

# SUNNICA ENERGY FARM

EN010106

Environmental Statement

Volume 6

6.2 Appendix 8J Report on Surveys for Bats

APFP Regulation 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and  
Procedure) Regulations 2009



Planning Act 2008

**The Infrastructure Planning  
(Applications: Prescribed Forms and  
Procedure) Regulations 2009**

**Sunnica Energy Farm**

**Environmental Statement  
Appendix 8J Report on Surveys for Bats**

|   |                                  |
|---|----------------------------------|
| <b>Regulation Reference:</b>                  | Regulation 5(2)(a)               |
| <b>Planning Inspectorate Scheme Reference</b> | EN010106                         |
| <b>Application Document Reference</b>         | EN010106/APP/6.2                 |
| <b>Author</b>                                 | Sunnica Energy Farm Project Team |

| <b>Version</b> | <b>Date</b>      | <b>Status of Version</b> |
|----------------|------------------|--------------------------|
| Rev 00         | 18 November 2021 | Application Version      |

## Executive summary

Bat surveys were undertaken as part of ecological surveys and assessments to determine a baseline and potential impacts of the proposed Sunnica Energy Farm (hereafter referred to as the Scheme).

Work in 2018 to 2021 comprised a desk study for bat records, a preliminary roost assessment, bat activity surveys (including transect and static detector surveys) and Advanced Bat Survey Techniques (ABST).

There were 216 desk study records of bats within 2km of the Order limits, comprising the following species: Common Pipistrelle, Soprano Pipistrelle, Barbastelle, Noctule, Leisler's bat, Serotine, Natterer's bat, Brandt's bat, Whiskered bat and Nathusius' pipistrelle.

In 2019, a total of 12 transects were surveyed and data from eight static detectors collected to provide a representative coverage of the habitats within the Scheme. Species recorded comprised at least nine species: Common Pipistrelle, Soprano Pipistrelle, Brown Long-eared bat, Serotine, Noctule, Barbastelle, Leisler's bat, Daubenton's, Natterer's and potentially other *Myotis* species.

Species on the transects comprised mainly Common and Soprano Pipistrelles, with Noctules recorded occasionally passing high over the site and lower numbers of other species. The highest activity (a Bat Activity Index of 67.6 passes per hour) was recorded in the summer at Static West 1 near Snailwell, located on a main north-south hedgerow with mature trees adjacent to a track and grazing marsh to the west. This was closely followed by summer activity at Static East 1, located along a woodland strip close to the Lee Brook.

In total 19,368 bat passes were recorded across the whole site based on 162 nights of data, from the eight static detectors. The most commonly recorded species by far were Common and Soprano Pipistrelles with 12,092 and 5,662 passes respectively, with 372 passes of either of these two species (as their calls overlap).

ABST was undertaken on 1, 8 August and 12 September 2019 to gather additional information on cryptic bat species and detail on breeding status of bats using the Order land, in particular woodland habitats immediate adjacent to the Order limits. Species caught and released comprised Brown Long-eared bats, Common and Soprano Pipistrelles and a Natterer's bat. This included a mix of male and female bats, including a female Natterer's, a Brown Long-eared bat, three Common Pipistrelles and two Soprano Pipistrelles that were either had bred (or were still lactating) this year, indicating nearby breeding roosts of those species.

Two species of bat were recorded roosting in two trees in the Burwell National Grid Substation Extension area during surveys. Both roosts are day roosts of Common Pipistrelle and Soprano Pipistrelle, two common and widespread species of bat. As small (1-2) numbers of bat were using these roosts, they are assessed as being of Local nature conservation importance, using the criteria in Annex C.

As all other roosts and potential roost features are outside the current footprint of the Scheme (due to avoidance of potential roosting features) no detailed roost presence/absence or characterisation has been undertaken elsewhere for the Scheme to determine roost importance. As a precautionary approach based on the data collected bat roosts have been assigned of up to County Importance based on potential maternity roosts of common species and small numbers/individual roosts of rarer species such as Barbastelle.

Biodiversity importance of foraging and commuting bats is based on species rarity, numbers, presence of nearby roosts and type/complexity of community/foraging features. This has

been assigned to individual species and is up to County Importance based on the species present.

Prior to construction, if any tree, woodlands, or buildings with bat roost suitability identified are impacted as a result of the Scheme, then these should be surveyed to determine roost presence/absence and where required to characterise the roost/s. Based on the Scheme layout it is anticipated that impacts to potential roosts are likely to be avoided.

# Table of contents

| <b>Chapter</b>  | <b>Pages</b> |
|---|--------------|
| <b>Executive summary</b>  | <b>i</b>     |
| <b>1 Introduction</b>   | <b>1</b>     |
| 1.2 The Scheme  | 1            |
| 1.3 Site description  | 2            |
| 1.4 Scope of the report   | 4            |
| <b>2 Legislative and Policy Framework</b>   | <b>5</b>     |
| 2.1 Legislative framework   | 5            |
| 2.2 European protected species mitigation licences  | 6            |
| 2.3 National and local planning policy  | 7            |
| 2.4 Local biodiversity action plan (LBAP)   | 7            |
| <b>3 Methods</b>  | <b>8</b>     |
| 3.1 Introduction  | 8            |
| 3.2 Desk study  | 8            |
| 3.3 Field survey  | 8            |
| 3.4 Biodiversity evaluation   | 14           |
| 3.5 Assumptions and limitations   | 14           |
| <b>4 Results</b>  | <b>16</b>    |
| 4.1 Desk study  | 16           |
| 4.2 Field surveys   | 16           |
| <b>5 Discussion</b>   | <b>22</b>    |
| 5.1 Introduction  | 22           |
| 5.2 Designated sites  | 22           |
| 5.3 Roosts  | 22           |
| 5.4 Commuting and foraging habitats   | 23           |
| 5.5 Potential impacts and significance of effects   | 26           |
| 5.6 Further surveys   | 28           |
| <b>6 References</b>   | <b>28</b>    |
| <b>Annex A Figures</b>  | <b>30</b>    |
| <b>Annex B Preliminary Bat Roost Appraisal Method</b>   | <b>36</b>    |
| <b>Annex C Valuing Bat Roosts Foraging and Commuting Habitats in Ecological Impact Assessment</b> | <b>38</b>    |
| <b>Annex D Survey Results</b>   | <b>43</b>    |
| 8D.1 Photographs  | 73           |
| 8D.2 Bat Activity Survey  | 80           |

## Table of Figures

|   |    |
|---|----|
| Chart 1: Total individual bat passes for each species ..... | 21 |
|---|----|

## Table of Tables

|  |    |
|--|----|
| Table 3-1: Minimum number of visits to determine presence/absence of bat roosts in trees/<br>woodland (Collins, 2016). ..... | 9  |
| Table 4-1: Summary of PRA results .....  | 17 |
| Table 4-2: Confirmed bat roosts .....  | 17 |
| Table 4-3: Summary of Bat Activity Index (BAI) from static detector surveys .....  | 20 |
| Table 5-1: Summary of biodiversity importance of commuting and foraging habitat.....   | 25 |

# 1 Introduction

1.1.1 In March 2019, AECOM undertook a Preliminary Ecological Appraisal (PEA) of the Sunnica Energy Farm site on behalf of Sunnica Ltd (Ref. 1). This PEA identified the need for follow-up ecological surveys and assessments to determine a baseline and potential impacts of the proposed Sunnica Energy Farm (hereafter referred to as the Scheme) on protected and, or notable species<sup>1</sup>. As part of this work, AECOM undertook bat surveys within the Scheme boundary (the Development Consent Order (DCO) Site (the Site)) (also referred to as the Order limits) (see **Figure 1**).

## 1.2 The Scheme

1.2.1 Sunnica Energy Farm (the Scheme) is a new solar energy farm proposal that will deliver electricity to the national electricity transmission network. Sunnica Limited is proposing to install ground mounted solar photovoltaic (PV) panel arrays to generate electrical energy from the sun and combine these with a Battery Energy Storage System (BESS) which will connect to Burwell National Grid Substation in Cambridgeshire.

1.2.2 Electricity will be generated at Sunnica East Site A, near Isleham in Cambridgeshire; Sunnica East Site B, near Worlington and Freckenham in Suffolk; Sunnica West Site A near Chippenham and Kennett in Cambridgeshire; and Sunnica West Site B, near Snailwell in Cambridgeshire. All locations will comprise ground mounted solar PV panel arrays, supporting electrical infrastructure and, with the exception of Sunnica West Site B, a BESS.

1.2.3 Supporting electrical infrastructure will include on-site substations on Sunnica East Site A and Sunnica East Site B and Sunnica West Site A, and on-site cabling between the different electrical elements across the Scheme. The generating equipment of the Scheme will be fenced and protected via security measures such as Closed Circuit Television. Inside the fenced areas, in addition to the generating equipment will be, internal access tracks, and drainage. It is not proposed for any area to be continuously lit.

1.2.4 Visual, ecological and archaeological mitigation is proposed which includes proposed grassland planting and new woodland; retention of existing woodland, wetlands and other vegetation; provision of replacement habitat; and offsetting areas, where there will be no development. The BESSs will consist of a compound and battery array to allow for the importation, storage and exportation of energy to the National Grid. There will also be areas at Sunnica East Site A and Sunnica East Site B for office and storage facilities for use during the Scheme's operation.

1.2.5 The Scheme will be connected to a new substation extension at the existing Burwell National Grid Substation, using 132 kilovolt (kV) cables buried underground. The cables will run between Sunnica East Site A, Sunnica East Site B and Sunnica West Site A (Grid Connection Route A), and then from Sunnica West Site A to Sunnica West B and onwards to the Burwell National Grid Substation (Grid Connection Route B). The Burwell National Grid Substation Extension will convert the 132kV to 400kV. The 400kV cables will be buried and

---

<sup>1</sup> A notable species is a species with a conservation designation, but no legal protection

will connect the Scheme to the existing Burwell National Grid Substation to allow distribution to the national transmission network.

- 1.2.6 The Scheme will have two main access points, one north of Elms Road at Sunnica East Site B and one south of La Hogue Road at Sunnica West Site A. The main access route to Sunnica West Site A will be via the Chippenham junction of the A11, to the north of junction 38 of the A14. Sunnica East Site B will be accessed via the A11 and B1085. A number of secondary access points are proposed to access the individual land parcels through construction, operation, and decommissioning phases.
- 1.2.7 The Scheme is defined as a Nationally Significant Infrastructure Project (NSIP) and will require a Development Consent Order (DCO) from the Secretary of State for Business, Energy and Industrial Strategy (Secretary of State), due to its generating capacity exceeding 50 megawatts (MW).
- 1.2.8 The Scheme comprises the following key areas:
- a. Solar Farm Sites:
    - i. Sunnica East Site A;
    - ii. Sunnica East Site B;
    - iii. Sunnica West Site A; and
    - iv. Sunnica West Site B.
  - b. associated electrical infrastructure areas for connection to the national transmission system:
    - i. Grid Connection Route A (connecting the Sunnica East Site A with the Sunnica East Site B and then connecting to the Sunnica West Site A);
    - ii. Grid Connection Route B (connecting the Sunnica West Site A and Sunnica West Site B and the Burwell National Grid Substation); and
    - iii. Burwell National Grid Substation Extension.
- 1.2.9 **Figure 1** shows the locations of these key areas.

### 1.3 Site description

- 1.3.1 A summary description of the habitats within the Scheme boundary (made up of the four sites (see section 1.2.8)) is provided below and a more detailed description of the habitats is provided in the PEA report (**Appendix 8B** of the ES [EN010106/APP/6.2]). The extent of the Scheme is shown in Annex A, **Figure 1**.

#### **Sunnica East Site**

- 1.3.2 The Sunnica East is split into two sub-sites, one to the north of Freckenham (referred to as Sunnica East Site A) and the other to the south of Worlington (referred to as Sunnica East Site B). These two sites are approximately 1 km apart and are separated by agricultural fields. The Sunnica East Site A encompasses an area of approximately 223ha and includes land within the county of Suffolk and Cambridgeshire. Sunnica East Site B lies within Suffolk and encompasses an area of approximately 319ha (**Figure 1**).



- 1.3.3 The landscape features within the Sunnica East Site A and Sunnica East Site B consist of arable agricultural fields interspersed with individual trees, hedgerows, linear tree belts, small woodland blocks, farm access tracks and local roads.
- 1.3.4 The landscape features immediately surrounding the Sunnica East Site A and Sunnica East Site B comprise small rural villages, including Worlington to the north, Barton Mills to the north-east, Red Lodge and Freckenham to the south and Isleham to the west. Industrial land uses adjoin the A11 to the south of the Sunnica East Site with an industrial installation of a 7.5MW solar farm situated adjacent to the south-eastern extent of the Sunnica East Site and an anaerobic digestion (AD) plant located to the south of the Sunnica East Site.

### **Sunnica West Site**

- 1.3.5 The Sunnica West Site is located within the East Cambridgeshire District Council administrative area, approximately 3km north east of Newmarket and 6.5 km east of Burwell.
- 1.3.6 Sunnica West is split into two sub-sites, one to the south-east (referred to as Sunnica West Site A) and the other to the north-west of Snailwell (referred to as Sunnica West Site B). These two sites are approximately 1km apart, separated by agricultural fields and Chippenham Road. The Sunnica West Site A encompasses an area of approximately 373ha and includes land to the east and west of the A11, consisting of agricultural fields bounded by trees, managed hedgerows, linear tree shelter belts, small woodland and copses and farm access tracks. Sunnica West Site B encompasses an area of approximately 66ha and comprise of agricultural fields, grassland, small woodland and copses, farm access tracks and irrigation ditches fed by the River Snail which runs along the western and northern boundaries of the Site (**Figure 1**).
- 1.3.7 The surrounding landscape comprises regularly shaped arable fields interspersed with managed hedgerows, tall shelter belts of trees and in the Chippenham Hall area, a parkland landscape with mature individual trees. Much of the area is also characterised by grazed paddocks, horse gallops and exercise tracks.

### **Cable route corridors**

- 1.3.8 The Scheme will connect to the existing Burwell National Grid Substation via a cable route corridor. The cable route corridors under consideration are Grid Connection Route A, which connects the Sunnica East Site A with the Sunnica East Site B and then runs between the Sunnica West Site A and the Sunnica East Site B; and Grid Connection Route B, between the Sunnica West Site A and Sunnica West Site B and the Burwell National Grid Substation.

#### *Grid Connection Route A*

- 1.3.9 Grid Connection Route A connects the Sunnica East Site A with Sunnica East Site B and crosses two minor roads and arable farmland (**Figure 8G-1**).
- 1.3.10 Heading south from the Sunnica East Site B, the cable route corridor for Grid Connection Route A crosses the River Kennett, pastoral farmland, the Chippenham footpath 49/7 (a Public Right of Way (PRoW)) and B1085 (**Figure 8G-1**).

### *Grid Connection Route B*

- 1.3.11 Heading east from the Burwell National Grid Substation, the cable route corridor for Grid Connection Route B crosses agricultural fields and a number of roads including the B1102 and A142. Grid Connection Route B also crosses a number of watercourses, including the Burwell Lode, New River, and the River Snail, as well as a number of drainage ditches associated with Burwell Fen, Little Fen, the Broads, and agricultural drains (**Figure 1**).
- 1.3.12 The cable route corridor for Grid Connection Route B crosses a PRow (footpath 92/19) before crossing the railway line and the A142 Newmarket / Fordham Road. The Route then runs alongside Snailwell Road and across the River Snail into Sunnica West Site B.

### **Burwell National Grid Substation Extension**

- 1.3.13 The habitat within the Burwell National Grid Substation Extension (surrounding the existing substation) comprises small grassland fields to the east of the existing substation (bordered by hedgerows and mature trees) and arable land to the south and west of the existing substation (**Figure 1**).

## **1.4 Scope of the report**

- 1.4.1 The PEA Report (Ref. 1) identified bat species that are protected under UK and European legislation and are species of principal importance (listed under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 (Ref. 2). It was identified that bat species could be potential constraints to the works or influence the design and implementation of the Scheme.
- 1.4.2 This report includes the following information:
- a. relevant legislation and policy;
  - b. methods for desk and field-based assessments undertaken between 2019 and 2021;
  - c. limitations to the surveys undertaken and any assumptions made as a result of any incomplete data;
  - d. survey results including preliminary roost appraisal and bat activity surveys;
  - e. biodiversity importance of the bat species and sites designated for bat species (where applicable); and
  - f. recommendations, including outline mitigation (i.e. avoidance, compensation), any further surveys and enhancement.
- 1.4.3 This report is a technical appendix to accompany the Environmental Statement (ES) for the DCO application.

## 2 Legislative and Policy Framework

### 2.1 Legislative framework

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

- a. Wildlife and Countryside Act 1981 (as amended) (the WCA) (Ref. 3);
- b. Countryside and Rights of Way (CRoW) Act 2000 (Ref. 4);
- c. Natural Environment and Rural Communities (NERC) Act 2006 (Ref. 2); and
- d. Conservation of Habitats and Species Regulations 2017 (as amended) (Ref. 5).

2.1.2 The above legislation has been considered when planning and undertaking the commissioned survey work using the methods described in section 3 of this report. Compliance with legislation may require the attainment of relevant protected species licences prior to the implementation of the proposed development.

2.1.3 All bat species and their roosts are legally protected in the UK under the Conservation of Habitats and Species Regulations 2017 (as amended) (Ref. 5), which implements the EC Directive 92/43/EEC (the Habitats Directive) (Ref. 6). 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 WCA (Ref. 3).

2.1.4 Taken together, the Conservation of Habitats and Species Regulations 2017 (as amended) (Ref. 5) and the WCA (Ref. 3) 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.

2.1.5 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.

- 2.1.6 Section 40 of the NERC Act 2006 (Ref. 2) places a legal obligation on public bodies in England to have regard to particular living organisms and types of habitat which are of the greatest conservation importance whilst carrying out their functions, whilst also having a general regard for protecting all biodiversity. The NERC Act 2006 Section 41 includes seven bats as species of 'principal importance': Barbastelle, Bechstein's bat, Noctule (*Nyctalus noctula*), Soprano Pipistrelle (*Pipistrellus pygmaeus*), Brown Long-eared bat (*Plecotus auritus*), Lesser and Greater Horseshoe bats.
- 2.1.7 Local Planning Authorities must be satisfied that favourable conservation status of bats (and other European Protected Species) can be maintained before granting planning permission. Demonstrating the maintenance of 'favourable conservation status' is one of three Habitats Directive "derogation tests" relating to European protected species that the Local Planning Authority must be satisfied are met in order to be able to grant planning permission.
- 2.1.8 The three "derogation tests" as set out in paragraph 53 of Conservation of Habitats and Species Regulations 2017 (as amended) (Ref. 5) are that:
- a. *"the development must be either for "public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment";*
  - b. *"that there is no satisfactory alternative";* and
  - c. *"that the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range".*
- 2.1.9 Favourable conservation status is defined in Article 1(i) of the Habitats Directive (Ref. 6) as when:
- a. *"population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats";*
  - b. *"the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future";* and
  - c. *"there is, and will probably continue to be, a sufficiently large habitat to maintain its population on a long-term basis".*

## **2.2 European protected species mitigation licences**

- 2.2.1 Although the law provides strict protection for bats, it also allows this protection to be set aside (derogated) under Regulation 53 of the Conservation of Habitats and Species Regulations (Ref. 5) through the issuing of European Protected Species Mitigation Licences (EPSMLs) for the purpose of preserving public health; public safety; other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment. However, in accordance with the requirements of the Conservation of Habitats and Species Regulations, a licence can only be issued where the following requirements are satisfied:
- a. there is no satisfactory alternative; and

- b. the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.

2.2.2 The process of obtaining an EPSML from Natural England will normally take two months (Natural England's standard determination period is 30 working days). In addition, Natural England would normally expect any bat EPSML application to be accompanied by the data collected from the detailed bat surveys, which are used to determine the status of the structure or tree with regard to bats; specifically, the location of roost sites, the bat species utilising the roost and the type of roost (such as maternity, or transitional).

2.2.3 The application for an EPSML would need to include the production of a detailed method statement for the proposed works. This document would include details of working practices and mitigation measures to ensure that the favourable conservation status of the bats using the structure or tree is not adversely affected.

## 2.3 National and local planning policy

2.3.1 National and local planning policy relevant to nature conservation is provided in detail in the PEA for the Scheme (Ref. 1), which is also included as **Appendix 8B** of the ES [EN010106/APP/6.2].

## 2.4 Local biodiversity action plan (LBAP)

2.4.1 Thirteen species of bats are listed in the Suffolk BAP (Ref. 7). These comprise barbastelle, Brandt's bat (*Myotis brandtii*), Brown Long-eared bat, Common Pipistrelle (*Pipistrellus pipistrellus*), Daubenton's bat (*Myotis daubentonii*), Leisler's bat (*Nyctalus leisleri*), Lesser Horseshoe bat, Nathusius' Pipistrelle (*Pipistrellus nathusii*), Natterer's bat (*Myotis nattereri*), Noctule, Serotine (*Eptesicus serotinus*), Soprano Pipistrelle and Whiskered bat (*Myotis mystacinus*). Information is provided on their conservation status, current factors causing loss or decline and current action for their conservation. Four of these species are also listed as Cambridgeshire and Peterborough priority species (Ref. 8): Barbastelle, Brown Long-eared bat, Noctule and Soprano Pipistrelle.

## 3 Methods

### 3.1 Introduction

- 3.1.1 All field surveys were led by competent ecologists, familiar with bat ecology and surveying, with the relevant Natural England bat class licences for the survey type, and full or associate members of the Chartered Institute of Ecology and Environmental Management (CIEEM).
- 3.1.2 Prior to the start of the 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 site, and record the context of the survey locations.

### 3.2 Desk study

- 3.2.1 A desk study was undertaken in December 2018 through Cambridgeshire & Peterborough Environmental Records Centre (CPERC) and Suffolk Biodiversity Information Service (SBIS), to obtain relevant bat records within the last ten years and within a 2km radius of the Order limits. This desk study also identified any international nature conservation designations (including those of relevance to bats) within 10km of the Order limits and other statutory or non-statutory nature conservation designations within 2km of the Order limits.
- 3.2.2 A search was undertaken of freely available resources including Environmental Statements of other local development with relevant desk study data (e.g. Ward Associates, 2017 (Ref. 9)) and Magic.gov.uk (Ref. 10) for bat designated Special Areas of Conservation (SACs) within 30km of the Order limits; other statutory sites designated for bats within 10km of the Order limits and any relevant non-statutory sites within 2km of the Order limits.

### 3.3 Field survey

#### Preliminary roost appraisal

- 3.3.1 A preliminary roost appraisal (PRA) survey was carried out on all relevant features identified within the Scheme on 15, 16 and 23 May 2019. Additional land added to the Scheme, following changes to the Order limits, was surveyed on 19 June and 25 September 2019. Land at Burwell National Grid Substation Extension was surveyed on 24 August 2020 and updated on 8 September 2021. Grid Connection Routes were surveyed on 19, 20 & 21 May and 1 June 2021. Where access was permitted, a licensed bat ecologist (with a minimum Natural England Level 1 Class Licence) and an assistant undertook an initial assessment of relevant buildings/structures, woodland blocks and trees at ground level for their suitability for roosting bats (see Annex A, **Figure 2**).
- 3.3.2 The aim of the survey was to undertake a rapid assessment to identify (a) the presence of bats or their roost(s), and/or (b) features that were suitable for roosting bats, but for which the presence/absence of bats or their roosts could not be determined.
- 3.3.3 Use of a GPS was made to accurately record the location of trees, woodlands and structures along with photos and notes recorded in line with guidance in the Bat Surveys: Good Practice Guidelines for Professional Ecologists 3rd Edition (Ref. 11)

(see Annex B). Any trees and structures were viewed from the ground. During the surveys, signs of bats such as staining and droppings were searched for and recorded (see full method in Annex B).

3.3.4 Based on the overall suitability for use as a roost each tree, woodland or structure was classified as negligible, low, moderate or high roost suitability, or as a confirmed roost, in accordance with best practice guidelines (Ref. 11). The results helped to inform the layout of the Proposed Scheme and any requirement for more detailed survey work to confirm the presence or likely absence of bat roosts if roost features are likely to be impacted. Note that it is currently assumed that none of these features will be impacted by the Scheme due to the embedded mitigation, on the basis of habitats being retained and a suitable buffer zone provided around potential roosting features to avoid roost loss or any significant disturbance. As such these assessments were carried out on a precautionary basis to inform any future amendments to the Scheme that may require further survey where roost disturbance or loss is a requirement.

### Bat emergence / re-entry surveys

3.3.5 Based on the results of the PRA survey and updated details of the Scheme design (provided in 2021), dusk emergence and dawn re-entry surveys were undertaken on trees at the Burwell National Grid Substation Extension. Surveys were undertaken within this area only as the PRA identified that the Scheme would potentially lead to the permanent loss of trees with potential to support roosting bats.

3.3.6 Surveys were undertaken in accordance with best practice guidance, which is based on the assessed habitat suitability grade of each tree (see summary in Table 3-1). No further surveys were required for trees assessed as Negligible or Low suitability, although it will be necessary to take appropriate precautions, including updated surveys, when felling trees with Low to High suitability even where a roost was not found.

3.3.7 Prior to surveys of the trees, an external non-invasive inspection was undertaken from the ground of potential roost features and bat access/egress points to identify any signs of roosting bats.

**Table 3-1: Minimum number of visits to determine presence/absence of bat roosts in trees/ woodland (Collins, 2016).**

| Feature         | Negligible Suitability | Low Suitability   | Moderate Suitability                      | High Suitability/ Confirmed Roost                      |
|-----------------|------------------------|-------------------|---|--|
| Trees/ woodland | No further survey      | No further survey | Two survey visits – one dusk and one dawn | Three survey visits – dusk or dawn (at least one dawn) |

3.3.8 Dusk and dawn surveys were undertaken at the Burwell National Grid Substation Extension on 25, 26 and 27 August 2021 and 1, 2, 3, 6, 8, 13 and 16 September 2021. Dusk emergence surveys started approximately 15 mins before sunset and ended 1.5 to 2 hours after sunset. Dawn re-entry surveys started 1.5 to 2 hours before sunrise and ended 15 mins after sunrise. Surveys were only undertaken during suitable weather conditions, *i.e.* in temperatures above 7°C and in the absence of rain, strong wind and fog. Where roosting was confirmed, a total of three

dusk or dawn surveys were then undertaken (where time allowed) to help characterise the roost/s.

- 3.3.9 Surveys were led by a suitably experienced bat ecologist. In addition to direct observation, bat detectors were used to record bat calls. These comprised full spectrum, time expansion and frequency division bat detectors connected to recording devices (e.g. Batlogger M or Pettersson D240x and Edirol recorder). Use was also made of static detectors (e.g. Anabat Express) and an infra-red video camera (e.g. Sony HDR-SR5) where required. Sound recordings were made in either full spectrum 'wav' files or zero-crossing files to allow subsequent verification of species or species groups, where required.

### **Bat activity surveys**

- 3.3.10 The survey effort for the bat activity surveys was based on the Scheme footprint located in mainly low value suitability habitats for foraging and commuting, comprising large open arable or pig fields and some smaller areas of grassland/set-aside, with the retention of woodland and hedges that are normally more frequently used by foraging and commuting bats.
- 3.3.11 Bat activity surveys were undertaken in 2019 in accessible and suitable foraging and commuting bat habitat at four transect locations covering each of the four Solar Farm Sites (see section 1.2.8): Sunnica East Site A (transect East 1), Sunnica East Site B (transect East 2), Sunnica West Site A (transect West 1 and 2) and Sunnica West Site B (transect West 1). Transect routes were surveyed in spring, summer and autumn (May, July and September to early October) covering representative habitat within the Order land (see Annex A, **Figures 3 to 5**).
- 3.3.12 In accordance with the bat survey guidelines (Ref. 11), habitats assessed as being of low value for foraging and commuting bats require three activity transects surveys within a year capturing spring, summer and autumn.
- 3.3.13 Each activity survey involved two surveyors walking a transect route which included a series of 'spot counts' at pre-determined points along the transect (shown as Waypoints on **Figures 3 to 5**). These 'spot count' points were located at potentially higher value features with regards to foraging and, or commuting bats. At each point surveyors stopped and recorded bat activity for three minutes using bat echolocation detectors. All activity encountered whilst walking between points was also noted. The survey route was designed to include potential flight paths or foraging areas within the Scheme and potential roost sites. The starting points and walked direction of the transects were varied during each survey visit in order to ensure different areas of the transect were walked close to dusk or dawn.
- 3.3.14 Surveyors carried full spectrum bat echolocation detectors (Batlogger M or Anabat Swift) to help determine which species were present. In accordance with survey guidelines (Ref. 11), dusk surveys were carried out from sunset to at least 2 hours after sunset. The time, location, numbers, species (where possible) 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 comprising Batsound, Kaleidoscope or Anlook W to verify bat calls where required. 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.



- 3.3.15 In addition to the transect surveys, eight automated static bat [REDACTED] detectors (Anabat Swift or Express with the same standard microphones) were placed across the Scheme in representative habitats to record bat activity over a longer period of time (two on each transect). This is double the recommended number of detectors required (normally one per transect for low value habitat) and ensured better coverage of the Scheme due to the large geographic spread and the ability to consider small areas of higher value habitat within each transect location. The locations of the static detectors are shown in Annex A, **Figures 3 to 5**.
- 3.3.16 All microphones were located at least 1m above the ground on trees, and 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**).
- 3.3.17 Weather conditions were recorded, using the temperate log files on each static detector and rain/wind conditions recorded at the nearest weather station using online resources (i.e. [REDACTED] (Ref. 12). Weather data were taken into consideration in the analysis. Where any prolonged period of strong wind >25mph or rain was experienced the static detectors were left for longer on site to obtain sufficient data during optimum weather conditions for bat activity.

### **Advanced bat survey techniques (ABST)**

#### *Survey rationale*

- 3.3.18 Standard survey inspection and acoustic survey methods are limited when trying to gather information on the presence of rare or cryptic species of bats (e.g. *myotis* species or *Barbastelle*), nor do these methods inform of the sex, age and their reproductive status. As such ABST, comprising bat trapping and use of acoustic lures was used to supplement the other survey data collected.
- 3.3.19 The aim of the was to provide the following information on the species on the Scheme in suitable woodland:
- confirmed identification of species;
  - sex;
  - age of bats; and
  - reproductive status.
- 3.3.20 ABST were used in one woodland in Sunnica West A and in a woodland/hedge-line in Sunnica East B, identified as being suitable for trapping of rare/cryptic species, based on initial transect/static detector records (see Annex A, **Figures 4 and 5**) within the Order land. Badlingham Lane at Sunnica East B was also considered, but due to use at night by motorbike riders it was not considered possible to safely trap bats there. Another woodland considered suitable for trapping close to Freckenham was removed from the Scheme prior to surveys.

### *Bat trapping and biometrics*

- 3.3.21 The surveys used a combination of suitably placed Austbat 3 bank harp traps, and 6 m double or triple high mist nets and acoustics lures (AT-100). Surveys were led on site by a suitably licensed bat ecologist (Class Licence Level 3 (CL19) and 4 (CL20)). Surveys avoided the time when bats were giving birth during the maternity season and were undertaken on 1, 7 August and 12 September 2019 in suitable weather conditions.
- 3.3.22 When bats were captured within the traps (harp or mist net) the bats were extracted by the licence holder using gloves suitable to handle bats and immediately transferred into a clean cloth bat bag. The bat, within the bag, was then be taken to the processing area which will be located immediately adjacent to the trapping locations. The biometrics of each individual bat was recorded, including species, sex, weight, forearm measurement, age, reproductive status and the general condition of the bat. If the identification of the bat was questionable (particularly for *myotis* species) then a DNA sample was taken, either in the form of bat droppings or fur sample (fur clipping taken from the back of the neck between the shoulder blades) if required.

### **Bat data analyses**

#### *Activity surveys*

- 3.3.23 The transect data were described in relation to species, number of passes (and where possible 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.
- 3.3.24 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*

- 3.3.25 BAI values were calculated by averaging the total number of bat passes per hour for each static detector unit at each location per month. 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 file or many bats in a single file.
- 3.3.26 Limited guidance is available on what constitutes low to high bat activity on a site/scheme based on number of passes. As such a relative scale is used by AECOM that follows the protocol recommended by Ecobat (Ref. 13) in this report where:
- low activity: 0-20th percentiles;
  - low to moderate activity: 21st-40th percentiles;

- c. moderate activity: 41st-60th percentiles;
- d. moderate to high activity: 61st-80th percentiles; and
- e. high activity: 81st-100th percentiles.

3.3.27 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. 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.

3.3.28 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.

#### *Bat roost categorisation*

3.3.29 Where bat roosts were found these were categorised as follows based on standard guidance (Ref. 11):

- a. day roost - A place where individual bats, or small groups of males, rest or shelter in the day but are rarely found by night in the summer;
- b. night roost - A place where bats rest or shelter in the night but are rarely found in the day and may be used by a single individual occasionally or it could be used regularly by the whole colony;
- c. feeding roost - A place where individual bats or a few individuals rest or feed during the night but are rarely present by day;
- d. transitional/occasional roost - Used by a few individuals or occasionally small groups for generally short periods of time on waking from hibernation or in the period prior to hibernation;
- e. swarming site - Where large numbers of males and females gather during late summer to autumn. Appear to be important mating sites;
- f. mating site - Where mating takes place from late summer and can continue through winter;
- g. maternity roost - Where female bats give birth and raise their young to independence;
- h. hibernation roost - Where bats may be found individually or together during winter, which has a constant cool temperature and high humidity; and
- i. satellite roost - An alternative roost found in close proximity to the main nursery colony used by a few individual breeding females to small groups of breeding females throughout the breeding season.

## **3.4 Biodiversity evaluation**

- 3.4.1 A hierarchical geographical approach used to assign biodiversity importance (i.e. sensitivity) of any bat roosts, and bat foraging and commuting habitat associated with the site is based upon Guidelines of Ecological Impact Assessment in the UK and Ireland (Ref. 14), and Valuing Bats in Ecological Assessment (Ref. 15) and professional judgement. It is acknowledged that in the Guidelines of Ecological Impact Assessment guidelines 'Importance' is used as opposed to Valuing Bats in Ecological Assessment which uses 'Value'. These geographical frames of reference and method of determination used in the assessment is similar and therefore the use of 'Importance' and/ or 'Value' for ecological features is interchangeable. Refer to Annex C for full details on the methodology used to determine biodiversity importance.
- 3.4.2 Reference has also been made where required to:
- Natural England Joint Publication JP025: A Review of the Population and Conservation Status of British Mammals (Ref. 15);
  - NERC Act Section 41 list of species of principal importance (Ref. 2);
  - Local Biodiversity Action Plans (Ref. 17);
  - Bat Roosts in Trees: A Guide to Identification and Assessment for Tree-Care and Ecology Professionals (Ref. 18); and
  - The State of the UK's Bats 2017: National Bat Monitoring Programme Populations Trends (Ref. 19).
- 3.4.3 The importance presented reflects the currently known distribution within the Scheme.

## **3.5 Assumptions and limitations**

### **Desk study**

- 3.5.1 The information collected from the desk study background record search represents only those records submitted to records centres and is therefore not a definitive list of all records of bat species identified within the Study Area. If records have not been provided, this does not confirm absence from the Scheme.

### **Field survey**

#### *Survey areas and access*

- 3.5.2 Survey areas were chosen to provide a representative sample of the Scheme, based on the best quality in terms of potential bat roosting/foraging habitat which could be impacted as a result of the Scheme (i.e. mainly arable/livestock fields). Note that since the surveys, the Scheme boundary has changed slightly, resulting in some PRA survey results and one bat activity transect that were undertaken in land that is now just outside the Scheme (at the Sunnica East Sites). This is not a significant limitation as similar habitats are present close to the Scheme and the data are still useful for assessing landscape scale effects on bats.
- 3.5.3 Not all habitats were surveyed in detail. No woodland, wetlands or hedgerows were surveyed in detail, as they were either outside the footprint of the Order limits (i.e.

retained and buffered from the Scheme) or access was not possible to land outside the Order limits. However, an initial preliminary roost assessment only of these habitats for roosting bats was undertaken. Data interpretation limitations

- 3.5.4 It is accepted that *Myotis* bat species are difficult or impossible to identify from echolocation alone, therefore these species are sometimes aggregated as 'Myotis species'. This aggregation, where undertaken, is widely accepted and does not affect the evaluation of the results of activity surveys. This is not a significant limitation as other survey methods, such as ABST and other field observations were aimed at identifying cryptic myotis species wherever possible.
- 3.5.5 The preliminary roost appraisal surveys undertaken were aimed at determining the presence/likely absence of roosts, therefore there would be a need for further surveys on potential roosts if they are likely to be impacted by the Scheme. Sufficient robust roost survey data are required to be collected for any future licence application (EPSML) for roost loss and, or modification and significant disturbance and to allow the Local Planning Authority to evaluate the planning submission and discharge its legal biodiversity duty in accordance with Natural England's standing advice.
- 3.5.6 Bats are highly mobile and may roost in different locations each year where suitable roost features are present. As such a precautionary approach for mitigation is proposed for trees or buildings assessed with roost suitability but where roosts were not found.
- 3.5.7 There were no other limitations that affected the survey results.

## 4 Results

### 4.1 Desk study

4.1.1 There are no international statutory site designations for bats within 30km of the Order limits. There are no national statutory site designations for bats within 10km of the Order limits or relevant non-statutory sites within 2km of the Order limits.

#### *Bat species*

4.1.2 There were 216 desk study individual record entries of bats within 2km of the Scheme, comprising the following species: Common Pipistrelle, Soprano Pipistrelle, Barbastelle, Noctule, Leisler's bat, Serotine, Natterer's bat, Brandt's bat, Whiskered bat, and Nathusius' Pipistrelle (Ref. 1).

4.1.3 There is one record of a Serotine bat from the 1km square covering Freckenham and part of the Sunnica East Site A. A bat activity survey of trees at Bay Farm, carried out for a development in 2017 (Ref. 9), south of the Sunnica East A Site (within 500m) found activity of Barbastelle, a *Myotis* species, Noctule, Brown Long-eared bat, Serotine and Common and Soprano Pipistrelles.

4.1.4 There are records of Common Pipistrelle, Brandt's bat, Daubenton's bat, Natterer's bat, Whiskered bat, Soprano Pipistrelle, Serotine and Brown Long-eared bat from outside, but within 500m of the boundary of the Sunnica East Site A. This includes possible Serotine, Common Pipistrelle and Brown Long-eared maternity roosts.

4.1.5 There are records of eight species recorded at Chippenham Fen, immediately adjacent to Sunnica West Site B. These comprise Common Pipistrelle, Soprano Pipistrelle, Serotine, Noctule, Daubenton's bat, Leisler's bat, Natterer's bat and Brown Long-eared bat.

4.1.6 There are no bat records within the Sunnica West Sites A, but there are at least three species within 500m of this site, comprising Brown Long-eared bat, Soprano Pipistrelle, an unknown *pipistrelle* species and Serotine.

4.1.7 The Grid Connection Routes included records of eight species within 2km, including records of Brown Long-eared bat, Common Pipistrelle, Soprano Pipistrelle, Barbastelle, Noctule, Serotine and Natterer's bat within the area of Cable Route Corridor B2. At Burwell National Grid Substation Extension Site there are nearby records (within the same 1km grid square) of Brown Long-eared bat, Common Pipistrelle, Natterer's bat, Noctule, Barbastelle and Soprano Pipistrelle.

### 4.2 Field surveys

#### **Preliminary roost appraisal**

4.2.1 The results of the preliminary roost appraisal are shown in Annex A, **Figure 2** and in Annex D.

4.2.2 In summary, this initial assessment has found one confirmed roost (based on bat activity data) at Woodland 612 (now outside the Order limits), 59 features with high suitability for roosting bats, 38 features with moderate suitability, 40 with low suitability and 21 features with negligible suitability (see Table 4-1). Many of the

woodlands, particularly those with moderate to high suitability are likely to contain roosting bats, however none of the features identified with roost suitability are currently likely to be directly impacted by the Scheme (see discussion in Section 0).

**Table 4-1: Summary of PRA results**

| Feature Type           | Negligible | Low | Moderate | High | Confirmed          |
|------------------------|------------|-----|----------|------|--------------------|
| Trees, Woodland/ copse | 19         | 33  | 35       | 56   | 1 (mixed woodland) |
| Buildings              | 2          | 4   | 3        | 3    | 0                  |
| Bridges                | 0          | 3   | 0        | 0    | 0                  |

### Bat roost surveys

- 4.2.3 All trees (or groups of trees) of moderate / high roost potential for bats within the Burwell National Grid Substation Extension area, based on the results of the PRA survey, were surveyed for bat emergence /re-entry.
- 4.2.4 During the surveys, two species of bat were recorded using trees within the Burwell National Grid Substation Extension area for roosting (Common Pipistrelle and Soprano Pipistrelle). Confirmed roosts comprise non-breeding day or feeding roosts of small numbers of bats in two trees. The roosts are described in **Table 4-2**. below. Full results from bat emergence/ re-entry surveys are presented in **Annex D**.

**Table 4-2: Confirmed bat roosts**

| Reference              | Feature | Roost/Date                   | Roost Type/ Species         | Description  |
|------------------------|---------|------------------------------|-----------------------------|--|
| T3                     | Willow  | Confirmed<br>Dusk (25/08/21) | Day roost<br>1x Common Pip  | Flew out at height, towards canopy height on 25/08/21. |
| T3                     | Willow  | Confirmed<br>Dawn (27/08/21) | Day roost<br>1x Soprano Pip | Swarming around T3                                     |
| T3                     | Willow  | Confirmed<br>Dusk (02/09/21) | Day roost<br>1x Common Pip  | Emergence from half-way up tree                        |
| Tree between T8 and T9 | Willow  | Confirmed<br>Dusk (06/09/21) | Day roost<br>1x Soprano Pip | Appeared to emerge from this tree                      |

### Bat activity surveys

- 4.2.5 The results of these surveys and the Bat Activity Index (BAI) (see section 3.3.20) are summarised below, with full results in Annex D. Transect mapping and static bat detector locations are shown in Annex A, **Figures 3 to 5**.

#### *Transect surveys*

- 4.2.6 A total of 12 transects were surveyed during 2019 to provide a representative coverage of the habitats within the Order land. This included hedges/tree lines, woodland edge, arable field margins and livestock fields (mainly pigs). Transects covered each of the four Sunnica Solar Sites; Sunnica East Site A (Transect East 1), Sunnica East Site B (Transect East 2), Sunnica West Site A (transect West 1 and 2) and Sunnica West Site B (Transect West 1).

4.2.7 Species recorded during the bat transect survey comprised at least eight species: Common Pipistrelle, Soprano Pipistrelle, Brown Long-eared bat, Serotine, Noctule, Barbastelle, Leisler's bat and *Myotis* species (Daubenton's and/or other *Myotis* species).

#### Spring

4.2.8 Surveys were undertaken on 15, 22, 23 and 28 May 2019. Activity on both East transects was low (six to 25 passes).

4.2.9 Species recorded on Transect East 1 comprised Common and Soprano Pipistrelle bats recorded passing and foraging. Relatively higher activity was recorded close to a block of woodland between Waypoints 4 and 5.

4.2.10 Species recorded on Transect East 2 comprised Common and Soprano Pipistrelle bats, two brown long-eared passes and single passes of a Noctule, barbastelle and a *Myotis* species. These records were fairly evenly spread along the transect mainly close to woodland edge and hedges.

4.2.11 Activity on Transect West 1 was low with several Noctule passes along the central north/south hedges, with Common and Soprano Pipistrelles and a single *myotis* bat pass.

4.2.12 Activity on Transect West 2 was moderate with up to four bats comprising Common and Soprano Pipistrelles foraging to the south west on the site along a woodland shelterbelt. A single *myotis* bat (probably Daubenton's bat) was recorded.

#### Summer

4.2.13 Surveys were undertaken on 24, 25, 30 and 31 July 2019. Activity on all transects was moderate (26 to 99 passes).

4.2.14 At Transect East 1, species comprised mainly Common and Soprano Pipistrelles with relatively high activity of up to three Common Pipistrelles foraging close to farm buildings at Waypoint 9. Noctules were recorded occasionally passing high over the site to the north and west of the site. A single Daubenton's bat was recorded over the reservoir at Waypoint 9 and a single Brown Long-eared bat along a hedge nearby.

4.2.15 At Transect East 2, there were passes of mainly Common and Soprano Pipistrelles, with a couple of Noctule passes and one undetermined Noctule or Leisler's pass. These were located mainly along Badlingham Lane and a treeline to the east of this.

4.2.16 At Transect West 1, there were passes of Common and Soprano Pipistrelles and Noctule bats. Two Common Pipistrelle bats were recorded foraging in and around the shelterbelt woodland at Waypoint 3.

4.2.17 At Transect West 2, Common and Soprano Pipistrelles, Noctule, Serotine and possible Leisler's bats. This is included possible emergence of a Soprano Pipistrelle in woodland at Waypoint 2. The Serotine was recorded foraging close to the barns at Waypoint 1. Other activity was recorded along the hedges/roads



and the central tree line to the east of the site. This included regular passes of Common and Soprano Pipistrelles, Noctule and a possible Leisler's bat.

### Autumn

- 4.2.18 Surveys were undertaken on 25 September and 4, 8, 15 October 2019. Activity on all transects was moderate (26 to 99 passes).
- 4.2.19 At Transect East 1, there were occasional passes of Common and Soprano Pipistrelles, and Noctule bats. There were a single passes Daubenton's and Leisler's bats were recorded along hedges. Relatively higher activity of foraging bats was recorded at Waypoint 1 close to woodland and Lee Brook and at Waypoint 8 close to farm buildings.
- 4.2.20 At Transect East 2, foraging passes of Noctule were recorded shortly after sunset over the reservoir to the south of this area. Along Badlingham Lane there were occasional passes of Common and Soprano Pipistrelles and a single pass of a Brown Long-eared bat and a Barbastelle. Further along the transect a few passes of Common Pipistrelle were recorded close to a woodland at Waypoint 6.
- 4.2.21 Activity on Transect West 1 was highest along the central north-south hedge between Waypoints 5 and 9 with several Noctule passes and frequent Common and Soprano Pipistrelles foraging passes with at least three individual bats recorded. There were occasional passes elsewhere close to hedges.
- 4.2.22 At transect West 2, regular Noctule passes and foraging activity were recorded to the east of the site along a tree line (Waypoint 10). Occasional passes of a single Common Pipistrelle were recorded close to La Hogue Farm. At Sounds Plantation (Waypoint 2) there was frequent foraging activity of common and Soprano Pipistrelle, a single pass of a Brown Long-eared bat and three barbastelle passes.

### *Static bat detectors*

- 4.2.23 Species recorded on the static bat detectors at the eight locations across the four sites surveyed in 2019 comprised at least eight species: Common Pipistrelle, Soprano Pipistrelle, Brown Long-eared bat, Serotine, Noctule, Barbastelle, Leisler's bat and *Myotis* species (Daubenton's and/or Natterer's bat). Full results are provided in Annex D with static locations in Annex A, **Figures 3 to 5**. A summary is provided as **Table 4-3** and Chart 1.
- 4.2.24 This highest activity (a BAI of 67.6 passes per hour) was recorded in the summer at Static West 1, located on the main north-south hedgerow with mature trees adjacent to a track and grazing marsh to the west. This was closely followed by summer activity at Static East 1, located along a woodland strip close to the Lee Brook.
- 4.2.25 In total 19,368 bat passes were recorded across the whole site based on 162 nights of data, from the eight static detectors. The most commonly recorded species by far were Common and Soprano Pipistrelles with 12,092 and 5,662 passes respectively, with 372 passes of either of these two species (as their calls overlap). The highest number of calls during one season was 2,453 passes of Soprano Pipistrelle at Sunnica West 1.

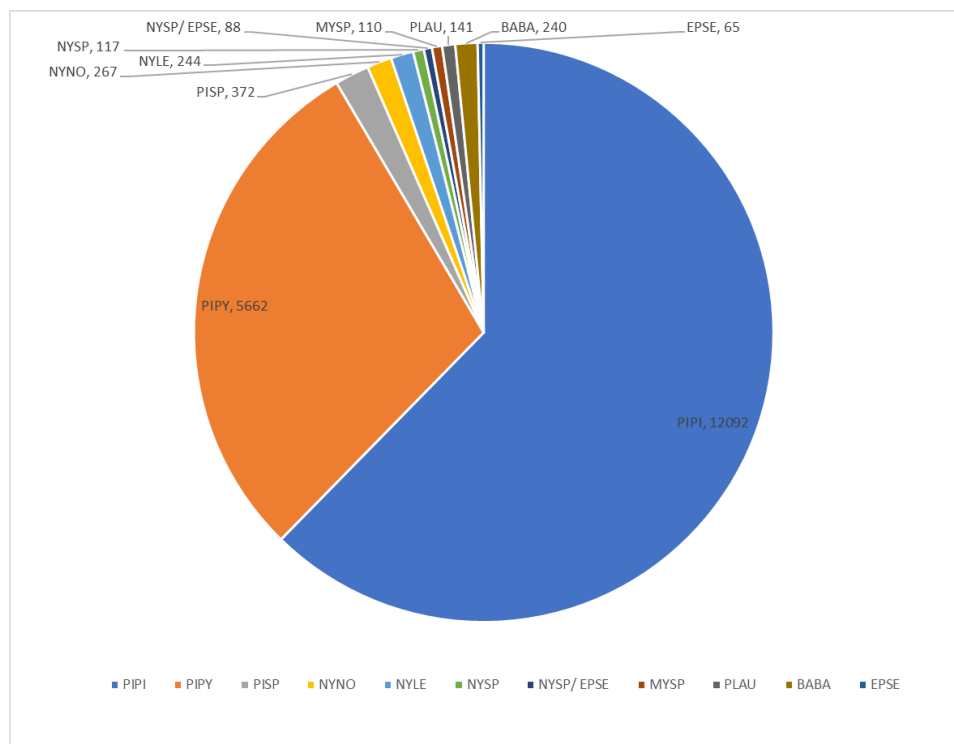
4.2.26 Noctule and Leisler's bats were the next most frequently recorded with 267 and 244 passes respectively and 117 of either of these two species spread throughout the site, throughout the year. 240 passes of Barbastelle were recorded mainly at Sunnica East 1 and 3 (Lee Brook and Badlingham Lane) in the spring and autumn. 141 passes of Brown Long-eared bats were recorded with a notable peak of 53 passes in a woodland shelterbelt in the summer at Sunnica West 2.

4.2.27 There were 110 passes in total of *Myotis* species scattered across the site in low numbers throughout the year. Based on direct field observations, including activity transects and captured bats these are most likely attributable to Daubenton's and/or Natterer's species. 65 passes of Serotine were recorded across the site and 88 passes as either Serotine and/or *Nyctalus* species (Noctule and/or Leisler's). There was a notable peak of 38 Serotine passes of this species in a woodland shelterbelt in the summer at Sunnica West 2.

**Table 4-3: Summary of Bat Activity Index (BAI) from static detector surveys**

| Date 2019 / Location | BAI* / hr | per hr | Activity Level | Date 2019 / Location | BAI* / hr | per hr | Activity Level | Date 2019 / Location | BAI* / hr | per hr | Activity Level |
|----------------------|-----------|--------|----------------|----------------------|-----------|--------|----------------|----------------------|-----------|--------|----------------|
| Summer West 1        | 67.6      |        | High           | Autumn West 1        | 9.8       |        | Moderate       | Autumn East 3        | 2.4       |        | Low            |
| Summer East 1        | 63.2      |        | High           | Summer West 4        | 8.0       |        | Moderate       | Spring East 3        | 1.8       |        | Low            |
| Summer West 3        | 22.3      |        | High           | Autumn East 1        | 7.8       |        | Moderate       | Spring West 4        | 1.4       |        | Very Low       |
| Autumn West 2        | 19.8      |        | High           | Summer East 2        | 7.7       |        | Moderate       | Autumn West 4        | 1.3       |        | Very Low       |
| Spring West 1        | 17.7      |        | High           | Summer East 3        | 5.2       |        | Low            | Spring West 2        | 0.9       |        | Very Low       |
| Summer West 2        | 12.3      |        | High           | Summer East 4        | 4.9       |        | Low            | Spring East 2        | 0.8       |        | Very Low       |
| Spring West 3        | 11.3      |        | Moderate       | Spring East 1        | 4.5       |        | Low            | Spring East 4        | 0.6       |        | Very Low       |
| Autumn West 3        | 10.3      |        | Moderate       | Autumn East 4        | 2.9       |        | Low            | Autumn East 2        | 0.4       |        | Very Low       |

\* BAI = Bat Activity Index (overall number of bat passes per hour) listed in descending order



**Chart 1: Total individual bat passes for each species**

\* Key to species: PIPY - Soprano Pipistrelle (orange), PISP – common or Soprano Pipistrelle (grey, NYNO - Noctule (yellow), NYLE – Leisler’s (light blue), NYSP/EPSE – Noctule or Leisler’s bat (green), MYSP - *Myotis* species purple), PLAU - Brown Long eared bat (lilac), BABA – barbastelle (brown) and EPSE - Serotine (dark blue), .

### Advanced bat survey techniques (ABST)

- 4.2.28 Full results are shown in Annex D and the survey sites in Annex A, **Figures 4 and 5**.
- 4.2.29 Three trapping sessions were undertaken on 1, 8 August and 12 September 2019 to gather additional information on cryptic bat species and detail on breeding status of bats using the Scheme, in particular woodland habitats immediately adjacent to the Scheme. Species caught and released comprised Brown Long-eared bats, Common and Soprano Pipistrelles and a Natterer’s bat. This included a mix of male and female bats, including a female Natterer’s, a Brown Long-eared bat, three Common Pipistrelles and two Soprano Pipistrelles that were either had bred (or were still lactating) this year, indicating nearby breeding roosts of those species.

## 5 Discussion

### 5.1 Introduction

5.1.1 An evaluation of the biodiversity importance of bat species in relation to the Scheme in terms of potential roosts, foraging and commuting habitats is described below. This evaluation considers each of the Sites (Sunnica East Sites A and B, Sunnica West Sites A and B). Potential outline impacts and effects on bat species are discussed.

### 5.2 Designated sites

5.2.1 No designated sites of relevance to bats were identified or are likely to be impacted by the Scheme.

### 5.3 Roosts

5.3.1 There are no relevant roosts within the Scheme identified in the desk study. Based on these records, there are likely to be nearby roosts, particularly in nearby villages/churches and these bats are likely to use the Order land for foraging. Based on the field data collected from a preliminary roost appraisal, bat activity and trapping, there are likely to be roosts within all the Sites of Common and Soprano Pipistrelle, Noctule, Leisler's bat, Serotine, *Myotis* bat species (Daubenton's and/or Natterer's bat), Brown Long-eared bat and Barbastelle. This includes the timing of observations in relation to expected emergence times (from static and transect data) and captures of Natterer's bat, Brown Long-eared bat, Common and Soprano Pipistrelle within woodland/hedge lines at Sunnica West Site A and Sunnica East Site B.

5.3.2 Two species of bat were recorded roosting in two trees in the Burwell National Grid Substation Extension area during surveys. Both roosts are day roosts of Common Pipistrelle and Soprano Pipistrelle, two common and widespread species of bat. As small (1-2) numbers of bat were using these roosts, they are assessed as being of Local nature conservation importance, using the criteria in **Annex C**.

5.3.3 As all other roosts and potential roost features (such as trees and woodland) are outside the current footprint of the Scheme (due to avoidance of potential roosting features) no detailed roost presence/ absence or characterisation has been undertaken elsewhere for the Scheme to determine roost importance and therefore no specific biodiversity importance has been assigned. As a precautionary approach based on the data collected bat roosts have been assigned of up to County Importance based on potential maternity roosts of common species and small numbers/individual roosts of rarer species such as Barbastelle.

5.3.4 Note that by the time construction work begins in Summer 2023, roosts may change and will require update assessments to determine the current status and characterisation of existing roosts and to confirm the presence of any new roosts. Suitable mitigation of the loss (if required) of any locally important, lower value tree roosts is likely to be readily achievable through supervised roost destruction (under an EPSML) and creation of alternative roosting provision (e.g. suitable tree mounted bat boxes), together with an appropriate habitat and landscape plan to ensure suitably replacement foraging and commuting habitat close to the roost.

## 5.4 Commuting and foraging habitats

- 5.4.1 Species recorded on the activity surveys (activity transects, static bat detectors and trapping) in 2019 comprised nine species: Common Pipistrelle, Soprano Pipistrelle, Brown Long-eared bat, Serotine, Noctule, Barbastelle, Leisler's bat, Daubenton's bat and Natterer's bat.
- 5.4.2 Biodiversity importance of foraging and commuting bats is based on species rarity, numbers, presence of nearby roosts and type/complexity of community/foraging features (see Annex C). This also considers the lower detectability on bat detectors of species such as Barbastelle, Brown Long-eared and *Myotis* bats compare to species such as Common and Soprano Pipistrelle and Noctule (Ref. 20).
- 5.4.3 There was a range of activity (including foraging, commuting and social calling) with multiple bats often recorded. The species and areas of highest bat activity recorded on the transects were mirrored in the static detector results.
- 5.4.4 Foraging and commuting habitat with the highest relative bat activity, were present in the following locations:
- Sunnica East Site A (Transect East 1); Lee Brook (e.g. Waypoint 1, 5 and Static 1) and the unnamed farm buildings near Beck Bridge (Waypoint 8), a north-south hedgerow/track (Waypoint 3) linking woodland/fen to the north of the site to habitats further south.
  - Sunnica East Site B (Transect East 2); Badlingham Lane (Waypoint 7 to 10, Static 3), unnamed woodland block (Waypoint 6), north south double hedgerow and track (Waypoint 2, Static 4).
  - Sunnica West Site A (Transects West 1 and 2); a woodland strip (Waypoint 3), barn complex (Waypoint 1), Sounds Plantation (Waypoint 2), unnamed woodland strip (Waypoint 4 to 5) and Half-moon plantation to The Willows (Waypoint 10).
  - Sunnica West Site B (Transect West 1); north-south mature hedge and trees and track (Waypoint 5 and 9) and the River Snail (Waypoint 8).
- 5.4.5 Whilst most of these areas with highest activity were located along linear features such as running water, hedges and woodland edges, foraging and commuting was also observed particularly by Noctule bats high over open fields and occasional foraging by pipistrelle species over some crops (such as maize) in open fields (e.g. Sunnica East B, Transect 2 Autumn).
- 5.4.6 Based on the data collected in 2019 the commuting and foraging habitat for bats is assessed as of up to County/District Importance (depending on the species, see Table 5-1 and guidance in Annex C).
- 5.4.7 The habitat is assessed as of County/District Importance for barbastelle (a Red List Near Threatened and classed as a 'rarest' species) based on the presence of individual or small numbers of bats throughout the Scheme, with possible small numbers of nearby roosts, and suitable foraging and commuting habitats comprising, isolated woodland patches, less intensive arable and villages, hedgerows and moderate to large field sizes.

- 5.4.8 The habitat is assessed as of County/District Importance for [REDACTED] foraging/commuting soprano and Common Pipistrelle (both common species) based on the presence of large numbers of bats, with numerous roosts/potential within and close to the Scheme, suitable habitats and their use of the habitats described above.
- 5.4.9 The habitat is assessed as of Local Importance for all other species: Daubenton's bat, Noctule, Leisler's bat, Serotine, Brown Long-eared bat, and Natterer's bat, based on the presence of individual bats/small numbers, with unknown/single roosts within or close to the site and their use of the habitats as described above.

**Table 5-1: Summary of biodiversity importance of commuting and foraging habitat**

| Species                | Rarity | Number of bats | Roosts/ potential roosts nearby | Type complexity and linear features | Commuting of Importance | Foraging habitat characteristics | Foraging Importance |
|------------------------|--------|----------------|---------------------------------|-------------------------------------|-------------------------|----------------------------------|---------------------|
| Common Pipistrelle     | 2      | 20             | 4                               | 3                                   | County/District         | 3                                | County/District     |
| Soprano Pipistrelle    | 2      | 20             | 4                               | 3                                   | County/District         | 3                                | County/District     |
| Noctule                | 5      | 10             | 2                               | 3                                   | Local                   | 3                                | Local               |
| Leisler's              | 5      | 5              | 2                               | 3                                   | Local                   | 3                                | Local               |
| Serotine               | 5      | 5              | 2                               | 3                                   | Local                   | 3                                | Local               |
| Brown Long-eared bat   | 2      | 5              | 2                               | 3                                   | Local                   | 3                                | Local               |
| Barbastelle            | 20     | 5              | 2                               | 3                                   | County/District         | 3                                | County/District     |
| <i>Myotis</i> species* | 5      | 5              | 2                               | 3                                   | Local                   | 3                                | Local               |

\* Daubenton's /Natterer's

## **5.5 Potential impacts and significance of effects**

- 5.5.1 The primary purpose of this report is to provide an assessment of the biodiversity importance of the bat population identified within the Scheme (see section 1.4). An assessment of potential impacts (taking into account embedded mitigation), any additional mitigation and residual effects have been undertaken in the Environmental Statement (ES), forming part of the DCO submission. As all UK bat species are protected by European legislation, they must be considered in the Environmental Impact Assessment (EIA) for the Scheme and any unavoidable adverse impacts must be mitigated. Where avoidance is not possible then appropriate mitigation and habitat compensation would be provided.
- 5.5.2 The impact assessment process will involve:
- identifying and characterising impacts and their effects;
  - incorporating measures to avoid and mitigate negative impacts;
  - assessing the significance of any residual effects after mitigation;
  - identifying appropriate compensation measures to offset; and
  - identifying opportunities for ecological enhancement.
- 5.5.3 The assessment of impacts will consider the baseline conditions for bats reported in this technical appendix (pending any updates) to allow:
- a description of how the baseline conditions will change as a result of the project and associated activities; and
  - the identification of cumulative impacts arising from the proposal and other relevant developments.
- 5.5.4 There is currently no scientific literature available on the impacts to bats from operational solar farms (Ref. 21). Small schemes have not been routinely monitoring impacts on bats and the first large scale (Nationally Significant Infrastructure Project (NSIP)) solar scheme Cleve Hill in Kent only received planning consent in May 2020 (Ref. 22). However, construction impacts are likely to be similar to other large-scale developments with habitat changes and losses, potential noise, dust, and lighting disturbance during construction and decommissioning works. Operational impacts and resulting effects will be based on the changes to habitats over time and the likely response of individual bat species. This will also require monitoring to improve confidence in the assessment of residual adverse or beneficial effects, to feedback into the landscape management plan and to provide a data for future large scale solar schemes.
- 5.5.5 The potential impacts are summarised as follows:
- disturbance to habitats used by bats for roosting, foraging and commuting from noise, dust and lighting;
  - loss of habitats (mainly agricultural land) to the Scheme infrastructure (i.e. solar panels, substation, control/junction boxes, access roads);
  - changes to bat foraging and commuting habitats, e.g. from agriculture (arable crops/pigs) to grassland (potentially cut or grazed);



- d. potential attraction or avoidance of bats to the solar panels from potential increases in prey (i.e. flying insects), potential noise attraction/disturbance, barrier effects;
- e. potential for roosting in new infrastructure; and
- f. indirect beneficial impacts through a possible reduction of agriculture chemical inputs to watercourses/, reduction in pesticide use on crops within the local area resulting in an increase in prey availability.

- 5.5.6 The construction of the Burwell National Grid Substation Extension will lead to the loss of two trees used as day roosts by low numbers of common and soprano pipistrelle bats. These are assessed as of local conservation importance. Mitigation for the loss of these roost is achievable with appropriate precautions prior to and during felling and provision of suitable artificial roosts (e.g. bat boxes) placed on nearby trees. Updated surveys in the year prior to felling and a bat mitigation licence (e.g. an EPSML) will be required to be obtained prior to the loss of these roosts.
- 5.5.7 Whilst all other potential/confirmed roosts are likely to be retained, as they are either located outside the boundary of the Scheme or retained and avoided as part of the embedded mitigation, there will be some temporary or permanent loss of habitats resulting in adverse effects to foraging/commuting bats associated with nearby roosts and in the wider area. It is anticipated that mainly low value habitats for foraging or commuting bats will be impacted by the Scheme and that any losses will be compensated through habitat creation and enhancement elsewhere within the Scheme. Precise figures from the Biodiversity Net Gain Calculations of habitat losses/gains will be used in this assessment. Newly created habitats and a change from intensive agriculture to may be beneficial to bats.
- 5.5.8 If the footprint of the final Scheme results in any features that are likely to be directly impacted (e.g. from the cable routes/access) then further more detailed bat roost surveys will be required at specific features (i.e. structures with low to high roost suitability and trees with moderate to high roost suitability) to inform mitigation and potential licence application in accordance with best practice guidance (Ref. 11). Where construction works are undertaken within these buffers zones there may be indirect impacts to roosts/potential roosts. These impacts would be avoided through use of a precautionary working method statement.
- 5.5.9 Effects from lighting have the potential to effect roosting bats within and close to the Scheme and bats commuting to and from foraging areas during the construction, operation and decommissioning phases. Some bat species are more sensitive to lighting (e.g. *Myotis* species and Brown Long-eared bats), and as the Sites are currently largely undeveloped, there is minimal artificial lighting. The lighting for the construction compound is likely to be of a temporary nature and used mainly during the construction and decommissioning phases. Security lighting where used during the operational phase is likely to be manually operated or on PIR sensors and will not be on continuously. Given the rural nature of the site, it is unlikely that any security lighting would be often triggered. Whilst security/compound lighting would be available for the lifetime of the Scheme, site activity will predominantly take place during daylight hours and is therefore not expected to cause significant disturbance to foraging or commuting bats.

## 5.6 Further surveys

- 5.6.1 Updated surveys will be required in the year (between May to August inclusive) prior to felling of the two trees at Burwell substation that have confirmed roosts to inform a bat mitigation licence application. Based on the Scheme layout it is anticipated that impacts to other potential roosts are likely to be avoided and that any further survey work where required is likely to be minor (i.e. possibly a few individual trees) and on a precautionary basis. If any further trees, with bat roost suitability (low or higher) are impacted as a result of the Scheme (e.g through pruning/felling), then these must be surveyed to determine roost presence/absence and where required to characterise the roost/s prior to work.

## 6 References

- Ref. 1 AECOM, 2020. Sunnica Energy Farm Preliminary Ecological Appraisal.
- Ref. 2 Anon. (2006). The Natural Environment and Rural Communities Act. HMSO, London.
- Ref. 3 Anon, 1981. Wildlife & Countryside Act 1981. HMSO.
- Ref. 4 HMSO (2000). Countryside and Rights of Way Act 2000. HMSO, London.
- Ref. 5 HMSO (2018). Conservation of Habitats and Species Regulations 2017 (as amended). HMSO, London.
- Ref. 6 EC (1992). Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora. EC, Brussels.
- Ref. 7 Suffolk Biodiversity Partnership, (2012) Suffolk Local Biodiversity Action Plan Grouped Plan for Bats. March 2012.
- Ref. 8 Cambridgeshire and Peterborough priority species
- Ref. 9 Ward Associates. 2017. Ecological Assessment of Land at Bay Farm, Worlington. A report to Frimstone Ltd.
- Ref. 10 Multi-agency Geographic Information for the Countryside (MAGIC).
- Ref. 11 Collins, J (ed.) 2016. Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edition). The Bat Conservation Trust, London.
- Ref. 12 Sunset/sunrise times [Accessed October 2020].
- Ref. 13 Ecobat [Accessed July 2020].
- Ref. 14 Chartered Institute of Ecology and Environmental Management (CIEEM) (2018), Guidelines for Ecological Impact Assessment in the United Kingdom: Terrestrial, Freshwater, Coastal and Marine.
- Ref. 15 Wray, S., Wells, D., Long, E. & Mitchell-Jones, T. 2010. Valuing Bats in Ecological Impact Assessment, IEEM In-Practice issue 70, p 23-25.
- Ref. 16 Mathews, F., Kubasiewicz, L. M., Gurnell, J., Harrower, C. A., McDonald, R. A. and Shore, R. F. 2018. Natural England Joint Publication JP025: A Review of the Population and Conservation Status of British Mammals. A report by the Mammal Society under contract to Natural England, Natural Resources Wales and Scottish Natural Heritage.
- Ref. 17 Suffolk Biodiversity Partnership. 2012. Suffolk Local Biodiversity Action Plan Grouped Plan for Bats. March 2012.

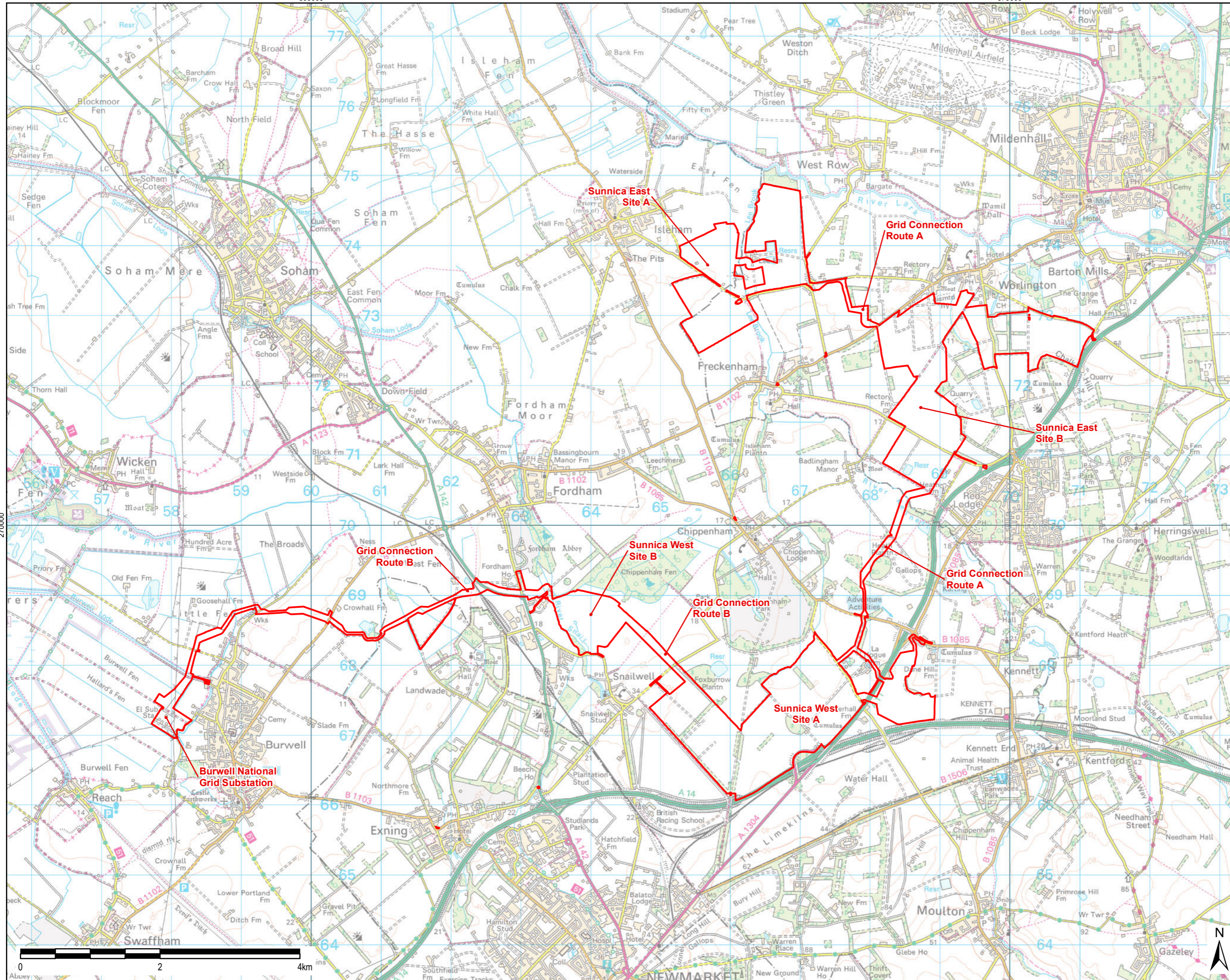
- Ref. 18 Andrews, H. 2018. Bat Roosts in Trees: A Guide to Identification and Assessment for Tree-Care and Ecology Professionals.
- Ref. 19 Bat Conservation Trust. 2017. The State of the UK's Bats: National Bat Monitoring Programme Populations Trends.
- Ref. 20 Barataud, M. 2015. Acoustic ecology of European bats. Species Identification and Studies of Their Habitats and Foraging Behaviour. Biotope Editions, Mèze; National Museum of Natural History, Paris (collection Inventaires et biodiversité), 340 p
- Ref. 21 Harrison, C., Lloyd, H., and Field, C. 2016. Evidence review of the impact of solar farms on birds, bats and general ecology. Manchester Metropolitan University August 2016.
- Ref. 22 Cleve Hill Solar Farm.

# Annex A      Figures

## Figure 1 Order limits boundary and location

LEGEND

The Order Limits



Document Reference: EN010106/APP/6.3  
APFP Regulation: 5(2)(a)

Copyright: Reproduced from Ordnance Survey digital map data © Crown copyright 2021. All rights reserved. Licence number 0100031673.

Purpose of Issue  
FOR DCO SUBMISSION

Client  
SUNNICA LTD



Drawing Title  
FIGURE 1:  
SITE LOCATION

|  |               |                        |                    |
|--|---------------|------------------------|--------------------|
| Drawn<br>BF                            | Checked<br>AB | Approved<br>NC         | Date<br>21/10/2021 |
| AECOM Internal Project No.<br>60589004 |               | Scale @ A3<br>1:50,000 |                    |

THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND SUBJECT TO THE TERMS OF AECOM'S APPOINTMENT BY ITS CLIENT. AECOM ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING AECOM'S EXPRESS AGREEMENT TO SUCH USE, AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.

AECOM  
Unit 1 Waterbrook Court,  
Gilton,  
Cambridge, CB3 0NA  
United Kingdom  
Telephone (01223) 488000  
www.aecom.com



|                                       |          |
|---------------------------------------|----------|
| Drawing Number<br>60589004_ES_ECO_003 | Rev<br>0 |
|---------------------------------------|----------|

## Figure 2 Preliminary Bat Roost Appraisal

565000

566000

567000

568000

THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

**LEGEND**

- The Order Limits
- 100m buffer
- 500m buffer

**Preliminary Roost Appraisal Structure**

- High
- Low
- Negligible

**Tree**

- Moderate
- Low
- Negligible

**Tree line / Hedge**

- High
- Moderate
- Low
- Negligible

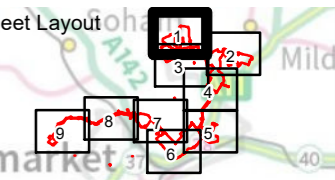
**Woodland**

- High

- Photo point (with reference identifier)

Note:  
 All other habitat features not mapped are negligible  
 Document Reference: EN010106/APP/6.3  
 APFP Regulation: 5(2)(a)

**Sheet Layout**



Copyright:  
 Reproduced from Ordnance Survey digital map data © Crown copyright 2021. All rights reserved. Licence number 010031673.

Purpose of Issue  
**FOR DCO SUBMISSION**

Client  
**SUNNICA LTD**



Drawing Title  
**FIGURE 2.1: PRELIMINARY BAT ROOST APPRAISAL**  
**PAGE 1 OF 9**

|  |               |                        |                    |
|--|---------------|------------------------|--------------------|
| Drawn<br>BF                            | Checked<br>MP | Approved<br>NC         | Date<br>21/10/2021 |
| AECOM Internal Project No.<br>60589004 |               | Scale @ A3<br>1:10,000 |                    |

THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND SUBJECT TO THE TERMS OF AECOM'S APPOINTMENT BY ITS CLIENT. AECOM ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING AECOM'S EXPRESS AGREEMENT TO SUCH USE AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.

AECOM  
 Unit 1 Wellbrook Court,  
 Gilton,  
 Cambridge, CB3 0NA  
 United Kingdom  
 Telephone (01223) 488000  
 www.aecom.com



|  |                 |
|--|-----------------|
| Drawing Number<br><b>60589004_ES_ECO_015</b> | Rev<br><b>0</b> |
|--|-----------------|

275000

274000

273000

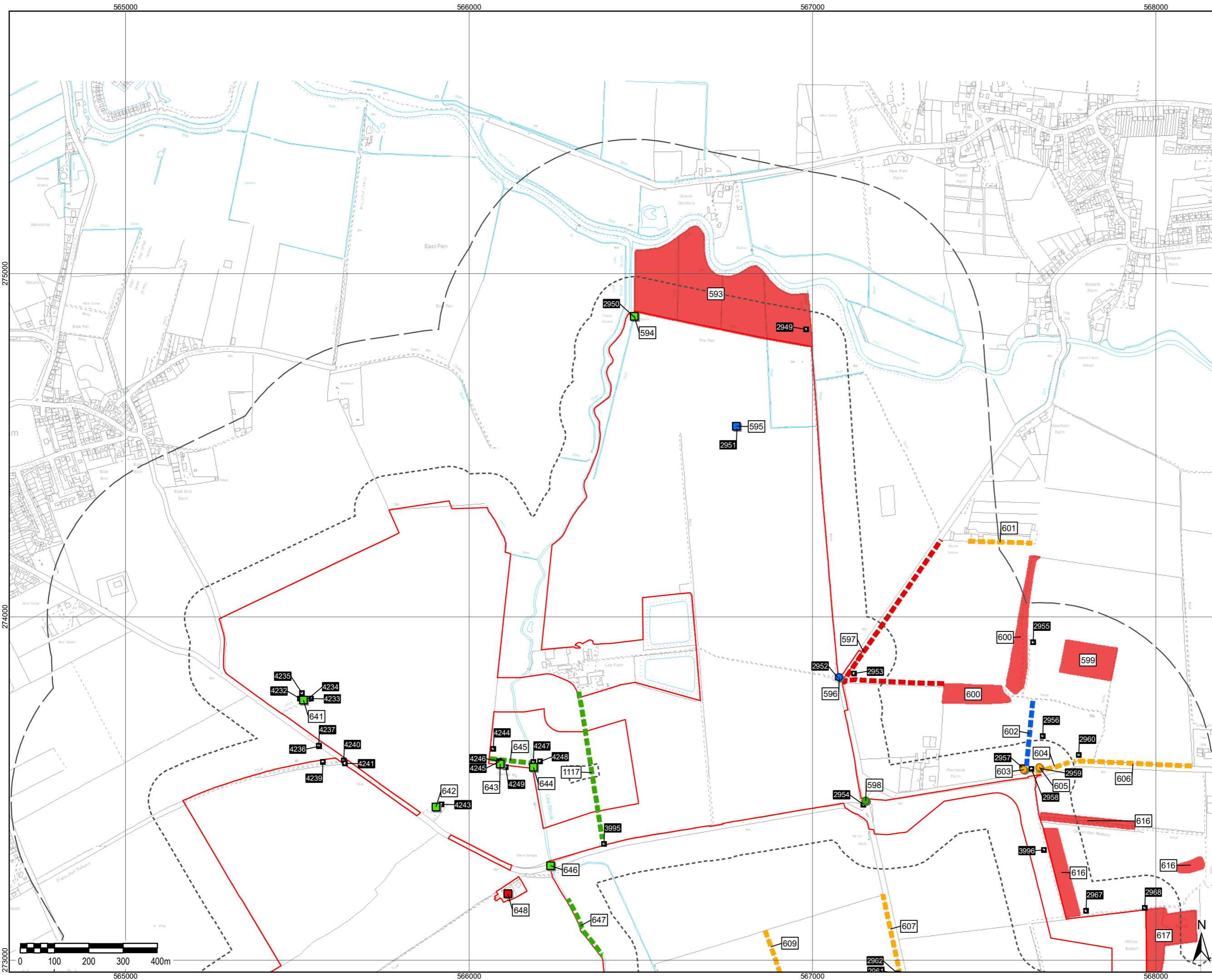
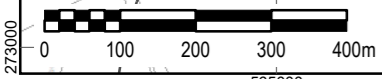
565000

566000

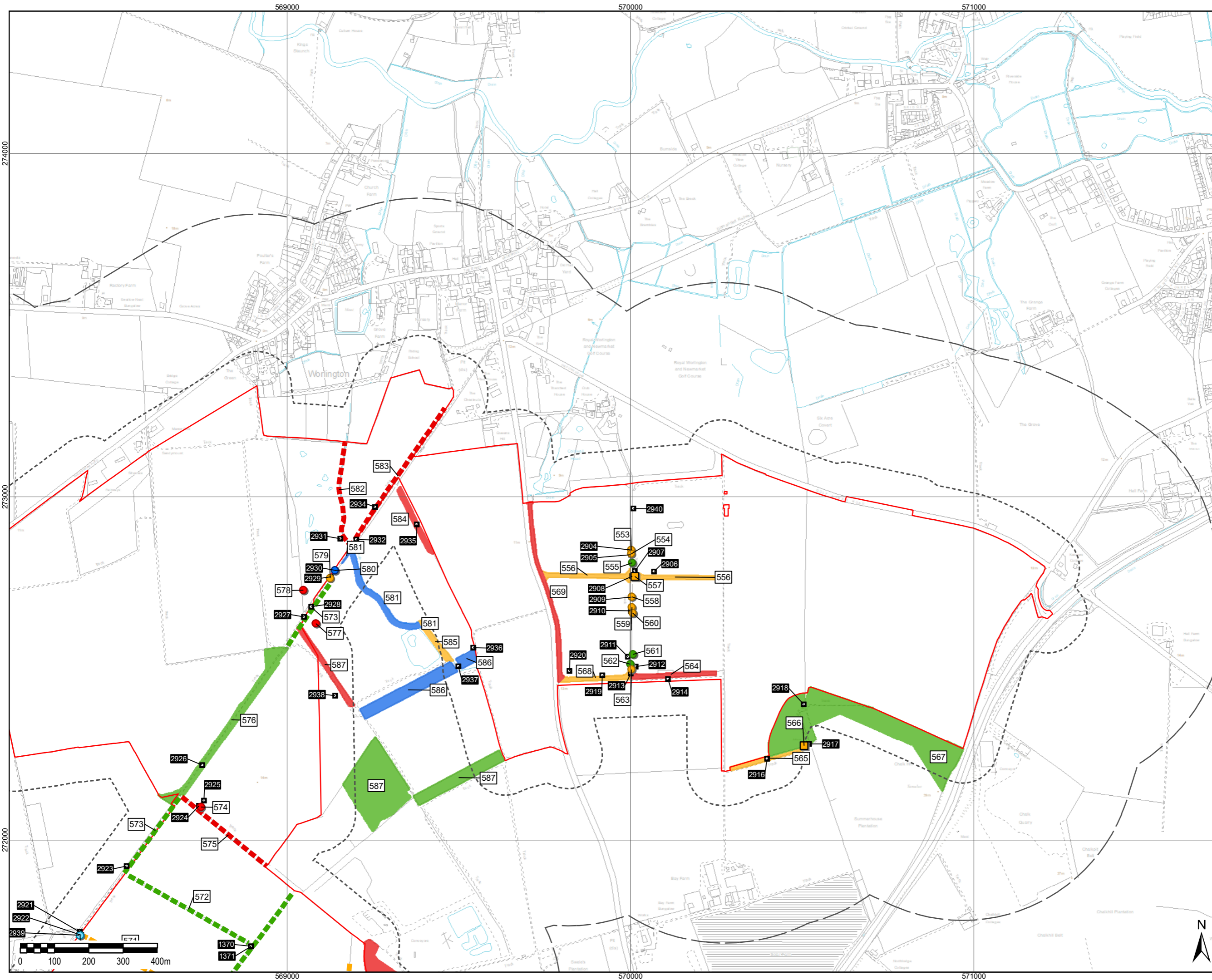
567000

568000

File Name: \\Active Projects\Solar Associates\GIS\02\_Maps\SEF\_015\_Bats - PRA.mxd



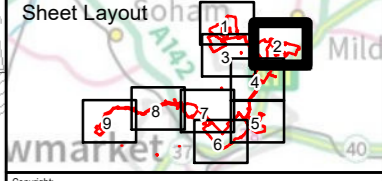




THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

- LEGEND**
- The Order Limits
  - 100m buffer
  - 500m buffer
- Preliminary Roost Appraisal Structure**
- Moderate
- Tree**
- High
  - Moderate
  - Low
  - Negligible to Low
  - Negligible
- Tree line / Hedge**
- High
  - Moderate
  - Low
- Woodland**
- High
  - Moderate
  - Low
  - Negligible
- Photo point (with reference identifier)

Note:  
All other habitat features not mapped are negligible  
Document Reference: EN010106/APP/6.3  
APFP Regulation: 5(2)(a)



Copyright:  
Reproduced from Ordnance Survey digital map data © Crown copyright 2021. All rights reserved. Licence number 0100031673.

Purpose of Issue  
**FOR DCO SUBMISSION**

Client  
**SUNNICA LTD**



Drawing Title  
**FIGURE 2.2: PRELIMINARY BAT ROOST APPRAISAL PAGE 2 OF 9**

|  |               |                        |                    |
|--|---------------|------------------------|--------------------|
| Drawn<br>BF                            | Checked<br>MP | Approved<br>NC         | Date<br>21/10/2021 |
| AECOM Internal Project No.<br>60589004 |               | Scale @ A3<br>1:10,000 |                    |

THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND SUBJECT TO THE TERMS OF AECOM'S APPOINTMENT BY ITS CLIENT. AECOM ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING AECOM'S EXPRESS AGREEMENT TO SUCH USE, AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.

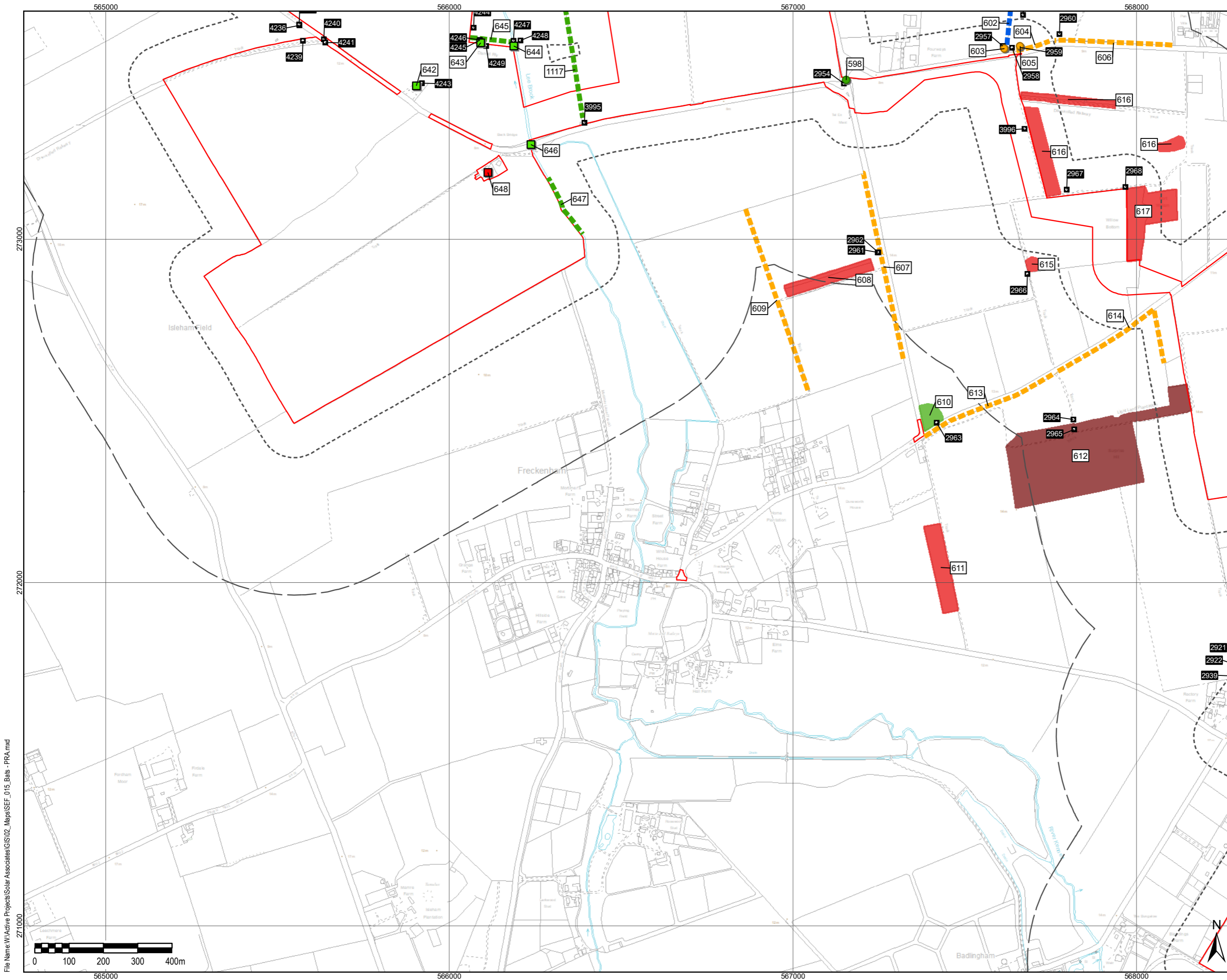
AECOM  
Unit 1 Wellbrook Court,  
Gilton,  
Cambridge, CB3 0NA  
United Kingdom  
Telephone (01223) 488000  
www.aecom.com



|  |                 |
|--|-----------------|
| Drawing Number<br><b>60589004_ES_ECO_015</b> | Rev<br><b>0</b> |
|--|-----------------|

File Name: \\Active Projects\Solar Associates\GIS\02\_Maps\SEF\_015\_Bats - PRA.mxd





THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

**LEGEND**

- The Order Limits
- 100m buffer
- 500m buffer

**Preliminary Roost Appraisal Structure**

- High
- Low

**Tree**

- Moderate
- Low

**Tree line / Hedge**

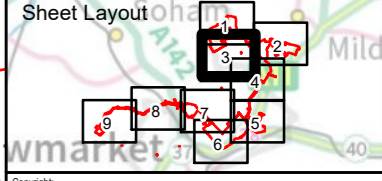
- Moderate
- Low
- Negligible

**Woodland**

- Confirmed roost
- High
- Low

Photo point (with reference identifier)

Note:  
All other habitat features not mapped are negligible  
Document Reference: EN010106/APP/6.3  
APFP Regulation: 5(2)(a)



Copyright:  
Reproduced from Ordnance Survey digital map data © Crown copyright 2021. All rights reserved. Licence number 0100031673.

Purpose of Issue  
**FOR DCO SUBMISSION**

Client  
**SUNNICA LTD**



Drawing Title  
**FIGURE 2.3: PRELIMINARY BAT ROOST APPRAISAL PAGE 3 OF 9**

|  |               |                        |                    |
|--|---------------|------------------------|--------------------|
| Drawn<br>BF                            | Checked<br>MP | Approved<br>NC         | Date<br>21/10/2021 |
| AECOM Internal Project No.<br>60589004 |               | Scale @ A3<br>1:10,000 |                    |

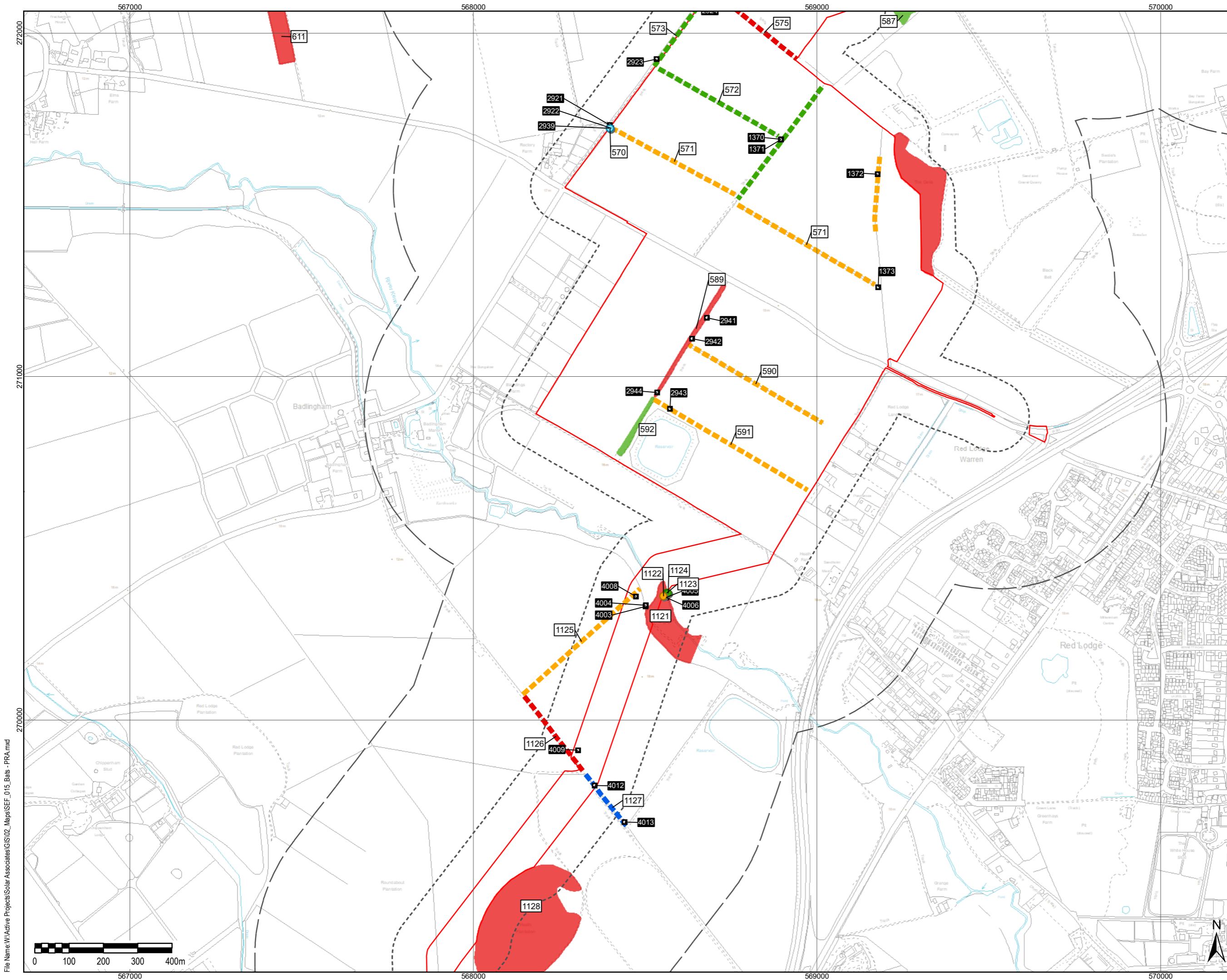
THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND SUBJECT TO THE TERMS OF AECOM'S APPOINTMENT BY ITS CLIENT. AECOM ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING AECOM'S EXPRESS AGREEMENT TO SUCH USE AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.

AECOM  
Unit 1 Wellbrook Court,  
Gilton,  
Cambridge, CB3 0NA  
United Kingdom  
Telephone (01223) 488000  
www.aecom.com



|  |                 |
|--|-----------------|
| Drawing Number<br><b>60589004_ES_ECO_015</b> | Rev<br><b>0</b> |
|--|-----------------|

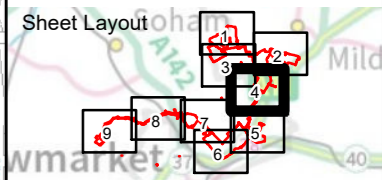
File Name: \\Active Projects\Solar Associates\GIS\02\_Maps\SEF\_015\_Bats - PRA.mxd



THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

- LEGEND**
- The Order Limits
  - 100m buffer
  - 500m buffer
- Preliminary Roost Appraisal Tree**
- Moderate
  - Low
  - Negligible to Low
- Tree line / Hedge**
- High
  - Moderate
  - Low
  - Negligible
- Woodland**
- High
  - Low
- Photo point (with reference identifier)

Note:  
All other habitat features not mapped are negligible  
Document Reference: EN010106/APP/6.3  
APFP Regulation: 5(2)(a)



Copyright:  
Reproduced from Ordnance Survey digital map data © Crown copyright 2021. All rights reserved. Licence number 010031673.

Purpose of Issue  
**FOR DCO SUBMISSION**

Client  
**SUNNICA LTD**



Drawing Title  
**FIGURE 2.4: PRELIMINARY BAT ROOST APPRAISAL PAGE 4 OF 9**

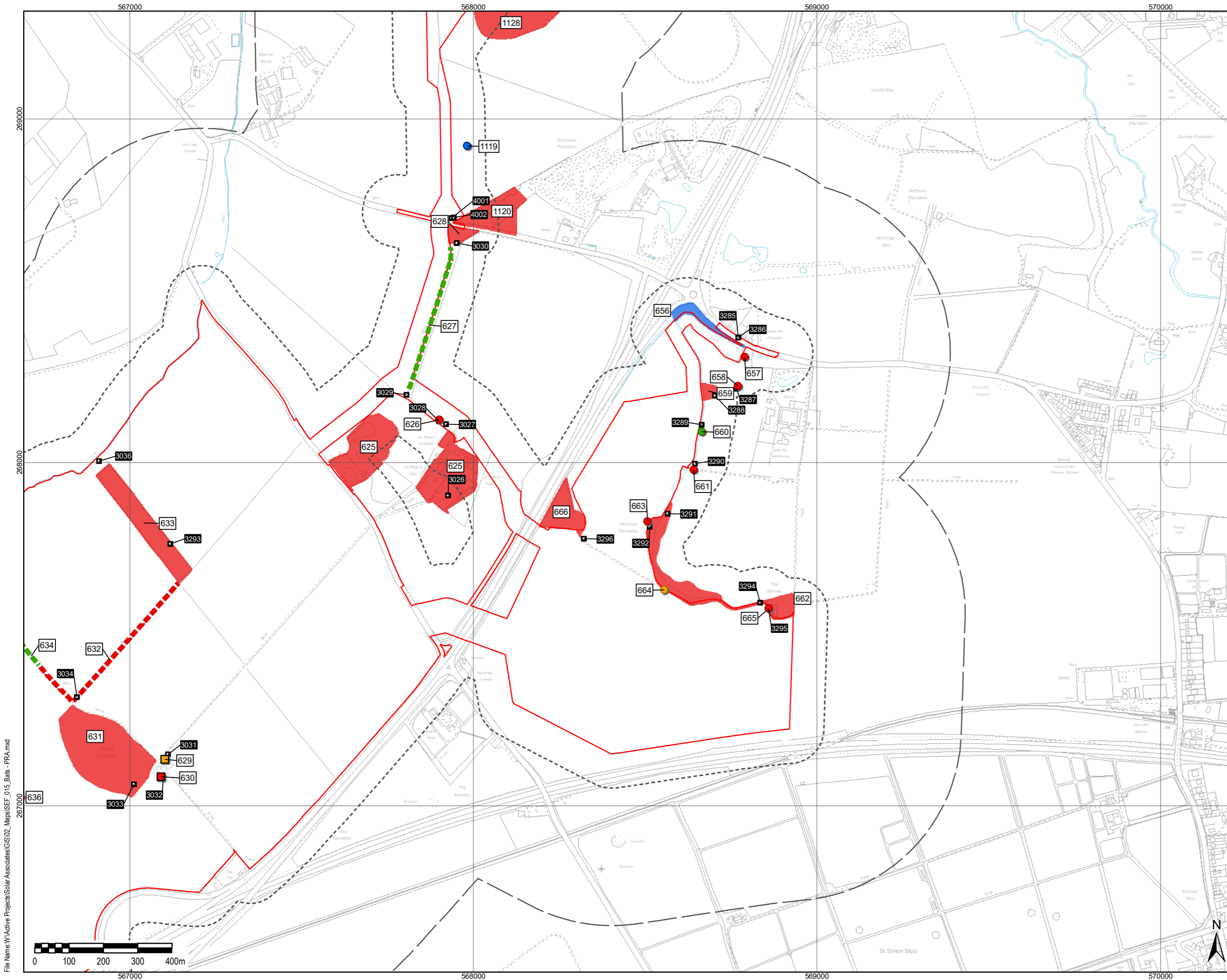
|  |               |                        |                    |
|--|---------------|------------------------|--------------------|
| Drawn<br>BF                            | Checked<br>MP | Approved<br>NC         | Date<br>21/10/2021 |
| AECOM Internal Project No.<br>60589004 |               | Scale @ A3<br>1:10,000 |                    |

THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND SUBJECT TO THE TERMS OF AECOM'S APPOINTMENT BY ITS CLIENT. AECOM ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING AECOM'S EXPRESS AGREEMENT TO SUCH USE AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.

AECOM  
Unit 1 Wellbrook Court,  
Gilton,  
Cambridge, CB3 0NA  
United Kingdom  
Telephone (01223) 488000  
www.aecom.com

|  |                 |
|--|-----------------|
| Drawing Number<br><b>60589004_ES_ECO_015</b> | Rev<br><b>0</b> |
|--|-----------------|

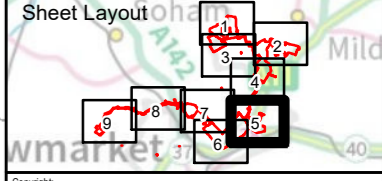
File Name: \\Active Projects\Solar Associates\GIS\02\_Maps\SEF\_015\_Bats - PRA.mxd



THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

- LEGEND**
- The Order Limits
  - 100m buffer
  - 500m buffer
- Preliminary Roost Appraisal Structure**
- High
  - Moderate
- Tree**
- High
  - Moderate
  - Low
  - Negligible
- Tree line / Hedge**
- High
  - Low
- Woodland**
- High
  - Negligible
- Photo point (with reference identifier)

Note:  
All other habitat features not mapped are negligible  
Document Reference: EN010106/APP/6.3  
APFP Regulation: 5(2)(a)



Copyright:  
Reproduced from Ordnance Survey digital map data © Crown copyright 2021. All rights reserved. Licence number 0100031673.

Purpose of Issue  
**FOR DCO SUBMISSION**

Client  
**SUNNICA LTD**



Drawing Title  
**FIGURE 2.5: PRELIMINARY BAT ROOST APPRAISAL PAGE 5 OF 9**

|  |               |                        |                    |
|--|---------------|------------------------|--------------------|
| Drawn<br>BF                            | Checked<br>MP | Approved<br>NC         | Date<br>21/10/2021 |
| AECOM Internal Project No.<br>60589004 |               | Scale @ A3<br>1:10,000 |                    |

THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND SUBJECT TO THE TERMS OF AECOM'S APPOINTMENT BY ITS CLIENT. AECOM ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING AECOM'S EXPRESS AGREEMENT TO SUCH USE AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.

AECOM  
Unit 1 Wellbrook Court,  
Gilton,  
Cambridge, CB3 0NA  
United Kingdom  
Telephone (01223) 488000  
www.aecom.com



|  |                 |
|--|-----------------|
| Drawing Number<br><b>60589004_ES_ECO_015</b> | Rev<br><b>0</b> |
|--|-----------------|

File Name: \\Active Projects\Solar Associates\GIS\02\_Maps\SEF\_015\_Bats - PRA.mxd

THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

**LEGEND**

- The Order Limits
- 100m buffer
- 500m buffer
- Preliminary Roost Appraisal Structure
  - High
  - Moderate
- Tree line / Hedge
  - High
  - Low
  - Negligible
- Woodland
  - High
  - Moderate
- Photo point (with reference identifier)

Note:  
All other habitat features not mapped are negligible  
Document Reference: EN010106/APP/6.3  
APFP Regulation: 5(2)(a)

Sheet Layout

Copyright:  
Reproduced from Ordnance Survey digital map data © Crown copyright 2021. All rights reserved. Licence number 0100031673.

Purpose of Issue  
**FOR DCO SUBMISSION**

Client  
**SUNNICA LTD**

Project Title

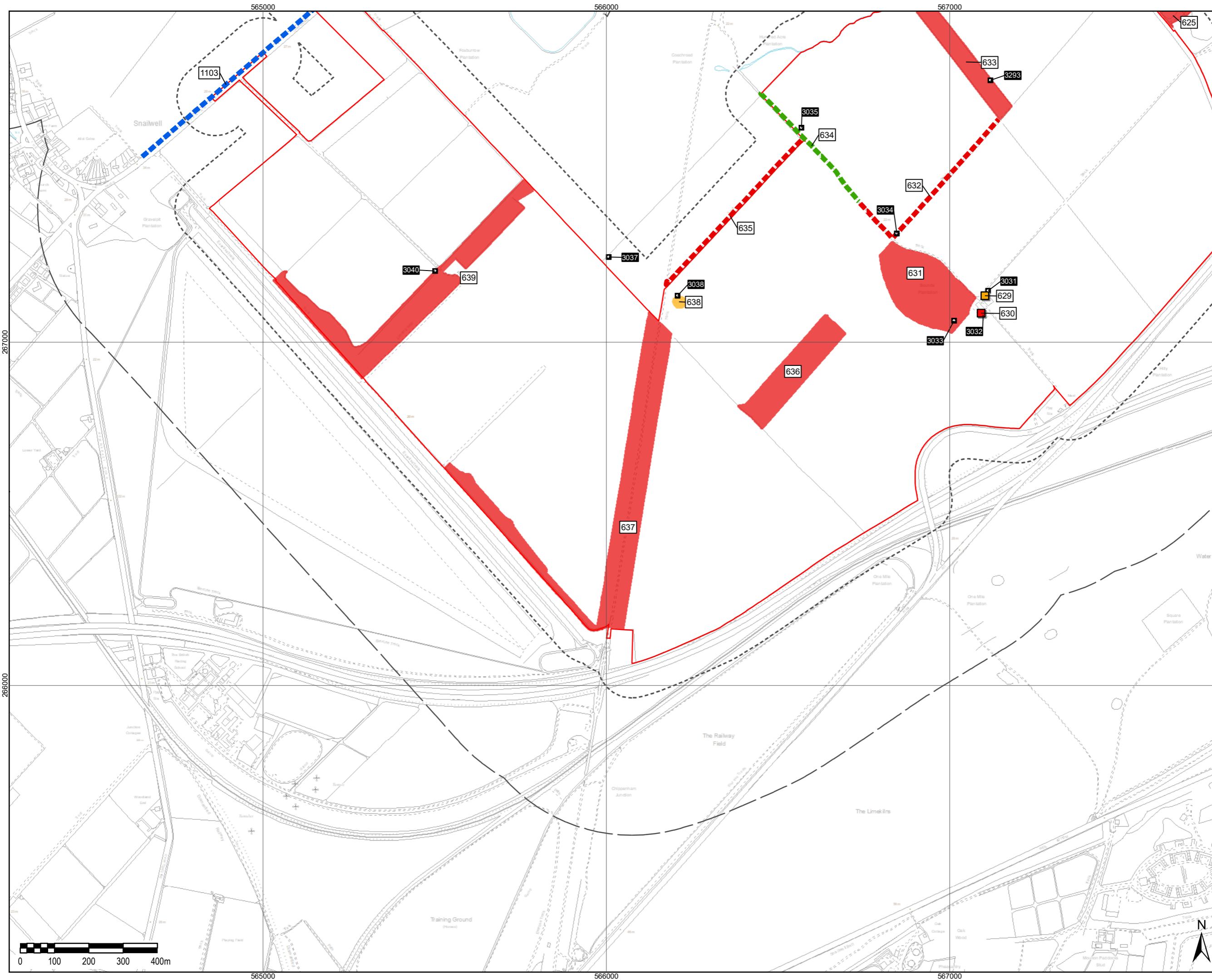
Drawing Title  
**FIGURE 2.6: PRELIMINARY BAT ROOST APPRAISAL PAGE 6 OF 9**

|  |               |                        |                    |
|--|---------------|------------------------|--------------------|
| Drawn<br>BF                            | Checked<br>MP | Approved<br>NC         | Date<br>21/10/2021 |
| AECOM Internal Project No.<br>60589004 |               | Scale @ A3<br>1:10,000 |                    |

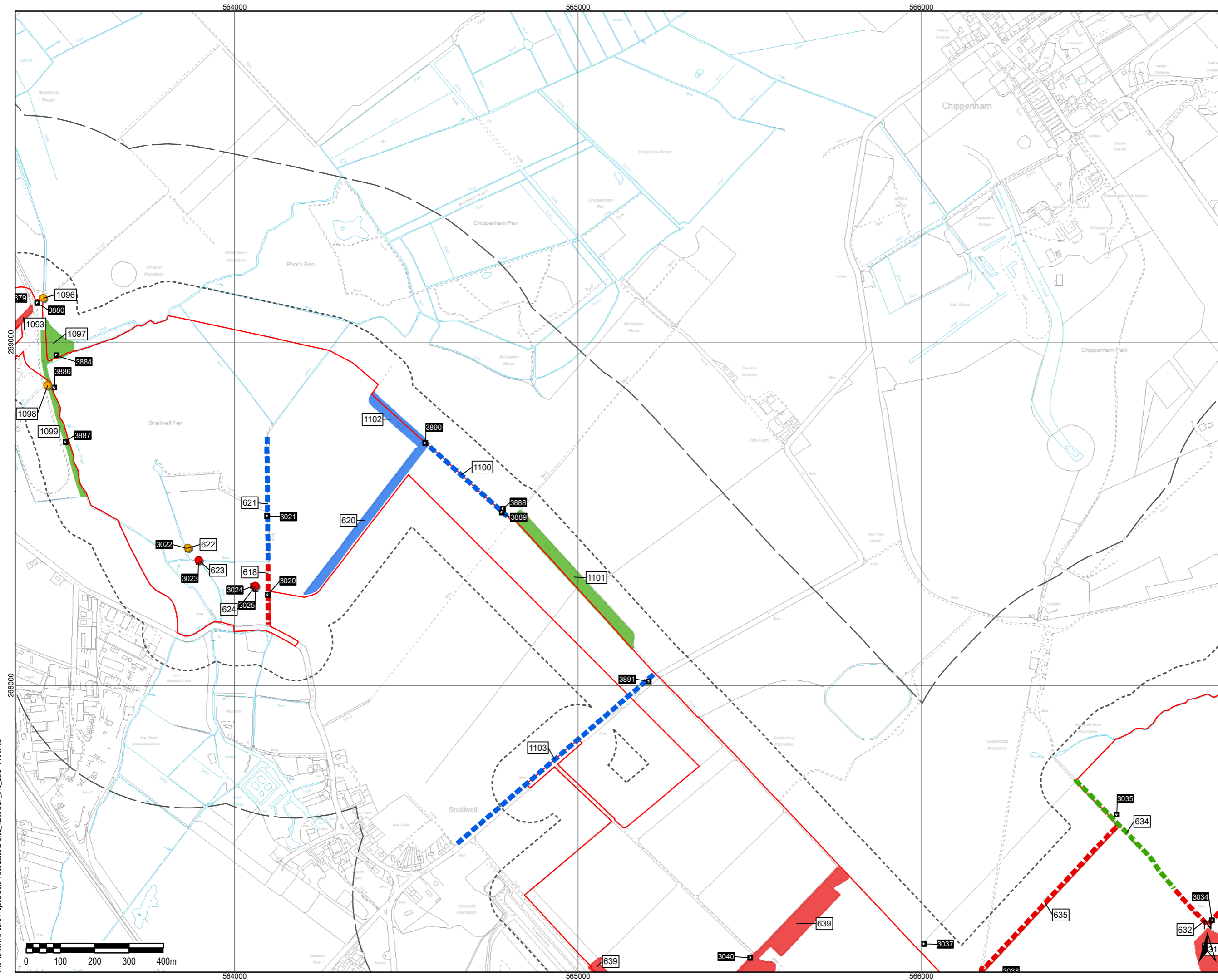
THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND SUBJECT TO THE TERMS OF AECOM'S APPOINTMENT BY ITS CLIENT. AECOM ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING AECOM'S EXPRESS AGREEMENT TO SUCH USE AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.

AECOM  
Unit 1 Wellbrook Court,  
Gilton,  
Cambridge, CB3 0NA  
United Kingdom  
Telephone (01223) 488000  
www.aecom.com

|  |                 |
|--|-----------------|
| Drawing Number<br><b>60589004_ES_ECO_015</b> | Rev<br><b>0</b> |
|--|-----------------|



File Name: \\Active Projects\Solar Associates\GIS\02\_Maps\SEF\_015\_Bats - PRA.mxd

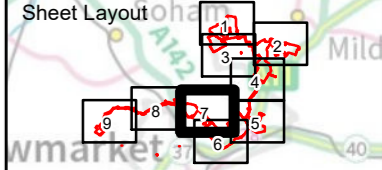


THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

**LEGEND**

- The Order Limits
- 100m buffer
- 500m buffer
- Preliminary Roost Appraisal Tree**
  - High
  - Moderate
- Tree line / Hedge**
  - High
  - Low
  - Negligible
- Woodland**
  - High
  - Low
  - Negligible
- Photo point (with reference identifier)

Note:  
All other habitat features not mapped are negligible  
Document Reference: EN010106/APP/6.3  
APFP Regulation: 5(2)(a)



Copyright:  
Reproduced from Ordnance Survey digital map data © Crown copyright 2021. All rights reserved. Licence number 010031673.

Purpose of Issue  
**FOR DCO SUBMISSION**

Client  
**SUNNICA LTD**



Drawing Title  
**FIGURE 2.7: PRELIMINARY BAT ROOST APPRAISAL PAGE 7 OF 9**

|  |               |                        |                    |
|--|---------------|------------------------|--------------------|
| Drawn<br>BF                            | Checked<br>MP | Approved<br>NC         | Date<br>21/10/2021 |
| AECOM Internal Project No.<br>60589004 |               | Scale @ A3<br>1:10,000 |                    |

THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND IS SUBJECT TO THE TERMS OF AECOM'S APPOINTMENT BY ITS CLIENT. AECOM ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING AECOM'S EXPRESS AGREEMENT TO SUCH USE, AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.

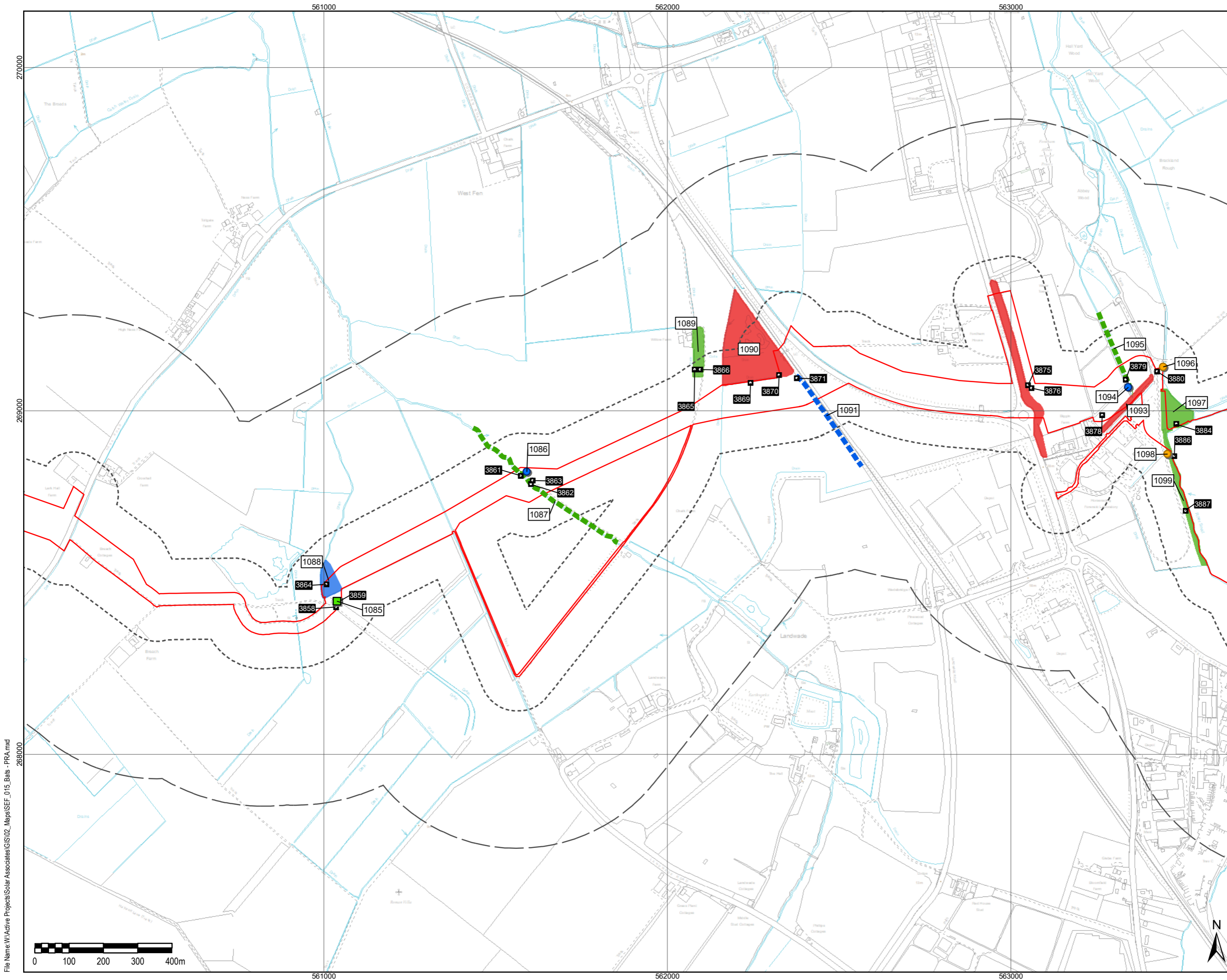
AECOM  
Unit 1 Wellbrook Court,  
Gilton,  
Cambridge, CB3 0NA  
United Kingdom  
Telephone (01223) 488000  
www.aecom.com



|  |                 |
|--|-----------------|
| Drawing Number<br><b>60589004_ES_ECO_015</b> | Rev<br><b>0</b> |
|--|-----------------|

File Name: \\Active Projects\Solar Associates\GIS\02\_Maps\SEF\_015\_Bats - PRA.mxd

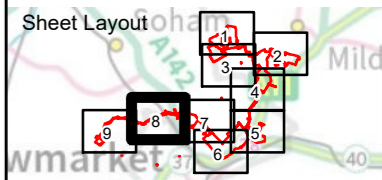




THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

- LEGEND**
- The Order Limits
  - 100m buffer
  - 500m buffer
  - Preliminary Roost Appraisal Structure**
  - Low
  - Tree**
  - Moderate
  - Negligible
  - Tree line / Hedge**
  - Low
  - Negligible
  - Woodland**
  - High
  - Low
  - Negligible
  - Photo point (with reference identifier)

Note:  
All other habitat features not mapped are negligible  
Document Reference: EN010106/APP/6.3  
APFP Regulation: 5(2)(a)



Copyright:  
Reproduced from Ordnance Survey digital map data © Crown copyright 2021. All rights reserved. Licence number 010031673.

Purpose of Issue  
**FOR DCO SUBMISSION**

Client  
**SUNNICA LTD**



Drawing Title  
**FIGURE 2.8: PRELIMINARY BAT ROOST APPRAISAL PAGE 8 OF 9**

|  |               |                        |                    |
|--|---------------|------------------------|--------------------|
| Drawn<br>BF                            | Checked<br>MP | Approved<br>NC         | Date<br>21/10/2021 |
| AECOM Internal Project No.<br>60589004 |               | Scale @ A3<br>1:10,000 |                    |

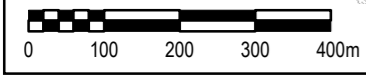
THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND SUBJECT TO THE TERMS OF AECOM'S APPOINTMENT BY ITS CLIENT. AECOM ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING AECOM'S EXPRESS AGREEMENT TO SUCH USE AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.

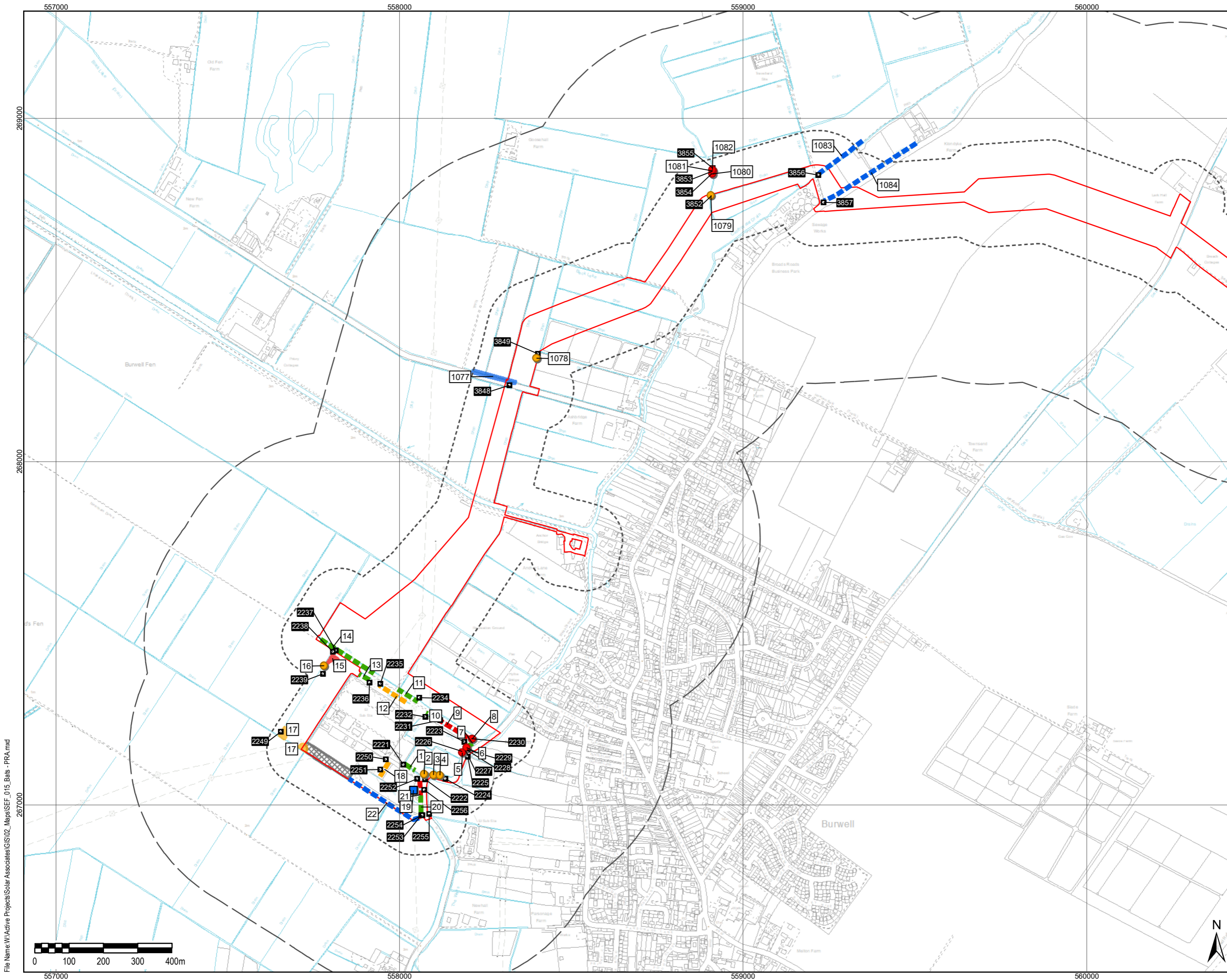
AECOM  
Unit 1 Wellbrook Court,  
Gilton,  
Cambridge, CB3 0NA  
United Kingdom  
Telephone (01223) 488000  
www.aecom.com



|  |                 |
|--|-----------------|
| Drawing Number<br><b>60589004_ES_ECO_015</b> | Rev<br><b>0</b> |
|--|-----------------|

File Name: \\Active Projects\Solar Associates\GIS\02\_Maps\SEF\_015\_Bats - PRA.mxd

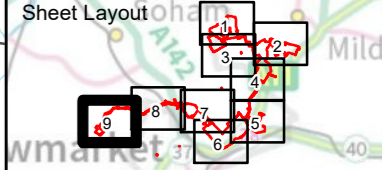




THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

- LEGEND**
- The Order Limits
  - 100m buffer
  - 500m buffer
- Preliminary Roost Appraisal Structure**
- Negligible
- Tree**
- High
  - Moderate
- Tree line / Hedge**
- High
  - Moderate
  - Low
  - Negligible
- Woodland**
- High
  - Moderate
  - Negligible
- Photo point (with reference identifier)
  - No access

Note:  
All other habitat features not mapped are negligible  
Document Reference: EN010106/APP/6.3  
APFP Regulation: 5(2)(a)



Copyright:  
Reproduced from Ordnance Survey digital map data © Crown copyright 2021. All rights reserved. Licence number 0100031673.

Purpose of Issue  
**FOR DCO SUBMISSION**

Client  
**SUNNICA LTD**



Drawing Title  
**FIGURE 2.9: PRELIMINARY BAT ROOST APPRAISAL  
PAGE 9 OF 9**

|  |               |                        |                    |
|--|---------------|------------------------|--------------------|
| Drawn<br>BF                            | Checked<br>MP | Approved<br>NC         | Date<br>21/10/2021 |
| AECOM Internal Project No.<br>60589004 |               | Scale @ A3<br>1:10,000 |                    |

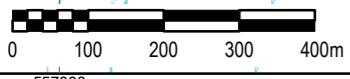
THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND IS SUBJECT TO THE TERMS OF AECOM'S APPOINTMENT BY ITS CLIENT. AECOM ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING AECOM'S EXPRESS AGREEMENT TO SUCH USE AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.

AECOM  
Unit 1 Wellbrook Court,  
Gilton,  
Cambridge, CB3 0NA  
United Kingdom  
Telephone (01223) 480000  
www.aecom.com



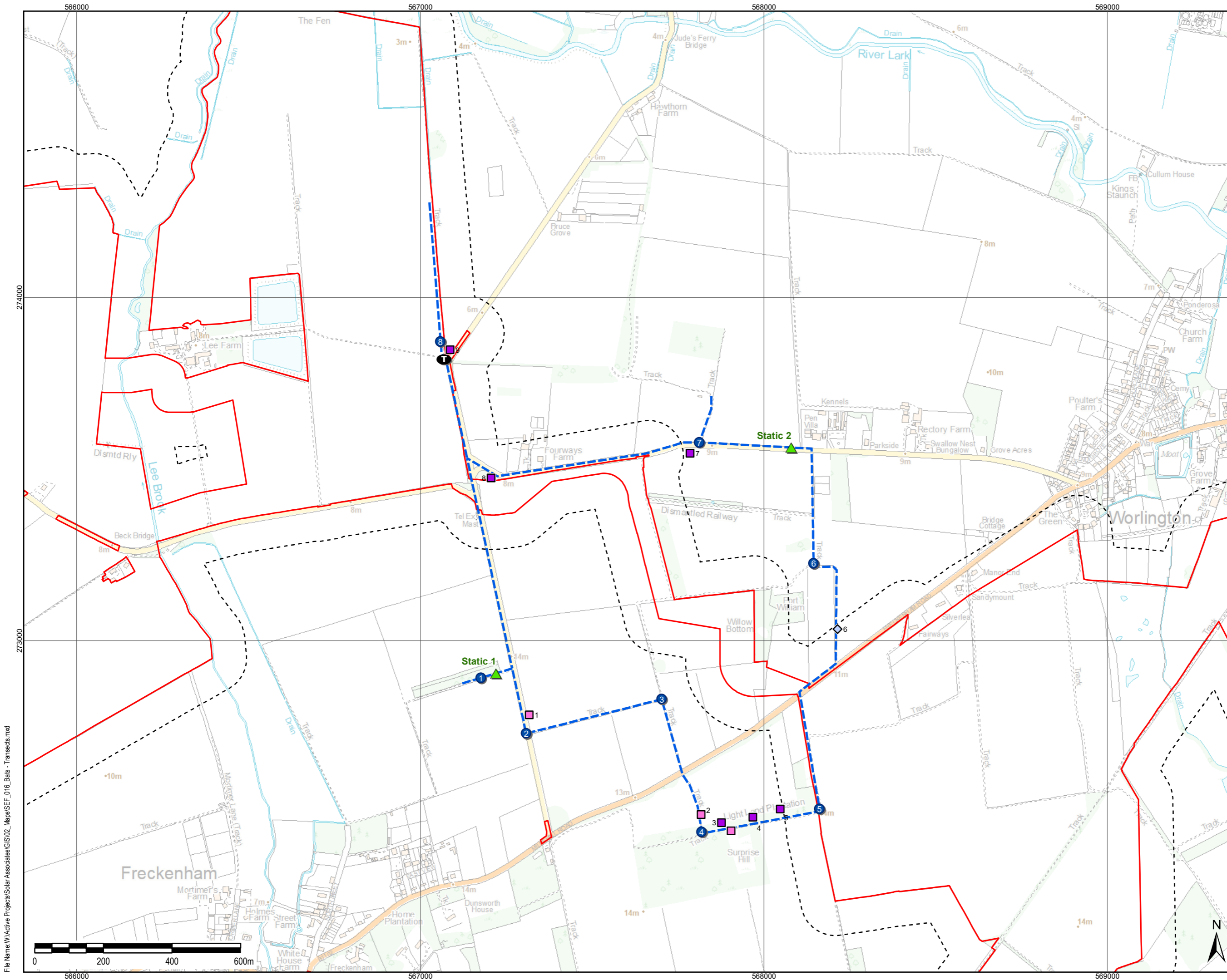
|  |                 |
|--|-----------------|
| Drawing Number<br><b>60589004_ES_ECO_015</b> | Rev<br><b>0</b> |
|--|-----------------|

File Name: \\Active Projects\Solar Associates\GIS\02\_Maps\SEF\_015\_Bats - PRA.mxd





### Figure 3 Spring Bat Activity Survey Results

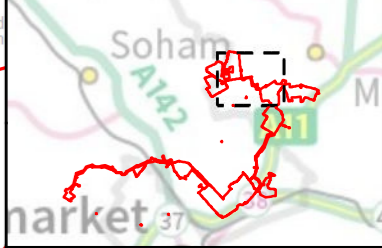


THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

- LEGEND**
- The Order Limits
  - 100m buffer
  - Bat survey transect route
  - Transect start/end point
  - Way point
  - ▲ Static detector
- Bat species**
- Common pipistrelle
  - Soprano pipistrelle
  - Pipistrelle sp.

Document Reference: EN010106/APP/6.3  
APFP Regulation: 5(2)(a)

Copyright:  
Reproduced from Ordnance Survey digital map data © Crown copyright 2021. All rights reserved. Licence number 0100031673.



Purpose of Issue  
**FOR DCO SUBMISSION**

Client  
**SUNNICA LTD**



Drawing Title  
**FIGURE 3.1  
BAT SURVEY  
TRANSECT EAST 1  
SPRING 15/05/2019**

|  |               |                        |                    |
|--|---------------|------------------------|--------------------|
| Drawn<br>BF                            | Checked<br>MP | Approved<br>NG         | Date<br>21/10/2021 |
| AECOM Internal Project No.<br>60589004 |               | Scale @ A3<br>1:10,000 |                    |

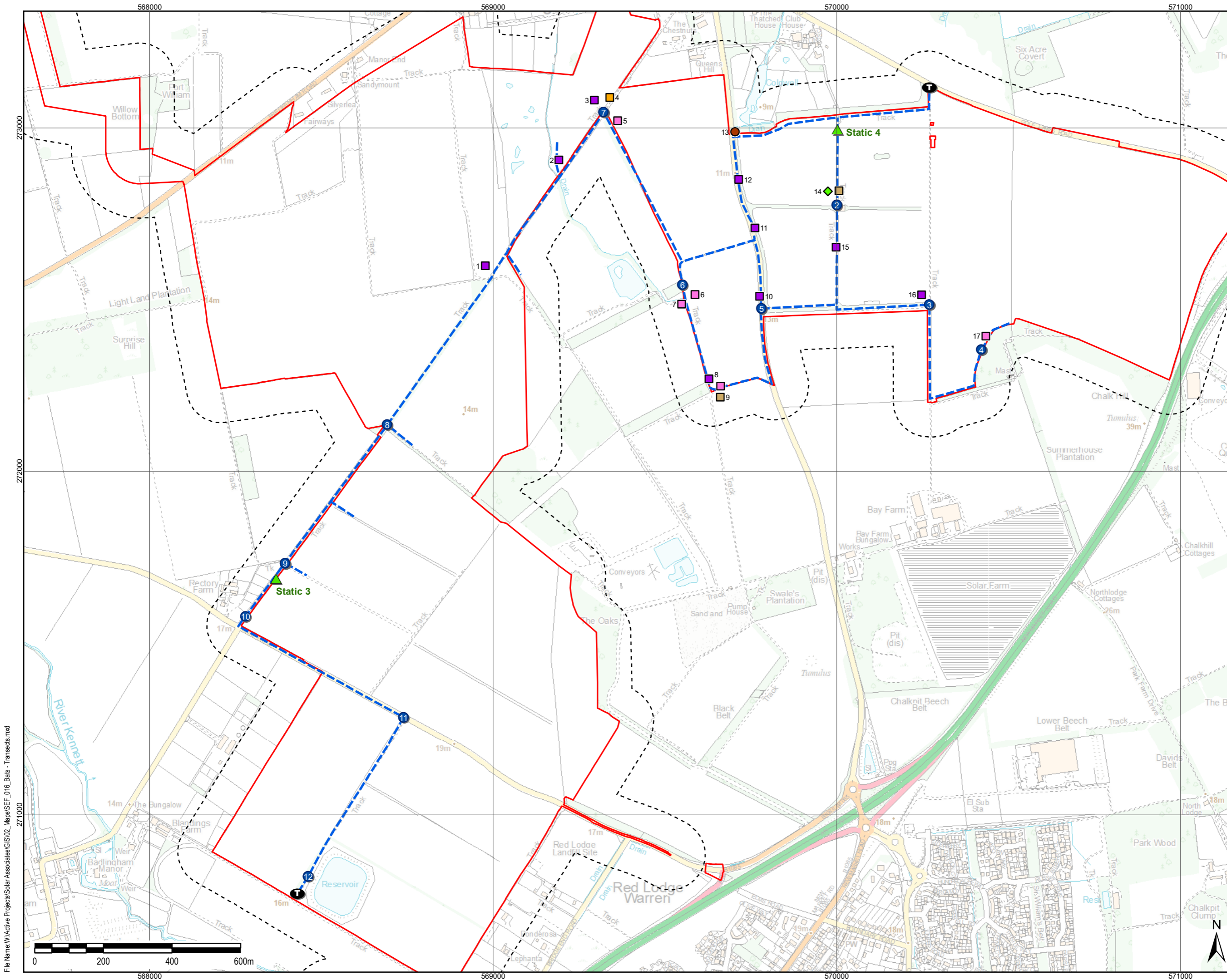
THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND IS SUBJECT TO THE TERMS OF AECOM'S APPOINTMENT BY ITS CLIENT. AECOM ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING AECOM'S EXPRESS AGREEMENT TO SUCH USE AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.

AECOM  
Unit 1 Wellbrook Court,  
Gilton,  
Cambridge, CB3 0NA  
United Kingdom  
Telephone (01223) 488000  
www.aecom.com



|  |                 |
|--|-----------------|
| Drawing Number<br><b>60589004_ES_ECO_016</b> | Rev<br><b>0</b> |
|--|-----------------|

File Name: \\Active Projects\Solar Associates\GIS\02\_Maps\SEF\_016\_Bats - Transects.mxd

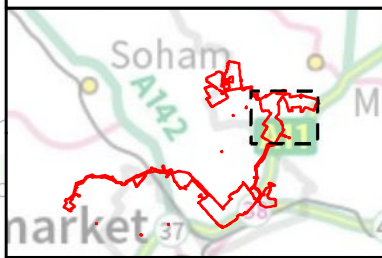


THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

- LEGEND**
- The Order Limits
  - 100m buffer
  - Bat survey transect route
  - Transect start/end point
  - Way point
  - ▲ Static detector
- Bat species**
- Barbastelle
  - Brown long-eared bat
  - Common pipistrelle
  - Noctule
  - Soprano pipistrelle
  - ◆ Myotis sp.

Document Reference: EN010106/APP/6.3  
APFP Regulation: 5(2)(a)

Copyright:  
Reproduced from Ordnance Survey digital map data © Crown copyright 2021. All rights reserved. Licence number 0100031673.



Purpose of Issue  
**FOR DCO SUBMISSION**

Client  
**SUNNICA LTD**



Drawing Title  
**FIGURE 3.2  
BAT SURVEY  
TRANSECT EAST 2  
SPRING 22/05/2019**

|  |               |                        |                    |
|--|---------------|------------------------|--------------------|
| Drawn<br>BF                            | Checked<br>MP | Approved<br>NG         | Date<br>21/10/2021 |
| AECOM Internal Project No.<br>60589004 |               | Scale @ A3<br>1:10,000 |                    |

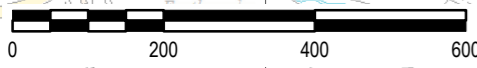
THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND SUBJECT TO THE TERMS OF AECOM'S APPOINTMENT BY ITS CLIENT. AECOM ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING AECOM'S EXPRESS AGREEMENT TO SUCH USE AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.

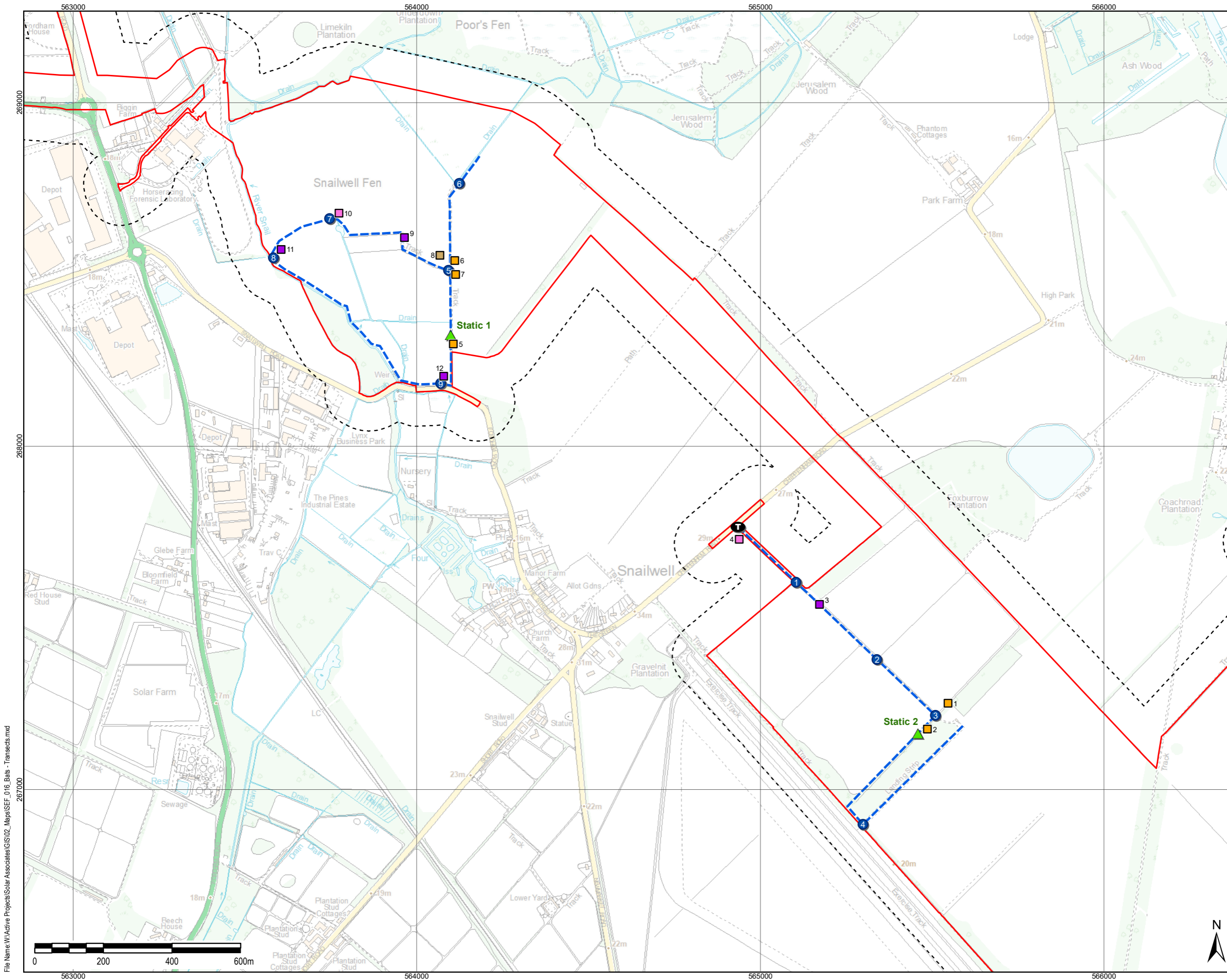
AECOM  
Unit 1 Wellbrook Court,  
Gilton,  
Cambridge, CB3 0NA  
United Kingdom  
Telephone (01223) 488000  
www.aecom.com



|  |                 |
|--|-----------------|
| Drawing Number<br><b>60589004_ES_ECO_016</b> | Rev<br><b>0</b> |
|--|-----------------|

File Name: \\Active Projects\Solar Associates\GIS\02\_Maps\SEF\_016\_Bats - Transects.mxd



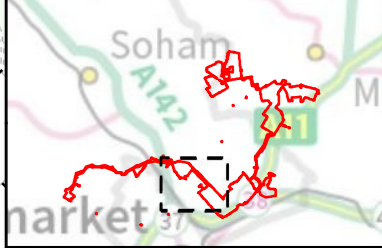


THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

- LEGEND**
- The Order Limits
  - 100m buffer
  - Bat survey transect route
  - Transect start/end point
  - Way point
  - ▲ Static detector
- Bat species**
- Brown long-eared bat
  - Common pipistrelle
  - Noctule
  - Soprano pipistrelle

Document Reference: EN010106/APP/6.3  
APFP Regulation: 5(2)(a)

Copyright:  
Reproduced from Ordnance Survey digital map data © Crown copyright 2021. All rights reserved. Licence number 0100031673.



Purpose of Issue  
**FOR DCO SUBMISSION**

Client  
**SUNNICA LTD**



Drawing Title  
**FIGURE 3.3  
BAT SURVEY  
TRANSECT WEST 1  
SPRING 23/05/2019**

|  |               |                        |                    |
|--|---------------|------------------------|--------------------|
| Drawn<br>BF                            | Checked<br>MP | Approved<br>NG         | Date<br>21/10/2021 |
| AECOM Internal Project No.<br>60589004 |               | Scale @ A3<br>1:10,000 |                    |

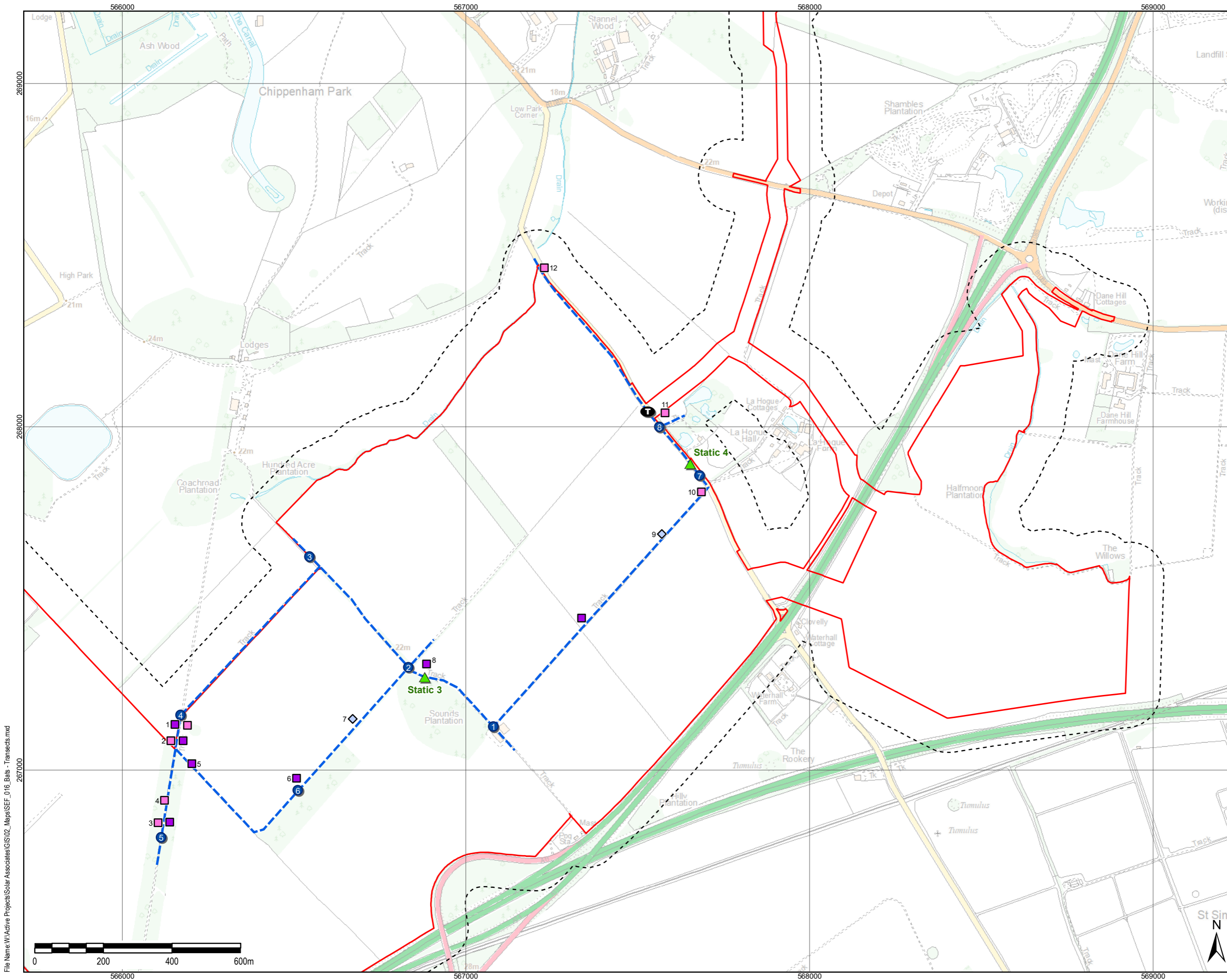
THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND IS SUBJECT TO THE TERMS OF AECOM'S APPOINTMENT BY ITS CLIENT. AECOM ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING AECOM'S EXPRESS AGREEMENT TO SUCH USE AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.

AECOM  
Unit 1 Wellbrook Court,  
Gilton,  
Cambridge, CB3 0NA  
United Kingdom  
Telephone (01223) 488000  
www.aecom.com



|  |                 |
|--|-----------------|
| Drawing Number<br><b>60589004_ES_ECO_016</b> | Rev<br><b>0</b> |
|--|-----------------|

File Name: \\Active Projects\Solar Associates\GIS\02\_Maps\SEF\_016\_Bats - Transects.mxd

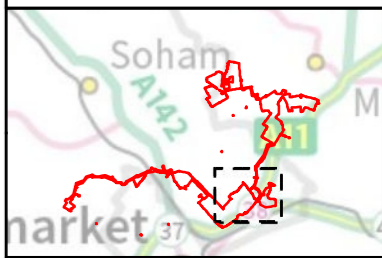


THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

- LEGEND**
- The Order Limits
  - 100m buffer
  - Bat survey transect route
  - T Transect start/end point
  - Way point
  - ▲ Static detector
- Bat species**
- Common pipistrelle
  - Soprano pipistrelle
  - Pipistrelle sp.

Document Reference: EN010106/APP/6.3  
APFP Regulation: 5(2)(a)

Copyright:  
Reproduced from Ordnance Survey digital map data © Crown copyright 2021. All rights reserved. Licence number 0100031673.



Purpose of Issue  
**FOR DCO SUBMISSION**

Client  
**SUNNICA LTD**



Drawing Title  
**FIGURE 3.4  
BAT SURVEY  
TRANSECT WEST 2  
SPRING 28/05/2019**

|  |               |                        |                    |
|--|---------------|------------------------|--------------------|
| Drawn<br>BF                            | Checked<br>MP | Approved<br>NG         | Date<br>21/10/2021 |
| AECOM Internal Project No.<br>60589004 |               | Scale @ A3<br>1:10,000 |                    |

THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND IS SUBJECT TO THE TERMS OF AECOM'S APPOINTMENT BY ITS CLIENT. AECOM ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING AECOM'S EXPRESS AGREEMENT TO SUCH USE AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.

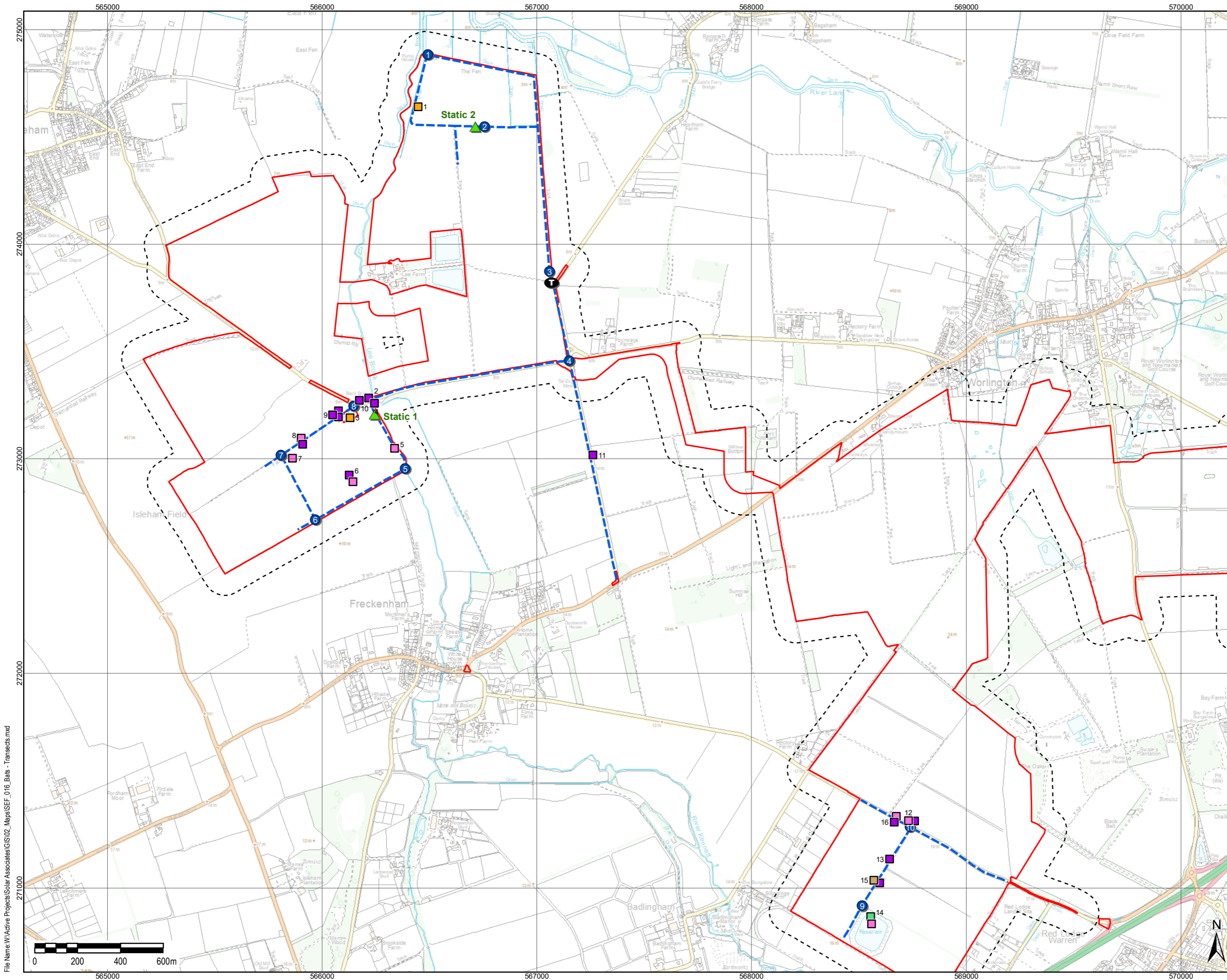
AECOM  
Unit 1 Wellbrook Court,  
Gilton,  
Cambridge, CB3 0NA  
United Kingdom  
Telephone (01223) 488000  
www.aecom.com



|  |                 |
|--|-----------------|
| Drawing Number<br><b>60589004_ES_ECO_016</b> | Rev<br><b>0</b> |
|--|-----------------|

File Name: \\Active Projects\Solar Associates\GIS\02\_Maps\SEF\_016\_Bats - Transects.mxd

**Figure 4 Summer Bat Activity Survey Results (including bat trapping locations)**



THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

**LEGEND**

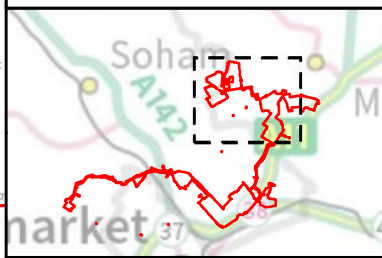
- The Order Limits
- 100m buffer
- Bat survey transect route
- Transect start/end point
- Way point
- ▲ Static detector

**Bat species**

- Brown long-eared bat
- Common pipistrelle
- Daubenton's bat
- Noctule
- Soprano pipistrelle

Document Reference: EN010106/APP/6.3  
APFP Regulation: 5(2)(a)

Copyright:  
Reproduced from Ordnance Survey digital map data © Crown copyright 2021. All rights reserved. Licence number 0100031673.



Purpose of Issue  
**FOR DCO SUBMISSION**

Client  
**SUNNICA LTD**



Drawing Title  
**FIGURE 4.1  
BAT SURVEY  
TRANSECT EAST 1  
SUMMER 24/07/2019**

|  |               |                        |                    |
|--|---------------|------------------------|--------------------|
| Drawn<br>BF                            | Checked<br>MP | Approved<br>NG         | Date<br>21/10/2021 |
| AECOM Internal Project No.<br>60589004 |               | Scale @ A3<br>1:16,000 |                    |

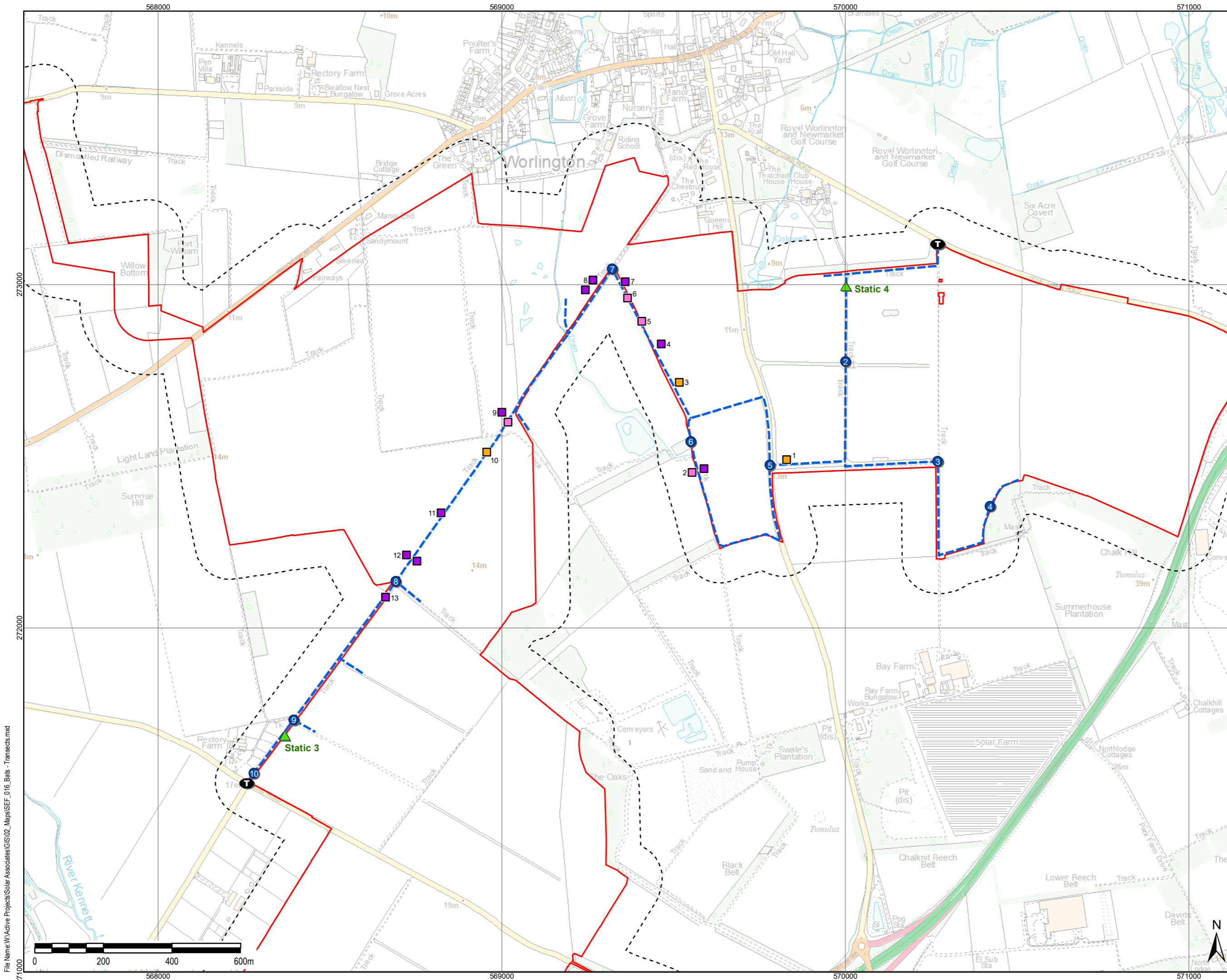
THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND SUBJECT TO THE TERMS OF AECOM'S APPOINTMENT BY ITS CLIENT. AECOM ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING AECOM'S EXPRESS AGREEMENT TO SUCH USE AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.

AECOM  
Unit 1 Wellbrook Court,  
Gilton,  
Cambridge, CB3 0NA  
United Kingdom  
Telephone (01223) 488000  
www.aecom.com



|  |                 |
|--|-----------------|
| Drawing Number<br><b>60589004_ES_ECO_017</b> | Rev<br><b>0</b> |
|--|-----------------|

File Name: \\Active Projects\Solar Associates\GIS\02\_Maps\SEF\_016\_Bats - Transects.mxd

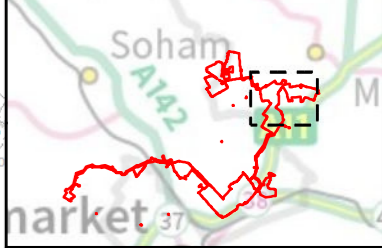


THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

- LEGEND**
- The Order Limits
  - 100m buffer
  - Bat survey transect route
  - Transect start/end point
  - Way point
  - ▲ Static detector
- Bat species**
- Common pipistrelle
  - Noctule
  - Soprano pipistrelle

Document Reference: EN010106/APP/6.3  
APFP Regulation: 5(2)(a)

Copyright:  
Reproduced from Ordnance Survey digital map data © Crown copyright 2021. All rights reserved. Licence number 0100031673.



Purpose of Issue  
**FOR DCO SUBMISSION**

Client  
**SUNNICA LTD**



Drawing Title  
**FIGURE 4.2  
BAT SURVEY  
TRANSECT EAST 2  
SUMMER 25/07/2019**

|  |               |                        |                    |
|--|---------------|------------------------|--------------------|
| Drawn<br>BF                            | Checked<br>MP | Approved<br>NG         | Date<br>21/10/2021 |
| AECOM Internal Project No.<br>60589004 |               | Scale @ A3<br>1:10,000 |                    |

THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND SUBJECT TO THE TERMS OF AECOM'S APPOINTMENT BY ITS CLIENT. AECOM ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING AECOM'S EXPRESS AGREEMENT TO SUCH USE AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.

AECOM  
Unit 1 Wellbrook Court,  
Gilton,  
Cambridge, CB3 0NA  
United Kingdom  
Telephone (01223) 488000  
www.aecom.com

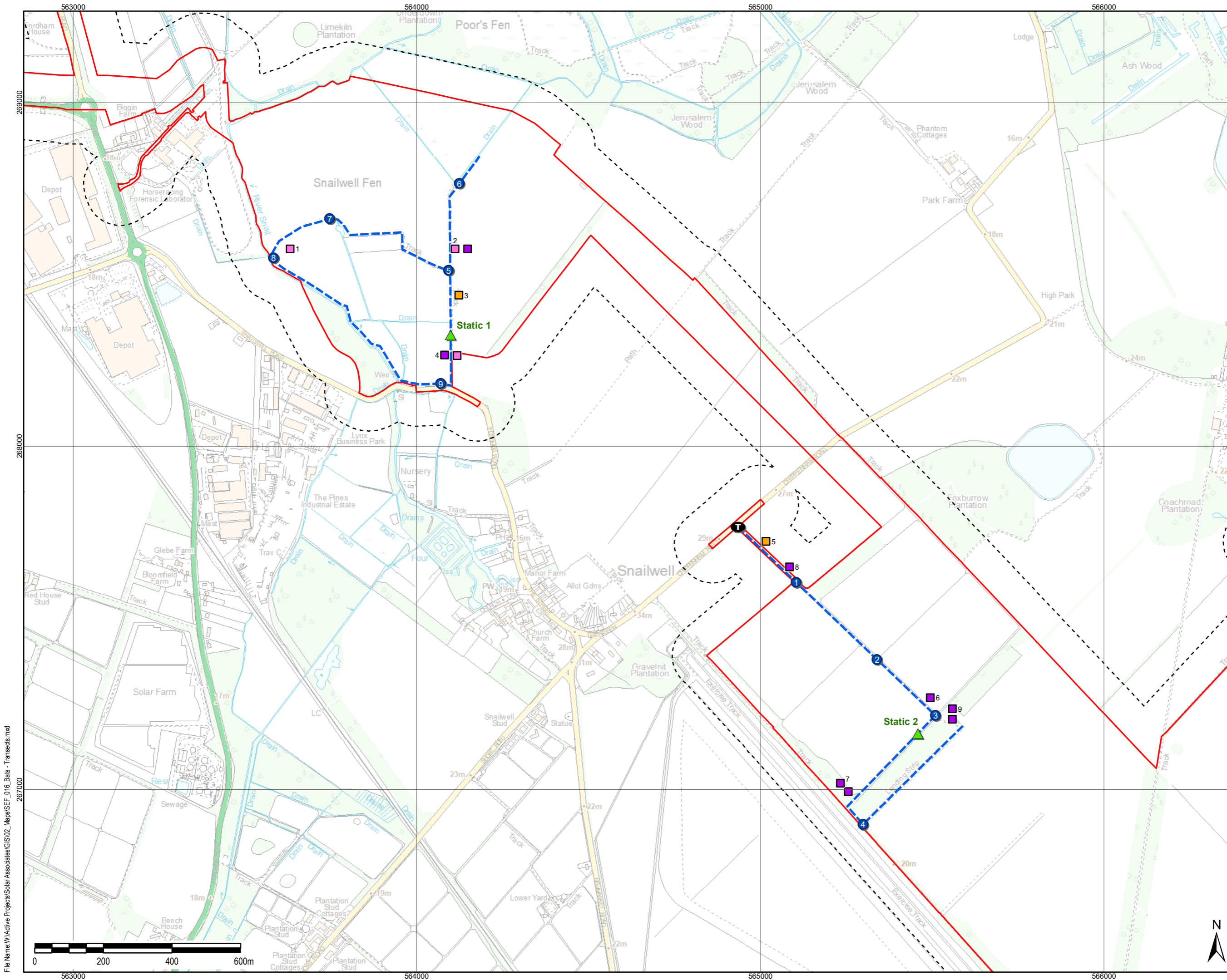


|  |                 |
|--|-----------------|
| Drawing Number<br><b>60589004_ES_ECO_017</b> | Rev<br><b>0</b> |
|--|-----------------|

File Name: \\Active Projects\Solar Associates\GIS\02\_Maps\SEF\_016\_Bats - Transects.mxd





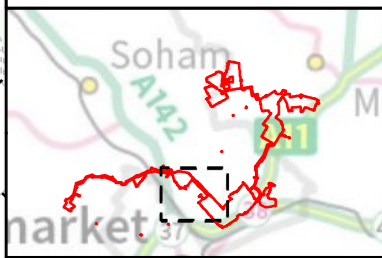


THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

- LEGEND**
- The Order Limits
  - 100m buffer
  - Bat survey transect route
  - Transect start/end point
  - Way point
  - ▲ Static detector
- Bat species**
- Common pipistrelle
  - Noctule
  - Soprano pipistrelle

Document Reference: EN010106/APP/6.3  
APFP Regulation: 5(2)(a)

Copyright:  
Reproduced from Ordnance Survey digital map data © Crown copyright 2021. All rights reserved. Licence number 0100031673.



Purpose of Issue  
**FOR DCO SUBMISSION**

Client  
**SUNNICA LTD**



Drawing Title  
**FIGURE 4.3  
BAT SURVEY  
TRANSECT WEST 1  
SUMMER 30/07/2019**

|  |               |                        |                    |
|--|---------------|------------------------|--------------------|
| Drawn<br>BF                            | Checked<br>MP | Approved<br>NG         | Date<br>21/10/2021 |
| AECOM Internal Project No.<br>60589004 |               | Scale @ A3<br>1:10,000 |                    |

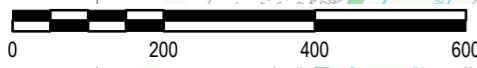
THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND IS SUBJECT TO THE TERMS OF AECOM'S APPOINTMENT BY ITS CLIENT. AECOM ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING AECOM'S EXPRESS AGREEMENT TO SUCH USE AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.

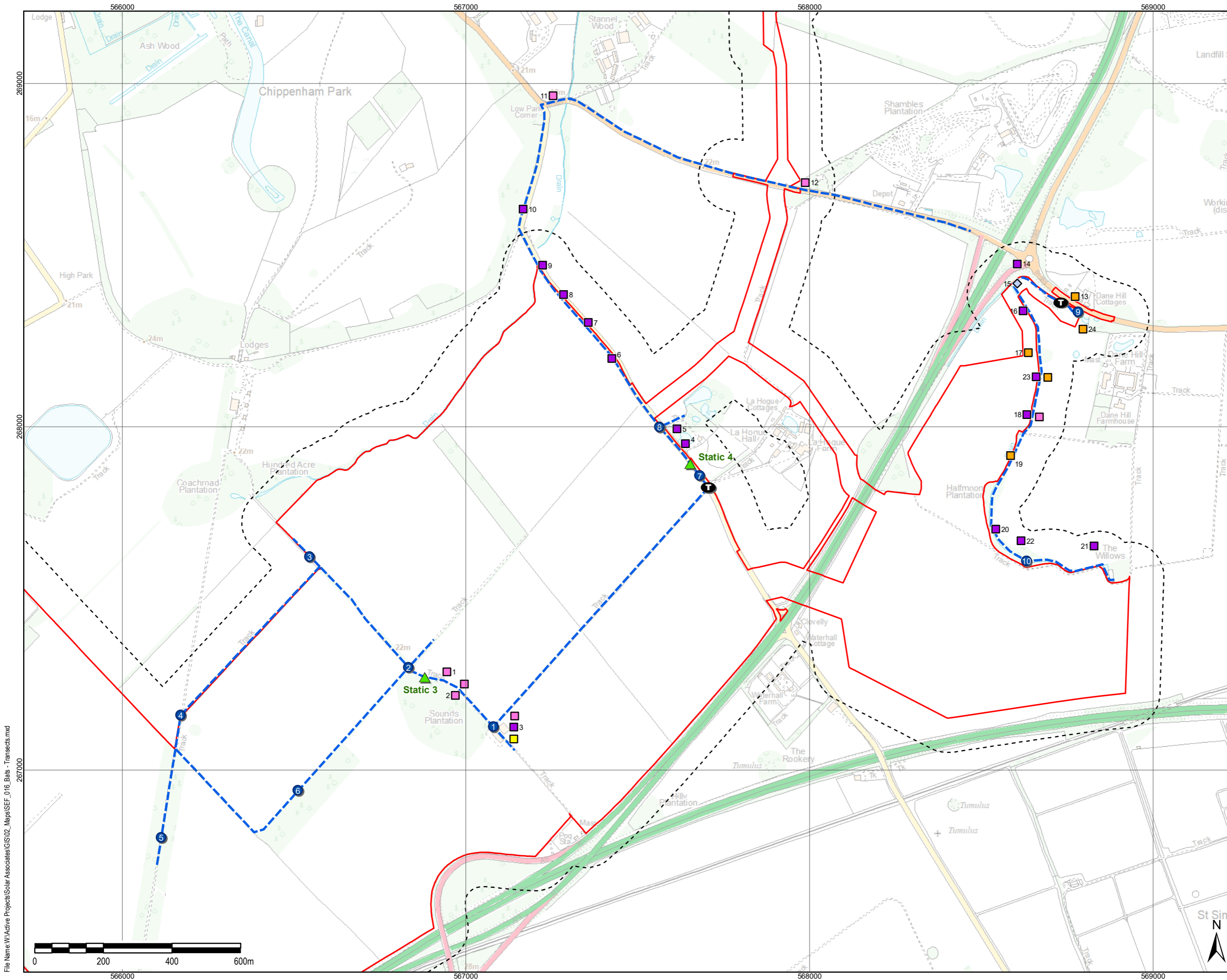
AECOM  
Unit 1 Wellbrook Court,  
Gilton,  
Cambridge, CB3 0NA  
United Kingdom  
Telephone (01223) 488000  
www.aecom.com



|  |                 |
|--|-----------------|
| Drawing Number<br><b>60589004_ES_ECO_017</b> | Rev<br><b>0</b> |
|--|-----------------|

File Name: \\Active Projects\Solar Associates\GIS\02\_Maps\SEF\_016\_Bats - Transects.mxd



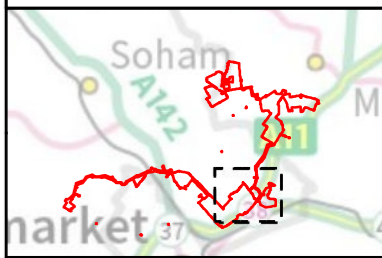


THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

- LEGEND**
- The Order Limits
  - 100m buffer
  - Bat survey transect route
  - Transect start/end point
  - Way point
  - ▲ Static detector
- Bat species**
- Common pipistrelle
  - Noctule
  - Serotine
  - Soprano pipistrelle
  - Pipistrelle sp.

Document Reference: EN010106/APP/6.3  
APFP Regulation: 5(2)(a)

Copyright:  
Reproduced from Ordnance Survey digital map data © Crown copyright 2021. All rights reserved. Licence number 0100031673.



Purpose of Issue  
**FOR DCO SUBMISSION**

Client  
**SUNNICA LTD**



Drawing Title  
**FIGURE 4.4  
BAT SURVEY  
TRANSECT WEST 2  
SUMMER 31/07/2019**

|  |               |                        |                    |
|--|---------------|------------------------|--------------------|
| Drawn<br>BF                            | Checked<br>MP | Approved<br>NG         | Date<br>21/10/2021 |
| AECOM Internal Project No.<br>60589004 |               | Scale @ A3<br>1:10,000 |                    |

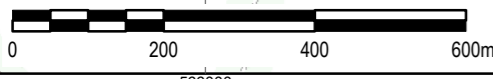
THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND SUBJECT TO THE TERMS OF AECOM'S APPOINTMENT BY ITS CLIENT. AECOM ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING AECOM'S EXPRESS AGREEMENT TO SUCH USE AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.

AECOM  
Unit 1 Wellbrook Court,  
Gilton,  
Cambridge, CB3 0NA  
United Kingdom  
Telephone (01223) 488000  
www.aecom.com

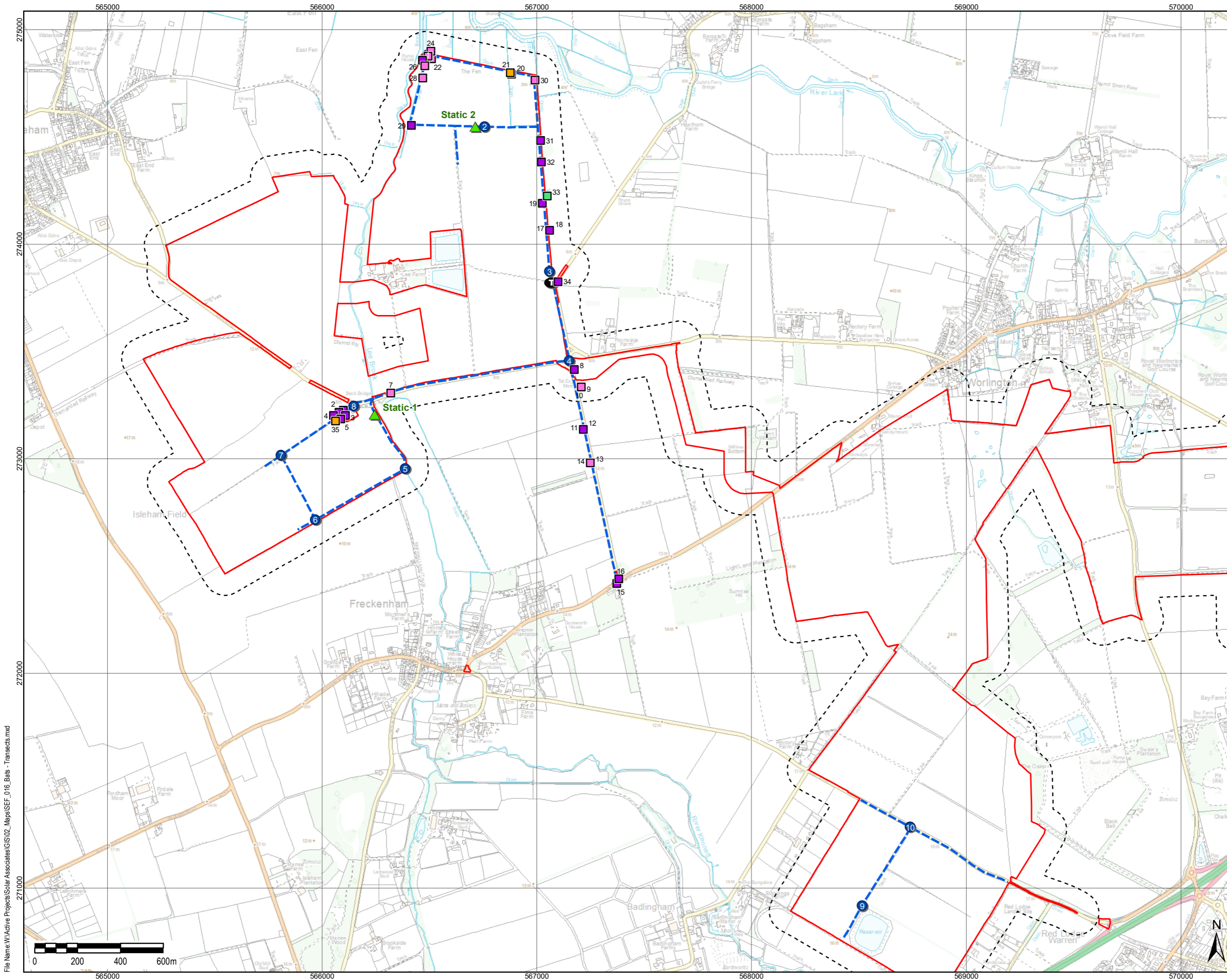


|  |                 |
|--|-----------------|
| Drawing Number<br><b>60589004_ES_ECO_017</b> | Rev<br><b>0</b> |
|--|-----------------|

File Name: \\Active Projects\Solar Associates\GIS\02\_Maps\SEF\_016\_Bats - Transects.mxd



**Figure 5 Autumn Bat Activity Survey Results (including bat trapping locations)**

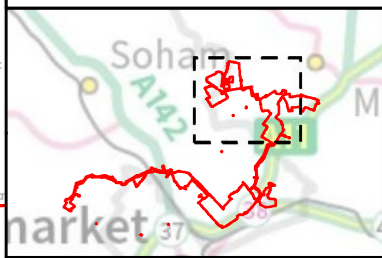


THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

- LEGEND**
- The Order Limits
  - 100m buffer
  - Bat survey transect route
  - Transect start/end point
  - Way point
  - ▲ Static detector
- Bat species**
- Common pipistrelle
  - Daubenton's bat
  - Leisler's bat
  - Noctule
  - Soprano pipistrelle

Document Reference: EN010106/APP/6.3  
APFP Regulation: 5(2)(a)

Copyright:  
Reproduced from Ordnance Survey digital map data © Crown copyright 2021. All rights reserved. Licence number 0100031673.



Purpose of Issue  
**FOR DCO SUBMISSION**

Client  
**SUNNICA LTD**



Drawing Title  
**FIGURE 5.1  
BAT SURVEY  
TRANSECT EAST 1  
AUTUMN 25/09/2019**

|  |               |                        |                    |
|--|---------------|------------------------|--------------------|
| Drawn<br>BF                            | Checked<br>MP | Approved<br>NG         | Date<br>21/10/2021 |
| AECOM Internal Project No.<br>60589004 |               | Scale @ A3<br>1:16,000 |                    |

THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND SUBJECT TO THE TERMS OF AECOM'S APPOINTMENT BY ITS CLIENT. AECOM ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING AECOM'S EXPRESS AGREEMENT TO SUCH USE AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.

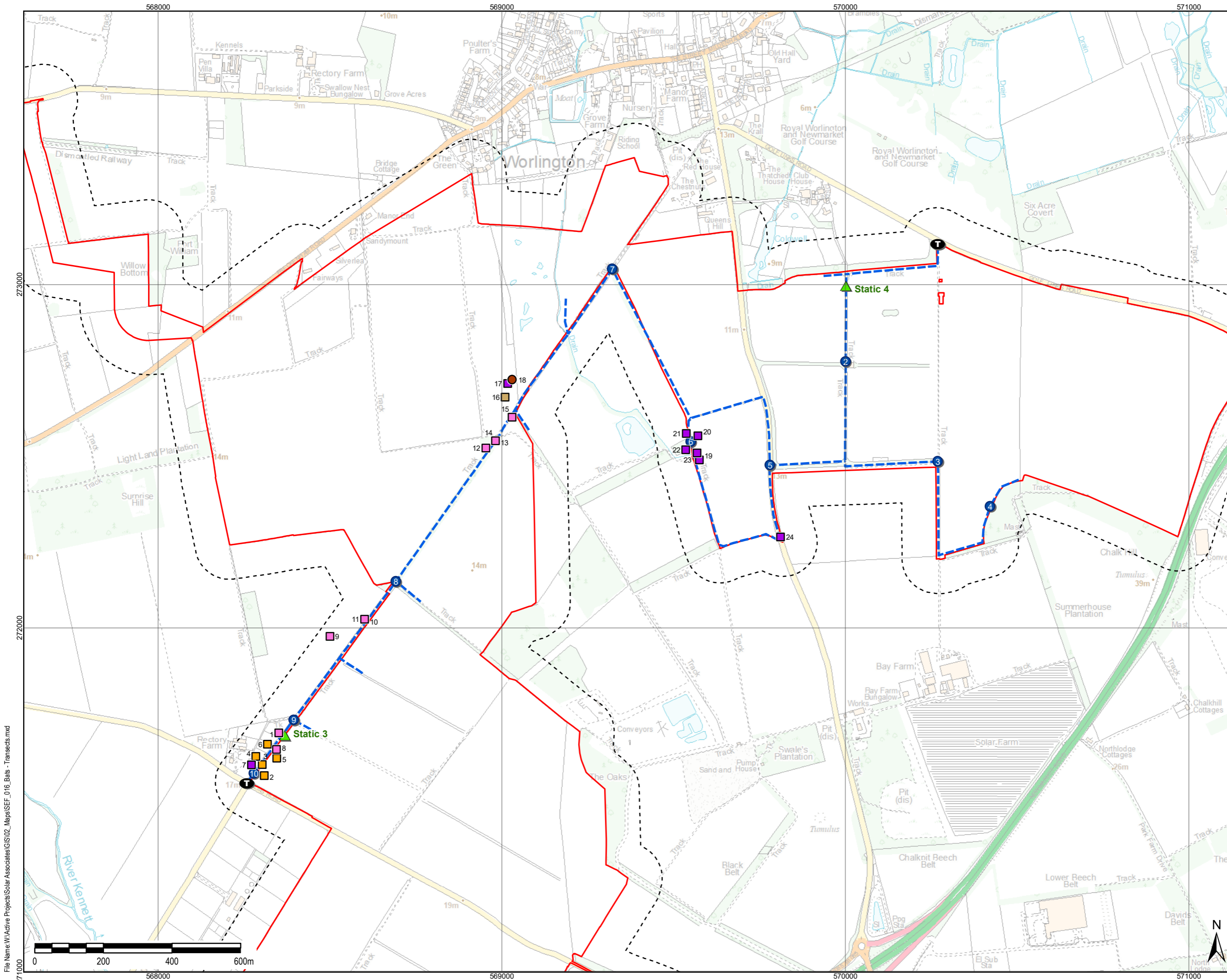
AECOM  
Unit 1 Wellbrook Court,  
Gilton,  
Cambridge, CB3 0NA  
United Kingdom  
Telephone (01223) 488000  
www.aecom.com



|  |                 |
|--|-----------------|
| Drawing Number<br><b>60589004_ES_ECO_018</b> | Rev<br><b>0</b> |
|--|-----------------|

File Name: \\Active Projects\Solar Associates\GIS\02\_Maps\SEF\_016\_Bats - Transects.mxd



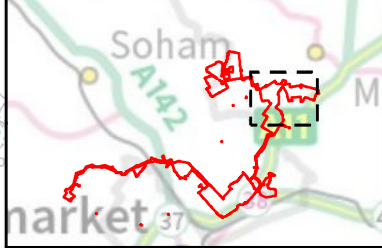


THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

- LEGEND**
- The Order Limits
  - 100m buffer
  - Bat survey transect route
  - Transect start/end point
  - Way point
  - ▲ Static detector
- Bat species**
- Barbastelle
  - Brown long-eared bat
  - Common pipistrelle
  - Noctule
  - Soprano pipistrelle

Document Reference: EN010106/APP/6.3  
APFP Regulation: 5(2)(a)

Copyright:  
Reproduced from Ordnance Survey digital map data © Crown copyright 2021. All rights reserved. Licence number 0100031673.



Purpose of Issue  
**FOR DCO SUBMISSION**

Client  
**SUNNICA LTD**



Drawing Title  
**FIGURE 5.2  
BAT SURVEY  
TRANSECT EAST 2  
AUTUMN 04/10/2019**

|  |               |                        |                    |
|--|---------------|------------------------|--------------------|
| Drawn<br>BF                            | Checked<br>MP | Approved<br>NG         | Date<br>21/10/2021 |
| AECOM Internal Project No.<br>60589004 |               | Scale @ A3<br>1:10,000 |                    |

THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND SUBJECT TO THE TERMS OF AECOM'S APPOINTMENT BY ITS CLIENT. AECOM ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING AECOM'S EXPRESS AGREEMENT TO SUCH USE AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.

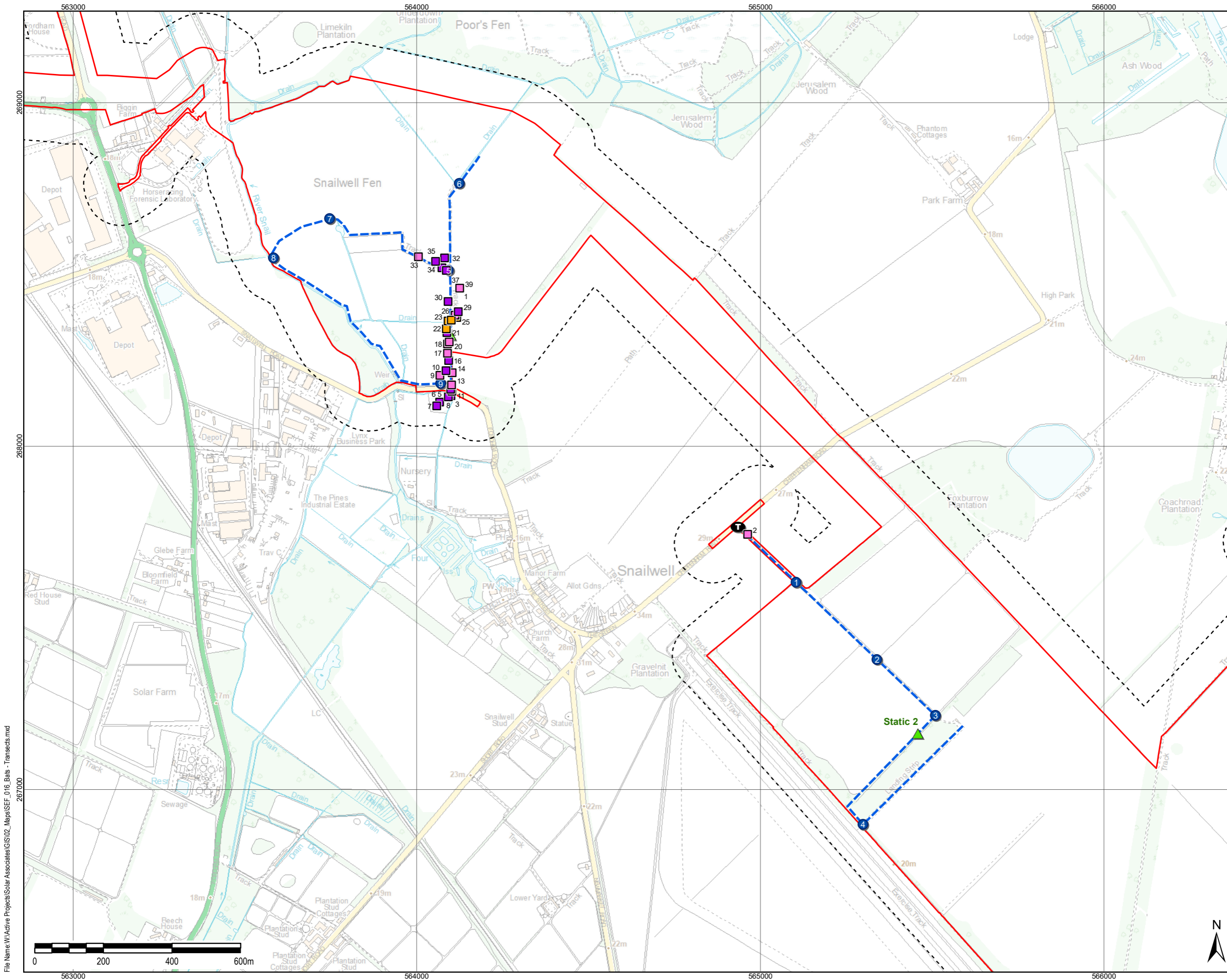
AECOM  
Unit 1 Wellbrook Court,  
Gilton,  
Cambridge, CB3 0NA  
United Kingdom  
Telephone (01223) 488000  
www.aecom.com



|  |                 |
|--|-----------------|
| Drawing Number<br><b>60589004_ES_ECO_018</b> | Rev<br><b>0</b> |
|--|-----------------|

File Name: \\Active Projects\Solar Associates\GIS\02\_Maps\SEF\_016\_Bats - Transects.mxd



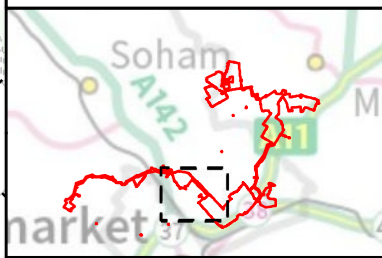


THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

- LEGEND**
- The Order Limits
  - 100m buffer
  - Bat survey transect route
  - Transect start/end point
  - Way point
  - ▲ Static detector
- Bat species**
- Common pipistrelle
  - Noctule
  - Soprano pipistrelle

Document Reference: EN010106/APP/6.3  
APFP Regulation: 5(2)(a)

Copyright:  
Reproduced from Ordnance Survey digital map data © Crown copyright 2021. All rights reserved. Licence number 0100031673.



Purpose of Issue  
**FOR DCO SUBMISSION**

Client  
**SUNNICA LTD**



Drawing Title  
**FIGURE 5.3  
BAT SURVEY  
TRANSECT WEST 1  
AUTUMN 08/10/2019**

|  |               |                        |                    |
|--|---------------|------------------------|--------------------|
| Drawn<br>BF                            | Checked<br>MP | Approved<br>NG         | Date<br>21/10/2021 |
| AECOM Internal Project No.<br>60589004 |               | Scale @ A3<br>1:10,000 |                    |

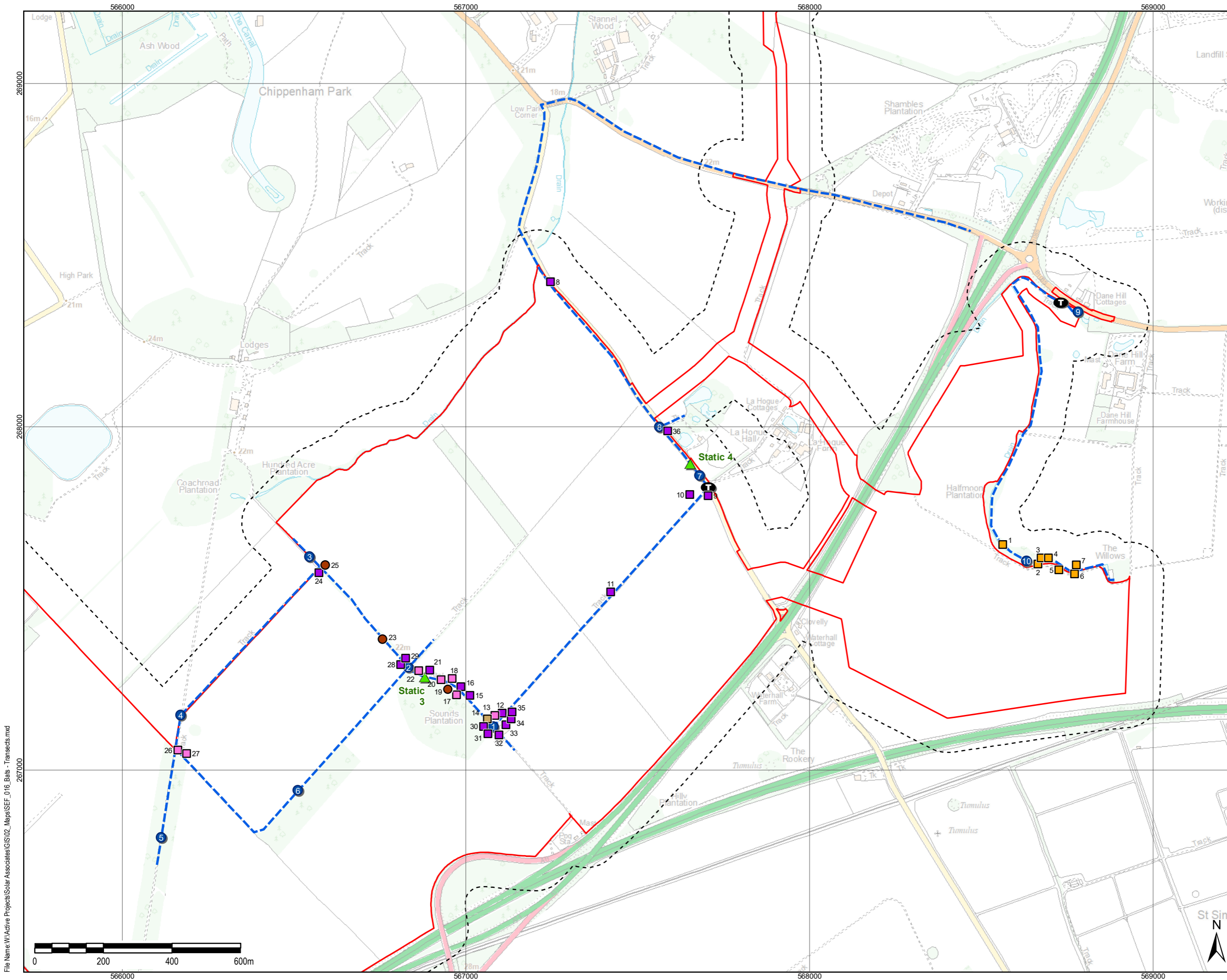
THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND IS SUBJECT TO THE TERMS OF AECOM'S APPOINTMENT BY ITS CLIENT. AECOM ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING AECOM'S EXPRESS AGREEMENT TO SUCH USE AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.

AECOM  
Unit 1 Wellbrook Court,  
Gilton,  
Cambridge, CB3 0NA  
United Kingdom  
Telephone (01223) 488000  
www.aecom.com



|  |                 |
|--|-----------------|
| Drawing Number<br><b>60589004_ES_ECO_018</b> | Rev<br><b>0</b> |
|--|-----------------|

File Name: \\Active Projects\Solar Associates\GIS\02\_Maps\SEF\_016\_Bats - Transects.mxd

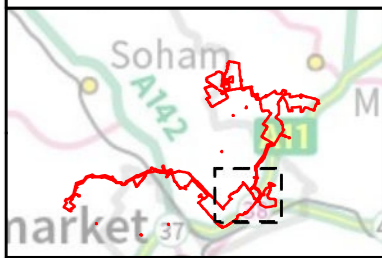


THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

- LEGEND**
- The Order Limits
  - 100m buffer
  - Bat survey transect route
  - Transect start/end point
  - Way point
  - ▲ Static detector
- Bat species**
- Barbastelle
  - Brown long-eared bat
  - Common pipistrelle
  - Noctule
  - Soprano pipistrelle

Document Reference: EN010106/APP/6.3  
APFP Regulation: 5(2)(a)

Copyright:  
Reproduced from Ordnance Survey digital map data © Crown copyright 2021. All rights reserved. Licence number 0100031673.



Purpose of Issue  
**FOR DCO SUBMISSION**

Client  
**SUNNICA LTD**



Drawing Title  
**FIGURE 5.4  
BAT SURVEY  
TRANSECT WEST 2  
AUTUMN 15/10/2019**

|  |               |                        |                    |
|--|---------------|------------------------|--------------------|
| Drawn<br>BF                            | Checked<br>MP | Approved<br>NG         | Date<br>21/10/2021 |
| AECOM Internal Project No.<br>60589004 |               | Scale @ A3<br>1:10,000 |                    |

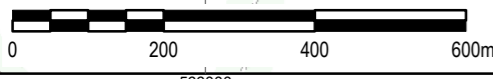
THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND SUBJECT TO THE TERMS OF AECOM'S APPOINTMENT BY ITS CLIENT. AECOM ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING AECOM'S EXPRESS AGREEMENT TO SUCH USE AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.

AECOM  
Unit 1 Wellbrook Court,  
Gilton,  
Cambridge, CB3 0NA  
United Kingdom  
Telephone (01223) 488000  
www.aecom.com



|  |                 |
|--|-----------------|
| Drawing Number<br><b>60589004_ES_ECO_018</b> | Rev<br><b>0</b> |
|--|-----------------|

File Name: \\Active Projects\Solar Associates\GIS\02\_Maps\SEF\_016\_Bats - Transects.mxd



# Annex B Preliminary Bat Roost Appraisal Method

**Table B-1: Survey Methodology for Assessing the Potential Roost Features (PRFs) of Trees**

| Trees  |
|--|
| <p>Surveys can be undertaken at any time of year but should preferably be carried out when the trees are not in full leaf, to aid the viewing of PRFs. Any constraints to surveys should always be noted.</p> <p>The scoping survey to identify the existence of PRFs should include checks for the presence of the following features that bats might be able to use to determine features with the potential to support bats in accordance with criteria in Table A2:</p> <ol style="list-style-type: none"> <li>a. natural holes (e.g. knot holes) arising from naturally shed branches, or branches previously pruned back to the branch collar;</li> <li>b. man-made holes (e.g. cavities that have developed from flush cuts) or cavities created by branches tearing out from parent stems;</li> <li>c. woodpecker holes;</li> <li>d. cracks/splits in stems or branches (both vertical and horizontal);</li> <li>e. partially detached or loose, platy bark;</li> <li>f. cankers (caused by localized bark death) in which cavities have developed;</li> <li>g. other hollows or cavities, including butt rots;</li> <li>h. compression forks with included bark, forming potential cavities;</li> <li>i. crossing stems or branches with suitable space between for roosting;</li> <li>j. ivy stems with diameters in excess of 50 mm with suitable roosting space behind (or where a roosting space can be seen where a mat of thinner stems has left a gap between the mat and the trunk);</li> <li>k. bird and bat boxes on trees; or</li> <li>l. other features that offer a place of shelter.</li> </ol> <p>NOTE Roosts of some species can occur very low on trees so PRFs can be found at all heights.</p> |
| Buildings  |
| <p>Bats utilise many different features in buildings for places of shelter and roosting. Features that should be observed, noted and graded (in accordance with criteria in Table A2) during the external and internal survey of buildings includes:</p> <p>External</p> <ol style="list-style-type: none"> <li>a. external features associated with each building are visually inspected for their suitability for use by roosting bats. Equipment includes close focusing binoculars and powerful spot-lamps are used to study the walls, eaves and roofs of the buildings. Inspection mirrors and endoscopes are used as required.</li> <li>b. bats are able to enter a roosting cavity through a small gaps at least 20mm wide. However, bats usually also require an area to land that is adjacent to the entrance hole and has a rough surface. Such features are looked for during the inspection.</li> <li>c. features include; gaps in ridge tiles (where mortar is missing) gaps under roof tiles or slates, lead flashing around chimney stacks and around dormer windows, gaps under the fascia's and soffits, weatherboarding, missing mortar from joints in stone/ brickwork, roof valleys and hips.</li> <li>d. special attention should be paid to the areas directly below any potential access/ egress point in an attempt to identify any accumulation of bat droppings.</li> <li>e. no work involving multi-sectional ladders over 5 m in height should be undertaken as part of the external survey.</li> <li>f. Internal (Not part of this survey)</li> </ol>  |



## Trees

the most effective method of determining the presence of bat activity within a building is by the presence of their droppings. Bats deposit droppings in both roost and social areas, but the use of such sites by bats can change due to prevailing weather conditions or the time of year.

**Table B-2: Criteria used to describe the level of suitability of a Potential Roost Feature (PRF) to support roosting bats.**

| Suitability/ Risk | Description of Roosting Habitats   |
|-------------------|--|
| Negligible        | Structure or tree with no or very limited roosting opportunities for bats. Feature may be isolated from foraging habitat.  |
| Low               | Structure or tree one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation).<br>A tree of sufficient size and age to contain PRF(s) but with none seen from the ground or features seen with only very limited roosting potential with a limited number of roosting opportunities. Low proximity and connectivity to low or moderate quality foraging habitat. |
| Moderate          | Structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).<br>Often will have some connectivity and proximity to moderate or high quality foraging habitat.  |
| High              | A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially longer periods of time due to their size, shelter one or more species of bat. With good connectivity to high quality foraging habitat.  |
| Confirmed Roost   | Presence of bats or evidence of bats. Confirmation of roost status may require further Roost Classification Survey.  |

Notes: Collins, 2016 uses the terms negligible, low, moderate, etc. to assess habitat suitability for bats as per the levels of shown in the table above. The BS 8596:2015 Surveying for bats in trees and woodland uses the term 'Risk' when assigning these categories to PRFs. In the absence of an industry standard this table can be used to help the ecologist determine the level of Habitat Suitability/Level of Risk of a PRF to provide suitable roosting opportunities for bats.

The NEGLIGIBLE category is used where a feature has been inspected and found not to contain any features of use to bats, and hence provides confirmation that a feature has been inspected or considered.

For building/structures PRFs assessed at LOW to HIGH Risk further surveys are likely to be required (in accordance with standard survey guidance to attempt to determine roost presence/absence). For tree PRFs assessed at MODERATE to HIGH Risk further surveys are likely to be required (in accordance with standard survey guidance to attempt to determine roost presence/absence).

CONFIRMED ROOSTS likely to require Roost Characterisation Surveys to inform planning/mitigation requirements.

# Annex C Valuing Bat Roosts

## Foraging and Commuting Habitats in Ecological Impact Assessment

**Table C-1: Categorising bats by distribution and rarity**

| Rarity within range               | England   |
|-----------------------------------|---|
| Rarest<br>(popn. under 10,000)    | Greater horseshoe ( <i>Rhinolophus ferrumequinum</i> )<br>Bechstein's ( <i>Myotis bechsteinii</i> )<br>Alcathoe ( <i>Myotis alcathoe</i> )<br>Greater mouse-eared ( <i>Myotis myotis</i> )<br>Barbastelle ( <i>Barbastella barbastellus</i> )<br>Grey long-eared ( <i>Plecotus austriacus</i> )   |
| Rarer<br>(popn. 10,000 – 100,000) | Lesser horseshoe ( <i>Rhinolophus hipposideros</i> )<br>Whiskered ( <i>Myotis mystacinus</i> )<br>Brandt's ( <i>Myotis brandtii</i> )<br>Daubenton's ( <i>Myotis daubentonii</i> )<br>Natterer's ( <i>Myotis nattereri</i> )<br>Leisler's ( <i>Nyctalus leisleri</i> )<br>Noctule ( <i>Nyctalus noctula</i> )<br>Nathusius' pipistrelle ( <i>Pipistrellus nathusii</i> )<br>Serotine ( <i>Eptesicus serotinus</i> ) |
| Common<br>(popn. Over 100,000)    | Common Pipistrelle ( <i>Pipistrellus pipistrellus</i> )<br>Soprano Pipistrelle ( <i>Pipistrellus pygmaeus</i> )<br>Brown long-eared ( <i>Plecotus auritus</i> )   |

**Table C-2: Valuing Bat Roosts**

| Geographic frame of reference | Roost Types   |
|-------------------------------|---|
| District, Local or Parish     | Feeding perches (common species)<br>Individual bats (common species)<br>Small numbers of non-breeding bats (common species)<br>Mating sites (common species)  |
| County                        | Maternity sites (common species)<br>Small numbers of hibernating bats (common and rarer species)<br>Feeding perches (rarer/rarest species)<br>Individual bats (rarer/rarest species)<br>Small numbers of non-breeding bats (rarer/rarest species) |
| Regional                      | Mating sites (rarer/rarest species) including well used swarming sites<br>Maternity sites (rarer species)<br>Hibernation sites (rarest species)<br>Significant hibernation sites for rarer/rarest species or all species assemblages              |
| National/UK                   | Maternity sites (rarest species)<br>Sites meeting Site of Special Scientific Interest guidelines  |
| International                 | Special Area of Conservation sites  |

**Table C-3: Valuing Commuting Routes**

| Species     | Number of Bats #          | Roosts/potential roosts nearby  | Type and complexity of linear features   |
|-------------|---------------------------|---|--|
| Common (2)  | Individual bats (5)       | None (1)  | Absence of (other) linear features (1)   |
|             |                           | Small number (3)  | Unvegetated fences/walls and large field sizes (2)   |
| Rarer (5)   | Small number of bats (10) | Moderate number/Not known (4)   | Walls, gappy or flailed hedgerows, isolated well grown hedgerows, and moderate field sizes (3)       |
|             |                           | Large number of roosts, or close to a nationally important/protected site for the species (5) | Well-grown and well-connected hedgerows/tree lines, small field sizes (4)                            |
| Rarest (20) | Large number of bats (20) | Close to or within an internationally important/protected site for the species (20)           | Complex network of mature well-established hedgerows, tree line, small fields and rivers/streams (5) |

# Individual bats 1 or 2, Small numbers 3 to 10, Large numbers >10 bats

**Table C-4: Valuing Foraging Areas**

| Species     | Number of Bats #          | Roosts/potential roosts nearby  | Type and complexity of linear features   |
|-------------|---------------------------|---|--|
| Common (2)  | Individual bats (5)       | None (1)  | Industrial or other site without established vegetation (1)                            |
|             |                           | Small number (3)  | Suburban areas or intensive arable land (2)  |
| Rarer (5)   | Small number of bats (10) | Moderate number/Not known (4)   | Isolated woodland patches, less intensive arable and/or small towns and villages (3)   |
|             |                           | Large number of roosts, or close to a nationally important site for the species (5) | Larger or connected woodland blocks, mixed agriculture, and small villages/hamlets (4) |
| Rarest (20) | Large number of bats (20) | Close to or within a SAC for the species (20)                                       | Mosaic of pasture, woodlands and wetland areas (5)                                     |

# Individual bats 1 or 2, Small numbers 3 to 10, Large numbers >10 bats

6.1.1 Scores in the four columns of each table above A5 and A6 are added up to provide an overall score to determine the value or importance of commuting routes and foraging areas as per **Table 8C-4**.

**Table C-5: Scoring System for Valuing Commuting and Foraging Bats**

| Geographic frame of reference   | Score   |
|---------------------------------|---------|
| International                   | >50     |
| National                        | 41 – 50 |
| Regional                        | 31 – 40 |
| County/District*                | 21 – 30 |
| Local                           | 11 – 20 |
| Not important (Site Level only) | 1 - 10  |

\* Note that County and District has been combined to correspond to CIEEM 2018 based on guidance table below.

| Importance of ecological features | Typical descriptors and examples of criteria  |
|-----------------------------------|---|
| International or European         | <p>An internationally designated site or candidate site including Special Protection Area (SPA), potential SPAs (pSPAs); Special Area of Conservation (SAC), candidate or possible SACs (cSACs or pSACs<sup>1</sup>) and Ramsar sites (wetlands of international importance).</p> <p>Biogenetic Reserves, World Heritage Sites and Biosphere Reserves.</p> <p>Areas which meet the published selection criteria for those sites listed above but which are not themselves designated as such.</p> <p>Resident or regularly occurring populations of species which may be considered at an international or European level<sup>2</sup> where:</p> <ol style="list-style-type: none"> <li>the loss of these populations would adversely affect the conservation status or distribution of the species at this geographic scale;</li> <li>the population forms a critical part<sup>3</sup> of a wider population at this scale; or</li> </ol> <p>the species is at a critical phase<sup>4</sup> of its life cycle at this scale.</p> |
| UK or National                    | <p>Sites designated at UK or national level e.g. Site of Special Scientific Interest (SSSI), Marine Protection Area (MPA) including Marine Conservation Zones (MCZ) and National Nature Reserve (NNR).</p> <p>Areas which meet the published selection criteria for those sites listed above but which are not themselves designated as such.</p> <p>Areas of key or priority habitats identified in the UK Post-2010 Biodiversity Framework i.e. UK Biodiversity Action Plan (BAP), including those published in accordance with Section 41 of the Natural Environment and Rural Communities Act (2006) and those considered to be of principal importance for the conservation of biodiversity.</p> <p>Areas of ancient woodland</p>  |

| Importance of ecological features       | Typical descriptors and examples of criteria   |
|---|--|
|   | <p>Resident or regularly occurring populations of species which may be considered at a UK or a national level<sup>5</sup> where:</p> <ul style="list-style-type: none"> <li>a. the loss of these populations would adversely affect the conservation status or distribution of the species at this geographic scale;</li> <li>b. the population forms a critical part of a wider population at this scale; or</li> </ul> <p>the species is at a critical phase of its life cycle at this scale.</p>  |
| Regional                                | <p>Habitats or populations of species of value at a regional level (i.e. East Anglia).</p> <p>Areas of key or priority habitat identified as being of Regional value in the appropriate National Character Area (NCA).</p> <p>Key or priority habitat or species listed within the Highways England (HE) / Highways Agency (HA) BAP.</p> <p>Resident or regularly occurring populations of species which may be considered at a regional level<sup>6</sup> where:</p> <ul style="list-style-type: none"> <li>a. the loss of these populations would adversely affect the conservation status or distribution of the species at this geographic scale;</li> <li>b. the population forms a critical part of a wider population at this scale; or</li> </ul> <p>the species is at a critical phase of its life cycle at this scale.</p>   |
| County or Unitary Authority or District | <p>Habitats or populations of species of value at a County (i.e. Cambridgeshire and Suffolk) level or District (e.g. Breckland).</p> <p>Designated sites, such as County Wildlife Site (CWS), Local Wildlife Site (LWS) or Sites of Importance for Nature Conservation (SINC) and Local Nature Reserve (LNR) designated in the county or unitary authority area i.e. District context.</p> <p>Areas which meet the published selection criteria for those sites listed above but which are not themselves designated as such.</p> <p>Areas of key or priority habitats identified in the Local Biodiversity Action Plan (LBAP).</p> <p>Resident or regularly occurring populations of species which may be considered at a County (or District) level<sup>7</sup> where:</p> <ul style="list-style-type: none"> <li>a. the loss of these populations would adversely affect the conservation status or distribution of the species at this geographic scale;</li> <li>b. the population forms a critical part of a wider population at this scale; or,</li> </ul> <p>the species is at a critical phase of its life cycle at this scale.</p> |
| Local                                   | <p>Habitats or species populations of value in a local (i.e. within ~ 5km of the site) context.</p> <p>Designated sites include LNRs designated in the local context.</p> <p>Trees that are protected by Tree Preservation Orders (TPOs).</p> <p>Areas of habitat or populations and, or communities of species considered to appreciably enrich the habitat resource within the local</p>   |

| Importance of ecological features | Typical descriptors and examples of criteria  |
|-----------------------------------|---|
|                                   | context (such as veteran trees), including features of value for migration, dispersal or genetic exchange.  |
| Site                              | Habitat that is of value in the context of the site only.<br>Populations of common and widespread species.<br>A degraded/ impoverished example of a common or widespread habitat in the local area. |

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 the Directive 2009/147/EC on the Conservation of wild birds (i.e. EC Birds Directive) (codified version of Council Directive 79/409/EEC as amended) or animal/ plant species 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; birds, other animals and plants which receive legal protection in the basis of their conservation interest (those listed within the Wildlife and Countryside Act 1981 (as amended) Schedule 1, 5 and 8); species listed for their principal importance for biodiversity (in accordance with the Natural Environment and Communities Act 2006 Section 41 England); priority species listed within the UK Post 2010 Biodiversity Framework (i.e. UKBAP); 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

7. Such species include those at county level (i.e. Cambridgeshire) including unitary authority area i.e. District level (i.e. South Cambridgeshire); as listed on the LBAPs; and listed as a county designated site.

\*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.

# Annex D Survey Results

**Table D-1: Preliminary Roost Appraisal (see Figure 2)**

| Name | Feature/Species    | Height m | DBH cm | Description  | PRF Description   | Bat signs | Roost Suitability | Photo ref: | Date / Time          |
|------|--------------------|----------|--------|--|---|-----------|-------------------|------------|----------------------|
| 553  | Elm                | 25       | 60     | Thick ivy causing crevices.                            | Ivy cover. No visible features  | none      | Moderate          | 2903       | 2019-05-15T10:29:00Z |
| 554  | Elm                | 25       | 60     | Thick ivy causing crevices.                            | Ivy cover. No visible features  | none      | Moderate          | 2904       | 2019-05-15T10:33:14Z |
| 555  | Sycamore           | 20       | 30     | Thick ivy causing crevices.                            | Ivy cover. No visible features  | none      | Low               | 2905       | 2019-05-15T10:34:32Z |
| 556  | Sycamore and Beech | -        | -      | Woodland strip c.40 to 50 semi-mature and mature trees | Some minor holes in some boughs, ivy cover obscuring potential roost features. Not surveyed in detail | none      | Moderate          | 2906       | 2019-05-15T10:43:28Z |
| 557  | Building           | -        | -      | Dilapidated timber and corrugated metal roof barn      | Small crevice areas   | none      | Moderate          | 2907, 2908 | 2019-05-15T10:46:59Z |
| 558  | Elm                | 20       | 40     | Elm on east hedge                                      | Ivy cover obscuring potential roost features.   | none      | Moderate          | 2909       | 2019-05-15T10:54:57Z |

| Name | Feature/Species    | Height m | DBH cm | Description                   | PRF Description                                  | Bat signs | Roost Suitability | Photo ref: | Date / Time          |
|------|--------------------|----------|--------|-------------------------------|--|-----------|-------------------|------------|----------------------|
| 559  | Elm                | 12       | 40     | Elm on west hedge             | Ivy covering obscuring potential roost features. | none      | Moderate          | 2910       | 2019-05-15T10:58:08Z |
| 560  | Elm                | 12       | 30     | Elm on east hedge             | Ivy covering obscuring potential roost features. | none      | Moderate          | 2911       | 2019-05-15T11:02:47Z |
| 561  | Sycamore           | 15       | 30     | Sycamore on eastern hedge     | Ivy covering obscuring potential roost features. | none      | Low               | 2912       | 2019-05-15T11:05:53Z |
| 562  | Sycamore           | 20       | 30     | Multi stemmed on west hedge   | Ivy covering obscuring potential roost features. | none      | Low               | 2913       | 2019-05-15T11:07:17Z |
| 563  | Beech              |          | 50     | Beech on East hedge           | Ivy covering obscuring potential roost features. | none      | Moderate          | 2914       | 2019-05-15T11:08:55Z |
| 564  | Woodland           |          |        | Lime, Norway maple, and beech |  | none      | High              | 2915       | 2019-05-15T11:12:33Z |
| 565  | Woodland/ hedge    |          |        | Beech and maple               |  | none      | Moderate          | 2916       | 2019-05-15T11:28:12Z |
| 566  | Building           |          |        | Substation building           |  | none      | Moderate          | 2917       | 2019-05-15T11:35:05Z |
| 567  | Conifer plantation |          |        | Corsican pine, scots pine     |  | none      | Low               | 2918       | 2019-05-15T11:39:09Z |
| 568  | Woodland           |          |        | Bird cherry and sycamore      |  | none      | Moderate          | 2919       | 2019-05-15T12:02:40Z |



| Name | Feature/Species                  | Height m | DBH cm | Description                             | PRF Description  | Bat signs | Roost Suitability | Photo ref: | Date / Time              |
|------|----------------------------------|----------|--------|---|--|-----------|-------------------|------------|--------------------------|
|      |                                  |          |        | plantation +<br>hedge                   |  |           |                   |            |                          |
| 569  | Broad leaved<br>woodland + hedge | -        | -      | Elm, ash,<br>beech, and<br>sycamore     | Numerous<br>features, not<br>surveyed in<br>detail                       | none      | High              | 2920       | 2019-05-<br>15T12:06:40Z |
| 570  | Scot's pine                      | 20       | 30     |   | No obvious<br>features, minor<br>lifted bark<br>plates                   | none      | Negligible<br>Low | 2921       | 2019-05-<br>15T13:25:39Z |
| 571  | Hedge + trees                    | -        | -      | mature grey<br>poplar (20+<br>trees)    | Some minor<br>cracks and<br>splits high up,<br>not surveyed in<br>detail | none      | Low - Moderate    | 2922       | 2019-05-<br>15T13:28:35Z |
| 572  | Scot's Pine<br>trees             | 50+ -    | -      |   |  | none      | Low               | 2923       | 2019-05-<br>15T13:34:36Z |
| 574  | Hybrid black<br>poplar           | 30       | 90     | Hybrid black<br>poplar in hedge         |  | none      | High              | 2924       | 2019-05-<br>15T13:46:25Z |
| 575  | Tree line                        |          |        | Hybrid black<br>poplar in hedge         |  | none      | up to high        | 2925       | 2019-05-<br>15T13:49:14Z |
| 576  | Woodland with<br>path            |          |        | Oak, elder,<br>scots pine               |  | none      | Low               | 2926       | 2019-05-<br>15T13:54:26Z |
| 577  | Scots pine tree line<br>with oak |          |        | 20 trees                                |  | none      | up to high        | 2927       | 2019-05-<br>15T14:09:07Z |
| 578  | Scots pine tree line             |          |        | 20 trees                                |  | none      | up to high        | 2928       | 2019-05-<br>15T14:12:30Z |
| 579  | Oak                              | 15-20    | 100    | Sessile oak on<br>south of the<br>track | ivy cover  | none      | Moderate          | 2929       | 2019-05-<br>15T14:16:29Z |

| Name | Feature/Species                                  | Height m | DBH cm   | Description                                     | PRF Description | Bat signs | Roost Suitability | Photo ref: | Date / Time          |
|------|--|----------|----------|---|-----------------|-----------|-------------------|------------|----------------------|
| 580  | Oak  | 12       | 40       |   |                 | none      | Negligible        | 2930       | 2019-05-15T14:20:49Z |
| 581  | Hybrid black poplar                              | 20       | 100      | Multi stemmed black poplar                      |                 | none      | Negligible        | 2931       | 2019-05-15T14:23:45Z |
| 582  | Line of trees                                    | 25       | 40 to 60 | Mature poplars, c, 50 trees                     |                 | none      | up to high        | 2932       | 2019-05-15T14:28:04Z |
| 583  | Broad leaved woodland                            |          |          | Oak, elder, buckthorn, c. 40-50 trees and scrub |                 | none      | up to high        | 2933       | 2019-05-15T14:38:44Z |
| 584  | Broad leaved woodland                            | 20-25    |          | Dead elm, Beech, 80 to 100 trees                |                 | none      | up to high        | 2934       | 2019-05-15T14:47:47Z |
| 585  | Line of hybrid black poplar                      | 30       |          |   |                 | none      | up to mod         | 2935       | 2019-05-15T14:59:19Z |
| 586  | Scots pine                                       | 5 to 10  |          |   |                 | none      | Negligible        | 2936       | 2019-05-15T14:59:54Z |
| 587  | Scots pine                                       | 20 to 30 |          | Scots pine plantation                           |                 | none      | Low               | 2937, 2939 | 2019-05-15T15:02:39Z |
| 589  | Blackthorn and scots pine                        |          |          |   |                 | none      | High              | 2940, 2941 | 2019-05-15T16:28:55Z |
| 590  | Poplar species, scots pine                       |          |          |   |                 | none      | High              | 2942       | 2019-05-15T16:33:28Z |
| 591  | Poplar, scots pine                               |          |          |   |                 | none      | Mod               | 2943       | 2019-05-15T16:38:04Z |
| 592  | Scattered scots pine                             |          |          |   |                 | none      | Low               | 2944       | 2019-05-15T16:38:47Z |
| 593  | Hybrid black poplar, alder, oak, salix sp, elder |          |          | Reed and nettle understory                      |                 | none      | up to high        | 2949       | 2019-05-16T10:10:57Z |

| Name | Feature/Species             | Height m | DBH cm | Description   | PRF Description                    | Bat signs | Roost Suitability | Photo ref: | Date / Time          |
|------|-----------------------------|----------|--------|---|------------------------------------|-----------|-------------------|------------|----------------------|
| 594  | Building                    |          |        | Old pump station 5x3. brick with tin, and concrete building | No access and outside site         | none      | Low               | 2950       | 2019-05-16T10:28:29Z |
| 595  | Pill box                    |          |        |   | No features for bats               | none      | Negligible        | 2951       | 2019-05-16T10:42:11Z |
| 596  | Oak                         | 10       | 30     | single oak  | n/a                                | none      | Negligible        | 2952       | 2019-05-16T10:50:35Z |
| 597  | line of Beech and Oak trees |          |        | 30 trees  |                                    | none      | up to high        | 2953       | 2019-05-16T10:54:05Z |
| 598  | Bridge                      |          |        | road bridge 10m long.                                       | 2 smaller holes, 1 deeper hole     | none      | Low               | 2954       | 2019-05-16T11:03:17Z |
| 599  | Pine plantation             |          |        | scots pine, elder, Corsican pine, privet                    |                                    | none      | up to high        | -          | 2019-05-16T11:17:18Z |
| 600  | Shelter belt woodland       |          |        | Oak, 50+ mature trees.                                      |                                    | none      | up to high        | 2955       | 2019-05-16T11:22:54Z |
| 601  | Lines of trees              |          |        | oak, scots pine   |                                    | none      | Moderate          | 2956       | 2019-05-16T11:45:40Z |
| 602  | Line of semi mature oak     |          |        |   |                                    | none      | Negligible        | -          | 2019-05-16T11:50:39Z |
| 603  | Line of Beech trees by road |          |        |   |                                    | none      | Moderate          | 2957       | 2019-05-16T11:54:10Z |
| 604  | Beech                       | 25       | 80     | beech next to the road                                      | ivy cover. 2 feats N facing 10m up | none      | Moderate          | 2958       | 2019-05-16T11:55:49Z |
| 605  | Dead Beech                  | 12       |        | dead beech, multi-stemmed                                   | limb holes                         | none      | Moderate          | 2959       | 2019-05-16T11:57:49Z |

| Name | Feature/Species   | Height m | DBH cm | Description                 | PRF Description | Bat signs | Roost Suitability | Photo ref: | Date / Time          |
|------|---|----------|--------|-----------------------------|-----------------|-----------|-------------------|------------|----------------------|
| 606  | Tree line   |          |        | beech, scots pine           |                 | none      | Moderate          | 2960       | 2019-05-16T12:00:35Z |
| 607  | Oak, sweet-chestnut                                     |          |        | line of mature trees        |                 | none      | High              | 2961       | 2019-05-16T12:38:07Z |
| 608  | Oak, scots pine, sycamore                               |          |        | mixed plantation            |                 | none      | High              | 2962       | 2019-05-16T12:38:47Z |
| 609  | Scots pine  |          |        |                             |                 | none      | Moderate          | -          | 2019-05-16T12:42:23Z |
| 610  | Sycamore, ash, field maple, Norway spruce               |          |        | Small copse                 |                 | none      | Low               | 2963       | 2019-05-16T12:50:13Z |
| 611  | Scots pine, oak   |          |        | mixed plantation            |                 | none      | High              | -          | 2019-05-16T12:52:27Z |
| 612  | Scots pine, birch, sycamore, hawthorn. Confirmed roost. |          |        | mixed woodland              |                 | none      | Confirmed         | 2964, 2965 | 2019-05-16T12:58:29Z |
| 613  | Multi-stemmed sycamore, scots pine, birch               |          |        | mixed woodland next to road |                 | none      | Moderate          |            | 2019-05-16T13:03:17Z |
| 614  | Scots pine  |          |        | scots pine line             |                 | none      | Moderate          | 2973       | 2019-05-16T13:06:10Z |
| 615  | Beech, crack willow, grey poplar                        |          |        | corps                       |                 | none      | High              | 2974       | 2019-05-16T13:15:46Z |
| 616  | Hawthorn, scots pine, sycamore, larch                   |          |        | mixed plantation            |                 | none      | up to high        | 2975       | 2019-05-16T13:22:26Z |
| 617  | Sycamore, oak, beech                                    |          |        | Broad leaved woodland       |                 | none      | High              | 2976       | 2019-05-16T13:28:24Z |

| Name | Feature/Species        | Height m | DBH cm | Description                     | PRF Description                      | Bat signs | Roost Suitability | Photo ref: | Date / Time          |
|------|------------------------|----------|--------|---------------------------------|--------------------------------------|-----------|-------------------|------------|----------------------|
| 618  | Ash                    | 25       | 120    | 5 mature ash trees              |                                      | none      | High              | 3020       | 2019-05-23T09:56:06Z |
| 620  | Hedge                  |          |        | Hedge                           |                                      | none      | Negligible to Low |            | 2019-05-23T10:00:14Z |
| 621  | Hedge                  |          |        | Hedge                           |                                      | none      | Negligible        | 3021       | 2019-05-23T10:11:39Z |
| 622  | Ash                    | 25       | 50     | Ash line along trainline        |                                      | none      | up to moderate    | 3022       | 2019-05-23T10:44:17Z |
| 623  | Ash                    | 20       | 70     | hollow ash                      | hollow trunk and several knot holes. | none      | High              | 3023       | 2019-05-23T10:47:01Z |
| 624  | Hybrid willow crack    | 25       | 150    | willow in centre of the field.  |                                      | none      | High              | 3024, 3025 | 2019-05-23T10:53:31Z |
| 625  | Several buildings      |          |        |                                 |                                      | none      | High              | 3027       | 2019-05-23T11:46:57Z |
| 626  | Oak                    | 15       | 120    |                                 | thick ivy                            | none      | High              | 3028       | 2019-05-23T12:00:57Z |
| 627  | Pine plantation        |          |        |                                 |                                      | none      | Low               | 3029       | 2019-05-23T12:07:36Z |
| 628  | Broadleaved woodland   |          |        | oak and beech                   |                                      | none      | up to high        | 3030       | 2019-05-23T12:12:47Z |
| 629  | Barn                   |          |        | gaps in timber beams.           |                                      | none      | Moderate          | 3031       | 2019-05-23T12:42:15Z |
| 630  | Enclosed barn          |          |        |                                 |                                      | none      | High              | 3032       | 2019-05-23T12:43:55Z |
| 631  | Broad leaved woodland. |          |        | oak, sycamore, beech, and elm   |                                      | none      | up to high        | 3033       | 2019-05-23T12:45:08Z |
| 632  | Woodland strip         |          |        | sycamore, elm, hawthorn, beech, |                                      | none      | High              | 3034       | 2019-05-23T12:49:51Z |

| Name | Feature/Species  | Height m | DBH cm | Description  | PRF Description  | Bat signs | Roost Suitability | Photo ref:   | Date / Time          |
|------|------------------|----------|--------|--|--|-----------|-------------------|--------------|----------------------|
| 633  | Mixed plantation |          |        | scots pine, sycamore, elm  |  | none      | up to high        | 3293         | 2019-05-23T12:51:56Z |
| 634  | Mixed plantation |          |        | treeline and hedge. Elm, Black poplar                                      |  | none      | Negligible to low | 3035         | 2019-05-23T12:56:49Z |
| 635  | Hedge and trees  |          |        | elm, field maple, sycamore, oak, and beech. 20 trees.                      |  | none      | up to high        | 3036         | 2019-05-23T12:59:58Z |
| 636  | Woodland         |          |        | Birch, beech, scots pine   |  | none      | up to high        | 3037         | 2019-05-23T13:07:22Z |
| 637  | Woodland         |          |        | Birch, beech, scots pine   |  | none      | up to high        |              | 2019-05-23T13:07:54Z |
| 638  | Willow copse     |          |        | Salix sp   |  | none      | up to mod         | 3038         | 2019-05-23T13:13:50Z |
| 639  | Woodland         |          |        | ash, sycamore, elm, scots pine, hawthorn                                   |  | none      | up to high        | 3040         | 2019-05-23T13:33:27Z |
| 641  | Barn             |          |        | 10 x 30m brick barn, concrete asbestos roof (broken)                       | Gaps under wood on top of wall, crack on north side in brickwork | none      | Low               | 4232 to 4235 | 25-09-19             |
| 642  | Barn             |          |        | Timber and corrugated iron barn, unsafe structure imminent collapse likely | Gaps between metal and wood on south side                        | none      | Low               | 4243         | 25-09-19             |

| Name | Feature/Species     | Height m | DBH cm | Description   | PRF Description  | Bat signs | Roost Suitability | Photo ref:  | Date / Time |
|------|---------------------|----------|--------|---|--|-----------|-------------------|-------------|-------------|
| 643  | Bridge              |          |        | Disused railway bridge, 3 x 5m opening 6m span  | one obvious crack on south side                                      | none      | Low               | 4244, 4245, | 25-09-19    |
| 644  | Bridge              |          |        | Disused railway bridge, spanning stream   | Nothing visible some ivy obscuring brickwork                         | none      | Low               | 4247        | 25-09-19    |
| 645  | Woodland            |          |        | Woodland on disused railway embankment. c.50 to 60 trees. Species include ash, sycamore, hawthorn | Minor features such as dead wood high in canopy, no obvious features | none      | Low               | 4248, 4249  | 25-09-19    |
| 646  | Road bridge         |          |        | Outside site not inspected  |  | none      | Low               |             | 25-09-19    |
| 647  | Tree line           |          |        | Outside site not inspected  |  | none      | Low               |             | 25-09-19    |
| 648  | Farm building/house |          |        | Various buildings not surveyed  | Numerous features and bat activity during transect survey            | none      | High              |             | 25-09-19    |
| 656  | Grey poplar         | 20       | 30     |   | No features visible  | none      | Negligible        | 3285        | 19-06-20    |
| 657  | Oaks                | 22       | 60     | 6 trees   | dead wood, bark split, ivy obscuring                                 | none      | High              |             | 19-06-20    |

| Name | Feature/Species         | Height m | DBH cm   | Description  | PRF Description   | Bat signs | Roost Suitability | Photo ref:       | Date / Time |
|------|-------------------------|----------|----------|--|---|-----------|-------------------|------------------|-------------|
| 658  | Oak                     | 25       | 70       | within small copse in field                          | lifted bark, cracks dead wood, ivy                                | none      | High              | 3287             | 19-06-20    |
| 659  | Oaks                    | 25       | 50 to 80 | multiple trees in woodland                           | lifted bark, cracks dead wood, ivy                                | none      | High              | 3288             | 19-06-20    |
| 660  | Grey poplar             | 25       | 30 to 50 | c. 12 trees  | a few minor holes on decaying limbs                               | none      | Negligible to Low | 3289             | 19-06-20    |
| 661  | Ash                     | 15       | 30       | Dying ash tree                                       | knothole on north side, woodpecker hole to S, compression fork    | none      | High              | 3290             | 19-06-20    |
| 662  | Aspen and ash           | 30       | 30 to 80 | woodland mainly covered but potential roost features |   | none      | High              | 3290             | 19-06-20    |
| 663  | White willow            | 28       | 120      |  | large cavity 12m high on west side, minor dead wood and ivy cover | none      | High              | 3291             | 19-06-20    |
| 664  | Grey poplar             |          |          |  | pruning cut hole 10m high on south side                           | none      | Med               | 3292             | 19-06-20    |
| 665  | 2 x native black poplar | 30       | 150      | veteran trees  | many features holes, bark fissures, decay,                        | none      | High              | 3293, 3295, 3296 | 19-06-20    |



| Name  | Feature/Species        | Height m | DBH cm   | Description                                    | PRF Description   | Bat signs | Roost Suitability | Photo ref:  | Date / Time |
|---|------------------------|----------|----------|--|---|-----------|-------------------|-------------|-------------|
|   |                        |          |          |  | minor butt rot, trunk cavities  |           |                   |             |             |
| 666   | Broadleaved plantation |          |          | multiple trees and potential roosting features |   | none      | High              | 3297        | 19-06-20    |
| <b>Burwell National Grid substation Extension</b> |                        |          |          |  |   |           |                   |             |             |
| 1   | field maple            | 15       | 20 to 30 | 6 young trees                                  | No features visible, but some ivy cover potentially obscuring roosting features | none      | Low               | 2221        | 24-08-20    |
| 2   | ash                    | 20       | 70       | single standard tree                           | Hazard beams, a few crevices under the ivy                                      | none      | Moderate          | 2222        | 24-08-20    |
| 3   | white willow           | 30       | 110      | single standard tree                           | Split trunk 10m high with potential feature, a few bark crevices                | none      | Moderate          | 2223        | 24-08-20    |
| 4   | crack willow           | 30       | 100      | single standard tree                           | A few minor crevices possible hidden under ivy.                                 | none      | Moderate          | 2224        | 24-08-20    |
| 5   | ash                    | 25       | 90       | single standard tree                           | Crevices possible hidden under dense ivy, some dead wood high up on boughs.     | none      | High              | 2225 & 2226 | 24-08-20    |

| Name | Feature/Species              | Height m | DBH cm   | Description  | PRF Description  | Bat signs | Roost Suitability | Photo ref:  | Date / Time |
|------|------------------------------|----------|----------|--|--|-----------|-------------------|-------------|-------------|
| 6    | ash                          | 25       | 90       | single twin stemmed tree                           | Crevices possible hidden under dense ivy, some pruning cut decay low down (c.3m) with suitability. | none      | High              | 2227 & 2228 | 24-08-20    |
| 7    | ash                          | 20-25    | 20 to 40 | 3 x semi-mature ash trees                          | A few minor crevices possible hidden under ivy.  | none      | Low               | 2229        | 24-08-20    |
| 8    | Elm (Ulmus minor agg.)       | 22       | 70       | single standard tree                               | Crevices possible hidden under dense ivy, some dead wood high up in canopy.                        | none      | High              | 2230        | 24-08-20    |
| 9    | line of various trees        | n/a      | n/a      | 14 mature trees with white willow, maple, sycamore | Many ivy covered and dead wood on willows. Low to High suitability                                 | none      | High              | 2231 & 2232 | 24-08-20    |
| 10   | line of field maple          | 15       | 30 to 40 | 6 x semi-mature field maple                        | negligible to low no obvious features  | none      | Low               | 2233        | 24-08-20    |
| 11   | sycamore woodland            | 15 to 20 | 5 to 30  | approx. 25 to 30 young to semi-mature trees        | No obvious features, minor dead wood and some ivy cover  | none      | Low               | 2234        | 24-08-20    |
| 12   | line of sycamore and weeping | 15 to 20 | 20 to 60 | 16 tree mainly comprising semi-                    | A few potential decay features   | none      | Moderate          | 2235        | 24-08-20    |

| Name | Feature/Species              | Height m | DBH cm   | Description   | PRF Description   | Bat signs | Roost Suitability | Photo ref:  | Date / Time |
|------|------------------------------|----------|----------|---|---|-----------|-------------------|-------------|-------------|
|      | willow (Salix x sepulcralis) |          |          | mature/mature sycamore  | particularly on the willow.   |           |                   |             |             |
| 13   | line of sycamore             | 15       | 30 to 40 | 11 semi-mature sycamore   | No obvious features negligible to low   | none      | Low               | 2236        | 24-08-20    |
| 14   | line of willow and poplars   | 15-20    | 5 to 30  | >30 trees/scrub with hybrid black poplar and hybrid crack willow                  | No obvious features negligible to low   | none      | Low               | 2237        | 24-08-20    |
| 15   | woodland                     | 15 to 25 | 30 to 60 | Mature and semi-mature white willow/hybrid crack willow, sycamore and field maple | Willow with high suitability based on vertical split, dead wood and hole 2m. Other trees negligible suitability | none      | High              | 2238        | 24-08-20    |
| 16   | white willow                 | 25       | 100      | single standard tree  | dead wood high up with a minor crevice  | none      | Moderate          | 2239        | 24-08-20    |
| 17   | woodland                     | 20       | 30 to 50 | 10 sycamore, alder and willow trees   | Minor crevice features, nothing obvious but dense ivy cover in places. Negligible to Moderate suitability       | none      | Moderate          | 2249        | 24-08-20    |
| 18   | line of ash trees            | 15 to 20 | 30 to 50 | 15 ash trees  | Dead and live ivy, one tree   | none      | Moderate          | 2250 & 2251 | 24-08-20    |

| Name                  | Feature/Species    | Height m | DBH cm   | Description  | PRF Description  | Bat signs | Roost Suitability | Photo ref: | Date / Time |
|-----------------------|--------------------|----------|----------|--|--|-----------|-------------------|------------|-------------|
|                       |                    |          |          |  | with callus hole in young bough (see photo 2251). Negligible to Moderate suitability                                 |           |                   |            |             |
| 19                    | building           | n/a      | n/a      | Livestock shelter, breeze block, metal roof.                         | No signs or features for roosting bats   | none      | Negligible        | 2252       | 24-08-20    |
| 20                    | hedgerow           | n/a      | n/a      | mature hedges with some standard trees including field maple and ash | No obvious features negligible to low  | none      | Low               | 2255       | 24-08-20    |
| 21                    | line of mature ash | 20       | 30 to 50 | 4 ash trees  | Some dead wood on boughs on south side, lots of ivy cover obscuring potential features, moderate to high suitability | none      | High              | 2256       | 24-08-20    |
| 22                    | hedgerow           | n/a      | n/a      | Managed hedge dominated by hawthorn                                  | no suitable roosting features  | none      | Negligible        | 2253       | 24-08-20    |
| Grid Connection Route |                    |          |          |  |  |           |                   |            |             |

| Name | Feature/Species                         | Height m | DBH cm | Description                | PRF Description  | Bat signs | Roost Suitability | Photo ref: | Date / Time |
|------|---|----------|--------|----------------------------|--|-----------|-------------------|------------|-------------|
| 1077 | Woodland copse, goat willow, blackthorn | 5        | 10-20  | 3 trees                    | Minor cracks and compression fork unsuitable for roosting                              | none      | Negligible        | 3848       | 19-05-21    |
| 1078 | Hybrid willow crack                     | 20       | 50     | Twin-stemmed tree          | Small hole 12m high on trunk north side  | none      | Moderate          | 3849       | 19-05-21    |
| 1079 | Hybrid willow crack                     | 15       | 100    | Old pollard                | Minor flaking bark, Ivy cover, nothing highly suitable but ivy obscuring most of trunk | none      | Moderate          | 3852       | 19-05-21    |
| 1080 | Hybrid willow crack                     | 25       | 120    | Old/veteran tree           | Deep fissures, flaking/lifting bark, decay/knot holes on limbs                         | none      | High              | 3853       | 19-05-21    |
| 1081 | Hybrid willow crack                     | 20       | 120    | Old/veteran tree           | Deep fissures, flaking/lifting bark, decay/knot holes on limbs                         | none      | High              | 3854       | 19-05-21    |
| 1082 | Hybrid willow crack                     | 15       | 130    | Old/veteran pollarded tree | Deep fissures, flaking/lifting bark, cavity on north side                              | none      | High              | 3855       | 19-05-21    |

| Name | Feature/Species | Height m | DBH cm | Description  | PRF Description   | Bat signs | Roost Suitability | Photo ref: | Date / Time |
|------|-----------------|----------|--------|--|---|-----------|-------------------|------------|-------------|
| 1083 | Line of trees   | 10-20    | 10-30  | c.20 trees: Ash, sycamore, bird cherry,  | No features, pruned and well spaced   | none      | Negligible        | 3856       | 19-05-21    |
| 1084 | Line of trees   | 5-10     | 10-20  | 5 trees: Rowan, Norway maple, bird cherry                                      | No features, young trees joining to hedge   | none      | Negligible        | 3857       | 19-05-21    |
| 1085 | Building        |          |        | 20x30m open fronted barn   | Limited suitability behind timber beams but exposed and poorly insulated, barn owl roosting signs | none      | Low               | 3858, 3859 | 19-05-21    |
| 1086 | Ash             | 15       | 50     | Standard tree  | No signs  | none      | Negligible        | 3861       | 19-05-21    |
| 1087 | Line of trees   | 15       | 50-70  | Horse chestnut and ash, 8 trees within site                                    | Minor bark fissures, some ivy cover.  | none      | Negligible to Low | 3862, 3863 | 19-05-21    |
| 1088 | Woodland        | 5-10     | 5-20   | Young plantation woodland with Hazel, Common hawthorn, willow and bird cherry. | None  | none      | Negligible        | 3864       | 19-05-21    |
| 1089 | Woodland        | 5-25     | 10-60  | Plantation woodland with Hybrid crack willow, common                           | Minor crevices on horse chestnut  | none      | Negligible to Low | 3865, 3866 | 19-05-21    |

| Name | Feature/Species          | Height m | DBH cm | Description  | PRF Description                                    | Bat signs | Roost Suitability | Photo ref: | Date / Time |
|------|--------------------------|----------|--------|--|--|-----------|-------------------|------------|-------------|
|      |                          |          |        | hawthorn, horse chestnut and alder. c.30 trees within site.  |  |           |                   |            |             |
| 1090 | Woodland                 | n/a      | n/a    | Mature plantation woodland adjacent with estimated 200-300 trees, willow, hawthorn, alder, ash and sycamore. | Not accessed but many suitable roost features.     | none      | High              | 3869, 3870 | 19-05-21    |
| 1091 | Line of trees and hedges | 5-20     | 10     | Young trees; Common hawthorn, oak, ash, hazel and field maple  | None   | none      | Negligible        | 3871       | 19-05-21    |
| 1092 | Woodland                 | 10-25    | 10-50  | Broad-leaved semi-natural woodland strip with 100 to 150 trees; ash, elm and oak                             | Standing dead trees, numerous holes and features   | none      | High              | 3875, 3876 | 20-05-21    |
| 1093 | Woodland                 | Up to 25 | 10-70  | Broad-leaved semi-natural woodland with c.30 mature trees  | Numerous, splits, cracks, knot holes and ivy cover | none      | High              | 3878       | 20-05-21    |
| 1094 | Ash                      | 20       | 15-20  | Multi-stemmed tree   | None   | none      | Negligible        | n/a        | 20-05-21    |

| Name | Feature/Species        | Height m | DBH cm | Description   | PRF Description  | Bat signs | Roost Suitability | Photo ref: | Date / Time |
|------|------------------------|----------|--------|---|--|-----------|-------------------|------------|-------------|
| 1095 | Line of trees          | 10-20    | 10-20  | Ash and willow and scrub, c.20 young trees                          | One compression joint, limited features                                    | none      | Negligible to Low | 3879       | 20-05-21    |
| 1096 | Beech                  | 25       | 80     | Two standard trees  | Numerous holes at various angles in branches high up in canopy             | none      | High              | n/a        | 20-05-21    |
| 1097 | Woodland               | 10-15    | 5-20   | Young plantation with 80 to 100 trees on site with alder and willow | No features, not all inspected in detail but young trees and lack features | none      | Negligible to Low | n/a        | 21-5-21     |
| 1098 | Hybrid willow crack    | 25       | 30-50  | Multi-stemmed tree  | Vertical subsidence cracks, minor callus folds around dead branches        | none      | Moderate          | 3886       | 21-5-21     |
| 1099 | Woodland               | 15-25    | 10-40  | 15 trees young and mature   | Minor decay holes only   | none      | Negligible to Low | 3887       | 21-5-21     |
| 1100 | Line of trees in hedge | 12       | 10-30  | Hedge with 6 standard sycamore trees                                | No features  | none      | Negligible        | 3888       | 21-5-21     |
| 1101 | Woodland               | 20       | 10-30  | Mixed plantation c100-150 trees dominated by                        | Not surveyed in detail, but no obvious features as                         | none      | Negligible to Low | 3889       | 21-5-21     |



| Name | Feature/Species | Height m | DBH cm   | Description   | PRF Description   | Bat signs | Roost Suitability | Photo ref: | Date / Time |
|------|-----------------|----------|----------|---|---|-----------|-------------------|------------|-------------|
|      |                 |          |          | Corsican pine and beech   | mostly young trees  |           |                   |            |             |
| 1102 | Woodland        | 10       | 10-20    | Young plantation and scrub with hornbeam, oak, ash and field maple    | No features   | none      | Negligible        | 3890       | 21-5-21     |
| 1103 | Line of trees   | 10       | 20-30    | Six beech trees   | No features   | none      | Negligible        | 3891       | 21-5-21     |
| 1117 | Line of trees   | 15-20    | 20-40    | c.40 trees up to 40 years old planted along driveway, common lime     | A few minor crevices from pruning cut but nothing suitable              | none      | Negligible to Low | 3995       | 1-6-21      |
| 1118 | Woodland        | 20       | 10-30    | 250 to 300 trees up to 30 years old; Scot's pine, oak, maple.         | No obvious features young trees, not surveyed in detail.                | none      | Negligible to Low | 3996       | 1-6-21      |
| 1119 | Ash             | 20       | 40       | Standard tree isolated in middle of a livestock field                 | Not accessed close due to livestock in field but no visible features    | none      | Negligible        | 4001       | 1-6-21      |
| 1120 | Woodland        | 20       | 10 to 50 | c.100 mature and semi-mature trees with ash, oak, Scot's pine and elm | Not surveyed in detail but mature woodland with numerous roost features | none      | High              | 4002       | 1-6-21      |

| Name | Feature/Species     | Height m | DBH cm   | Description   | PRF Description   | Bat signs | Roost Suitability | Photo ref: | Date / Time |
|------|---------------------|----------|----------|---|---|-----------|-------------------|------------|-------------|
| 1121 | Woodland            | 20       | 10 to 50 | c.100 mature and semi-mature trees with ash, oak, elm and scrub | Not surveyed in detail but mature woodland with numerous roost features   | none      | High              | 4003       | 1-6-21      |
| 1122 | Ash                 | 20       | 50       | 2 x standard trees next to each other                           | Thick ivy cover and small holes on one tree high up on North facing bough   | none      | Moderate          | 4004       | 1-6-21      |
| 1123 | Ash                 | 20       | 50       | Standard tree   | No features, ivy cover may obscure limited features   | none      | Low               | 4005       | 1-6-21      |
| 1124 | Hybrid willow crack | 20       | 60       | Standard tree   | Deep bark fissures, but nothing highly suitable   | none      | Low               | 4006       | 1-6-21      |
| 1125 | Line of trees       | 15-20    | 10-40    | c.100 trees with Scot's pine, Corsican pine, beech, sycamore    | Mostly Negligible suitability, with some possible features on Corsican pines at northern end of line obscured by thick ivy. | none      | Moderate          | 4008       | 1-6-21      |
| 1126 | Line of trees       | 20       | 50-80    | 7 trees with oak, beech, sycamore                               | Compression fork, various small knots   | none      | High              | 4009       | 1-6-21      |

| Name | Feature/Species  | Height m | DBH cm | Description  | PRF Description   | Bat signs | Roost Suitability | Photo ref: | Date / Time |
|------|------------------|----------|--------|--|---|-----------|-------------------|------------|-------------|
|      |                  |          |        |  | holes, thick ivy in places  |           |                   |            |             |
| 1127 | Line trees/hedge | 15-20    | 10-30  | c.12 trees with beech, elm, field maple and common hawthorn  | No features   | none      | Negligible        | 4012       | 1-6-21      |
| 1128 | Woodland         |          |        | Broad-leaved semi-natural woodland with up to 300 trees dominated by oak, sycamore and Scot's pind | Not surveyed in detail but mature woodland with numerous roost features | none      | High              | 4013       | 1-6-21      |

**Table D-2: Emergence / Re-entry Survey Results (see Figure 2)**

| Roost Feature              | Surveyor(s)                   | Date                   | Sunset/rise | Start     | Finish              | Equipment   |
|----------------------------|-------------------------------|------------------------|-------------|-----------|---------------------|---|
| T3 / T4                    | AJB                           | 25/08/21               | 20:03       | 19:48     | 21:33               | Pettersson D240x,<br>Anabat Express                                     |
| Weather                    | Rain                          | Wind                   | Temp start  | Temp end  | Cloud               | Verified  |
| Dry, cloudy,<br>light wind | 0                             | F1                     | 17          | 17        | 8/8                 |   |
| Ref                        | Time                          | Species                | No. of bats | Recording | Emerged/re-entered? | Description   |
| 1                          | 20:11                         | Common Pip             | 1           | No        | No                  | Flew from behind vp, low (c4-5m) towards T3/T4 and round corner of road |
| 2                          | 20:14                         | Common Pip             | 1           | No        | YES                 | Flew high from T3 direction, over to south                              |
| 3                          | 20:18                         | Soprano Pip            | 1           | Yes       | No                  | Flew low into T3  |
| 4                          | 20:20                         | Common Pip             | 1           | Yes       | No                  | Low flight  |
| 5                          | 20:22 – 20:32                 | Common and Soprano Pip | 2           | Yes       | No                  | 2 x bats, multiple passes   |
| 6                          | 20:34, 20:36, 20:38 and 20:40 | Common Pip             | 1           | Yes       | No                  | Heard, not seen   |
| 7                          | 20:43                         | Soprano Pip            | 1           | Yes       | No                  | Heard, not seen   |
| 8                          | 20:46 – 21:33                 | Common and Soprano Pip | 1-2         | Yes       | No                  | Heard, not seen. Multiple passes of both species                        |
| 9                          | 21:07 and 21:21               | Noctule                | 1           | Yes       | No                  | Heard, not seen   |

| Roost Feature           | Surveyor(s)            | Date                   | Sunset/rise | Start     | Finish              | Equipment                        |
|-------------------------|------------------------|------------------------|-------------|-----------|---------------------|----------------------------------|
| T8 / T9                 | AJB                    | 26/08/21               | 20:01       | 19:46     | 21:10               | Pettersson D240x, Anabat Express |
| Weather                 | Rain                   | Wind                   | Temp start  | Temp end  | Cloud               | Verified                         |
| Dry, cloudy, light wind | 0 then rain from 21:12 | F2-3                   | 16          | 16        | 8/8                 |                                  |
| Ref                     | Time                   | Species                | No. of bats | Recording | Emerged/re-entered? | Description                      |
| 1                       | 20:26                  | Common Pip             | 1           | Yes       | No                  | Flew from behind vp, c5m west    |
| 2                       | 20:29                  | Pip sp.                | 1           | No        | No                  | Faint call, brief and not seen   |
| 3                       | 20:36/20:37            | Common Pip             | 1           | Yes       | No                  | Heard, not seen                  |
| 4                       | 20:38/20:39            | Common Pip             | 1           | Yes       | No                  | Multiple passes                  |
| 5                       | 20:40 and 20:42        | Soprano Pip            | 1           | Yes       | No                  | Heard, not seen                  |
| 6                       | 20:47 to 21:04         | Common and Soprano Pip | 1-2         | Yes       | No                  | Multiple passes by 1-2 bats      |

| Roost Feature              | Surveyor(s)  | Date        | Sunset/rise | Start     | Finish              | Equipment   |
|----------------------------|--|-------------|-------------|-----------|---------------------|---|
| T3 / T4                    | AJB  | 27/08/21    | 06:01       | 04:31     | 06:16               | Pettersson D240x,<br>Anabat Express   |
| Weather                    | Rain   | Wind        | Temp start  | Temp end  | Cloud               | Verified  |
| Dry, cloudy,<br>light wind | 0  | F1-2        | 13          | 13        | 8/8                 |   |
| Ref                        | Time   | Species     | No. of bats | Recording | Emerged/re-entered? | Description   |
| 1                          | 04:28  | Soprano Pip | 1           | Yes       | No                  | Brief   |
| 2                          | 04:46 and 04:47  | Common Pip  | 1           | Yes       | No                  | Brief   |
| 3                          | 04:53  | Soprano Pip | 1           | Yes       | No                  | Brief   |
| 4                          | 05:00 and 05:03  | Common Pip  | 1           | Yes       | No                  | Brief   |
| 5                          | 05:07, 05:08, 05:09, 05:10, 05:14, 05:15, 05:23, 05:32 | Soprano Pip | 1           | Yes       | YES                 | Seen at canopy level<br>of T3, flying in and<br>out, thought to re-<br>enter T3 |

| Roost Feature           | Surveyor(s)     | Date                            | Sunset/rise | Start     | Finish                             | Equipment  |
|-------------------------|-----------------|---------------------------------|-------------|-----------|------------------------------------|--|
| T8 / T9                 | AJB             | 01/09/21                        | 19:47       | 19:32     | 21:07 -too dark to see after 21:00 | Pettersson D240x, Anabat Express                 |
| Weather                 | Rain            | Wind                            | Temp start  | Temp end  | Cloud                              | Verified   |
| Dry, cloudy, light wind | 0               | F2                              | 16          | 16        | 8/8                                |  |
| Ref                     | Time            | Species                         | No. of bats | Recording | Emerged/re-entered?                | Description                                      |
| 1                       | 20:19           | Serotine or Noctule / Leisler's | 1           | Yes       | No                                 | Brief, not seen                                  |
| 2                       | 20:21           | Soprano Pip                     | 1           | Yes       | No                                 | Flew low, c2-3m height from behind vp            |
| 3                       | 20:22           | Serotine                        | 1           | Yes       | No                                 | Flew west along road, c5m height                 |
| 4                       | 20:24           | Common Pip                      | 2           | Yes       | No                                 | 2x bats flying around Weir's Drove, feeding buzz |
| 5                       | 20:27           | Soprano Pip                     | 1           | Yes       | No                                 | Brief, not seen                                  |
| 6                       | 20:29-20:51     | Common Pip                      | 1-2         | Yes       | No                                 | Multiple passes                                  |
| 7                       | 20:53 and 20:57 | Soprano Pip                     | 1           | Yes       | No                                 |  |
| 8                       | 20:58           | Common Pip                      | 1           | Yes       | No                                 | Heard, not seen                                  |
| 9                       | 21:01           | Soprano Pip                     | 1           | Yes       | No                                 | Heard, not seen                                  |

| Roost Feature        | Surveyor(s)     | Date                   | Sunset/rise | Start     | Finish              | Equipment  |
|----------------------|-----------------|------------------------|-------------|-----------|---------------------|--|
| T3 / T4              | AJB             | 02/09/21               | 19:45       | 19:30     | 21:15               | Pettersson D240x, Anabat Express                           |
| Weather              | Rain            | Wind                   | Temp start  | Temp end  | Cloud               | Verified   |
| Dry, cloudy, no wind | 0               | 0                      | 17          | 17        | 8/8                 |  |
| Ref                  | Time            | Species                | No. of bats | Recording | Emerged/re-entered? | Description  |
| 1                    | 19:46 and 19:58 | Common Pip             | 1           | Yes       | No                  | Heard, not seen  |
| 2                    | 20:02           | Common Pip             | 1           | Yes       | YES                 | Emergence from T3, half-way up tree                        |
| 3                    | 20:03 and 20:04 | Common Pip             | 2           | Yes       | No                  | One flew from behind T3/T4, one flew into T3               |
| 4                    | 20:07           | Soprano Pip            | 1           | Yes       | No                  | Heard, not seen  |
| 5                    | 20:09 to 20:59  | Soprano and Common Pip | 1-2         | Yes       | No                  | Multiple passes from both species, occasional feeding buzz |



| Roost Feature                      | Surveyor(s)     | Date        | Sunset/rise | Start     | Finish              | Equipment  |
|------------------------------------|-----------------|-------------|-------------|-----------|---------------------|--|
| South side of Newnham Drove T9 gap | AJB             | 03/09/21    | 06:13       | 04:48     | 06:28               | Pettersson D240x, Anabat Express                               |
| Weather                            | Rain            | Wind        | Temp start  | Temp end  | Cloud               | Verified   |
| Dry, cloudy, no wind               | 0               | 0           | 15          | 15        | 8/8                 |  |
| Ref                                | Time            | Species     | No. of bats | Recording | Emerged/re-entered? | Description  |
| 1                                  | 04:50 to 05:43  | Common Pip  | 1-2         | Yes       | No                  | Multiple passes up and down Drove by 1-2 bats. Last seen 05:43 |
| 2                                  | 05:33           | Soprano Pip | 1-2         | Yes       | No                  | Multiple passes up and down Drove by 1-2 bats                  |
| 3                                  | 05:41 to 05:43  | Soprano Pip | 1-2         | Yes       | No                  | Multiple passes up and down Drove by 1-2 bats                  |
| 4                                  | 05:47 and 05:49 | Common Pip  | 1           | Yes       | No                  | Last sightings of CP   |

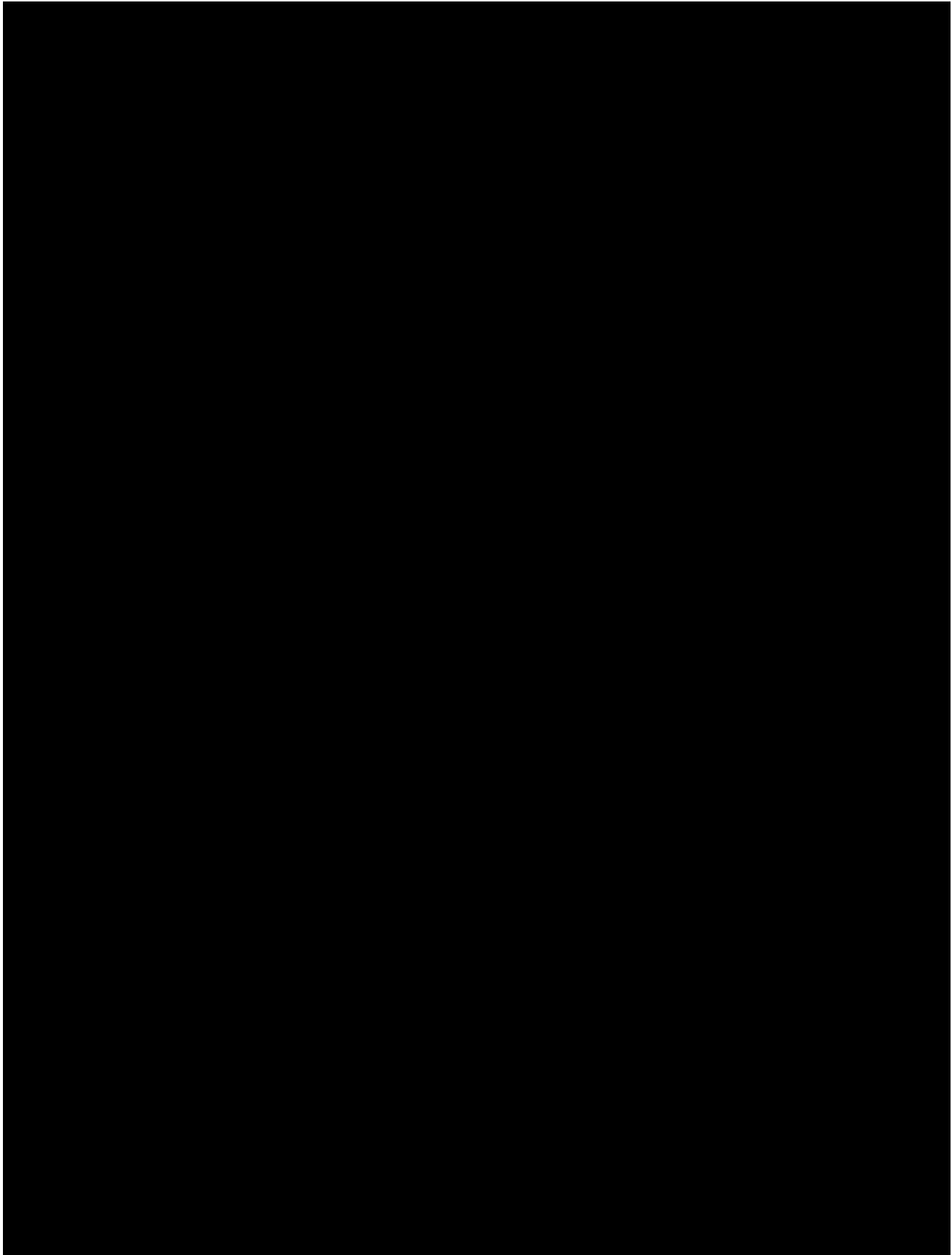
| Roost Feature          | Surveyor(s)                    | Date                       | Sunset/rise | Start     | Finish                                  | Equipment   |
|------------------------|--------------------------------|----------------------------|-------------|-----------|---|---|
| T8 / T9                | AJB                            | 06/09/21                   | 19:36       | 19:21     | 20:45 (too dark to see after this time) | Pettersson D240x, Anabat Express                                  |
| Weather                | Rain                           | Wind                       | Temp start  | Temp end  | Cloud                                   | Verified  |
| Dry, no cloud, no wind | 0                              | F1                         | 24          | 24        | 0                                       |   |
| Ref                    | Time                           | Species                    | No. of bats | Recording | Emerged/re-entered?                     | Description   |
| 1                      | 19:45 and 19:46                | Common Pip                 | 1-2         | Yes       | No                                      | Flying at canopy height over road. Didn't see any emergence       |
| 2                      | 19:53                          | Common Pip                 | 1           | Yes       | No                                      | Multiple passes, flying n and out of Willow tree                  |
| 3                      | 19:54                          | Soprano Pip                | 1           | Yes       | YES                                     | Multiple passes with Common Pip and appeared to emerge from 'T22' |
| 4                      | 20:01 and 20:04                | Soprano Pip                | 1           | Yes       | No                                      | Multiple passes at canopy height                                  |
| 5                      | 20:06 to 20:08 and until 20:40 | Soprano Pip and Common Pip | 2           | Yes       | No                                      | Multiple passes   |
| 6                      | 20:10                          | Unknown                    | 1           | Yes       | No                                      | Heard, not seen   |
| 7                      | 20:16/20:17                    | Serotine and Common Pip    | 2           | Yes       | No                                      | Two bats flew down road   |

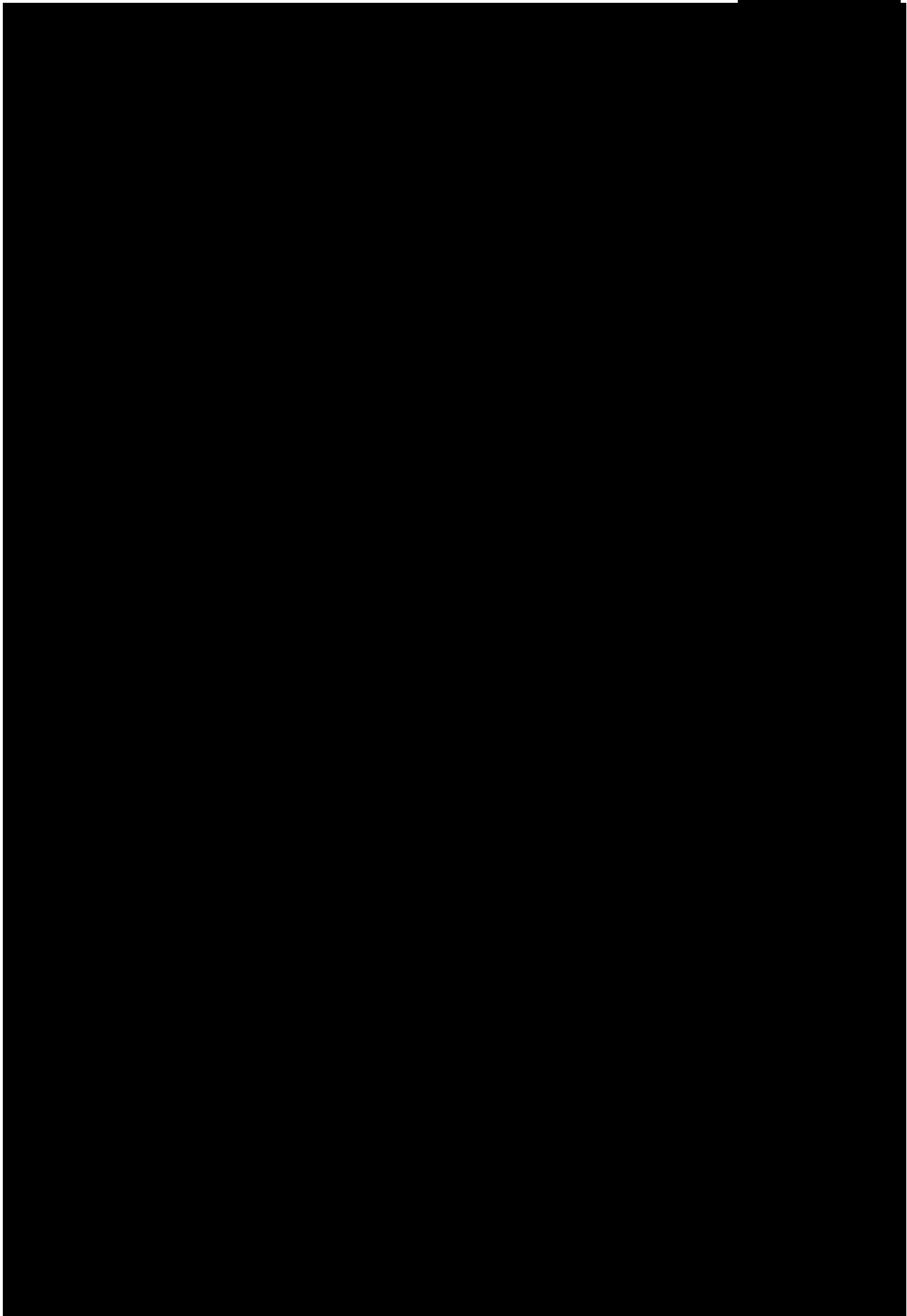
| Roost Feature              | Surveyor(s)                    | Date                            | Sunset/rise | Start     | Finish                                  | Equipment                        |
|----------------------------|--------------------------------|---------------------------------|-------------|-----------|---|----------------------------------|
| White willow east of T4    | AJB                            | 08/09/21                        | 19:32       | 19:17     | 20:45 (too dark to see after this time) | Pettersson D240x, Anabat Express |
| Weather                    | Rain                           | Wind                            | Temp start  | Temp end  | Cloud                                   | Verified                         |
| Dry, no cloud, little wind | 0                              | F1                              | 24          | 24        | 1/8                                     |                                  |
| Ref                        | Time                           | Species                         | No. of bats | Recording | Emerged/re-entered?                     | Description                      |
| 1                          | 19:54/19:55                    | Common Pip                      | 1           | Yes       | No                                      | Brief, not seen                  |
| 2                          | 19:56                          | Unknown                         | 1           | No        | No                                      | Flew east to west behind T4      |
| 3                          | 20:02                          | Serotine or Noctule / Leisler's | 1           | Yes       | No                                      | Heard, not seen                  |
| 4                          | 20:06/20:07                    | Common Pip                      | 1           | Yes       | No                                      | Flying low (c5m) around tree     |
| 5                          | 20:08 to 20:11 and until 20:26 | Common Pip                      | 2           | Yes       | No                                      | Multiple passes                  |
| 6                          | 20:11 until 20:22              | Soprano Pip                     | 1           | Yes       | No                                      | Multiple passes, not seen        |

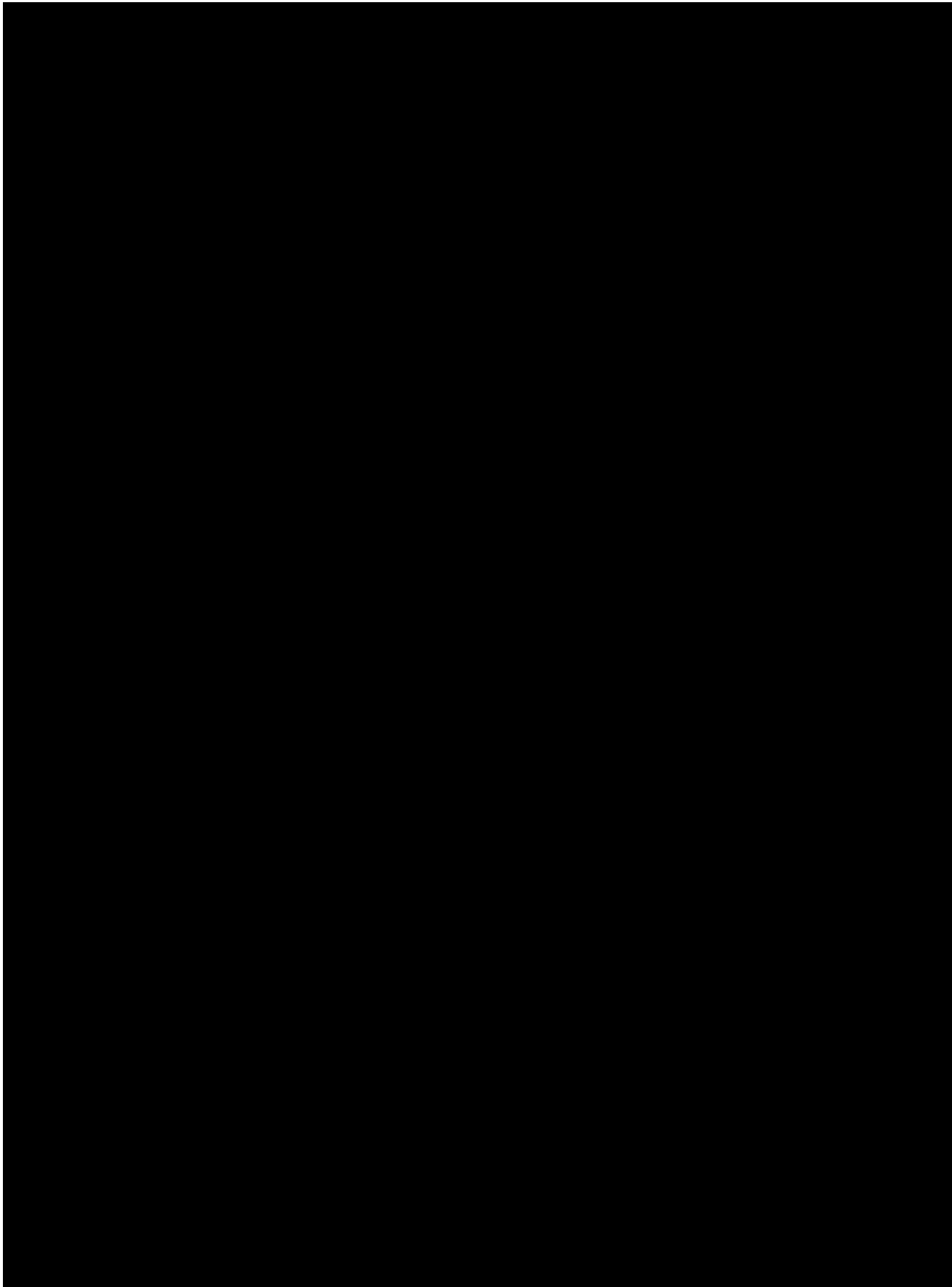
| Roost Feature   | Surveyor(s) | Date                  | Sunset/rise | Start     | Finish                                  | Equipment                        |
|---|-------------|-----------------------|-------------|-----------|---|----------------------------------|
| Group of Sycamores are very western end of Newnham Drover | AJB         | 13/09/21              | 19:18       | 19:03     | 20:18 (too dark to see after this time) | Pettersson D240x, Anabat Express |
| Weather   | Rain        | Wind                  | Temp start  | Temp end  | Cloud                                   | Verified                         |
| Dry, no cloud, little wind                                | 0           | 0                     | 21          | 21        | 0                                       |                                  |
| Ref   | Time        | Species               | No. of bats | Recording | Emerged/re-entered?                     | Description                      |
| 1   |             | Nothing seen or heard |             |           |   |                                  |

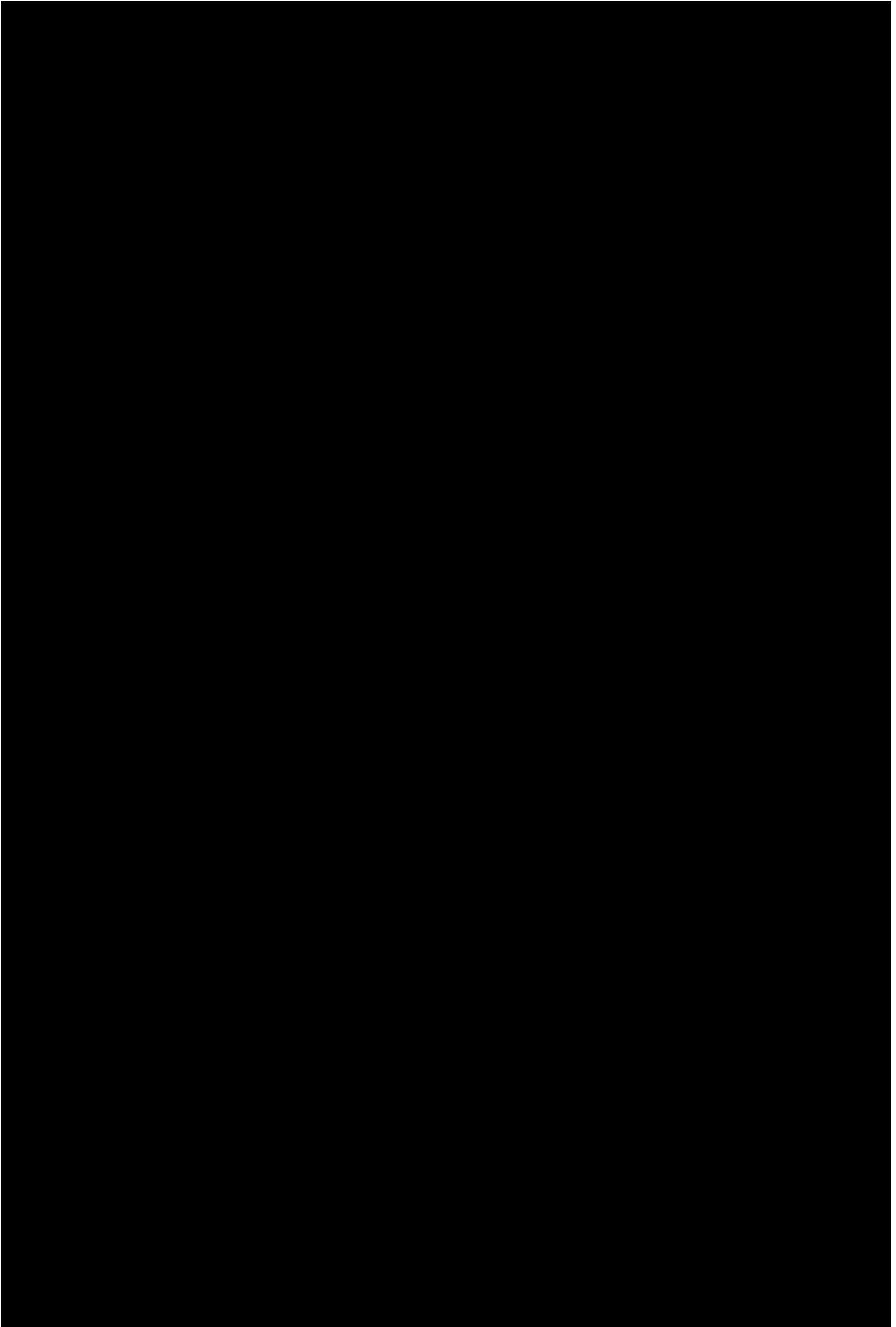
| Roost Feature              | Surveyor(s)         | Date                      | Sunset/rise | Start     | Finish              | Equipment                        |
|----------------------------|---------------------|---------------------------|-------------|-----------|---------------------|----------------------------------|
| White willow east of T4    | AJB                 | 15/09/21                  | 06:34       | 05:15     | 06:40               | Pettersson D240x, Anabat Express |
| Weather                    | Rain                | Wind                      | Temp start  | Temp end  | Cloud               | Verified                         |
| Dry, no cloud, little wind | 0                   | F1                        | 11          | 11        | 0                   |                                  |
| Ref                        | Time                | Species                   | No. of bats | Recording | Emerged/re-entered? | Description                      |
| 1                          | 05:25               | Common Pip                | 1           | No        | No                  | Not seen, multiple passes        |
| 2                          | 05:25               | Soprano Pip               | 1           | No        | No                  | Not seen, multiple passes        |
| 3                          | 05:36               | Common Pip                | 1           | No        | No                  | Not seen                         |
| 4                          | 05:40, 05:53, 06:00 | 05:44, 05:57, Soprano Pip | 1           | No        | No                  | Multiple passes, not seen        |

## 8D.1 Photographs

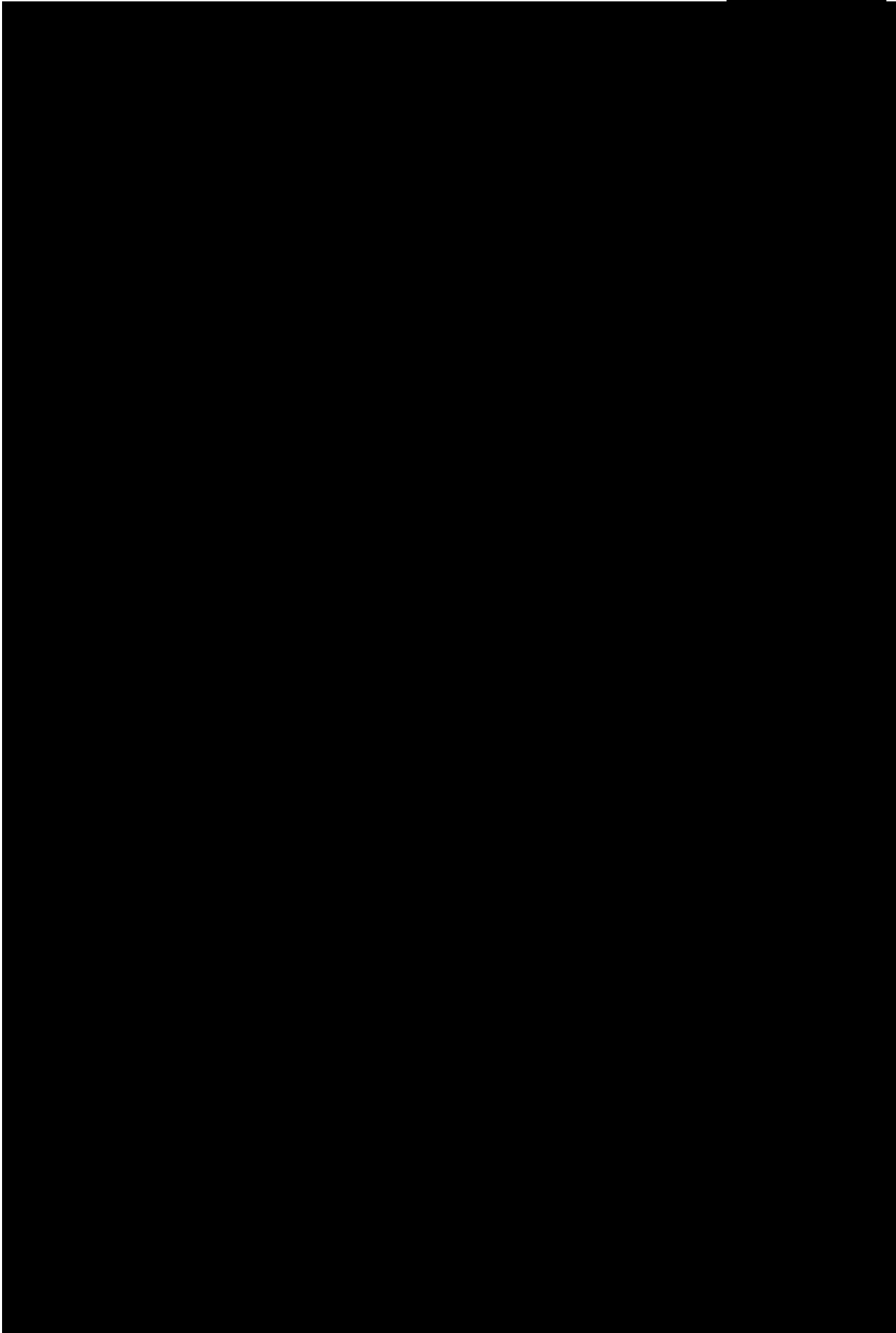


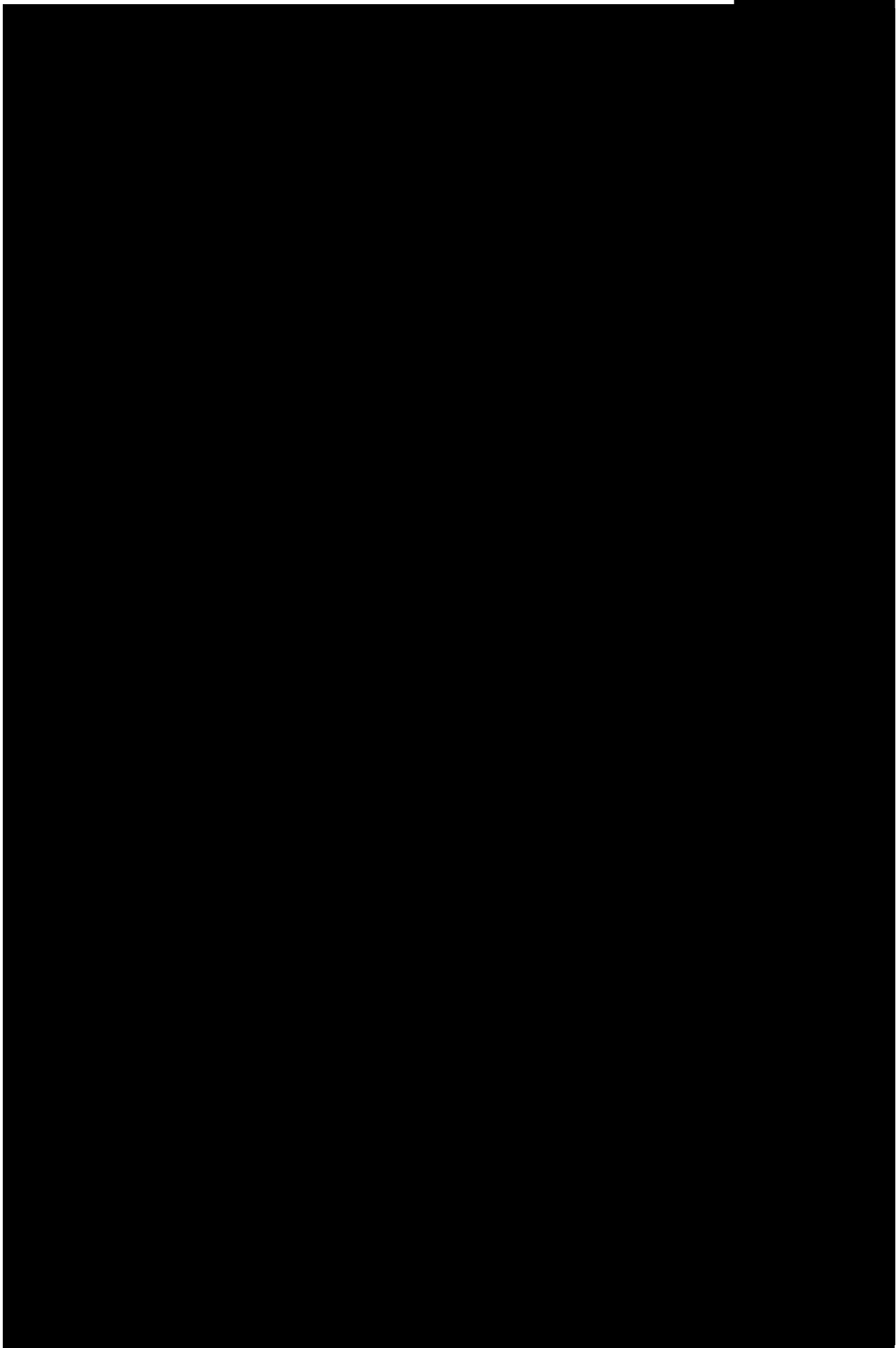


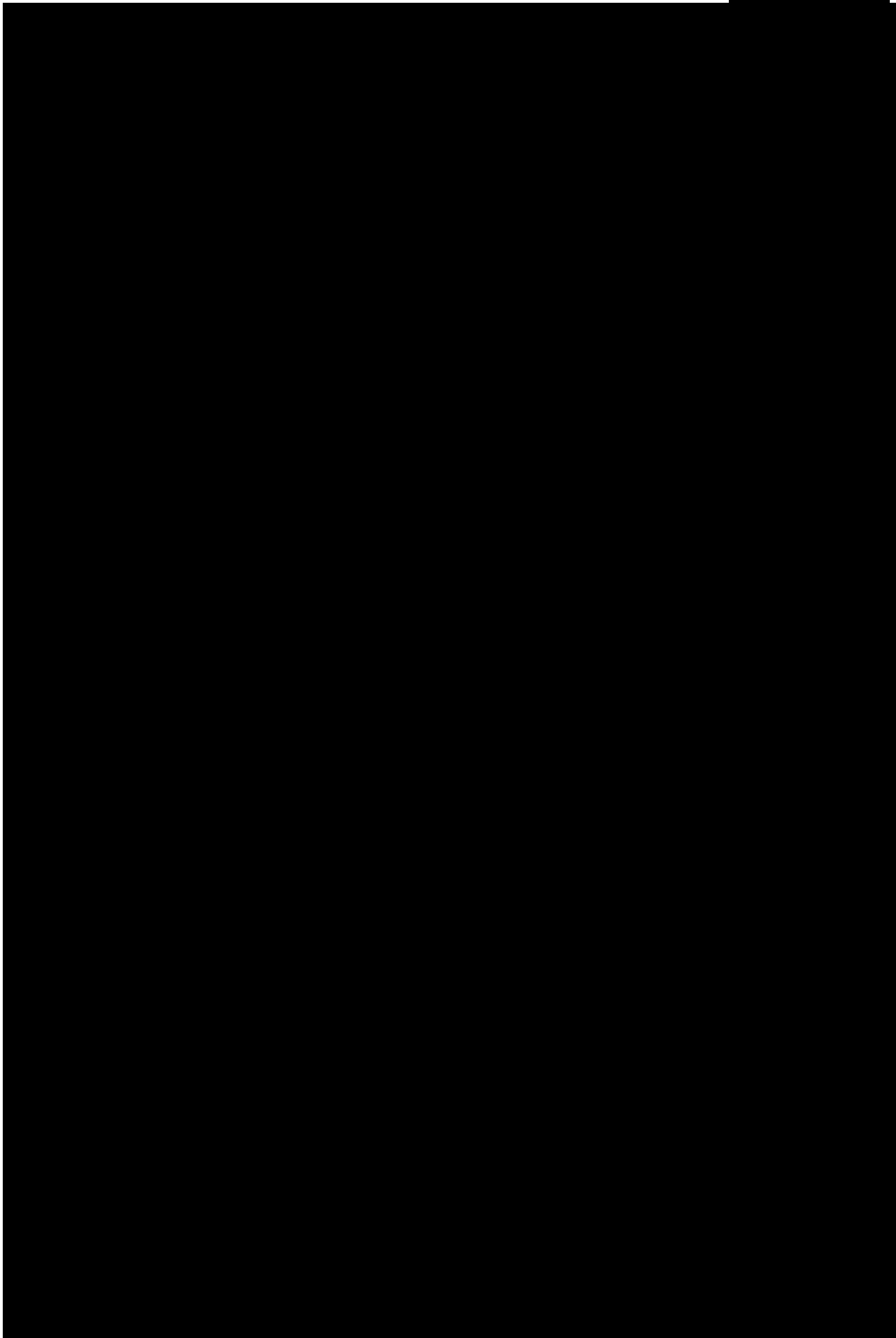


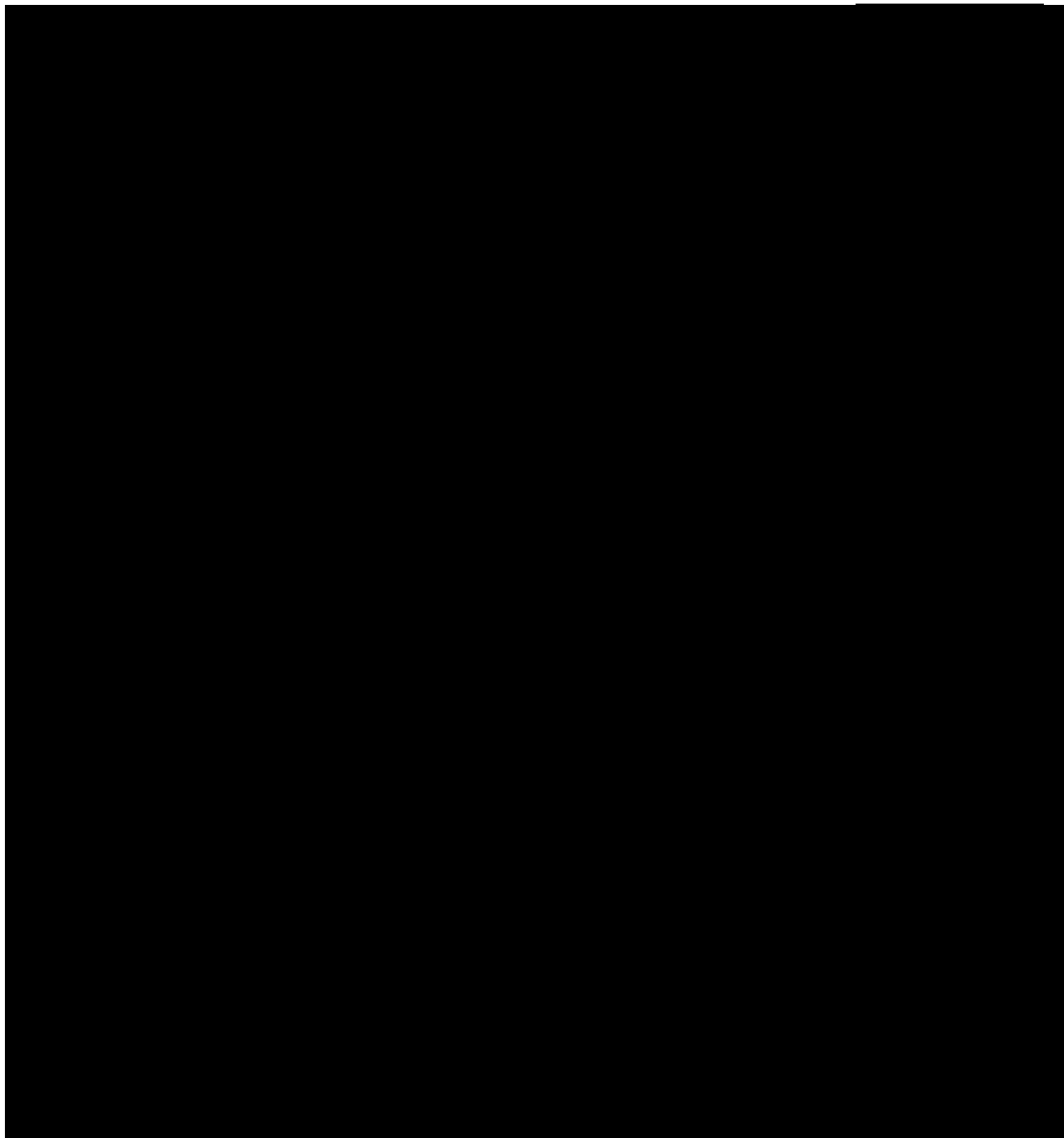












## 8D.2 Bat Activity Survey

**Table D-2: Transect Results**

| Transect | Surveyor | Date     | Sunset/rise   | Start     | Finish   | Equipment                      |
|----------|----------|----------|---------------|-----------|----------|--------------------------------|
| East 1   | MP/SS    | 15-05-19 | 20:47         | 20:47     | 22:58    | Batlogger<br>M/Anabat<br>Scout |
| Weather  | Rain     | Wind     | Temp start    | Temp end  | Cloud    | Verified                       |
| dry/cool | 0        | 2        | 12.5          | 9         | 2        | MP                             |
| Ref      | Time     | Species  | No. of passes | Recording | Emerged? | Description                    |
| 1        | 21:22    | PIPY     | 1             | y         | n        | pass HNS                       |

| Transect | Surveyor | Date       | Sunset/rise | Start | Finish | Equipment                 |
|----------|----------|------------|-------------|-------|--------|---------------------------|
| 2        | 21:25    | PIPY       | 2           | y     | n      | foraging and social calls |
| 3        | 21:29    | PIPI, PIPY | 2           | y     | n      | passing                   |
| 4        | 21:40    | PIPI       | 1           | y     | n      | pass HNS                  |
| 5        | 21:42    | PIPI       | 1           | y     | n      | foraging                  |
| 6        | 22:04    | PIPI       | 1           | y     | n      | foraging                  |
| 7        | 22:24    | PIPI       | 1           | y     | n      | pass HNS                  |
| 8        | 22:27    | PIPI       | 1           | y     | n      | pass HNS                  |

| Transect | Surveyor | Date       | Sunset/rise   | Start     | Finish   | Equipment                |
|----------|----------|------------|---------------|-----------|----------|--------------------------|
| East 2   | MP/SS    | 22-05-19   | 20:57         | 20:45     | 23:00    | Batlogger M/Anabat Scout |
| Weather  | Rain     | Wind       | Temp start    | Temp end  | Cloud    | Verified                 |
| dry/warm | 0        | 1          | 16            | 14        | 4        | MP                       |
| Ref      | Time     | Species    | No. of passes | Recording | Emerged? | Description              |
| 1        | 21:30    | PIPI       | 1             | y         | n        | passing                  |
| 2        | 21:35    | PIPI       | 1             | y         | n        | foraging north to south  |
| 3        | 21:41    | PIPI, NYNO | 2             | y         | n        | passing                  |
| 4        | 21:42    | PIPY       | 1             | y         | n        | passing                  |
| 5        | 21:55    | PIPY       | 1             | y         | n        | foraging along hedge     |
| 6        | 21:57    | PIPY       | 1             | y         | n        | foraging along hedge     |
| 7        | 22:01    | PIPI       | 1             | y         | n        | social calls             |
| 8        | 22:02    | PLAU, PIPY | 2             | y         | n        | foraging                 |
| 9        | 22:23    | PIPI       | 1             | y         | n        | passing HNS              |
| 10       | 22:25    | PIPI       | 1             | y         | n        | passing HNS              |
| 11       | 22:27    | PIPI       | 1             | y         | n        | passing HNS              |
| 12       | 22:31    | BABA       | 1             | y         | n        | passing HNS              |
| 13       | 22:53    | MYSP, PLAU | 2             | y         | n        | passing MYSP max 80kHz   |
| 14       | 22:58    | PIPI       | 1             | y         | n        | passing HNS              |

| Transect | Surveyor | Date     | Sunset/rise   | Start     | Finish   | Equipment                |
|----------|----------|----------|---------------|-----------|----------|--------------------------|
| West 1   | MP/SS    | 23-05-19 | 20:59         | 20:50     | 23:00    | Batlogger M/Anabat Scout |
| Weather  | Rain     | Wind     | Temp start    | Temp end  | Cloud    | Verified                 |
| dry/mild | 0        | 0 to 1   | 18            | 17        | 2        | MP                       |
| Ref      | Time     | Species  | No. of passes | Recording | Emerged? | Description              |
| 1        | 21:37    | NYNO     | 1             | y         | n        | passing HNS              |

| Transect | Surveyor | Date | Sunset/rise | Start | Finish | Equipment         |
|----------|----------|------|-------------|-------|--------|-------------------|
| 2        | 21:43    | NYNO | 1           | y     | n      | faint pass<br>HNS |
| 3        | 21:46    | PIPI | 1           | y     | n      | passing HNS       |
| 4        | 21:48    | PIPY | 1           | y     | n      | foraging          |
| 5        | 21:59    | NYNO | 2           | y     | n      | passing HNS       |
| 6        | 22:06    | NYNO | 1           | y     | n      | passing HNS       |
| 7        | 22:06    | NYNO | 1           | y     | n      | foraging HNS      |
| 8        | 22:08    | PLAU | 2           | y     | n      | foraging          |
| 9        | 22:10    | PIPI | 2           | y     | n      | passing HNS       |
| 10       | 22:16    | PIPY | 1           | y     | n      | passing HNS       |
| 11       | 22:40    | PIPI | 1           | y     | n      | passing HNS       |
| 11       | 22:50    | PIPI | 1           | y     | n      | passing HNS       |

| Transect          | Surveyor | Date        | Sunset/rise   | Start     | Finish   | Equipment                      |
|-------------------|----------|-------------|---------------|-----------|----------|--------------------------------|
| West 2            | MP/SS    | 28-05-19    | 21:05         | 20:58     | 23:00    | Batlogger<br>M/Anabat<br>Scout |
| Weather           | Rain     | Wind        | Temp start    | Temp end  | Cloud    | Verified                       |
| overcast,<br>mild | 0        | 2           | 14            | 12        | 4        | MP                             |
| Ref               | Time     | Species     | No. of passes | Recording | Emerged? | Description                    |
| 1                 | 21:50    | PIPY        | 1             | y         | n        | foraging                       |
| 2                 | 21:51    | PIPI & PIPY | 15            | y         | n        | foraging, c.4<br>bats          |
| 3                 | 21:57    | PIPI & PIPY | 12            | y         | n        | foraging, c.4<br>bats          |
| 4                 | 22:01    | PIPI        | 2             | y         | n        | foraging                       |
| 5                 | 22:14    | PIPI        | 2             | y         | n        | passing                        |
| 6                 | 22:28    | PIPY        | 1             | y         | n        | foraging                       |
| 7                 | 22:45    | MYSP        | 1             | y         | n        | HNS<br>poss.MYDA               |
| 8                 | 22:46    | PIPY        | 2             | y         | n        | passing HNS                    |
| 9                 | 22:50    | PIPY        | 2             | y         | n        | foraging &<br>social calls     |
| 10                | 23:00    | PIPY        | 1             | y         | n        | passing HNS                    |

| Transect | Surveyor | Date     | Sunset/rise   | Start     | Finish   | Equipment                      |
|----------|----------|----------|---------------|-----------|----------|--------------------------------|
| West 1   | MP/SS    | 23-05-19 | 20:59         | 20:50     | 23:00    | Batlogger<br>M/Anabat<br>Scout |
| Weather  | Rain     | Wind     | Temp start    | Temp end  | Cloud    | Verified                       |
| dry/mild | 0        | 0 to 1   | 18            | 17        | 2        | MP                             |
| Ref      | Time     | Species  | No. of passes | Recording | Emerged? | Description                    |
| 1        | 21:37    | NYNO     | 1             | y         | n        | passing HNS                    |

| Transect | Surveyor | Date | Sunset/rise | Start | Finish | Equipment         |
|----------|----------|------|-------------|-------|--------|-------------------|
| 2        | 21:43    | NYNO | 1           | y     | n      | faint pass<br>HNS |
| 3        | 21:46    | PIPI | 1           | y     | n      | passing HNS       |
| 4        | 21:48    | PIPY | 1           | y     | n      | foraging          |
| 5        | 21:59    | NYNO | 2           | y     | n      | passing HNS       |
| 6        | 22:06    | NYNO | 1           | y     | n      | passing HNS       |
| 7        | 22:08    | MYSP | 2           | y     | n      | foraging HNS      |
| 8        | 22:10    | PIPI | 2           | y     | n      | foraging          |
| 9        | 22:16    | PIPY | 2           | y     | n      | passing HNS       |
| 10       | 22:18    | PIPI | 1           | y     | n      | passing HNS       |

| Transect          | Surveyor | Date        | Sunset/rise   | Start     | Finish   | Equipment                      |
|-------------------|----------|-------------|---------------|-----------|----------|--------------------------------|
| West 2            | MP/SS    | 28-05-19    | 21:05         | 20:58     | 23:00    | Batlogger<br>M/Anabat<br>Scout |
| Weather           | Rain     | Wind        | Temp start    | Temp end  | Cloud    | Verified                       |
| overcast,<br>mild | 0        | 2           | 14            | 12        | 4        | MP                             |
| Ref               | Time     | Species     | No. of passes | Recording | Emerged? | Description                    |
| 1                 | 21:50    | PIPY        | 1             | y         | n        | foraging                       |
| 2                 | 21:51    | PIPI & PIPY | 15            | y         | n        | foraging, c.4<br>bats          |
| 3                 | 21:57    | PIPI & PIPY | 12            | y         | n        | foraging, c.4<br>bats          |
| 4                 | 22:01    | PIPI        | 2             | y         | n        | foraging                       |
| 5                 | 22:14    | PIPI        | 2             | y         | n        | passing                        |
| 6                 | 22:28    | PIPY        | 1             | y         | n        | foraging                       |
| 7                 | 22:45    | MYSP        | 1             | y         | n        | HNS<br>poss.MYDA               |
| 8                 | 22:46    | PIPY        | 2             | y         | n        | passing HNS                    |
| 9                 | 22:50    | PIPY        | 2             | y         | n        | foraging &<br>social calls     |

| Transect          | Surveyor | Date     | Sunset/rise   | Start     | Finish   | Equipment                      |
|-------------------|----------|----------|---------------|-----------|----------|--------------------------------|
| East 1            | MP/SS    | 24-07-19 | 21:04         | 21:00     | 23:06    | Batlogger<br>M/Anabat<br>Scout |
| Weather           | Rain     | Wind     | Temp start    | Temp end  | Cloud    | Verified                       |
| dry,<br>hot,still | 0        | 1 to 0   | 22            | 21        | 3        | MP                             |
| Ref               | Time     | Species  | No. of passes | Recording | Emerged? | Description                    |
| 1                 | 21:27    | NYNO     | 1             | y         | n        | S to N over<br>field           |

| Transect | Surveyor | Date       | Sunset/rise | Start | Finish | Equipment                      |
|----------|----------|------------|-------------|-------|--------|--------------------------------|
| 2        | 21:55    | PIPI       | 1           | y     | n      | pass near ditch                |
| 3        | 21:56    | NYNO       | 1           | y     | n      | distant pass high HNS          |
| 4        | 22:00    | PIPI       | 5           | y     | n      | foraging                       |
| 5        | 22:05    | PIPY       | 2           | y     | n      | passing                        |
| 6        | 22:10    | PIPI, PIPY | 5           | y     | n      | foraging                       |
| 7        | 22:18    | PIPY       | 2           | y     | n      | foraging                       |
| 8        | 22:20    | PIPI, PIPY | 3           | y     | n      | foraging                       |
| 9        | 22:24    | PIPI       | 6           | y     | n      | >3 bats foraging near building |
| 10       | 22:26    | PIPI       | 6           | y     | n      | >3 bats foraging near building |
| 11       | 22:32    | PIPI       | 1           | y     | n      | passing                        |
| 12       | 22:40    | PIPI, PIPY | 2           | y     | n      | foraging                       |
| 13       | 22:42    | PIPI       | 1           | y     | n      | foraging up and down hedge     |
| 14       | 22:52    | MYDA, PIPY | 2           | y     | n      | foraging                       |
| 15       | 22:58    | PIPI, PLAU | 2           | y     | n      | passing                        |
| 16       | 23:01    | PIPI, PIPY | 2           | y     | n      | foraging along hedge           |

| Transect | Surveyor | Date       | Sunset/rise   | Start     | Finish   | Equipment                |
|----------|----------|------------|---------------|-----------|----------|--------------------------|
| East 2   | MP/SS    | 25-07-19   | 21:00         | 21:00     | 23:00    | Batlogger M/Anabat Scout |
| Weather  | Rain     | Wind       | Temp start    | Temp end  | Cloud    | Verified                 |
| dry, hot | 0        | 2 to 4     | 30            | 29        | 7        | MP                       |
| Ref      | Time     | Species    | No. of passes | Recording | Emerged? | Description              |
| 1        | 21:38    | NYNO       | 2             | y         | n        | foraging nr woods/road   |
| 2        | 21:51    | PIPI, PIPY | 2             | y         | n        | foraging                 |
| 3        | 21:54    | NYNO       | 1             | y         | n        | passing in field         |
| 4        | 21:59    | PIPI       | 1             | y         | n        | passing in field         |
| 5        | 22:00    | PIPY       | 1             | y         | n        | passing in field         |
| 6        | 22:03    | PIPY       | 1             | y         | n        | passing in field         |
| 7        | 22:05    | PIPI       | 1             | y         | n        | passing in field         |
| 8        | 22:07    | PIPI       | 1             | y         | n        | passing                  |



| Transect | Surveyor | Date       | Sunset/rise | Start | Finish | Equipment                   |
|----------|----------|------------|-------------|-------|--------|-----------------------------|
| 9        | 22:16    | PIPI, PIPY | 5           | y     | n      | 2 bats foraging along track |
| 10       | 22:19    | NYSP       | 2           | y     | n      | pass NYNO or NYLE           |
| 11       | 22:22    | PIPI       | 2           | y     | n      | pass along track            |
| 12       | 22:23    | PIPI       | 4           | y     | n      | 2 bats foraging             |
| 13       | 22:31    | PIPI       | 2           | y     | n      | passing                     |

| Transect  | Surveyor | Date             | Sunset/rise   | Start     | Finish   | Equipment                    |
|-----------|----------|------------------|---------------|-----------|----------|------------------------------|
| West 1    | MP/SS    | 30-07-19         | 20:52         | 20:50     | 22:55    | Batlogger M/Anabat Scout     |
| Weather   | Rain     | Wind             | Temp start    | Temp end  | Cloud    | Verified                     |
| Dry, mild | 0        | 4                | 18            | 17        | 8        | MP                           |
| Ref       | Time     | Species          | No. of passes | Recording | Emerged? | Description                  |
| 1         | 21:17    | PIPY             | 4             | y         | n        | foraging along stream        |
| 2         | 21:32    | PIPI, PIPY       | 5             | y         | n        | foraging along hedge         |
| 3         | 21:35    | NYNO             | 2             | y         | n        | pass S to N                  |
| 4         | 21:38    | PIPI, PIPY, NYNO | 3             | y         | n        | foraging along hedge         |
| 5         | 21:47    | NYNO             | 2             | y         | n        | pass S to N over field       |
| 6         | 21:58    | PIPI             | 2             | y         | n        | foraging W of plantation     |
| 7         | 22:06    | PIPI             | 10            | y         | n        | 2 to 3 bats foraging         |
| 8         | 22:18    | PIPI             | 3             | y         | n        | foraging near woods in field |
| 9         | 22:44    | PIPI             | 5             | y         | n        | 2 bats foraging              |

| Transect  | Surveyor | Date     | Sunset/rise   | Start     | Finish   | Equipment                     |
|-----------|----------|----------|---------------|-----------|----------|-------------------------------|
| West 2    | MP/SS    | 31-07-19 | 20:52         | 20:50     | 23:00    | Batlogger M/Anabat Scout      |
| Weather   | Rain     | Wind     | Temp start    | Temp end  | Cloud    | Verified                      |
| dry, mild | 0        | 2        | 19            | 17        | 5        | MP                            |
| Ref       | Time     | Species  | No. of passes | Recording | Emerged? | Description                   |
| 1         | 21:28    | PIPY     | 1             | y         | ?        | possible emergence from woods |

| Transect | Surveyor | Date             | Sunset/rise | Start | Finish | Equipment             |
|----------|----------|------------------|-------------|-------|--------|-----------------------|
| 2        | 21:30    | PIPY             | 2           | y     | n      | foraging              |
| 3        | 21:40    | EPSE, PIPI, PIPY | 3           | y     | n      | foraging              |
| 4        | 21:47    | PIPI             | 3           | y     | n      | foraging              |
| 5        | 21:48    | PIPI             | 1           | y     | n      | foraging              |
| 6        | 21:49    | PIPI             | 1           | y     | n      | foraging              |
| 7        | 21:52    | PIPI             | 1           | y     | n      | foraging              |
| 8        | 21:54    | PIPI             | 1           | y     | n      | foraging              |
| 9        | 21:57    | PIPI             | 3           | y     | n      | foraging              |
| 10       | 21:58    | NYSP             | 1           | y     | n      | foraging              |
| 11       | 22:02    | PIPY             | 1           | y     | n      | foraging              |
| 12       | 22:07    | PIPY             | 1           | y     | n      | foraging              |
| 13       | 22:09    | NYNO             | 2           | y     | n      | passing HNS           |
| 14       | 22:10    | PIPI, NYNO       | 2           | y     | n      | foraging              |
| 15       | 22:11    | PIPI             | 2           | y     | n      | foraging              |
| 16       | 22:14    | PIPI             | 2           | y     | n      | foraging              |
| 17       | 22:18    | NYSP             | 2           | y     | n      | foraging              |
| 18       | 22:20    | PIPI, PIPY       | 2           | y     | n      | foraging              |
| 19       | 22:22    | NYSP             | 2           | y     | n      | possible NYLE         |
| 20       | 22:25    | PIPI             | 2           | y     | n      | passing along ditch   |
| 21       | 22:32    | PIPI             | 1           | y     | n      | passing               |
| 22       | 22:35    | PIPI             | 2           | y     | n      | passing               |
| 23       | 22:37    | PIPI, NYNO       | 2           | y     | n      | foraging near poplars |
| 24       | 22:50    | NYNO             | 2           | y     | n      | passing by road       |

| Transect  | Surveyor | Date             | Sunset/rise   | Start     | Finish   | Equipment                |
|-----------|----------|------------------|---------------|-----------|----------|--------------------------|
| East 1    | MP/SS    | 25-09-19         | 18:51         | 18:50     | 20:50    | Batlogger M/Anabat Scout |
| Weather   | Rain     | Wind             | Temp start    | Temp end  | Cloud    | Verified                 |
| dry, warm | 0        | 1                | 18            | 17        | 1        | MP                       |
| Ref       | Time     | Species          | No. of passes | Recording | Emerged? | Description              |
| 1         | 19:18    | NYNO             | 1             | y         | n        | high pass near hedge     |
| 2         | 19:20    | PIPI             | 1             | y         | Y        | emerged and foraging     |
| 3         | 19:21    | PIPI, NYNO       | 2             | y         | n        | passing near hedge/track |
| 4         | 19:27    | PIPI, PIPY, NYNO | 3             | y         | n        | bats along road          |

| Transect | Surveyor | Date             | Sunset/rise | Start | Finish | Equipment       |
|----------|----------|------------------|-------------|-------|--------|-----------------|
| 5        | 19:28    | PIPI, PIPY, NYNO | 3           | y     | n      | bats along road |
| 6        | 19:29    | PIPI, PIPY, NYNO | 3           | y     | n      | bats along road |
| 7        | 19:30    | NYLE, PIPI, PIPY | 3           | y     | n      | 1 x NYLE        |
| 8        | 19:31    | PIPI, PIPY, NYNO | 3           | y     | n      | bats along road |
| 9        | 19:33    | PIPI             | 1           | y     | n      | passing         |
| 10       | 19:39    | PIPI             | 1           | y     | n      | passing         |
| 11       | 19:40    | NYNO             | 1           | y     | n      | passing         |
| 12       | 19:50    | PIPY             | 1           | y     | n      | 2 bats foraging |
| 13       | 19:51    | PIPI, PIPY       | 2           | y     | n      | passing         |
| 14       | 19:58    | PIPI, PIPY       | 2           | y     | n      | passing         |
| 15       | 20:03    | unknown          | 1           | n     | n      | HNS over field  |
| 16       | 20:07    | PIPI             | 1           | y     | n      | HNS over field  |
| 17       | 20:10    | PIPI, PIPY, MYSP | 3           | y     | n      | Probably MYDA   |
| 18       | 20:21    | PIPI             | 2           | y     | n      | passing by cars |
| 19       | 20:30    | PIPI             | 2           | y     | n      | bats along road |
| 20       | 20:38    | PIPI, PIPY, NYNO | 3           | y     | n      | bats along road |
| 21       | 20:50    | PIPI, PIPY, NYNO | 3           | y     | n      | bats along road |

| Transect  | Surveyor | Date     | Sunset/rise   | Start     | Finish   | Equipment                                       |
|-----------|----------|----------|---------------|-----------|----------|---|
| East 2    | MP/SS    | 04-10-19 | 18:30         | 18:25     | 20:30    | Batlogger M/Anabat Scout                        |
| Weather   | Rain     | Wind     | Temp start    | Temp end  | Cloud    | Verified  |
| dry, mild | 0        | 1        | 13            | 13        | 5        | MP  |
| Ref       | Time     | Species  | No. of passes | Recording | Emerged? | Description                                     |
| 1         | 18:35    | NYNO     | 5             | y         | n        | flew in from southwest, foraging over reservoir |
| 2         | 18:52    | NYNO     | 1             | y         | n        | passing high overhead HNS                       |
| 3         | 18:56    | PIPI     | 1             | y         | n        | passing along hedge                             |
| 4         | 18:58    | PIPY     | 1             | y         | n        | passing along track/hedge                       |

| Transect | Surveyor | Date             | Sunset/rise | Start | Finish | Equipment                  |
|----------|----------|------------------|-------------|-------|--------|----------------------------|
| 5        | 18:37    | NYNO             | 1           | y     | n      | passing along track/hedge  |
| 6        | 18:39    | NYNO             | 1           | y     | n      | passing along track/hedge  |
| 7        | 18:45    | NYNO             | 1           | y     | n      | passing along track/hedge  |
| 8        | 18:51    | NYNO             | 1           | y     | n      | passing along track/hedge  |
| 9        | 18:53    | NYNO             | 1           | y     | n      | passing along track/hedge  |
| 10       | 18:55    | PIPI             | 1           | y     | n      | passing along track/hedge  |
| 11       | 18:57    | PIPY             | 1           | y     | n      | passing along track/hedge  |
| 12       | 19:04    | PIPY             | 1           | y     | n      | passing along track/hedge  |
| 13       | 19:04    | PIPY             | 1           | y     | n      | passing along track/hedge  |
| 14       | 19:04    | PIPY             | 1           | y     | n      | passing along track/hedge  |
| 15       | 19:15    | PIPY             | 1           | y     | n      | passing along track/hedge  |
| 16       | 19:16    | PIPY             | 1           | y     | n      | passing along track/hedge  |
| 17       | 19:16    | PIPY             | 1           | y     | n      | passing along track/hedge  |
| 18       | 19:17    | PIPY             | 1           | y     | n      | passing along track/hedge  |
| 19       | 19:17    | PLAU             | 2           | y     | n      | passing along track/hedge  |
| 20       | 19:18    | PIPI             | 1           | y     | n      | passing along track/hedge  |
| 21       | 19:19    | BABA             | 1           | y     | n      | passing along track/hedge  |
| 22       | 19:34    | PIPI             | 1           | y     | n      | passing along track/hedge  |
| 23       | 19:35    | PIPI             | 1           | y     | n      | passing along track/hedge  |
| 24       | 19:37    | PIPI, PIPY, MYSP | 3           | y     | n      | foraging along track/hedge |
| 25       | 19:39    | PIPI             | 1           | y     | n      | passing along track/hedge  |
| 26       | 19:39    | PIPI             | 1           | y     | n      | passing along track/hedge  |
| 27       | 19:48    | PIPI             | 1           | y     | n      | passing along track/hedge  |

| Transect  | Surveyor | Date             | Sunset/rise   | Start     | Finish   | Equipment                      |
|-----------|----------|------------------|---------------|-----------|----------|--------------------------------|
| West 1    | MP/SS    | 08-10-19         | 18:20         | 18:20     | 20:20    | Batlogger<br>M/Anabat<br>Scout |
| Weather   | Rain     | Wind             | Temp start    | Temp end  | Cloud    | Verified                       |
| dry, mild | 0        | 3                | 14            | 12        | 3 to 0   | MP                             |
| Ref       | Time     | Species          | No. of passes | Recording | Emerged? | Description                    |
| 1         | 18:49    | PIPY             | 1             | y         | n        | pass along track               |
| 2         | 18:54    | PIPI, NYSP       | 2             | y         | n        | foraging/pass                  |
| 3         | 18:54    | PIPI, NYSP       | 2             | y         | n        | foraging/pass                  |
| 4         | 18:55    | PIPI, PIPY, NYSP | 3             | y         | n        | foraging/pass                  |
| 5         | 18:55    | PIPI             | 1             | y         | n        | foraging/pass                  |
| 6         | 18:55    | PIPI             | 1             | y         | n        | foraging/pass                  |
| 7         | 18:55    | PIPI             | 1             | y         | n        | foraging/pass                  |
| 8         | 18:56    | PIPY             | 1             | y         | n        | foraging/pass                  |
| 9         | 18:56    | PIPY             | 1             | y         | n        | foraging/pass                  |
| 10        | 18:56    | PIPY             | 1             | y         | n        | foraging/pass                  |
| 11        | 18:57    | PIPI             | 1             | y         | n        | foraging/pass                  |
| 12        | 18:57    | PIPY             | 1             | y         | n        | foraging/pass                  |
| 13        | 18:57    | PIPY             | 1             | y         | n        | foraging/pass                  |
| 14        | 18:58    | PIPI             | 1             | y         | n        | foraging/pass                  |
| 15        | 18:58    | PIPI             | 1             | y         | n        | foraging/pass                  |
| 16        | 18:59    | PIPY             | 1             | y         | n        | foraging/pass                  |
| 17        | 18:59    | PIPY             | 1             | y         | n        | foraging/pass                  |
| 18        | 18:59    | PIPY             | 1             | y         | n        | foraging/pass                  |
| 19        | 18:59    | PIPY             | 1             | y         | n        | foraging/pass                  |
| 20        | 19:00    | PIPI             | 1             | y         | n        | foraging/pass                  |
| 21        | 19:00    | NYNO             | 1             | y         | n        | foraging/pass                  |
| 22        | 19:00    | NYNO             | 1             | y         | n        | foraging/pass                  |
| 23        | 19:01    | NYNO             | 1             | y         | n        | foraging/pass                  |
| 24        | 19:01    | NYNO             | 1             | y         | n        | foraging/pass                  |
| 25        | 19:01    | NYNO             | 1             | y         | n        | foraging/pass                  |
| 26        | 19:02    | PIPY             | 1             | y         | n        | foraging/pass                  |
| 27        | 19:02    | NYNO             | 1             | y         | n        | foraging/pass                  |
| 28        | 19:03    | PIPI, PIPY, NYNO | 3             | y         | n        | foraging/pass                  |
| 29        | 19:04    | PIPI             | 1             | y         | n        | foraging/pass                  |
| 30        | 19:05    | PIPI             | 1             | y         | n        | foraging/pass                  |
| 31        | 19:05    | PIPI             | 1             | y         | n        | foraging/pass                  |
| 32        | 19:29    | PIPY             | 1             | y         | n        | foraging/pass                  |
| 33        | 19:30    | PIPI             | 1             | y         | n        | foraging/pass                  |
| 34        | 19:30    | PIPI             | 1             | y         | n        | foraging/pass                  |
| 35        | 19:30    | PIPI             | 1             | y         | n        | foraging/pass                  |

| Transect | Surveyor | Date       | Sunset/rise | Start | Finish | Equipment                  |
|----------|----------|------------|-------------|-------|--------|----------------------------|
| 36       | 19:33    | PIPI       | 1           | y     | n      | foraging/pass              |
| 37       | 19:33    | PIPI       | 1           | y     | n      | foraging/pass              |
| 38       | 19:33    | PIPI       | 1           | y     | n      | foraging/pass              |
| 39       | 19:34    | PIPI, PIPY | 2           | y     | n      | foraging/pass              |
| 40       | 19:34    | PIPI, PIPY | 2           | y     | n      | foraging/pass              |
| 41       | 19:34    | PIPY       | 1           | y     | n      | foraging/pass              |
| 42       | 19:34    | PIPY       | 1           | y     | n      | foraging/pass              |
| 43       | 19:35    | PIPY       | 1           | y     | n      | foraging/pass              |
| 44       | 19:36    | PIPI       | 1           | y     | n      | foraging/pass              |
| 45       | 19:42    | PIPY       | 1           | y     | n      | pass entrance to cow field |

| Transect | Surveyor | Date       | Sunset/rise   | Start     | Finish   | Equipment                |
|----------|----------|------------|---------------|-----------|----------|--------------------------|
| West 2   | MP/SS    | 15-10-19   | 18:06         | 18:00     | 20:08    | Batlogger M/Anabat Scout |
| Weather  | Rain     | Wind       | Temp start    | Temp end  | Cloud    | Verified                 |
| dry/mild | 0        | 1          | 14            | 10        | 3        | MP                       |
| Ref      | Time     | Species    | No. of passes | Recording | Emerged? | Description              |
| 1        | 18:07    | NYNO       | 2             | y         | n        | foraging/pass            |
| 2        | 18:08    | NYNO       | 2             | y         | n        | foraging/pass            |
| 3        | 18:09    | NYNO       | 1             | y         | n        | foraging/pass            |
| 4        | 18:10    | NYNO       | 2             | y         | n        | foraging/pass            |
| 5        | 18:13    | NYNO       | 1             | y         | n        | foraging/pass            |
| 6        | 18:17    | NYNO       | 1             | y         | n        | foraging/pass            |
| 7        | 18:19    | NYNO       | 1             | y         | n        | foraging/pass            |
| 8        | 18:43    | PIPI       | 1             | y         | n        | foraging/pass            |
| 9        | 18:45    | PIPI       | 1             | y         | n        | foraging/pass            |
| 10       | 18:49    | PIPI       | 1             | y         | n        | foraging/pass            |
| 11       | 18:51    | PIPI       | 2             | y         | n        | foraging/pass            |
| 12       | 18:52    | PIPI       | 1             | y         | n        | foraging/pass            |
| 13       | 18:53    | PIPY       | 3             | y         | n        | foraging/pass            |
| 14       | 18:53    | PLAU, PIPI | 2             | y         | n        | foraging/pass            |
| 15       | 18:54    | PIPI       | 3             | y         | n        | foraging/pass            |
| 16       | 18:55    | PIPY       | 2             | y         | n        | foraging/pass            |
| 17       | 18:55    | PIPI       | 1             | y         | n        | foraging/pass            |
| 18       | 18:56    | PIPY       | 1             | y         | n        | foraging/pass            |
| 19       | 18:56    | BABA       | 1             | y         | n        | foraging/pass            |
| 20       | 18:56    | PIPY       | 4             | y         | n        | foraging/pass            |
| 21       | 18:57    | PIPI       | 1             | y         | n        | foraging/pass            |
| 22       | 18:57    | PIPY       | 2             | y         | n        | foraging/pass            |
| 23       | 18:58    | BABA       | 1             | y         | n        | foraging/pass            |
| 24       | 18:59    | PIPI       | 1             | y         | n        | foraging/pass            |

| Transect | Surveyor | Date | Sunset/rise | Start | Finish | Equipment     |
|----------|----------|------|-------------|-------|--------|---------------|
| 25       | 19:00    | BABA | 1           | y     | n      | foraging/pass |
| 26       | 19:04    | PIPY | 1           | y     | n      | foraging/pass |
| 27       | 19:06    | PIPY | 1           | y     | n      | foraging/pass |
| 28       | 19:11    | PIPI | 6           | y     | n      | foraging/pass |
| 29       | 19:12    | PIPI | 2           | y     | n      | foraging/pass |
| 30       | 19:13    | PIPI | 6           | y     | n      | foraging/pass |
| 31       | 19:14    | PIPI | 2           | y     | n      | foraging/pass |
| 32       | 19:15    | PIPI | 3           | y     | n      | foraging/pass |
| 33       | 19:16    | PIPI | 6           | y     | n      | foraging/pass |
| 34       | 19:17    | PIPI | 8           | y     | n      | foraging/pass |
| 35       | 19:18    | PIPI | 1           | y     | n      | foraging/pass |
| 36       | 19:58    | PIPI | 1           | y     | n      | foraging/pass |

| Key   |
|---|
| 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). |
| Species abbreviations: PIPI - Common Pipistrelle, PIPY - Soprano Pipistrelle, PISP – common or Soprano Pipistrelle, NYNO - Noctule, NYLE – Leisler’s, NYSP – Noctule or Leisler’s bat, PLAU - brown long eared bat, BABA – barbastelle, MYSP - Myotis species, MYDA - Daubenton’s bat, Nold – unidentified bat.   |

**Table D-3: ABST Results**

| Project name  |      | Sunnica Solar Farm |            |            |              |            | Weather Description |      | Warm, dry, heavy showers in day, slight breeze, 17°C at start, 90% humidity |                           |  |
|---------------|------|--------------------|------------|------------|--------------|------------|---------------------|------|---|---------------------------|--|
| Surveyor Name |      | SCG, MP, EW, SS    |            |            |              |            | Trap 1              |      | Harp – TL 66963 67213   |                           |  |
| Date          |      | 01/08/2019         |            |            |              |            | Trap 2              |      | Harp – TL 66833 67261   |                           |  |
| Start         |      | 20:51              |            |            |              |            | Trap 3              |      | Net – TL 66825 67274  |                           |  |
| Sunset        |      | 20:51              |            |            |              |            | Trap 4              |      | Harp – TL 66841 67287   |                           |  |
| Finish        |      | 01:00              |            |            |              |            |                     |      |   |                           |  |
| Time          | Trap | Species *          | Sex (M/F)* | Age (A/J)* | Forearm (mm) | Weight (g) | Testes              | Epi* | Reproductive Status (F)*  | Comments                  |  |
| 21:58         | 3    | BLE                | M          | A          | 37.5         | 7.52       | 0                   | 0    | N/A   | Black tipped Epi          |  |
| 22:33         | 2    | S Pip              | F          | A          | 31.6         | 4.65       | N/A                 | N/A  | NB  | Hairy Nipples             |  |
| 23:02         | 1    | C Pip              | F          | A          | 34.0         | 6.00       | N/A                 | N/A  | BTS   | Bare patch around nipples |  |

|                     |   |       |   |                    |      |      |                            |     |     |   |  |
|---------------------|---|-------|---|--------------------|------|------|----------------------------|-----|-----|---|--|
| <b>Project name</b> |   |       |   | Sunnica Solar Farm |      |      | <b>Weather Description</b> |     |     | Warm, dry, heavy showers in day, slight breeze, 17°C at start, 90% humidity |  |
| 23:09               | 1 | C Pip | F   | A                  | 32.2 | 5.37 | N/A                        | N/A | BTS | Bare patch around nipple  |  |
| 22:49               | 3 | BLE   | F   | A                  | 39.0 | 8.08 | N/A                        | N/A | BTS | Para but not lactating  |  |
| 00:05               | 2 | C Pip | Released without measurements as found when traps were being taken down |                    |      |      |                            |     |     |   |  |

\*Table Key: Species: BLE (Brown-Long eared), S Pip (Soprano Pipistrelle), C Pip (Common Pipistrelle), M nat (Natterer's bat); Sex: M (male), F (female); Age: A (Adult), SA (Sub-Adult), J (Juvenile); Epi (Epididymis); Reproductive Status: NB (Not bred), BTS (Bred this year)

| <b>Project name</b>  |      |           |            | Sunnica Solar Farm |              |            | <b>Weather Description</b> |      |                          | Warm, dry, light wisps of cloud, light breeze, 21°C - 16°C, 71% humidity |  |
|----------------------|------|-----------|------------|--------------------|--------------|------------|----------------------------|------|--------------------------|--|--|
| <b>Surveyor Name</b> |      |           |            | MP, CV, EW         |              |            | <b>Trap 1</b>              |      |                          | Net – TL 70000 72780   |  |
| <b>Date</b>          |      |           |            | 07/08/2019         |              |            | <b>Trap 2</b>              |      |                          | Harp – TI 69997 72800  |  |
| <b>Start</b>         |      |           |            | 20:39              |              |            | <b>Trap 3</b>              |      |                          | Harp – TL 70002 72941  |  |
| <b>Sunset</b>        |      |           |            | 20:39              |              |            |                            |      |                          |  |  |
| <b>Finish</b>        |      |           |            | 23:30              |              |            |                            |      |                          |  |  |
| Time                 | Trap | Species * | Sex (M/F)* | Age (A/J)*         | Forearm (mm) | Weight (g) | Testes                     | Epi* | Reproductive Status (F)* | Comments   |  |
| 21:11                | 1    | S Pip     | F          | SA                 | 30.07        | 4.45       | N/A                        | N/A  | NB                       | Hair nipples   |  |
| 21:20                | 3    | S Pip     | F          | A                  | 30.02        | 4.31       | N/A                        | N/A  | BTS                      | Hairless nipples   |  |
| 21:20                | 3    | S Pip     | M          | SA                 | 33.3         | 4.62       | 1                          | 0    | N/A                      | Epi pale   |  |
| 21:20                | 3    | C Pip     | M          | A                  | 31.1         | 4.20       | 1                          | 0    | N/A                      | Epi pale   |  |
| 21:54                | 1    | BLE       | M          | A                  | 36.5         | 7.19       | 1                          | 0    | N/A                      | Epi pale   |  |
| 22:11                | 1    | S Pip     | F          | A                  | 33.2         | 4.91       | N/A                        | N/A  | NB                       | Hairy nipples  |  |
| 22:21                | 1    | C Pip     | M          | A                  | 32.5         | 5.3        | 1                          | 0    | N/A                      | Epi pale   |  |

\*Table Key: Species: BLE (Brown-Long eared), S Pip (Soprano Pipistrelle), C Pip (Common Pipistrelle), M nat (Natterer's bat); Sex: M (male), F (female); Age: A (Adult), SA (Sub-Adult), J (Juvenile); Epi (Epididymis); Reproductive Status: NB (Not bred), BTS (Bred this year)

| <b>Project name</b>  |      |           |            | Sunnica Solar Farm |              |            | <b>Weather Description</b> |      |                          | Mild, strong breeze, overcast, 22°C |  |
|----------------------|------|-----------|------------|--------------------|--------------|------------|----------------------------|------|--------------------------|-------------------------------------|--|
| <b>Surveyor Name</b> |      |           |            | MP, CV, EW, TC     |              |            | <b>Trap 1</b>              |      |                          | Harp – TL 66817 67232               |  |
| <b>Date</b>          |      |           |            | 12/09/2019         |              |            | <b>Trap 2</b>              |      |                          | Harp – TL 66836 67257               |  |
| <b>Start</b>         |      |           |            | 19:22              |              |            | <b>Trap 3</b>              |      |                          | Net - TL 66903 67235                |  |
| <b>Sunset</b>        |      |           |            | 19:22              |              |            |                            |      |                          |                                     |  |
| <b>Finish</b>        |      |           |            | 23:00              |              |            |                            |      |                          |                                     |  |
| Time                 | Trap | Species * | Sex (M/F)* | Age (A/J)*         | Forearm (mm) | Weight (g) | Testes                     | Epi* | Reproductive Status (F)* | Comments                            |  |



| Project name |   |       |   | Sunnica Solar Farm |      |      | Weather Description |     |     | Mild, strong breeze, overcast, 22°C |
|--------------|---|-------|---|--------------------|------|------|---------------------|-----|-----|-------------------------------------|
| 20:18        | 3 | S Pip | F | A                  | 32.0 | 4.88 | N/A                 | N/A | NB  | Hairy Nipples                       |
| 20:27        | 3 | S Pip | F | A                  | 32.6 | 6.0  | N/A                 | N/A | BTS | Hairless Nipples                    |
| 20:59        | 3 | S pip | F | A                  | 33.6 | 5.4  | N/A                 | N/A | BTS | Hairless Nipples                    |
| 22:24        | 2 | M nat | F | A                  | 41.1 | 8.3  | N/A                 | N/A | BTS | Hairless Nipples                    |

\*Table Key: Species: BLE (Brown-Long eared), S Pip (Soprano Pipistrelle), C Pip (Common Pipistrelle), M nat (Natterer's bat); Sex: M (male), F (female); Age: A (Adult), SA (Sub-Adult), J (Juvenile); Epi (Epididymis); Reproductive Status: NB (Not bred), BTS (Bred this year)

**Table D-4: Static Detector Survey Results**

| Night temp. range | Date 2019 /Location | PIPI | PIPY | PISP | NYNO | NYLE | NYSP | NYSP/EPSE | MYSP | PLAU | BABA | EPSE | Species no. | Total | Nights | hrs/nt | BAI per hr | Activity Level |
|-------------------|---------------------|------|------|------|------|------|------|-----------|------|------|------|------|-------------|-------|--------|--------|------------|----------------|
| 10.0 - 19.5°C     | - Spring West 1     | 738  | 484  | 105  | 11   | 12   | 17   | 0         | 6    | 0    | 1    | 0    | 8           | 1374  | 5      | 15.50  | 17.73      | High           |
| 10.0 - 19.5°C     | - Spring West 2     | 27   | 26   | 0    | 8    | 1    | 0    | 0         | 3    | 0    | 1    | 3    | 7           | 69    | 5      | 15.50  | 0.89       | Very Low       |
| 10.0 - 19.5°C     | - Spring West 3     | 720  | 141  | 3    | 7    | 0    | 5    | 2         | 0    | 0    | 0    | 0    | 6           | 878   | 5      | 15.50  | 11.33      | Moderate       |
| 10.0 - 19.5°C     | - Spring West 4     | 84   | 3    | 3    | 11   | 2    | 0    | 0         | 2    | 1    | 0    | 2    | 8           | 108   | 5      | 15.50  | 1.39       | Very Low       |
| 4.5 - 19.75°C     | - Spring East 1     | 254  | 78   | 9    | 8    | 6    | 18   | 0         | 13   | 6    | 97   | 0    | 9           | 489   | 7      | 15.50  | 4.51       | Low            |
| 4.5 - 17.0°C      | - Spring East 2     | 4    | 6    | 0    | 7    | 10   | 6    | 0         | 0    | 2    | 2    | 0    | 7           | 37    | 3      | 15.50  | 0.80       | Very Low       |
| 4.5 - 19.75°C     | - Spring East 3     | 159  | 11   | 4    | 9    | 5    | 4    | 0         | 6    | 0    | 0    | 0    | 7           | 198   | 7      | 15.50  | 1.82       | Low            |
| 4.5 - 19.75°C     | - Spring East 4     | 29   | 9    | 5    | 13   | 13   | 2    | 2         | 2    | 0    | 3    | 0    | 9           | 78    | 9      | 15.50  | 0.56       | Very Low       |
| 12.4 - 22.1°C     | - Summer West 1     | 2045 | 2453 | 2    | 5    | 31   | 6    | 8         | 10   | 16   | 13   | 9    | 11          | 4598  | 8      | 8.50   | 67.62      | High           |
| 12.4 - 22.1°C     | - Summer West 2     | 541  | 83   | 3    | 5    | 41   | 6    | 45        | 9    | 53   | 11   | 38   | 11          | 835   | 8      | 8.50   | 12.28      | High           |
| 12.4 - 22.1°C     | - Summer West 3     | 926  | 497  | 17   | 10   | 47   | 11   | 3         | 4    | 1    | 0    | 0    | 9           | 1516  | 8      | 8.50   | 22.29      | High           |
| 12.4 - 22.1°C     | - Summer West 4     | 456  | 46   | 4    | 6    | 8    | 4    | 6         | 0    | 7    | 0    | 6    | 9           | 543   | 8      | 8.50   | 7.99       | Moderate       |
| 13.5 - 31.3°C     | - Summer East 1     | 2877 | 199  | 26   | 11   | 27   | 14   | 16        | 21   | 24   | 3    | 3    | 11          | 3221  | 6      | 8.50   | 63.16      | High           |

| Night temp. range | Date 2019 /Location | PIPI | PIPY | PISP | NYNO | NYLE | NYSP | NYSP/EPSE | MYSP | PLAU | BABA | EPSE | Species no. | Total | Nights | hrs/nt | BAI per hr | Activity Level |
|-------------------|---------------------|------|------|------|------|------|------|-----------|------|------|------|------|-------------|-------|--------|--------|------------|----------------|
| 13.5 - 31.3°C     | Summer East 2       | 148  | 62   | 155  | 12   | 6    | 4    | 0         | 2    | 3    | 0    | 0    | 8           | 392   | 6      | 8.50   | 7.69       | Moderate       |
| 13.5 - 31.3°C     | Summer East 3       | 183  | 35   | 12   | 11   | 9    | 4    | 2         | 3    | 1    | 1    | 4    | 11          | 265   | 6      | 8.50   | 5.20       | Low            |
| 13.5 - 31.3°C     | Summer East 4       | 167  | 54   | 15   | 10   | 3    | 1    | 0         | 0    | 0    | 0    | 0    | 6           | 250   | 6      | 8.50   | 4.90       | Low            |
| 5.8 - 17.6°C      | Autumn West 1       | 285  | 309  | 1    | 42   | 1    | 1    | 0         | 0    | 0    | 0    | 0    | 6           | 639   | 5      | 13.00  | 9.83       | Moderate       |
| 5.8 - 17.6°C      | Autumn West 2       | 1130 | 88   | 0    | 33   | 14   | 11   | 0         | 1    | 6    | 2    | 0    | 8           | 1285  | 5      | 13.00  | 19.77      | High           |
| 5.8 - 17.6°C      | Autumn West 3       | 488  | 410  | 3    | 9    | 1    | 0    | 1         | 3    | 5    | 16   | 0    | 9           | 936   | 7      | 13.00  | 10.29      | Moderate       |
| 5.8 - 17.6°C      | Autumn West 4       | 99   | 6    | 1    | 3    | 0    | 0    | 1         | 2    | 3    | 3    | 0    | 8           | 118   | 7      | 13.00  | 1.30       | Very Low       |
| 4.0 - 23.4°C      | Autumn East 1       | 425  | 449  | 0    | 4    | 1    | 0    | 0         | 9    | 1    | 20   | 0    | 7           | 909   | 9      | 13.00  | 7.77       | Moderate       |
| 4.0 - 23.4°C      | Autumn East 2       | 6    | 25   | 1    | 6    | 0    | 1    | 0         | 2    | 6    | 1    | 0    | 8           | 48    | 9      | 13.00  | 0.41       | Very Low       |
| 4.0 - 23.4°C      | Autumn East 3       | 116  | 77   | 1    | 4    | 3    | 1    | 2         | 9    | 5    | 59   | 0    | 10          | 277   | 9      | 13.00  | 2.37       | Low            |
| 4.0 - 23.4°C      | Autumn East 4       | 185  | 111  | 2    | 22   | 3    | 1    | 0         | 3    | 1    | 7    | 0    | 9           | 335   | 9      | 13.00  | 2.86       | Low            |

Key to species: PIPI - Common Pipistrelle, PIPY - Soprano Pipistrelle, PISP – common or Soprano Pipistrelle, NYNO - Noctule, NYLE – Leisler's, NYSP – Noctule or Leisler's bat, PLAU - brown long eared bat, BABA – barbastelle, MYSP - Myotis species.

**Table D-5: Weather Conditions During Static Surveys**

| Date   | Minimum Temperature (°C) | Maximum Temperature (°C) | Minimum wind mph | Maximum wind mph | Rain       |
|--------|--------------------------|--------------------------|------------------|------------------|------------|
| 13-May | 9.80                     | 17.80                    | 1                | 9                | None       |
| 14-May | 15.60                    | 19.70                    | 1                | 8                | None       |
| 15-May | 4.50                     | 13.25                    | 3                | 9                | None       |
| 16-May | 9.50                     | 17.00                    | 4                | 17               | None       |
| 17-May | 10.75                    | 13.75                    | 5                | 11               | None       |
| 18-May | 8.75                     | 15.25                    | 1                | 3                | None       |
| 19-May | 11.25                    | 17.00                    | 1                | 4                | Light Rain |
| 20-May | 7.25                     | 18.50                    | 2                | 9                | None       |
| 21-May | 6.25                     | 19.75                    | 2                | 9                | None       |
| 22-May | 16.80                    | 24.50                    | 4                | 9                | None       |
| 23-May | 11.00                    | 19.25                    | 2                | 9                | None       |
| 24-May | 12.75                    | 18.25                    | 4                | 12               | None       |
| 25-May | 16.75                    | 18.75                    | 2                | 8                | None       |
| 26-May | 11.75                    | 19.50                    | 5                | 16               | None       |
| 27-May | 10.00                    | 15.25                    | 6                | 14               | None       |
| 28-May | 12.00                    | 12.50                    | 6                | 9                | Light Rain |
| 24-Jul | 19.00                    | 30.40                    | 5                | 11               | None       |
| 25-Jul | 21.70                    | 31.30                    | 4                | 12               | None       |
| 26-Jul | 18.70                    | 23.40                    | 5                | 12               | None       |
| 27-Jul | 15.60                    | 16.60                    | 6                | 14               | Heavy Rain |
| 28-Jul | 13.50                    | 15.80                    | 11               | 13               | None       |
| 29-Jul | 17.90                    | 23.80                    | 7                | 9                | None       |
| 30-Jul | 20.20                    | 22.10                    | 12               | 19               | Light Rain |
| 31-Jul | 16.60                    | 19.10                    | 14               | 22               | None       |
| 01-Aug | 14.80                    | 19.50                    | 6                | 10               | None       |
| 02-Aug | 12.40                    | 19.90                    | 6                | 10               | None       |
| 03-Aug | 15.30                    | 20.20                    | 1                | 7                | None       |
| 04-Aug | 17.00                    | 21.30                    | 5                | 12               | None       |
| 05-Aug | 16.40                    | 21.40                    | 7                | 14               | None       |
| 06-Aug | 15.80                    | 20.10                    | 8                | 14               | Light Rain |
| 25-Sep | 15.10                    | 23.40                    | 9                | 12               | Light Rain |
| 26-Sep | 13.80                    | 19.50                    | 9                | 19               | None       |
| 27-Sep | 11.90                    | 16.50                    | 12               | 18               | None       |
| 28-Sep | 13.60                    | 17.10                    | 12               | 21               | Light Rain |
| 29-Sep | 9.60                     | 15.90                    | 16               | 18               | None       |
| 30-Sep | 13.90                    | 15.80                    | 7                | 10               | Light Rain |
| 01-Oct | 6.10                     | 13.00                    | 9                | 12               | Light Rain |
| 02-Oct | 4.00                     | 20.00                    | 3                | 13               | None       |
| 03-Oct | 10.30                    | 13.80                    | 1                | 12               | Light Rain |
| 04-Oct | 10.30                    | 17.60                    | 5                | 14               | None       |

| Date   | Minimum Temperature (°C) | Maximum Temperature (°C) | Minimum wind mph | Maximum wind mph | Rain       |
|--------|--------------------------|--------------------------|------------------|------------------|------------|
| 05-Oct | 11.00                    | 15.40                    | 3                | 9                | Light Rain |
| 06-Oct | 5.80                     | 12.60                    | 6                | 13               | None       |
| 07-Oct | 12.80                    | 14.00                    | 1                | 11               | None       |
| 08-Oct | 10.50                    | 14.50                    | 10               | 19               | None       |
| 09-Oct | 8.50                     | 13.75                    | 12               | 17               | None       |
| 10-Oct | 14.5                     | 16.25                    | 12               | 18               | None       |
| 11-Oct | 11                       | 17.25                    | 12               | 24               | Light Rain |