SUNNICA ENERGY FARM

Appendix 8C: Terrestrial Invertebrate Scoping Note

Sunnica Ltd

August 2020

Quality information

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Revision History

Revision	Revision date	Details	Authorized	Name	Position
1	August 2020	For Issue	August 2020	Neal Gates	Associate Director

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Tables

1. Introduction

1.1.1 In March 2019, AECOM (on behalf of Sunnica Limited), undertook a Preliminary Ecological Appraisal[1] (PEA) for the proposed Sunnica Energy Farm (hereafter referred to as the Scheme). This PEA identified the need for follow-up surveys to determine the potential impacts of the Scheme on protected / notable species[2], including terrestrial invertebrates. Therefore, AECOM was instructed to undertake a scoping survey of the terrestrial habitat within the Scheme boundary (the Development Consent Order (DCO) Site) (the DCO Site) (see **Figure 8C-1** in **Sub-Appendix A**) to evaluate the potential of habitats to support terrestrial invertebrates and determine the requirement for further surveys.

1.2 The Scheme

2.1.1 Sunnica Energy Farm is a new solar farm scheme that would connect to the national electricity transmission network. Sunnica will use ground mounted solar photovoltaic (PV) panel arrays to generate electricity energy from the sun and combine these with a Battery Energy Storage System (BESS). The Scheme will be connected to the national electricity transmission network by an underground cable.

2.1.2 The BESSs will consist of a compound and battery array to allow for the storage, importation and exportation of energy to the National Grid. Details of the design of the BESS elements, including their power and energy ratings, and their dimensions and appearance, are currently in development.

2.1.3 Supporting electrical infrastructure will include an on-site substation and on-site cabling between the different electrical elements of the Scheme. The generating equipment of the Scheme will be fenced and be protected via security measures such as CCTV and lighting. Inside the fenced areas, in addition to the generating equipment will be, internal access tracks, landscaping and habitat management and drainage.

2.1.4 The Scheme will be connected to the existing Burwell National Grid Substation, most likely using 132kV cables buried underground. The cables will run between Sunnica West and Sunnica East (Grid Connection Route A), and then on from Sunnica West to the Burwell National Grid Substation (Grid Connection Route B). Details of the cable route, dimensions of the cables, the depth and method of burial, and numbers of joints required are currently in development.

2.1.5 The Scheme qualifies as a Nationally Significant Infrastructure Project (NSIP) and will require a Development Consent Order (DCO) from national government, due to its generating capacity.

2.1.6 The Scheme therefore comprises the following key areas:

[1] AECOM (2020) Preliminary Ecological Appraisal Report
[2] A notable species is a species with a conservation designation, but no legal protection.

- Solar Farm Sites:
  - Sunnica East Site A;
  - Sunnica East Site B;
  - Sunnica West Site A; and
  - Sunnica West Site B.
- associated electrical infrastructure for connection to the national transmission system comprise:
  - 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);
  - Grid Connection Route B (connecting the Sunnica West Site A and Sunnica West Site B and the Burwell National Grid Substation); and
  - Burwell National Grid Substation Extension.

2.1.7 **Figure 8C-1** in **Sub-Appendix A** shows the locations of these key areas.

1.3 Site Description

3.1.1 A summary description of the habitats within the Scheme boundary (made up of the three Sites) is provided below and a more detailed description of the habitats is provided in the PEA report (Ref 8C-1). The extent of the Scheme is shown in **Figure 8C-1**.

Sunnica East Site

3.1.2 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 231.7 ha and includes land within the county of Suffolk and Cambridgeshire. Sunnica East Site B lies within Suffolk and encompasses an area of approximately 323.1 ha (**Figure 8C-1**).

3.1.3 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.

3.1.4 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 7.5 MW 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

3.1.5 The Sunnica West Site is located within the East Cambridgeshire District Council administrative area, approximately 3 km north east of Newmarket and 6.5 km east of Burwell.

3.1.6 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 1 km apart, separated by agricultural fields and Chippenham Road. The Sunnica West Site A encompasses an area of approximately 485.5 ha 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 68.8 ha 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 8C-1**).

3.1.7 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

3.1.8 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

3.1.9 Grid Connection Route A connects the Sunnica East Site A with Sunnica East Site B and crosses two minor roads and arable farmland (**Figure 8C-1**).

3.1.10 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 8C-1**).

Grid Connection Route B

3.1.11 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 8C-1**).

3.1.12 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

3.1.13 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.

1.4 Scope of Report

4.1.1 The objective of the terrestrial invertebrate scoping survey, reported in this document, is to evaluate the potential for habitats within the Site boundary to support notable terrestrial invertebrate species and assemblages.

4.1.2 This note is a technical appendix to accompany the Preliminary Environmental Information report, reporting on and evaluating the baseline data collected as of August 2020.

1.5 Methods

5.1.1 A scoping survey to evaluate the potential of habitats for terrestrial invertebrates was carried out by invertebrate ecologist Steve Lane on 7th, 9th and 27th May and 27th August 2019, in which the entire area was visually assessed 'on the ground'. The scoping survey concentrated on grassland habitats, as boundary features, such as isolated trees, hedgerows, copses and plantation blocks will generally be avoided and not impacted by the Scheme. Subsequent minor amendments to the DCO Site boundary are discussed in the Preliminary Ecological Appraisal (**Appendix 8A**).

5.1.2 The survey identified target areas that comprise both permanent and disturbed grassland. The latter includes the margins of pig fields and also plots of land that have been mechanically cultivated to attract Stone Curlew *Burhinus oedicnemus*, but were not occupied at the time of survey.

5.1.3 **Table 8C-1** sets out the areas within the Scheme boundary that were evaluated and those that were recommended to be the subject of further invertebrate survey. These areas are presented in **Sub-Appendix A**, **Figure 8C-2**.

5.1.4 Following the initial scoping survey in May 2019, areas H, K, L, M, N, P, Q, R, T, U, V, W, X and Y (see **Figure 8C-2**) are no longer within the Scheme boundary and therefore not included in the further assessments. **Table 8C-1** sets out the areas within the DCO Site that were assessed for their terrestrial invertebrate potential and the resultant survey requirements.

Table 8C-1 Areas identified for invertebrate surveys

Site Code	*Brief Habitat Description*	*Invertebrate Survey*
A	Grassland with yarrow, carrot, plantain, cranesbill and much bramble and rose scrub. A smaller area of rabbit-grazed short turf within a woodland clearing close to, and NE of 'A' had greater interest but was rather small and due to its position within woodland, of no consequence regarding development impact.	No

Site Code	*Brief Habitat Description*	*Invertebrate Survey*
B	Pig farm, with heavily disturbed sandy margins, dominated by small nettle, mayweed, chenopods and groundsel etc – poor biodiversity.	No
C	Mainly tall herb, ungrazed grassland, with consolidated vegetation structure with Taraxacum, plantain and cranesbill. Mainly poor botanical diversity.	No
D	Grassland on aerial photos, but freshly ploughed at time of scoping survey.	No
E	Mechanically disturbed area with further continual disturbance from mole activity. Good botanical diversity includes *Erodium* and *Echium*. Very sandy soil and sparsely vegetated. Probably indicative of good breck invertebrate assemblages. Invertebrates were briefly sampled during scoping survey.	Pitfall trapping and observation/sweeping.
F	Pig farm, with interesting margins. In the east, the margin is large and the vegetation forming a consolidated short turf mat, probably rabbit-grazed, but with minimal substrate showing. Has potential to support interesting breck invertebrate assemblage. Margin along western edge is more disturbed, and of interest, but the botanical diversity decreases in the northernmost section.	Pitfall trapping and observation/sweeping.
G	Pig farm with heavily disturbed margins recalling those of area 'B'. Typically with small nettle, groundsel and mayweed. Poor botanical diversity.	No
I	Ungrazed, short turf grassland, with consolidated vegetation structure, but containing relatively diverse communities. Nature of the area changes significantly such that the northernmost margin appears to be poor rank grassland (ex-cultivation) and the southernmost area has evidently also been cultivated fairly recently and is due for cultivation again.	No
J	Horse grazed short-turf pasture grassland with similar plant communities to 'I' but more disturbed. Dung fauna was briefly sampled during scoping survey.	No if grazing still present in 2020
O	Former pig farm, now occupied by horse paddocks and chicken barns, the margins of which have been controlled for weeds. Some short turf margins running parallel to the road hedgerow have interest with *Erodium* mats, yarrow, bugloss etc, but this area is small relative to other areas in the target survey.	No
S	Large pig farm, with generally very heavily disturbed margins containing small nettle, chenopods, groundsel and mayweeds, but margin of north-south trackway of better interest with flixweed, mallow, etc. and worthy of further investigation.	Observation and sweeping.
Z	Tall herb grassland grown as a nectaring/pollen crop. *Phacelia* very evident in western half. Potential for significant ground-nesting Breck Hymenopteran fauna	Spot-sampling and netting for Hymenoptera; grubbing at margins of

Site Code	*Brief Habitat Description*	*Invertebrate Survey*
	to be using this as a resource. Ground vegetation mostly consolidated, but some short turf communities at margin of field could be sampled by observation and grubbing during visits.	field for ground-dwelling inverts
BB	South area is semi-improved pasture grassland with scattered trees including some old willow pollards and a flowing stream in the west. North area is of ungrazed rank grassland with hogweed, creeping thistle, vetches, ground ivy, ox-eye daisy, yarrow, lady's bedstraw, knapweed and plantain, etc. – some seasonally inundated areas with Juncus, etc., but these were mainly dry during scoping survey. This area of grassland is similar to an area on opposite side of River Snail surveyed by this surveyor two years ago and which has since been destroyed. That area was found to be unexceptional.	No
CC	An area of scrub (hawthorn, dogwood, rose, etc.) and probable calcareous grassland through which a public footpath meanders. In the southernmost section this broadens out into a woodland or plantation belt. The grassland in the north has some potential for notable invertebrate assemblages..	**Possibly,** by sweeping
DD	Hardstanding with weedy ephemeral vegetation including St John's wort, yarrow, trefoils etc. Broadens into ungrazed tall sward grassland at its eastern end.	No
EE	Ungrazed tall sward grassland flanking the south edge of a water course. The habitat here is botanically unexceptional and rather uniform in character.	No
FF	An area of set-aside dominated by mugwort, with poppies, white campion, field pansy and interestingly, several stands of *Nepeta. Meligethes incanus* (a Nationally Scarce pollen beetle) was tapped off this plant here. Excepting this, the habitat appears to have very little potential to support significant invertebrate assemblages.	No

1.6 Recommendations

6.1.1 The results of the scoping survey allow for the list of sites requiring further surveys to be reduced to those that are considered to have the potential to support notable invertebrate assemblages and, or rare or scarce individual taxa.

6.1.2 Following the scoping exercise, it was recommended that the Breck grassland invertebrate assemblages across the DCO Site are sampled using a programme of pitfall trapping programme across three main seasons in the year: May to June, August, and September to October.

6.1.3 It was recommended that trap lines consisting of five beakers are sunk into the ground, containing saturated salt solution as a preservative, and left down for between one and two weeks and then lifted. During each set of visits,

these areas will also be sampled using the methods as suggested in **Table 8C-1**.

6.1.4 No surveys are recommended for terrestrial invertebrates within the Grid Connection Routes as the temporary nature of the construction of the cable corridor will not significantly impact upon any terrestrial invertebrates in these areas.

6.1.5 No further surveys are required for the Burwell National Grid Substation Extension as this habitat is unlikely to support significant invertebrate assemblages and, or rare or scarce individual taxa.

Sub-Appendix A Figures

Figure 8C-1 DCO Site Boundary

560000 565000 570000

275000

270000

265000

Sunnica East Site A

Sunnica East Site B

Sunnica West Site B

Sunnica West Site A

0 1,000 2,000 3,000 4,000 5,000m

N

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

LEGEND

- Scheme Boundary
- Not Included in the DCO Site
- Public Highway within Scheme

NOTE:
Public highways run through the Sunnica East Site, which are not part of the site boundary. These have been digitised based on the 1:1250 scale OS Mastermap.

Purpose of Issue
PEIR

Client
SUNNICA LTD

Project Title
sunnica energy farm

Drawing Title
FIGURE 8C-1
SCHEME BOUNDARY

Drawn	Checked	Approved	Date
AD	DW	NC	02/09/2020

AECOM Internal Project No.	Scale @ A3
60589004	1:50,000

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Unit 1 Wellbrook Court,
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File Name:C:\Users\Anna.Diliello\AECOM Directory\Sunnica Energy Farm - GIS - General\Layout\PEIR\Chapter_2_Site_Description_Surrounds\200902_SunnicaEnergyFarm_Figure2-1_SchemeBoundary.mxd

Figure 8C-2 Invertebrate Survey Habitat

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

LEGEND

- DCO Boundary
- Location of grassland

Purpose of Issue
FOR INFORMATION

Client
SUNNICA LTD

Project Title
sunnica energy farm

Drawing Title
SUNNICA EAST GRASSLAND AREAS HIGHLIGHTED FROM SCOPING SURVEY

Drawn	Checked	Approved	Date
BF	AB	NG	03/09/2020

AECOM Internal Project No.
60589004

Scale @ A3
1:20,000

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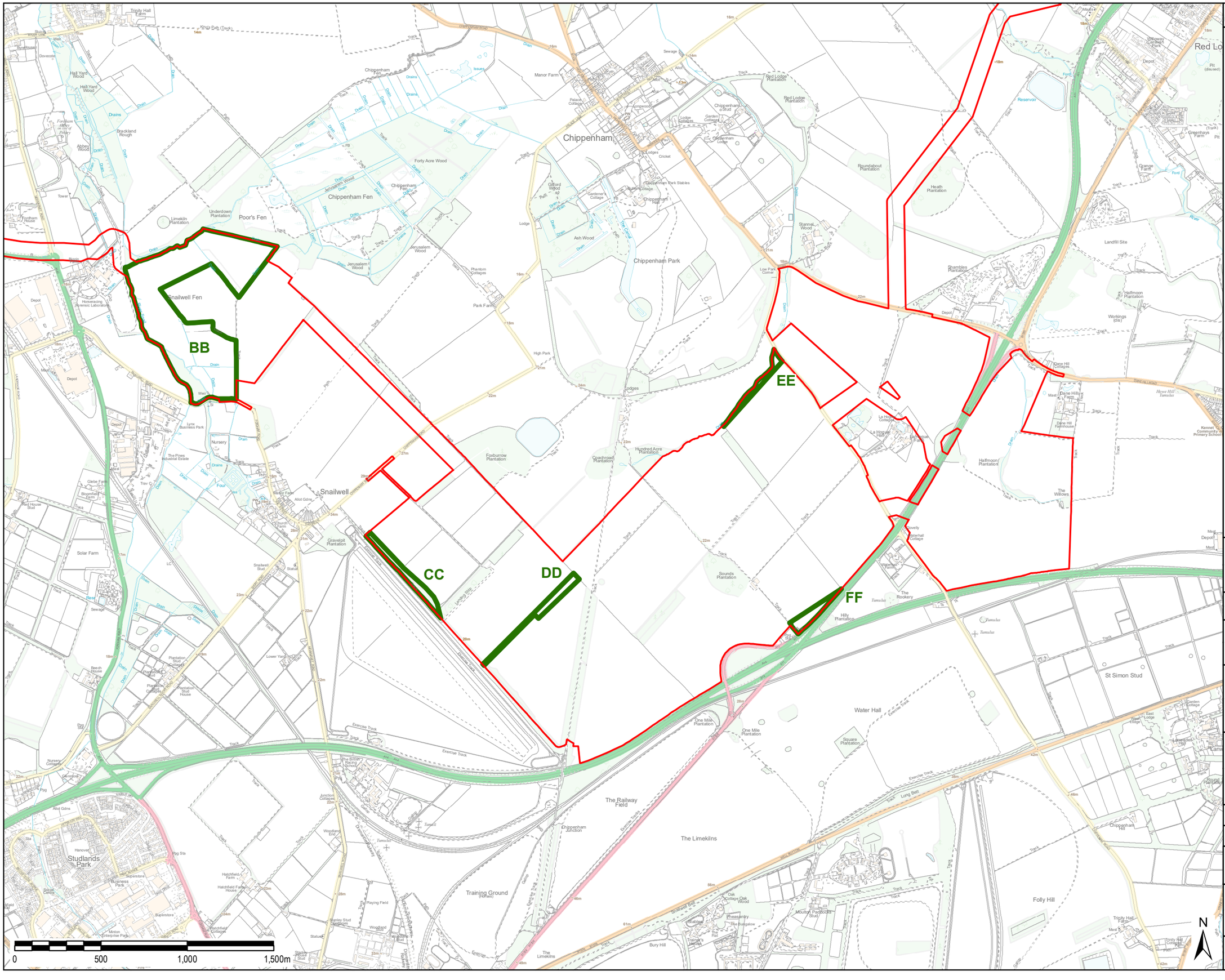
Drawing Number
FIGURE 8C-2a

Rev

0 500 1,000 1,500m

N

File Name:W:\Active Projects\Solar Associates\GIS\02_Maps\SEF_InvertebrateSurvey.mxd



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

LEGEND

- DCO Boundary
- Location of grassland

Purpose of Issue
FOR INFORMATION

Client
SUNNICA LTD

Project Title
sunnica energy farm

Drawing Title
SUNNICA WEST GRASSLAND AREAS HIGHLIGHTED FROM SCOPING SURVEY

Drawn	Checked	Approved	Date
BF	AB	NG	03/09/2020

AECOM Internal Project No.	Scale @ A3
60589004	1:20,000

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Drawing Number
FIGURE 8C-**2**b

Rev

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