



Fosse Green Energy

Preliminary Environmental Information Report

VOLUME

3

**Appendix 8-D: Terrestrial
Invertebrates**

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Fosse Green Energy Limited

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1. Introduction

1.1 Background

- 1.1.1 This report forms a technical appendix to the Preliminary Ecological Information (PEI) Report, specifically to accompany **PEI Report Volume 1, Chapter 8: Ecology and Nature Conservation**. It provides information on a scoping survey for terrestrial insect and other invertebrate species to inform Fosse Green Energy (hereafter referred to as the Proposed Development).
- 1.1.2 Further information on the Proposed Development is included within **PEI Report Volume 1, Chapter 3: The Proposed Development**.

1.2 Site Description

- 1.2.1 The Proposed Development is located 9 km to the south and south west of Lincoln City Centre, Lincolnshire and lies within the administrative district of North Kesteven.
- 1.2.2 The Proposed Development comprises two distinct parcels:
 - a. the Principal Site, which is where ground mounted solar PV panels, electrical sub-stations and Battery Energy Storage System (BESS) will be installed; and
 - b. the Cable Corridor, which comprises the underground electrical infrastructure required to connect the Principal Site to the National Grid.
- 1.2.3 The location of the Proposed Development is centred at Ordnance Survey (OS) Grid Reference SK 90388 62514 and is presented in **PEI Report Volume 2, Figure 1-1**.
- 1.2.4 The Site covers an area of approximately 1,426 hectares (ha) and is dominated by arable fields (approximately 90% of the Site) which are treated with pesticides, *e.g.* insecticides and molluscicides, with smaller areas of improved and semi-improved grassland, hedgerows and woodland.

1.3 Scope of the Report

- 1.3.1 The aim of this report is to determine the potential value of the habitats present within the Survey Area (see Section 3.1) for terrestrial invertebrate species and assemblages of biodiversity importance within the Site (see Section 3.1).
- 1.3.2 The objectives, therefore, are to:
 - a. review existing ecological data to identify any records of terrestrial invertebrates within the Study Area (see Section 3.1); and

- b. identify the terrestrial habitat within the Site that supports or may support notable terrestrial invertebrate species (including protected and Priority Species (see Section 2.1 and 2.2)) and assemblages of biodiversity importance (see Section 3.1).

1.3.3 Combined, this will be used to:

- a. inform the decision as to whether any more detailed and, or, focussed surveys are needed;
- b. determine the biodiversity importance of the Site for terrestrial invertebrates; and
- c. determine the potential impacts of the Proposed Development on terrestrial invertebrates, along with any required mitigation and opportunities for enhancement.

2. Relevant Legislation, Policy and Guidance

2.1 Legislation

Wildlife and Countryside Act 1981 (as amended) Schedule 5

- 2.1.1 Schedule 5 of the Wildlife and Countryside Act (WCA) 1981 (as amended) (Ref 1) lists animals and species that are protected under Section 9, which prohibits the intentional killing, injuring or taking of the species listed in Schedule 5 and also prohibits possession and trade of the animals and species listed. The species listed, of which there are 55 terrestrial invertebrate species (Ref 2), are also further protected from disturbance by prohibiting actions that affect places they use for shelter.

Conservation of Habitats and Species Regulations 2017 (as amended)

- 2.1.2 The Conservation of Habitats and Species Regulations 2017 (as amended) (Habitats Regulations) (Ref 3) transpose Council Directive 92/43/EEC, on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive) (Ref 4) into English law, making it an offence to deliberately capture, kill or disturb wild animals listed under Schedule 2 of the Regulations.
- 2.1.3 Three invertebrate species are protected within the UK under these regulations:
- a. Fisher's Estuarine Moth (*Gortyna borelii lunata*);
 - b. Large Blue Butterfly (*Phengaris arion*); and,
 - c. Lesser Whirlpool Ramshorn Snail (*Anisus vorticulus*).
- 2.1.4 For these species, it is illegal to capture, kill, disturb or injure them; damage or destroy their breeding or resting places or obstruct access to their resting or sheltering places (either deliberately or accidentally).

2.2 Priority Species

- 2.2.1 The Natural Environment and Rural Communities (NERC) Act 2006 (Ref 5) list of Species of Principal Importance (SPI) used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under Section 40 of the NERC Act (in this context, the Secretary of State). Under Section 40 every public authority (e.g., a local authority or local planning authority) must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to

the purpose of conserving biodiversity, including restoring or enhancing a population or a habitat.

- 2.2.2 In the region of 400 invertebrate species are listed as Priority Species under Section 41 of the NERC Act 2006 (Ref 5) and the presence of any of these on a development site is therefore of material consideration in the determination of planning decisions.
- 2.2.3 The UK Biodiversity Action Plan (UKBAP) (Ref 6) was launched in 1994 and established a framework and criteria for identifying species (and habitat types) of conservation concern. From this list, action plans for Priority Species of conservation concern were published. The UKBAP was subsequently succeeded by the UK Post-2010 Biodiversity Framework (July 2012) (Ref 7), and then again by the UK Biodiversity Framework 2024 (Ref 8). This latest Framework has been published in response to the Kunming-Montreal Global Biodiversity Framework (Ref 9), which was agreed at the Fifteen Conference of the Parties (COP15) in December 2022, which is relevant in the context of Section 40 of the NERC Act. These species are identified as those of conservation concern, due to their rarity or a declining population trend.

2.3 Local Biodiversity Action Plan

- 2.3.1 The Proposed Development is located within the county of Lincolnshire. Formerly, the Lincolnshire Biodiversity Action Plan (BAP) (3rd edition) (Ref 10) provided context to inform identification of threatened or uncommon species of local relevance, alongside priorities for conservation and enhancement targeted at a local level. However, under the Environment Act 2021 (Ref 11), BAPs are being replaced by Local Nature Recovery Strategies (LNRs), which are a system of spatial strategies for nature which will support delivery of biodiversity net gain (BNG) and provide more focussed action for nature recovery. Whilst this is still being developed for Lincolnshire and with no specific habitat or species plans currently in place, this report references the Lincolnshire BAP; however, no terrestrial invertebrates are listed as BAP priority species.

3. Methods

3.1 Characterising the Baseline

- 3.1.1 Within this report, the following terminology is used when referring to the geographic areas within which assessments were made:
- Study Area – the area within the Site and a 2km radius which was subject to collection of background information e.g., collation of desk study records to supplement the findings of the survey work;
 - Zone of Influence (Zol) – the area over which terrestrial invertebrates may be affected by the Proposed Development which, using professional judgement is typically no more than 2km around the Site. A review of the likely impacts of the Proposed Development and the results of the desk study, were used to define the scope of field surveys within the Zol; and
 - Survey Area – the area within which survey work was undertaken. For the terrestrial invertebrate surveys, this was the Principal Site only and excluded the Cable Corridor, acknowledging that the habitat with potential to support notable terrestrial invertebrate species (or assemblages) and to be long term temporarily impacted upon (i.e., lost) by the Proposed Development, is within the Principal Site. Habitat disturbed by laying the cable along the Cable Corridor will be reinstated post laying works.

3.2 Desk Study

- 3.2.1 A desk study was undertaken as part of the Preliminary Ecological Appraisal (PEA) in 2023 (see **PEI Report Volume 3, Appendix 8-B: PEA**). This desk study obtained records from Lincolnshire Environmental Records Centre (LERC) of protected and/or Priority Species of terrestrial invertebrates, including beetles, flies and butterflies within the Study Area. This information was indicative of the level of recording within the Study Area and records were indicative of the habitats found within it. Any records of rare or otherwise notable species occurring within the Zol were considered in the assessment.
- 3.2.2 Only records of terrestrial invertebrates up to ten years from the data request date (April 2023) were considered within the assessment, as any records older than ten years are unlikely to be still representative of presence in the local area.

3.3 Field Survey

- 3.3.1 The Survey Area was the Principal Site only and excluded the Cable Corridor, acknowledging that the habitat with potential to support notable terrestrial invertebrate species (or assemblages) and to be long term temporarily impacted upon (i.e., lost) by the Proposed Development, is within the Principal Site.

- 3.3.2 A walk-over of the Survey Area was led by Steve Lane, an independent consultant entomologist with over 30 years' experience, to evaluate the habitats that were present and to identify potential habitats likely to support notable terrestrial invertebrates, or assemblages of invertebrates. This survey was carried out on the 30 March and 4 April 2023.
- 3.3.3 The walkover survey focussed on arable margins and grassland habitats within the Principal Site. Boundary features, such as isolated trees, hedgerows, copses and plantation blocks will be retained and not impacted by the Proposed Development and therefore, did not form part of the survey.
- 3.3.4 A route was devised which allowed a sufficiently close approach to all parts of the Principal Site to assess the likely relative importance of each area for invertebrate diversity. Whilst this involved walking over the majority of the Survey Area, it did not necessitate walking over all habitats, as some areas could be assessed from a distance including by using binoculars. This particularly applied to large areas of arable crops and the more common boundary features.
- 3.3.5 The primary objective of the survey was to walk the perimeter of accessible fields within the Survey Area, noting any habitats that might support significant assemblages or individual species of invertebrate, particularly any that have International Union for the Conservation of Nature (IUCN) threat status or partial or full legal protection. Particular attention was given to saproxylic habitat. This usually manifests as dead wood, often within standing dead or dying trees. Saproxylic invertebrates utilise dead and dying wood and its associated decay micro-habitats (e.g., fungi) for at least part of their life cycle development. Oak (species of *Quercus*) are particularly important due to the diversity of saproxylic species supported.
- 3.3.6 The presence of floristically diverse short-sward grassland in areas of lowland habitats, particularly where this habitat is found on free-draining soils and where there is also some degree of low-level disturbance, e.g., by Rabbit (*Oryctolagus cuniculus*) grazing and digging activity, was also of interest.
- 3.3.7 During the walkover survey, any visually obvious and readily identified invertebrate species were noted at the time and limited sampling of invertebrates was undertaken. Habitat photographs were taken of any features that were considered of interest and brief notes were made in the field.
- 3.3.8 Following the scoping survey, the areas considered most suitable to support notable terrestrial invertebrates, or assemblages of terrestrial invertebrates were subject to targeted sampling on a single occasion (on 30 March and 4 April 2023) to appraise the broad level of terrestrial invertebrate interest within such areas.
- 3.3.9 Targeted sampling involved using sieving, which is a method of surveying that extracts invertebrates from debris such as leaf litter and rotting wood. This method can record a wide range of invertebrates and is also useful in

finding larvae of flies or beetles, plus adult organisms such as worms, pseudoscorpions and *Dermaptera* (earwigs).

3.4 Assessment Criteria

Nationally Rare and Nationally Scarce Species

- 3.4.1 Since 2010, IUCN reviews have been produced for many invertebrate groups and the recent IUCN review (Ref 12) assesses the restricted distribution categories, standardised to Nationally Rare (NR) and Nationally Scarce (NS) without further subdivision. The Great Britain (GB) system of assessing rarity based solely on distribution is used alongside IUCN criteria which, although they also use measures of geographical extent, are primarily concerned with assessing National and International Threat in terms of decline of species populations.
- 3.4.2 In this report, for the taxa found within the Survey Area, the IUCN criteria (Ref 12) have been used. Otherwise, where no such IUCN reviews yet exist for the species recorded, they are referred, in this report, to the older categorisations. Early assessments of invertebrate taxa used the term 'Nationally Notable' for these Nationally Scarce species and, for some taxa, this category was further split into 'Notable A' (Na) for species occurring in 16 to 30 hectads of the National Grid and 'Notable B' (Nb) for those occurring in 31 to 100 hectads. A further category used was 'Red Data Book' which equates to 'Nationally Rare'. This category was used for species that occurred in 15 or fewer hectads in Britain. It was further subdivided depending on the perceived or actual degree of rarity, e.g. 'RDB2' as Vulnerable, 'RDB1' as Endangered, 'RDBI' as 'Red Data Book Indeterminate' and 'RDBK' as 'Red Data Book Insufficiently Known'.

3.5 Biodiversity Importance

- 3.5.1 An essential prerequisite step to allow ecological impact assessment of the Proposed Development was an evaluation of the relative biodiversity importance of the Survey Area for terrestrial invertebrates. This is necessary to set the terms of reference for the subsequent ecological impact assessment.
- 3.5.2 The method of evaluation that was utilised has been developed with reference to the Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines (Ref 13) for scoping and carrying out environmental assessments, placing appraisal in the context of relevant policies and at a geographical scale at which a given feature matters (*i.e.* international, national, regional, county, district, local or site). Data received through desk study and field-based surveys were used to identify the importance of the species encountered. Professional judgement was also applied, where necessary. Relevant published national and local guidance and criteria have been used, where available, to inform the assessment of biodiversity importance and to ensure consistency in evaluation.

3.5.3 Furthermore, whilst there is no standard method for assessing the biodiversity importance of the invertebrate habitat of a site, guidelines set out by Colin Plant Associates (UK Consultant Entomologists (Ref 14)) have been used to determine the importance of the Survey Area (see **Table 1**).

Table 1: Guidelines for evaluating the biodiversity importance of a site

Geographical Scale	Description	Minimum qualifying criteria
International	European Important Site	Internationally important invertebrate species, or assemblages, present.
National	Nationally Important Site	A site that: a. achieves SSSI invertebrate criteria; b. supports sustainable populations of species listed as critically endangered; c. supports sustainable populations of species listed in the Habitats Directive; d. supports sustainable populations of species listed as Endangered within the Red Data Book; e. supports sustainable populations of any species listed on the WCA; or f. contains important invertebrate habitats that are actively threatened nationally.
Regional	A site with populations of invertebrates or invertebrate habitats considered scarce or rare or threatened in a region of England (i.e., East Midlands)	Habitat that is scarce or threatened in the region or which has, or is reasonably expected to have, the presence of an assemblage of invertebrates including at least ten Nationally Notable species or at least ten species listed as Regionally Notable for the English Nature region in question in the Recorder database or elsewhere or a combination of these categories amounting to ten species in total.
County	A site with populations of invertebrates or invertebrate habitats considered scarce or rare or threatened in the county in question, (i.e., Lincolnshire)	Habitat that is scarce or threatened in the county and/or which contains or is reasonably expected to contain an assemblage of invertebrates that includes viable populations of at least five Nationally Notable species or viable populations of at least five species regarded as Regionally Scarce by the county records centres and / or field club.
District	A site with populations of invertebrates or invertebrate habitats	A rather vague definition of habitats falling below county significance level, but which may be of greater significance than merely

Geographical Scale	Description	Minimum qualifying criteria
	considered scarce or rare or threatened in the administrative district (<i>i.e.</i> , North Kesteven District).	Local. They include sites for which NS (nationally scarce) species in the range from 1 to 4 examples are reasonably expected, but not yet necessarily recorded, sites that have 1 to 4 Priority Species and sites that have an outstanding assemblage of Research Only Section 41 moths.
Local	A site with populations of invertebrates or invertebrate habitats considered scarce or rare or threatened in the affected and neighbouring Parishes.	Habitats or species unique or of some other significance within the local area.
Site	-	Although almost no area is completely without significance these are the areas with nothing more than expected “background” populations of common species and the occasional NS species.

3.6 Assumptions and Limitations

Desk Study

- 3.6.1 The aim of the desk study was to help characterise the baseline context of the Proposed Development and provide valuable background information that would not be captured by site surveys alone. Information obtained during the course of the desk study was dependent upon people and organisations having made and submitted records for the area of interest. As such, a lack of records for terrestrial invertebrates (as is the case here) does not necessarily mean that these do not occur in the Study Area. Likewise, the presence of records of species does not automatically mean that these still occur within the area of interest or are relevant in the context of the Proposed Development.

Field Survey

- 3.6.2 The level of assessment and survey effort were determined based on the findings of the walkover survey and with consideration to the Proposed Development design that avoids impacts to adjacent and/or boundary features such as woodlands and hedgerows. Whilst it is acknowledged that the approach reported in this document will have only detected a subset of the total range of invertebrate interest in selected areas of perceived greater importance for terrestrial invertebrates, the scoping assessment and targeted sampling, undertaken in March and April 2023, are adequate for determining the invertebrate interest in and around the Site, in consideration

of the Proposed Development's retention and avoidance of existing boundary features.

- 3.6.3 No surveys were undertaken for terrestrial invertebrates within the Cable Corridor as the temporary nature of the construction of the cable corridor in these areas will not significantly impact upon any terrestrial invertebrates, or their habitats.

4. Results

4.1 Desk Study

- 4.1.1 The desk study returned two records of protected and/or priority species of terrestrial invertebrate species, both butterflies, within the preceding ten years and within 2 km of the Site. There was one record of White-letter Hairstreak (*Satyrrium w-album*), the closest of which is approximately 650 m from the Site, a species protected under Schedule 5 of the 1981 Wildlife and Countryside Act (sale only) and a Section 41 species of principal importance under the 2006 NERC Act and UK BAP priority species; and one record of Purple Emperor (*Apatura iris*), the closest of which is approximately 1.5 km from the Site, a species protected under Schedule 5 of the 1981 Wildlife and Countryside Act (sale only).

4.2 Field Survey

- 4.2.1 The walkover survey identified 22 areas within the Site that, due to the habitat, had potentially more value to terrestrial invertebrates and at the time of survey had the potential to be within the developable areas of the Proposed Development.
- 4.2.2 A summary of these 22 areas is presented in **Table 2**, and their locations are presented in **Figure 8-D-1 (Annex A)**. Additional areas of saproxylic habitat with a lower value to terrestrial invertebrates are also presented.

Table 2: Summary description of areas of more value to terrestrial invertebrates

Area Code (see Figure 8-D-1)	Brief Habitat Description	Photograph
1	Stocking Wood, consisting largely of oak woodland with some notably mature and damaged examples along its perimeter. This wood was later excluded from the Site and is present along the Site Boundary/adjacent land only.	

Area Code (see Figure 8-D-1)	Brief Habitat Description	Photograph
2	An apparently unexceptional, but relatively large compartment of poor semi-improved grassland.	
3	Ditch containing water; in places with emergent water plants including stands of Reedmace (<i>Typha</i> species) and occasional Water-cress (<i>Nasturtium officinale</i>), but a large amount of algae suggested run-off contamination from surrounding agricultural land and associated eutrophication.	
4	A relatively large grassland area of set-aside that appeared to have been seeded with wildflowers including Ox-eye Daisy (<i>Leucanthemum vulgare</i>), Ribwort Plantain (<i>Plantago lanceolata</i>), Yarrow (<i>Achillea millefolium</i>), Common Knapweed (<i>Centaurea nigra</i>), Spear Thistle (<i>Cirsium vulgare</i>), some clovers species of <i>Trifolium</i> , Nettle (<i>Urtica dioica</i>), some docks (species of <i>Rumex</i>), Common Ragwort (<i>Jacobaea vulgaris</i>) and some dandelions (species of <i>Taraxacum</i>).	

Area Code (see Figure 8-D-1)	Brief Habitat Description	Photograph
5	Small plantation of Hazel (<i>Corylus avellana</i>) and some willow species (<i>Salix</i> species) with a perimeter oak (<i>Quercus</i> species).	
6	Deep ditch, unexceptional for invertebrates but bordered on both sides by a relatively broad strip of rough grassland containing Creeping Buttercup (<i>Ranunculus repens</i>), Hogweed (<i>Heracleum sphondylium</i>), Cow Parsley (<i>Anthriscus sylvestris</i>), Lesser Celandine (<i>Ficaria verna</i>), docks and Teasel (<i>Dipsacus fullonum</i>).	
7	Relatively small pocket of rough ex-arable grassland; plant diversity was poor.	
8	Small area of set-aside/rough grassland; plant diversity was poor.	No photo.

Area Code (see Figure 8-D-1)	Brief Habitat Description	Photograph
9	Small circular field pond with emergent Reedmace (<i>Typha</i> species); with Bittersweet (<i>Solanum dulcamara</i>) and Rosebay Willowherb (<i>Chamerion angustifolium</i>) with Burdock (<i>Arctium</i> species) at the margins.	
10	Broad headland strip bordering cultivated arable, and containing many Brassicaceae (cabbage family), planted as foraging habitat for birds.	No photo.
11	One of the better examples of ephemeral weedy areas within the Site, particularly well-represented in the western half of this field. If this field was purposefully left as set-aside it may be found to contain a diverse assemblage of invertebrates associated with sparsely vegetated arable habitats, but the likelihood is that it will be ploughed. Previously cropped for Maize (<i>Zea mays</i>). Field Pansy (<i>Viola arvensis</i>), Scentless Mayweed (<i>Tripleurospermum inodorum</i>) and Common Chickweed (<i>Stellaria media</i>) were noted.	
12	A number of dead elms (<i>Ulmus</i> species) in the northern section of this hedgerow which should support associated saproxylic invertebrates.	No photo.
13	Hedgerow with plentiful dead Ash (<i>Fraxinus excelsior</i>) and elm (<i>Ulmus</i> species) and a notable large dead Ash in field corner.	

Area Code (see Figure 8-D-1)	Brief Habitat Description	Photograph
14	Ditch containing water and variously choked up by Reedmace and shrubs (Blackthorn (<i>Prunus spinosa</i>) and willows) along its length. Water quality appeared to be poor.	
15	Ditch containing water and with stands of emergent water plants – the water quality improved in mid-northern section, but the ditch is likely compromised by run-off contamination.	
16	Small copse, predominantly Ash with Hawthorn (<i>Crataegus monogyna</i>) and Blackthorn at its perimeter.	No photo.
17	Row of old willows along a stream; some signs of historic pollarding, many with exposed rot on trunks.	
18	Unmanaged section of ditch with tall vegetation of Reedmace, Willowherb and Bramble (<i>Rubus fruticosus</i> aggregate).	

Area Code (see Figure 8-D-1)	Brief Habitat Description	Photograph
19	Grass-dominated headland.	
20	Large grassland headland with Knapweed and Ox-eye Daisy, probably wildflower-mix seeded area.	No photo
21	Pasture grazed by sheep with Cowslip (<i>Primula veris</i>), Common Sorrel (<i>Rumex acetosa</i>), Self-heal (<i>Prunella vulgaris</i>), Hoary Plantain (<i>Plantago media</i>), Mouse-ear Hawkweed (<i>Pilosella officinarum</i>) and high intensity sheep grazing and with a high percentage (>50%) bare ground.	
22	Two broad, permanent headland strips bordering cultivated arable, and containing many Brassicaceae as well as Broad-leaved Dock (<i>Rumex obtusifolius</i>), willowherbs, Spear Thistle and Burdock; retained as foraging habitat for birds.	
Additional examples / photos of saproxylic habitat.		
23	An oak on the east perimeter of Area 7 showing significant fracture damage to the trunk and additional limb damage, located at grid ref. SK90616258.	

Area Code (see Figure 8-D-1)	Brief Habitat Description	Photograph
24	Ash with significant damage, probably as a result of Ash Dieback (<i>Hymenoscyphus fraxineus</i>). Located in a hedgerow at grid ref. SK88956378.	
25	Oak with significant damage to trunk (which is partially hollowed) at grid ref. SK88306442	

- 4.2.3 Targeted sampling of terrestrial invertebrates, following the walkover survey resulted in a total of 170 invertebrate species being recorded. Most of these were sieved from ground vegetation. The majority were common and widespread species.
- 4.2.4 Two species with British Rarity value (i.e. Nationally Scarce) were recorded, both associated with woody vegetation and dead wood:
- Coeliodes transversealbofasciatus*, a weevil beetle, which is widely but sparsely distributed in England; and
 - Orchesia micans*, a saproxylic beetle, the characteristically pink larvae of which develop in bracket fungi (particularly Shaggy Polypore (*Inonotus hispidus*)) on decaying Ash trees.

5. Evaluation

5.1 Desk Study

- 5.1.1 The desk study identified two species of terrestrial invertebrate species, both butterfly species, occurring within 2km of the Site. These were Purple Emperor and White-letter Hairstreak. Purple Emperor is found in woodland habitats, the caterpillar of this species particularly favouring Goat Willow (*Salix caprea*) and Grey Willow (*Salix cinerea*). White-letter Hairstreak is found in sheltered hedgerows, mixed scrub and on the edges of woodland and breeds on various elm species, including Wych Elm (*Ulmus glabra*), English Elm (*Ulmus procera*) and Small-leaved Elm (*Ulmus minor*).
- 5.1.2 Whilst woodland, scrub and hedgerow habitats did not form part of the scope of the surveys reported in this document, any such habitats that may support Purple Emperor or White-letter Hairstreak would be retained as part of the Proposed Development, therefore these species would not be impacted upon, even if present.

5.2 Field Survey

- 5.2.1 The walkover survey for terrestrial invertebrates identified 22 areas plus individual trees that, due to the type of habitat, were of potentially greater value to terrestrial invertebrates than the remainder of the Principal Site. These areas amounted to about 24.6ha of grassland and woodland (2.3% of the Survey Area), 2.8km of ditches, 0.5km of hedges, and individual trees as shown on **Figure 8-D-1 (Annex A)** and were subject to targeted sampling to appraise their invertebrate interest, recording 170 terrestrial invertebrate species during the survey.
- 5.2.2 No species that are afforded full protection under UK or International legislation or Priority Species were recorded during the survey. Two Nationally Scarce species, both associated with woody vegetation and dead wood were recorded *Coeliodes transversealbofasciatus*, a weevil beetle; and *Orchesia micans*, a saproxylic beetle.
- 5.2.3 The most important habitat features across the Site were the dead, dying and damaged oak and ash trees, located along boundary hedgerows and as individual trees as these are likely to support significant invertebrate assemblages. Providing these are retained, then there will be no need for any further, targeted invertebrate species surveys (e.g. for saproxylic species).
- 5.2.4 The grassland habitat within the Site was botanically relatively species poor and hence unexceptional for invertebrate species. It is not expected that invertebrate assemblages of significance occur in these isolated and relatively small parcels of land, but it is desirable to retain these as their value to invertebrates will be greater than the value of monoculture crops and narrow field margins so typical of the majority of the existing arable farmland (approximately 92% of the Site, currently arable agriculture, part of

the crop husbandry of which includes applications of pesticides, *e.g.*, insecticides and molluscicides). No further surveys are proposed in these habitats.

6. Conclusion

- 6.1.1 The desk study identified two species of butterfly (Purple Emperor and White-letter Hairstreak) occurring within the Study Area and potentially within the Site. The field survey identified two Nationally Scarce species of beetle, both associated with woody vegetation and dead wood within the Site. None of these species is likely to be impacted by the Proposed Development as they prefer woodland, individual trees (*i.e.* mature/veteran trees), hedgerows and scrub, all or most of which will be retained and buffered from disturbance.
- 6.1.2 Overall, based on the habitats within the Principal Site, the avoidance that will be built into the design for the Proposed Development, the embedded mitigation measures (as presented in **Chapter 8: Ecology and Nature Conservation** of the **PEI Report Volume 1**), and the small number of terrestrial invertebrates of conservation interest that were recorded or are likely to be present within the Proposed Development, the value of the Site to terrestrial invertebrates is of District value only.
- 6.1.3 This District value comes from the often isolated and relatively small parcels of suitable habitat within the Site (*i.e.* woodland, individual trees and hedgerows) and it is desirable to retain these as their value to invertebrates will be greater than the approximately 90% of the Site currently in arable agriculture. Where woodland habitat, individual trees and, or hedgerows are removed, it may be necessary to undertake a further assessment for example, saproxylic species, to determine any necessary mitigation. This will depend on such factors as the length or area of habitat to be lost and its condition, *e.g.* age of tree.
- 6.1.4 The Proposed Development presents an opportunity to include habitat creation within the design that would enhance the habitats for terrestrial invertebrates, *e.g.*, through the creation of nectar rich grassland and additional tree/shrub planting.

7. References

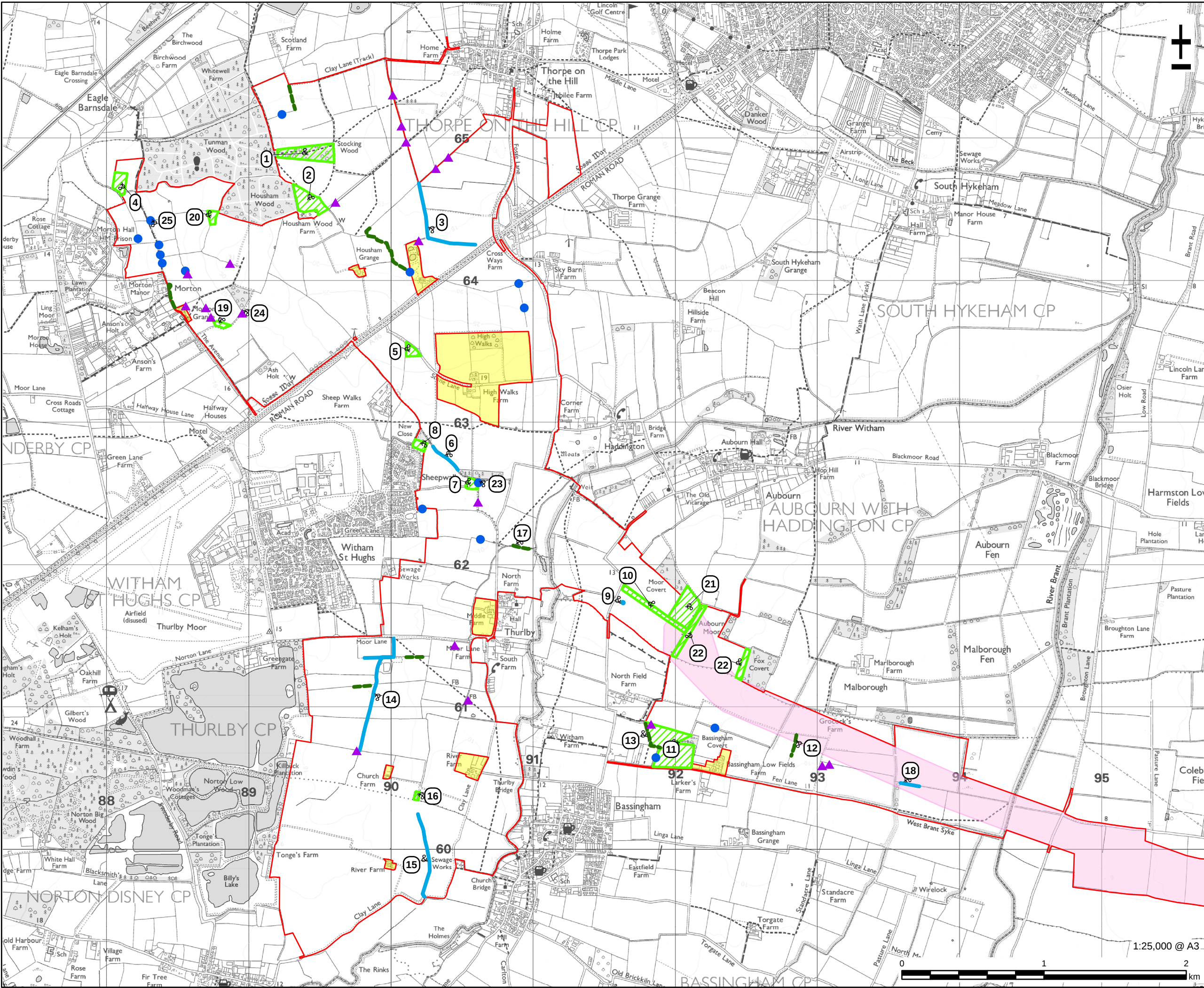
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Annex A Figures

PEI Report Volume 3, Figure 8-D-1 Terrestrial Invertebrate Habitats



PROJECT

Fosse Green Energy

CLIENT

Fosse Green Energy Ltd

CONSULTANT

AECOM Limited
Sunley House
4 Bedford Park
Surrey, CR0 2AP, UK
www.aecom.com

LEGEND

- Solar and Energy Storage Park
- Land Not Included In Site Boundary
- Grid Connection Corridor
- Saproxylc habitat (significantly damaged hedgerow oak), labelled with Area Code
- Saproxylc habitat (Ash), labelled with Area Code
- Areas of grassland or broad arable headland, with Area Code
These areas amounted to about **24.6ha (2.3% of the Site)**
- Relatively noteworthy ditch features, labelled with Area Code
These amount to about **2.8km**
- Unmanaged and relatively species-rich hedgerows, labelled with Area Code where applicable
Labelled features amount to about **0.5km**

NOTES

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ISSUE PURPOSE

PEI Report

PROJECT NUMBER

60664324

FIGURE TITLE

Terrestrial Invertebrate Habitats

FIGURE NUMBER

Figure 8-D-1