FENWICK SOLAR FARM

Preliminary Environmental Information Report

Volume III Appendix 8-2: Preliminary Ecological Appraisal

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Prepared for:
Fenwick Solar Project Limited

Prepared by:
AECOM Limited

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Executive Summary

Site Details	Name: Fenwick Solar Farm – Solar Photovoltaic (PV) Site Location: Fenwick, Doncaster, SE 60658 16767 Approximate area of Solar PV Site: 421 hectares (ha)
Scheme Details	Fenwick Solar Farm site is located from approximately 5 kilometres (km) north of Doncaster, with the Solar PV Site, located approximately 12 km north of Doncaster, and is comprised of three main areas: a. The land located east of Fenwick and immediately south of the River Went, hereafter referred to as the Solar PV Site; b. The land between the Solar PV Site and the Existing National Grid Thorpe Marsh Substation, hereafter referred to as the Grid Connection Corridor; and c. The land located within the compound for the Existing National Grid Thorpe Marsh Substation approximately 6 km to the south, hereafter referred to as the Existing National Grid Thorpe Marsh Substation. The Solar PV Site, Grid Connection Corridor and Existing National Grid Thorpe Marsh Substation are collectively referred to as 'the Site'. Fenwick Solar Farm, hereafter referred to as 'the Scheme', comprises the installation of Solar PV Panels, On-Site Cables, Interconnecting Cables, associated Battery Energy Storage System (BESS) Battery Containers, an On-Site Substation, a cable or line drop connecting the On-Site Substation to the Existing National Grid Thorpe Marsh Substation, and other supporting infrastructure including fencing, access tracks, drainage and biodiversity and landscaping enhancements. This Preliminary Ecological Appraisal Report (PEAR) includes the Solar PV Site only. A separate assessment will be prepared for the Grid Connection Corridor (encompassing the Existing National Grid Thorpe Marsh Substation). The Scheme is classified as a Nationally Significant Infrastructure Project (NSIP). This PEAR is intended to inform the ecological work required to accompany the Development Consent Order (DCO) application for the Scheme.

Ecological Features that may be affected by the Scheme	Much of the Solar PV Site is arable farmland and semi-improved or improved grassland used for grazing livestock. There are trees, hedgerows, running water, and ditches present on the Solar PV Site and within the zone of influence, which provide suitable habitat for birds, bats, Otters (*Lutra lutra*), Water Voles (*Arvicola amphibius*), Great Crested Newts (*Triturus cristatus*), Badger (*Meles meles*) reptiles, aquatic invertebrates, aquatic macrophytes and fish.
Recommendations for Further Survey and Assessment	Designated sites: It is recommended that a Habitats Regulations Assessment Screening Report is completed to evaluate the risk of likely significant effects upon the qualifying features and conservation objectives of European Sites within the Study Area. Natural England should be consulted on the conclusions of the Habitats Regulations Assessment Screening Report. Designated sites: It is recommended that where Local Wildlife Site (LWS) are within the Scheme they are avoided and buffered. If it is not possible to avoid these LWS's (i.e. the Went Valley (Part) LWS on the Solar PV Site, then it is recommended that further surveys of this site are carried out to assess the likely impacts from the Scheme. Appropriate protection zones and construction precautions should be implemented for Bunfold Shaw LWS, The Riddings Farm Pond candidate LWS (cLWS), Fenwick Hall Moat LWS and Fenwick Churchyard LWS, to avoid potential impacts. Habitats: A detailed vegetation survey may be required to obtain specific survey information for any potential Habitat of Principal Importance and determine whether any significant plant communities are present that may inform any mitigation requirements. It is recommended that a hedgerow survey is carried out on the hedgerows present on the Solar PV Site. Bats: A Daytime Bat Walkover to be carried out to provide an initial assessment of potential suitability for roosting bats in features identified. To assess how bats use the habitats for foraging and commuting away from roosts, it is recommended that bat activity transects and static monitoring are carried out across the Solar PV Site. Otters: It is recommended that surveys of the River Went, and any associated drains and ditches be carried out. This involves investigating the watercourses 250

metres (m) up and downstream, searching for signs of Otter. Any suitable terrestrial habitat within 200 m of the River Went, the Fleet Drain and Fenwick Common Drain will also be inspected for signs of den or rest sites.

Water Voles: If the Scheme is to impact suitable Water Vole habitat within 5 m, it is recommended that surveys of the River Went be carried out. This involves investigating the watercourses 200 m up and downstream, searching for signs of Water Vole.

Great Crested Newts: It is recommended that environmental DNA surveys be carried out on suitable waterbodies within a 250 m buffer of the Solar PV Site Boundary. This will confirm the presence or likely absence of Great Crested Newts in the waterbodies within the Solar PV Site.

Reptiles: It is recommended that seven visits be made to the Solar PV Site, to search for reptile presence on artificial refugia (sheets of roofing felt or metal corrugated roofing panels).

Birds: It is recommended that wintering bird surveys be carried out over the months of September to March and breeding bird surveys be carried out over the months of April to August.

Aquatic Receptors: Further surveys for aquatic invertebrates and aquatic macrophytes are recommended for identifying protected/notable species and invasive non-native species (INNS). Fish surveys are recommended on the River Went, Fleet Drain, and Fenwick Common Drain, to assess habitat suitability for River (*Lampetra fluviatilis*) and Sea Lamprey (*Petromyzon marinus*) and to carry out electric fishing surveys for these and other fish species. If it can be established that these watercourses would not be impacted, fish surveys would no longer be required.

Invasive non-native species: It is recommended that an INNS survey is carried out between April to September to assess the potential impact of INNS to the Scheme and to inform any mitigation measures required. The recommended aquatic ecological surveys would also detect the presence of INNS within waterbodies and marginal habitats.

Recommendations for Mitigation	The Scheme design should seek to avoid or minimise impacts to notable habitats that have the potential to represent Habitat of Principal Importance, as well as any trees or hedgerows present on the Solar PV Site. The requirement for mitigation measures for protected species will be informed by further surveys. Where necessary the mitigation for protected species will be detailed in the relevant protected species licence as appropriate. General precautions for habitats and species are provided below: Habitats: To minimise the risk of habitat loss the following protection measures are recommended for these habitats: (1) Retained trees and hedgerows should be protected in accordance with the guidance of BS5837:2012 Trees in relation to design, demolition, and construction, and (2) Watercourses should be protected with a 10 m stand-off and ditches should be protected by a 5 m stand-off. Badgers/other mammals: During construction general measures should be implemented to avoid the risk of harm to Badgers (and other mammals), including covering any open excavations or providing an adequate means of escape and capping any pipes greater than 25 centimetres (cm) in diameter. All active Badger setts should be retained and protected within the Scheme design and this may be enforced through the use of fencing. Where impacts to active Badger setts cannot be avoided then these should be covered by a Natural England Badger licence. Bats: In the event that bat roosts would be lost or disturbed then mitigation will be detailed in a Natural England European Protected Species Licence. It is also recommended that the risk of indirect impacts to bat habitat from any artificial lighting should be mitigated through the use of directed or low intensity lighting. Birds: The clearance of any suitable bird nesting habitat is undertaken in the Autumn/Winter, to be outside of the main bird nesting season (March to August, inclusive). Where this is not possible then clearance would be preceded by a nesting bird check and appropriate stand-offs enforced until the chicks have fledged. Invasive non-native species: Measures should be implemented during construction to prevent the spread of INNS and where practicable to locally eradicate these species within the Solar PV Site.

Opportunities for Biodiversity Enhancements

Opportunities for biodiversity enhancements at the Solar PV Site that could be considered are outlined below:

a. Improve the defunct and species-poor hedgerows at the Solar PV Site to add diversity and improve habitat connectivity;
b. Over-sowing a wildflower meadow within areas of semi-improved grassland could provide a good food source for several species of invertebrates including pollinators;
c. Pond creation and the maintenance of the ditches present on Site would be beneficial to invertebrates, birds, amphibians and reptiles. Pond creation should be focused within the areas with the lowest value to wildlife, and ditch management should focus on creating shady and sunlit areas, and varying depths along the lengths;
d. Bat boxes could be placed around the Site to enhance roosting opportunities for bat species;
e. Bird boxes could be placed around the Site to offer shelter for breeding bird species;
f. ‘Bug hotels’ could be placed around the Site in different locations (such as on trees or underneath hedgerows), to provide habitat for terrestrial invertebrates; and
g. Hibernacula, such as log, rock and stone piles, could be created around the Site to provide habitat for reptiles and amphibians. Additionally, these piles would be beneficial to a variety of terrestrial invertebrates.

1. Introduction

1.1 Background

1.1.1 This Preliminary Ecological Appraisal Report (PEAR) has been prepared by AECOM on behalf of Fenwick Solar Project Limited (hereafter referred to as the 'Applicant'), to assess the ecological constraints in connection with Fenwick Solar Farm (hereafter referred to as the 'Scheme'), located in Fenwick, Doncaster, as shown by the Site Boundary on Figure 1 in Annex A.

1.1.2 This PEA was commissioned to identify whether there are known or potential ecological receptors (nature conservation designations, protected and notable habitats and species and scheduled invasive non-native species (INNS)) that may constrain or influence the design and implementation of the Scheme. The approach applied when undertaking this PEA accords with the Guidelines for Preliminary Ecological Appraisal published by the Chartered Institute of Ecology and Environmental Management (CIEEM) (Ref. 1). The PEA addresses relevant wildlife legislation and planning policy as summarised in Section 2 of this report and is consistent with the requirements of *British Standard 42020:2013 Biodiversity. Code of Practice for Planning and Development* (Ref. 1).

1.2 The Scheme

1.2.1 The proposed Scheme includes three locations (collectively referred to as the 'Site'):

a. The land located east of Fenwick and immediately south of the River Went (hereafter referred to as the 'Solar PV Site');

b. The land between the Solar PV Site and the existing compound for Thorpe Marsh Substation (hereafter referred to as the 'Grid Connection Corridor'); and

c. The land located within the existing compound for Thorpe Marsh Substation (hereafter referred to as the 'Existing National Grid Thorpe Marsh Substation').

1.2.2 The Scheme comprises the installation of Solar PV Panels, On-Site Cables, Interconnecting Cables, associated Battery Energy Storage System (BESS) Battery Containers, an On-site Substation, a cable or line drop connecting the On-Site Substation to the Existing National Grid Thorpe Marsh Substation and other supporting infrastructure including fencing, access tracks, drainage, and biodiversity and landscaping enhancements.

1.2.3 This PEAR considers the Solar PV Site only. A separate assessment will be prepared for the Grid Connection Corridor prior to the DCO application.

1.3 The Site

1.3.1 The Solar PV Site is located near the village of Fenwick, approximately 12 kilometres (km) north of Doncaster, approximately centred at Ordnance Survey national grid reference SE 60658 16767. The Solar PV Site is approximately 421 hectares (ha) in size.

1.3.2 The Solar PV Site comprises arable and pasture fields, and small patches of broadleaved woodlands, with the River Went delineating the northern Site Boundary and two large drains running through the eastern part of the Solar PV Site (Fenwick Common Drain, and Fleet Drain).

1.3.3 The Solar PV Site is bounded by further arable and pasture fields to the east, west and south, and the wider area consists of a landscape that is much the same in terms of land use. The small town of Askern is located approximately 3 km to the south west of the Solar PV Site and nearby rural villages Moss and Balne are present within a few kilometres to the south and north respectively.

1.3.4 In August 2023, following the Scoping report (**PEIR Volume III Appendix 1-1: EIA Scoping Report**), the Solar PV Site Boundary was expanded to include ten additional fields, and a section of Fenwick Common Lane. This added an additional 92 ha to the Solar PV Site.

1.4 Purpose of the Preliminary Ecological Appraisal

1.4.1 This PEAR is intended to provide advice in respect of the Scheme design, Site layout and/or Site investigation. Further ecological surveys and ecological impact assessment (including detailed mitigation measures) will be undertaken in connection with the Development Consent Order (DCO) application in the format of an Environmental Impact Assessment (EIA) once the Scheme proposals have been finalised and required surveys completed. These detailed surveys will provide the characterisation of the ecological baseline conditions and supersede this report.

1.4.2 This PEAR presents ecological information obtained during the following:

a. A desk-study undertaken on 20 February 2023 and 3 November 2023 to obtain records of designated sites and protected and notable habitats and species (the area covered by the desk study is hereafter referred to as the ‘Study Area’, as defined in Section 3);

b. A walkover survey of accessible land within and adjacent to the Solar PV Site (the area covered by the survey is hereafter referred to as the ‘Survey Area’, as defined in Section 3) from 28 to 31 March 2023 and on 25 April 2023; and

c. A walkover survey of the new areas of the Solar PV Site on 19 October 2023.

1.4.3 The purpose of the PEAR is to provide a high-level ecological appraisal of the Solar PV Site, specifically:

a. To establish baseline conditions and determine the presence of Important Ecological Features (IEFs) (habitats, species, ecosystems and their functions and processes that are of conservation importance and could potentially be affected by the Scheme), as far as is possible;

b. To identify potential ecological constraints to the Scheme and make initial recommendations to avoid impacts on IEFs, where practicable;

c. To identify requirements for mitigation, where practicable, including mitigation measures that will be required and those that may be required (depending on results of further surveys or final Scheme design);

d. To establish any requirements for more detailed surveys; and
e. To identify any opportunities offered by the Scheme to deliver biodiversity enhancements.

2. Legislation, Policy and Guidance

2.1.1 A summary of applicable legislation, planning policy and other guidance documents relating to biodiversity and relevant to the Scheme is provided below and in Annex B.

2.1.2 Full details of the legislation, policy, and guidance of relevance to the assessment of significant biodiversity effects of the Scheme is provided in full in **PEIR Volume III, Appendix 8-1: Legislation, Policy and Guidance (Ecology)**.

2.2 Legislation

2.2.1 The following legislation is applicable in order to inform the biodiversity assessment:

a. Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (Habitats and Species Directive) (Ref. 3);

b. Directive 2009/147/EC on the conservation of wild birds (the codified version of Council Directive 79/409/EEC as amended) (Birds Directive) (Ref. 3);

c. Regulation (European Union (EU)) 1143/2014 (2014) on the prevention and management of the introduction and spread of invasive alien species (the IAS Regulation) (Ref. 4);

d. The Ramsar Convention 1971 (Ref. 5);

e. The Conservation of Habitats Regulations 2017 (as amended) (Habitat Regulations) (Ref. 6);

f. The Wildlife and Countryside Act 1981 (as amended) (WCA) (Ref. 7);

g. The Countryside and Rights of Way Act 2000 (CRoW Act) (Ref. 8);

h. The Environment Act 2021 (Ref. 9);

i. The Natural Environment and Rural Communities Act 2006 (NERC Act) (Ref. 10);

j. The Protection of Badgers Act 1992 (Ref. 11);

k. The Hedgerows Regulations 1997 (Ref. 12);

l. The Animal Welfare Act 2006 (Ref. 13);

m. The Invasive Alien Species (Enforcement and Permitting) Order 2019 (as amended) (Ref. 14);

n. The Salmon and Freshwater Fisheries Act 1975 (Ref. 15);

o. The Eels (England and Wales) Regulations 2009 (Ref. 16); and

p. The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (Ref. 17).

2.2.2 As part of the assessment of the Scheme, it is necessary to determine whether the Scheme is likely to have a significant effect on areas that have been internationally designated for nature conservation purposes such as

Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar sites, as well as proposed or potential sites (hereafter, 'European sites'). Therefore, Likely Significant Effects (LSE), with relation to European sites, will be considered further in the Habitats Regulations Assessment (HRA) report that will be included with the Environmental Statement (ES) as part of the DCO application.

2.3 National Planning Policy

2.3.1 This PEAR considers relevant National Policy Statements (NPS) for solar. In combination, these NPS set out national policy for energy infrastructure and provide guidance and the legal framework for planning decisions. Therefore, the following NPS have been reviewed and are relevant to the Scheme and biodiversity:

a. Overarching National Policy Statement (NPS) for Energy (EN-1) (November 2023) (Ref. 18);

a. NPS for Renewable Energy Infrastructure (EN-3) (November 2023) (Ref. 19)

b. NPS for Electricity Networks Infrastructure (EN-5) (November 2023) (Ref. 20)

2.3.2 The National Planning Policy Framework (NPPF) (Ref. 21) sets out the Governments planning policies for England and how these are expected to be applied. The NPPF with particular reference to section 15 (conserving and enhancing the natural environment) states that the planning system should contribute to and enhance the natural and local environment by minimising impacts on biodiversity and providing net gains in biodiversity. The NPPF is clear that pursuing sustainable development includes moving from a net loss of biodiversity to achieving net gains for nature, and that a core principle for planning is that it should contribute to conserving and enhancing the natural environment and reducing pollution. The NPPF also specifies the obligations that the Local Authorities and the United Kingdom (UK) Government have regarding sites statutorily designated for their biodiversity value and otherwise protected or notable habitats and protected species under UK and international legislation and how this is to be delivered in the planning system. Protected or notable habitats and species are of material consideration in planning decisions and may therefore make some sites unsuitable for particular types of development, or if development is permitted and significant harm to biodiversity cannot be avoided, then adequate mitigation measures (or as a last resort, compensation) will be required to avoid or minimise impacts on certain habitats and species.

2.4 Local Planning Policy

2.4.1 The applicable local planning policies that are relevant to inform the biodiversity assessment for the Scheme is the Doncaster Local Plan 2015-2035 (adopted September 2021) (Ref. 22).

2.4.2 Policies in chapter 10 (Green Infrastructure) of The Doncaster Local Plan seek to maintain, protect, enhance and extend all assets in the green infrastructure network in Doncaster. Development proposals will be

supported which contribute to an attractive and connected environment including creating and enhancing green corridors that link urban areas to countryside. The policies provide the detail on how their green infrastructure visions and objectives will be achieved through the planning system by providing a network of well-connected habitats and an attractive, healthier, safer and more active place to live and work.

2.5 Other Guidance Documents

2.5.1 Other guidance documents that have informed the assessment of the impacts of the Scheme on biodiversity includes:

a. The Environmental Improvement Plan 2023 (Ref. 23);

b. Natural England and Department for Environment, Food and Rural Affairs (Defra) Standing Advice (protected species) (Ref. 24);

c. The UK Biodiversity Action Plan (UK BAP) list of priority habitats and species (Ref. 25), succeeded by the UK Post-2010 Biodiversity Framework (Ref. 26);

d. Biodiversity Guidance for Solar Developments (2014) (Ref. 27);

e. Natural England's evidence review of the impacts of solar farms on birds, bats and general ecology (Ref. 27);

f. Mitigating biodiversity impacts associated with solar and wind energy development: Guidelines for project developers (Ref. 30);

g. Birds of Conservation Concern (BoCC) (Ref. 31);

h. The International Union for Conservation of Nature (IUCN) Red List of Threatened Species (Ref. 32);

i. Doncaster Local Biodiversity Action Plan (Doncaster BAP) (Ref. 32);

j. The Doncaster Green Infrastructure Strategy 2014-2028 (adoption version April 2014) (Ref. 33);

k. Internal Drainage Board (IDB) Policies (Ref. 34);

l. Guidelines for Ecological Impact Assessment in the UK and Ireland Terrestrial, Freshwater, Costal and Marine (Ref. 35); and

m. Natural England Technical Information Note TIN101 Solar parks: Maximising Environmental Benefits (Ref. 37).

3. Methods

3.1 Desk Study

3.1.1 A desk study was carried out to identify nature conservation designations and protected or notable habitats and species potentially relevant to the Scheme.

3.1.2 A stratified approach was taken when defining the desk Study Area, based on the likely zone of influence (ZoI) of the Scheme on different ecological receptors, and an understanding of the maximum distances typically considered by statutory consultees. Accordingly, the desk study identified:

a. Any international nature conservation designations within 10 km of the Site Boundary (as well as any SACs) within 30 km where bats are noted as the, or one of the, qualifying features);

b. Other statutory nature conservations designations within 2 km of the Site Boundary; and

c. Local non-statutory nature conservation designations and protected or notable habitats and species within 2 km of the Site Boundary.

3.1.3 The desk study was carried out using the data sources detailed in Table 1. Protected and notable habitats and species included those listed under;

a. Schedules 1, 5 and 8 of the WCA (Ref. 7);

b. Schedules 2, 4 and 5 of the Habitats Regulations (Ref. 6); or

c. Section 41 (S41) of the NERC Act (Ref. 10) which lists species and habitats of principal importance (Species of Principal Importance (SPI) or Habitats of Principal Importance (HaPI)) for nature conservation in England.

3.1.4 Other habitats and species that are Nationally Rare, Nationally Scarce or listed in national or local Red Data Lists and Biodiversity Action Plans but are not protected by legislation (this is consistent with the requirements of relevant planning policy), were also considered and have been assessed on a case-by-case basis.

3.1.5 Only records up to ten years old were considered within the assessment, as any records older than ten years are unlikely to be representative of species presence in the local area.

Table 1: Desk Study Data Sources

Data Source	Accessed	Data obtained
Multi-Agency Geographic Information for the Countryside (MAGIC)	February 2023 November 2023	International statutory designated considered up to 30 km for bats, where potential hydrological links may exist and within 10 km for all other sites. National statutory sites within 2 km. Ancient woodlands and notable habitats within 2 km. Ponds and standing water within 0.5 km.

Data Source	Accessed	Data obtained
website (Ref. 38)		
Environment Agency	February 2023 November 2023	Current Water Framework Directive (WFD) status (Catchment Data Explorer website). Ecological survey data from the last ten years and within 5 km of the Study Area. (Environment Agency Ecology and Fish Data Explorer). Historical crayfish records from the National Biodiversity Network Atlas (NBN) (Ref. 39).
Doncaster Local Records Centre (DLRC) and The North and East Yorkshire Ecological Data Centre (NEYEDC)	February 2023 November 2023	Records of non-statutory designated sites (Local Wildlife Sites (LWS) and candidate Local Wildlife Sites (cLWS)) within 2 km of the Solar PV Site Boundary. Records of legally protected and notable species (fauna and flora) within 2 km of the Solar PV Site Boundary, including SPI for the Conservation of Biodiversity listed under S41 of the NERC Act (Ref. 10) in the England Biodiversity List. DLRC has a cross boundary agreement with NEYEDC up to 2 km, so this records centre was the only one contacted.

3.2 Field Survey

3.2.1 The PEA includes a walkover survey of the Survey Area (all land within the Solar PV Site and up to 50 metres (m) from the Solar PV Site Boundary, where access was granted), broadly following the Phase 1 habitat survey methodology as set out in Joint Nature Conservation Committee (JNCC) guidance (Ref. 40). This survey method records information on habitat types and is 'extended' to record any evidence of and potential for protected or notable species to be present. Plant names recorded during the survey follow Stace (2010) (Ref. 41).

Appraisal of the Potential Suitability of Habitats for Protected and Notable Species

3.2.2 An appraisal was made of the potential suitability of the habitats present to support protected and notable species of plants or animals (as defined by legislation and planning policy in Section 2 of this report). Field signs, habitat features with potential to support protected species and any sightings or auditory evidence were recorded when encountered, but no detailed surveys were carried out for any particular species.

3.2.3 In addition, attention was given to identifying INNS that are listed under Schedule 9 of the WCA (Ref. 7) and those *"widespread species"* listed in the Invasive Alien species (Enforcement and Permitting) Order 2019 (Ref. 14). Locations of plants or stands of any such INNS, if found, were recorded.

3.2.4 The following summarises the surveying methods used for the potential protected or notable species that could be found on the Solar PV Site:

a. Badger (*Meles meles*): the survey involves searching for signs of Badger activity including setts, tracks, snuffle holes and latrines, following the methodology detailed in Scottish Badgers (Ref. 42) and Harris *et al*. (1989) (Ref. 43);

b. Bats: a preliminary walkover to assess commuting and foraging habitat and potential for bat roosts within trees and structures (such as buildings, bridges or underground features such as mines) to provide a scope for further bat surveys;

c. Otter (*Lutra lutra*): the survey involves assessing the potential of watercourses and water bodies, and adjacent terrestrial habitat within the Survey Area to support Otter, following the Environment Agency's Fifth Otter Survey of England 2009-2010 (Ref. 44), '*Monitoring the Otter*' (Ref. 45) and the New Rivers and Wildlife Handbook (Ref. 46);

d. Water Vole (*Arvicola amphibius*): the survey involves assessing the potential of watercourses and water bodies within the Survey Area to support Water Vole, following Strachan *et al*. (2011) (Ref. 47) and Dean *et al.* (2016) (Ref. 48);

e. Birds: the survey involves assessing the potential of habitats within the Survey Area to support breeding, wintering or migrating birds, either individually notable species or assemblages of both common and rarer species;

f. Great Crested Newt (*Triturus cristatus*) (GCN): the survey involves assessing the potential of habitats within the Survey Area to support GCN, following Froglife guidance (Ref. 49);

g. Reptiles: the survey involves assessing the potential of habitats within the Survey Area to support reptiles (typically Adder *Vipera berus*, Grass Snake *Natrix natrix*, Common Lizard *Zootoca vivipara* and Slow Worm *Anguis fragilis* only), though in some locations and habitat types (most notably heathland) may also include Smooth Snake *Coronella austriaca* and Sand Lizard *Lacerta agilis*), following Froglife guidance (Ref. 50);

h. Notable species of invertebrate: the survey involves assessing the potential of habitats within the Survey Area to support notable species of invertebrates, both terrestrial and aquatic (including White-clawed Crayfish *Austropotamobius pallipes*);

i. Protected or notable species of plants: the survey involves recording protected or notable plant species;

j. Other notable species: the survey involves assessing the potential of habitat within the Survey Area to support other notable species, such as Hedgehog (*Erinaceus europaeus*), Brown Hare (*Lepus europaeus*), Polecat (*Mustela putorius*) or Common Toad (*Bufo bufo*); and

k. INNS: the survey involves recording evidence of the presence of invasive plants listed on Schedule 9 of the WCA (Ref. 7) and subject to strict legal control.

3.3 Habitat Suitability Index for Great Crested Newt

3.3.1 The calculation of the GCN Habitat Suitability Index (HSI) for waterbody requires that the following ten variables are recorded and assigned a numerical value (Ref. 51):

a. Location within Britain;
b. Pond area;
c. Pond drying (based on both local knowledge and field evidence);
d. Water quality;
e. Percentage perimeter shaded;
f. Presence or absence of waterfowl;
g. Presence or absence of fish;
h. Number of water bodies situated within 1 km;
i. Suitability of terrestrial habitat; and
j. Percentage of macrophyte cover.

3.3.2 The results of the HSI assessment for a water body have been interpreted using Table 2 which is taken from the HSI guidance.

Table 2: Habitat Suitability Index Score and Interpretation

HSI Score	Water Body Suitability for GCN
< 0.5	Poor
0.5	Below average
0.6	Average
0.7	Good
> 0.8	Excellent

3.4 Limitations and Assumptions

Desk Study

3.4.1 The aim of a desk study is to help provide a baseline for the Scheme and provide valuable background information that would not be captured by a single field survey alone. The information obtained during a desk study is dependent upon people and organisations having made and submitted records for the area of interest. A lack of records for habitats or species does not necessarily mean that the habitats or species do not occur in the Study Area. Likewise, the presence of records for habitats and species does not automatically mean that these still occur within the area of interest or are relevant in the context of the Scheme.

Field Survey

3.4.2 Some areas of the Solar PV Site were inaccessible at the time of the Phase 1 survey between 28 March and 31 March and 25 April 2023, including the

areas up to 50 m from the Solar PV Site Boundary. This is a significant constraint to this report and as a precaution, these habitats would be inspected separately as part of further survey work, as recommended. This report will be updated at that time to include information that would instruct any future consideration for further survey or mitigation work.

3.4.3 The recording of plant species, including invasive non-native plant species listed on Schedule 9 of the WCA and listed as species of EU concern (IAS Regulation) can be constrained by the time of year that the survey was undertaken. Most such species are not visible or cannot be reliably mapped outside the growing season (April to September), and some species are only apparent during certain months. Populations of annual plant species may fluctuate between years dependent on the growing conditions present in any given season. As the survey took place during March and April only, this was a constraint to the identification of plants present within each habitat as some plants may not have been evident at that time of year, acknowledging that a Phase 1 habitat survey is only a 'snapshot' of the species present at the time of survey. However, sufficient information was collected to identify habitat types for the purpose of this PEAR and as such this is not a significant limitation.

3.4.4 Some areas of the 50 m buffer around the Solar PV Site were inaccessible at the time of the Phase 1 survey. This includes the ponds (listed in Table 6), the area to the north of the River Went, and the central area of the Solar PV Site (Fenwick Common Hall). This is not a significant limitation as they are outside the Solar PV Site and will be updated prior to the final assessment in ES (where accessible).

3.4.5 Where habitat boundaries coincide with physical boundaries recorded on OS maps the resolution is as determined by the scale of mapping. Elsewhere, habitat mapping is as estimated in the field and/or recorded by hand-held GPS. Where areas of habitat are given, they are approximate and should be verified by measurement on Solar PV Site where required for design or construction. While indicative locations of trees are recorded this does not replace requirements for detailed specialist arboriculture survey to *British Standard 5837:2012 Trees in Relation to Design, Demolition and Construction British Standards* (Ref. 52).

3.4.6 The data in the desk study itself is valid for 12 months from the date of supply. This follows guidance from the CIEEM (Ref. 35).

4. Results

4.1.1 The following sections detail the results of the desk and field-based studies undertaken to inform this PEAR. Where necessary, recommendations for mitigation measures to protect known IEFs, or further surveys to determine the presence or likely absence of likely IEFs, are provided.

4.1.2 With regard to background data, 'recent' records are those no older than ten years from the date of the desk study. Records outside of this period are historical and have only been reported where more recent records for a feature do not exist. Exceptions to this are detailed in the appropriate sections below.

4.2 Designated Sites

Statutory Designated Sites

4.2.1 There are three sites statutorily designated for their biodiversity value at an International level and within the 10 km of the Site. These are:

a. Thorne Moor SAC;

b. Hatfield Moor SAC; and

c. Thorne and Hatfield Moors SPA.

4.2.2 There are no SAC sites that list bats as a qualifying feature within 30 km of the Site.

4.2.3 The River Went (present along the northern Site Boundary of the Solar PV Site) is connected to the Humber Estuary SAC/Ramsar approximately 16 km downstream of the Site via the River Don and Dutch River. The Humber Estuary SAC/Ramsar is partly designated for the migratory fish species River Lamprey (*Lampetra fluviatilis*) and Sea Lamprey (*Petromyzon marinus*), which have the potential to be present in the River Went and connected watercourses. Whilst impacts are likely to be avoided, an assessment on whether the Scheme is likely to impact upon these species has not been made in this PEAR but will be considered further in the HRA report that will be included with the ES as part of the DCO application.

4.2.4 There is one site statutorily designated for its biodiversity value at a national level within the 2 km of the Site. This is Shirley Pool SSSI (Site of Special Scientific Interest) which is located approximately 900 m to the south of the Site (a section of road to the west of the Solar PV Site). The SSSI is designated for wetland habitats including open water, reed swamp, tall fen, wet neutral grassland, and carr which grades into Birch-oak woodland on drier ground. Depending on the nature of the works at this location of the Site, due to potential habitat linkages (i.e. through surface/ground water) there is the potential for direct or indirect impacts on the habitats associated with Shirley Pool SSSI.

4.2.5 Statutorily designated sites are summarised in Table 3 and are presented in ascending order, with those closest to the Site listed first. The locations of these statutorily designated sites, relevant to the Scheme, are presented in Figure 1 (Annex A). Where designated sites are situated outside of the Site

Boundary, the distance and direction are given at the closest point of the designated site from the Site.

Table 3: Sites Statutorily Designated for their Biodiversity Value Within 10 km (International) and 2 km (national) of the Site

Designated Site	Reason for Designation	Location of Designated Site
Shirely Pool SSSI	The site contains excellent examples of wetland habitats including open water, reed swamp, tall fen, wet neutral grassland and carr which grades into Birch-oak woodland on drier ground. It is the most natural wetland of this type in South Yorkshire. The pools and drains support a representative aquatic flora and as a result it is also of high entomological value, the assemblages of insects associated with sedges and carrland being particularly diverse. A number of species recorded within the SSSI are close to the northern edge of their range in Britain.	900 m south of the Site.
Thorne Moor SAC	The Annex I habitat that is a primary reason for selection of this site is degraded raised bogs still capable of natural regeneration.	8 km east of the Site.
Thorne and Hatfield Moors SPA	The site is used regularly by 1 % or more of the Great Britain population of Nightjar (*Caprimulgus europaeus*). The site also supports small numbers (at non-qualifying levels) of other Annex 1 species. Hen Harrier (*Circus cyaneus*), Merlin (*Falco columbarius*) and Short-eared Owl (*Asio flammeus*) hunt over the site in Winter and at least one pair of Hobbies (*Falco subbuteo*) feed over the site in Summer. Also notable are Nightingales (*Luscinia megarhynchos*) breeding at one	8.5 km east of the Site.

Designated Site	Reason for Designation	Location of Designated Site
	of their most northerly regular sites in Britain.	
Hatfield Moors SAC	Similar to Thorne Moors, Hatfield Moors is a remnant of the once-extensive bog and fen peatlands within the Humberhead Levels and is still the second-largest area of extant lowland raised bog peat in England. Moraines of sand occur beneath the peat, the largest of which forms Lindholme Island, in the centre of the bog. Little, if any, original bog surface has survived the massive extraction of peat over the last few decades. Peat-cutting has now ceased, and the bog is being restored over its remaining minimum average depth of 0.5 m of peat.	8.5 km east of the Site.

Non-statutory Designated Sites

4.2.6 There are 43 non-statutory sites designated for their biodiversity value identified within 2 km of the Site. These sites have all been designated as LWS or cLWS for their biodiversity value at a county level and are known to have supporting value to a wide variety of protected or notable species and/or habitats. Whilst cLWS have not yet been designated, they are included within this section as they are being considered for designation and may become so within the lifetime of the Scheme.

4.2.7 Non-statutorily designated sites are summarised in Table 4 and are presented in ascending order, with those closest to the Site listed first. The locations of these non-statutorily designated sites, relevant to the Scheme, are presented in Figure 2 (Annex A). Where designated sites are situated outside of the Site Boundary, the distance and direction are given at the closest point of the designated site from the Site.

Table 4: Non-Statutory Designated Sites Within 2 km of the Site

Non-statutory site name	Non-statutory site description	Approximate distance (m/km) and direction from closest point of the Site
Went Valley (Part) LWS	This site comprises a series of semi-improved and cattle-grazed neutral grasslands which are located	Within the northern part of the Solar PV Site (adjacent to and

Non-statutory site name	Non-statutory site description	Approximate distance (m/km) and direction from closest point of the Site
	immediately south of the River Went.	south of the River Went).
Wrancarr Drain and Braithwaite Delves LWS	The site comprises two drains. The Ash Carr Drain runs along the western side of a disused railway embankment. There is an overgrown abandoned farm access track that ran north-south along the former route of the railway line, but tall ruderal vegetation is now interspersed by dense scrub in this area. GCN have been recorded here.	A section of this LWS sits within the Grid Connection Corridor.
Trumfleet Pit LWS	A linear wetland site comprising a water filled drain with an east sloping bank with many mature Alders (*Alnus glutinosa*), occasional Crack Willow (*Salix fragilis*) and Pedunculate Oak (*Quercus robur*). Skylark (*Alauda arvensis*), Gadwall (*Anas strepera*) and Meadow Pipit (*Anthus pratensis*) have been recorded at this site.	A section of this LWS sits within the Grid Connection Corridor.
Trumfleet Pond LWS	This is a small wetland, comprising a small linear pond, with some *Salix* species, surrounded by a horse pasture.	Within the Grid Connection Corridor.
Fox Covert LWS	The site comprises deciduous scrub woodland and a drain. The adjacent land use is silage, arable and wetland. Lesser Spotted Woodpecker (*Dendrocopos minor*) have been recorded at this site.	This LWS is immediately adjacent to the Grid Connection Corridor.
Marsh Lane LWS	The site comprises a long lane and its hedgerows and some woodland edge, the adjacent land use is woodland and agricultural land. The bridleway of the lane and its edges support an assemblage of plants typical of bare and disturbed ground including Annual Meadow Grass (*Poa annua*), Pineapple Mayweed (*Matricaria discoidea*), Hawkweeds	This LWS is immediately adjacent to the Grid Connection Corridor.

Non-statutory site name	Non-statutory site description	Approximate distance (m/km) and direction from closest point of the Site
	(*Hieracea*), Toad Rush (*Juncus bufonius*), Hedge Mustard (*Sisymbrium officinale*) and Fat Hen (*Chenopodium album*).	
Fenwick Churchyard LWS	This site comprises a small graveyard and contains an area of mildly calcareous to neutral unimproved grassland with scattered planted trees mainly in a line opposite to the site entrance.	Located less than 1 m west of Fenwick Common Lane, which comprises part of the Solar PV Site.
Bunfold Shaw LWS	This small, irregularly shaped site is predominantly Pedunculate Oak dominated woodland in the eastern and central sectors, while the western and south western edge is an open clearing, which supports mainly tall ruderal vegetation, with one or two scattered Oak species and several young, planted Scot's Pine (*Pinus sylvestris*). This area of woodland is also listed as 'Ancient and semi-natural woodland'.	Located less than 10 m from the Solar PV Site, within the central area of the Solar PV Site.
Thorpe in Balne/Kirk Bramwith Area LWS	A large area situated between the River Don and the canal. There are cattle-grazed flood banks alongside the river, which are species poor apart from a small banking. The continuation of Northfield Lane is species-rich in hedgerow terms, with a mix of ground flora. The north west facing canal banking is floristically good in some parts, but lack of cutting/grazing is resulting in dominant grasses taking over.	c.20 m from the Grid Connection Corridor.
Fenwick Hall Moat LWS	The moat edges support some very large mature trees including Ash (*Fraxinus excelsior*) and White Willow (*Salix alba*). The deepest area of standing open water is located at the north eastern corner of the moat where the pond has been deepened in recent years. The wet mud of the moat supports a dense stand of Reed Sweet-grass	c.25 m from the Solar PV Site, within the central area surrounding Fenwick Hall.

Non-statutory site name	Non-statutory site description	Approximate distance (m/km) and direction from closest point of the Site
	(*Glyceria maxima*) with Great Willowherb (*Epilobium hirsutum*), Plicate Sweet-grass (*Glyceria notata*), Marsh Bedstraw (*Galium palustre*) and Hard Rush (*Juncus inflexus*).	
Bentley Tilts and Course of Old Ea Beck LWS	A long linear site, approximately 3.5 km in length. Running along the centre of the site is the straightened and embanked course of the Ea Beck. The site contains two ponds, created by the Environment Agency in the mid-1990s, and south of the Ea Beck flood bank is a series of waterbodies, ditches and wet borrow pits. The site has historically attracted large numbers of Snipe (*Gallinago gallinago*).	c.35 m west of the Grid Connection Corridor, next to the Existing National Grid Thorpe Marsh Substation.
Warren House Park cLWS	Woodland, hedgerows and wildflower meadow with local wildlife interest including Grass Snake and birds such as Linnet (*Linaria cannabina*), Redwing (*Turdus iliacus*), Fieldfare (*Turdus pilaris*) and Barn Owl (*Tyto alba*).	c.40 m south west of the Site (a small off-site section of road).
Barnby Dun Old Don Oxbow LWS	Site is split into two, with the northern part being used as a fishery and the southern part being used for agriculture and grazing. The site is part of the course of the Old River Don and consists of standing water with a high flood embankment on the south east side.	The closest point of the LWS is c.75 m east of the Grid Connection Corridor.
Broad Ings Oxbow LWS	Broad Ings Oxbow is the original line of the River Don and is a treeless site with pasture flood banks grazed by cattle. The area between Broad Ings Oxbow and the straightened River Don is also grazed and has shallow pools after seasonal flooding.	c.90 m east of the Grid Connection Corridor, on the opposite side of the River Don to the Scheme.
Moss Brick Pond LWS	Disused claypit, surrounded by dense scrub. Now used as a fishing	c.110 m south west of Fenwick Common

Non-statutory site name	Non-statutory site description	Approximate distance (m/km) and direction from closest point of the Site
	lake, the open water area contains locally-abundant Curly Pondweed (*Lagarosiphon major*). Both Southern Marsh (*Dactylorhiza praetermissa*) and Common Spotted Orchid (*Dactylorhiza fuchsia*) are present.	Lane, which comprises part of the Solar PV Site.
Riddings Farm Pond cLWS	This is a small pond and wetland feature containing small populations of Fine-leaved Water Dropwort (*Oenanthe aquatica*) (which is locally scarce) and good numbers of submerged plant species.	c.130 m from the Solar PV Site, within the central area at Riddings Farm.
Pilkington's Burgy Banks LWS	The Burgy Banks have been created over many years by the nearby Pilkington's Glass factory which was located on the opposite side of the River Don and the Dun Navigation. The banks have been created by the gradual settling out of a liquid waste (burgy) which was pumped through a pipe over the river and canal. This process, which began sometime in the 1920's, has resulted in a considerable area of steeply banked 'lagoons', all of which have dried out and solidified.	c.145 m south of the Grid Connection Corridor.
Barnby Dun Borrow Pits LWS	This site is a flooded linear 'borrow pit' created during the building of the flood banks of the adjacent River Don Flood Drain. The water depth ranges from 10 centimetres (cm) at the edges to well over a metre in the centre of the pond. There are two subsites; one is located on the eastern side of the river and the other is on the western side. The high flood banks are semi-improved grassland and are grazed by sheep.	The closest point of the LWS is c.150 m east of the Grid Connection Corridor.
Old Ings and Chequer Lane LWS	Historic records of Otter and GCN here, this site is large and comprises a series of drains, arable land, improved grassland, woodland, scrub and hedgerows.	c.250 m east of the Grid Connection Corridor.

Non-statutory site name	Non-statutory site description	Approximate distance (m/km) and direction from closest point of the Site
	The adjacent land use is mainly arable.	
Thorpe Marsh Area LWS	This site comprises Thorpe Marsh Nature Reserve, a reserve of 60 hectares managed by the Yorkshire Wildlife Trust. It consists of ancient ridge-and-furrow pastures, a disused railway line, ponds and a lake excavated in the late 1970s.	c.405 m west of the Grid Connection Corridor, next to the Existing National Grid Thorpe Marsh Substation and Bentley Tilts and Course of Old Ea Beck LWS.
Copley Spring Wood LWS	A mixed deciduous woodland bounded by a continuous hedgerow and containing abundant Pedunculate Oak and some Hybrid Oak (*Quercus* x *rosacea*).	c.420 m south of the Solar PV Site.
Northfield Pond LWS	A constant wet pond area with typical wet zone trees and ditch running south from the Northfield Pond. Adjacent land use is arable and a canal runs along the north west boundary.	c.450 m east of the Grid Connection Corridor.
Bentley Bank LWS	The site comprises a long linear marsh, grazed grassy floodbank, scrub, ponds and drains. The adjacent land use is arable and the mounds of waste from the Pilkington's Glass Factory (known locally as Burgy Banks). The site is bisected by Arksey Common Lane.	c.465 m south of the Grid Connection Corridor.
Old River Don Oxbow LWS	The site is located on alluvium in the flood plain of the River Don. During the 1930s the River Don was straightened out near Waite House. All that remains today of the old course is shallow grassy depression which periodically holds water. The site, within the flood banks of the Flood Drain is inundated at times when the river is high. To the south of the old river course is a large pond created by the Environment Agency. To the north and west there	c.495 m south of the Grid Connection Corridor.

Non-statutory site name	Non-statutory site description	Approximate distance (m/km) and direction from closest point of the Site
	is a mixture of arable and pasture. To the east are the River Don Flood Drain and the Dun Navigation.	
Croft Ings LWS	The site comprises a series of three 'triangular' borrow pits created to provide material to construct the adjacent canal embankment. A water-filled drain links the ponds. The canal bank rises steeply up from the lower lying agricultural land. This bank is vegetated by tall ruderals, False Oat Grass (*Arrhenatherum elatius*), Bramble (*Rubus fruticosus*) and Common Nettle (*Urtica dioica*). Water Vole have been recorded at this site.	c.610 m south east of the Grid Connection Corridor.
Went Valley (near Sykehouse) LWS	This site supports a mosaic of habitats spread over a series of fields. The site is bounded to the north by a small young plantation and the River Went. The southern and eastern boundary is formed by a grassy embankment and established hedge lines.	c.635 m east of the Solar PV Site.
Shirley Pool and Rushy Moor Area LWS	The site contains excellent examples of wetland habitats including open water, reed swamp, tall fen, wet neutral grassland and carr which grades into Birch-oak woodland on drier ground. Shirley Pool SSSI is also located within this site (a smaller extent than the LWS).	c.700 m south west of the Solar PV Site.
Long Sandall Ings LWS	The site is an area of flat, low-lying land situated on alluvium in the flood plain of the River Don, a meander of which formally passed through the area. This was removed when the river was straightened during the first part of the 20th Century and little trace of it can be found today.	c.820 m south of the Grid Connection Corridor.
Bramwith Lock Woods LWS	The site comprises an extensive area of dense Hawthorn (*Crataegus*	c.820 m east of the Grid Connection Corridor.

Non-statutory site name	Non-statutory site description	Approximate distance (m/km) and direction from closest point of the Site
	monogyna) scrub, tall ruderal vegetation and grassland.	
Ruskholme LWS	This site is located on the east side of the New Junction Canal and on the north bank of the River Don, on the alluvial floodplain. This site is associated with a number of other nearby Local Wildlife Sites and subsites, including Old Ings, Chequer Lane No., Thorpe in Balne/Kirk Bramwith Area and Bramwith Lock Woods.	c.930 m east of the Grid Connection Corridor.
Bramwith Lane Wood cLWS	This site is a very small, scrappy copse of widely spaced coniferous trees, European Larch (*Larix decidua*), Scot's Pine and Corsican Pine (*Pinus nigra*), together with occasional Oak species and Sycamore (*Acer pseudoplatanus*).	c.970 m south east of the Grid Connection Corridor.
The Grove, Kirk Sandall LWS	This site comprises a narrow section of scattered trees and shrubs running parallel to Moor Lane, which widens out at the western end into secondary broadleaved woodland. Yellowhammer (*Emberiza citronella*), Reed Bunting (*Emberiza schoeniclus*) and Mistle Thrush (*Turdus viscivorus*) have been observed here.	c.1.0 km south east of the Grid Connection Corridor.
Kirk Sandall Gorse cLWS	The site formerly had many more open areas but the lack of management has allowed tall Gorse (*Ulex europaeus*) to spread into most parts of the site. This scrub does, however, provide shelter for birds and the berry-bearing scrub also provides a good source of food in Autumn.	c.1.30 km south east of the Grid Connection Corridor.
Went Valley (Eskholme) LWS	The riverbank supports an abundance of Reed Sweet-grass, Fool's-watercress (*Apium nodiflorum*), Amphibious Bistort (*Persicaria amphibia*), Reed Canary	c.1.44 km north east of the Solar PV Site.

Non-statutory site name	Non-statutory site description	Approximate distance (m/km) and direction from closest point of the Site
	Grass (*Phalaris arundinacea*), Branched Bur-reed (*Sparganium erectum*), Greater Bulrush (*Typha latifolia*) and locally-frequent Pink Water Speedwell (*Veronica catenate*).	
River Went Oxbow cLWS	The old course of the River Went now forms a loop south of the present canalised river. Between one-third to almost a half of this old course is now a dry, or only seasonally wet, depression choked by tall ruderal and scattered wetland vegetation and is shaded throughout much of this western half by dense to scattered scrub and tree cover.	c.1.47 km west of the Solar PV Site.
Barnby Dun Station Wood LWS	This site comprises quite a large area of woodland to the south of the active railway line at Barnby Dun. The canopy is dominated by Oak species, Silver Birch (*Betula pendula*) and Downy Birch (*Betula pubescens*) with an under storey of Elder (*Sambucus nigra*), Hawthorn and scattered Rowan (*Sorbus aucuparia*). A small open glade, beside the railway has areas of bare sand, re-vegetating with Cup Lichen (*Cladonia* sp.) and mosses (*Polytrichum commune*).	c.1.54 km south east of the Grid Connection Corridor.
Joan Croft Pond cLWS	A small wetland site, which has become increasingly surrounded by dense scrub and very widespread and extensive tall ruderal vegetation.	c.1.57 km west of the Grid Connection Corridor.
Bramwith Hall LWS	This large field supports improved pasture with poor sward structure however the site is of good value being a wooded pasture. Many of the trees are unfenced however some newer planted Chestnut (*Castanea*) species are protected.	c.1.71 km east of the Grid Connection Corridor.

Non-statutory site name	Non-statutory site description	Approximate distance (m/km) and direction from closest point of the Site
Clay Bridge Field LWS	The site is a small damp meadow enclosed by dense hedgerows on all sides except the south, which has a slightly raised bank along a dry ditch, supporting an old defunct hedgerow comprising a line of mature Pedunculate and Turkey Oaks (*Quercus cerris*). A deep water-filled drain runs along the northern side of the site.	c.1.79 km east of the Solar PV Site. New Junction Canal separates the Solar PV Site and the LWS. There is no direct habitat connectivity.
Arksey Ings LWS	No site description provided.	c.1.80 km south west of the Grid Connection Corridor.
Westfield Ings LWS	The site is formerly a marsh within which ponds had been dug and trees planted. The southern part has recently been cleared of scrub and the ponds filled in, but the area still contains marsh plants and could, with suitable management, redevelop as a marsh habitat.	c.1.83 km south east of the Solar PV Site.
Brecks Plantation cLWS	Plantation woodland.	c.2.0 km south of the Grid Connection Corridor.
Hobbledehoy Wood LWS	Woodland, not ancient woodland.	c.2.0 km south east of the Grid Connection Corridor.

Constraints and Recommendations

European Sites

4.2.8 The Scheme is unlikely to affect either Thorne and Hatfield Moors SPA or Thorne Moor SAC. Thorne and Hatfield SPA is designated for the presence of breeding Nightjar. Nightjar are known to forage up to 6 km from their breeding habitat (Ref. 52) and, as Thorne and Hatfield Moor SPA is located over 8 km from the Solar PV Site, it is unlikely that the habitats within the Solar PV Site represent Functionally Linked Land to the SPA. Therefore, the Scheme is unlikely to result in significant adverse effects upon the qualifying feature of the Thorne and Hatfield Moors SPA. No further survey or mitigation is required in relation to this statutory designated site.

4.2.9 Thorne Moor SAC is designated for the presence of Annex I heathland habitats. There are no habitat connections to Thorne Moor SAC, including

hydrological links, and there is no heathland habitat within the Solar PV Site Boundary. The lack of ecological links and the magnitude of the intervening distance (approximately 8 km) is considered sufficient to conclude that there would be no significant adverse effects upon the qualifying features of Thorne Moor SAC as a result of the Scheme. No further survey or mitigation is required in relation to this statutory designated site.

4.2.10 The River Went is connected to the Humber Estuary SAC/Ramsar approximately 16 km downstream via the River Don and Dutch River. In the event that there are any direct impacts to the River Went or associated watercourses (for example, through culverting) then further fish survey and habitat assessment may be required to determine if there would be any effect upon populations migratory fish species River Lamprey and Sea Lamprey that are qualifying features of the Humber estuary SAC/Ramsar.

4.2.11 A detailed assessment will be presented in the ES and an HRA Screening Report will be completed to evaluate the risk of likely significant effects upon the qualifying features and conservation objectives of European Sites within the Study Area. Natural England will be consulted on the conclusions of the HRA Screening Report.

Non-statutory Designated Sites

Went Valley (Part) LWS

4.2.12 The Went Valley (Part) LWS is located within the Solar PV Site Boundary and may be impacted by the Scheme. It is recommended that the Scheme avoids construction within the boundary of the Went Valley (Part) LWS. Good practice measures should be implemented during construction and operation to avoid the risk of indirect pollution or hydrological change to this designated site. If direct or indirect impacts to the Went Valley (Part) LWS cannot be avoided then further detailed vegetation surveys (such as National Vegetation Classification (NVC) surveys (Ref. 54)) would be required to evaluate the likely impacts of the Scheme and to plan effective mitigation and compensation.

Fenwick Churchyard LWS

4.2.13 Fenwick Churchyard LWS is located 1 m away from the Solar PV Site Boundary, adjacent to Fenwick Common Lane. Direct impacts to this designated site may occur, depending on the works that will be undertaken on Fenwick Common Lane. Good practice measures should be implemented during construction and operation to avoid the risk of impacts to this designated site.

Bunfold Shaw LWS

4.2.14 Bunfold Shaw LWS is an area of ancient woodland located within 10 m of the Solar PV Site Boundary. With appropriate buffers, any direct impacts (during both construction and operation) are considered unlikely and good practice measures should be implemented during construction and operation to avoid the risk of indirect pollution (including dust) or hydrological change to this designated site.

The Riddings Farm Pond cLWS and Fenwick Hall Moat LWS

4.2.15 The Riddings Farm Pond cLWS and Fenwick Hall Moat LWS are located within the central area of the Solar PV Site (outside of the Site Boundary and approximately 100 m away). There are no direct impacts to either of these non-statutory sites, but potential indirect impacts may occur as a result of pollution during construction and/or changes in the rate or quality of greenfield run-off. Therefore, as with all the designated sites good practice measures should be implemented during construction and operation to avoid the risk of indirect pollution or hydrological change to these designated sites. Additional constraints and recommendations relating directly to aquatic invertebrates, fish and aquatic macrophytes are detailed in the relevant species sections below.

4.2.16 Full details of the impact assessment will be presented in the ES. There is no direct habitat connectivity between any of the other LWSs and the Solar PV Site, and intervening land largely consists of arable fields and residential areas. Due to the distance from the Solar PV Site, lack of connectivity and the proposed works being confined to the Solar PV Site itself the LWSs are unlikely to be affected by the Scheme and no further survey or mitigation in relation to these sites is considered necessary.

4.3 Habitats

4.3.1 The land within the Solar PV Site, approximately 421 ha, is predominantly arable agriculture (approximately 70 %), some of which have grassland margins and the fields being intersected by a network of drainage ditches, hedgerows and tree-lines. Other habitat includes improved grassland (4.5 ha/c.1 %), semi-improved grassland (c.100 ha/24 %), mature trees and hedges (c.30 km) and small wooded copses (<1 ha/<1 %). The surrounding habitat is mainly arable, with small pockets of mature broad-leaved woodland (plantation and semi-natural). There are individual and clusters of residential properties located adjacent to the Site.

4.3.2 The terrestrial habitats present within the Solar PV Site were identified during the Phase 1 habitat survey, undertaken in March, April and October 2023. These habitats are the broad habitat types found within the Solar PV Site and are presented in Table 5, alongside area calculations that are taken from digitised maps of the Phase 1 Habitats. The locations of these habitats are presented in Figure 3 (Annex A).

4.3.3 Surveys within the Site are ongoing and whilst habitats within the Grid Connection Corridor have not yet been defined (therefore are not presented in Table 5), a review of aerial imagery (https://www.google.co.uk/maps) indicates that the Grid Connection Corridor lies predominantly within arable fields, crossing the villages of Moss and Thorpe in Balne. The Grid Connection Corridor also appears to cross hedgerows and a small number of ditches. However, where the desk study has identified any HaPI in the Grid Connection Corridor, then these are summarised and included in Table 5.

4.3.4 A review of the MAGIC website (Ref. 38) identified areas of priority habitats under S41 of the NERC Act 2006 (Ref. 10) as being present or likely to be present (where determination by further survey may be required) within the Solar PV Site or within the 50 m Survey Area:

a. Coastal and floodplain grazing marsh (within the Solar PV Site);

b. Rivers (the River Went forms the northern Site Boundary of the Solar PV Site and Fleet Drain is also an EA main river and WFD water body);

c. Traditional Orchard (outside of the Solar PV Site, but a hedgerow directly links this habitat to the Solar PV Site); and

d. Reedbeds (outside of the Solar PV Site).

4.3.5 For the ES that follows with the DCO application, these habitats will be further defined by the detailed habitat surveys, where relevant, set out in Table 5. Habitat and condition assessment data will be utilised in the Biodiversity Net Gain (BNG) assessment.

Table 5: Broad Habitat Types Within the Site and Survey Area Recorded During Surveys or Anticipated to be Present, Alongside Preliminary Assessment of Biodiversity Importance of Ecological Features

Habitat	Summary Description	Area (ha)	% of Site Area	Conservation Status	Preliminary Importance	Supporting notes
A1.1.1 - Broadleaved woodland - semi-natural	Bunfold Shaw LWS is a semi-natural broadleaved woodland located approximately 15 m outside the Solar PV Site. As identified on the Ancient Woodland inventory (Ref. 38), it is an ancient woodland, dominated by Pedunculate Oak. The woodland also contains Hawthorn, Ash, Silver Birch, overtopping Hazel (*Corylus avellana*), Alder, Aspen (*Populus tremula*) and some scattered conifer species (*Pinus* sp.). Smaller areas of broadleaved woodland are located within the Solar PV Site, with the largest of these being an apparently unmanaged area of *Salix* carr, approximately 1,700 m^2 in area.	0.2	<0.1	LWS and Habitat of principal importance (HaPI) – Lowland Mixed Deciduous Woodland	Up to County	Bunfold Shaw LWS is of County Importance. It is also an area of Ancient Woodland but is outside of the Site. There are no other areas of Ancient Woodland within the Site. Smaller areas of broadleaved woodland within the Site are HaPI's of lower value.
A1.1.2 - Broadleaved woodland - plantation	Three areas of broadleaved plantation woodland are located within the Solar PV Site, with species recorded including Oak species, Sycamore, Whitebeam	0.2	<0.1	No	Site	Not a HaPI.

Habitat	Summary Description	Area (ha)	% of Site Area	Conservation Status	Preliminary Importance	Supporting notes
	(*Sorbus aria*), Hazel, Willow species, Silver Birch, Hawthorn and Dog Rose (*Rosa canina*).					
A1.3.2 - Mixed woodland - plantation	There are small areas of mixed plantation woodland which contain deciduous and coniferous trees.	0.2	0.1	No	Site	Not a HaPI.
A2.1 - Scrub - dense/continuous	Small areas of scrub are found throughout the Solar PV Site. Hawthorn is dominant, with Dog Rose and Willow species also present	0.3	0.1	No	Site	Not a HaPI.
A3.1 - Broadleaved parkland/scattered trees and A3.3 - Mixed parkland/scattered trees	There are remnants of previous hedges in several locations on the Solar PV Site that have been left unmanaged and as a result now form lines of scattered trees, rather than hedges. They delineate some of the field boundaries.	0.5	0.1	No	Local	Individual trees are not a HaPI. However, veteran or ancient trees are of greater value. Individual trees can provide suitable habitat for protected and notable species, including bats and Barn Owl. The desk study identified veteran and ancient trees within the Study

Habitat	Summary Description	Area (ha)	% of Site Area	Conservation Status	Preliminary Importance	Supporting notes
						Area, but not from within the Site.
B2.2 - Neutral grassland - semi-improved (including B6 - Poor semi-improved grassland)	Approximately 24 % of the Solar PV Site is semi-improved neutral grassland, used for livestock grazing. Some of these areas are dominated by Red Fescue (*Festuca rubra*), with abundant Perennial Rye-grass (*Lolium perenne*). Other species include Yorkshire Fog (*Holcus lanatus*), Cock's-foot (*Dactylis glomerata*), Reed Canary Grass and Bent species (*Agrostis* sp.). Areas with Perennial Rye-grass and few other species noted within the sward may be re-categorised as B4 Improved grassland following updated surveys in the Summer. Some of the grasslands to the north east of the Solar PV Site have *Brassica* crop which have spread from the arable fields. These areas are also likely to be subject to some periodic inundation due to the proximity to the River Went and this was supported by the presence of occasional reed and Rush	100.9	24	Some of this habitat is within an area shown as Coastal and Floodplain Grazing Marsh HaPI. Potentially other HaPI grassland types may be present. Limestone Grassland, Lowland Heathland and Neutral and Wet Grassland are Doncaster BAP habitats (Ref. 32).	If priority grasslands are present - Up to County	Some areas are a HaPI. Neutral and wet grassland is also a Doncaster BAP habitat (Ref. 32). Further surveys to determine extent and quality of grassland habitats to see if meets the HaPI and Doncaster BAP criteria. If significant area of HaPI/Doncaster BAP habitat then up to County importance.

Habitat	Summary Description	Area (ha)	% of Site Area	Conservation Status	Preliminary Importance	Supporting notes
	species (*Juncus*), potentially of higher value.					
B4 - Improved grassland	Fields in the south east of the Solar PV Site with Perennial Rye-grass dominant.	4.5	1.1	No	Site	Not a HaPI.
C3.1 - Other tall herb and fern - ruderal	There are two areas of tall ruderal vegetation within the Solar PV Site, species including Curled Dock (*Rumex crispus*), Common Nettle, Willowherb species (*Epilobium* sp.), Cleavers (*Galium aparine*), Bramble, Hogweed (*Heracleum sphondylium*) and Dog Rose.	0.6	0.1	No	Site	Not a HaPI.
F1 - Swamp	This habitat, within the northern Solar PV Site (adjacent to the River Went) consists of swards that are dominated by Common Reed (*Phragmites australis*) with Soft Rush (*Juncus effusus*), scattered Pond Sedge (*Carex* sp.) and Greater Bulrush, representing a reedbed habitat. Some of the swamp habitat is associated with the River Went (Part) LWS, however there are some areas which sit outside of this.	8.2	2.0	Swamp is a HaPI. 'Marshes and Swamps, Lakes and Ponds, Ditches and Drains (MLD)' is listed as a Doncaster BAP habitat (Ref. 32).	Up to County	HaPI of County Importance due to presence of LWS and extent of habitat along the River Went riparian corridor.

Habitat	Summary Description	Area (ha)	% of Site Area	Conservation Status	Preliminary Importance	Supporting notes
	Smaller areas of reedbed within the Solar PV Site are located in and around some of the drainage ditches and the River Went. These areas appear to be regularly inundated (likely after prolonged periods of rain) but dry out regularly.					
G2 - Running water	The River Went runs along the northern Site Boundary of the Solar PV Site, flowing from west to east. The river channel is approximately 7 m wide and the banks are less than 1 m high and vegetated with Common Nettle and Common Reed. The Fleet Drain and Fenwick Common Drain are two watercourses that run through the Solar PV Site and are connected to (fed by) the network of field drains. The Fleet Drain is connected to the River Went, and to Fenwick Common Drain. Banks are steep, and approximately 2 to 3 m high, and 2 to 3 m wide. Flora adjacent to the drains includes Common Nettle, Lesser Celandine (*Ficaria*	0.9	0.2	Importance due to presence of the LWS designation and connectivity to the Humber Estuary SAC.	Up to County	Rivers may qualify as a HaPI.

Habitat	Summary Description	Area (ha)	% of Site Area	Conservation Status	Preliminary Importance	Supporting notes
	verna) and Cow Parsley (*Anthriscus sylvestris*).					
J1.1 - Cultivated/disturbed land - arable	Approximately 70 % of the Solar PV Site is cultivated and used for the production of arable crops, including *Brassica* sp. and wheat. Arable margins are present, with flora recorded here including Shepherd's Purse (*Capsella bursa-pastoris*), Red Dead Nettle (*Lamium purpureum*), Yarrow (*Achillea millefolium*), Colt's Foot (*Tussilago farfara*), Common Chickweed (*Stellaria media*), Speedwell species (*Veronica* sp.) and Bittercress species (*Cardamine* sp.). Potential for rare/scarce arable plants.	292.5	69.7	Arable margins are a HaPI and Doncaster LBAP habitat (Ref. 32).	Up to County	Intensively managed arable farmland is not a HaPI but some arable fields have field margins which could support notable flora (to be confirmed through an arable flora survey) and arable margins are a HaPI.
J1.2 - Cultivated/disturbed land - amenity grassland	This refers to open areas, used for amenity (such as parklands or gardens) and are typically intensively managed with very few plant species.	0.2	0.1	None	Site	Not a HaPI.
J1.3 - Cultivated/disturbed land - ephemeral/short perennial	These comprise areas of disturbed ground/set-aside within arable fields in the southern part of the Solar PV Site with no signs of recent cultivation. Species	5.9	1.4	None	Site	Not a HaPI.

Habitat	Summary Description	Area (ha)	% of Site Area	Conservation Status	Preliminary Importance	Supporting notes
	present here include Common Nettle, Umbellifer species (*Daucus* sp.), Mayweed (*Anthemis* sp.) species and Cleavers.					
J2.6 - Dry ditch	Drainage ditches were associated with every hedgerow, scattered tree line and field edge at the Solar PV Site. Although the majority of each ditch was dry, every ditch contained some water at the time of survey. The water present is likely to be as a result of prior rainfall as the majority of ditches lacked any flora that is typical of periodic or permanent inundation, with only some localised stands of Common Reed indicating more regular inundation.	0.2	0.0	No, however, may support notable aquatic species due to connectivity with other watercourses, including designated sites. Ditches and drains are a Doncaster BAP habitat (Ref. 32).	Site	Not a HaPI. However, ditches and drains which hold water for most of the year are a Doncaster BAP habitat.
J3.6 - Buildings	Three farm/residential buildings are present within the Solar PV Site.	0.1	0.0	None	Site	Not a HaPI.
J4 - Bare ground	A small area mainly along tracks/paths	0.3	0.1	None	Site	Not a HaPI.
J5 - Other habitat	Other habitat target noted during the PEA survey, generally not	0.8	0.2	None	Site	Survey update will define these habitats (where accessible).

Habitat	Summary Description	Area (ha)	% of Site Area	Conservation Status	Preliminary Importance	Supporting notes
	surveyed due to no access therefore no habitat assigned.					
Z99 - Hardstanding	Hardstanding around buildings and roads.	2.7	0.6	None	Site	Not a HaPI.
Species-poor and species-rich hedgerows (intact and defunct), some with trees.	There are c.110 hedgerows within the Solar PV Site, with native species, Hawthorn or Blackthorn (*Prunus spinosa*), dominating and most have some evidence of current management. A few of the hedges present appear more diverse than others; supporting a number of woody species, including Blackthorn, Ash, Dog Rose and Oak species standards. Hedgerows are also present within the Grid Connection Corridor.	c.31 km	-	All hedges are a HaPI. Ancient and species-rich hedgerows are a Doncaster BAP habitat (Ref. 32). Some of the hedgerows may be classified as 'Important' under the Hedgerow Regulations (Ref. 12), to be confirmed by further surveys in 2024.	Up to County	HaPI, legally protected under the Hedgerow Regulations (Ref. 12). Hedgerows are listed as a Doncaster BAP habitat (Ref. 32).

Semi-natural Broadleaved Woodland

4.3.6 Bunfold Shaw LWS is a semi-natural broadleaved woodland located approximately 15 m outside the Solar PV Site. As identified on the Ancient Woodland inventory (Ref. 38), it is an ancient woodland, dominated by Pedunculate Oak. The woodland also contains Hawthorn, Ash, Silver Birch, overtopping Hazel, Alder, Aspen and some scattered conifer species.

4.3.7 Smaller areas of broadleaved woodland are located within the Solar PV Site, with the largest of these being an apparently unmanaged area of *Salix* sp. carr, approximately 1,700 m^2 in area.

Broadleaved Woodland Plantation

4.3.8 Three areas of broadleaved plantation woodland located within the Solar PV Site, with species recorded including Oak species, Sycamore, Whitebeam, Hazel, Willow species, Silver Birch, Hawthorn and Dog Rose.

Mixed Woodland Plantation

4.3.9 There are small areas of mixed plantation woodland which contain deciduous and coniferous trees.

Dense Scrub

4.3.10 The following three areas of dense scrub are present within the Solar PV Site:

a. A small area on a flood bank in the eastern part of the Solar PV Site (associated with H43). Hawthorn dominates, but Dog Rose and Willow species are also present. This scrub connects to a line of Douglas Fir (*Pseudotsuga menziesii*) to the west;

b. In the northern part of the Solar PV Site (associated with H20), this area of scrub is alongside Willow carr. It is Hawthorn dominated with Holly (*Ilex*), Elder and Bramble present and likely to be a remnant of a former hedge; and

c. The final area on Solar PV Site (TN14) comprises a dense patch of Hawthorn. There is a ditch which runs around it and the grassland is heavily grazed around at the base of the scrub by livestock.

Scattered Trees

4.3.11 There are remnants of previous hedges in several locations on the Solar PV Site that have been left unmanaged and as a result now form lines of scattered trees, rather than hedges. They delineate some of the field boundaries, except for one (TL9), which sits adjacent to the field boundary. These tree lines consist of Hawthorn, Oak species and Ash. In wetter locations (on the banks of drainage ditches at the northern end of the Solar PV Site, adjacent to the River Went) the tree lines contain mature examples of Willow species (TL6 and TL7).

4.3.12 Some of the mature trees exhibited features typically associated with veteran trees, such as deadwood, tear outs and butt rot. Full results on the

assessment of scattered trees found on the Solar PV Site can be found in Annex E.

Semi-improved and Poor Semi-improved Neutral Grassland

4.3.13 Approximately 24 % of the Solar PV Site is semi-improved neutral grassland, used for livestock grazing. Some of these areas are dominated by Red Fescue, with abundant Perennial Rye-grass. Other species include Yorkshire Fog, Cock's-foot, Reed Canary Grass and Bent species. Areas with Perennial Rye-grass and few other species noted within the sward may be re-categorised as B4 Improved grassland following further surveys in 2024. Some of the grasslands to the north east of the Solar PV Site have *Brassica* crop which have spread from the arable fields. These areas are also likely to be subject to some periodic inundation due to the proximity to the River Went and this was supported by the presence of occasional reed and Rush species, potentially of higher value.

Improved Grassland

4.3.14 A field to the south east of the Solar PV Site with Perennial Rye-grass dominant.

Tall Ruderal

4.3.15 There are two areas of tall ruderal vegetation on Solar PV Site. One patch is found within the northern part of the Solar PV Site (TN13), which is within an area of unmanaged land containing rubble and old snapped branches, dominated by Curled Dock.

4.3.16 There is a second patch in the western part of the Solar PV Site (adjacent to H76); this grows on a rubble bund and consists of Common Nettle, Willowherb species, Cleavers, Bramble, Hogweed, and Dog Rose.

Swamp

4.3.17 The land to the north of the Solar PV Site, adjacent to the River Went is predominantly swamp habitat consisting of swards that are dominated by Common Reed with Soft Rush, scattered Pond Sedge and Greater Bulrush. These areas, dominated by Common Reed, represent a reedbed priority habitat.

4.3.18 Some of the swamp habitat is associated with the Went Valley (Part) LWS (TN16), however there are some areas which sit outside of the Went Valley (Part) boundary. These areas (TN21 and TN22), also extend out of the boundary of the coastal floodplain grazing marsh priority habitat. There was no evidence of grazing within the swamp or adjacent habitats during the Solar PV Site visits, although the lack of boundary with adjacent pasture fields indicates that selected areas may be subject to occasional grazing. The presence of grazing in these areas would be consistent with this habitat representing coastal and floodplain grazing marsh Priority Habitat.

4.3.19 There are also reedbeds on Solar PV Site (TN9), located in and around some of the drainage ditches and the River Went. These areas appear to be regularly inundated (likely after prolonged periods of rain) but dry out regularly.

Running Water

4.3.20 The River Went (TN18) is directly adjacent to the north of the Solar PV Site, flowing from west to east. The river channel is approximately 7 m wide and the water level was high during the survey visit. The banks of the river were less than 1 m high and vegetated with Common Nettle and Common Reed.

4.3.21 The Fleet Drain and Fenwick Common Drain are two watercourses that run through the Solar PV Site and are connected to (fed by) the network of field drains. The Fleet Drain is connected to the River Went, and to Fenwick Common Drain. These drains are both slow flowing, but water levels were high during the site visit due to recent rain and contained water throughout their entire length. Banks are steep, and approximately 2 to 3 m high, and 2 to 3 m wide. Flora adjacent to the drains includes Common Nettle, Lesser Celandine, and Cow Parsley.

Cultivated Land – Arable and Ephemeral/Short Perennial

4.3.22 Over 60 % of the land within the Solar PV Site Boundary is cultivated and used for the production of arable crops, including *Brassica* sp. and wheat.

4.3.23 Adjacent to the fields in the north (TN18), there are margins with arable flora. Arable flora recorded in this habitat include Shepherd's Purse, Red Dead Nettle, Yarrow, Colt's Foot, Chickweeds, Speedwells, Wavy Bittercress (*Cardamine flexuosa*) and Hairy Bittercress (*Cardamine hirsute*).

4.3.24 There are also areas of disturbed ground within arable fields in the southern part of the Solar PV Site (TN20 and TN27), with no signs of recent cultivation. Species present here include Common Nettle, Umbellifer species, Mayweed species and Cleavers.

Cultivated Land - Amenity Grassland

4.3.25 This refers to open areas, used for amenity (such as parklands or gardens) and are typically managed with very few plant species. A small area is present along the Solar PV Site Boundary, along a track and within the buffer area outside the Solar PV Site close to buildings.

Ditches

4.3.26 Drainage ditches were associated with every hedgerow, scattered tree line and field edge at the Solar PV Site (Annex F, Ditches). Although the majority of each ditch was dry, every ditch contained some water at the time of survey. The water present is likely to be as a result of prior rainfall as the majority of ditches lacked any flora that is typical of periodic or permanent inundation, with only some localised stands of Common Reed indicating more regular inundation. The water present was either very slow flowing or standing.

Buildings

4.3.27 One farm building is present within the Solar PV Site.

Hardstanding

4.3.28 There are several small (mostly private) roads present on Solar PV Site and within 50 m of the Solar PV Site Boundary.

Hedgerows

4.3.29 There are 109 hedgerows within the Solar PV Site (see Annex D), with native species, Hawthorn or Blackthorn dominating and most have some evidence of current management. A few of the hedges present appear more diverse than others; supporting a number of woody species, including Blackthorn, Ash, Dog Rose and Oak species standards.

4.3.30 Each hedgerow (with the exception of H86, H87, H88, H91, H93 and H94) has an associated drainage ditch, which together delineate the field borders. There is evidence of heavy browsing and/or agrochemical run-off or drift (evidenced by the lack of any ground flora and little to no branches at the base of the hedgerows). Consistent with this, where associated ditches are dry, the recorded ground flora consists mainly of Common Nettle, Cleavers and Cow Parsley. Where the associated ditch is regularly inundated, Common Reeds are present in the ground flora of the hedgerows.

There are 18 defunct hedgerows on the Solar PV Site. Two (TN3 and TN4) are remnants of past hedgerows and contain scattered dense scrub and Hawthorn. The others are mostly intact, but with occasional 5 m gaps.

Marshy grassland

4.3.31 Areas of marshy grassland are found close to the northern boundary (TN17) (outside the Solar PV Site Boundary), adjacent to the River Went. These areas fall within the area of designated coastal floodplain grazing marsh and also extend beyond it. It is characterised by tussocks of Tufted Hairgrass (*Deschampsia cespitosa*) and Rush species.

4.3.32 Temporary pools of water from a recent rain event were recorded in this area. No vegetation typical of permanent inundation were noted in this location. This area was inaccessible during the survey and was only viewed at a distance from the areas south of the River Went that were accessible.

Constraints and Recommendations

4.3.33 Outside the boundary of designated sites, it is recommended that the loss of any habitats of Principal Importance that are present within the Solar PV Site should be avoided. To minimise the risk the following protection measures are recommended for these habitats:

a. Retained trees and hedgerows should be protected in accordance with the guidance of *BS5837:2012 Trees in relation to design, demolition, and construction* (Ref. 53); and

b. Watercourses should be protected with a 10 m stand-off and ditches should be protected by a 5 m stand-off.

4.3.34 Good practice measures should also be implemented during construction and operation to avoid the risk of indirect pollution or hydrological change to these notable habitats.

4.3.35 The majority of hedgerows on the Solar PV Site are uniform in their woody species composition or have poor diversity, although some hedgerows do exhibit greater species and structural diversity. All hedgerows are dominated by native species and are likely to represent HaPI. All hedgerows will be subject to a detailed hedgerow survey against the criteria Hedgerow Regulations 1997. This survey can be carried out any time between April and October, but May to June are the optimal months.

4.3.36 If the Scheme directly or indirectly impacts any other areas that have the potential to represent HaPI (floodplain grazing marsh, reedbed, marshy grassland, wet woodland), then a detailed vegetation survey (e.g. NVC (Ref. 54) survey) may be required to determine whether any significant plant communities are present and to inform the requirement for mitigation or compensation. A NVC survey should be carried out at the appropriate time of year (May to August) by a suitably experienced ecologist.

4.3.37 A habitat condition survey will be completed to inform BNG. Habitat condition data from terrestrial habitats would be collected in accordance with the condition assessment criteria outlined in Biodiversity Metric 4.0 (Ref. 55) and applying professional judgement.

4.4 Badger

Desk Study

4.4.1 There are no recent records of Badger within the Study Area.

Field Survey

4.4.2 The Solar PV Site supports areas of woodland, grassland, scrub, hedgerows, and waterbodies which provide suitable commuting, foraging and watering habitat for Badgers.

4.4.3 Signs of Badger activity were recorded during the Phase 1 habitat survey, although the detail of the findings is not included in this report owing to the persecution faced by Badgers and the need for information pertaining to their whereabouts to be treated as confidential. A separate confidential Badger appendix will be provided as **PEIR Volume I Appendix 8-5: Badger Report**.

Constraints and Recommendations

4.4.4 Detailed constraints and recommendations relating to Badgers will be provided in a separate confidential Badger report that will be produced in due course. In brief, the following is recommended to protect Badgers:

a. During construction general measures should be implemented to avoid the risk of harm to Badgers (and other mammals), including covering any open excavations or providing an adequate means of escape and capping any pipes greater than 25 cm in diameter.

4.4.5 All active Badger setts should be retained and protected within the Scheme design and this may be enforced through the use of fencing:

a. Where impacts to active Badger setts cannot be avoided then these should be covered by a Natural England Badger licence; and

b. Habitat connectivity for Badgers between their setts and foraging areas should be maintained across the Scheme during construction and operation. This may for example include the use of Badger gates in perimeter fencing.

4.5 Bats

Desk Study

4.5.1 There are no international statutory sites designated for bats within 30 km of the Scheme. There are no national statutory sites designated for bats within 10 km of the Scheme or relevant non-statutory sites within 2 km of the Scheme.

4.5.2 The DLRC holds 16 records of bats within the Study Area made within the past ten years, including two bat roosts. All records are in the same location 1.7 km north west of the Site, in 2014. The closest of the two bat roosts is located 1.2 km east of the Site, in 2015.

4.5.3 A further search of the MAGIC data showed that three Natural England bat mitigation licences were issued for the destruction of a Brown Long-eared (Plecotus auritus) and Common Pipistrelle (Pipistrellus pipistrellus) non-breeding roost (2015-15069-EPS-MIT, 2020-49789-EPS-MIT and 2020-49789-EPS-MIT-1) between 2015 and 2020. The closest of these records is located 1.6 km north of the Site Boundary and was granted in 2015.

Field Survey

Ref. 1 Many trees on Solar PV Site were noted to have features that are potentially suitable for roosting bats (see Annex G). These will be assessed at a later stage for their potential suitability for roosting bats following guidance from Bat Surveys: Good Practice Guidelines for Professional Ecologists 4th Edition (Ref. 56). During this initial appraisal there are many trees with potential roost features suitable for roosting bats, including cavities, splits, tear-outs and lifted bark.

Ref. 2 There is one farm building present within the Solar PV Site Boundary and will be retained as outside Scheme.

Ref. 3 There are nearby buildings within the central area (such as farm buildings and Fenwick Hall), which may be suitable roosting habitat. Additionally, there are several mature trees within Bunfold Shaw LWS, which are likely to have suitability for roosting bats. As these buildings and trees are outside the Solar PV Site Boundary, these are not included in this appraisal.

Ref. 4 The dominant arable habitat is likely to provide only a limited resource for foraging bats due to the lack of insects associated with intensively managed arable land. The hedgerows and associated wet and dry ditches on Solar PV Site, as well as the River Went to the north of the Solar PV Site and hedgerows and ditches beyond the Solar PV Site Boundary are linear features that are likely to provide suitable foraging and commuting habitat. The coastal floodplain grazing marsh areas to the north are also likely to offer suitable foraging and commuting habitat for bats, as the areas of inundated ground may support invertebrates that are likely to provide a foraging resource, (see Section 4.11). The pasture fields, particularly those frequently grazed by livestock, are also

likely to offer some foraging opportunities to bats due to the likely presence of invertebrates being attracted to the animals and their dung.

Constraints and Recommendations

4.5.4 It is reasonable to expect that the habitats within the Solar PV Site and surrounding areas are used by bats due to the presence of local records and the suitability of habitats present for this group. All species of bats are fully protected by law. Some bats, for which there are records within the Study Area, including the Soprano Pipistrelle (*Pipistrellus pygmaeus*), Noctule (*Nyctalus noctule*) and Brown Long-eared bat, are also SPI (refer to Annex B).

4.5.5 A Daytime Bat Walkover (DBW) will be carried out to provide an initial assessment of potential suitability for roosting bats following guidance from Bat Surveys: Good Practice Guidelines for Professional Ecologists 4th Edition (Ref. 56). If trees with the potential to support bats are to be affected by the Scheme, then further survey would be needed to establish the likely presence of a bat roost and evaluate impacts and appropriate mitigation. Surveys should be completed in accordance with the latest good practice guidelines. Following the DBW further surveys may be required (including detailed Ground Level Tree Assessments (GLTA), aerial potential roost feature inspections and emergence/re-entrye surveys) if a feature with roosting potential is detected that would or could be affected by the Scheme (if known at this stage). In the event that a bat roost is impacted by the Scheme, then mitigation and compensation may need to be provided as part of Natural England European Protected Species mitigation licence. The licence would include detail of the appropriate timing of works, best working practices, ecological supervision and provision of compensatory habitat (for example, bat boxes).

4.5.6 To assess how bats use the foraging and commuting habitats it is recommended that Night-time Bat Walkover (NBW) survey comprising vantage point/transects and static detector survey will be carried out across the Solar PV Site. Given the suitability of habitats present (i.e. dominated by arable) and that the Scheme is expected to result in minor impacts to bat commuting and foraging habitat, it is considered that seasonal activity surveys (single transect and static monitoring surveys in each season, Spring, Summer and Autumn) will be proportionate. These activity surveys will focus on the linear features, such as the hedgerows/tree lines, ditches and the River Went, which are suitable for bat flight routes. The activity surveys will assess the value of the foraging and commuting habitat within the Solar PV Site and identify the bat species present in the local area. Scheme design should be planned to minimise the loss of any suitable foraging or commuting habitat and to maintain functional connections for bats between their roosts and foraging habitat.

4.5.7 It is also recommended that the risk of indirect impacts to bat habitat from any artificial lighting should be mitigated through the use of directed or low intensity lighting.

4.6 Otter

Desk Study

4.6.1 There are no recent records of Otter within the Study Area.

Field Survey

4.6.2 The River Went is suitable to support foraging and commuting Otters, and the trees and stands of reedbed along the edge of the banks (TN1) may provide potential opportunities for breeding and shelter. The Fleet Drain, Fenwick Common Drain, Fenwick Grange Drain and Ell Wood Drain are four watercourses present on Solar PV Site which may provide suitable commuting habitat for Otter. The Willow carr to the north of H20 may also provide suitable breeding and shelter opportunities.

4.6.3 The ponds within 250 m of the Solar PV Site may also offer suitable foraging habitat for Otter.

Constraints and Recommendations

4.6.4 Although Otters are not known to be present within the Study Area, the habitat within the Solar PV Site and in the surrounding area (including the River Went, drainage ditches and water bodies in particular) is suitable for Otter, so it is reasonable to assume they may be present on Solar PV Site and/or nearby.

4.6.5 The Scheme does have the potential to cause disturbance to any Otters using the Solar PV Site, via both noise and lighting during the construction phase, and potentially via the destruction of resting places. Further surveys will be carried out to determine presence or likely Otter absence on the watercourses and surrounding terrestrial habitat.

4.6.6 It is recommended that two detailed Otter surveys of the River Went, and any associated drains and ditches are conducted with at least a three-month interval between surveys. Otter surveys can take place at any time of year but one visit during the Autumn to late Winter/early Spring is recommended to find Otter sites (e.g. holts and rest sites) when vegetation is less dense. The surveys will extend to 250 m up and downstream of the Solar PV Site and be carried out in accordance with good practice guidelines (Ref. 44). The surveys will focus on finding field signs which indicate the presence of Otters, such as spraints, footprints, feeding remains, slides/haul-outs and rest sites. Any suitable terrestrial habitat within 200 m of the River Went, the Fleet Drain and Fenwick Common Drain should also be inspected for signs of holts and rest sites. The use of trailcams is recommended to confirm the use of suspected holts and rest sites. If evidence of Otter is found, an assessment of the potential impacts of the Scheme upon them will be made and appropriate mitigation may be required.

4.7 Water Vole

Desk Study

4.7.1 There are four recent records of Water Voles within the Study Area. The most recent record is from 2016 and is approximately 0.1 km south of the Solar PV Site Boundary, close to Pond P14.

Field Survey

4.7.2 The River Went, ponds and the ditches associated within and surrounding the Solar PV Site have the potential to support Water Voles. Three ditches (D17, D32 and D50) contain banks for burrowing and abundant Common Reeds, which is suitable foraging for Water Voles. There are areas along the river and around the ponds that have significant reedbeds and associated marginal vegetation which provide good foraging opportunities for Water Voles. Water Voles may also use the banks of the river and ditches for burrowing and sometime above ground nests in suitable habitats.

Constraints and Recommendations

4.7.3 As Water Vole are known to be present in the nearby area, and as suitable habitat is present within the Solar PV Site Boundary, Water Vole presence cannot be ruled out without further survey.

4.7.4 The Scheme may cause the destruction or significant disturbance of resting and foraging sites. It is therefore recommended that any work should be carried out over 5 m away from any suitable Water Vole habitat.

4.7.5 If work must be carried out within 5 m of suitable habitat, then it is recommended that further surveys are carried out to determine presence or likely absence on the watercourses, ditches and water bodies on Solar PV Site.

4.7.6 It is recommended that two surveys of the River Went, and the surrounding aquatic habitats, is undertaken at least 200 m up and downstream to identify the presence or likely absence of Water Vole.

4.7.7 In accordance with Water Vole survey guidelines (Ref. 48) the first survey should be undertaken between mid-April and June, and the second should be undertaken between July and September, with surveys being carried out at least two months apart.

4.7.8 Water Vole field signs include latrines, feeding stations, burrows, above ground nests, paths, and sightings of Water Voles.

4.8 Great Crested Newt

Desk Study

4.8.1 There are 47 recent records of GCN within the Study Area. The most recent record is from 2015, and it is located 0.2 km east of the Solar PV Site boundary (at P19).

4.8.2 The desk study also identified 28 ponds within 250 m of the Solar PV Site.

Field Survey

4.8.3 There are no ponds within the Solar PV Site Boundary, but there are numerous drainage ditches, some of which contain standing water that could provide suitable breeding habitat for GCN, although it appears that the majority of the ditches dry out and refill throughout the year with the varying weather conditions.

4.8.4 Of the 28 ponds identified during the desk study, 21 were inaccessible. Of the seven visited, two were absent (i.e. not there), one was dry, and four were present and contained water.

4.8.5 The 28 ponds are summarised in Table 6. Where ponds are situated outside of the Site Boundary, the approximate distance and direction is given at the closest point of the pond from the Solar PV Site. Where access to aquatic features was possible, HSI assessments have been completed.

Table 6: Summary of Features with Potential to Support GCN

Feature	Description of Feature and Location	HSI Score
P1	Pond adjacent to farm buildings off Lawn Lane. 23 m south west from the Solar PV Site Boundary. There are direct terrestrial habitat links to the Solar PV Site via hedgerows.	No access.
P2	Ponds in a cluster, but clearly separate. All south of the buildings, within the central area. Ponds P2 to P4 all appear to have trees and vegetation surrounding them. P5 is not on any OS maps but looks to be an open pond from the aerial imagery maps. P2 is 100 m from the Solar PV Site Boundary, P3 is 164 m from the Solar PV Site Boundary, P4 is 155 m from the Solar PV Site Boundary, and P5 is 182 m away. There are direct terrestrial habitat links to the Solar PV Site via hedgerows.	Pond absent.
P3		No access.
P4		No access.
P5		No access.
P6	Pond surrounded by trees on Fenwick Hall land. P6 is 214 m from the Solar PV Site Boundary, within the central area. There are direct terrestrial habitat links to the Solar PV Site via hedgerows.	0.71 (Good)
P7	Pond in a hedgerow between two arable fields to the north of Fenwick Hall. P7 is 200 m from the Solar PV Site Boundary, within the central area. There are direct terrestrial habitat links to the Solar PV Site via hedgerows.	Pond dry.
P8	Large pond surrounded by trees on Fenwick Hall land. P8 is 120 m from the Solar PV Site Boundary, within the central area. There are	0.69 (Average)

Feature	Description of Feature and Location	HSI Score
	direct terrestrial habitat links to the Solar PV Site via hedgerows.	
P9	Pond surrounded by trees to the south of Fenwick Hall. P9 is 90 m from the Solar PV Site Boundary, within the central area. There are previous records of GCN at this pond.	0.80 (Excellent)
P10	Pond approximately 325 m north east of P9. There are previous records of GCN at this pond. P10 is 37 m from the Solar PV Site Boundary, in the central area. There are direct terrestrial habitat links to the Solar PV Site via hedgerows.	0.70 (Good)
P11	Small pond adjacent to a hedgerow 184 m to the south of the Solar PV Site Boundary, potentially connected to the Solar PV Site via hedgerows, however West Lane may act as a barrier to movement for GCN.	No access.
P12	Waterbody seen on OS map but unable to see clearly on aerial images. Assumed to be an overgrown pond, within a residential garden. Pond located 48 m east of the Site Boundary. There are direct terrestrial habitat links to the Solar PV Site via hedgerows.	No access.
P13	Small pond surrounded by trees; 90 m east of the Solar PV Site Boundary. There are direct terrestrial habitat links to the Solar PV Site via hedgerows.	Pond absent.
P14	Pond located 20 m south of the Solar PV Site Boundary, shaped like a figure of eight. Pond has a small island in the middle of the western section. Directly adjacent to the Solar PV Site.	No access.
P15	Pond to the north west of P14, in the corner of a field. Appears to be clear of any tall vegetation on the aerial imagery. There are previous records of GCN at this pond.	No access.
P16	Pond located to the south of pond P17. Within a hedgerow, 230 m east of the Solar PV Site boundary. There are direct terrestrial habitat links to the Solar PV Site via hedgerows.	No access.
P17	Appears to be three ponds clustered together from aerial maps but appears to be one pond on OS maps. Located approximately 75 m east of the Solar PV Site Boundary. There are direct terrestrial habitat links to the Solar PV Site via	No access.

Feature	Description of Feature and Location	HSI Score
	hedgerows. There are previous records of GCN at this pond.	
P18	Located to the east of P19, 237 m east of the Solar PV Site Boundary. Small pond which appears to be surrounded by vegetation and in a residential garden. There are direct terrestrial habitat links to the Solar PV Site via hedgerows.	No access.
P19	Residential pond, located to the south of Topham Ferry Lane approximately 95 m east of the Solar PV Site Boundary. Looks to be a dry pond from the aerial imagery. There are direct terrestrial habitat links to the Solar PV Site via hedgerows. There are previous records of GCN at this pond.	No access.
P20	A cluster of ponds to the north of the Solar PV Site Boundary. Approx. 175 m away from the Solar PV Site Boundary to the north of the River Went. The River Went has a relatively fast flow and is likely to act as a barrier to movement for GCN.	No access.
P21	Located 42 m to the north of the Solar PV Site Boundary to the north of the River Went. The River Went has a relatively fast flow and is likely to act as a barrier to movement for GCN.	No access.
P22	An elongated waterbody located north west of P21, 120 m north of the Site boundary and to the north of the River Went. Appears to be dry from recent aerial imagery. The River Went has a relatively fast flow and is likely to act as a barrier to movement for GCN.	No access.
P23	Pond appears to be surrounded by trees. 51 m north of the Solar PV Site Boundary and to the north of the River Went. The River Went has a relatively fast flow and is likely to act as a barrier to movement for GCN.	No access.
P24	Located 218 m south of the Solar PV Site Boundary. Pond appears to be within a pasture field, surrounded by trees on the west side.	No access.
P25	Appears to be a residential pond, behind the back of a pet food shop. Located 53 m east of Fenwick Common Lane, which forms part of the Site.	No access.

Feature	Description of Feature and Location	HSI Score
P26	Located 168 m west of Fenwick Common Lane. Along the edge of an arable field.	No access.
P27	Located 176 m south west of Fenwick Common Lane. This is Moss Brick Pond LWS, angling pond so unlikely to be suitable for GCN.	No access.
P28	Located 163 m south east of Fenwick Common Lane. Situated within a pasture field, pond has an island in the centre.	No access.

Constraints and Recommendations

4.8.6 The accessible ponds within the Study Area are considered average, good or exceptional for GCN in the HSI assessments. There are recent records of GCN within the Study Area, and there are ditches present within the Solar PV Site which may have potential to support GCN. It is likely that GCN are present in areas of suitable habitat (both aquatic and terrestrial) across the Solar PV Site and the Scheme has the potential to affect them. As such, a licence will be required in order for Scheme construction to proceed.

4.8.7 It is currently proposed that the Scheme will make use of Natural England's District Level Licencing (DLL) Scheme (as opposed to applying for a traditional European Protected Species Mitigation Licence). Although a licence application for a DLL can be made without providing any survey data, providing data through survey evidence can assist Natural England in their calculations of the number of GCN ponds that require compensation. Therefore, further survey will be undertaken to confirm presence or likely absence of GCN in all potentially suitable water bodies on Solar PV Site and within 250 m of the Solar PV Site Boundary where records of GCN do not already exist to inform a future DLL application. Where survey data is not available the calculations will be made on a 'worst case' basis that assumes waterbodies within 250 m of the Solar PV Site Boundary support GCN and require compensation.

4.8.8 Surveys using environmental DNA (eDNA) water sampling techniques are therefore recommended on all accessible and potentially suitable waterbodies within 250 m of the Solar PV Site Boundary to rule out GCN presence (Ref. 57). This includes taking a sample of the water and testing it for GCN DNA. These surveys can be carried out from mid-April to the end of June.

4.9 Common Species of Reptile

4.9.1 Common species of reptile refers to Common Lizard, Slow Worm, Adder and Grass Snake.

Desk Study

4.9.2 The desk study returned 37 records of Grass Snake within the Study Area.

Field Survey

4.9.3 The potential for reptiles to be present within the majority of the Solar PV Site is considered to be low, owing to the main habitats present being either arable crop fields or pasture grazed to a low height by livestock, which are open and present limited opportunities for reptiles to forage or shelter. The following areas provide potential opportunities for reptiles:

a. The areas of marshy grassland in the northern part of the Solar PV Site, which supports a mosaic of ruderal vegetation, wet tussocky grassland and is near to the River Went (it is part of the Went Valley LWS) (TN11);

b. The hedgerows and small areas of scrub and woodland edge habitats within the Solar PV Site also have the potential to support reptiles;

c. Where there are mosaic or transitional habitats, such as in the eastern part of the Solar PV Site, where hedgerow H44 meets broadleaved woodland and semi-improved grassland habitats and where there are also nearby off-site ponds;

d. Bunfold Shaw (TN15) and adjoining ditch, hedgerow and rough grassland habitats may also support reptiles;

e. There is a brick pile present within the arable land in the southern part of the Solar PV Site (TN2), and a brick pile present within an improved grassland in the eastern part of the Solar PV Site (TN8), both of which are suitable refugia for species of reptile; and

f. There are two deadwood piles present within the new areas of the Site Boundary, to the south east, both are in field corners (TN26 and TN29)

Constraints and Recommendations

4.9.4 Reptiles may be present within the Solar PV Site in particular, within the habitats described above, which provide suitable basking, foraging and hibernation opportunities.

4.9.5 A reptile survey is required to be carried out in the most suitable areas of habitat, following good practice to determine presence or absence (Ref. 50). This involves placing artificial refugia (sheets of roofing felt or metal corrugated roofing panels) in suitable locations and visiting the Solar PV Site seven times during suitable weather conditions, between April to September, to directly observe any reptiles using the artificial refugia or other areas of suitable habitat.

4.9.6 These surveys will confirm the risk, if any, to this species posed by the Scheme and design advice and/or suitable mitigation strategies can be determined from this. In brief, measures to protect reptiles would include avoiding areas of suitable habitat and, where this is not possible, it may be necessary to displace reptiles from the construction area, either through the careful management of vegetation and/or the translocation of reptiles to areas of suitable habitat.

4.10 Birds

Desk Study

4.10.1 There are over 1,000 recent records of notable bird species within the Study Area. Seventeen species from these records are on the RSBP 'BoCC red list' and the BoCC5 Red list (Ref. 31). Twenty species from these records are listed on the BoCC5 Amber list (Ref. 31). There are also several species listed under Schedule 1 of the WCA, including a record of a Barn Owl from 2017.

Field Survey

4.10.2 The mix of habitats within the Solar PV Site provides suitable nesting and foraging habitat for birds. The trees, deadwood trees, hedgerows, reedbeds and arable fields are expected to be used by a broad range of common breeding bird species. The River Went is also suitable for a range of breeding waterfowl and wintering bird species. The more undisturbed areas of grassland and arable land may also be used by some ground-nesting species, such as Skylarks and Lapwing (*Vanellus vanellus*).

4.10.3 Many bird species were recorded within the Solar PV Site during the field survey, including Skylarks (TN6) and Mallards (*Anas platyrhynchos*) (TN11). A male Hen Harrier (TN12) was also recorded during the surveys, although this is likely to be a foraging individual and was not present in suitable breeding habitat.

4.10.4 A Barn Owl box is present on Solar PV Site, and surveyors witnessed a Barn Owl pair exiting the box (TN5).

Constraints and Recommendations

4.10.5 To assess how the Solar PV Site is used by the bird species present, breeding bird surveys and wintering bird surveys will be required. Surveys for breeding and wintering birds are based on standard methods for surveying birds as detailed in '*Bird Monitoring Methods*' (Ref. 58) and '*Bird Census Techniques*' (Ref. 59).

4.10.6 Breeding bird surveys should be completed over five monthly visits in the period March to July, inclusive. The survey in each month would comprise walked transects to ensure full coverage of the Solar PV Site. Experienced ornithologists would use bird sound and behaviour to classify the breeding status of birds present. The locations of all species of conservation importance that are breeding or likely to breed will be mapped and an estimate of their numbers (pairs/territories) derived.

4.10.7 Wintering bird surveys should be completed over four monthly visits in the period November to February, inclusive. The survey in each month would also comprise separate walked transects. Experienced ornithologists would record the species and number of birds using the site. The locations of all species of conservation importance present would be mapped.

4.10.8 These surveys will confirm the risk, if any, to bird species posed by the Scheme and design advice and/or suitable mitigation strategies can be determined from this, as applicable.

4.10.9 Active nests of all wild birds are protected at all times under the WCA (Ref. 7. Species (including Barn Owl) listed under Schedule 1 of the WCA also receive additional protection from disturbance. It is recommended that the clearance of any suitable bird nesting habitat is undertaken in the Autumn/Winter, to be outside of the main bird nesting season (March to August, inclusive).

4.10.10 Prior to construction, a suitably experienced ecologist would need to check suitable nesting habitat to be cleared. This must take place immediately prior to the commencement of any vegetation clearance works. If a nest is discovered, the clearance and other construction works in the area should not be started and an exclusion zone (to be determined by the supervising ecologist) would need to be implemented. Works within the exclusion zone would need to be postponed until an ecologist has confirmed that all young have fledged, and the nest is no longer in use.

4.11 Terrestrial Invertebrates

Desk Study

4.11.1 The desk study returned over 750 records of notable terrestrial invertebrates from within the Study Area, mainly butterflies (334 records), moths (83 records), beetles (29 records), dragonflies (310 records) and orthoptera (one record).

Field Survey

4.11.2 The majority of the Solar PV Site is intensively managed arable fields and improved grassland that are of limited interest for invertebrates. However, there are areas (such as TN18) where this management is less intense, where arable flora is present. The arable field margins may also present foraging opportunities for terrestrial invertebrates. Flora associated with these areas and the semi-improved grasslands offers nectar sources and foodplants for insects.

4.11.3 Some areas of grassland within the coastal floodplain grazing marsh may also contain foodplant and nectar sources unique to this habitat type. This, along with the ditches and their associated flora and grasses, may support certain species of beetle and dragonflies. The areas of inundated ground (TN9 and TN16) may have some potential to support similar terrestrial invertebrates.

4.11.4 The complement of fallen deadwood habitat, which may support saproxylic (dead wood) invertebrates, is limited but there are several dead trees within the Solar PV Site that are likely to support invertebrates. The mature trees with veteran features and the well-structured hedgerows present on Solar PV Site may also provide suitable habitat for species of butterfly and beetle.

Constraints and Recommendations

4.11.5 Overall, the Solar PV Site is dominated by poor suitability for terrestrial invertebrates, with some potentially higher suitability grassland habitats and deadwood habitat which could be avoided.

4.11.6 The measures set out in the above sections, to protect habitats, are likely to be sufficient to protect invertebrates. However, should there be impacts upon the most suitable habitats for terrestrial invertebrates present on Solar PV Site, such as higher value grassland in the coastal floodplain grazing marsh habitat, then further invertebrate survey may be required.

4.12 Aquatic Invertebrates

Desk Study

4.12.1 There are no recent records of notable or protected aquatic invertebrates, including White-clawed Crayfish within the Study Area.

4.12.2 Although protected and notable aquatic invertebrate records were absent from the Study Area, it should be noted that for the Went from Blowell Drain to the River Don WFD Water Body (ID: GB104027064260), aquatic invertebrates were classified as High status for the 2019 WFD cycle.

4.12.3 There were no Environment Agency monitoring sites on Fleet drain and Fenwick common drain. Therefore, desk study data was taken from an Environment Agency monitoring site (Solar PV Site ID: 916) on the River Went, 2 km upstream from the Study Area and 4.7 km upstream of the confluence of Fleet drain with the River Went. The non-native New Zealand Mud Snail (*Potamopyrgus antipodarum*) was identified in 2016. There are no statutory obligations pertaining to the spread of the species. No other notable species were recorded.

4.12.4 Consistent with the habitat field survey, desk study data and aerial imagery identified three watercourses within the Study Area, including, the River Went, Fenwick Common Drain, and Fleet Drain. Furthermore, 11 ditches were also identified.

Field Survey

4.12.5 Aquatic invertebrate field surveys have not been completed to date. The following ditches were assessed during the aquatic walkover surveys; D60, D29, D33, D55, D9, D10, D15, D12, D3, D26 and D27. A targeted approach was taken to assess a representative number with the potential to be affected by the Scheme. Of these, six were recorded as wet (D60, D29, D33, D9, D15 and D12) and five were dry (D55, D10, D3, D26 and D27). Wet ditches were generally found to be showing little sign of physical damage and visible INNS were absent however, heavy shading was present, with a lack of diversity in marginal and aquatic plants. Full results from the walkover surveys on the ditches in the Survey Area can be found in Annex F.

Constraints and Recommendations

4.12.6 Due to the proximity of the River Went to the Solar PV Site, there is potential for the River Went to be impacted through Site drainage during construction and resulting impacts to water quality, changes to hydrological regime, or watercourse crossings.

4.12.7 Initial assessment of ditches indicated that the habitats were of low suitability for aquatic inverts and that further survey of the representative ditches will be provided as part of the separate aquatic baseline assessment.

4.12.8 In the event that direct or indirect impacts to watercourses or ditches are identified, then further aquatic macroinvertebrate surveys are recommended to identify protected, notable and invasive species, and to inform WFD assessment.

4.13 Fish

Desk Study

4.13.1 According to Environment Agency data (Solar PV Site: 4355) and NBN Atlas (Ref. 39), two notable fish species were identified in 2012, 2017 and 2019 approximately 2 km upstream of the Study Area. These are European Bullhead (*Cottus gobio*) and European Eel (*Anguilla Anguilla*), both of which are under Annex II of the Habitats and Species Directive (Ref. 3). European Eel is also afforded protection under the Eel Regulations 2009 (Ref. 16) in terms of fish passage and impacts of screening and abstraction. Furthermore, additional fish species recorded here included seven records of Three-spined Stickleback (*Gasterosteus aculeatus*), with the most recent record being in 2017.

4.13.2 Environment Agency data within 2 km of Fleet drain and Common drain were not available. Alternatively, data available from an Environment Agency monitoring site (Solar PV Site ID: 4355) approximately 2 km upstream of the Study Area on the River Went are available for interpretation. This is located approximately 4.7 km upstream of the confluence of Fleet drain with the River Went. The confluence of Fenwick Common Drain and Fleet Drain occurs a further 2.1 km upstream of Fleet Drain. Six fish taxa were identified here in 2017 which included the notable (Annex II of the Habitats and Species Directive (Ref. 3) and UK BAP priority species (Ref. 25) European Bullhead. No other notable species were recorded.

4.13.3 According to Environment Agency data, fish are classified as Poor status within the Went from Blowell Drain to the River Don WFD Water Body.

4.13.4 The Species Audit of the City of Doncaster Council, produced for the Doncaster BAP in 2007 (Ref. 32), also listed 22 records of European Eel, six records of Atlantic Salmon (*Salmo salar*), four records of Brown Trout (*Salmo trutta*) located at various unconfirmed locations, and one record of Sea Lamprey within the New Junction Canal which is connected to the River Went approximately 6 km downstream of the Study Area.

Constraints and Recommendations

4.13.5 Desk study data may be limited due to the age of the most recent records available.

4.13.6 Given the designated status of Sea Lamprey, Atlantic Salmon and Brown Trout, these species should also be considered in further reporting.

4.13.7 Furthermore, given the most recent update of the Doncaster BAP was in 2007 (Ref. 32), these records are not current and may need updating to reflect existing species presence.

4.13.8 Impacts to watercourses and ditches due to the Scheme are expected to be minimal, and it is envisaged that any temporary or permanent culverts for watercourse crossings would ensure fish passage. However, given the

potential for Sea Lamprey to be affected and their importance in the context of the Humber Estuary SAC/Ramsar, further fish surveys are recommended. Surveys are recommended on the River Went, Fleet Drain, and Fenwick Common Drain, to assess habitat suitability for River and Sea Lamprey, and to carry out electric fishing surveys for these and other fish species. If it can be established that these watercourses would not be impacted, fish surveys would no longer be required.

4.14 Aquatic Macrophytes

Desk Study

4.14.1 According to desk study data, there are no recent records of protected aquatic macrophytes within the Study Area in relation to the River Went, Fleet Drain and Fenwick Common Drain.

4.14.2 According to Environment Agency catchment database data, macrophytes as a sub-element scored poorly on the Went from Blowell Drain to the River Don Water Body during the 2019 cycle.

Field Survey

4.14.3 Aquatic macrophyte field surveys have not been undertaken to date.

Constraints and Recommendations

4.14.4 Due to the location of the River Went, Fleet Drain and Common Drain within the Study Area, there is potential for these watercourses, and all ditches, to be impacted through Site drainage during construction and resulting impacts to water quality, changes to hydrological regime, or watercourse crossings.

4.14.5 Further aquatic macrophyte surveys are recommended to identify protected, notable and invasive species, and to inform the WFD assessment.

4.15 Invasive Non-Native Species (INNS)

Desk Study

4.15.1 Several aquatic INNS were identified in the desk study, as shown in Table 7. There are no recent records of terrestrial INNS within the Study Area.

Table 7: Aquatic INNS Identified Within 2 km of the Study Area and Within the Last Ten Years

Species	Designation/status	Total Number of Records	Most recent record	Distance of closest record to Study Area
New Zealand Mud Snail	Non-native but naturalised	15	2013 or date not stated	2 km
Nuttall's Waterweed (*Elodea nuttallii*)	Invasive Alien Species (Enforcement	5	2016	70 m downstream

Species	Designation/status	Total Number of Records	Most recent record	Distance of closest record to Study Area
	and Permitting) Order 2019			on River Went
Curly Waterweed (*Lagarosiphon major*)	Invasive Alien Species (Enforcement and Permitting) Order 2019	1	2016	2 km

Field survey

4.15.2 Aquatic INNS field surveys have not been completed to date.

4.15.3 During the field survey, no terrestrial plant INNS were seen, however Muntjac Deer (*Muntiacus reevesi*) are present on Solar PV Site and were sighted several times during the surveys.

Constrains and Recommendations

4.15.4 There are statutory constraints regarding the potential spread of INNS listed in the Invasive Alien Species (Enforcement and Permitting) Order 2019 (Ref. 14), and therefore measures should be implemented during Scheme construction to prevent their spread and where practicable locally eradicate these species within the Solar PV Site. The spread of INNS not listed in statutory legislation should also be controlled by biosecurity measures during construction, operation, and decommissioning.

4.15.5 Further aquatic macrophyte and aquatic invertebrate surveys have been recommended, which would include data collection on INNS within the Solar PV Site.

4.15.6 It is considered likely that terrestrial plant INNS may still be present but were unobservable at the time of the survey. Muntjac Deer were sighted several times during the Phase 1 survey; this species is listed in the Invasive Alien Species (Enforcement and Permitting) Order 2019 (Ref. 14).

4.15.7 It is therefore recommended that an INNS survey is carried out during April to September to assess the potential impact of INNS species to the Scheme and to inform any mitigation measures required.

4.16 Other Notable Species

Desk Study

4.16.1 In addition to GCN records, there are seven recent records of other amphibians within the Study Area. There are three records of Common Frog (*Rana temporaria*), two records of a Common Toad and two records of Smooth Newt (*Lissotriton vulgaris*). The closest of these records is 1.3 km

east of the Solar PV Site (a sighting of one Common Frog and one Smooth Newt).

4.16.2 There were records of notable mammal species comprising Brown Hare (Lepus europaeus), Harvest Mouse (Micromys minutus) and Hedgehog (Erinaceus europaeus) within the Solar PV Site.

Field Survey

4.16.3 Brown Hares were seen in the arable fields to the western part of the Solar PV Site during the survey. These are notable as they are a SPI.

Constraints and Recommendations

4.16.4 During the Scheme construction phase, if excavations are to be left uncovered overnight, material that could function as a ladder should be placed to allow any animals to escape, that may otherwise have become trapped (see Section 4.4 for more details).

4.16.5 There are considered to be no constraints from potential notable species presence that would be likely to affect the Scheme and as such, no further surveys in relation to other species are considered necessary.

4.16.6 It is recommended that to avoid harm to common and wide-spread species, a Reasonable Avoidance Method Statement (RAMS) should be followed. The RAMS should be in addition to any mitigation that is required for other protected species. Typical mitigation methods may include:

a. The appointment of an ecological clerk of works (EcoW) to provide a ‘toolbox’ talk at the start of the construction phase on ecological responsibilities. This would identify the species likely to be present and any suitable habitat within or nearby the working area;

b. The hand dismantling of any refugia suitable for common and widespread species;

c. The sensitive management of vegetation and Site material to discourage common and widespread species from the Site; and

d. If any animals (excluding GCN) are encountered during the works, they will be carefully moved away from the works area and released into nearby suitable habitat identified by the EcoW. However, if GCN are encountered, works must stop immediately, and an ecologist must be contacted for advice.

5. Opportunities for Enhancements

5.1.1 This section highlights opportunities for providing ecological enhancements consistent with current good practice guidelines (Ref. 27) and based on the location of the Scheme. These are high level opportunities and would need to be developed in greater detail once further surveys have been completed and the Scheme proposals, such as detailed areas of habitat loss are confirmed.

5.2 Biodiversity Net Gain

5.2.1 The NPPF states that "*planning decisions should minimise impacts on and provide net gain for biodiversity*". Furthermore, from 12 February 2024 in England, it became mandatory for all relevant developments to achieve a minimum of 10 % net gain in biodiversity units, relative to a site's baseline biodiversity value, under Schedule 7A of the Town and Country Planning Act (Ref. 60). Schedule 15 of the Environment Act 2021 (Ref. 9) makes provision for BNG in relation to development consent for NSIPs. Although the requirement for a minimum 10% gain in biodiversity for NSIPs will not become mandatory until 2025, the Scheme will aspire to achieve at least this level of net gain in biodiversity (as set out in the legislation).

5.3 Other Enhancements

5.3.1 The following enhancements could be delivered for biodiversity as part of the Scheme, that do not contribute towards the calculation of BNG but can still deliver significant improvements for biodiversity:

a. Improve the defunct and species-poor hedgerows on Solar PV Site to add diversity and improve habitat connectivity. Enriching species-poor hedgerows with native plant species and leaving dead wood and leaf litter in situ will support many invertebrates, in turn providing foraging opportunities for bird and bat species;

b. Over-sowing a wildflower meadow within areas of semi-improved grassland could provide a good food source for several species of invertebrates such as pollinator bees. Species could include those listed in the Royal Horticultural Society's Perfect for Pollinator's list (Ref. 61) such as Yellow Rattle (*Rhinanthus Minor*), and Birds-foot Trefoil (*Lotus Corniculatus*);

c. Pond creation and the maintenance of the ditches present on Solar PV Site would be beneficial to invertebrates, birds, amphibians and reptiles. Pond creation should be focused within the areas with the lowest value to wildlife, and ditch management should focus on creating shady and sunlit areas, and varying depths along the lengths;

d. Bat boxes could be placed around the Solar PV Site to enhance roosting opportunities for bat species;

e. Bird boxes could be placed around the Solar PV Site to offer shelter for breeding bird species;

f. 'Bug hotels' could be placed around the Solar PV Site in different locations (such as on trees or underneath hedgerows), to provide habitat

for terrestrial invertebrates. These ‘hotels’ could have varying structures, such as small holes for solitary bees and wasps, and ‘beetle buckets’ for stag beetles. The creation of bare ground may also be beneficial for some species of invertebrates; and

g. Hibernacula, such as log, rock and stone piles, could be created around the Solar PV Site to provide habitat for reptiles and amphibians. Additionally, these piles would be beneficial to a variety of terrestrial invertebrates.

6. Conclusion

6.1.1 This PEAR is based on a desk study and ecological surveys undertaken between 28 to 31 March, on 25 April and on 19 October 2023, to assess the ecological constraints to the Scheme (within the Solar PV Site) and to provide advice in respect of Scheme design, Site layout and/or Site investigation.

6.1.2 The following further surveys, summarised in Table , are recommended to support detailed design and planning application.

Table 8: Summary of Recommendations

Feature	Recommendation	Timing
Designated sites	It is recommended that a HRA screening is carried out.	Prior to submission of DCO application.
	Avoid and buffer the Went Valley (Part) LWS on the Solar PV Site. If not possible then further surveys on this site (such as detailed botanical and species surveys) will need to be carried out to assess the likely impacts from the Scheme on this LWS.	Prior to any works or plans relating to the Scheme.
	Appropriate protection zones should be implemented around adjacent LWSs, e.g. Bunfold Shaw LWS (semi-natural ancient woodland habitat) and Fenwick Churchyard LWS to protect them.	During the construction phase.
	Indirect impacts to River Went (that includes numerous LWSs) and other aquatic LWSs within the Study Area should be mitigated through construction good practice (Ref. 62). (Additional constraints and recommendations relating directly to mammals, aquatic invertebrates, fish and aquatic macrophytes are detailed below)	Prior to commencement of the Scheme.
Habitats	It is recommended that the notable habitats present at the Solar PV Site, including ancient woodland, trees and areas of marginal vegetation should be retained where practicable. If this is not possible, a NVC (Ref. 54) survey should be completed of	Prior to any works or plans relating to the Scheme.

Feature	Recommendation	Timing
	habitats any Priority Habitats that may be impacted.	
	It is recommended that a hedgerow survey is carried out.	April to October, with the optimal months April to June.
	A habitat condition survey should be completed to inform BNG. Habitat condition data from terrestrial habitats should be collected in accordance with the condition assessment criteria outlined in Biodiversity Metric 4.0 (Ref. 55).	April to October.
Bats	If trees with the potential to support bats are affected by the Scheme, then further survey would be needed to establish the likely presence of a bat roost and evaluate impacts and appropriate mitigation.	A DBW can be carried out any time of the year ideally when trees not in leaf. Subsequent roost presence/absence surveys comprising aerial survey and/or emergence surveys. Noting that emergence surveys are normally carried out between May and September.
	To assess how bats use habitats for foraging and commuting, it is recommended that NBW (i.e. bat vantage point/transects and static detector surveys) are carried out across the Solar PV Site.	One survey each season (Spring (April/May), Summer June to August, and Autumn (September to/October).
Badgers	Good practice measures during construction to protect Badgers (and other mammals) from harm.	During construction.
	Separate Badger survey to be carried out and discussed in a separate confidential report.	Can be completed at any time of year.
Otter	Surveys of the River Went, and any associated drains and ditches. This involves investigating the watercourses within the Solar PV Site and up to 250 m up and downstream, searching for signs of Otter.	A least two separate visits one between April and September and one in the Winter to look for signs. Rest sites and holts should be monitored with trail cameras, where

Feature	Recommendation	Timing
	Any suitable terrestrial habitat within 200 m of the River Went, the Fleet Drain, Fenwick Common Drain and Ell Wood Drain should also be inspected for signs of resting sites.	practicable to determine their use by Otter.
Water Vole	It is recommended that any work should be carried out a minimum of 5 m away from the bank toe of any suitable watercourse. If work must be carried out within 5 m of suitable habitat, then it is recommended that further surveys are carried out to determine presence or likely absence on the watercourses, ditches and waterbodies on Solar PV Site. Two detailed surveys of the River Went and any suitable associated drains and ditches. This involves investigating the watercourses 200 m up and downstream, searching for signs of Water Vole.	Two surveys should be undertaken, one between mid-April and June, and a second survey should be undertaken between July and September.
GCN	GCN eDNA surveys should be carried out of the existing waterbodies within and up to 250 m of, the Solar PV Site. This will rule out or confirm the presence of GCN in the waterbodies within the Solar PV Site. Mitigation to be delivered as part of DLL.	During GCN breeding season (between mid-April to June).
Reptiles	Reptile presence/absence surveys should be undertaken. This involves making seven visits to the Solar PV Site, to search for reptile presence following installation of artificial refugia (sheets of roofing felt or metal corrugated roofing panels). The artificial refugia should be placed in suitable areas to maximise the chances of reptile use.	Seven surveys between April to September. The timing of these visits is dependent on temperatures and weather conditions.
Birds	Wintering Bird Surveys (WBS) in each month would comprise walked transects to ensure full coverage of the Solar PV Site.	Monthly visits between November and February.

Feature	Recommendation	Timing
	Experienced ornithologists would record the species and number of birds using the site. The locations of all species of conservation importance present would be mapped.	
	Breeding bird surveys (BBS) in each month would comprise walked transects to ensure full coverage of the Solar PV Site. Experienced ornithologists would use bird sound and behaviour to classify the breeding status of birds present.	Monthly visits between March and July.
	Active nests of all wild birds are protected under the WCA. It is recommended that a nesting bird check would need to be carried out on any suitable vegetation to be cleared by a suitably experienced ecologist. If a nest is discovered, the clearance and other construction works in the area should not be started and an exclusion zone (to be determined by the supervising ecologist) would need to be implemented. Works within the exclusion zone would need to be postponed until an ecologist has confirmed that all young have fledged, and the nest is no longer in use.	Vegetation clearance should be carried out outside of the main bird nesting season (which is generally accepted as March to August, inclusive). The nesting bird check should be carried out immediately prior to any clearance of suitable nesting habitat.
Aquatic Receptors	Aquatic macroinvertebrate surveys of watercourses and ditches likely to be impacted (otherwise, representative reaches).	Spring (March to May) and/or Autumn (September to November).
	Aquatic macrophyte surveys of watercourses and ditches likely to be impacted (otherwise, representative reaches).	Summer (June to September).
	Fish surveys are recommended on the River Went, Fleet Drain, and Fenwick Common Drain, to assess habitat suitability for River and Sea Lamprey, and to carry out electric fishing surveys for these and other fish species. If it can be established	Summer (June to September).

Feature	Recommendation	Timing
	that these watercourses would not be impacted, fish surveys would no longer be required.	
INNS	Aquatic INNS are included in the surveys above.	Summer (June to September).
	It is recommended that a terrestrial INNS survey is carried out to assess the potential impact of INNS species to the Scheme and to inform any mitigation measures required.	Between April to September, with June and July being the optimal months.

6.1.3 Enhancements for biodiversity that could be delivered as part of the Scheme include enhancing the existing habitats on Solar PV Site by planting native species, creating ponds and maintaining ditches on Solar PV Site, and providing artificial refugia for species present on Site.

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Annex A Figures

Figure 1: Location of Statutorily Designated Sites

Figure 2: Location of Non-statutorily Designated Sites

Figure 3: Phase 1 Habitats

Revision: 01 Drawn: LP Checked: AB Approved: TN Date: 2024-03-21

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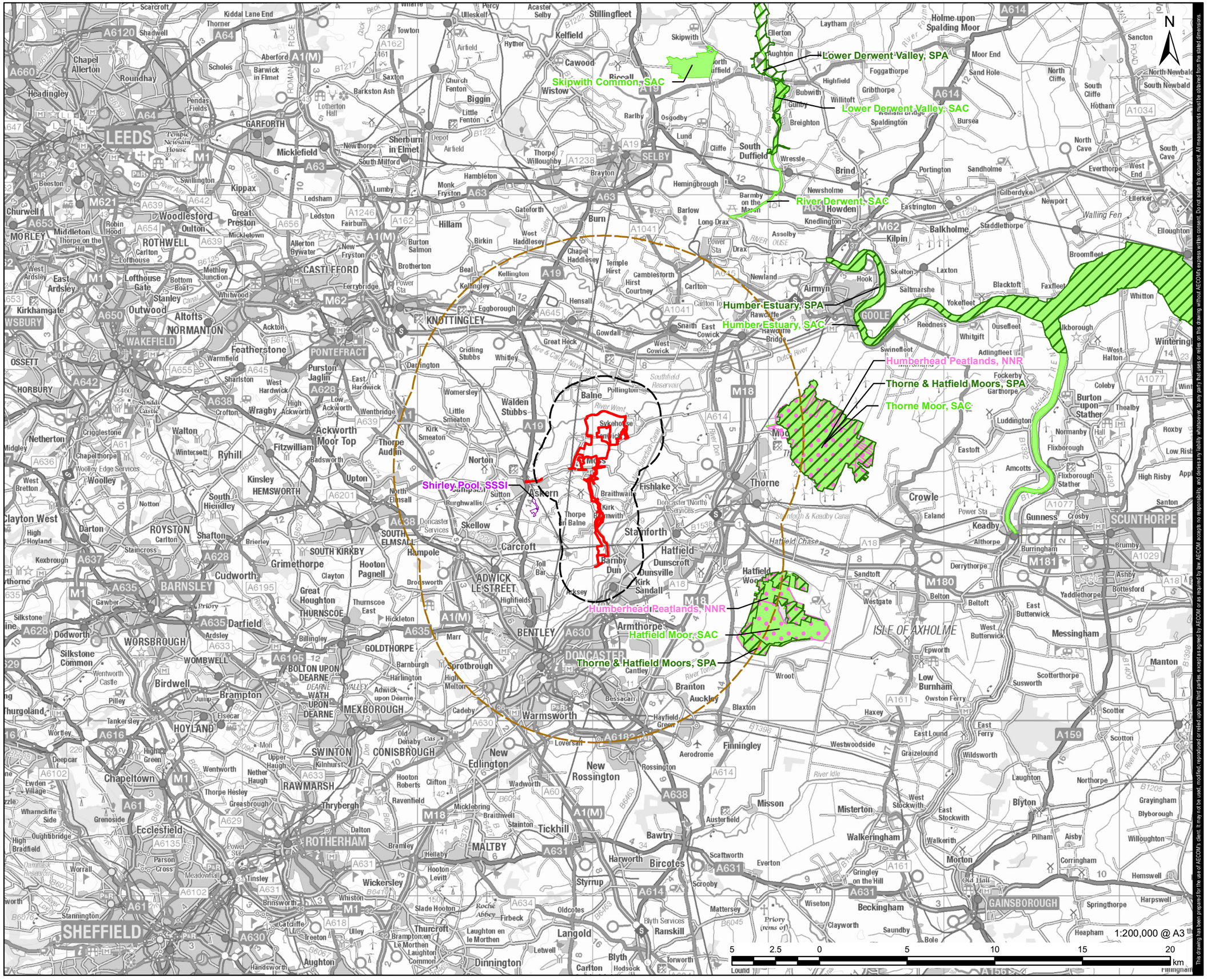

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PROJECT

Fenwick Solar Farm

CLIENT

Fenwick Solar Project Limited

CONSULTANT

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

LEGEND

- Site Boundary
- 10km International Nature Conservation Sites Study Area
- 2km National Nature Conservation Sites Study Area
- Special Protection Area
- Special Area of Conservation (SAC)
- Site of Special Scientific Interest (SSSI)
- National Nature Reserve (NNR)

NOTES

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N.B. SSSI sites are shown up to 2km, NNR sites up to 10km, and SPA and SAC sites up to 20km only.

ISSUE PURPOSE

PEA

PROJECT NUMBER

60698207

FIGURE TITLE

Sites Statutorily Designated for their Biodiversity Value at an International and National Level.

FIGURE NUMBER

Figure 1

Revision: 01 Drawn: LP Checked: AB Approved: TN Date: 2024-03-21

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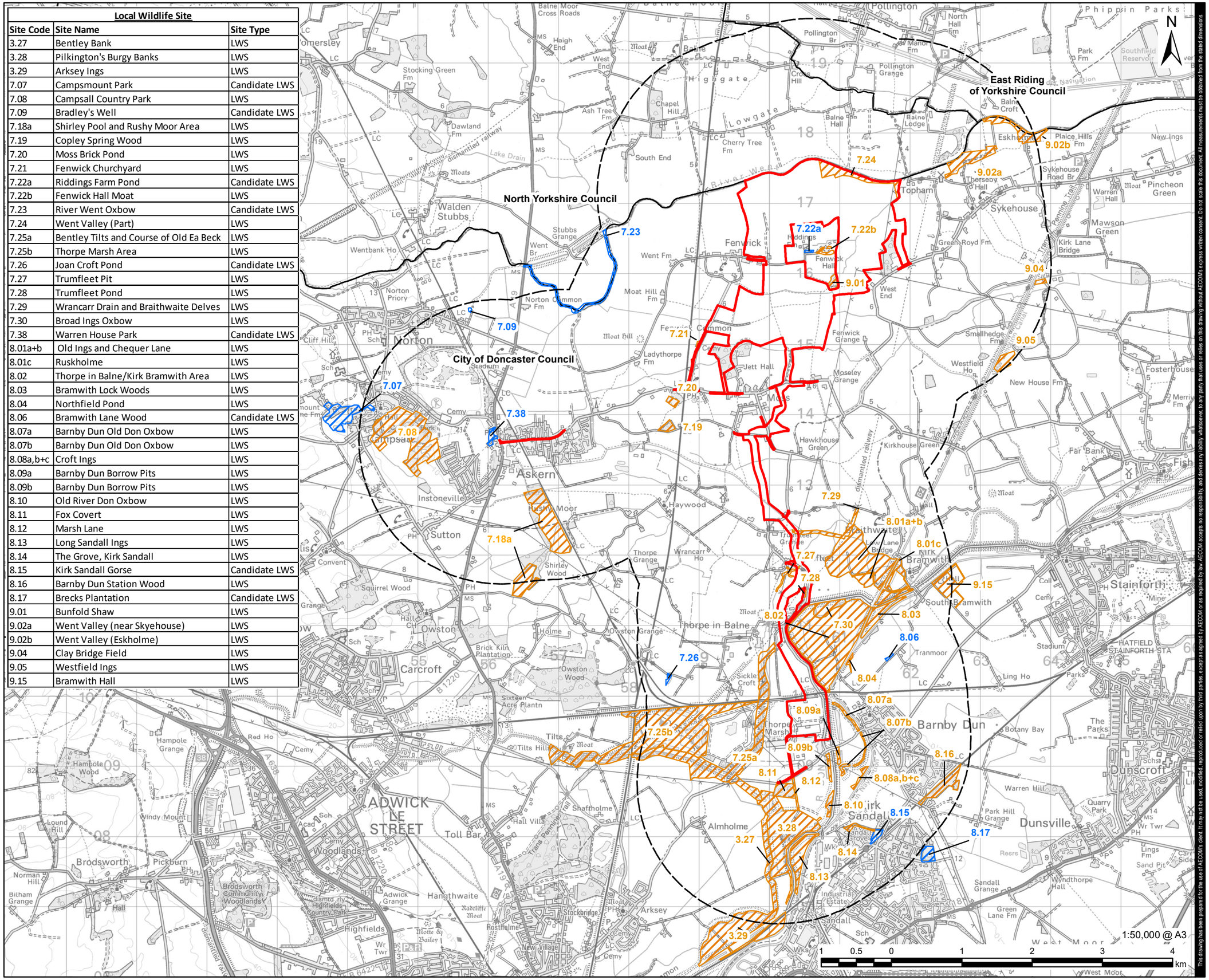
Local Wildlife Site		
Site Code	**Site Name**	**Site Type**
3.27	Bentley Bank	LWS
3.28	Pilkington's Burgy Banks	LWS
3.29	Arksey Ings	LWS
7.07	Campsmount Park	Candidate LWS
7.08	Campsall Country Park	LWS
7.09	Bradley's Well	Candidate LWS
7.18a	Shirley Pool and Rushy Moor Area	LWS
7.19	Copley Spring Wood	LWS
7.20	Moss Brick Pond	LWS
7.21	Fenwick Churchyard	LWS
7.22a	Riddings Farm Pond	Candidate LWS
7.22b	Fenwick Hall Moat	LWS
7.23	River Went Oxbow	Candidate LWS
7.24	Went Valley (Part)	LWS
7.25a	Bentley Tilts and Course of Old Ea Beck	LWS
7.25b	Thorpe Marsh Area	LWS
7.26	Joan Croft Pond	Candidate LWS
7.27	Trumfleet Pit	LWS
7.28	Trumfleet Pond	LWS
7.29	Wrancarr Drain and Braithwaite Delves	LWS
7.30	Broad Ings Oxbow	LWS
7.38	Warren House Park	Candidate LWS
8.01a+b	Old Ings and Chequer Lane	LWS
8.01c	Ruskholme	LWS
8.02	Thorpe in Balne/Kirk Bramwith Area	LWS
8.03	Bramwith Lock Woods	LWS
8.04	Northfield Pond	LWS
8.06	Bramwith Lane Wood	Candidate LWS
8.07a	Barnby Dun Old Don Oxbow	LWS
8.07b	Barnby Dun Old Don Oxbow	LWS
8.08a,b+c	Croft Ings	LWS
8.09a	Barnby Dun Borrow Pits	LWS
8.09b	Barnby Dun Borrow Pits	LWS
8.10	Old River Don Oxbow	LWS
8.11	Fox Covert	LWS
8.12	Marsh Lane	LWS
8.13	Long Sandall Ings	LWS
8.14	The Grove, Kirk Sandall	LWS
8.15	Kirk Sandall Gorse	Candidate LWS
8.16	Barnby Dun Station Wood	LWS
8.17	Brecks Plantation	Candidate LWS
9.01	Bunfold Shaw	LWS
9.02a	Went Valley (near Skyehouse)	LWS
9.02b	Went Valley (Eskholme)	LWS
9.04	Clay Bridge Field	LWS
9.05	Westfield Ings	LWS
9.15	Bramwith Hall	LWS



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CLIENT

Fenwick Solar Project Limited

CONSULTANT

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

LEGEND

- Site Boundary
- 2km Study Area
- Local Authority Boundary

Local Wildlife Sites* (City of Doncaster Council Only)

- Local Wildlife Site (LWS)
- Candidate Local Wildlife Site (cLWS)

NOTES

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*LWS boundaries are indicative only based upon information available on the City of Doncaster Council public facing Biodiversity Map on 26/04/2023 & 06/03/2024.
NB. Only records within 2km of the Site Boundary have been captured.

ISSUE PURPOSE

PEA

PROJECT NUMBER

60698207

FIGURE TITLE

Sites Non-Statutorily Designated for their Biodiversity Value

FIGURE NUMBER

Figure 2

Revision: 01 Drawn: LP Checked: AB Approved: TN Date: 2024-03-21

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Legend

- Solar PV Site
- 50m Buffer of the Solar PV Site
- Target Note
- A3.1 - Broadleaved parkland/scattered trees
- A3.1 - Broadleaved parkland/scattered trees
- A3.3 - Mixed parkland/scattered trees
- Hedge
- G2 - Running water
- J2.6 - Dry ditch
- A1.1.1 - Broadleaved woodland - semi-natural
- A1.1.2 - Broadleaved woodland - plantation
- A1.3.2 - Mixed woodland - plantation
- A2.1 - Scrub - dense/continuous
- A3.1 - Broadleaved parkland/scattered trees
- A3.3 - Mixed parkland/scattered trees
- B2.2 - Neutral grassland - semi-improved
- B4 - Improved grassland
- B5 - Marsh/marshy grassland
- B6 - Poor semi-improved grassland
- C3.1 - Other tall herb and fern - ruderal
- F1 - Swamp
- G1 - Standing water
- G2 - Running water
- J1.1 - Cultivated/disturbed land - arable
- J1.2 - Cultivated/disturbed land - amenity grassland
- J1.3 - Cultivated/disturbed land - ephemeral/short perennial
- J1.4 - Introduced shrub
- J2.6 - Dry ditch
- J3.6 - Buildings
- J4 - Bare ground
- J5 - Other habitat
- Hardstanding
- Priority Habitat Inventory - Coastal and Floodplain Grazing Marsh
- Local Wildlife Site (LWS)

SHEET 1
SHEET 2
SHEET 3
SHEET 4
SHEET 5
SHEET 6

N

1:15,000 @ A3

250 125 0 250 500 750 1,000 m

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PROJECT
Fenwick Solar Farm

CLIENT
Fenwick Solar Project Limited

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

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*LWS site boundaries are indicative only based upon information available on the Doncaster Metropolitan Borough Council public facing Biodiversity Map on 26/04/2023. Phase 1 Surveys were conducted during February, March, and October 2023.

ISSUE PURPOSE
PEA

PROJECT NUMBER
60698207

FIGURE TITLE
Phase 1 Habitats
Overview Page

FIGURE NUMBER
Figure 3

Revision: 01 Drawn: LP Checked: AB Approved: TN Date: 2024-03-21

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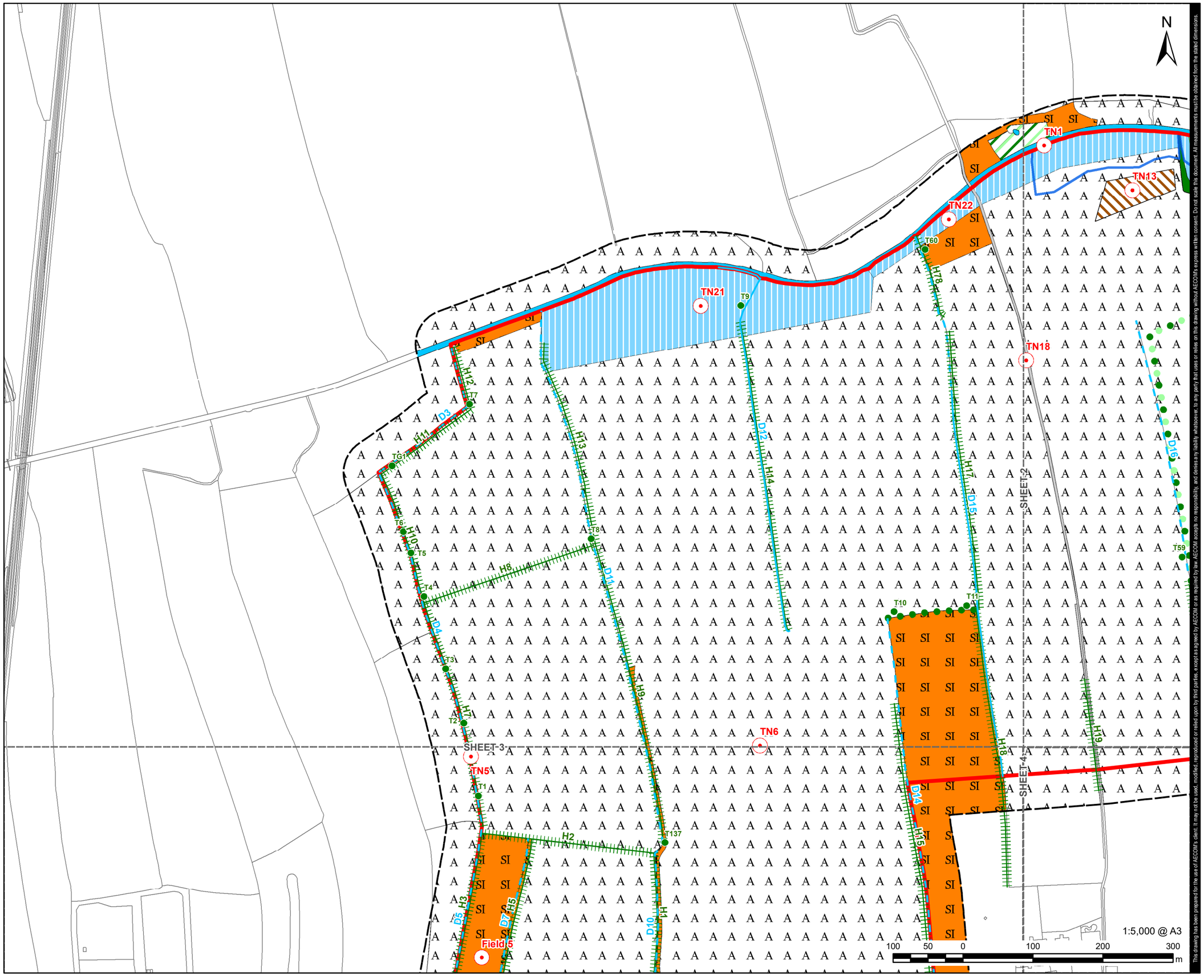

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PROJECT

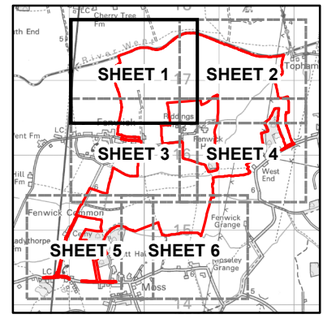
Fenwick Solar Farm

CLIENT

Fenwick Solar Project Limited

CONSULTANT

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



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ISSUE PURPOSE

PEA

PROJECT NUMBER

60698207

FIGURE TITLE

Phase 1 Habitats
Sheet 1 of 6

FIGURE NUMBER

Figure 3

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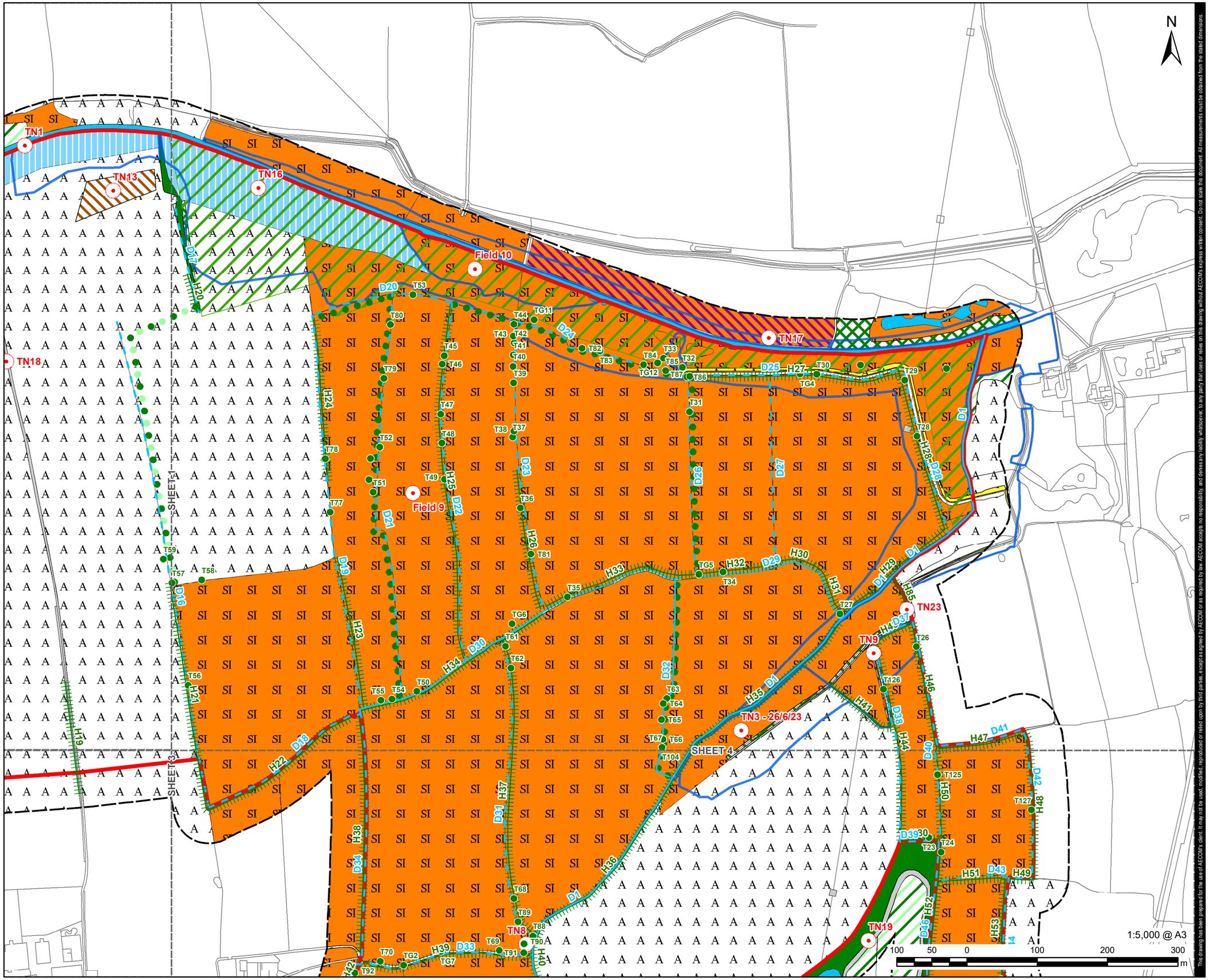

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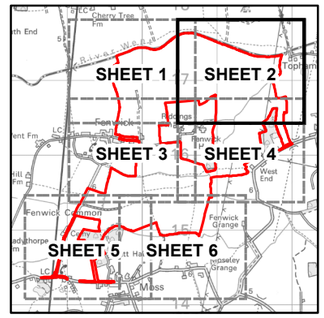

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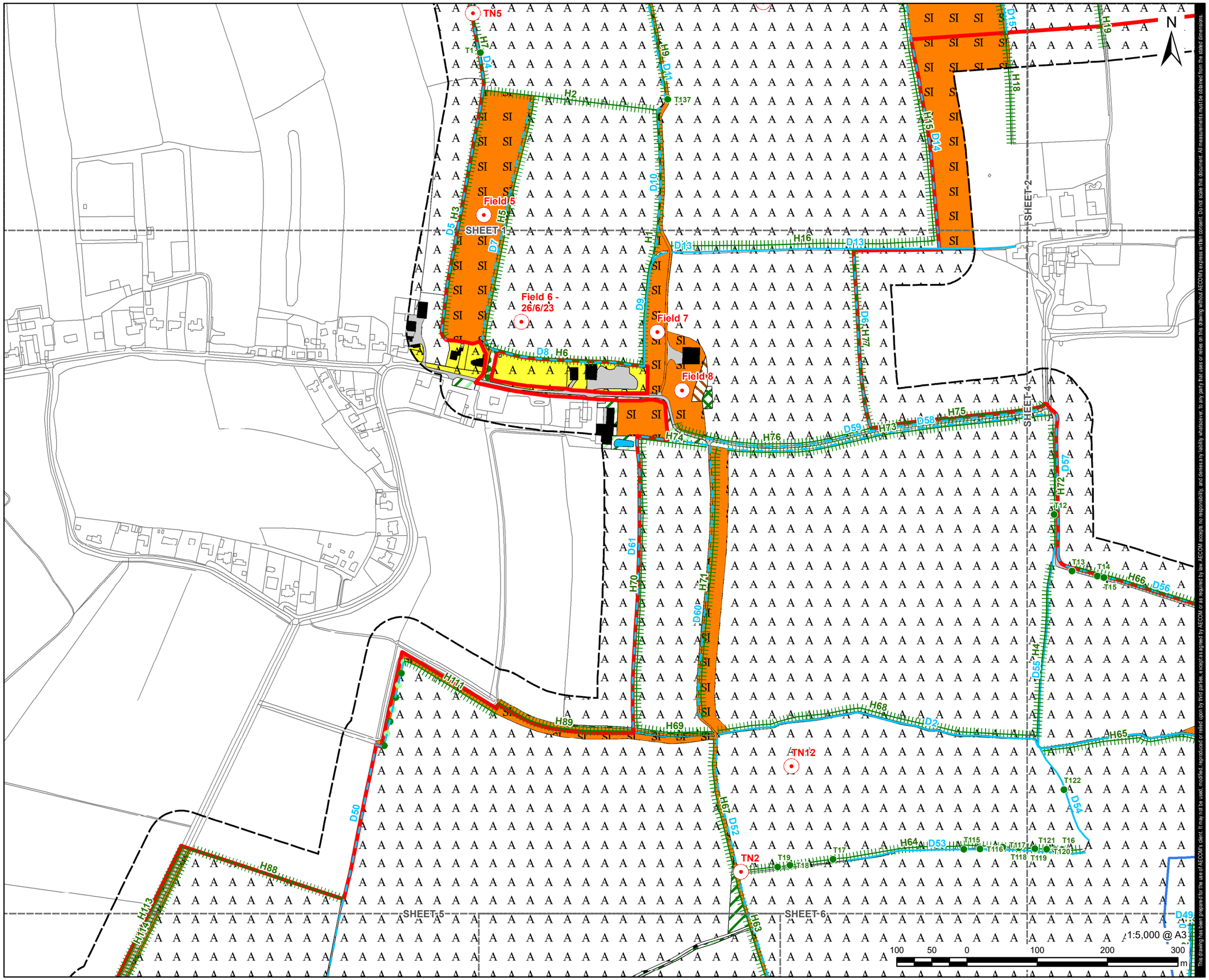

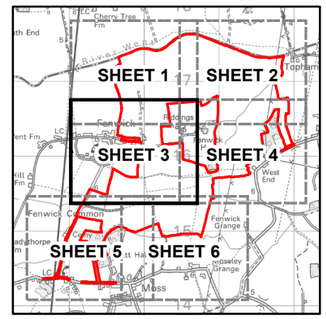

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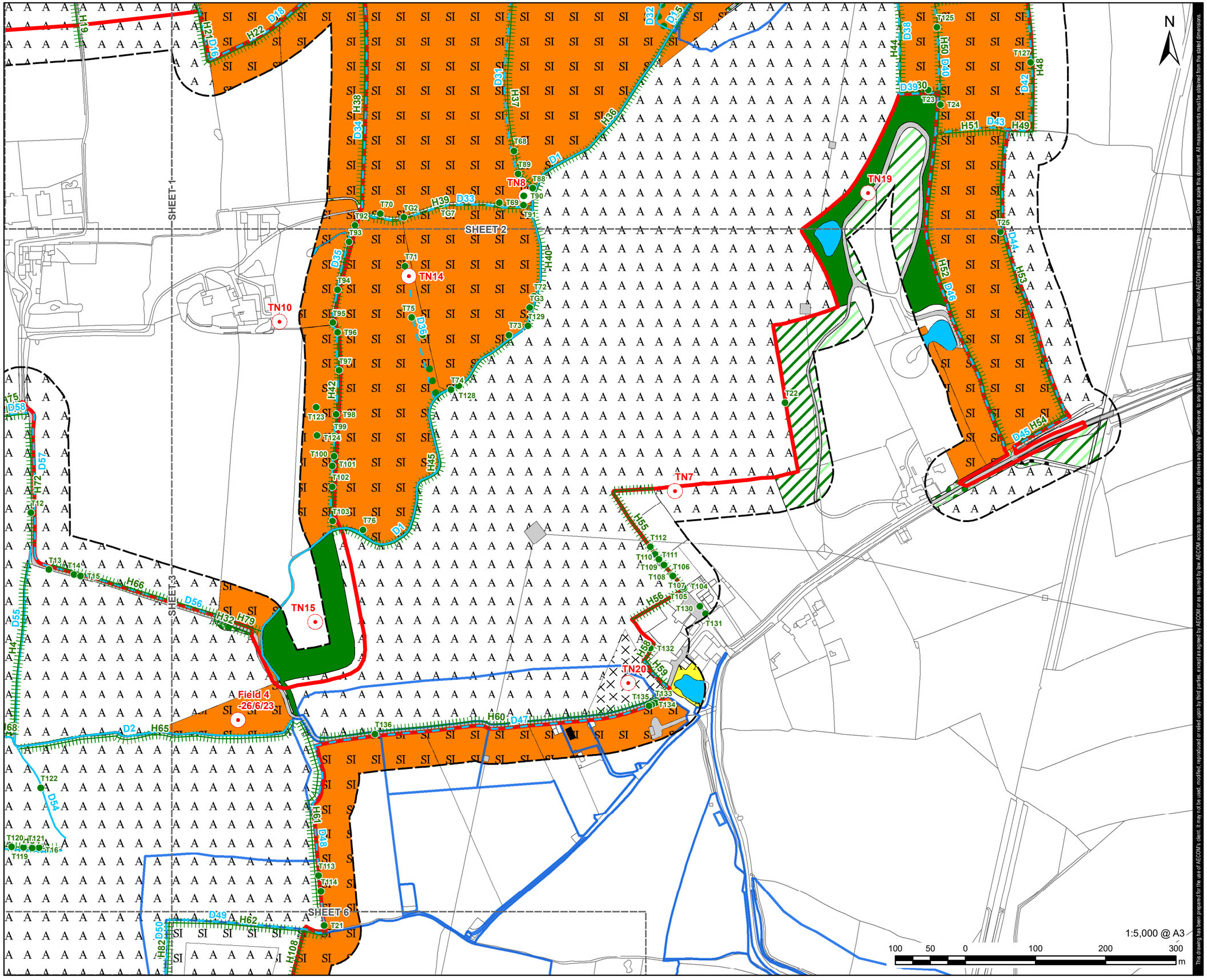

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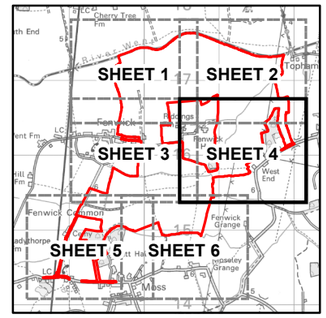

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FIGURE TITLE

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FIGURE NUMBER

Figure 3

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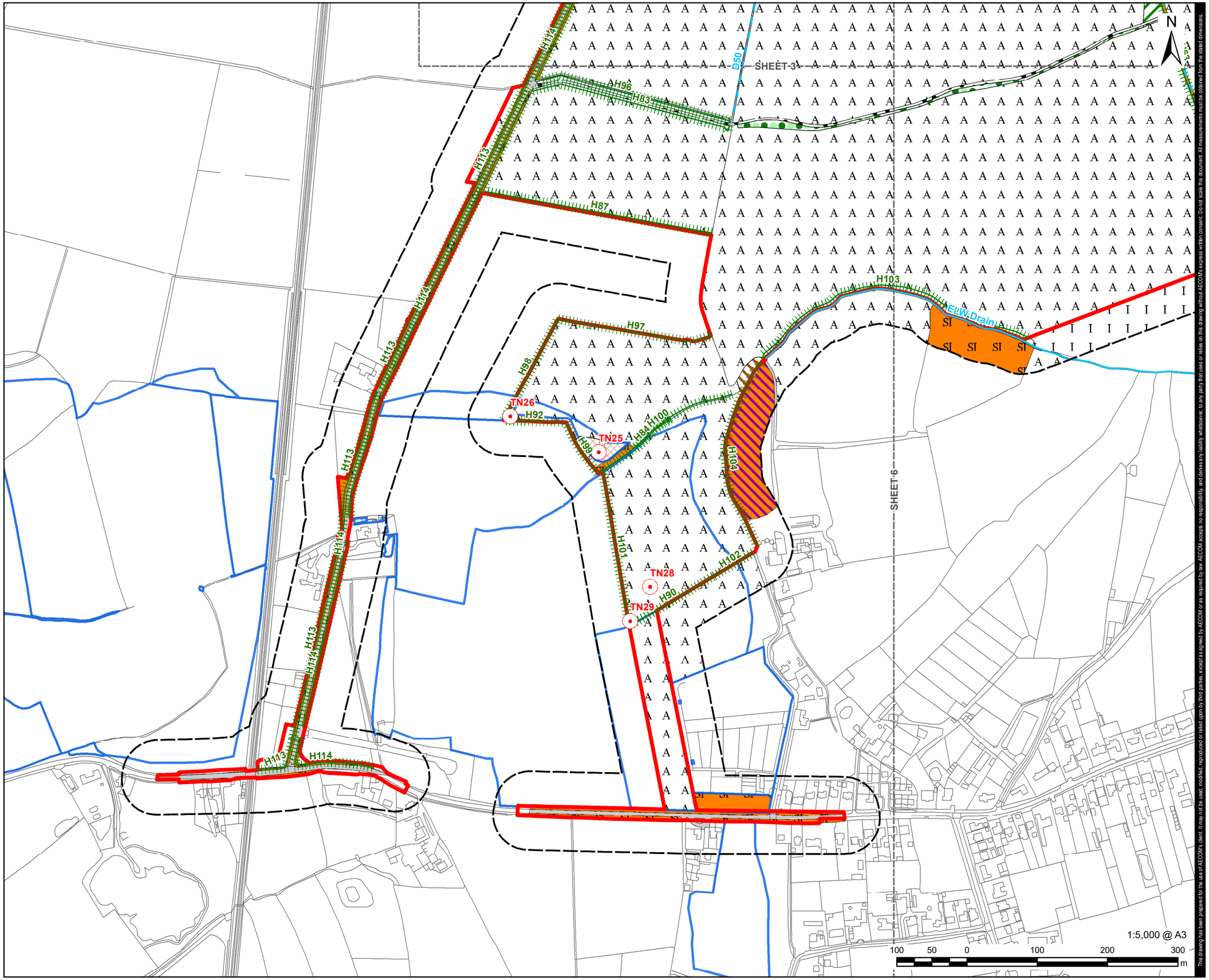

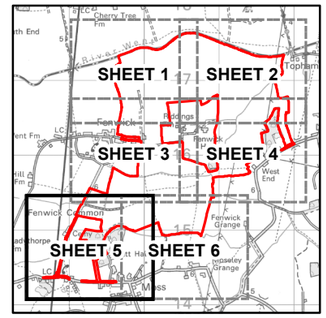

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FIGURE TITLE

Phase 1 Habitats
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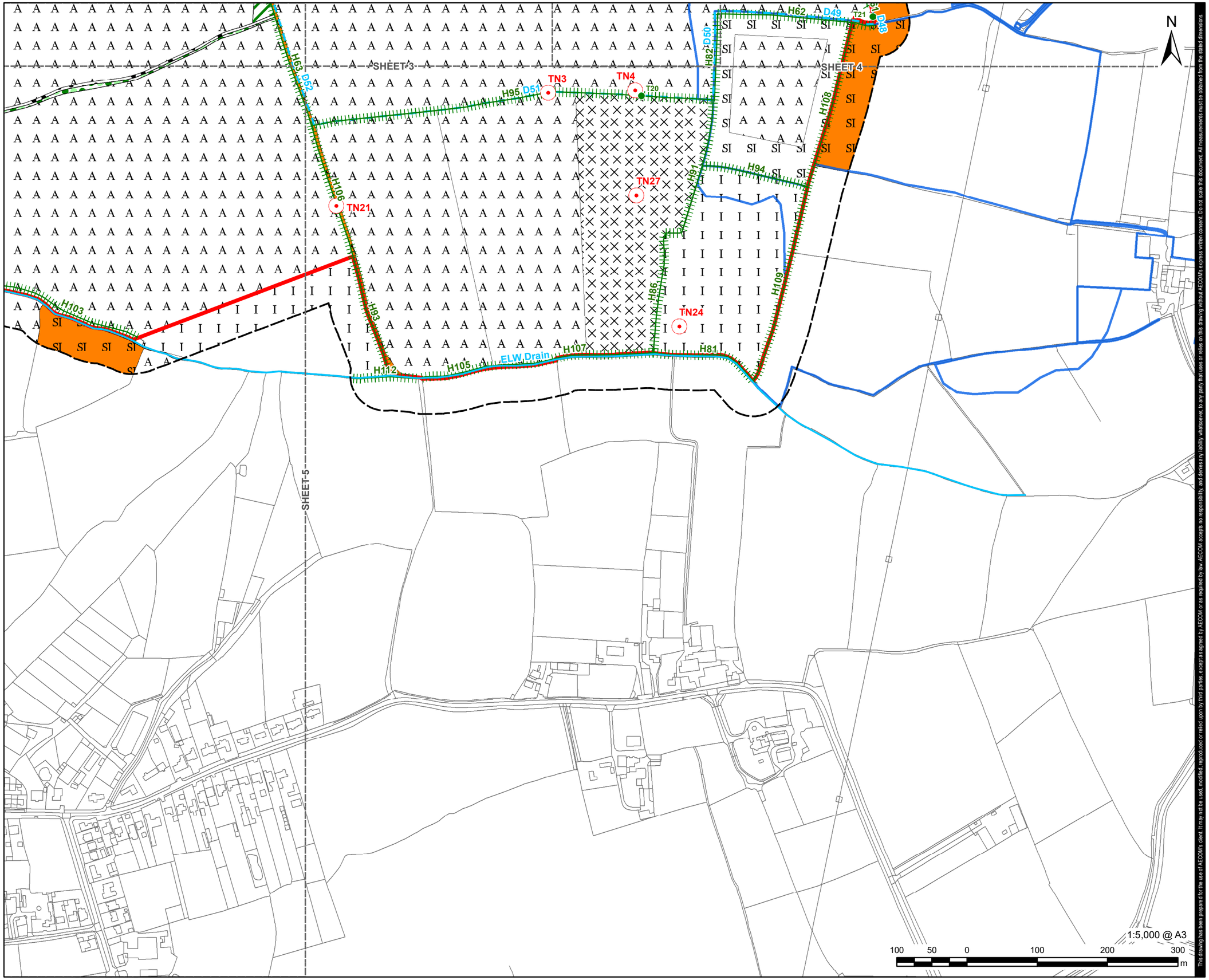

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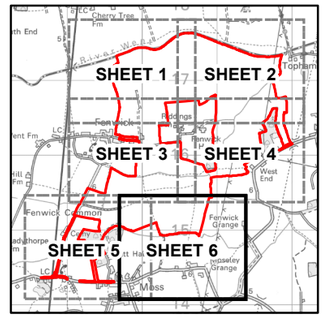

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Figure 3

Annex B Relevant Legislation and Planning Policy

Legislation

The UK is no longer a member of the EU. However, EU legislation, which applied directly or indirectly to the UK before 11.00 p.m. on 31 December 2020, has been retained in UK law as a form of domestic legislation known as 'retained EU legislation'.

The Secretary of State for the Environment, Food and Rural Affairs and Welsh Ministers have made changes to parts of the Habitats Regulations (Ref. 6) so that they operate effectively. Most of these changes involve transferring functions from the European Commission to the appropriate authorities in England. All other processes or terms in the Habitats Regulations remain unchanged and existing guidance is still relevant.

Designated Sites

Special Protection Areas/Special Areas of Conservation

These sites in the UK no longer form part of the EU's Natura 2000 ecological network. The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (2019 Regulations) (Ref. 63) have created a national site network on land and at sea, including both the inshore and offshore marine areas in the UK. The national site network includes:

a. Existing SACs and SPAs; and

b. New SACs and SPAs designated under these Regulations.

Any references to Natura 2000 in the Habitats Regulations (Ref. 6) and in guidance now refers to the new national site network.

Formal Appropriate Assessment is required to be undertaken by the competent authority before undertaking, or giving consent, permission or other authorisation for any work which are likely to have a significant effect on such a site.

Locally Designated Sites

LWS are sites with 'substantive nature conservation value'. They are defined areas, identified, and selected for their nature conservation value, based on important, distinctive and threatened habitats and species with a region.

They are usually selected by the relevant Wildlife Trust, along with representatives of the local authority and other local wildlife conservation groups.

The LWS selection panel select all sites that meet the assigned criteria, unlike SSSIs, for which some habitats are a representative sample of sites that meet the national standard. Therefore, many sites of SSSI quality are not designated and instead are selected as LWSs. Consequently, LWSs can be amongst the best sites for biodiversity.

Protected Species

Bats/Otter/Great Crested Newt/Smooth Snake

These species, known as European Protected Species, are protected under Regulation 43 of the Habitats Regulations (Ref. 6), as amended by the 2019 Regulations (Ref. 63). This makes it an offence to:

a. Deliberately capture, injure or kill an animal;

b. Deliberately disturb an animal; or

c. Damage or destroy a breeding site or resting place used by an animal.

Deliberate capture or killing is taken to include *"accepting the possibility"* of such capture or killing. Deliberate disturbance of animals includes in particular any disturbance which is likely:

a. To impair their ability:

   i. To survive, to breed or reproduce, or to rear or nurture their young; or

   ii. In the case of animals of hibernating or migratory species, to hibernate or migrate.

b. To affect significantly the local distribution or abundance of the species to which they belong.

Where development works are at risk of causing one or more of the offences listed above, a mitigation licence from Natural England can be obtained to facilitate the works that would otherwise be illegal.

These species are also protected under Schedule 5 of the WCA (Ref. 7) which makes it an offence to intentionally or recklessly obstruct access to any structure or place used for shelter or protection or disturb an animal in such a place.

Lower levels of disturbance not covered by the Habitats Regulations remain an offence under the WCA, although a defence is available where such actions are the incidental result of a lawful activity that could not reasonably be avoided.

Water Vole

Water Voles are protected under the WCA (Ref. 7). There are no licensing purposes that explicitly cover development or other construction activities which could have an impact on water voles.

When development work is proposed in or near an area which is either known to or likely to contain Water Voles, then the developer will need to implement suitable mitigation to prevent impacts to Water Voles. The preferred mitigation option is to leave Water Voles *in situ*, with the development works adopting avoidance measures through redesign of the proposals.

Where impacts cannot be avoided, operations aimed at displacing water voles from a development site are now no longer covered by the "*incidental result of an otherwise lawful action*" defence in the WCA. Displacement of Water Voles now needs to be undertaken under a licence.

In England, small scale (limited to continuous lengths of bank not exceeding 50 m) displacement of Water Voles can be carried out at certain times of the year (February to April) for the purposes of conservation under a Class Licence by a registered

person. For larger scale displacements or displacements outside of this period, displacement can be undertaken under a site-specific conservation licence.

Where it is considered that the best outcome for Water Voles is capture and translocation to a different location then this action is considered by Natural England to be outside the scope of the defence as the intentional capture of Water Voles is unlikely to be considered 'incidental'. In these circumstances there may be genuine grounds for issuing a conservation licence for the purpose of translocating the Water Vole population to suitable alternative habitat.

Nesting Birds

All wild birds are protected under the WCA (Ref. 7), with some species afforded greater protection under Schedule 1 of the WCA. In addition to the protection from killing or taking that all birds receive, Schedule 1 birds and their young must not be disturbed at the nest.

There are no licensing purposes that explicitly cover development activities affecting wild birds.

White-clawed Crayfish

White-clawed Crayfish are protected under Schedule 5 of the WCA (Ref. 7). It is illegal to take or to sell White-clawed Crayfish.

White-clawed Crayfish is a species under major threat of global extinction and is referred to in various biodiversity related policy (e.g. under S41 of the NERC Act (Ref. 10)). Under the Water Resources Act 1991 (Ref. 64) and the Land Drainage Act 1991 (Ref. 65) there is a requirement to consider the presence of notable species such as White-clawed Crayfish when the Environment Agency, Internal Drainage Board or other statutory agency is considering granting consent for proposed operations to a water course.

Common Species of Reptile (Common Lizard, Slow Worm, Grass Snake and Adder)

Common species of reptile are protected against intentional killing and injury under Schedule 5 of the WCA (Ref. 7). There is no requirement for a licence where development works affect common species of reptiles. Instead, Natural England advise that where reptiles are present, they should be protected from any harm that might arise during the development works through appropriate mitigation.

Badger

Badgers and their setts are protected under the Protection of Badgers Act 1992 (Ref. 11). This makes it an offence to:

a. Wilfully kill, injure or take a Badger; or

b. Intentionally or recklessly damage, destroy or obstruct access to a Badger sett or disturb a Badger in its sett.

It is not illegal to carry out disturbance activities near setts that are not occupied, i.e. those that do not show signs of current use.

Where required, licences for development activities involving disturbance or sett interference or closure are issued by Natural England. Licences for activities

involving watercourse maintenance, drainage works or flood defences are issued under a separate process.

When assessing the requirement for a licence in respect of development, Natural England state that Badgers are relatively tolerant of moderate levels of noise and activity around their setts, and that a low or moderate level of apparent disturbing activity at or near to Badger setts does not necessarily disturb the Badgers occupying those setts.

Licences are normally not granted from December to June inclusive (the Badger breeding season) because dependent cubs may be present within setts.

Species and Habitats of Principal Importance for the Conservation of Biodiversity

Section 40 of the NERC Act (Ref. 10) sets out the duty for public authorities to conserve biodiversity in England.

Habitats and species of principal importance for the conservation of biodiversity are identified by the Secretary of State for England, in consultation with Natural England, are referred to in S41 of the NERC Act for England. The list, known as the 'England Biodiversity List', of habitats and species can be found on the Natural England web site.

The 'England Biodiversity List' is used as a guide for decision makers such as public bodies, including local and regional authorities, in implementing their duty under section 40 of the NERC Act to have regard to the conservation of biodiversity in England when carrying out their normal functions.

Hedgerows

Under the Hedgerows Regulations 1997, it is against the law to remove or destroy certain hedgerows without permission from the local planning authority. In general, permission will be required before removing hedges that are at least 20 m in length, over 30 years old and contain certain species of plant. The local planning authority will assess the importance of the hedgerow using criteria set out in the regulations.

Non-native Invasive Plant Species

Under the WCA (Ref. 7), it is an offence to plant or otherwise cause these species to grow in the wild.

Any contaminated soil or plant material is classified as controlled waste and should be disposed of in a suitably licensed landfill site, accompanied by appropriate Waste Transfer documentation, and must comply with section 34 of the Environmental Protection Act 1990.

Furthermore, The Invasive Alien Species (Enforcement and Permitting) Order 2019 (Ref. 14) cites non-native plants and animals which may result in serious negative consequences for their new environment with the aim of minimising and mitigating the impacts caused by these species.

Planning Policy

National Planning Policy Framework, 2023

The NPPF (Ref. 21) sets out the Governments planning policies for England and how these are expected to be applied by Local Authorities within their Local Development Frameworks (LDF). Chapter 15 of the NPPF '*Conserving and enhancing the natural environment*' sets out the requirements to consider biodiversity in planning decisions.

Local Planning Policy

The Doncaster Local Plan (Ref. 22) contains the following policies for nature conservation.

Policy 29: Ecological Networks (Strategic Policy)

Proposals will only be supported which deliver a net gain for biodiversity and protect, create, maintain and enhance the Borough's ecological networks by:

a. Being of an appropriate size, scale and type in relation to their location within and impact on the ecological network;

b. Maintaining, strengthening and bridging gaps in existing habitat networks;

c. Planting native species and creating new, or restoring existing, national and local priority habitats and/or species; and

d. Working with strategic partnerships to deliver conservation projects at a landscape scale where appropriate.

Policy 30: Valuing Biodiversity and Geodiversity (Strategic Policy)

The Borough has a range of internationally, nationally, and locally important habitats, sites and species that will be protected through the following principles:

a. All proposals shall be considered in light of the mitigation hierarchy in accordance with National Policy;

b. Proposals which may harm designated Local Wildlife Sites, Local Geological Sites, Priority Habitats, Priority Species, protected species or non-designated sites or features of biodiversity interest, will only be supported where:

    i. They use the Defra biodiversity metric to demonstrate that a proposal will deliver a minimum 10 % net gain for biodiversity;

    ii. They protect, restore, enhance and provide appropriate buffers around wildlife and geological features and bridge gaps to link these to the wider ecological network;

    iii. They produce and deliver appropriate long term management plans for local wildlife and geological sites as well as newly created or restored habitats;

    iv. They can demonstrate that the need for a proposal outweighs the value of any features to be lost; and

    v. If the permanent loss of a geological site is unavoidable, then provision will be made for the site to first be recorded by a suitably qualified expert.

c. Proposals which may impact SACs, SPAs or Ramsar Sites will only be supported where it can be demonstrated that there will be no likely significant effects and

no adverse effects on the integrity of European sites, unless there are no alternative solutions, and it is justified by an *"imperative reasons of overriding public interest"* (IROPI) assessment under the Habitats and Species Directive;

d. Proposals that may either directly or indirectly negatively impact SSSI will not normally be supported. Proposals should seek to protect and enhance SSSI and maintain, strengthen, and bridge gaps to link them to the wider ecological network wherever possible; and

e. In order to ensure development does not negatively impact on Nightjar populations, proposals located within 3 km of Thorne and Hatfield Moors SPA, that impact habitats that Nightjars may use for feeding on, will only be supported where they deliver a net gain in Nightjar foraging habitat.

Policy 32: Woodlands, Trees and Hedgerows

Proposals will be supported where it can be demonstrated that woodlands, trees and hedgerows have been adequately considered during the design process, so that a significant adverse impact upon public amenity or ecological interest has been avoided. There will be presumption against development that results in the loss or deterioration of ancient woodland and/or veteran trees. Proposals will need to include:

a. The submission of survey information of woodland, trees and hedgerows, as appropriate, to a recognised professional and fit for purpose standard which is able to demonstrate evaluation of these features for realistic long-term retention, and how this has positively informed the design process;

b. Demonstration of how retained features are to be protected during development;

c. An adequate landscape buffer (which excludes built development and residential gardens) adjacent to existing woodlands, wildlife sites and at settlement edges;

d. Sufficient provision of appropriate replacement planting where it is intended to remove trees and hedgerows; and

e. Avoidance of the loss or deterioration of woodland.

Local Biodiversity Action Plans

The Doncaster BAP (Ref. 32) was adopted in 2007, and underpins the duty placed on all local authorities towards biodiversity protection, as set out in the NERC Act (Ref. 10), and at a strategic level will ensure that biodiversity principals are:

a. Adopted into approaches regarding the delivery of services and functions and involve all Partner landholdings;

b. Promoted in urban development, and regeneration plans and projects;

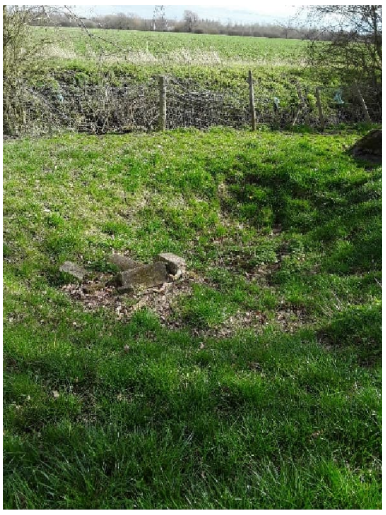
c. Incorporated into land management practices in rural regeneration schemes; and

d. Encouraged to help engender local pride and environmental stewardship.

Annex C Target Notes

Target Note	Description	Photograph(s)
TN1	Large Willow species trees present on the banks of the River Went, suitable resting sites for Otters.	
TN2	Large rock pile suitable for reptile refugia.	
TN3	Defunct field boundary, reduced to scattered shrubs and semi mature standards, with Hawthorn, Oak species, Ash, and Blackthorn. Growing over shallow drainage ditch with Common Reed and Bramble.	

Target Note	Description	Photograph(s)
TN4	Defunct field boundary turns into a species poor, managed hedgerow over a dry ditch, Hawthorn dominated with Oak species standards and Blackthorn.	
TN5	Barn Owl box. Surveyors saw a pair of Barn Owls exiting box.	
TN6	Skylark territorial calling over the field.	No photo available.
TN7	No boundary between two fields.	

Target Note	Description	Photograph(s)
TN8	Deep depression in ground with bricks that may provide refugia for newts and reptiles.	
TN9	Terrestrial reedbed under a pylon, at the end of a ditch.	
TN10	A large Rabbit (*Oryctolagus cuniculus*) warren.	
TN11	Deleted as not applicable	
TN12	Male Hen Harrier seen displaying hunting behaviour over Winter feeding grounds.	No photo available.

Target Note	Description	Photograph(s)
TN13	A patch of unmanaged land, used as waste tip. Tall ruderals and Common Reed present. High density of Curled Dock over improved grassland.	
TN14	Patch of Hawthorn and scrub, looks like the remnants of a hedgerow.	
TN15	Bunfold Shaw LWS (beyond Site Boundary): Pedunculate Oak dominates, and the woodland also contains Hawthorn, Ash, Silver Birch, overtopping Hazel, Alder, Aspen, and some scattered conifer species.	

Target Note	Description	Photograph(s)
TN16	The Went Valley (Part) LWS: extensive site comprises semi-improved and cattle-grazed neutral grasslands which are located immediately south of the River Went.	
TN17	Large waterbody across river, looks to be an area which has been flooded by the river. Wetland habitat with Lapwings sighted. Unable to access, outside of the Solar PV Site Boundary.	
TN18	Arable field margins with arable flora. Species include Mayweed species, Shepherd's Purse, Red Dead Nettle, Yarrow, Colt's Foot, Chickweed, Speedwell species, Wavy Bittercress and Hairy Bittercress.	No photo available
TN19	Area of plantation woodland not accessed during the survey.	No photo available

Target Note	Description	Photograph(s)
TN20	A patch of disturbed ground, within an arable field in the southern part of the Solar PV Site. Species present include Common Nettle, umbellifer species, Mayweed species and Cleavers.	
TN21	Reed bed on land, dominated by Common Reed with Soft Rush and Pond Sedge. Snipe species seen.	
TN22	Reed bed on land, dominated by Common Reed.	

Target Note	Description	Photograph(s)
TN23	Dry hallow, dominated by Floating Sweet Grass (*Glyceria fluitans*). Dry at time of survey. Reed Canary Grass, Floating Sweet Grass and Soft Rush.	
TN24	Spoil heap, disturbed ground with Thistle species, Nettles, Cleavers, *Malva* species?	
TN25	Patch of Chinese Silver Grass (*Miscanthus sinensis*)	
TN26	Pile of dead wood	

Target Note	Description	Photograph(s)
TN27	Unmanaged patch of land, adjacent to arable field, separated by grassy verge. Perennial Rye-grass, Clover (*Trifolium* sp.), *Geranium* species, Dandelion (*Taraxacum officinale*), Dock (*Rumex* sp.), Thistle species. Patchy areas of tall herbs, game cover for shooting	
TN28	Desk study revealed that this area is CFGM, however this is not the case - this is Arable land now	
TN29	Pile of deadwood	

Annex D Hedgerows

Hedgerows on Solar PV Site are Hawthorn or Blackthorn dominated, and most have some evidence of current management. Most hedgerows have an associated drainage ditch, which together delineate the field borders. There is evidence of heavy browsing and/or agrochemical run-off or drift. The below pictures show representatives of what the hedgerows look like on the Solar PV Site.

Plate 1: Example of a managed hedgerow (H2)

Plate 2: Example of an unmanaged hedgerow (H52)

Plate 3: Example of a gappy hedgerow (H38)

Hedgerow	Description
H1	Managed hedge with an associated shallow, dry, field drain below it. 2-3 m high, 1-2 m wide. Hawthorn dominated, with immature standards present. Species include Pedunculate Oak and Ash. High evidence of agricultural enrichment, ground flora is dominant Cleavers and tall ruderals.
H2	Hedge is less than 20 years old, with Hawthorn, three Oak species standards, and a fence running through it. Hedge is managed, 2 to 3 m high, 1 m wide.
H3	Dominating Blackthorn and Hawthorn, frequent Dog Rose. Has standards including an Oak species tree, and a managed mature White Willow. The associated drainage ditch holds water, but only after recent rain.
H4	Dominated by Hawthorn and scrub over dry land drain. Occasional Ash and Oak species standards present. Other species include Dog Rose, Bramble. Not strictly a hedge but functions as effective barrier.

H5	Managed on one side, unmanaged on the other. Fence runs inside the hedgerow. 3 m high, 2 m wide. Hawthorn dominated, Cherry (*Prunus avium*) standard and Ash standard. Cleavers at the ground level.
H6	Unmanaged and overgrown hedgerow. 5/6 m tall, 2 m wide. Hawthorn dominated with abundant Blackthorn and Oak species standards. Cow Parsley at the base.
H7	Species poor, managed hedge, with a fence present. The associated drainage ditch holds water due to recent rain but doesn't hold water permanently. Standard trees include Pedunculate Oak (with Barn Owl box attached), and Field Maple (*Acer campestre*). Hawthorn dominates, with rare Holly and poor ground flora due to agrochemical use and browsing, Nettles and Cleavers dominate.
H8	Species poor, managed Hawthorn dominated hedge with a fence running through it. Approximately 2-3 m high, 1-2 m wide, with a single immature Oak species standard. There are 5 m gaps at each end for field access and poor ground flora.
H9	Unmanaged hedge with trees up to 10 m high. Hedge is approximately 4 m high and 2 m wide. Hawthorn dominates, with frequent Blackthorn, and poor ground flora. There are mature Crab Apple (*Malus sylvestris*) standards, and other species include Oak species, Ash, Willow species.
H10	Managed hedgerow, with an associated fence and field drain. Hedge is 1-2 m high, 1-2 m wide, with limited ground flora due to agricultural chemicals and browsing. Hawthorn and Blackthorn dominate, with rare Dog Rose and, immature Oak species, Ash, White Willow, and Field Maple standards. *Arum maculatum* and Lesser Celandine were present in the ground flora.
H11	Managed hedgerow with a fence and field drain present. Hedge is 1-2 m high, 1-2 m wide, with limited ground flora, likely due to agricultural chemicals and browsing. Hawthorn dominates, with Blackthorn and Dog Rose present. Immature standards present, and *Arum maculatum* and Lesser Celandine present in the ground flora.
H12	Managed hedgerow with a fence and field drain present. Hedge is 1-2 m high, 1-2 m wide, with limited ground flora due to agricultural chemicals and browsing. Hawthorn dominates, with Blackthorn and Dog Rose present. Immature standards present, and *Arum maculatum* and Lesser Celandine present in the ground flora. Willow species standard present.
H13	Unmanaged Hawthorn dominated hedge. Occasional Dog Rose and rare Elder present, as well as immature Oak species and Ash standard. Hedge is 3-4 m high, 2-3 m wide, with trees managed to the east. Associated drainage ditch is dry at present, with limited ground flora, and abundant Bramble.
H14	Hawthorn dominates, with Willow species and 1 Ash standards. Hedge is managed in places and has gaps in places, and Brambles, frequent Blackthorn, Dog Rose, and Ivy (*Hedera helix*) are present.

H15	Defunct hedge, essentially a line of scattered Willow species, Oak species, and Hawthorn trees with tall ruderals and scrub.
H16	Unmanaged hedgerow, approximately 3-4 m high, 1-2 m wide, with an adjacent running drainage ditch. Hawthorn dominates, with rare Dog Rose. Ground flora subject to heavy browsing, with little evidence of AWI species. Western section unmanaged to 8 m high.
H17	Hedge has dense scrub and is adjacent to a drainage ditch. There was scattered hedgerow species, including Bramble, young Oak species, Blackthorn, young Ash, Wild Carrot (*Daucus carota*), Nettles, Dog Rose, immature Oak species, Hawthorn, Holly, and Yarrow. Also, sites along a barbed wire fence, and has large gaps.
H18	Hawthorn dominates, with other species including Nettles, Blackthorn, Dog Rose Cleavers, Wild Carrot, Cow Parsley, Nettles, and Holly. Hedge contains an Ivy-covered immature Oak species standard and is gappy in places. Evidence of some recent management and the hedge sits in, and adjacent to, a mostly dry drainage ditch.
H19	Regularly managed Hawthorn hedge along a road. Some new planted Oak species standards.
H20	Looks like a remnant of previous hedge. Gappy in parts, contains Willow species, Ash, Oak species, Hawthorn, Holly, Elder and Bramble (in patches of dense scrub).
H21	Evidence of recent management. Blackthorn and Hawthorn dominate, with other species including Cleavers, Nettles, Holly, Brambles, Ivy, Cow Parsley, Dog Rose, and immature Oak species. Hedgerow is very gappy, with some scrub at the base.
H22	Evidence of recent management, hedge is 5 m tall and 3 m wide. Blackthorn and Hawthorn dominate, with other species including Cleavers, Nettles, Holly, Brambles, Ivy, Cow Parsley, Dog Rose, and immature Oak species. Standards present include a semi mature Oak species standard, and a young Silver Birch. There is a depression in the soil for drainage, and an adjacent fence. Hedge is heavily grazed at the base by sheep resulting in a lack of ground flora.
H23	Evidence of recent management. Blackthorn and Hawthorn dominate. This hedge has a wet drain adjacent to it.
H24	Species include an Oak species standard, dominant Hawthorn, Blackthorn, Groundsel (*Senecio vulgaris*), and Cleavers. The associated drain has some wet patches, but otherwise is mostly dry.
H25	This hedge has an associated drainage ditch with wet patches (although this is due to recent rain). Dominant Hawthorn and Blackthorn, with ground flora including Nettles and Cow Parsley, and standards including Willow species, Oak species, and Ash. Hedge is 3 m tall, 2 m wide, poorly managed, and regularly browsed at the base.

H26	Hawthorn dominates, with Cleavers, Blackthorn, and Willow species standards. Associated ditch contains water. Where the hedge ends, it turns into a scattered tree line.
H27	Gappy hedgerow, 5 m high, 1 m wide, unmanaged. Hawthorn dominates, with occasional immature Oak species, Tufted Hairgrass, Ash standards, Oak species standards, Blackthorn, and Nettles. Ground flora limited as regularly grazed.
H28	Dominate Hawthorn, hedge contains deadwood, Oak species standards, and a young Ash standard. Hedge is 6 m high, and 1 m wide. It is unmanaged, and the ground flora is limited as it is regularly grazed. The associated drain is dry.
H29	Species include Nettles, Brambles, Dog Rose, Cow Parsley, Dock species, Oak species, Tufted Hairgrass, and dominate Hawthorn. There is a wire fence alongside the hedgerow.
H30	Hawthorn dominates both these hedgerows, and other species include Nettles, Goat Willow (*Salix caprea*), dead Willow species, other *Salix* species. These two hedges are connected and share the same associated drainage ditch. They are both approximately 5 m high, 2 m wide, unmanaged, and regularly browsed at the base by sheep.
H31	Gappy, unmanaged Hawthorn dominated hedge.
H32	Gappy, Hawthorn dominated hedgerow with Oak species standards.
H33	Gappy hedgerow, 3 m high, 1 m wide, unmanaged, regularly grazed at the base. Hawthorn dominates, and other species includes Oak species standards, Ivy, Blackthorn, Brambles, and Nettles. The associated drain has slow flowing water.
H34	Hawthorn dominates, with frequent Cleavers and Blackthorn. The associated drain makes this hedgerow partially flooded. Runs along 3 fields to the south.
H35	Unmanaged, Hawthorn dominated hedgerow. Contains Blackthorn, Brambles, Cleavers, Common Nettle, Honeysuckle (*Lonicera* sp.), Lesser Celandine, White Dead Nettle (*Lamium album*) and Hogweed. Willow species standards. Hedge is across ditch.
H36	Unmanaged, Hawthorn dominated hedge. 44 m high, 2 m wide. Hogweed, Cleavers, and Common Nettle at the base.
H37	Unmanaged, 4 m tall, 1 m wide, Hawthorn dominated. The associated ditch runs into an adjacent drain. Other species include Blackthorn, Ash standard, Cow Parsley, Broadleaved Dock (*Rumex obtusifolius*), Cleavers, Dog Rose, and Buttercup (*Ranunculus* sp.).
H38	Blackthorn and Hawthorn dominate, with other species including Cleavers, Nettles, and Holly. There is a barbed wire fence running through, very gappy and unmanaged. The associated drain running through it is wet in parts. Regularly grazed at the base.

H39	Hedge is 4 m high, 1 m wide, and unmanaged. Hawthorn dominates, but other species include Ash, Willow species and Oak species standards, Nettles, Cleavers, Brambles, and Blackthorn. There is a fence adjacent and an associated drain.
H40	Dominated by Hawthorn, species also include immature Oak species standards, and Blackthorn. Hedge is unmanaged, 4 m high, and 3 m wide. Has associated running water ditch, with a fence which runs alongside it.
H41	Essentially a line of trees and scrub plants and probably not defined as a hedge. Trees are Ash and Oak species, and the hedge is over 5 m wide, and managed for height due to overhead power lines. Species include Dog Rose, Willow species, dense Nettles, and common tall ruderals.
H42	Unmanaged and overgrown, Hawthorn dominated hedge. 6 m tall, 2 m wide. Contains Willow species standards.
H43	Dominated by Hawthorn, hedge also contains Reed species, Hogweed, Nettles, Cleavers, dead Willow species, Oak species, Brambles, and Dog Rose. Hedge also contains standalone hedgerow species. There is a shallow drain between the two fields, which is presently dry. There is a pylon at the end of hedgerow.
H44	Unmanaged hedge, 6 m high with Oak species and Ash standards. There is a fence present, and the hedge overtops a shallow land drain holding less than 5 cm water. Hawthorn dominates, and other species include Blackthorn, Honeysuckle, and Dog Rose. Poor ground flora, *Arum maculatum* present but evidence of tall sward grasses and common ruderals present.
H45	Gappy, Hawthorn dominated hedge, with some recent management. 2 m tall, and 1 m wide. Other species include Blackthorn and Oak species standards.
H46	Hawthorn dominated, other species include Cleavers, Nettles, Blackthorn, Bramble, and Oak species standards.
H47	Blackthorn and Hawthorn dominate, but also present are Bramble, Ivy, Nettles, Cleavers, and Dog Rose.
H48	Unmanaged hedge to 8 m, 3-4 m wide. Fence present, poor ground flora visible. Hawthorn dominates, with Oak species and Ash standards, becomes more a line of trees overtopping hedge shrubs to the north.
H49	Short section of defunct hedge, Hawthorn scrub and fence. Semi-mature Oak species to the west corner, and poor ground flora present.
H50	Species poor rarely managed hedge. Hawthorn dominated, with Oak species, Blackthorn, Cleavers, and Dog Rose. Runs adjacent to a barbed wire fence.
H51	Hawthorn dominated species poor hedge. One large Oak species standard and a fence runs through.

H52	Hawthorn dominated, with semi-mature Oak species standards, Ivy, Dog Rose, *Arum* species, Brambles, Cow Parsley, Willow species standard, Cleavers, Honeysuckle, Blackthorn, Field Maple standard, Nettles, Aspen standard, and Thistle species. Hedge is adjacent to a barbed wire fence, it is unmanaged, 5 m high, and 2 m wide. The Oak species standards have good bat roost potential. There are some gaps, approximately 10 m long in places. There is a slight depression in soil in hedgerow, which acts as a drain. This is wet in some parts due to recent rain.
H53	Unmanaged hedge to 8 m with Oak species, Willow species and Ash standards. 2-4 m wide with a shallow, dry land drain below and an adjacent barbed wire fence. Hawthorn dominated, with moderate ground flora, high density arum species, and primrose present, but also Yorkshire Fog, Cock's-foot, with Common Nettle and Cleavers.
H54	Managed Hawthorn dominated hedge, 2-4 m high, 2-3 m wide, fence present, adjacent hedge within 15 m. Occasional Dog Rose and Blackthorn, rare Elder and a high density of Common Nettle and Cleavers with common tall ruderals and daffodils.
H55	Unmanaged Hawthorn dominated hedge, 5 m tall, 3 m wide. Species include Ash, Dog Rose, Bramble, Ivy, Nettles, Cleavers, and Blackthorn.
H56	Old hedgerow left unmanaged. Semi-mature Oak species standards overtopping poorly managed Hawthorn and Dog Rose scrub. NB forms domestic curtilage.
H57	Species include young Horse Chestnut (*Aesculus hippocastanum*), Hawthorn, Lesser Celandine, Oak species standard, *Arum maculatum*, Turkey Oak, Cleavers, Yarrow, Ivy, Nettles, Blackthorn, Cow Parsley, Thistle species. Vetch species (*Vicia*), *Geranium* species, White Dead Nettle, Wavy Bittercress, Dog Rose, and large cracked Willow species standards.
H58	Species include young Horse Chestnut (*Aesculus hippocastanum*), Hawthorn, Lesser Celandine, Oak species standard, *Arum maculatum*, Turkey Oak, Cleavers, Yarrow, Ivy, Nettles, Blackthorn, Cow Parsley, Thistle species. Vetch species (*Vicia*), *Geranium* species, White Dead Nettle, Wavy Bittercress, Dog Rose, and large cracked Willow species standards.
H59	Species include young Horse Chestnut (*Aesculus hippocastanum*), Hawthorn, Lesser Celandine, Oak species standard, *Arum maculatum*, Turkey Oak, Cleavers, Yarrow, Ivy, Nettles, Blackthorn, Cow Parsley, Thistle species. Vetch species (*Vicia*), *Geranium* species, White Dead Nettle, Wavy Bittercress, Dog Rose, and large cracked Willow species standards.
H60	Hawthorn dominated hedgerow, 2 m tall, 3 m wide. Other species include Blackthorn, immature Oak species, Ash, Bramble, Oak species Standards, Cleavers, Cow Parsley, Common Knapweed (*Centaurea nigra*), Ivy and Elder. Associated dry ditch runs beneath the hedgerow.

H61	Poorly managed hedge with mature Oak species standards.
H62	Managed, Hawthorn dominated hedgerow over shallow drainage ditch, ditch wet due to recent rain. Abundant Blackthorn, Oak species and Willow species semi mature standards, and no ground flora to note. Adjacent field farmed to the hedgerow.
H63	Species poor, partly managed, Hawthorn dominated hedgerow over a wet drainage ditch. Ditch wet due to recent rain. Abundant Hazel, and Oak species immature standards present. No notable flora and is adjacent to Public Right of Way.
H64	Gappy in parts, evidence of recent tree management, Hawthorn dominated hedgerow. Other species present include Blackthorn, Brambles, semi-mature Oak species standards, Willow species standards, and Goat Willow.
H65	Species poor, Hawthorn dominated, managed hedgerow with semi mature Oak species and Ash standards. Over tops main drain channel.
H66	Hawthorn dominated hedge, with Dog Rose, Blackthorn, Brambles, Cow Parsley, Dandelion, Nettles, Cleavers, Red Dead Nettle, Ash and Ivy, and Oak species and Ash standards. Regular browsing by deer and likely agrochemical spill-over limits ground flora.
H67	Hawthorn dominated hedge is 3 m high, and gappy in parts, with piles of deadwood in the gaps. There is a dry drain beneath the hedge. Species include Hazel, Cleavers, Nettles, *Arum maculatum*, Brambles, immature Ash and Oak species standards, Dog Rose, Blackthorn.
H68	Species rich, Blackthorn dominated hedgerow. Other species include abundant Hawthorn, frequent Ash and Dog Rose, and Oak species standards.
H69	Species poor hedge, over drainage ditch. Hawthorn dominated with immature standard Oak species.
H70	Species poor, partially managed gappy hedge with semi mature standards Hawthorn, Oak species, and Blackthorn.
H71	Unmanaged, Hawthorn dominated hedge, 3 m tall, 1 m wide. Species include Blackthorn, Ivy, immature Oak species standards, Cow Parsley, Bramble, Goat Willow, and Nettles. A drainage ditch runs adjacent to it. Hedge is gappy in places.
H72	Species poor, Hawthorn dominated, managed hedge to 4 m high, and 4 m wide. Many semi-mature standards present, along with a dry land drain to the west. East adjacent track designated Public Right of Way.
H73	Recently managed, Hawthorn dominated hedge. 3 m high, and 2 m wide. Hedge contains Willow species, Ash and Oak species standards, Blackthorn, *Arum maculatum*, Broadleaved Dock, Cow Parsley, Nettles, Brambles, Willowherb species, Hogweed and Ivy.

H74	Hawthorn dominates, with abundant Blackthorn, hedge contains a single immature Oak species standard and poor ground flora.
H75	Little management, overgrown in parts. Hawthorn dominated with scrub in ground flora. 2 m tall, 1 m wide.
H76	Unmanaged, Hawthorn dominated hedge with Ash and Oak species standards.
H77	Unmanaged Hawthorn dominated hedgerow at the edge of a horse paddock. 5 m tall in places.
H78	Hedgerow is just dense scrub in parts, and Hawthorn dominated. Other species include Nettles, a dead Ash tree, Ash standards, Cleavers, Speedwell species, Holly, Ivy and Brambles. The associated drainage ditch has a little water in, and runs into the River Went.
H79	Hawthorn dominated hedge, with Dog Rose, Blackthorn, and Brambles. Heavy browsing by deer and agrochemical spill-over limits ground flora.
H80	Unmanaged hedge with Oak species standards, borders a plantation broadleaf woodland. There is a fence present, and species include Oak species, Ash, Hawthorn and Bramble. Hedge has poor ground flora.
H81	Managed hedgerow 2 m high and 2 m wide. Semi mature Oak species standard at the end. Blackthorn and Hawthorn dominated with Dog Rose, Bramble and Knapweed.
H82	Species poor, Hawthorn dominated hedge, with an associated dry ditch. Other species include Oak species, Willow species, and Dog Rose, with Oak species standards.
H83	Managed hedgerow, 2 m high, 2 m width Hawthorn (d), Hazel, Willow species, Bramble, Dog Rose, Honeysuckle, Single 5 m gap.
H84	Unmanaged hedgerow, 5 m high, 2.5 width. Associated with ditch on northern side. Hawthorn, Bramble, Buttercup, Willow species, Blackthorn, Dog Rose, Bindweed (*Convolvulus*), Teasel (*Dipsacus*), Cow Parley, Hogweed. Associated ditch- wet during survey, Common Reed. Hedgerow located on either side of ditch (H100).
H85	Species poor, Hawthorn dominated hedge, with an associated dry ditch.
H86	Unmanaged, 3 m high, 2 m wide, gappy in parts hedgerow. Blackthorn dominated, Nettles, Brambles, young Ash standard, *Juncus* species seen in ground flora, ground wet underfoot after a period of rain.
H87	1.5 m high, 1 m wide, intensively managed hedgerow, gappy. Species include Alder, Hawthorn and Oak species.
H88	2 m high, 2 m wide, managed, no access Hawthorn dominates, Dog Rose, Blackthorn, single Aspen tree on opposite side of ditch.
H89	Section outside of RLB Unmanaged, 10 m high, Hawthorn, Blackthorn, Oak species and Ash standards.

H90	Hogweed, Oak species, Hazel, Hawthorn, Ash, Blackthorn, Comon Nettles Honeysuckle, *Geranium* species, Cow Parley, Field Maple 3 m high, 2 m wide. Unmanaged, no trees. Gap in hedge row – split.
H91	Unmanaged, 4 m high, 2 m wide, Hogweed, Oak species, Hazel Hawthorn, Ash, Blackthorn, Nettles, Honeysuckle, *Geranium* species, Cow Parley and Field Maple.
H92	Managed on northern side, unmanaged on southern side. 2 m high, 2 m width. One semi mature Oak species, two 5 m gap at the centre. Bramble, Blackthorn, Hawthorn and Hogweed.
H93	Part managed, 5 m high,3 m width. Dry depression running in the middle of hedgerow - not wet Semi mature Ash (1) and Oak species tree (3), Hazel, Bramble, Hawthorn, Dog Rose, Blackthorn (d) and Hawthorn.
H94	Fence post seen and barred wire on the ground. Only the far end still has a single Hawthorn and some Blackthorn bushes left.
H95	Part managed hedgerow, very gappy, 2.5 m high,1.5 m width Semi mature Oak species (6) and Ash (1- very ill looking), Hawthorn (LD) and Blackthorn (LD).
H96	Managed, 3 m high, 2 m wide, Hawthorn dominant, Blackthorn frequent, Hogweed, Oak species in hedgerow and Dog Rose.
H97	North side managed, southern unmanaged hedgerow.1 m high and 3 m width 3 semi mature Oak species, Hawthorn, Blackthorn (d), Broom (*Cytisus scoparius*), Willow species, Silver Birch, Oak species, Dog Rose, Bramble, Nettles, Thistle species, Cow Parley and Hogweed,
H98	Single gap <5 m Unmanaged hedgerow with numerous trees, 5-6 m high, 2 m width Oak species tree (mature), Silver Birch (semi mature), Ash (semi-mature). Hawthorn (D), Dog Rose, Blackthorn, Gorse, Broom, Willow species and Bramble.
H99	Unmanaged hedgerow on north side and managed on other side. 3 m high, 1 m width with ground depression throughout. 3 Oak species trees (semi-mature). Hawthorn, Blackthorn, Bramble, Thistle species and Ribwort Plantain (*Plantago lanceolata*).
H100	Unmanaged hedgerow, 5 m high, 2.5 width. Associated with ditch on northern side. 3 mature Oak species tree, Hawthorn, Bramble, Buttercup, Willow species, Blackthorn, Dog Rose, Bindweed, Teasel, Cow Parley and Hogweed. Associated ditch- wet during survey with Common Reed.
H101	Managed hedgerow, 1.5 m high, 2 m width, gappy in parts, fence running through it. Multiple Oak species trees throughout Hawthorn hedgerow and Blackthorn.
H102	Gap in hedge row - split 3 m high, 2 m wide. Unmanaged, no trees Hawthorn, Blackthorn, Brambles, Nettles, Dog Rose, Willowherb species, Hogweed and Thistle species.

H103	Single gap 5 m Part management, 4-5 m high,2-3 width Mature Willow species tree. Multiple Oak species trees (mature and semi mature), Dog Rose, Hazel, Hawthorn, Blackthorn (d), Bracken (*Pteridium aquilinum*), Rowan and Bramble
H104	Associated with wet ditch - Common Reed, Nettle, Hogweed. Bracken and Bramble on bank sides. Part managed hedgerow 5 m high, 1.5 m width 3 mature Oak species tree, Hawthorn (d), Field Maple, Bracken, Bramble, Dog Rose and Blackthorn,
H105	1.5 m high, 2 m wide, managed but not recently Hawthorn, Blackthorn, Bramble, Willowherb species, Oak species standards, Nettles, Hogweed, *Geranium* species and Thistle species.
H106	Continuous of hedgerow but not as managed on the top 5 m high, 2-3 m width Oak species standards (semi mature), Dog Rose, Hazel, Bramble, Bracken, Hawthorn and Blackthorn.
H107	Becomes more unmanaged to the East 1.5 m tall, 3 m wide, managed but not recently. Gappy in parts, with barbed wire fence Hawthorn, Willow species standard, Bramble, Dog Rose, Blackthorn and Oak species standards.
H108	Unmanaged, 5 m tall, 4 m wide. Mature Willow species standard, Hawthorn and Blackthorn, Thistle species, Brambles, Ivy, Nettles, Cow Parsley, mature Oak species standards, Field Maple, Ash standard and *Prunus* species,
H109	Associated with barbed wire fence Part managed (on width) hedgerow. 5 m high, 2.5 m width Semi-mature (4) and mature (1) Oak species trees, Hawthorn (d), Bramble, Blackthorn and Field Maple.

Annex E Scattered Trees

There are remnants of previous hedges in a number of locations on Solar PV Site that have been left unmanaged and, as a result, they now form lines of scattered trees (tree lines), rather than hedges. These trees consist of Hawthorn trees, Oak species and Ash. Plates 4 to 6 illustrate examples of the tree lines on the Solar PV Site.

Plate 4: Example of a line of trees (TL2)

Plate 5: Example of a line of mature trees (TL3)

Plate 6: Example of a scattered deadwood tree line (TL7)

Scattered Tree Ref	Description
TL1	Line of Hawthorn could be a remnant of a previous hedge. Individual scrub bushes over semi-improved grassland.
TL2	Barbed wire fence on field boundary, with a mix of Oak species, Ash and Hawthorn trees and scrub, looks to turn into a hedgerow further down.
TL3	Individual Hawthorn, Ash, and Oak species trees, with an associated drainage ditch.
TL4	Line of scattered Hawthorn, along a fence. Could be a remnant of a previous hedgerow.
TL5	Scattered Hawthorn along wet drain.
TL6	Scattered Willow species, Oak species and Ash trees along northern edge of field boundary.
TL7	Line of Willow species, deadwood, and Hawthorn with Cleavers and Nettles at their base.

TL8	Very gappy, not a hedgerow, but resembles one in places. Blackthorn, Hawthorn and Holly bushes, with Nettles at their base. Has associated ditch, runs into perpendicular ditch.
TL9	Small line of Hawthorn, with scrub and Nettles at their base. Looks to be a remnant of a previous hedgerow.

Annex F Ditches

Drainage ditches were associated with every hedgerow, scattered tree line and field edge. Although the majority of each ditch was dry, every ditch contained some water at the time of survey. The water present is likely to be as a result of recent rainfall as the majority of ditches lacked any flora that is typical of periodic or permanent inundation, with only some localised stands of Common Reed indicating more regular inundation. The water present which was either very slow flowing or standing. Below are some representative photos of the ditches present on the Solar PV Site.

Plate 7: Example of a wet ditch (D13)

Plate 8: Example of a dry drainage depression (D16)

Plate 9: Example of a drainage ditch which is wet in parts (D36)

Ditch	Description
Fleet Drain (D1)	Fleet Drain runs through the east side of the Solar PV Site. Slow flowing, connects to Fenwick Common Drain to the south.
Fenwick Common Drain (D2)	Fenwick Common Drain, runs along the south side of the Solar PV Site, connected to the Fleet Drain.
D3	Contains standing water, but it comes and goes. Dry in patches.
D4	Dry drainage depression, wet in patches due to recent rain.
D5	Drainage ditch, it has water but only after rain.
D6	Dry ditch runs inside H77. Wet when it rains.
D7	Dry depression inside H5.

D8	Dry depression in H6.
D9	Clearly managed, recently dug out. There was water present, likely, run off from fields. Hairy Bittercress on ditch slopes.
D10	Dry, more of a depression than a ditch. Within hedgerow between 2 fields.
D11	Dry drainage depression.
D12	Wet and flowing. Drain for fields with a fast flow. Clearly recently excavated.
D13	Very wet ditch, gentle flow west to east. Well managed, hedgerow alongside it. Common Nettle, Cleavers, Dock species, Brambles, and Red Dead Nettle at the edges. Higher water levels after heavy rain.
D14	Dry depression drain, within hedgerow scrub.
D15	Drainage ditch currently has water but empties regularly.
D16	Drainage depression between two fields, mostly dry, wet in parts.
D17	Dry, Reed species present. Looks to be a terrestrial reedbed. Adjacent to Willow carr.
D18	A depression in the soil for drainage.
D19	A depression in the soil for drainage.
D20	Only dry in parts, drainage ditch.
D21	Dry ditch, wet after rain.
D22	Wet patches due to recent rain.
D23	Ditch with standing water in, likely to dry out over the Summer.
D24	Small depression in soil, to act as a drain for the field. Dry and unmanaged. Some areas are shallower than others.
D25	Dry depression in the soil for drainage.
D26	Dry depression in tree line in centre of field.
D27	Mostly dry drain between two fields. <1 m deep, 1 m wide, some wet patches due to recent rain.
D28	Drain is dry depression in the soil.
D29	Standing water drain, less than 50 cm deep, 1.5 m wide.
D30	Slow moving water, flowing east to west.
D31	Mostly dry with some running water patches.
D32	Rush species present in ditch, the water runs into the Fleet Drain (D1).

D33	Dry in places, with standing water.
D34	Drain running through hedge in parts and wet in parts.
D35	Dry, shallow ditch inside hedgerow.
D36	Tree lined, drainage ditch, mostly dry. Shallow soil depression between two fields, wet in patches.
D37	Shallow drain between two fields, dry. Mostly dry field drain.
D38	Shallow land drain holding less than 5 cm water, inside a hedgerow contained by two barbed wire fences.
D39	Dry depression on field boundary. Small divots in the ground along a hedgerow.
D40	Dry depression between two fields.
D41	Wet in patches, associated with hedgerow.
D42	Wet in patches, associated with hedgerow.
D43	Wet in patches, associated with hedgerow.
D44	Wet in patches around field edge 2 m wide, shallow dry land drain.
D45	Wet in patches around field edge.
D46	Slight depression in soil in hedgerow, acts as a drain. Wet in some parts.
D47	Dry ditch for drainage.
D48	Dry ditch running alongside the field wet in places due to recent rain. Associated with hedgerows.
D49	Shallow drainage ditch, wet due to recent rain.
D50	Shallow drainage ditch, wet due to recent rain. Common Reeds present in ditch.
D51	Shallow drainage ditch within a defunct field boundary.
D52	Drainage ditch, wet due to rain.
D53	Small areas of wet in the ditch. Unmanaged for a while, standing water.
D54	Overgrown ditch with standing water, unmanaged and manmade, drains and fills. Flows into Fenwick common drain (D2).
D55	Scrub over dry land drain.
D56	Drain running between two fields.
D57	Dry land drain.
D58	Dry drain, along roadside of a hedgerow.

D59	Dry drain, along roadside of a hedgerow.
D60	Shallow, wet ditch. Water present due to recent rain.
D61	Associated with H70 and H74. Dry depression between two fields.

Annex G Trees

Many trees on the Solar PV Site were noted to have features that are potentially suitable for roosting bats. At this stage, only an initial appraisal of the trees has been made (from the ground, with the use of binoculars). A full DBW Survey is recommended. Below are some example photos trees with features for bats.

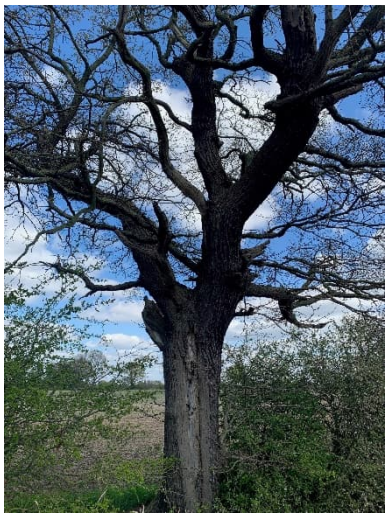


Plate 10: Example of a tree with multiple features for bats, including butt rot and dead and snapped branches (T120)

Plate 11: Example of a tree fewer features to support bats, but still has some suitability such as broken limbs and lifted bark (T121)

Plate 12: Example of a tree with single or few features to support bats (T85)

Tree	Description
T1	Immature Oak species, 25-30 years old, west facing woodpecker hole, east facing split in trunk.
T2	Immature Oak species with south east facing hole in trunk.
T3	Oak species with south east facing hole and snapped branches.
T4	Oak species with two south east facing broken branches.
T5	Oak species with south facing hole, 3 m high.
T6	Semi-mature Oak species with a south facing hole in an east facing branch.
T7	Willow species with many cracks in its trunk, snapped branches.
T8	Standing deadwood Ash. Large trunk cavity to east, ground level to 3.5 m. Open branch cavity, 4.5 m east.

T9	Single Willow species between two fields, no features.
T10	Willow species with lots of cracks in stem and snapped branches.
T11	Willow species with many cracks and snaps.
T12	Oak species, 0.6 m diameter at breast height (DBH), long trunk cavity and lifted bark on south east at 2 m to 4.5 m.
T13	Single immature Oak species no features.
T14	Ash with north facing hole in branch, snapped branches.
T15	Oak species with south facing holes, hard to see if holes go all the way in.
T16	Willow species with snapped stem and deadwood, north facing. Hollow stem on south side. High potential.
T17	Oak species with 4 m south west facing hole and a north facing hole, and a torn branch.
T18	Oak species with north facing lifted bark.
T19	Semi-mature Oak species, with 5 m north facing branch with tear out.
T20	Standing deadwood Oak species with potential roost feature visible up northern aspect. Lifted bark and split in the trunk.
T21	Semi-mature Oak species with a woodpecker hole 3.5 m high on eastern side.
T22	Oak species, 0.7 m DBH, trunk split from 1.5 m high to 4 m. Light visible.
T23	Multi stemmed Ash, 50 cm DBH, two woodpecker holes at 4 and 4.5 m eastern aspect.
T24	Half dead Ash tree with bat roost potential.
T25	Immature Oak species, 0.4 m DBH, branch split on eastern aspect to 2.5 m high.
T26	Oak species with split in stem and broken branches.
T27	Many stemmed Willow species.
T28	Semi-mature Oak species with snapped branches approximately 5 m up.
T29	Semi-mature Oak species.
T30	Semi-mature Ash.
T31	Mature Willow species with ten stems. Cracks in stems.
T32	Mature Willow species with cracks in trunk and snapped branches.

T33	Mature Willow species hanging over flooded grassland. Snapped branches, unsafe to climb.
T34	Semi-mature Oak species, no potential roost features.
T35	Semi-mature Oak species.
T36	Willow species with but rot snapped branches, deadwood with cracks and crevices.
T37	Immature Ash, no potential roost features.
T38	Semi-mature Oak species.
T39	Mature Willow species with butt rot and fallen stems.
T40	Mature Willow species no potential roost features.
T41	Hawthorn, no potential roost features.
T42	Dead Willow species with lots of fallen branches and deadwood.
T43	Hawthorn.
T44	Immature Willow species.
T45	Willow species with split stems and snapped branches.
T46	Oak species.
T47	Willow species.
T48	Oak species.
T49	Ash with two rot holes in the stem.
T50	Ash.
T51	Oak species with tear outs and snapped branches.
T52	Standing dead wood tree.
T53	Willow species with split trunk.
T54	Ash.
T55	Ash with dead branches, tear outs, providing potential roost features.
T56	Oak species with tear outs in stem and broken branches.
T57	Ash with tear out on one of the branches.
T58	Willow species, unsafe to climb, large split, single tree.
T59	Semi-mature Oak species, 0.5 m DBH, tear out/branch cavity at 4.5 m to west aspect providing potential roost features.
T60	Dead Ash, half of the trunk has fallen away, upwards facing holes.
T61	Immature Ash, snapped branch on east side.

T62	Ash with snapped branches, lifted bark.
T63	Mature Willow species adjacent to a ditch, cracked branches, but rot.
T64	Willow species which is half snapped off, deadwood, butt rot, not safe to climb as dropping to pieces.
T65	Snapped branch, 6 m up.
T66	Ash with snapped branches and rot holes approximately 6 m high.
T67	Mature Willow species with severe decay and butt rot.
T68	Ash, tear out 6 m up on west side.
T69	Ash with no roost features.
T70	Ash with snapped branches.
T71	Single semi-mature Oak species.
T72	Immature Oak species with split in stem, tear out approximately 4 m high, west facing.
T73	Semi-mature Oak species
T74	Semi-mature Oak species, with butt rot and snapped branches.
T75	Single semi-mature Oak species, may have bat roost potential.
T76	Ivy-covered Oak species, semi-mature, with tear outs and missing branches, with bat roost potential.
T77	Mature Oak species within a large gap in the hedgerow along field boundary
T78	Ash with splits in stem and snapped branches.
T79	Half dead with branch snaps and split stem.
T80	Mature Willow species with snapped branches.
T81	Oak species with bat roost potential.
T82	Oak species
T83	Willow species with bat roost potential.
T84	Willow species with bat roost potential.
T85	Oak species with bat roost potential.
T86	Willow species with bat roost potential.
T87	Willow species with bat roost potential.
T88	Willow species.
T89	Willow species.

T90	No information.
T91	No information.
T92	Willow species with bat roost potential.
T93	No information.
T94	Ash with bat roost potential.
T95	No information.
T96	No information.
T97	No information.
T98	No information.
T99	No information.
T100	No information.
T101	No information.
T102	No information.
T103	No information.
T104	Dead and fallen Willow species tree stump, approximately 2.5 m tall.
T105	Oak species with damaged limbs. Low potential.
T106	Oak species with dead wood at the top and lifted bark. Low potential.
T107	Oak species with snapped branches and damage limbs. Low potential.
T108	Ivy covered Oak species with a split in trunk. Low potential.
T109	Oak species with a tear out with bat roost potential.
T110	Oak species with cracked bark with bat roost potential.
T111	Oak species with tear outs and some ivy covering.
T112	Dead, hollow Oak species. Rot holes all the way up the trunk with bat roost potential.
T113	Oak species with bat roost potential.
T114	Oak species with bat roost potential.
T115	Oak species with snapped limbs with bat roost potential.
T116	Many stemmed Willow species with cracks with bat roost potential.
T117	Oak species with a cavity 4 m up on the south side, snapped branches and splits. High potential.
T118	Oak species with cracked or lifted bark. Cracks in trunk. Low potential.

T119	Willow species with snaps in and off limbs. Rot hollow in the main trunk.
T120	Oak species with butt rot and dead and snapped branches with bat roost potential.
T121	Oak species with broken limbs and lifted bark with bat roost potential.

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