Technical Appendix 2: Ecological Impact Assessment

Derril Water Solar Farm

26/05/2021

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EXECUTIVE SUMMARY

2.1. An Ecological Impact Assessment ("EcIA") has been undertaken for a proposed solar farm and associated infrastructure (the "Proposed Development") on lands circa 1.2km south-west of the village of Pyworthy, Devon. This is to assess the potential impacts on local ecology as a result of the Proposed Development. Baseline information within the ecological assessment comprises an initial desk-based assessment and an extended phase 1 habitat survey, which have been outlined within the relevant sections of this report.

2.2. The desk-based assessment identified that within 15km of the Application Site boundary there are three internationally designated sites: all Special Areas of Conservation ("SACs"). The closest of these is the Culm Grasslands SAC, located 5.06km north of the Application Site. There are three Sites of Special Scientific Interest ("SSSIs") within 5km of the Application Site.

2.3. These designated sites have been assessed below. There will be **no adverse effects** on the integrity of any statutory designated sites as a result of the Proposed Development.

2.4. The only designated sites with connectivity to the Application Site are Brendon and Vealand Fen SSSI and the non-statutory sites Hopworthy County Wildlife Site ("CWS"), Lower Hopworthy CWS, Tinneymoor CWS, Tinney CWS, Derril Water 2 Unconfirmed Wildlife Site ("UWS"), Monk's Farm UWS, Trelana UWS, Derril Fields UWS and West Yeomadon UWS. With the implementation of the recommended measures, it has been determined that there will be **no significant adverse effects** on any designated nature conservation site as a result of the Proposed Development.

2.5. A total of 19 habitat types were noted within the Ecological Study Area ("ESA") during the extended phase 1 habitat survey undertaken in October 2020. During the survey visits, these habitats were assessed for their potential to support protected and notable species. Overall, the current site is considered to be of **relatively low ecological interest** in terms of habitats.

2.6. The construction of the Proposed Development will occur over land which has been identified primarily as arable habitat. Proposed security fencing and access tracks will cross arable land, improved and poor semi-improved grassland, wet and dry ditches and native species-rich hedges. Fences will be microsited to reduce disturbance, and existing gaps will be used. The extent of habitat loss in a local context where these habitats are frequent is **not considered significant**.

2.7. From the survey findings and impact assessment conducted it is considered that the Proposed Development is **likely to have no significant adverse effects** on local wildlife. However, precautionary and mitigation measures have been outlined within this report to reduce any potential for effects upon local ecology.

2.8. Furthermore, a Biodiversity Management Plan ("BMP") has been produced. This encompasses enhancement and compensatory measures to ensure the proposed solar farm will lead to a **net gain** for local wildlife (see **Appendices 2.3** and **2.4** of this report).

INTRODUCTION

Background

2.9. Neo Environmental Ltd has been appointed by Renewable Energy Systems (RES) Ltd (the "Applicant") to complete Environmental Assessments for a proposed 42MW solar farm and associated infrastructure (the "Proposed Development") on lands circa 1.2km southwest of the village of Pyworthy, Devon (the "Application Site").

2.10. Please see **Figure 4 of Volume 2: Planning Application Drawings** for the layout of the Proposed Development.

2.11. An extended phase 1 habitat survey report (**Appendix 2.1**), Wildlife Trigger List (**Appendix 2.2**), Biodiversity Management Plan ("BMP"; **Appendix 2.3**) and net gain assessment (**Appendix 2.4**) have also been prepared for the Proposed Development. These should be read in conjunction with this Ecological Impact Assessment ("EcIA").

Development Description

2.12. The Proposed Development will consist of the construction of bi-facial solar photovoltaic (PV) panels mounted on metal frames, new access tracks, underground cabling, perimeter fencing with CCTV cameras and access gates, a temporary construction compound, substation and all ancillary grid infrastructure and associated works. The Proposed Development will result in the production of clean energy from a renewable energy resource (daylight) and will also involve additional landscaping including hedgerow planting and improved biodiversity management.

Site Description

2.13. The Application Site is located on lands circa 1.2km southwest of the village of Pyworthy and c. 1.8km southeast of Bridgerule in Torridge, Devon; the approximate centre point of which is Grid Reference E229936, N101914. Comprising 28 agricultural fields, the Application Site measures 66.33 hectares (ha) in total. See **Figure 1 of Volume 2: Planning Application Drawings** for details.

2.14. Land within the Application Site itself is gently undulating, ranging between 95 - 125m AOD and consists of fields typically of medium scale and generally well enclosed by a mixture of dense treelines, hedgerows and woodland shelter belt, limiting visibility for local settlements and receptors (See **Figure 3 of Volume 2: Planning Application Drawings** for field numbers).

2.15. The Application Site is in an area with existing electricity infrastructure, with a solar farm present c. 0.3km southeast and another c. 1.2km to the southwest. Additionally, the electrical

Pyworthy Substation is located c. 75m from the northern parcel's eastern boundary, adjacent to Field 16, where the Proposed Development will connect.

2.16. The local area is generally agricultural in nature, punctuated by individual properties and farmsteads; the nearest residential areas are Hopworthy and Yeomadon, located 0.7km northeast and southeast respectively. Recreational Routes include two Public Rights of Way (PRoW); one which passes the southeastern boundary of the Application Site (linking Crinacott Farm and Northmoor Farm, both outside the Application Site) and another which passes east of the adjacent substation, located circa 75m east of the Application Site.

2.17. While there are a number of drains and water courses throughout the Application Site, it is mostly contained within Flood Zone 1, an area described as having a "*Low probability*" of flooding. The exception to this is a small part of the Application Site within Flood Zone 2 and 3, towards the eastern boundary of Field 16. These areas have been avoided within the Proposed Development footprint.

2.18. The Application Site will be accessed from four existing entrance points on the unnamed minor road which splits the site into northern and southern parcels. From the western boundary of the site, the road runs in a southwestern direction for c. 0.5km before turning in a general east-northeast direction through the eastern section of the Application Site.

Scope of the Assessment

2.19. An EcIA of the Application Site has been completed to inform the submission of a planning application to Torridge District Council for a proposed solar farm development. The aims of this report are to:

- Determine the main habitat types within and immediately adjacent to the Application Site in relation to the Proposed Development footprint;
- Identify any actual or potential habitat or species constraints pertinent to the development of the Application Site and to identify how the Proposed Development can avoid, mitigate and, if necessary, compensate for impacts on these actual or potential constraints;
- Assess the potential impacts of the Proposed Development during the construction, operation and decommissioning phases;
- Provide mitigation to reduce the impacts of the activities undertaken during the various phases of the Proposed Development; and
- Identify potential opportunities for the Proposed Development to enhance and add to the biodiversity resource within the site.

Statement of Authority

2.20. The assessment has been conducted by ecologists registered with the Chartered Institute of Ecology and Environmental Management ("CIEEM"). Work has been carried out in line with the relevant professional guidance: CIEEM's Guidelines for Ecological Impact Assessment in the UK and Ireland[1].

2.21. Daniel Flenley has over 14 years of ecology experience including undertaking surveys and writing associated reports. A full member of CIEEM, he has experience in undertaking and managing a range of surveys and assessments including Ecological Impacts Assessments ("EcIAs"), extended phase 1 habitat surveys and ornithological and protected species surveys, for over 400 projects. These include a variety of development types such as energy, commercial, industrial and transport infrastructure. Daniel holds a great crested newt ("GCN") class licence and has worked as an accredited agent under bat and amphibian mitigation and reptile survey licences.

2.22. Becky Prudden has worked for a number of different ecology and environmental companies across the UK and gained a wide range of experience covering all aspects of ecological consultancy. Becky is a skilled field ecologist and carries out a broad range of flora and faunal field surveys. She regularly carries out large scale habitat assessments and detailed botanical surveys and is a licenced surveyor for bats, dormice, GCN and barn owls. She is also experienced in carrying out surveys for otters, water voles and a range of notable mammals including brown hares and hedgehogs. Becky has prepared ecological assessments and advice for developments of all scales, from concept planning, assisting with project delivery through to the post-planning and construction phases.

2.23. Oliver Prudden has over 18 years' experience working for and running a number of ecological consultancies. He has a wide range of ecological experience including co-ordinating and undertaking habitat and faunal field surveys, GIS and mapping, preparing ecological assessments, providing input to development masterplans and landscape designs as well as giving ecological support through the post-planning and construction phases. Oliver's project experience includes large- and small-scale road schemes, residential/commercial/retail developments (urban redevelopment and greenfield sites), river edge restoration, windfarms and production of guidance documents.

[1] CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Costal and Marine.

CONSULTATION

2.25. The project team requested pre-application advice from Torridge District Council in September 2020. A meeting with Laura Davies (Planning Officer), held on 22nd October, highlighted that a net gain for biodiversity was expected with the implementation of a BMP and Landscape and Ecology Management Plan ("LEMP"). It also brought to light that, while a particular percentage of gain is not specified, the Applicant's team would need to complete a DEFRA biodiversity metric assessment for the Council to evaluate.

2.26. Laura Davies provided a formal response on 10th November 2020. This took into account consultation advice from Natural England, and included the following comments on ecology:

Local Planning Authorities have a statutory duty to ensure that the impact of development on wildlife is fully considered during the determination of a planning application under the Wildlife and Countryside Act 1981 (as amended), Natural Environment and Rural Communities Act 2006, The Conservation of Habitats and Species Regulations 2010 (Habitats Regulations 2010). This is further reinforced within the North Devon and Torridge District Local Plan through Policy DM08 which requires new development to 'avoid adverse impacts on existing ecology features as a first principle and enable net gains by designing in biodiversity features'.

A completed Wildlife Trigger List should be submitted in support of the proposed development, together with a Preliminary Ecological Assessment which would be triggered by the site area. Any Assessment should also reflect the relevant mitigation and enhancement measures as required by Policies DM08 and ST14 of the Local Plan. The supporting text to Policy DM08 notes that the DEFRA Metric will be used to assess the extent of any net gain and acceptability of developments having an impact on biodiversity with biodiversity assets being retained or enhanced on site where feasible (paragraph 13.62).

It is understood from the meeting that a Phase 1 walkover survey of the site is being undertaken currently. The proposed lighting details to the boundaries of the site and in relation to any proposed ancillary buildings should be included and assessed within any ecology assessment, including details of the proposed light spill.

2.27. An Environmental Impact Assessment ("EIA") screening request for the Proposed Development was submitted to the Council on 14th December 2020. The response (received on 21st December 2020) indicated that no EIA was necessary.

2.28. The ecology points arising from the consultation have been addressed as follows:

- Design of measures to avoid adverse impacts on existing ecology;
- Assessment of impacts on designated sites, habitats and protected/Priority species to enable these to be avoided;

- Completion of Wildlife Trigger List (**Technical Appendix 2.2**);
- Production of EcIA providing and going beyond the information usually submitted in a Preliminary Ecological Assessment ("PEA");
- Production of BMP (**Technical Appendix 2.3**) and LEMP (**Figure 1.14, Technical Appendix 1**) to enable net gains;
- Assessment of net gains, using the recommended DEFRA metric, in **Technical Appendix 2.3: Net Gain Assessment**;
- Ecological assessment of proposed lighting details and light spill for site boundaries and any proposed ancillary buildings (provided as part of assessment for light-sensitive protected species).

LEGISLATION AND PLANNING POLICY CONTEXT

International Legislation

2.29. International legislation relevant to the Proposed Development is outlined within **Table 2-1** below.

Table 2--1: Relevant International Legislation

Directive	Main Provisions
Bern Convention	The Bern Convention[2] came into force in 1982, with the principal aims to ensure conservation and protection of wild plant and animal species and their natural habitats (listed in Appendices I and II of the Convention), to increase cooperation between contracting parties, and to regulate the exploitation of those species (including migratory species) listed in Appendix III.
Bonn Convention	The Bonn Convention[3] came into force in 1985. Contracting Parties work together to conserve migratory species and their habitats by providing strict protection for endangered migratory species (listed in Appendix I of the Convention), concluding multilateral Agreements for the conservation and management of migratory species which require or would benefit from international cooperation (listed in Appendix II), and by undertaking cooperative research activities.
Ramsar Convention	The Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention)[4] came into force in 1975. It is an international treaty for the conservation and wise use of wetlands.

National Legislation

Wildlife & Countryside Act 1981 / Conservation of Habitats and Species Regulations 2017

2.30. The Wildlife and Countryside Act 1981[5] (as amended), formerly used to implement EU legislation, has more recently been strengthened by the Conservation of Habitats and Species Regulations 2017. This consolidates and amends existing national legislation, making it an offence to:

[2] Available at: https://www.coe.int/en/web/bern-convention

[3] Available at: https://www.cms.int/en/convention-text

[4] Available at: https://www.ramsar.org/about-the-convention-on-wetlands-0

[5] Parliament of the United Kingdom, 1981. Wildlife and Countryside Act 1981 (as amended). Available at: http://www.legislation.gov.uk/ukpga/1981/69

- *"Intentionally kill, injure or take any wild bird or their eggs or nests (with certain exceptions) and disturb any bird species listed under Schedule 1 to the Act, or its dependent young while it is nesting*
- *Intentionally kill, injure or take any wild animal listed under Schedule 5 of the Act; intentionally damage, destroy or obstruct any place used for shelter or protection by any wild animal listed under Schedule 5 of the Act; disturb certain Schedule 5 animal species while they occupy a place used for shelter or protection*
- *Pick or uproot any wild plant listed under Schedule 8 of the Act"*

Natural Environment and Rural Communities Act 2006

2.31. The Natural Environment and Rural Communities ("NERC") Act[6] places a duty on planning authorities to have due regard for biodiversity and nature conservation during operations, ensuring that biodiversity is a key consideration in the local planning process.

2.32. Section 41 of the NERC Act lists a number of habitats and species of principal importance for the conservation of biodiversity in England.

Hedgerows Regulations 1997

2.33. Under the Hedgerows Regulations 1997, certain hedgerows[7] are classified as 'Important' based on factors such as the presence of a certain number of woody native plant species. Subject to certain exceptions, the removal of an 'Important' hedgerow is prohibited.

2.34. 'Removal' includes uprooting all or part of the hedgerow, as well as any acts that could lead to the hedgerow's destruction. Removal is permitted under Section 6 of the Act under a small number of exemptions, including:

"for carrying out development for which planning permission has been granted or is deemed to have been granted, except development for which permission is granted by article 3 of the Town and Country Planning General Permitted Development Order 1995 in respect of development of any of the descriptions contained in Schedule 2 to that Order other than Parts 11 (development under local or private Acts or orders) and 30 (toll road facilities)."

[6] Available at https://www.legislation.gov.uk/ukpga/2006/16/contents
[7] Available at https://www.legislation.gov.uk/uksi/1997/1160/contents/made

Protection of Badgers Act

2.35. The Protection of Badgers Act 1992[8] makes it illegal to kill, injure or take a badger or to intentionally or recklessly interfere with a badger sett. Sett interference includes disturbing badgers whilst they are occupying a sett or obstructing access to it.

Planning Policy

National Planning Policy Framework (2019)

2.36. The National Planning Policy Framework (NPPF)[9] sets out the government planning policies for England and how they should be applied. With regards to ecology and biodiversity, Chapter 11 "Conserving and Enhancing the Natural Environment", paragraph 170, states that planning policies should:

- Minimise impacts on, and provide net gains in, biodiversity where possible.
- Recognise the wider benefits of natural capital and ecosystem services.

2.37. Under these aims, paragraph 171 stresses the need to plan for natural capital at a catchment or landscape scale, linked to national and local targets. Paragraph 175 sets out the principles that local planning authorities should apply when determining planning applications:

- Refuse planning permission if significant harm cannot be avoided, adequately mitigated, or, as a last resort, compensated for;
- Encourage opportunities to incorporate biodiversity in and around developments, especially where this can secure measurable net gains for biodiversity;
- Permission should not normally be permitted where an adverse effect on a nationally designated Site of Special Scientific Interest is likely;
- Refuse planning permission if development will result in the loss or deterioration of irreplaceable habitats, such as ancient woodland and ancient or veteran trees, unless there are wholly exceptional circumstances e.g. when the benefits of the development clearly outweigh the loss or deterioration.

[8] Parliament of the United Kingdom (1992). Protection of Badgers Act 1992. Available at http://www.legislation.gov.uk/ukpga/1992/51/contents

[9] Department for Housing, Communities and Local Government (2019). National Planning Policy Framework

The UK Post-2010 Biodiversity Framework

2.38. The UK Post-2010 Biodiversity Framework[10] was developed to covers the period from 2011 to 2020 in response to two main drivers: the Convention on Biological Diversity's ("CBD's") Strategic Plan for Biodiversity 2011-2020[11] and its five strategic goals and 20 'Aichi Biodiversity Targets', published in October 2010, and the EU Biodiversity Strategy ("EUBS")[12]. It supersedes the former UK Biodiversity Action Plan ("BAP").

2.39. The first Implementation Plan was produced for the Framework in November 2013, and an updated and revised Plan was produced in 2018. The Framework's aims include setting out:

"a shared vision and priorities for UK-scale activities, in a framework jointly owned by the four countries, and to which their own strategies will contribute."

2.40. This is based on goals such as reducing direct pressures on biodiversity and promoting sustainable use, improving the status of biodiversity by safeguarding ecosystems, species and genetic diversity, and enhancing the benefits to all from biodiversity and ecosystems. The current BMP aims to demonstrate how the Proposed Development will assist in achieving this target.

2.41. The Framework seems likely to be superseded by the Environment Bill[13], currently before the House of Commons, during the course of 2021.

Biodiversity Action Plans

2.42. The UK Biodiversity Action Plan ("UKBAP"; 1994)[14] was organised to fulfil the Rio Convention on Biological Diversity in 1992, to which the UK is a signatory. Lists of national Priority species and habitats were produced with all listed species/habitats having specific action plans, defining the measures required to ensure their conservation.

2.43. While the UKBAP has since been superseded by the UK Post-2010 Biodiversity Framework (see above), regional and local BAPs have been produced to develop plans for species/ habitats of nature conservation importance at regional and local levels. The Devon BAP[15] contains a long list of Priority habitats including, among others:

- Alder/willow wet woodland,

[10] Available at https://hub.jncc.gov.uk/assets/587024ff-864f-4d1d-a669-f38cb448abdc#UK-Post2010-Biodiversity-Framework-2012.pdf

[11] Available at https://www.cbd.int/sp/

[12] Available at: https://ec.europa.eu/environment/nature/biodiversity/strategy_2020/index_en.htm

[13] https://services.parliament.uk/bills/2019-21/environment.html

[14] Available at https://data.jncc.gov.uk/data/cb0ef1c9-2325-4d17-9f87-a5c84fe400bd/UKBAP-BiodiversityActionPlan-1994.pdf

[15] Available at: https://www.devon.gov.uk/environment/wildlife/the-devon-biodiversity-action-plan-bap

- Cities, towns and villages,
- Species-rich hedges,
- Rivers, streams, floodplains and fluvial processes.

2.44. Several Priority species are also listed. Those most relevant to the habitats within the Application Site and/or the local area in which the Application Site is found include:

- Primrose,
- Marsh fritillary,
- White-clawed crayfish,
- Atlantic salmon,
- Barn owl,
- House sparrow
- Cirl bunting,
- Curlew,
- Brown hare,
- Dormouse,
- Greater horseshoe bat,
- Soprano pipistrelle,
- Otter, and
- Water vole.

North Devon and Torridge Local Plan 2011 – 2031

2.45. Adopted in October 2018, this is the current Local Plan for Torridge, the district in which the Application Site falls. The relevant policies set out within the Plan include the following ecological provisions.

Policy ST03: Adapting to Climate Change and Strengthening Resilience

"Development should be designed and constructed to take account of the impacts of climate change and minimize the risk to and vulnerability of people, land, infrastructure and property by […]

(i) conserving and enhancing landscapes and networks of habitats, including cross-boundary green infrastructure links, strengthening the resilience of biodiversity to climate change by facilitating migration of wildlife between habitats and improving their connectivity."

Policy ST14: Enhancing Environmental Assets

"The quality of northern Devon's natural environment will be protected and enhanced by ensuring that development contributes to:

(a) Providing a net gain in northern Devon's biodiversity where possible, through positive management of an enhanced and expanded network of designated sites and green infrastructure, including retention and enhancement of critical environmental capital;

(b) Protecting the hierarchy of designated sites in accordance with their status;

(c) Conserving European protected species and the habitats on which they depend […]."

Policy DM04: Design Principles

"(1) Good design seeks to guide overall scale, density, massing, height, landscape, layout, materials, access and appearance of new development. It seeks not just to manage land use but support the creation of successful places and respond to the challenges of climate change. Development proposals need to have regard to the following design principles […]

(f) retain and integrate existing landscape features and biodiversity to enhance networks and promote diversity and distinctiveness of the surrounding area […]."

Policy DM08: Biodiversity and Geodiversity

"(1) Development should conserve, protect and, where possible, enhance biodiversity and geodiversity interests and soils commensurate with their status and giving appropriate weight to their importance. All development must ensure that the importance of habitats and designated sites are taken into account and consider opportunities for the creation of a local and district-wide biodiversity network of wildlife corridors which link County Wildlife Sites and other areas of biodiversity importance.

European Sites

(2) The highest level of protection will be given to potential and existing Special Protection Areas, candidate and existing Special Areas of Conservation and listed or proposed Ramsar sites. Proposals having an adverse impact on the integrity of such areas that cannot be avoided or adequately mitigated to remove any adverse effect will not be permitted other than in exceptional circumstances. These circumstances will only apply where there are:

(a) no alternative solutions;

(b) imperative reasons of overriding public interest; and

(c) necessary compensatory provisions secured to ensure that the overall coherence of the Natura 2000 network of European sites is protected.

(3) Development will only be supported where any necessary mitigation is included such that, in combination with other plans or projects, there will be no adverse effects on the integrity of European Nature Conservation Sites.

National Sites

(4) Development proposals within or outside a Site of Special Scientific Interest or Marine Conservation Zone which would be likely to affect the designation adversely, either individually or in combination with other developments, will not be supported unless the benefits of the development at this site clearly outweigh both the adverse impacts on the site and any adverse impacts on the wider network of Sites of Special Scientific Interest and Marine Conservation Zones.

Local Sites

(5) Development likely to affect adversely locally designated sites, their features or their function as part of the ecological network, including County Wildlife Sites, County Geological Sites and sites supporting Biodiversity Action Plan habitats and species, will only be permitted where the need for and benefits of the development clearly outweigh the loss, and the coherence of the local ecological network is maintained.

Protected Species and Habitats

(6) Adverse impacts on European and UK protected species and Biodiversity Action Plan habitats and species must be avoided wherever possible, subject to:

(i) the legal tests afforded to them where applicable; or otherwise unless

(ii) the need for and benefits clearly outweigh the loss.

Ancient Woodland and Veteran Trees

(7) Development must avoid the loss or deterioration of ancient woodland and veteran trees, unless the need for, or benefits of development on that site clearly outweigh the loss.

Avoidance, Mitigation and Compensation for Biodiversity and Geodiversity Impacts

(8) Development should avoid adverse impact on existing features as a first principle and enable net gains by designing in biodiversity features and enhancements and opportunities for geological conservation alongside new development. Where adverse impacts are unavoidable they must be adequately and proportionately mitigated, If full mitigation cannot be provided, compensation will be required as a last resort."

Policy DM09: Safeguarding Green Infrastructure

"Development involving the loss of green infrastructure including public open space will only be supported where:

(a) alternative green infrastructure is provided of at least equivalent size, quality and accessibility to that being lost; or

(b) the green infrastructure network in the locality can be retained or enhanced through redevelopment of a small part of the site […]."

2.46. The EcIA of the Proposed Development will consider each of the policies outlined above.

Guidance Documents

BS 42020:2013 Biodiversity

2.47. The British Standards Institute has published *BS 42020:2013 Biodiversity*[16]*. Code of Practice for Planning and Development* which offers a coherent methodology for biodiversity management. This document seeks to promote transparency and consistency in the quality and appropriateness of ecological information submitted with planning applications and applications for other regulatory approvals.

2.48. BS 42020:2013 cites CIEEM EcIA Guidelines as the acknowledged reference on Ecological Impact Assessment ("EcIA"). These guidelines provide recommendations on topics such as professional practice, proportionality, pre-application discussions, ecological surveys, adequacy of ecological information, reporting and monitoring.

[16] BS 42020:2013 Biodiversity. Code of practice for planning and development

CIEEM Guidelines

2.49. CIEEM have produced guidance on Ecological Impact Assessment[17] and Ecological Report Writing[18].

2.50. EcIA is a process of identifying, quantifying and evaluating potential effects from activities such as those related to development on habitats, species and ecosystems. This EcIA process follows the tasks set out in Table 2-2 below.

Table 2-2: EcIA Process

Task	Description
Scoping	Determining the matters to be addressed in the EcIA, including consultation to ensure the most effective input to defining the scope. Scoping is an ongoing process – the scope of the EcIA may be modified following further ecological survey/research and during impact assessment.
Establishing the baseline	Collecting information and describing the ecological conditions in the absence of the proposed project, to inform the assessment of impacts.
Important ecological features	Identifying important ecological features (habitats, species and ecosystems, including ecosystem function and processes) that may be affected, with reference to a geographical context in which they are considered important.
Impact assessment	An assessment of whether important ecological features will be subject to impacts and characterisation of these impacts and their effects3. Assessment of the significance of the residual ecological effects of the project (those remaining after mitigation), including cumulative effects.
Avoidance, mitigation, compensation and enhancement	Incorporating measures to avoid, reduce and compensate negative ecological impacts and their effects, and the provision of ecological enhancements. Monitoring impacts and their effects. Evaluation of the success of proposed mitigation, compensation and enhancement measures.

2.51. The aims of their EcIA guidelines are to:

- promote good practice;

[17] CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Costal and Marine.
[18] CIEEM (2017) Guidelines for Ecological Report Writing

- promote a scientifically rigorous and transparent approach to Ecological Impact Assessment (EcIA);
- provide a common framework to EcIA in order to promote better communication and closer cooperation between ecologists involved in EcIA; and
- provide decision-makers with relevant information about the likely ecological effects of a project.

Natural England and Forestry Commission Guidelines

2.52. Natural England have published standing advice for various protected species and habitats in England. The advice covers accepted and recommended survey, avoidance, mitigation and compensation standards for development affecting these ecological features. These advice documents have been borne in mind where relevant to the Proposed Development.

2.53. Within this series, Natural England and the Forestry Commission Standing have published joint standing advice for ancient woodland and ancient and veteran trees[19]. This advice guides planning authorities in assessing the impacts of proposals affecting these features. It also provides guidance on reaching planning decisions and avoiding, mitigating and (as a last resort) compensating for impacts on these features.

[19] https://www.gov.uk/guidance/ancient-woodland-and-veteran-trees-protection-surveys-licences

METHODOLOGY

Zone of Influence

2.54. The Zone of Influence (ZoI) is the area encompassing all predicted negative ecological effects from a Proposed Development and is informed by the habitats present within the Application Site and the nature of the Proposed Development. Due to the scale and nature of the Proposed Development, it is considered that the ZoI outlined in **Table 2-3 below** was appropriate for the gathering of information to inform the desk study.

Table 2-3: Zone of Influence for Ecological Features

ECOLOGICAL FEATURE	Zone of Influence (ZoI)
International statutory designations	15km (or beyond in the case of significant hydrological influence)
National statutory designations	5km
Non-statutory designations	2km
Protected and Priority species	2km
Extended phase 1 habitat survey	50m

Desk Study

2.55. A desk-based assessment was undertaken to collate available ecological information for the Application Site and the surrounding area. This included a search of statutory designated sites within a 5km radius of the Proposed Development, including: Special Protection Areas (SPAs), Special Areas of Conservation (SACs), Ramsar Sites, National Nature Reserves (NNRs) and Local Nature Reserves (LNRs). The description of each of these sites was obtained utilising the Multi-Agency Geographic Information for the Countryside (MAGIC) website[20].

2.56. A data search was conducted through the Devon Biodiversity Records Centre (DBRC) to obtain information regarding protected/Priority species within 2km of the Application Site boundary.

[20] Available at - https://magic.defra.gov.uk/

Field Survey

Extended Phase 1 Habitat Survey

2.57. An extended phase 1 habitat survey was undertaken from 21st to 23rd October 2020 by Becky Prudden MCIEEM and Oliver Prudden MCIEEM. The Ecological Survey Area (ESA) covered all land within the Application Site and a 50m buffer around the entire site.

2.58. Survey work was carried out in accordance with the Joint Nature Conservation Committee (JNCC) guidelines (2010)[21] in order to produce an extended phase 1 habitat map.

2.59. This habitat classification method provides a standardised system to record and map semi-natural vegetation and other wildlife habitats in order to assess their potential importance for nature conservation.

Species Scoping Survey

2.60. A species scoping survey was carried out to identify the presence of protected species, or the potential of the Application Site to support protected species. The aim of the survey was to provide an overview of the Application Site and to determine whether any further survey work was required.

2.61. **Table 2-4** below outlines the relevant habitat and field signs that indicate the potential presence of protected or Priority species within the ESA.

Table 2-4: Indicative Habitats and Field Signs of Protected Species

Taxon	Indicative Habitat(s)	Field Signs (In Addition to Sightings)
Bats	Roosts – trees, buildings, bridges, caves, etc. Foraging areas – e.g. parkland, water bodies, streams, wetlands, woodland edges and hedgerow. Commuting routes – linear features (e.g.) hedgerows, water courses, tree lines).	In or on potential roost sites: droppings stuck to walls, urine spotting in roof spaces, oil from fur staining round roost entrances, feeding remains (e.g. moth wings under a feeding perch).
Badger	Found in most rural and many urban habitats.	Excavations and tracks: sett entrances, latrines, hairs, well-worn paths, prints, scratch marks on trees.

[21] JNCC (2010). Handbook for Phase 1 Habitat Survey

Taxon	Indicative Habitat(s)	Field Signs (In Addition to Sightings)
Dormouse	Deciduous woodland, overgrown/species-rich hedgerows and associated scrub.	Nests, feeding remains (distinctively marked hazelnut shells).
Otter	Watercourses.	Holts (or dens), prints, spraints (droppings), slide marks into watercourses, feeding signs (e.g. fish bones).
Birds	Trees, scrub, hedgerow, field margins, grassland, buildings.	Nests, droppings below nest sites (especially in buildings of trees), tree holes.
Common reptiles	Rough grassland, log and rubble piles.	Sloughed skins.

Weather Conditions

2.62. The weather conditions at the time of the surveys can be found in **Table 1** of **Appendix 2.1: Extended Phase 1 Habitat Survey Report**.

Limitations

2.63. Results of the assessment undertaken by Neo Environmental are representative of the time that surveying was undertaken.

2.64. The absence of specific species records returned during the data search does not necessarily indicate absence of a species or habitat from an area, but rather that these have not been recorded or are perhaps under-recorded within the search area.

2.65. An extended phase 1 habitat survey does not aim to produce a full botanical or faunal species list or provide a full protected species survey, but enables competent ecologists to ascertain an understanding of the ecology of the site in order to:

- Identify broadly the nature conservation value of a site and preliminarily assess the significance of any potential impacts on habitat/species recorded, and
- Confirm the need and extent of any additional specific ecological surveys that are required to identify the true nature conservation value of a site.

2.66. At the time of the survey, access was only permitted within the landownership boundary. Parts of the adjacent land did fall within the ownership boundary. However, areas of land in

the ESA that were not within the landownership boundary were viewed from field boundaries, with the use of binoculars, where needed. Given the habitats present across the landscape, it is considered that the limited access to some areas of land directly adjacent to the Application Site has not impacted significantly upon the findings of the habitat or species scoping surveys.

2.67. The survey was performed outside the optimal season for botanical surveys (which is April to September). However, given the habitats present, it is not considered that this places a significant constraint on the interpretation of the Application Site's ecological interest.

Evaluation Methods

2.68. The evaluation of ecological receptors is based upon CIEEM guidelines[22] (2017), which suggest that the value or potential value of an ecological resource or feature (for example a habitat type, species or ecosystem) should be determined within a geographical context (e.g. rare at a local level). Attributing a value to a receptor, which is also a designated site, is generally precise, as the designations themselves provide an indication of value.

Adopted Design Principles

2.69. Where possible, measures have been implemented as part of the iterative design process to prevent the various phases of the Proposed Development affecting sensitive ecological features. The evaluation of the ecological baseline has enabled the inclusion of integral design measures including the following:

- A 5m buffer from hedgerows,
- 5m drainage ditch buffer,
- Tree buffers,
- 10m watercourse buffer,
- 10m buffer from woodland,
- 25m buffer between PV panels and Hopworthy County Wildlife Site ("CWS"), Lower Hopworthy CWS and Monk's Farm Unconfirmed Wildlife Site ("UWS"),
- 35m buffer between PV panels and Trelana UWS,
- 5m buffer between PV panels and Derril Water 2 UWS,

[22] CIEEM (2017) Guidelines for the Ecological Impact Assessment in the UK and Ireland

- 30m badger sett buffer; hand digging permitted over 10m from setts and light machinery use permitted over 20m from setts (though not likely to be needed), and
- 10cm gaps at the bottom of security fencing to ensure connectivity for wild mammals.

Impact Assessment

2.70. The impact assessment process involves:

- identifying and characterising impacts and their effects;
- incorporating measures to avoid and mitigate negative impacts and effects;
- assessing the significance of any residual effects after mitigation;
- identifying appropriate compensation measures to offset significant residual effects;
- identifying opportunities for ecological enhancement.

2.71. The terms 'impact' and 'effect' are used commonly throughout ecological reports. Impact is defined as a change experienced by an ecological feature, while effect is defined as the outcome to an ecological feature from an impact. Impacts and effects can be positive, negative or neutral.

2.72. Assessment of potential impacts and effects needs to consider on-site, adjacent and more distant ecological features, including habitats, species and statutory and ecological designated sites.

2.73. This Ecological Impact Assessment has been concluded by an experienced ecologist following CIEEM guidance[23].

Assessing the Magnitude of Change

2.74. Determining the magnitude of any likely effects requires an understanding of how the ecological features are likely to respond to the Proposed Development. This change can occur during construction or operation of the Proposed Development.

2.75. Effect magnitude refers to changes in the extent and integrity of an ecological receptor. A definition of ecological 'integrity' that is relevant across the UK is found within Scottish Executive circular 6/1995 (as updated, 2000)[24]. This states that:

[23] CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Costal and Marine.

[24] Natura Casework Guidance: How to consider plans and projects affecting Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). Available at: https://www.nature.scot/natura-casework-guidance-how-consider-plans-and-projects-affecting-special-areas-conservation-sacs

"The integrity of a site is the coherence of its ecological structure and function, across its whole area, which enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified".

2.76. Although this definition is used specifically regarding international-level designated sites (SACs and SPAs), it is also considered suitable for wider countryside habitats and species for the purposes of this assessment.

2.77. Effects can be adverse, neutral or positive. Effects are judged in terms of magnitude in space and time. There are five levels of spatial effects and five levels of temporal effects as described in Table 2-5 and Table 2-6 respectively.

Table 2-5: Spatial Effect Magnitude

Spatial Magnitude	Description
Very High	Would cause the loss of the majority of a feature (>80%) or would be sufficient to damage a feature sufficient to immediately affect its viability.
High	Would have a major effect on the feature or its viability. For example, more than 20% habitat loss or damage.
Moderate	Would have a moderate effect on the feature or its viability. For example, between 10 - 20% habitat loss or damage.
Low	Would have a minor effect upon the feature or its viability. For example, less than 10% habitat loss or damage.
Negligible	Minimal change on a very small scale; effects not dissimilar to those expected within a 'do nothing' scenario.

2-6: Temporal Effect Magnitude

Temporal Magnitude	Description
Permanent	Effects continuing indefinitely beyond the span of one human generation (taken here as 30+ years), except where there is likely to be substantial improvement after this

	period in which case the category Long-term may be more appropriate.
Long-term	From 15 years up to (and including) 30 years; for short-lived species such as invertebrates, multiple generations.
Medium-term	From 5 years up to (but not including) 15 years; for short-lived species, a single generation.
Short-term	Up to (but not including) 5 years; for short-lived species, a single season or part of a season.
Negligible	No effect.

BASELINE CONDITIONS

Desk-based Study

Designated Sites

2.78. The Application Site does not lie within or adjacent to any statutory designated environmental sites.

2.79. Within 15km of the Application Site boundary there are three internationally designated sites: three Special Areas of Conservation ("SACs"). The closest of these is the Culm Grasslands SAC, located 5.06km north of the Application Site at its closest point. No Ramsar Sites, possible SACs ("pSACs") or potential SPAs ("pSPAs") were recorded within 15km. There are three Sites of Special Scientific Interest ("SSSIs") within 5km of the Application Site, namely Kingford Fen SSSI, Small Brook SSSI and Brendon and Vealand Fen SSSI. No National Nature Reserves ("NNRs") or Local Nature Reserves ("LNRs") are present within 5km. There is not believed to be any material hydrological influence beyond the 15km study area.

2.80. The Application Site overlaps one non-statutory designated environmental sites and adjoins three others. Derril Water 2 Unconfirmed Wildlife Site ("UWS") overlaps Field 25 and the adjacent woodland to the south. Hopworthy County Wildlife Site ("CWS") is present immediately north of Field 13 and Lower Hopworthy CWS is present immediately northeast of Field 16 (see **Figure 3, Volume 2: Planning Application Drawings**). Monk's Farm UWS is present immediately north of Fields 15 and 16. In total, 33 non-statutory designated environmental sites (nine CWS, 21 UWS, two Proposed CWS ("pCWS") and one Special Verge Site ("SVS")) are present within 2km of the Application Site.

2.81. Each of these sites are outlined in **Table 2-7** below. Statutory sites are detailed within **Appendix 2A, Figure 2.1**. The closest non-statutory sites to the Application Site are shown in **Appendix 2A, Figure 2.3**. The site descriptions and qualifying features are derived from the DBRC data search and the original site citations available from JNCC[25] and MAGIC[26].

Table 2-7: Designated Sites

Site Code	Site Name	Qualifying Features	Distance & Direction	Potential Connectivity with the Proposed Development Site

[25] Available at https://sac.jncc.gov.uk/

[26] Available at https://magic.defra.gov.uk/magicmap.aspx

SAC (15km or extent of significant hydrological influence)				
UK0012679	Culm Grasslands	• [6410] *Molinia* Meadows on calcareous, peaty or clayed-silt-laden soils (*Molinion caeruleae*) • [4010] Northern Atlantic wet heaths with *Erica tetralix* • [1065] Marsh fritillary butterfly *Euphydryas (Eurodryas, Hypodryas) aurinia*	5.06km North	None
UK0013047	Tintagel-Marsland-Clovelly Coast	• [1230] Vegetated sea cliffs of the Atlantic and Baltic Coasts • [91A0] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles • European dry heaths	9.32km West	None
UK0030396	Bristol Channel Approaches	• [1351] Harbour porpoise (*Phocoena phocoena*)	9.65km West	None
SSSI (5km)				
1001054	Kingford Fen	• Acidic grassland, flushes and neutral marshland	3.44km Northwest	None

		• Herb-rich plant communities • Invertebrates including marsh fritillary (*Eurodryas aurinia*) and wood white (*Leptidea sinapis*)		
1001076	Small Brook	• Culm grassland • Species-rich fen meadow communities • Whorled caraway (*Carum verticillatum*) • Wavy St John's-wort (*Hypericum undulatum*) • Marsh fritillary	4.05km North	None
1001135	Brendon and Vealand Fen	• Herb-rich mire and swamp communities, several of which are nationally scarce • Wavy St John's-wort • Marsh fritillary • Otter	4.17km Northwest	Ecological
CWS (2km)				
SS20/002	Hopworthy	• Culm grassland	0.00km North	Ecological, hydrological

		• Unimproved acid grassland		
SS30/038	Lower Hopworthy	• Culm grassland	0.00km Northeast	Ecological, hydrological
SS20/028	Springfield	• Culm grassland (rush-pasture)	0.89km Northwest	None
SS20/001	The Bridge Mill	• Rush pasture • Ponds • Semi-improved grassland	1.53km Northwest	None
SS20/029	Heatherley	• Culm grassland (M23)	0.95km North	None
SS20/030	Dux	• Culm grassland • Marshy grassland	0.18km North	None
SS20/026	Tinneymoor	• Culm grassland (rush-pasture and tall herb fen) • Small wooded copses with dormice evidence	0.91km South	Hydrological
SX29/002	Tinney	• Culm grassland (rush-pasture) • Tall herb fen & fen-meadow • Swamp • Unimproved neutral grassland	1.53km South	Hydrological

		• Broadleaved woodland • Orchard		
SS30/096	Carn Brae Fields	• Culm grassland (rush-pasture)	1.92km Northwest	None
pCWS (2km)				
SS30/048	Affaland Moor	• Culm grassland	1.58km Southeast	None
SS30/096	Carn Brae Fields UWS [sic]	• Species-poor dry grassland (MG6) • Species-poor wet grassland (MG10)	1.75km Northeast	None
UWS (2km)				
SS30/039	Derril Water 2	• Culm grassland (possible)	Overlapping	Ecological, hydrological
SS30/040	Monk's Farm	• Culm grassland (possible)	0.00km North	Ecological, hydrological
SS30/012	Trelana	• Culm grassland	0.01km South	Ecological, hydrological
SS30/109	Derrill Fields	• Culm grassland (possible) • Broadleaved woodland	0.05km North	Ecological
SS20/035	Bounds Cross	• Possible scrub/young trees with pockets of culm grassland	0.13km West	None

SS30/024	West Yeomadon	• Culm grassland	0.19km Southeast	Hydrological
SS20/024	Strawberry Bank	• Culm grassland (possible)	0.23km South	None
SS20/025	Dux (E)	• Culm grassland (possible)	0.38km North	None
SS20/034	Sturton	• Culm grassland (possible)	0.48km West	None
SS30/042	Hopworthy Moor	• Culm grassland (possible)	0.57km Northeast	None
SS20/033	Heatherly Wood	• Wet woodland	0.90km North	None
SS30/041	Derril	• Culm grassland (possible)	0.94km Northeast	None
SX29/001	Tinney (N)	• Culm grassland (possible)	1.20km South	None
SS30/045	Yeomadon	• Culm grassland (possible)	1.21km Southeast	None
SS20/014	Merrifield (E)	• Culm grassland (possible)	1.41km West	None
SS30/109	Derril Water Fields & Woods	• Culm grassland (possible) • Broadleaved woodland	1.54km Northeast	None
SS20/015	Bradford Farm	• Culm grassland (possible)	1.60km Southwest	None

SS30/047	Brooks House	• Culm grassland (possible)	1.65km East	None
SS20/016	Old Mill Leat Field	• Culm grassland (possible)	1.70km Northwest	None
SS30/043	Cob Tree Barton	• Culm grassland (possible)	1.79km Northeast	None
SX29/004	Tinney (S)	• Culm grassland (possible)	2.00km South	None
SVS (2km)				
N14	Derril Water	Not indicated	1.75km Northeast	None

2.82. The potential presence of protected species within the study area was assessed though a data search conducted via DBRC. This identified records of invasive, rare, scarce, protected and Priority species within 2km of the Application Site boundary.

2.83. In addition, the extended phase 1 habitat survey included a species scoping survey in order to assess the potential of the Application Site to support protected species.

2.84. **Table 2-8** below summarises the most relevant protected, Priority and invasive non-native species recorded within the search area, and their potential to be present within the Application Site at Derril Water.

Table 2-8: Summary of Biological Records

Species	Number of Records	Field Signs or Sightings within ESA	Potential for Species within Application Site
MAMMALS			
European Otter (*Lutra lutra*)	3	Yes	Yes
West European Hedgehog (*Erinaceus europaeus*)	2	No	Yes

Hazel Dormouse (*Muscardinus avellanarius*)	2	No	Yes
Brown Long-eared Bat (*Plecotus auritus*)	5	No	Yes
Common Pipistrelle (*Pipistrellus pipistrellus*)	3	No	Yes
Lesser Horseshoe Bat (*Rhinolophus hipposideros*)	5	No	Yes
Western Barbastelle (*Barbastella barbastellus*)	1	No	Yes
Roe Deer (*Capreolus capreolus*)	4	No	Yes
Red Deer (*Cervus elaphus)*	2	No	Yes
Eurasian Common Shrew (*Sorex araneus*)	1	No	Yes
Weasel (*Mustela nivalis*)	1	No	Yes
AMPHIBIANS			
Common frog *(Rana temporaria)*	6	No	Yes
Common Toad (*Bufo bufo*)	4	No	Yes
BIRDS			
Reed Bunting (*Emberiza schoeniclus*)	1	No	Yes
Yellowhammer (*Emberiza citronella*)	1	No	Yes
Grey Wagtail (*Motacilla cinerea*)	1	No	Yes
Willow Warbler (*Phylloscopus trochilus*)	2	No	Yes
Barn Owl (*Tyto alba*)	4	No	Yes
Snipe (*Gallinago gallinago*)	5	No	Yes

Common Bullfinch (*Pyrrhula pyrrhula*)	1	No	Yes
Dunnock (*Prunella modularis*)	3	No	Yes
Woodcock (*Scolopax rusticola*)	1	No	Yes
Song Thrush (*Turdus philomelos*)	1	No	Yes
Skylark (*Alauda arvensis*)	1	No	Yes
Common Kingfisher (*Alcedo atthis*)	1	No	Yes
Marsh Tit (*Poecile palustris*)	1	No	Yes
Wren (*Troglodytes troglodytes*)	7	No	Yes
Great Spotted Woodpecker (*Dendrocopos major*)	1	Probable	Yes
Robin (*Erithacus rubecula*)	4	No	Yes
Goldfinch (*Carduelis carduelis*)	1	No	Yes
Greenfinch (*Chloris chloris*)	1	No	Yes
Goldcrest (*Regulus regulus*)	1	No	Yes
Great Tit *(Parus major)*	1	No	Yes
Swallow (*Hirundo rustica*)	1	No	Yes
Treecreeper (*Certhia familiaris*)	1	No	Yes
INSECTS			
Wall Butterfly (*Lasiommata megera*)	4	No	Yes
Scarce Blue-tailed Damselfly (*Ischnura pumilio*)	1	No	No

White-legged Damselfly (*Platycnemis pennipes*)	1	No	Very minor
Marsh Fritillary (*Euphydryas aurinia*)	1	No	Yes
Wood White (*Leptidea sinapis*)	1	No	Yes
Devon Carpet (*Lampropteryx otregiata*)	1	No	Minor
FLORA			
Primrose (*Primula vulgaris*)	9	Yes	Yes
Wavy St. John's-Wort *(Hypericum undulatum)*	3	No	Yes
Himalayan Balsam *(Impatiens glandulifera)*	**3**	Yes	Yes
Japanese Knotweed *(Fallopia japonica)*	**5**	No	Yes
Yellow Loosestrife *(Lysimachia vulgaris)*	1	No	Yes
Pond Water-Crowfoot *(Ranunculus peltatus)*	1	No	Minor
Lesser Pond-sedge *(Carex acutiformis)*	1	No	Yes
Galingale *(Cyperus longus)*	1	No	No
Whorled Caraway *(Carum verticillatum)*	5	No	Yes
Wild Service-tree *(Sorbus torminalis)*	1	No	Yes
Flowering-rush *(Butomus umbellatus)*	1	No	Some
Marsh Cinquefoil (*Potentilla palustris*)	1	No	Some

Round-leaved Crowfoot (*Ranunculus omiophyllus*)	1	No	Yes
Wood Club-Rush (*Scirpus sylvaticus*)	2	No	Yes
REPTILES			
Grass Snake (*Natrix natrix / helvetica*)	1	No	Yes
LICHENS			
Witches' Whiskers Lichen (*Usnea articulata*)	2	No	Yes

Habitat Survey

2.85. The extended phase 1 habitat survey undertaken in October 2020 identified 19 habitat types within the ESA. Each of these are listed below, with the relevant habitat codes beforehand.

- A1.1.1 Broadleaved Semi-natural Woodland,
- A1.1.2 Broadleaved Plantation Woodland,
- A2.1 Dense Scrub,
- A3.1 Scattered Broadleaved Trees,
- A2.2 Scrub (Scattered),
- B4 Improved Grassland,
- B5 Marshy Grassland,
- B6 Poor Semi-improved Grassland,
- C3.1 Tall Ruderal,
- G1 Standing Water,
- G2 Running Water,
- J1.1 Arable,
- J2.1.1 Intact Hedge - Native Species-rich,
- J2.1.2 Intact Hedge - Species-poor,

- J2.3.1 Hedge with Trees - Native Species-rich,
- J2.4 Fence,
- J2.6 Dry Ditch,
- J3.6 Buildings, and
- J4 Bare Ground.

2.86. Overall, the site is considered to be of relatively low intrinsic ecological value in terms of habitats. The primary habitat interest derives from the presence of species-rich hedgerows and culm grassland, a type of marshy grassland.

2.87. Suitable potential habitat within and adjacent to the survey area is present for otter, badger, dormouse, bats, hedgehog, brown hare, harvest mouse, amphibians and reptiles, breeding and wintering birds and invertebrates.

2.88. Himalayan balsam, an invasive non-native plant species listed in Schedule 2 Part 2 of the Invasive Alien Species (Enforcement and Permitting) Order 2019 (as amended)[27], is present within the Application Site as scattered (individual) plants along the Derril Water. This suggests fairly recent colonization of the river corridor. The baseline against which the proposals are assessed includes a "do-nothing" scenario in which Himalayan balsam spreads, reducing native floristic diversity.

2.89. No other non-native invasive or protected species of flora were identified during the survey.

2.90. Please refer to **Appendix 2.1: Extended Phase 1 Habitat Survey Report** for full details of the survey.

[27] https://www.legislation.gov.uk/uksi/2019/527

IMPACT ASSESSMENT

Best Practice Pollution Prevention Measures

2.91. Standard best practice pollution prevention measures will be adhered to, which will reduce the potential for impacts on ecology during the construction stage. As these are standard requirements, they are separate to mitigation measures (outlined later in this report).

2.92. Relevant measures include but are not limited to:

Pollution Prevention

- Hydrocarbons, greases and hydraulic fluids will be stored in a secure compound area;
- All plant machinery will be properly serviced and maintained, thereby reducing risk of spillage or leakage;
- All waste produced from construction will be collected in skips with the construction site kept tidy at all times;
- Excavated soil will be stored on site or removed by a licensed waste disposal unit;
- All materials and substances used for construction will be stored in a secure compound and all chemicals will be stored in secure containers to avoid potential contamination.
- Location of spill kit to be known by all construction workers and implemented in the event of spillage or leakage.

Waste Management

- Skips are to be used for site waste/debris at all times and collected regularly or when full;
- All hydrocarbons and fluids are to be collected in leak-proof containers and removed from site for disposal or recycling;
- All waste from construction is to be stored within the site confines and removed to a permitted waste facility.

Environmental Monitoring

- Contractor to nominate member of staff as the environmental officer with the responsibility to ensure best practice measures are implemented and adhered to, with any incidents or non-compliance issues being reported to project team.

Designated Sites

Statutory Sites

2.93. Within the ZoI surrounding the Application Site, there are three Special Areas of Conservation ("SACs"). There is no connectivity between the Application Site and these statutory designated sites.

2.94. The Application Site contains culm grassland, a type of marshy grassland for which the Culm Grasslands SAC is designated. However, this on-site habitat is over 5km away from the SAC and isolated from it within an agriculturally-dominated landscape. The two are therefore not considered ecologically connected in habitat terms. None of the wooded areas within the Application Site are old sessile oak woods of the type for which the Tintagel-Marsland-Clovelly Coast SAC is designated. Bristol Channel Approaches is designated for a single marine species for which there are no suitable habitat the ESA. No hydrological connectivity exists: all the statutory sites are several kilometres upstream of the Application Site. No notable species populations associated with the SACs are considered likely to range to the Application Site.

2.95. As a result, it is considered that there are no pathways for potential impacts on these international sites from the Proposed Development. They have therefore been dismissed from further assessment.

2.96. Of those species and populations associated with the SSSIs, only otters from Brendon and Vealand Fen SSSI are considered at all likely to make potential use of the Application Site. There is therefore potential ecological connectivity between the site and Brendon and Vealand Fen SSSI.

2.97. No connectivity with any other statutory designated sites has been identified, so these have been dismissed from further assessment.

Non-statutory Sites

2.98. Hopworthy CWS and Lower Hopworthy CWS are present immediately adjacent to the Application Site at their closest points, while Derril Water 2 UWS partly overlaps Field 25 and the woodland between Fields 25 and 27. Seven other CWS, 20 further UWS, two pCWS and one SVS are also present within 2km.

2.99. Hopworthy CWS, Lower Hopworthy CWS, Derril Water 2 UWS, Monk's Farm UWS and Trelana UWS are ecologically and hydrologically connected to the Application Site. Tinneymoor CWS, Tinney CWS and West Yeomadon UWS are hydrologically connected to the site via Derril Water, and Derril Fields UWS is ecologically connected.

2.100. There is no connectivity between the Application Site and the other non-statutory designated sites. As a result, it is considered that there are no pathways for potential impacts on these sites from the Proposed Development and they have therefore been dismissed from further assessment.

In the Absence of Mitigation

Brendon and Vealand Fen SSSI

2.101. Brendon and Vealand Fen SSSI is located 4.17km northwest of the Application Site. This distance is well within the known range size of otters. Otter presence within the ESA is likely to be restricted to the Derril Water river corridor, where a single spraint was found (see **Appendix 2.1: Extended Phase 1 Habitat Survey Report**). Of the watercourses within the Application Site, only one in the south (target note 101; see **Appendix 2A, Figure 2.2**) was assessed as offering suitable habitat for otter, due to having sufficient water depth to provide cover and forging opportunities. The remainder were assessed as sub-optimal for this species, being too shallow. However, these tributaries could provide potential dispersal routes between Derril Water and other watercourses / catchments, being well-protected in steep gullies and lined with either woodland or scattered trees and scrub. Otters associated with the SSSI could therefore commute across the Application Site.

2.102. Potential connectivity is restricted to otter only. The other mobile species associated with the SSSI (the marsh fritillary) tends to be very site-faithful and restricted in its movement. The SSSI population of this species is therefore expected to be absent from the Application Site, if indeed the species is present at all. As no hydrological connectivity exists with the Application Site, and the SSSI qualifying habitats are all absent from the Application Site and/or far removed from it, there will be no effect on these habitats or on wavy St John's-wort.

2.103. **Table 2-9** below details common water pollutants and their effect on the aquatic environment (table adapted from Ciria guidance[28]).

Table 2-9: Common Water Pollutants and their Effects on the Aquatic Environment

Common Water Pollutants	Adverse Effect on Aquatic Environment
Silt	Reduces water quality, clogs fish gills, covers aquatic plants, impacts aquatic

[28] Ciria (2015) Environmental good practice on site guide, 4th edition

	invertebrates, leads to a reduction in prey for insectivorous/carnivorous species, leads to degradation of habitat
Bentonite (very fine silt)	Reduces water quality, clogs fish gills, covers aquatic plants, impacts aquatic invertebrates, leads to a reduction in prey for species including otter, leads to degradation of habitat
Cement or concrete wash water (highly alkaline)	Changes the chemical balance, is toxic to fish and other wildlife. This can lead to direct impacts for aquatic species, or indirect impacts through loss of prey resources
Detergent	Removes dissolved oxygen, can be toxic to wildlife present within the aquatic environment
Hydrocarbons (e.g. oil, diesel)	Suffocates aquatic life, damaging to wildlife (e.g. otters) and to water supplies including industrial abstractions
Sewage	Reduces water quality, is toxic to aquatic wildlife, and damages water supplies

2.104. The potential occurrence of these contaminants and their capability of affecting water quality has been considered during the various phases of the Proposed Development. Potential contaminants are capable of undermining water quality and impacting the qualifying species occurring within the ZoI of the Proposed Development.

2.105. The Proposed Development will incorporate Sustainable Drainage System ("SuDS") and flood prevention measures, in accordance with Policies ST03 and DM04 of the North Devon and Torridge Local Plan. Such preventative measures (which are essentially mandatory for all developments within North Devon and Torridge, and therefore are not relied on as ecological mitigation) will have the effect of controlling the movement of surface waters within and from the Application Site. For further detail see **Technical Appendix 4: Flood Risk Assessment / Drainage Impact Assessment** in **Volume 3** of this application.

2.106. The Proposed Development will be subject to mandatory pollution prevention measures under the Control of Pollution Act 1974 (as amended)[29]. Measures have been included within the development design to prevent dust and other pollution entering the watercourse. The recommended **standard pollution prevention measures** can be secured through a suitably-

[29] https://www.legislation.gov.uk/ukpga/1974/40/part/III/crossheading/construction-sites

worded planning condition requesting a Construction Environmental Management Plan (CEMP). An Outline CEMP (OCEMP) has been produced as part of this application (see **Technical Appendix 8: OCEMP** in **Volume 3** of this application).

2.107. A 10m buffer from watercourses has been incorporated into the design of the Proposed Development (i.e. not as mitigation). As a result of the development design and the implementation of the above measures, it is considered there will be **no significant adverse effects** upon otters through physical or chemical pollution.

2.108. Construction works will be temporary, and restricted to the daytime. Otters are nocturnal, and therefore unlikely to be using the site during the hours of construction. Disturbance through noise and vibration during this phase is therefore considered **not to be significant**.

2.109. During the construction phase, the Proposed Development could cause undue stress to otters if these animals are accidently trapped within any exposed excavations left overnight. While this impact alone is unlikely to lead to a significant effect on the SSSI population, a precautionary approach has been taken in line with CIEEM guidelines. It is therefore considered that, without mitigation, otters may suffer an effect of **moderate spatial** and **short-term temporal** magnitude as a result of the Proposed Development. Stress through trapping would be expected to last for a very short duration (between one night and at worst three days, e.g. if an otter became trapped over a bank holiday weekend), but could lead to a longer-term effect of the fitness of the individual.

2.110. In the absence of mitigation, it is considered there will be **a moderate adverse effect** upon a single interest feature of the SSSI as a result.

Hopworthy CWS

2.111. Hopworthy CWS is located immediately north and east of Field 13 (see **Figure 3, Volume 2: Planning Application Drawings**) along a length of approximately 85m. It is designated for culm grassland and unimproved grassland, although these habitats are not present immediately adjacent to the Application Site.

2.112. The Application Site is ecologically connected with the CWS given the close proximity of the two sites. The sites are also hydrologically connected through potential movement of ground and surface water.

2.113. Each of several potential contaminants outlined in **Table 2-9** above has been considered and assessed for their potential occurrence during the different phases of the overall development. The proposed protection measures referred to in connection with Brendon and Vealand Fen SSSI will also be implemented. As noted above in connection with the SSSI, the Proposed Development will be subject to mandatory pollution prevention measures under the Control of Pollution Act 1974 (as amended)[30]. Considering also the development design

[30] https://www.legislation.gov.uk/ukpga/1974/40/part/III/crossheading/construction-sites

and implementation of appropriate measures as outlined in the OCEMP (see **Technical Appendix 8: OCEMP**), it can be concluded that the Proposed Development **will have no adverse effect** on the qualifying habitats of Hopworthy CWS via a hydrological connection.

2.114. As part of the Proposed Development design, solar PV panels have been kept a minimum of 25m from the CWS. The qualifying habitats of the CWS are also screened from the Application Site by woodland within the CWS (see **Appendix 2A, Figure 2.2**, where the culm grassland is shown as marshy grassland north of target note 57).

2.115. During the operational phase of the Proposed Development, the current level of disturbance from agricultural activities will be reduced. Lighting of the CWS will not be increased either. Together with the development design and implementation of appropriate measures outlined in the OCEMP, this will in all likelihood mean there will be **no adverse effects** upon the CWS.

Lower Hopworthy CWS

2.116. Lower Hopworthy CWS is located immediately northeast of Field 16 (see **Figure 3, Volume 2: Planning Application Drawings**). DBRC data indicates that the boundary between the CWS and Application Site consists of a single point of contact, but the CWS is present within 10-15m of the Application Site along a stretch of approximately 250m. It is designated for culm grassland.

2.117. The Application Site is ecologically connected with the CWS given the close proximity of the two sites. The sites are also hydrologically connected through potential movement of ground and surface water.

2.118. As part of the Proposed Development design, solar PV panels have been kept a minimum of 25m from the CWS. Each of several potential contaminants outlined in **Table 2-9** above has been considered and assessed for their potential occurrence during the different phases of the overall development. In the present case and for the reasons set out in relation to Hopworthy CWS above, it can be concluded that the Proposed Development **will have no adverse effect** on the qualifying habitats of Lower Hopworthy CWS via a hydrological connection.

2.119. Lighting on the CWS's qualifying feature will not be increased, and the current level of disturbance from agricultural activities will be reduced during the operational phase.

2.120. As noted above in connection with Hopworthy CWS, the Proposed Development will be subject to mandatory pollution prevention measures under the Control of Pollution Act 1974 (as amended)[31]. Together with the development design and implementation of appropriate measures outlined in the OCEMP (see **Technical Appendix 8: OCEMP** in **Volume 3** of this application), this will mean there will be **no significant adverse effects** upon the CWS.

[31] https://www.legislation.gov.uk/ukpga/1974/40/part/III/crossheading/construction-sites

Tinneymoor CWS

2.121. Tinneymoor CWS is located 0.91km south of the Application Site at its closest point. It is designated for "culm grassland (rush-pasture and tall herb fen)" and "small wooded copses with dormice evidence."

2.122. The CWS is hydrologically connected to the site via Derril Water. Drains within the Application Site lead into the Derril Water River, which flows alongside the CWS approximately 1.8km downstream. However, no solely ecological connection exists: the culm grassland and dormouse habitats within Tinneymoor CWS are not continuous with those within the Application Site.

2.123. Each of the contaminants outlined in **Table 2-9** above has been considered and assessed for their potential occurrence during the different phases of the Proposed Development. For the reasons set out in relation to Hopworthy CWS, it can be concluded that the Proposed Development **will have no adverse effect** on the qualifying habitats of Tinneymoor CWS via a hydrological connection. The distance from the Application Site to the CWS will also allow rapid dilution of any remaining contaminants in the event that small amounts enter the watercourses, notwithstanding the proposed prevention measures.

2.124. The intervening distance, mandatory pollution prevention measures and OCEMP (see **Technical Appendix 8: OCEMP** in **Volume 3**) will mean there will be **no adverse effects** upon Tinneymoor CWS.

Tinney CWS

2.125. Tinney CWS is located 1.53km south of the Application Site at its closest point. It is designated for culm grassland (rush-pasture), tall herb fen and fen-meadow, swamp, unimproved neutral grassland, broadleaved woodland and orchard habitats.

2.126. The CWS is hydrologically connected to the site via Derrill Water, which flows alongside the CWS approximately 2.7km downstream of the Application Site. However, no solely ecological connection exists. This is because the qualifying habitats of Tinney CWS are either absent from the Application Site or (e.g. for culm grassland and broadleaved woodland) are not continuously connected to these habitats where they do occur within the Application Site.

2.127. The contaminants outlined in **Table 2-9** above have been considered and assessed for potential occurrence during the Proposed Development. For the reasons set out in relation to Hopworthy CWS, it can be concluded that the Proposed Development **will have no adverse effect** on the qualifying habitats of Tinney CWS via a hydrological connection. The distance along watercourses from the Application Site to the CWS will allow even greater dilution of any contaminants than for Tinneymoor CWS (see above).

2.128. The intervening distance, mandatory pollution prevention measures and OCEMP (see **Technical Appendix 8: OCEMP** in **Volume 3**) will mean there will be **no adverse effects** upon Tinney CWS.

Derril Water 2 UWS

2.129. Derril Water 2 UWS overlaps approximately 0.57ha of Field 25 and 10m^2 of the woodland between Fields 25 and 27. It also skirts the eastern boundary of Field 27 for approximately 120m. It is designated for "possible culm grassland" (i.e. likely to have been identified as possible culm habitat from an aerial map, but not verified in the field at the time).

2.130. The Application Site is ecologically and hydrologically connected with the UWS due to the overlap of the two sites.

2.131. As part of the Proposed Development design, solar PV panels have been kept outside the UWS. However, it is proposed to install approximately 155m of deer fencing within 2m of the western edge of the UWS in the southeast of Field 25. New deer fencing will also fall within 5m of the UWS along a length of approximately 90m in the east of Field 27.

2.132. UWS are defined as:

Sites identified as having possible interest but not fully surveyed. Some of these sites will be areas of significant wildlife interest. [32]

2.133. The habitats within the UWS in and adjacent to the Application Site are a mixture of culm grassland and other habitats. No culm grassland is present within the UWS adjacent to Field 27. The majority of the UWS within Field 25 is culm grassland (although improved grassland is present along the western edge of the UWS); the woodland between the fields is (by definition) not culm grassland. No signs of protected or Priority fauna strongly associated with culm grassland (e.g. marsh fritillary) were recorded during the species scoping survey. Given the limited extent of culm grassland within the Application Site, it is reasonable to consider that these species are likely to be absent from the site.

2.134. Proposed works are removed from the culm grassland by 45m in Field 27 and a minimum of 0.5m in Field 25. With the proposed pollution prevention measures in place (see above), they will have negligible effects on the qualifying feature of the UWS. Predicted adverse impacts are limited to vibration disturbance during the construction phase. This phase will last six months, but disturbance of the UWS will be limited to the period during which the fence and nearby panels are installed in Fields 25 and 27 (i.e. a much shorter duration).

2.135. Fencing does not necessarily pose a particular risk to culm grassland aside from any loss of land directly beneath its footprint (which will not occur as part of the Proposed Development). Indeed, Butterfly Conservation suggest fencing as an appropriate management aid for

[32] DBRC (2009) The Devon Local Sites Manual Policies and Procedures for the Identification and Designation of Wildlife Sites. Version 1.2 – May 2009. Devon Biodiversity Records Centre, Exeter

riverside areas within a culm grassland landscape[33]. There is no reason to suspect that, during the operational phase, the proposed fencing will trigger hydrological or ecological changes or other impacts that may adversely affect the UWS.

2.136. One positive impact is foreseen, namely the eradication of invasive Himalayan balsam from the Derril Water corridor within the site. A suitably experienced specialist contractor will be engaged to remove the species using environmentally sensitive methods. Monitoring and (where necessary) repeat removal of this species will occur throughout the operational phase. Compared to the baseline do-nothing scenario, this will lead to a positive effect on the UWS's culm grassland habitat by enhancing native floristic diversity.

2.137. Further to the above, the mandatory pollution prevention measures and proposed OCEMP (see **Technical Appendix 8: OCEMP** in **Volume 3**) will minimise the likelihood of any adverse effects on the qualifying habitat of the UWS via a hydrological connection.

2.138. Without mitigation, overall impacts on Derril Water 2 UWS are expected to lead to a **minor beneficial effect**. This is because the negative effects will be limited to the western edge of the 5.8ha non-statutory site, and outweighed by a positive effect on the UWS. Both types of effect will occur for over 30 years: the Proposed Development has a 40-year lifespan, after which full restoration will occur.

Monk's Farm UWS

2.139. Monk's Farm UWS is located immediately north of Fields 15 and 16 at its closest point. It shares a boundary of approximately 79m with the Application Site, and is designated for possible culm grassland.

2.140. The Application Site is ecologically connected with the UWS given the close proximity of the two sites. The sites are also hydrologically connected through potential movement of ground and surface water.

2.141. As part of the development design, the closest PV panels have been kept 25m from the UWS. The qualifying habitat of the UWS is also screened from the Application Site by dense scrub within the UWS (see **Appendix 2A, Figure 2.2**, between target notes 46 and 49).

2.142. Each of the contaminants outlined in **Table 2-9** above has been considered and assessed for their potential occurrence during the different phases of development. For the reasons set out in relation to Hopworthy CWS above, it is concluded that the Proposed Development **will have no adverse effect** on the qualifying habitats of Monk's Farm UWS via a hydrological connection.

[33] Butterfly Conservation (2006) Re-connecting the Culm: A practical guide to managing Culm landscapes. Butterfly Conservation, Wareham, Dorset

2.143. Lighting on the UWS's qualifying feature will not be increased, and the current level of disturbance from nearby agricultural activities will be reduced during the operational phase.

2.144. As noted above, the Proposed Development will be subject to mandatory pollution prevention measures under the Control of Pollution Act 1974 (as amended)[34]. Together with the development design and implementation of appropriate measures outlined in the OCEMP (see **Technical Appendix 8: OCEMP** in **Volume 3** of this application), this will mean there will be **no significant adverse effects** upon Monk's Farm UWS.

Trelana UWS

2.145. Trelana UWS is located 11m south of the Field 5 at its closest point. It is designated for culm grassland. The Application Site is ecologically connected with the UWS given its proximity. The sites are also hydrologically connected through potential movement of ground and surface water.

2.146. The qualifying habitat of the UWS are separated from the Application Site by arable land and a farm track (see **Appendix 2A, Figure 2.2** southwest of target note 84). As part of the design, the closest PV panels have been kept 35m from the UWS.

2.147. For the reasons set out in relation to Hopworthy CWS above, it is concluded that the Proposed Development **will have no adverse effect** on the qualifying habitats of Trelana UWS via a hydrological connection. Lighting on the UWS's qualifying feature will not be increased, and disturbance from nearby agricultural activities will be reduced during the operational phase.

2.148. The Proposed Development will be subject to mandatory pollution prevention measures under the Control of Pollution Act 1974 (as amended)[35]. Due to the above, the development design and the implementation of appropriate measures outlined in the OCEMP (see **Technical Appendix 8: OCEMP** in **Volume 3**), there will be **no significant adverse effects** upon Trelana UWS.

Derril Fields UWS

2.149. Derril Fields UWS is located 53m north of Field 12 at its closest point. It is designated for broadleaved woodland and possible culm grassland.

2.150. The UWS is ecologically connected to the Application Site by intervening woodland that is continuous with the broadleaved woodland of the UWS. However, no hydrological connection is expected. This is because the Application Site drains northeast towards Derril Water, and the watercourses providing this drainage on the Application Site's northern boundary do not pass any closer to the UWS.

[34] https://www.legislation.gov.uk/ukpga/1974/40/part/III/crossheading/construction-sites
[35] https://www.legislation.gov.uk/ukpga/1974/40/part/III/crossheading/construction-sites

2.151. A 10m buffer from the intervening woodland has been applied as part of the Proposed Development design (i.e. not as mitigation). The Proposed Development will also be subject to mandatory pollution prevention measures under the Control of Pollution Act 1974 (as amended)[36]. It is considered that any impacts on the UWS woodland via dust and airborne chemical pollution will be negligible at the observed distance of 53m. Aerial imagery suggests the closest possible culm grassland is located 55m from the Application Site, and further screened from the Application Site by the woodland. Impacts on this qualifying feature will thus be even lower.

2.152. The current level of noise pollution from nearby agricultural activities is considered to be low to negligible at the observed distances of 53m and above. Such pollution and disturbance is expected to be similarly low during the construction phase, and will be reduced further during the operational phase. Lighting on the UWS's qualifying feature will not be increased.

2.153. Considering the development design, mandatory pollution control and the implementation of appropriate measures outlined in the OCEMP (see **Technical Appendix 8: OCEMP** in **Volume 3** of this application), there will be **no adverse effects** upon Derril Fields UWS.

West Yeomadon UWS

2.154. West Yeomadon UWS is located 0.19km southeast of the Application Site at its closest point. It is designated for culm grassland.

2.155. West Yeomadon UWS is hydrologically connected to the site via Derril Water, which flows alongside the UWS approximately 0.4km downstream of the Application Site. However, no solely ecological connection exists. This is because the qualifying habitat of West Yeomadon UWS is some distance from the Application Site and not continuously connected to the culm grassland within the Application Site.

2.156. For the reasons set out in relation to Hopworthy CWS above, it is concluded that the Proposed Development will have no adverse effect on the qualifying habitats of West Yeomadon UWS via a hydrological connection. As this is the only connection that exists between the UWS and the Application Site, there will be **no adverse effects** upon West Yeomadon UWS as a result.

Recommended Mitigation and Enhancement Measures

Brendon and Vealand Fen SSSI

2.157. All excavations are to be covered or closed off securely at the end of each working day to prevent the accidental trapping of commuting otters.

[36] https://www.legislation.gov.uk/ukpga/1974/40/part/III/crossheading/construction-sites

2.158. Although not relied on as mitigation, the 5m drainage ditch and 10m watercourse buffer zones adopted for the Proposed Development during project design will be clearly demarcated on site.

Derril Water 2 UWS

2.159. As a precaution, security fence installation within 5m of Derril Water 2 UWS will be supervised by a suitably experienced Ecological Clerk of Works ("ECoW"). Excavations connected with fence installation in this area will ensure that the material excavated is removed carefully, stored immediately adjacent to the fence installation trench (i.e. outside the UWS), and carefully laid back either side of the fence to fill the trench as soon as possible.

2.160. The creation of new tree, hedgerow and species-rich grassland planting (see **Appendix 2.3: Biodiversity Management Plan**) will strengthen the green infrastructure connected to Derril Water 2 UWS. It will also strengthen the ecological connectivity of non-statutory designated sites including Lower Hopworthy CWS, Monk's Farm UWS, Trelana UWS and Derrill Fields UWS. This accords with Policies ST03, ST14 and DM09 of the North Devon and Torridge Local Plan 2011 – 2031.

2.161. As noted above, standard best practice pollution prevention measures will be adhered to in order to reduce any potential impacts on ecology during the construction phase.

Residual Effects

2.162. With the implementation of the above mitigation measures and the ecological enhancements designed as part of the Proposed Development (see **Appendix 2.3: Biodiversity Management Plan**), adverse effects will be minimised, counterbalanced and/or outweighed by beneficial effects. It is therefore considered that, overall, Brendon and Vealand Fen SSSI will experience **no adverse effects** as a result of the Proposed Development and Derril Water 2 UWS will experience **beneficial effects**.

2.163. Through the strengthening of green infrastructure linkages via the proposed enhancements detailed in the BMP, the Proposed Development will lead to **beneficial effects** on the other non-statutory sites ecologically connected to the Application Site.

Habitats

In the Absence of Mitigation

2.164. The construction of the Proposed Development will occur over land which has been identified primarily as arable habitat. This habitat is generally of low ecological value and currently offers limited potential to support wildlife. Only arable land, fence, improved and poor semi-improved grassland are present under the proposed solar panels.

2.165. Proposed fencing and access tracks will also cross these habitats plus six dry ditches, 10 wet ditches (running water), 11 native species-rich hedges with trees and 10 intact native species-rich hedges. Some or all of these hedges may be classified as 'Important' under the Hedgerows Regulations 1997[37]. Breaks of circa 1.5m, totalling 29 breaks across these 21 hedges, will be created where needed. However, fences will be microsited to reduce disturbance, and any existing gaps will be used where possible.

2.166. A total of 3.4m species-rich hedge (from a single hedge) and 5.85m of species-rich hedge with trees (from two hedges) will be removed to create road access. A single section of 40.5m of species-rich hedge will require removal to improve visibility along the road. Construction will not involve the removal of any other trees or sections of hedgerow.

2.167. The relatively minor extent of habitat loss in a local context where these habitats are frequent is **not considered to be significant** in terms of the Application Site's intrinsic habitat interest.

2.168. As part of the design proposals (rather than as ecological mitigation), hedgerow sections lost will be replaced with new native species-rich hedges. **Figure 1.14 of Technical Appendix 1** shows the location of the proposed planting. However, in the absence of mitigation, the hedgerow breaks will still constitute loss of small amounts of a Priority habitat. This will lead to effects of **low to negligible spatial** and **medium-term temporal** magnitude, i.e. negligible to minor and **not significant** effects. These magnitudes have been assigned because the loss of hedgerow length will be much less than 10% and, although the new hedges will provide biodiversity benefits in the long term, it will be a number of years until they attain the value of the existing hedges.

2.169. The Proposed Development will be designed in such a way to avoid significant losses of agricultural land during the operational stage, with a circa 5% ground level footprint typical. Agriculture can continue on the other 95% of the land.

2.170. The main habitat loss will occur under the Proposed Development footprint in regard to structures such as access tracks, cable trenches and hardstanding for buildings and inverters. Solar panels will be mounted on frames which will be pile driven into the ground in a similar way to fence posts, therefore limiting soil disturbance. The site can be fully restored upon the cessation of the solar farm.

2.171. Impacts on culm grassland (marshy grassland) are assessed above in relation to designated sites. Small areas of this Priority habitat are also present within the Application Site beyond the non-statutory designated sites identified. However, impacts on these as a result of the Proposed Development are considered to be negligible.

2.172. Himalayan balsam, an invasive non-native plant species, is present within the Application Site as scattered individual plants adjacent to Derril Water. These plants will be removed by a specialist invasive species management contractor prior to the construction phase. The

[37] Available at https://www.legislation.gov.uk/uksi/1997/1160/contents/made

eradication zone will be marked off clearly as an exclusion zone. The watercourse along which the Himalayan balsam is found has been buffered by 10m as part of development design. As a consequence, no development will take place in the area where the species is present. The movement of construction personnel and vehicles will also be prohibited within this buffer along Derril Water. This will prevent the spread of Himalayan balsam propagules from the soil.

2.173. This will avoid an offence the Wildlife & Countryside Act 1981 (as amended)[38], which prohibits the spread of these species in the wild. This measure does not therefore constitute mitigation. By encouraging floristic diversity through the removal of a potential dominant non-native species, the Proposed Development will lead to ecological enhancement of the habitats along Derril Water.

2.174. With the implementation of the **Biodiversity Management Plan** ("BMP"; **Appendix 2.3**), where new habitats will be created using native species appropriate to the Application Site, biodiversity value will increase. This is in line with Policy DM08 of the North Devon and Torridge Local Plan.

2.175. It is therefore considered that the loss of habitat from the Proposed Development **will not be significant**.

Recommended Enhancement Measures

2.176. The proposed wildlife enhancements designed into the Proposed Development (see **Appendix 2.3: Biodiversity Management Plan**) include the following habitat measures:

- Eradication of invasive non-native Himalayan balsam;
- Creation of new species-rich grassland, hedgerows, scrub and trees;
- Creation of habitat interest features for protected species (e.g., herptile hibernacula and dormouse boxes; see below).

Residual Effects

2.177. With the implementation of the Proposed Development's design measures, best practice measures implemented during the construction phase, and the habitat management outlined, there will be **beneficial effects** on habitats.

2.178. With the correct management in place during the 40-year lifespan of the Proposed Development, the potential of the Application Site to support wildlife is likely to be increased. The supporting **BMP** (see **Appendix 2.3**) outlines the management proposals to enhance the Application Site's ecological value and therefore increase its potential to support local wildlife.

[38] https://www.legislation.gov.uk/ukpga/1981/69/schedules

With the implementation of these proposed enhancement measures, it is anticipated there will be a **net gain for biodiversity**, in line with Policy DM08 of the North Devon and Torridge Local Plan (See **Appendix 2.2** of this report)

Protected and Notable Species

In the Absence of Mitigation

2.179. The sections below detail the potential impacts and effects in the absence of mitigation for protected and notable species during the construction phase (approximately six months) and operational phase (40 years) of the Proposed Development.

2.180. In accordance with CIEEM guidelines[39], the duration of disturbance during construction is considered to be **short term** for the species groups below (except invertebrates). All groups except invertebrates live for several years in the UK. However, it is noted that short-term impacts can lead to long-term effects if e.g. they cause breeding failure in a given year. Invertebrates are assessed in line with their specific life history characteristics.

Otter

2.181. The presence of otter was confirmed along Derril Water during the site visit with a fresh spraint found beneath the road bridge (TN42). This small river was found to offer numerous potential holt sites along the banks of the river, within undercut banks and around exposed root buttresses. For much of its length, bankside vegetation (particularly dense scrub) also offers suitable habitat for couches. The meandering nature of the river also means that deeper pools are likely to be present, and together with nearby ponds (including man-made fish stocked lakes) these provide optimal foraging opportunities.

2.182. Of the natural watercourses within the Application Site, only one in the south (TN101) was assessed as offering suitable habitat for otter, due to having sufficient water depth to provide cover and forging opportunities. The remainder were assessed as sub-optimal for this species, being too shallow. However, these tributaries could provide potential dispersal routes between Derril Water and other watercourses / catchments, being well-protected in steep gullies and lined with either woodland or scattered trees and scrub.

Badger

2.183. The Application Site falls within a Badger Cull Zone, with all landowners taking part[40]. Badger activity is therefore much lower than would otherwise be expected for a site of this size and

[39] CIEEM (2019) Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Costal and Marine. Version 1.1.

[40] Landowner, personal communication during extended Phase 1 habitat survey

nature in Devon. Limited signs of recent Badger activity were noted within the ESA in the form of a single sett entrance, recorded along the southern boundary at TN105 (see **Appendix 2A, Figure 2.2**). This outlier sett showed signs of current / recent use. The majority of the site offers suitable foraging habitat for this species. All the hedgebanks and woodland areas (where not waterlogged) are considered suitable for sett-building.

2.184. As part the Proposed Development design, a 30m buffer zone has been incorporated around the badger sett. The buffer zone will be clearly demarcated on site and tool box talks will be given to all construction staff to ensure works and workers avoid this area. Hand digging will be permitted over 10m from setts and light machinery use permitted over 20m from setts, although these are not foreseen to be needed. Any works ultimately required within the 10m to 30m zone will only take place using handheld tools, avoiding significant ground disturbance.

2.185. The fencing used at the Proposed Solar Farm will have 10cm gaps at the bottom to allow continued potential for badger movement (see **Figure 9 of Volume 2: Planning Application Drawings**). Badgers will usually dig a shallow scrape into the ground beneath such gaps to allow easier access at key points on their commuting routes. This will prevent the Proposed Development affecting access to foraging areas within the Application Site that are part of a clan's territory. This measure has been designed into the development, and therefore is not relied upon as mitigation.

2.186. If any badger setts have been excavated since the surveys, the construction phase of the Proposed Development has the potential to impact upon badger by causing disturbance or destruction to a badger sett. During the construction phase, the Proposed Development can also cause undue stress to badgers if these animals are accidently trapped within any exposed excavations left overnight.

2.187. In the absence of mitigation, badger **may be significantly affected** by the Proposed Development. The loss of any newly-created sett would be classed as of **moderate to high spatial** and **long-term temporal** magnitude.

Dormouse

2.188. All hedges within the Application Site, together with areas of dense scrub (willow carr) and woodland both within and immediately adjacent to the Application Site, were considered suitable for hazel dormice. These habitats offer good arboreal connectivity and a variety of food and nesting resources.

2.189. As part of design measures, with the effect of avoiding impacts on dormice, all hedgerows within and adjacent to the Application Site will be retained and buffered from development by 5m, with the exception of small breaks of up to 1.5m for fencing and four hedgerow breaks for road access and visibility. A 10m buffer has been applied to all suitable woodlands, with the exception of one area on the west of target note 103 (see **Appendix 2A, Figure 2.2** and

Appendix 2.1: Extended Phase 1 Habitat Survey Report). However, in this area the fence will follow an existing fence line. No removal of woodland will therefore be required.

2.190. The only suitable dormouse habitats that will be affected directly during works are the intact species-rich hedgerows and the hedgerows with trees where breaks are proposed. The extent of potential dormouse habitat to be lost temporarily to the Proposed Development (a total of circa 93.25m across 25 hedgerows) is minor. Of these gaps, 29 will be at most 1.5m wide, with a metal fence in the centre that can be climbed by dormice. The design is therefore unlikely to deter dormice from crossing the gap. A restoration plan will also be agreed for the end of the Proposed Development's 40-year lifespan.

2.191. The three gaps for road access will be between 2.5m and 3.4m in width, causing some minor fragmentation. The final gap relates to 40.5m of hedgerow removed for visibility purposes along the main road. The presence of the road adjacent to these hedgerows decreases the likelihood that they are currently occupied by dormice. As part of the design proposals (rather than as ecological mitigation), all hedgerow sections lost will be replaced with new native species-rich hedges.

2.192. Given the potential presence of dormice, there is potential for lighting used during construction to disturb the species. However, it is anticipated that there will be minimal need for construction lighting (if any), as the vast majority of works will be undertaken in daylight. During the winter months, some construction lighting may be needed. However, dormice are in hibernation, and therefore deep within winter nests in vegetation and less likely to be disturbed, during this period.

2.193. The completed development will only feature emergency lighting and motion-sensitive security lighting. This will be directed to where it is needed and will only operate when triggered due to an emergency (i.e., the Application Site will be unlit for the majority of the time). Light spillage on potential dormouse habitats within and adjacent to the Application Site will therefore be negligible.

2.194. Through the removal of agricultural machinery and chemical crop treatments, the operational phase will lead to a decrease in disturbance below current levels. The implementation of the supporting BMP (Appendix 2.3) and LEMP (Figure 1.14 of Technical Appendix 1), including measures to plant new dormouse habitat, erect dormouse nest boxes and increase the diversity of flora species including dormouse foodplants within the Application Site, will lead to **positive** effects on dormice. These measures are not provided by way of mitigation, but as an integral part of the Proposed Development design.

2.195. However, in the absence of mitigation, any dormice using the hedgerows could be injured or killed during the construction phase. Any dormice using the woodland on the west of target note 103 may also be disturbed by noise, dust and vibration during construction. At worst, these combined impacts would lead to a **significant adverse** effect of **low to moderate** spatial and **medium temporal** magnitude (5 to 15 years) upon any dormouse population using the Application Site.

Bats

2.196. The Application Site contains no built structures suitable for roosting bats. Numerous mature trees were recorded within hedges, along tree-lines (particularly those along the Derril Water and its stream tributaries) and throughout the woodlands surrounding the Application Site. Many of these trees contain potential roosting features for bats. The Application Site offers a number of optimal habitats for commuting and foraging bats overall, with good habitat connectivity both within the site and linking it to adjacent areas. Key habitat features include hedges, tree-lined stream corridors, woodlands and woodland edges, the flowing water of Derril Water and the marshy grassland/wet woodland mosaic along this.

2.197. Many species of bat in England commute and forage along linear features, such as a stream/river, hedgerow or woodland edge. However, on occasion they will cross open features (particularly true of species such as Leisler's bat (*Nyctalus leisleri*) that use strong echolocation).

2.198. It is noted that the arable land is a sub-optimal commuting and foraging feature for most bat species. Arable land offers sub-optimal foraging habitat for bat species due to limited prey abundance. The loss of this habitat under the Proposed Development footprint will not lead to a significant reduction in foraging habitat for local bats.

2.199. A minor loss of more suitable foraging/commuting habitat is predicted from the construction of the Proposed Development, being limited to breaks totalling circa 93.25m across 25 hedgerows. The proposed fencing will also pass across 10 existing wet drainage ditches, but without causing any loss of this foraging habitat for bats. It can be concluded that no significant fragmentation of habitats will occur; the fencing could disrupt commuting routes along these, but the proposed fence height of 2.0m is unlikely to cause significant disruption. No trees with bat roosting potential will be lost.

2.200. Given the likely presence of foraging and commuting bats, there is potential for lighting used during construction to disturb bats. However, it is anticipated that there will be minimal need for construction lighting (if any), as the vast majority of works will be undertaken in daylight. During the winter months, some construction lighting may be needed, but bats are generally in hibernation during this period.

2.201. The completed development will only feature emergency lighting and motion-sensitive security lighting. This will be directed to where it is needed and will only operate when triggered due to an emergency (i.e., the Application Site will be unlit for the majority of the time). Light spillage on bat habitats within and adjacent to the Application Site will therefore be negligible.

2.202. Through the removal of agricultural machinery and chemical crop treatments, the operational phase will lead to a decrease in disturbance below current levels. With the implementation of the supporting BMP (**Appendix 2.3**) and LEMP (**Figure 1.14 of Technical Appendix 1**), which outline measures to increase the diversity of flora species within the Application Site, faunal

diversity including prey species for foraging bats will also increase. Please note these measures are not provided by way of mitigation, but instead as an integral part of the design of the Proposed Development.

2.203. It is therefore considered that the Proposed Development will have a **positive effect** on bats, including the Devon Priority species greater horseshoe bat (if present in the area), post-construction.

Other Mammals

2.204. The Application Site offers suitable sheltering / foraging habitat for hedgehog in the form of hedgerows, woodland and dense scrub. The site also offers suitable arable and grassland habitat for brown hare. This was corroborated by an incidental sighting of a hare disturbed from its form near to Monks Farm. In addition, the Application Site offers suitable habitat for harvest mouse. This species favours long, tussocky grassland, hedgerows, farmland and woodland edges.

2.205. Hedgehog, brown hare and harvest mouse are UK and England Priority species[41]. Brown hare is also a Devon Priority species.

2.206. No signs of water vole were noted. The agricultural drainage ditches within the site are considered to offer at best limited opportunities for these species. **No significant effect** upon water vole is predicted.

2.207. No evidence of other protected or Priority mammals was noted. It is expected that the site supports an assemblage of common small mammal species.

2.208. There will be negligible loss and fragmentation to the arable, grassland, woodland and hedgerow habitats. Impacts on hedgehog, brown hare and harvest mouse are therefore likely to be limited to dust, noise and vibration disturbance during the construction phase of the Proposed Development.

2.209. However, the current baseline includes periodic disturbance of a smaller but not incomparable magnitude from agricultural activities several times a year. The limited human disturbance during the operational phase (constituting activities such as security checks and habitat management operations) will be an improvement on the current situation for these three species.

2.210. Fencing used at the Proposed Development Site will contain 10cm gaps at the bottom to allow continued hare, hedgehog and harvest mouse movement (see **Figure 9 of Volume 2: Planning Application Drawings**). This will prevent the Proposed Development affecting access to foraging areas within the Application Site. This measure has been designed into the development, and therefore is not relied upon as mitigation.

[41] See https://hub.jncc.gov.uk/assets/98fb6dab-13ae-470d-884b-7816afce42d4

2.211. **No significant effects** are anticipated upon brown hare or harvest mouse in the absence of mitigation.

2.212. Habitats will be significantly enhanced for hedgehog and common small mammals by the creation of new hedgerows, species-rich grassland and scrub as part of the proposed BMP (**Appendix 2.3: Biodiversity Management Plan**).

2.213. **Positive effects** are anticipated for hedgehog in the absence of mitigation.

Herptiles

2.214. It is considered that great crested newt (GCN) is likely to be absent from the Application Site and therefore **will not be subject to adverse effects** (see **Appendix 2.3** for further information).

2.215. Suitable aquatic habitat for other amphibians within the ESA includes the small number of ponds and areas of slow-moving water within field drains. Hedges, marsh / grassland mosaics, scrub and woodland habitats present within the site all offer suitable terrestrial habitat for amphibians.

2.216. Much of the site is considered unsuitable for reptiles due to being intensively managed for cattle grazing and silage, with many of the fields regularly cultivated up to the base of the surrounding hedges. The majority of hedges were also noted to be fairly heavily shaded by mature / dense shrubs, and provide limited opportunities for basking. However, small pockets of suitable habitat were noted, including some hedge margins, marshy grassland alongside Derril Water, areas of recolonising ground and an overgrown / silted-up pond. Due to the damp nature of many of these, these are considered most suitable for grass snake and slow-worm.

2.217. No development will occur in the majority of these habitats. However, the removal of hedgerow sections at any time of year could lead to disturbance, injury or mortality of sheltering herptiles. Any herptiles using ditches crossed by the proposed access track and/or fencing may also be disturbed by construction activities. In the absence of mitigation, adverse effects of **low** spatial and **medium-term** temporal magnitude could occur on common herptile species. However, according to the latest report on the status of Devon's wildlife, common amphibians and reptiles are faring well[42]. The effect foreseen is therefore considered **not significant**.

2.218. The operational phase would, however, lead to reduced disturbance when compared with the baseline level. The proposed enhancements (see **Appendix 2.3**) would also lead to **significant gains** due to the creation of new species-rich grassland and scrub, new tree planting and herptile hibernacula, leading to increased prey abundance and shelter opportunities within the Application Site.

[42] Natural Devon (2014) State of Devon's Nature 2013. Available at: https://www.naturaldevon.org.uk/wp-content/uploads/2013/01/State-of-Devons-Nature-Long-Report-2013.pdf

Birds

2.219. Main impacts on bird species from developments include:

- Direct loss or deterioration of habitats;
- Indirect habitat loss as a result of displacement by disturbance.

2.220. Breeding birds are highly susceptible to disturbance. The trees and hedgerows within the Application Site are likely to support a variety of common nesting birds during the breeding season, as are the adjacent woodland areas. This assemblage is likely also to include farmland birds of conservation concern. Buildings adjacent to the Application Site offer suitable opportunities for species such as the Devon Priority species barn owl (also listed on Wildlife & Countryside Act 1981 (as amended) Schedule 1[43]) and house sparrow.

2.221. The constructive phase may therefore have a temporary adverse impact on breeding birds within and adjacent to the Application Site. This would result in an effect of **low** spatial and **medium-term** temporal magnitude. The effect may continue beyond a single bird generation, but is expected to be sufficiently small for the local population to recover relatively soon. This effect would be **not significant** for the commoner species, but could be **significant** for Priority species and birds of conservation concern.

2.222. The Proposed Development is to be constructed on land that is subject to a level of disturbance from current agricultural activities. However, in the absence of mitigation there is **potential for significant effects** on breeding birds if construction works are undertaken between the months of March and August inclusive.

2.223. Post construction, it is considered that the implementation of the BMP will increase the ecological value of the Application Site for birds. Disturbance during the operational phase is likely to be lower than the level currently experienced from crop treatments, and from noise and physical disturbance from agricultural machinery. Given this, **positive effects** are anticipated for these species during the operational phase.

Invertebrates

2.224. The vast majority of the Application Site (arable grass ley / improved grassland) is considered to be of very limited value to invertebrates as it is species-poor, with high levels of herbicide and fertilizer inputs. However, hedges, tree-lines, marshy grassland adjacent to Derril Water, and areas of semi-natural broadleaved and wet woodland are all considered likely to support a more diverse invertebrate assemblage. In addition, together with the scattered network of ponds in the area, Derril Water and its stream tributaries are also likely to support a good assemblage of aquatic invertebrates.

[43] See https://www.legislation.gov.uk/ukpga/1981/69/schedule/1

2.225. Impacts on these species are likely to be limited to dust and other pollution emitted during the construction phase of the Proposed Development. However, the current baseline includes periodic disturbance of a smaller but not incomparable magnitude from agricultural activities several times a year. **No significant effect** is anticipated during the construction phase.

2.226. Habitats will be significantly enhanced for invertebrates by new hedgerow, species-rich grassland, scrub and tree planting as part of the proposed BMP (**Appendix 2.3: Biodiversity Management Plan**).

2.227. Overall, these species are deemed likely to experience **significant positive effects** in the absence of mitigation.

Mitigation and Enhancement Measures and Further Survey

Otter

2.228. Use of the Application Site by otter is likely to be restricted to commuting. This will generally be restricted to well-vegetated habitat corridors such as Derril Water. However, there is potential for any otters using the site during the construction phase to become trapped in trenches excavated during works. In line with construction best practice, all excavations during the construction phase of the Proposed Development will be covered securely; this will therefore prevent the accidental trapping of otters.

2.229. Standard best practice measures in regard to pollution prevention (as identified above and in **Technical Appendix 8: Outline Construction Environmental Management Plan**) will be implemented to prevent contamination of the aquatic environment during the construction phase of the Proposed Development.

2.230. With the above in place, there will be **no significant adverse effects** on otter from the Proposed Development.

Dormouse

2.231. To avoid impacts on dormice, a non-licensed method statement will be devised prior to, and followed during, construction. This will be based around vegetation removal undertaken at appropriate times under the direct supervision of a licensed on-site ecologist. An ecologist will also supervise the proposed fencing work in the woodland west of target note 103 (see above and **Appendix 2A, Figure 2.2**).

2.232. The removal of sections of hedgerow should ideally be undertaken between April and October (i.e. outside the hibernation period). Clearance will use hand tools only. In the event any clearance is required between November and March inclusive, the woody plants in the section proposed for removal should be cut down to stump height. From April onwards, any remaining stumps should be grubbed out.

2.233. In the event that any sign of dormice is found during works, construction should stop and an ecologist be contacted for advice (if not already present). Further mitigation for dormice will then involve Natural England European Protected Species licensing, restricted timings for vegetation clearance under supervision, and suitable native planting within the landscape design. A license must be gained before any further works with the potential to affect dormice can be undertaken.

2.234. As an enhancement, native species planting will include the favoured dormouse plants hazel and honeysuckle (see **Figure 1.14, Technical Appendix 1: Landscape and Visual Impact Appraisal** and **Appendix 2.3: Biodiversity Management Plan**). During the operational phase, the Application Site will also be subject to less disturbance due to the ceasing of the current agricultural activities. These factors will increase the potential of the site to support dormice.

2.235. With the above mitigation, the presence of the buffer zones designed into the project and the proposed habitat enhancements, dormouse is likely to experience **minor positive effects** overall.

Badger

2.236. Given that badger is a highly mobile species and may be present within the Application Site, it is recommended that a pre-construction badger survey is undertaken to assess the presence of badger immediately before construction. Any necessary mitigation will then be designed in accordance with relevant ecological guidance and legislative requirements.

2.237. During the construction process, all dug ground should be levelled and compacted wherever possible. All excavations are to be covered or closed off securely at the end of each working day to prevent the accidental trapping of badgers.

2.238. Enhancements designed into the Proposed Development (see **Appendix 2.3: Biodiversity Management Plan**) include the following measure for badgers:

- Creation of new scrub and tree planting, providing new sett-building habitat;
- Fruit trees within this planting to provide additional badger foraging resources in autumn.

Bats

2.239. It is not proposed that any trees with bat roost potential ("BRP") will be removed at the Application Site. If any mature tree ultimately requires removal, it will need to be surveyed for BRP prior to removal. In line with Bat Conservation Trust guidelines[44], further surveys will be required should this BRP check determine the tree to be of medium or high bat roosting

[44] Collins, J. (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines. 3rd edition. Bat Conservation Trust, London.

potential. Soft felling techniques will be used if low potential exists to ensure that no cavities are cut through, and branches or trunk pieces with cavities are lowered carefully to the ground and left with the access hole upward facing over night to allow any bats to leave.

2.240. The enhancements designed into the Proposed Development (see **Appendix 2.3: Biodiversity Management Plan**) include the following measures for bats:

- Installation of bat boxes on retained trees of suitable size and location (including designs suitable for locally-present bat species identified by the desk study);
- Creation of new hedgerows, species-rich grassland, scrub and tree planting, providing new bat foraging opportunities;
- Measures to increase invertebrate numbers, increasing potential bat prey availability.

Other Mammals

2.241. No further survey is considered necessary in connection with other mammal species.

2.242. Although not relied on as mitigation, a 10cm gap will be included at the bottom of all boundary fencing to allow the free movement of any small mammal in, out of and within the Application Site.

2.243. The enhancements designed into the Proposed Development (see **Appendix 2.3: Biodiversity Management Plan**) include the following measures for hedgehog:

- Creation of new hedgerow, species-rich grassland and scrub habitat;
- Provision of hedgehog houses;
- Measures to increase invertebrate numbers, increasing potential hedgehog prey availability.

Herptiles

2.244. No further surveys are needed for herptile species. However, any strimming or other removal of vegetation during the herptile active season (March to September) should be carried out in phases, towards retained habitat. The initial phase should involve cutting the vegetation to a height of 150mm, followed by a second phase of cutting down to ground level if necessary. This method allows any reptiles or amphibians present to move out of the area ahead of works.

2.245. Where sections of hedgerow are to be removed, this should occur in suitable weather conditions, ideally using hand tools and during the herptile active season (see **Table 2-11**). If

the work needs to occur between October and February, dismantling/removal will be overseen by a suitably qualified and experienced Ecological Clerk of Works ("ECoW").

2.246. Any amphibians or reptiles found should be moved carefully by an ecologist to suitable retained habitat in the vicinity or, if already present, to one of the herptile hibernacula to be created within the Application Site (see **Appendix 2.3: Biodiversity Management Plan** and **Figure 1.14 of Volume 3, Technical Appendix 1**).

2.247. Enhancements designed into the Proposed Development include the following measures for herptiles:

- Creation of new hedgerow, species-rich grassland and scrub over existing arable habitat, providing new shelter and foraging resources;
- Creation of herptile hibernacula;
- Measures to increase invertebrate numbers, increasing potential herptile prey availability.

Birds

2.248. Breeding birds are highly susceptible to disturbance. As the constructive phase may have a significant impact on breeding birds within and adjacent to the Application Site, mitigation measures have been recommended to ensure that no significant impacts occur.

2.249. Where works are to commence during the breeding season (March to August inclusive), pre-commencement checks of possible nesting sites should be undertaken by a suitably experienced ecologist prior to works commencing. An appropriate buffer zone must be established around nesting birds until the young have fully fledged.

2.250. Proposed enhancements (see **Appendix 2.3: Biodiversity Management Plan**) include the following measures for birds:

- Planting of new hedgerows, species-rich grassland, scrub and trees, providing new nesting and foraging resources;
- Measures to increase invertebrate numbers, increasing potential prey availability for insectivorous birds;
- Erection of bird boxes, including a design suitable for the Devon Priority species house sparrow.

Invertebrates

2.251. No further survey or mitigation is considered necessary in connection with invertebrates.

2.252. The enhancements designed into the Proposed Development (see **Appendix 2.3: Biodiversity Management Plan**) include the following measures benefitting invertebrates:

- Planting of new hedgerows, species-rich grassland, scrub and trees, increasing invertebrate habitat interest;
- Provision of invertebrate boxes/hotels;
- Creation of bee banks;
- Creation of herptile hibernacula, doubling as a dead wood resource for saproxylic invertebrates.

Residual Effects

2.253. With the implementation of pre-commencement surveys and the proposed mitigation measures, it is considered that there will be **no significant negative effects** upon protected or notable species during the construction phase. The BMP and LEMP propose a number of habitat creation and enhancement measures centred around new hedgerows, species-rich grassland, tree and scrub planting, herptile hibernacula and bird and bat boxes. With the implementation of these, **the potential of the Application Site to support local wildlife will increase** and the Proposed Development will lead to a significant **positive effect** on a number of protected species during the operational phase.

2.254. Residual effects on otters are considered **not to be significant**.

2.255. Residual effects upon dormice are envisaged to be **minor positive**.

2.256. Residual effects on badgers are considered to be **minor positive**.

2.257. Residual effects upon bats are envisaged to be **significant and positive**.

2.258. Residual effects on hedgehog and common small mammals are considered **significant and positive**.

2.259. Residual effects on other mammals including brown hares and harvest mice are considered **not to be significant.**

2.260. Residual effects upon herptiles are envisaged to be **significant and positive**.

2.261. Residual effects upon birds are considered to be **significant and positive**.

2.262. Residual effects upon invertebrates are considered to be **significant and positive**.

CUMULATIVE EFFECTS

2.263. As well as singular effects, cumulative effects also need to be considered. The Conservation of Habitats and Species Regulations 2017 state that any plan or project that may, either alone or in combination with other plans or projects, significantly affect an international designated site should be the subject of an Appropriate Assessment.

2.264. Cumulative impacts can be an issue when the Proposed Development has a small impact on international sites or other sensitive ecological receptors. If other proposals have a small impact, the combined result can have a significant impact on these features.

2.265. A search of the Torridge District Council and Cornwall Council online planning portals was undertaken to identify any projects or developments within 5km which could impact any international sites, sensitive habitats or protected/notable species, either alone or in combination with the Proposed Development. **Table 2-10** below shows the relevant developments.

Table 2-10 Developments for Cumulative Assessment

Application Reference Number	Name	Development	Status	Distance & Direction from the Site
Operational				
n/a	Pyworthy substation	Substation	Operational	0.08km east of Field 18
1/1318/2007/ FUL	Crinacott Farm	Wind Turbine (12m blade tip)	Operational	0.3km southeast of Field 20
1/0883/2012 1/0753/2015	Crinacott Farm/ Land West of Parsonage Farm (Crinacott extension)	Solar Farm	Operational	0.3km southeast of Field 20
1/0766/2013/ FUL	Tatson Farm	Wind Turbine (45m blade tip)	Operational	1.1km northwest of Field 10

1/0035/2011/FULM 1/1005/2015/FUL	Land At Bradford Manor Farm	Solar Farm	Operational	1.2km southwest of Field 2
1/0833/2012 1/0207/2017/FULM (Extension to operational life)	Pitworthy Farm Solar Park	Solar Farm	Operational	2.2km north, northwest of Field 12
1/0218/2011/FULM 1/1131/2020/FULM (Extension to operational life)	Great Knowle Farm Solar	Solar Farm	Operational Extension application under consideration	2.7km northeast of Field 16
1/0978/2012/FULM	Derriton Fields Solar Farm	Solar Farm	Operational	2.7km east of Field 16
1/0657/2013/FUL 1/1169/2016/FUL	East Balsdon Farm	Wind Turbine (77m blade tip)	Operational	1.3km southwest of Field 1
PA13/05242 PA15/09511	Hollafrench Farm	Wind Turbine (37m blade tip)	Operational	2.5km southeast of Field 27
PA14/07283	Haydon Farm	Wind Turbine (37m blade tip)	Operational	3.0km southwest of Field 1
Consented				
1/1107/2008/FUL	Yeomadon Farm	Wind Turbine (9m blade tip)	Consented	1km southeast of Field 27
1/0502/2015/FULM	Holladon Farm	Wind Turbine (57m blade tip)	Consented	1.7km north of Field 15

2.266. The residual effects of the Proposed Development are considered to be positive for habitats and the majority of protected and Priority species. **No significant cumulative adverse effect** would therefore occur for these ecological features as a result of the Proposed Development.

2.267. For the above cumulative developments, there are no potential impacts of any appreciable magnitude raised for designated sites connected to the Application Site. **No significant cumulative adverse effect** is therefore anticipated upon any nearby environmental designated site as a result of the Proposed Development.

2.268. Potential impacts on otters raised for the above cumulative developments were considered negligible. **No significant cumulative adverse effect** is therefore anticipated upon otters as a result of the Proposed Development.

2.269. Predicted impacts on brown hare, harvest mouse and other mammals (excluding badgers, bats and dormice, covered above) for these cumulative developments varied between negligible and positive. **No significant cumulative adverse effect** is therefore anticipated upon brown hare, harvest mouse or any other mammal as a result of the Proposed Development.

CONCLUSION

2.270. To minimise potential impacts on local wildlife, protective ecological measures have been incorporated into the Proposed Development as part of the iterative design process. These include buffers from potentially sensitive ecological receptors (see **Table 2-10** below). Standard best practice pollution prevention measures for the construction stage have also been outlined and considered as part of the impact assessment, prior to mitigation. These measures are also outlined within **Table 2-11**.

2.271. A total of 19 habitat types were noted during the extended phase 1 habitat survey undertaken in October 2020. The main impacts during the construction phase include the direct loss of habitat under the Proposed Development footprint and indirect loss of habitat due to noise and vibration disturbance, and dust and water pollution. The **loss of these primarily arable habitat areas is considered to be of negligible significance** to nature conservation interest within the local area.

2.272. The desk-based assessment identified three Special Areas of Conservation ("SACs") and no Special Protection Areas ("SPAs") no possible SACs ("pSACs"), potential SPAs ("pSPAs") or Ramsar Sites. There are three Sites of Special Scientific Interest ("SSSIs") and no National Nature Reserves ("NNRs") or Local Nature Reserves ("LNRs") within 5km of the Application Site. Thirty-three non-statutory designated environmental sites are present within 2km of the Application Site. Details of these designated sites have been provided and assessed above, as appropriate.

2.273. The only designated sites with connectivity to the Application Site are Brendon and Vealand Fen SSSI and the non-statutory sites Hopworthy County Wildlife Site ("CWS"), Lower Hopworthy CWS, Tinneymoor CWS, Tinney CWS, Derril Water 2 Unconfirmed Wildlife Site ("UWS"), Monk's Farm UWS, Trelana UWS, Derril Fields UWS and West Yeomadon UWS. With the implementation of the recommended measures, it has been determined that there will be **no significant adverse effects** on any designated nature conservation site as a result of the Proposed Development.

2.274. Himalayan balsam, an invasive non-native plant species, is present within the Application Site as scattered individual plants adjacent to Derril Water. These plants will be removed by a specialist invasive species management contractor prior to the construction phase, with repeated removal following during the operational phase to ensure full eradication. The eradication zone will be marked off clearly, and no development or personnel/vehicle movement will take place in the area where the species is present.

2.275. Recommendations for further survey work have been provided within this report as part of the relevant mitigation measures (please refer to **Table 2-11** below).

2.276. It is considered that the short-term disturbance resulting from the Proposed Development **will not be significant** if the recommended mitigation is undertaken. With the implementation

of pre-commencement surveys and the proposed mitigation measures, it is considered that there will be **no significant negative effects** upon protected or notable species during the construction phase. The BMP and LEMP propose a number of habitat creation and enhancement measures centred around new hedgerows, species-rich grassland, tree and scrub planting, log piles and bird, mammal and invertebrate houses/boxes. With the implementation of these, **the potential of the site to support local wildlife will increase** and the Proposed Development will lead to a **significant positive effect** on a number of protected or Priority species during the operational phase.

2.277. The Proposed Development conserves and enhances biodiversity, minimising impacts, providing **net gains** and strengthening existing and retained green infrastructure. This accords with national planning policy, and with Policies ST03, ST14, DM04, DM08 and DM09 of the North Devon and Torridge Local Plan.

Table 2-10: Integral Design Measures and Standard Best Practice

Receptor	Potential Development Impacts	Phase of Development	Measures Implemented
INTEGRAL DESIGN MEASURES			
Aquatic environment	Pollution	Construction	Avoidance of all surface water areas including ponding
Habitats	Pollution and destruction	Construction	Avoidance of hedgerows, watercourses/field drains, woodland, trees and culm grassland
Non-statutory designated sites	Pollution and damage	Construction	25m buffer between PV panels and Hopworthy CWS/Lower Hopworthy CWS/Monk's Farm UWS 35m buffer between PV panels and Trelana UWS 5m buffer between PV panels and Derril Water 2 UWS 10m buffer from woodland connected to Derril Fields UWS
Otter, statutory designated sites	Disturbance of otter potentially associated with Brendon and Vealand Fen SSSI	Construction	Avoidance of watercourses
Badger	Disturbance and destruction of badger sett	Construction	Avoidance of badger sett Hand digging permitted over 10m from setts and light handheld machinery use permitted over 20m from setts if needed
Badger, brown hare, hedgehog	Exclusion from foraging habitat	Operational	Fencing to have 10cm gap at base to allow free movement of badger through the site
STANDARD BEST PRACTICE MEASURES			

Habitats	Loss of floristic diversity through spread of invasive plants	Pre-construction	Removal of invasive Himalayan balsam by a specialist contractor Avoidance of eradication zones until removal complete
Aquatic environment	Pollution	Construction	Best practice pollution prevention measures implemented prior to and throughout the construction phase to prevent contaminants entering the aquatic environment
Badger, otter, statutory designated sites	Accidental trapping with excavations (could include otters associated with Brendon and Vealand Fen SSSI)	Construction	All excavations should be securely covered at the end of each working day

Table 2-11: Recommended Mitigation Measures

Receptor	Potential Development Impacts	Phase of Development	Measures Implemented
MITIGATION MEASURES			
Derril Water 2 UWS	Pollution and damage	Construction	Supervision of fence installation within 5m of Derril Water 2 UWS by Ecological Clerk of Works ("ECoW") Careful removal and storage (outside UWS) of excavated material connected with fence installation Careful laying back of material either side of fence to fill the trench as soon as possible
Culm grassland			
Dormouse	Disturbance, killing and injury, habitat disturbance/destruction and minor hedgerow loss	Construction	Implementation of non-licensed method statement Supervision of works to existing hedgerows and woodland by Ecological Clerk of Works

Badger	Destruction of badger setts	Pre-construction	Pre-commencement survey (Measures dependent on survey findings)
Bats	Habitat disturbance/destruction	Pre-construction	Bat Roost Potential survey of any tree to be removed (Measures dependent on survey findings)
Birds	Habitat disturbance/destruction of nesting habitat (Only if works are undertaken between March and August inclusive)	Pre-construction	Pre-construction nesting bird check (only if works are undertaken between March and August inclusive) (Measures dependent on survey findings)
Herptiles	Habitat disturbance/destruction and minor hedgerow loss	Construction	Any vegetation removal from March to September to be carried out directionally towards retained habitat, in two stages Careful removal of hedgerow performed with hand tools, only when air temperature is above 10°C, and not after long dry spells. Ecologist to be contacted if herptiles are found If the work needs to occur between October and February, dismantling/removal will be overseen by a suitably qualified and experienced Ecological Clerk of Works

APPENDICES

Appendix 2A – Figures

- Figure 2.1 – Statutory Environmental Designations
- Figure 2.2 – Habitat Map
- Figure 2.3 – Non-Statutory Environmental Designations

Appendix 2.1 – Extended Phase 1 Survey Report

Appendix 2.2 – Wildlife Trigger List

Appendix 2.3 – Biodiversity Management Plan

Appendix 2.4 – Net Gain Assessment

Appendix 2A: Figures

Derril Water Solar Farm
Statutory Environmental Designations
Figure 2.1

Key

- Site Boundary
- 5km Study Area
- 15km Study Area
- Site of Special Scientific Interest (SSSI)
- Special Area of Conservation (SAC)

Bristol Channel Approaches SAC

Culm Grasslands SAC

Brendon and Vealand Fen SSSI

Small Brook SSSI

Kingford Fen SSSI

Tintagel-Marsland-Clovelly Coast SAC

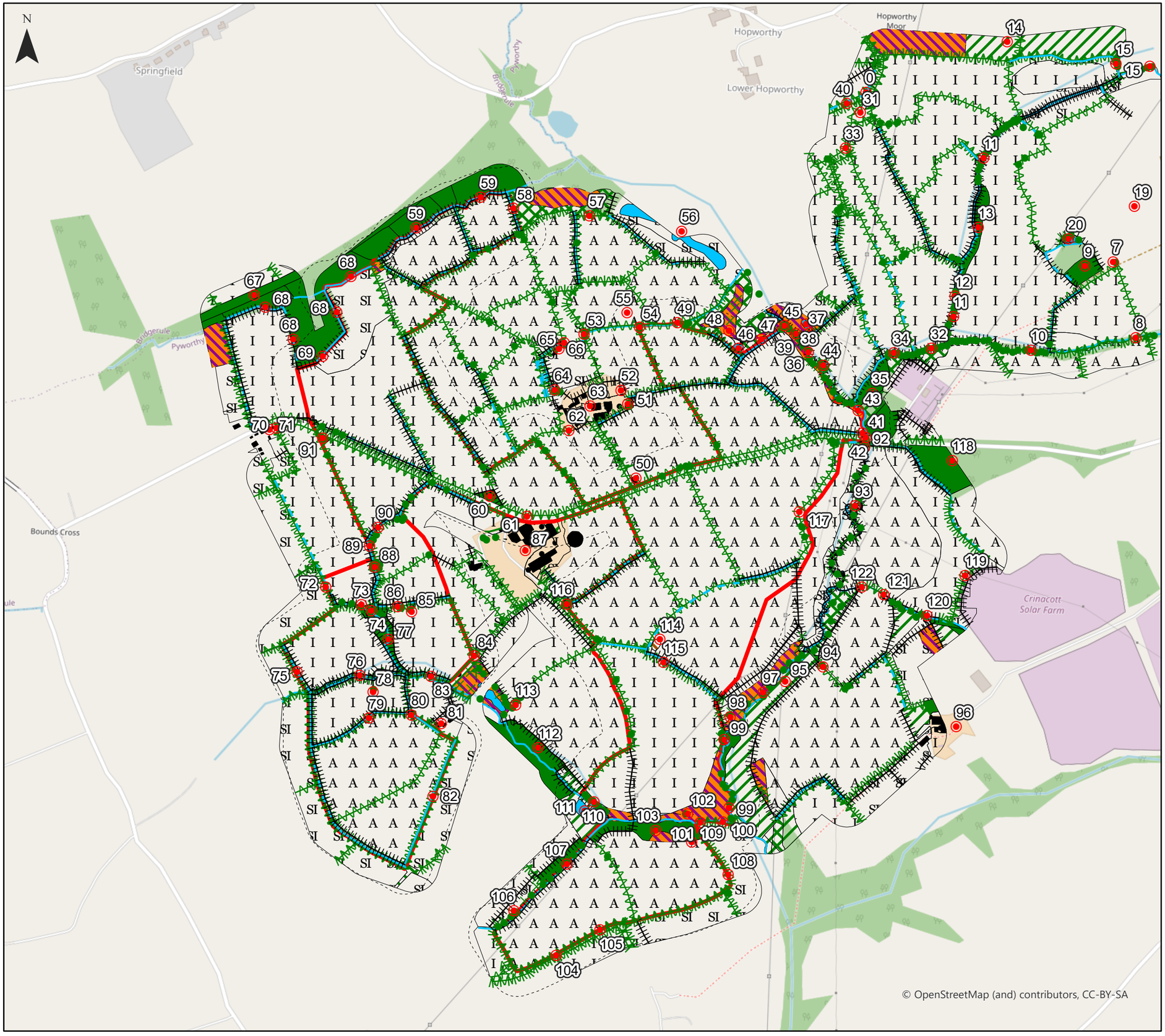
0 3.75 7.5 15 Kilometres

Neo Office Address:
Cinnamon House, Crab Lane, Warrington, WA2 0XP

Date: 28/01/2021
Drawn By: Daniel Flenley
Scale (A3): 1:125,000
Drawing No: NEO00738/0060I/A

neo ENVIRONMENTAL

Derril Water Solar Farm
Habitat Map
Figure 2.2

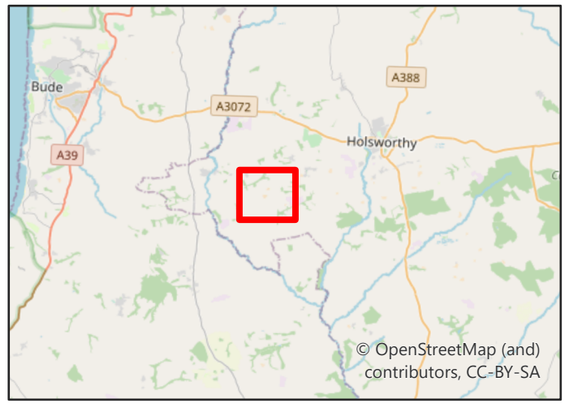


0 125 250 500 Metres

Key

- Development Boundary
- 50m Ecological Study Area
- Target Notes
- A3.1 Scattered Broadleaved Trees
- A2.2 Scrub (Scattered)
- G2 Running Water
- J2.1.1 Intact Hedge - Native Species-rich
- J2.1.2 Intact Hedge - Species-poor
- J2.3.1 Hedge with Trees - Native Species-rich
- J2.4 Fence
- J2.6 Dry Ditch
- A1.1.1 Broadleaved Semi-natural Woodland
- A1.1.2 Broadleaved Plantation Woodland
- A2.1 Dense Scrub
- B4 Improved Grassland
- B5 Marshy Grassland
- B6 Poor Semi-improved Grassland
- C3.1 Tall Ruderal
- G1 Standing Water
- J1.1 Arable
- J3.6 Buildings
- J4 Bare Ground

Neo Office Address:
Cinnamon House, Crab Lane, Warrington, WA2 0XP



Date: 01/03/2021
Drawn By: Daniel Flenley
Scale (A3): 1:7,500
Drawing No: NEO00738/0012I/D

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Derril Water Solar Farm
Non-statutory Environmental Designations
Figure 2.3

Key

- Site Boundary
- County Wildlife Site (CWS)
- Unconfirmed Wildlife Site (UWS)

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Date: 28/01/2021
Drawn By: Daniel Flenley
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Drawing No: NEO00738/0061I/A

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Appendix 2.1: Extended Phase 1 Habitat Survey Report

Derril Water Solar Farm

01/03/2021

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	Name	**Signature**
Approved By	Paul Neary	

Contents

INTRODUCTION

Background

2.1. Neo Environmental Ltd has been appointed by Renewable Energy Systems (RES) Ltd (the "Applicant") to complete a Phase 1 habitat survey for a proposed for a proposed 42MW solar farm and associated infrastructure (the "Proposed Development") on lands circa 1.2km southwest of the village of Pyworthy, Devon (the "Application Site").

2.2. Please see **Figure 4 of Volume 2: Planning Application Drawings** for the layout of the Proposed Development.

Development Description

2.3. The Proposed Development will consist of the construction of bi-facial solar photovoltaic (PV) panels mounted on metal frames, new access tracks, underground cabling, perimeter fencing with CCTV cameras and access gates, a temporary construction compound, substation and all ancillary grid infrastructure and associated works.

2.4. The Proposed Development will result in the production of clean energy from a renewable energy resource (daylight) and will also involve additional landscaping including hedgerow planting and improved biodiversity management.

Site Description

2.5. The Application Site is located on lands circa 1.2km southwest of the village of Pyworthy and c. 1.8km southeast of Bridgerule in Torridge, Devon; the approximate centre point of which is Grid Reference E229936, N101914. Comprising 28 agricultural fields, the Application Site measures 66.33 hectares (ha) in total. See **Figure 1 of Volume 2: Planning Application Drawings** for details.

2.6. Land within the Application Site itself is gently undulating, ranging between 95 - 125m AOD and consists of fields typically of medium scale and generally well enclosed by a mixture of dense treelines, hedgerows and woodland shelter belt, limiting visibility for local settlements and receptors (See **Figure 3 of Volume 2: Planning Application Drawings** for field numbers).

2.7. The Application Site is in an area with existing electricity infrastructure, with a solar farm present c. 0.3km southeast and another c. 1.2km to the southwest. Additionally, the electrical Pyworthy Substation is located c. 75m from the northern parcel's eastern boundary, adjacent to Field 16, where the Proposed Development will connect.

2.8. The local area is generally agricultural in nature, punctuated by individual properties and farmsteads; the nearest residential areas are Hopworthy and Yeomadon, located 0.7km northeast and southeast respectively. Recreational Routes include two Public Rights of Way

(PRoW); one which passes the southeastern boundary of the Application Site (linking Crinacott Farm and Northmoor Farm, both outside the Application Site) and another which passes east of the adjacent substation, located on the eastern boundary of the Application Site.

2.9. While there are a number of drains and water courses throughout the Application Site, it is mostly contained within Flood Zone 1, an area described as having a "Low probability" of flooding. The exception to this is a small part of the Application Site within Flood Zone 2 and 3, towards the eastern boundary of Field 16. These areas have been avoided within the Proposed Development footprint.

2.10. The Application Site will be accessed from four existing entrance points on the unnamed minor road which splits the site into northern and southern parcels. From the western boundary of the site, the road runs in a southwestern direction for c. 0.5km before turning in a general east-northeast direction through the eastern section of the Application Site.

METHODOLOGY

Extended Phase 1 Habitat Survey

2.11. The survey methods employed were taken from current Chartered Institute of Ecology and Environmental Management[1] (CIEEM) and Joint Nature Conservation Committee[2] (JNCC) guidance.

2.12. Extended Phase 1 Habitat Surveys were undertaken from 21st to 23rd October 2020 by Becky Prudden MCIEEM and Oliver Prudden MCIEEM, experienced ecologists. Table 1 describes the weather conditions across the survey dates, giving air temperature, wind and precipitation.

Table 1: Weather Conditions at Time of Survey

Survey Date	Temperature (°C)	Wind Force (Beaufort Scale)	Precipitation
21/10/2020	12-14	2	Rain showers
22/10/2020	10-12	0	Nil
23/10/2020	11-14	1	Nil

2.13. All habitats within the Application Site, plus a 50m buffer where accessible, were surveyed; this constitutes the Ecological Study Area ("ESA").

2.14. Habitats were mapped using ArcGIS or similar software in line with JNCC Phase 1 habitat survey methodology. Aerial photography and OS maps were evaluated to aid in the assessment of boundary features and habitat boundaries. Target notes were used to identify the presence and location of features of particular ecological interest or those too small to map. Habitat features indicating the presence, or likely presence, of protected species or other species of nature conservation interest were also noted, as were direct observations of such species.

Badger

2.15. Badger setts were recorded wherever found. Any signs such as dung pits, latrines, hair, footprints and snuffle holes were noted.

2.16. Setts were classified according to type, as follows, in light of relevant guidance[3]:

[1] CIEEM (2017) Guidelines for Preliminary Ecological Appraisal
[2] JNCC (2010) Handbook for Phase 1 Habitat Survey - A Technique for Environmental Audit
[3] Scottish Badgers (2018). Surveying for Badgers: Good Practice Guidelines. Version 1.

- Main sett;
- Annexe sett;
- Subsidiary sett; and
- Outlier sett.

Constraints

2.17. As some areas adjacent to the Application Site within the ESA were in different landownership, not all these areas could be accessed fully. However, these were viewed from land within the Application Site wherever possible, and no significant constraint has been identified as a result.

2.18. The absence of a particular species during a field survey does not necessarily mean it is wholly absent. Absence of a species during surveys may simply mean it could not be detected or was not using the site at the time the visit was undertaken. Likely absence may, however, be inferred from a combination of factors.

2.19. The survey was performed outside the optimal season for botanical surveys (which is April to September). However, given the habitats present, it is not considered that this places a significant constraint on the interpretation of the Application Site's ecological interest.

RESULTS

Habitats

2.20. Habitats recorded within the survey areas include:

- A1.1.1 - Broadleaved Semi-Natural Woodland;
- A1.1.2 - Broadleaved Plantation Woodland;
- A2.1 - Scrub (Dense);
- A2.2 - Scrub (Scattered);
- A3.1 - Scattered Broadleaved Trees;
- B4 - Improved Grassland;
- B5 - Marshy Grassland;
- B6 - Poor Semi-improved Grassland;
- C3.1 - Tall Ruderal;
- G1 - Standing Water;
- G2 - Running Water;
- J1.1 - Cultivated/Disturbed Land – Arable;
- J2.1.1 - Intact Hedge – Native Species-rich;
- J2.1.2 - Intact Hedge – Species-poor;
- J2.3.1 - Hedge with Trees – Native Species-rich;
- J2.4 - Fence;
- J2.6 - Dry Ditch;
- J3.6 – Buildings, and
- J4 - Bare Ground.

2.21. A map of the habitats is given as **Figure 2.2 of Technical Appendix 2**, with photographs in **Appendix 2.1A** of this report. The target notes referred to in Figure 2.2 are detailed in **Table 2** below. During the design iteration process, the Application Site was reduced in size from circa

80 hectares at the EIA Screening stage to 66.33 hectares at the application stage. As a result, the survey covered a much larger area than that which was included in the final Application boundary, hence numbering is not wholly consecutive.

Table 2: Target Notes

Target Note	Easting	Northing	Description
35	230328	102242	Off-site mature semi-natural broadleaved woodland adjacent to electricity sub-station and Derrill Water. Open canopy formed by beech, alder, oak and ash with a dense understorey comprising of hazel, holly, beech, hawthorn and blackthorn. Optimal habitat for dormice and trees assessed as having up to high suitability for roosting bats, with features such as dense ivy, splits and tear-outs.
36	230286	102162	Upper reaches of Derrill Water, at this point a fast-flowing meandering stream, up to 2.5m wide and 0.75m deep (although typically much shallower). Banks were noted to be steep, up to 1.5m high and undercut in places with exposed earth cliffs providing suitable nesting opportunities for species such as kingfisher. The watercourse provides optimal habitat to support an otter territory, with numerous potential holt sites where banks / tree-roots have been undercut and couches within dense scrub / vegetation either side. Evidence of the presence of otter was found further downstream (refer to target note ("TN") 42).
37	230162	102281	Mature oak on bend in hedge which contained three large knot holes and small cavities around an old pruning cut – assessed as having up to moderate suitability for roosting bats.
38	230154	102298	Off-site shallow pond in low-lying part of field with wide margins dominated by soft rush, sweet-grass and water horsetail. The central area of the pond supported broadleaved pondweed.
39	230235	102735	Streamside trees including mature ash which were showing signs of die-back and contained small knot holes, splits and ivy-covering. Group assessed as having up to low suitability for roosting bats.

41	230266	102083	Mature oak within hedge near road bridge (with at least one small knot hole and several small splits). Assessed as having low suitability for roosting bats.
42	230273	102074	Stone-built arched road bridge over Derrill Water. Mortar and masonry generally in good condition with only occasional small crevices where mortar was missing in brick arches which could potentially support roosting bats (assessed as low suitability) and nesting birds. Otter spraint (estimated to be <1 month old) found on rock ledge directly beneath bridge.
43	230257	102128	Area of unmanaged grassland (marshy beside stream) with large brash piles, offering suitable habitat for reptiles such as grass snake.
44	230189	102218	Mature willows growing on stream bank with occasional longitudinal splits and tear-outs – group assessed as having up to moderate suitability.
45	230112	102295	Two mature ash trees on bend in river – both contained low number of small knot holes / sparse ivy-covering – assessed as having low suitability.
46	230021	102251	Small, old quarry found to be filled with water. Vertical quarry faces surrounded the southern side of the waterbody, which appeared to hold deep water in places and measured c. 25 x 15m. Marginal plants included bulrush, jointed rush and sweet-grass with a water star-wort and broad-leaved pondweed recorded within deeper water.
47	230066	102269	Mature ash, oak and willow trees along boundary of wet woodland containing numerous knot holes and tear-outs – assessed as having up to high suitability for roosting bats.
48	230002	102286	Area of previously disturbed ground (through quarrying and tipping) next to an area of marshy grassland and wet woodland. High suitability for reptiles and amphibians with abundant suitable refugia in vegetated spoil mounds.
49	229900	102301	Mature oak in hedge with a dense covering of Ivy, although none appeared to be thick-stemmed – assessed as having low suitability for roosting bats.

50	229818	101995	Dwelling at entrance to Monks Farm (New Park) with hipped, slate-covered roof, undergoing renovation works at the time of survey. Suitable access gaps for bats were noted under some roof slates and a large loft space is likely. Provisionally assessed as having up to moderate suitability for roosting bats.
54	229825	102292	Mature oak in hedge with cavities formed around an old pruning cut low down on trunk and small dead limbs with splits – assessed as having low suitability for roosting bats.
55	229801	102322	Brown hare sighting – disturbed from form within grassland.
58	229576	102527	Group of mature oak trees along hedge containing small splits / tear-outs and occasional knot holes – assessed as having up to moderate suitability for roosting bats.
59	229511	102550	Mature oaks along wood edge with several large / deep knot holes, peeling bark, tear-outs as well as some Ivy growth – assessed as having up to high suitability for roosting bats.
60	229384	102489	Small copse with mature beech and oak containing low number of large knot holes – assessed as having up to moderate suitability for roosting bats.
61	229530	101959	Mature oak trees along roadside boundary (mostly within verge rather than hedge) containing knot holes, splits and Ivy covering - assessed as having up to high suitability for roosting bats.
68	229064	102357	Mature oaks and beech along woodland edge containing low number of potential roosting features such as occasional knot holes, peeling bark and small dead limbs with splits – assessed as having up to low suitability for roosting bats.
69	229086	102332	Mature oaks along woodland edge containing deep knot holes and splits – assessed as having up to high suitability for roosting bats.

70	229141	102269	Mature ash on boundary with Bounds Farm, containing some ivy growth and a tear-out – assessed as having up to low suitability for roosting bats.
71	229199	102235	House and outbuildings at Bounds Farm, with pitched, artificial slate-covered roofs and rendered walls and timber barge / fascia boards. Given the age / size of the buildings, provisionally assessed as having up to high suitability for roosting bats and may also support nesting birds.
72	229227	102323	Group of mature oaks in field corner containing low number of potential roosting features including small knot holes, sparse ivy-covering and nearby (off-site) beech with butt-rot and hollow stems – assessed as having up to low suitability for roosting bats.
73	229255	102393	Mature oak and beech trees lining the stream including some standing dead trees. Potential roosting features include mature ivy-growth, peeling bark, knot-holes and tear-outs – assessed as having up to high suitability for roosting bats.
74	229108	102093	Narrow watercourse close to source, which was fast-flowing over a stony substrate. Channel is circa 0.5m wide and up to 20cm deep with steep, scrub-covered banks. Watercourse sub-optimal for otters and unlikely to support a territory; however, it may occasionally be used by this species for dispersal.
75	229094	102091	Group of mature oaks (including several standing dead trees) along hedge with occasional small knot holes, tear-outs and splits – assessed as having up to low suitability for roosting bats.
76	229205	101779	Mature oak trees scattered along length of hedge containing sparse Ivy-growth, occasional small knot holes and splits – assessed as having up to moderate suitability for roosting bats.
77	229276	101744	Small mature broadleaved woodland with canopy dominated by pedunculate oak and a stream running through the middle. Canopy oak trees noted to contain frequent knot holes and splits with frequent standing dead trees – assessed as having up to high suitability for roosting bat. A patchy shrub layer was noted and the woodland

			provides suitable habitat for dormice and breeding birds. The watercourse itself was very minor (close to spring source) and was assessed as unsuitable for otters.
78	229295	101733	Mature multi-stemmed oak in field noted to contain decay around root buttress, although no hollow stems were found and no obvious cavities / crevices – negligible suitability for roosting bats.
79	229149	101611	Mature oaks scattered along hedge with some sparse Ivy-covering and small splits – assessed as having up to low suitability for roosting bats.
80	229272	101604	Very mature pedunculate oak next to gateway noted to contain several dead limbs, some of which appeared hollow and others with large splits – assessed as having up to moderate suitability for roosting bats.
81	229329	101675	Westlake Cottage (off-site) – comprising an old cottage with a rag slate roof and a converted outbuilding, together with an unconverted old barn with original cob walls. Several mature trees were also noted in proximity to the building group. Provisionally assessed as having up to high suitability for roosting bats within the buildings and surrounding trees as well as nesting opportunities for birds, including potentially barn owl in the unconverted barn.
82	229299	101572	Mature beech in hedge with large knot hole in main stem at c. 3m height – assessed as having moderate suitability for roosting bats.
83	229291	101520	Mature oak and ash trees alongside watercourse, some of which were note to be dead / dying. Group contains woodpecker holes, deep knot holes, peeling bark and splits – assessed as having up to high suitability for roosting bats.
84	229374	101527	Two mature oak trees at junction of hedges found to contain a number of small knot holes and splits in side branches – assessed as having low suitability for roosting bats.
85	229433	101509	Very mature pedunculate oak off-set from adjacent hedge by c. 5m found to contain a deep knot hole on the south side of main stem at c. 3.5m height as well as several small

			dead limbs with peeling bark / splits – assessed as having up to moderate suitability for roosting bats.
86	229417	101366	Mature oaks along length of hedge, some of which were noted to contain ivy-growth, small splits knot holes and crevices around old pruning cuts – assessed as having up to moderate suitability for roosting bats.
88	229499	101643	Group of trees on edge of field which included a mature ash pollard with large tear-out and hollow limbs (assessed as having up to high suitability for roosting bats) and three mature oaks that contained a small number of knot holes and splits (assessed as having up to low suitability).
89	229375	101731	Mature oak in hedge containing two knot holes on main stem – assessed as having up to moderate suitability for roosting bats.
90	229347	101741	Group of mature oaks, some of which were within the hedge whilst others were found scattered along the field margin, off-set from the adjacent hedge by up to 12m. Noted to contain knot holes, small dead limbs with splits, deep fissures and wood pecker holes – assessed as having up to high suitability for roosting bats.
91	229302	101819	Small copse with mature oak, some of which were note to have a sparse covering of Ivy – assessed as having up to low suitability for roosting bats.
92	229292	101861	Mature Ash tree next to Derrill Water (near road bridge) found to contain several knot holes and thick-stemmed Ivy and a nearby Alder also noted to be clad with dense Ivy – assessed as having moderate suitability for roosting bats.
95	230251	101940	Young linear broadleaved plantation woodland alongside Derrill Water. Canopy formed by regularly planted alder which were estimated to be c. 20-25 years old, with a closed canopy established. No distinct shrub layer was seen, with occasional grey willow and blackthorn only. The ground layer was dominated by creeping soft-grass and common nettle, developing into marsh closest to the river bank. Woodland was assessed as suitable for dormice and provides a strong linear wildlife corridor in conjunction with Derrill Water.

97	230113	101593	Mature Alder and Ash on river banks with thick-stemmed Ivy growth – assessed as having up to moderate suitability for roosting bats.
98	230451	101503	Mature Pedunculate Oak with several small knot holes and minor dead limbs containing splits – assessed as having up to low suitability for roosting bats.
99	230070	101571	Mature Ash, oak and willows alongside Derrill Water with occasional knot holes, splits and Ivy growth, assessed as having up to high suitability for roosting bats.
100	230004	101523	Line of mature oaks and Beech along hedge, several of which were dead (standing). Noted to contain frequent splits, knot holes, woodpecker holes and peeling bark – assessed as having up to high suitability for roosting bats.
101	229992	101477	Shallow and fast-flowing tributary of Derrill Water, with channel up to 1.5m wide and up to 30cm deep and steep earth banks. Suitable for otters, in conjunction with nearby Derrill Water where presence has been confirmed.
102	230002	101343	Mature oak off-set from field boundary by c. 15m containing several small dead limbs with splits- assessed as having up to low suitability for roosting bats.
103	229990	101315	Mature semi-natural broadleaved woodland with canopy formed by a mix of alder, ash, oak together with occasional downy birch. A dense understorey was recorded in places, comprising of a mix of beech, holly, hazel and grey willow. Un-fenced from adjacent field, and ground layer was noted to be heavily poached by cattle. Trees were noted to include woodpecker holes, Ivy growth, splits, tear-outs and knot holes and were assessed as having up to high suitability for roosting bats, whilst overall the woodland offers optimal habitat for dormice and nesting birds.
104	229945	101314	Overgrown track (footpath) lined by hedges on both sides, with trees / shrubs cut from field sides only and forming a closed canopy above. Provides a wildlife corridor for a range of species, including as a commuting route for bats and optimal habitat for dormice.
105	229920	101330	Outlier badger sett with single entrance in hedgebank at base of large sycamore. Entrance showed signs of active /

			recent use at the time of survey in the form of freshly excavated spoil and a guard hair found. Further entrances may exist along the track-side of the hedgebanks (not accessible).
106	229857	101298	Mature oaks alongside watercourse with numerous splits, knot holes, tear-outs, woodpecker holes and ivy-covering – assessed as having up to high suitability for roosting bats.
107	229577	101139	Mature oak and ash trees alongside watercourse with Ivy growth, including occasional thick-stemmed sections – assessed as having up to low suitability for roosting bats.
108	229660	101051	Mature oak in hedge noted to contain peeling bark, longitudinal splits, knot holes and woodpecker holes – assessed as having high suitability for roosting bats.
109	229747	101101	Line of mature oak on wood edge with knot holes, peeling bark, splits and cavities around old pruning cuts – assessed as having up to moderate suitability for roosting bats.
110	229682	101231	Line of mature oak / ash along watercourse bank with frequent minor dead limbs with splits, small knot holes and sparse ivy-covering – assessed as having up to low suitability for roosting bats.
111	230001	101211	Large man-made pond within plantation (off-site), above water table. Viewed from a distance only but appeared to have a large area of open water with wide marginal zone supporting bulrush and branched bur-reed. Surrounded by dense scrub on all sides. Offers potential foraging area for otters in close proximity to watercourse, optimal habitat for breeding amphibians and also likely to support breeding waterfowl, with mallard seem at the time of survey.
114	229717	101337	Silted-up pond (possibly former slurry lagoon), now surrounded by common nettle and overgrown with bulrush and creeping soft-grass. Provides suitable damp habitat for amphibians and reptiles such as grass snake as well as cover for nesting birds.
115	229625	101462	Group of mature oaks along hedge with ivy growth, small splits and knot holes – assessed as having up to low suitability for roosting bats.

116	229873	101630	Group of mature oak and beech trees in field corner, several containing minor dead limbs with splits, small knot holes and sparse Ivy cover – assessed as having up to low suitability for roosting bats.
117	230141	101928	Large, partially overgrown pile of waste wood adjacent to hedge offering suitable refugia for amphibians and reptiles.

2.22. Descriptions of the main habitats of interest and plant species recorded are given in **Table 3** below. The abundance of these species is scored using the DAFOR scale, as follows:

- Dominant (D)
- Abundant (A)
- Frequent (F)
- Occasional (O)
- Rare (R)
- Any of these may be prefixed by Locally (L).

Table 3: Habitat Descriptions and Plant Species

Broadleaved Semi-Natural Woodland
Within the Application Site, only small areas of semi-natural broadleaved woodland were recorded, mainly as remnants along water corridors or small copses in field corners. These were mostly un-fenced from the adjacent pasture, which meant shrub layers were generally sparse and the ground layer often grassland and variably poached by livestock. Much larger areas of continuous woodland were recorded elsewhere within the ESA. All of these woodlands were typically co-dominated by a mix of mature Pedunculate and Sessile oak, ash and beech. Often these drier woodlands occurred in a mosaic with wet woodland (see below) with locally frequent downy birch and alder. Where fenced off from the adjacent pasture, a well-developed shrub layer was generally recorded, which comprised of frequent hazel and holly with grey willow in the wetter areas. A reasonably diverse ground flora was also recorded which included a number of Ancient Woodland Indicators (AWIs) for Southwest England (marked with an asterisk (*) in the table below). None of the woodlands appeared to show signs of active or recent management and fallen / standing dead wood was frequent throughout. 'Deciduous Woodland' is listed as a UK Priority habitat.

Common Name	Scientific Name	DAFOR
Canopy		
Alder	*Alnus glutinosa*	LF
Ash	*Fraxinus excelsior*	F
Aspen	*Populus tremula*	R
Beech	*Fagus sylvatica*	F
Downy Birch	*Betulus pubescens*	LF
Pedunculate Oak	*Quercus robur*	F
Sessile Oak	*Quercus petraea*	F
Shrub Layer		
Alder	*Alnus glutinosa*	O
Beech	*Fagus sylvatica*	O
Blackthorn	*Prunus spinosa*	O
Grey Willow	*Salix cinerea* subsp. *oleifolia*	F
Hawthorn	*Crataegus monogyna*	O
Hazel	*Corylus avellana*	F
Holly	*Ilex aquifolium*	F
Ground Layer		

Violet	*Viola* sp.	O
Atlantic Ivy	*Hedera hibernica*	A
Bramble	*Rubus fruticosus agg.*	O
Broad Buckler-fern	*Dryopteris dilatata*	O
Cock's-foot	*Dactylis glomerata*	O
Common Haircap	*Polytrichum commune*	LF
Common Nettle	*Urtica dioica*	O
Common Sorrel	*Rumex acetosa*	O
Common Tamarisk-moss	*Tamarisk thuidium*	LF
Creeping Bent	*Agrostis stolonifera*	LF
False-Brome	*Brachypodium sylvaticum*	F
Foxglove	*Digitalis purpurea*	F
Germander Speedwell	*Veronica chamaedrys*	O
Hard Fern*	*Blechnum spicant*	F
Hedge Woundwort	*Stachys sylvatica*	O
Herb-Robert	*Geranium robertianum*	O
Honeysuckle	*Lonicera periclymenum*	O
Meadowsweet	*Filipendula ulmaria*	O

Pignut*	*Conopodium majus*	R
Primrose*	*Primula vulgaris*	R
Red Campion	*Silene dioica*	F
Sanicle*	*Sanicula europaea*	R
Saw-wort	*Serratula tinctoria*	R
Self-heal	*Prunella vulgaris*	O
Soft Rush	*Juncus effusus*	O
Tufted Hair-grass	*Deschampsia caespitosa*	O
Yorkshire Fog	*Holcus lanatus*	O
Wild Angelica	*Angelica sylvestris*	O
Wood Avens	*Geum urbanum*	O
Wood Meadow-grass*	*Poa nemoralis*	LF
Wood Melick*	*Melica uniflora*	O

Broadleaved Plantation Woodland
A large linear broadleaved plantation was recorded along the Derril Water in the southern part of the Application Site (TN95). It was estimated to be circa 20-25 years old. Regularly spaced and densely planted alder dominated the canopy layer, together with frequent ash and pedunculate oak as well as occasional crack willow, rowan, field maple and aspen, all of a uniform age. The canopy was noted to be dense, with no distinct shrub layer recorded with the ground layer dominated by creeping soft-grass and common nettle, transitioning into marsh closer to the river. Additional areas of broadleaved plantation were recorded scattered elsewhere within the ESA.

Scrub (Dense)

Small areas of wet woodland were recorded within the Application Site, predominantly along the banks of the Derril Water as well as some of its tributaries. Due to the dominance of grey willow within the canopy layer, whilst this habitat is considered to have many similarities to woodland, it has been categorised as Dense Scrub in accordance with the Phase 1 manual[4].

The canopy willows were noted to be mature and up to circa 10m tall with occasional young willow saplings noted to be coming up through beneath, together with frequent goat willow and occasional hazel, holly, hawthorn and blackthorn which formed a patchy shrub layer. Ground cover was noted to be variable dependent upon the frequency of inundation and extent of the canopy cover but typically included marsh species such as meadowsweet, tufted hair-grass, remote sedge, wild angelica and water mint.

With the exception of power-line easements, which were noted to be regularly coppiced, no signs of current active management were noted and fallen / standing dead wood was frequent throughout.

'Wet Woodland' is listed as a UK Priority habitat.

Scattered Broadleaved Trees

Scattered broadleaved trees were recorded across the Application Site and were typically within or close to field boundaries. It should be noted that where there was fewer than one standard tree per 50m (average) of hedge, these were classified / mapped as scattered trees; otherwise, they were classified as 'hedge and trees' in accordance with the Phase 1 manual.

Pedunculate Oak was the most abundant species, with sessile oak also recorded frequently, particularly in the less freely-drained areas along the Derril Water river corridor. These are considered most likely relics of woodlands which have been cleared / reduced through intensification of farming in the area. Both of these species were also frequent as standards within hedges, together with occasional beech, alder, downy birch and ash, with English elm and aspen also recorded (albeit rarely).

Marsh / Marshy Grassland

A narrow strip of marshy grassland was recorded within the Application Site, along the banks of the Derril Water. This habitat is defined as areas with >25% rush cover with typical marsh associates but excludes grazed Yorkshire fog / rush pasture. Soft rush and compact rush were typically co-dominant with occasional sharp-flowered rush, reed canary-grass, tussock sedge and associated herbs such as meadowsweet, common fleabane, cuckooflower, lesser spearwort and greater bird's-foot trefoil.

Additional areas were also recorded off-site, adjacent to the Application Site boundary, again associated with the river and stream corridors and often found as a mosaic with wet

[4] JNCC (2010) Handbook for Phase 1 Habitat Survey - A Technique for Environmental Audit

woodland. 'Culm grassland' such as this would have once been much more widespread in this area (as confirmed through a review of historic aerial photos and maps) but has been significantly reduced through agricultural intensification. It qualifies as a UK Priority habitat ('Purple Moor-grass and Rush Pastures').
Running Water
A number of natural watercourses, streams and rivers were recorded within the ESA, the most significant of which was the Derril Water, which ran approximately north to south through the middle of the Application Site. This tributary of the River Tamar was found to have a natural, meandering course in its upper reaches, with a typical channel width of up to 2.5m wide and up to 0.75m deep (although mostly much shallower). Banks were noted to be steep, up to 1.5m high and undercut in places with exposed earth cliffs. Very few plants were recorded growing within the channel itself, with only very occasional branched bur-reed recorded. marginal plants were also fairly limited and included hemlock water drop-wort, fool's water-cress and pendulous sedge. Watercourses and minor streams recorded within the ESA were tributaries of Derrill Water. The above could all qualify as the UK Priority habitat 'Rivers,' despite their small size. A number of field drains holding shallow running water were recorded across the Application Site, many of which were fenced off from adjacent pasture and supported a number of emergent / marginal species. These appeared to be regularly maintained through dredging and vegetation cutting.
Intact hedges form the main field boundaries across the Application Site, and comprise typical Devon hedges with a line of shrubs on an earth bank. The vast majority of hedges in the ESA were classified as species-rich due to having five or more woody species in a 30m length. Most of the hedges did not contain trees, or if present only contained one or two isolated standards. Hedges with trees (i.e. with >1 tree every 50m on average) were generally concentrated in the southern and southwestern parts of the Site. Most hedges appear to be regularly trimmed on all sides, with no gaps; where gaps are present, these are <5% of their overall length. Blackthorn, hawthorn and hazel were the most frequently recorded shrub species, with pedunculate oak, sessile oak and ash the most regularly encountered trees. Ground flora recorded on the hedgebanks included nutrient enrichment indicators such as common nettle, hogweed and false oat-grass, together with other typical hedgebank species such as dog's mercury, common polypody, greater stitchwort and wall pennywort. Hedgerows which are more than 20m in length and contain at least 80% cover of a UK native woody species are listed as UK Priority habitat.

2.23. The main habitat present at the Application Site are arable and improved grassland, which are dominant across the adjacent landscape. Only arable land, fence, improved and poor semi-improved grassland are present under the proposed solar panels. Proposed security fencing

and access tracks will also cross these habitats plus wet and dry ditches, native species-rich hedges with trees and intact native species-rich hedges.

Invasive Species

2.24. Himalayan balsam, an invasive non-native plant species listed in Schedule 2 Part 2 of the Invasive Alien Species (Enforcement and Permitting) Order 2019 (as amended)[5], is present within the Application Site as scattered (individual) plants along the Derrill Water. This suggests fairly recent colonization of the river corridor.

2.25. No other invasive non-native plant species were recorded within the ESA.

Protected Species

Otter

2.26. The presence of otter was confirmed along Derril Water during the site visit with a fresh spraint found beneath the road bridge (TN42). This small river was found to offer numerous potential holt sites along the banks of the river, within undercut banks and around exposed root buttresses. For much of its length, bankside vegetation (particularly dense scrub) also offers suitable habitat for couches. The meandering nature of the river also means that deeper pools are likely to be present, and together with nearby ponds (including man-made fish stocked lakes) these provide optimal foraging opportunities.

2.27. Of the other natural watercourses within the ESA, only one in the south (TN101) was assessed as offering suitable habitat for otter, due to having sufficient water depth to provide cover and forging opportunities. The remainder were all assessed as sub-optimal for this species, being too shallow. However, these tributaries could provide potential dispersal routes between Derril Water and other watercourses / catchments, being well-protected in steep gullies and lined with either woodland or scattered trees and scrub.

2.28. The field drains recorded within the Application Site were small and of little ecological significance. None of these appeared suitable for otter or any other riparian mammal.

Badger

2.29. It is understood that the whole Site falls within a Badger Cull Zone, with all landowners taking part[6]. Badger activity is therefore much lower than would otherwise be expected for a site of this size and nature in Devon.

[5] https://www.legislation.gov.uk/uksi/2019/527

[6] Landowner, personal communication during survey

2.30. Limited signs of recent Badger activity were noted within the ESA in the form of a single sett entrance, recorded along the southern boundary at TN105 (see **Technical Appendix 2, Figure 2.2**). This outlier sett showed signs of current / recent use.

2.31. The majority of the Application Site offers suitable foraging habitat for this species. All the hedgebanks and woodland areas (where not waterlogged) are considered suitable for sett-building.

Dormouse

2.32. All hedges within the Application Site, together with areas of dense scrub (willow carr) and woodland both within and immediately adjacent to the Application Site, were considered suitable for hazel dormice. These habitats offer good arboreal connectivity and a variety of food and nesting resources. Dormouse is a Devon Priority species.

Bats

2.33. There were no buildings within the Application Site that contain suitable opportunities for roosting bats.

2.34. A detached cottage (New Park; TN50) was recorded within the ESA close to Monks Farm. This was provisionally assessed as having up to moderate suitability for both crevice-dwelling and free-hanging roosting bats.

2.35. Several additional building groups are present within the ESA outside the site boundary. These include Bounds Farm to the west of the site (TN71) and Westlake Cottage (TN81) to the south. All of these building groups included a number of old buildings / barns and are provisionally assessed as having up to high suitability for roosting bats.

2.36. The only other built structure present within / adjacent to the Application Site that was found to include suitable features for roosting bats was a stone arched road bridge over Derrill Water (TN42). This was assessed as having at most, low suitability.

2.37. Numerous mature trees were recorded within hedges, along tree-lines (particularly those along the Derril Water and its tributaries) and throughout the woodlands surrounding the Application Site. Many of these trees contain potential roosting features for bats. This includes features such as dense and thick-stemmed ivy growth, knot holes, tear-outs, lifted bark, splits and occasional woodpecker holes. From a preliminary ground level assessment, many of the trees / tree groups are assessed as having up to high suitability for roosting bats due to the size or number of potential features present.

2.38. The Application Site offers optimal habitats for commuting and foraging bats overall, with good habitat connectivity both within the site and linking it to adjacent areas. Key habitat features include hedges (particularly those containing trees), tree-lined stream corridors, woodlands and woodland edges, the Derrill Water river and the marshy grassland / wet woodland mosaic along this. The vast majority of the Application Site is presumed to be unlit

at night, given the lack of any street-lighting in the immediate vicinity. However, some localised light spillage from adjacent residences / farm yards may occur.

Other Mammals

2.39. The Application Site offers suitable sheltering / foraging habitat for hedgehog in the form of hedgerows, woodland and dense scrub.

2.40. The site also offers suitable arable and grassland habitat for brown hare, with regular sightings reported by several landowners. This was corroborated by an incidental sighting of a hare disturbed from its form near to Monks Farm during the survey (see TN55 and **Photograph 7**).

2.41. In addition, the Application Site offers suitable habitat for harvest mouse. This species favours long, tussocky grassland, hedgerows, farmland and woodland edges.

2.42. Hedgehog, brown hare and harvest mouse are UK and England Priority species[7]. Brown hare is also a Devon Priority species.

2.43. No signs of other protected or Priority mammals were noted. It is expected that the Application Site supports an assemblage of common small mammal species.

Herptiles

2.44. The Application Site does not fall within a Great Crested Newt Consultation Zone. Absence of this species from the ESA can therefore be assumed.

2.45. With regards to other more common and widespread amphibians (including common toad, which is listed as a Priority species under the Natural Environment and Rural Communities Act 2006[8]), suitable aquatic habitat within the ESA includes the small number of ponds and areas of slow-moving water within field drains. Hedges, marsh / grassland mosaics, scrub and woodland habitats present within the Application Site all offer suitable terrestrial habitat for amphibians.

2.46. Much of the Application Site is considered unsuitable for reptiles due to being intensively managed for cattle grazing and silage, with many of the fields regularly cultivated up to the base of the surrounding hedges. The majority of hedges were also noted to be fairly heavily shaded by mature / dense shrubs, and provide limited opportunities for basking.

2.47. However, small pockets of suitable habitat were noted. These include some wider and south-facing hedge margins (particularly where associated with ditches), the mosaic of rush pasture and marshy grassland alongside the Derrill Water river corridor (TN43), and waste piles (TN117), areas of previously disturbed ground which have recolonized (TN46 and TN48), and an overgrown / silted-up pond (TN114). Due to the damp nature of many of these habitats,

[7] See https://hub.jncc.gov.uk/assets/98fb6dab-13ae-470d-884b-7816afce42d4
[8] https://www.legislation.gov.uk/ukpga/2006/16/contents

these are considered most suitable for grass snake (which have been seen in the vicinity of the Application Site[9]) and potentially also slow-worm.

Birds

2.48. The ESA provides abundant suitable nesting habitat for a diverse assemblage of birds in the form of hedgerow trees and shrubs, scrub and woodland habitats. This assemblage is likely to also include farmland birds of conservation concern. Buildings within and adjacent to the Application Site also offer suitable opportunities for species such as house sparrow and swallows (UK red-listed[10] but still relatively common), as well as the Wildlife & Countryside Act 1981 (as amended) Schedule 1 species[11] barn owl.

2.49. Rush pasture and marsh along the Derril Water corridor also offer suitable habitat for ground-nesting wetland specialists, as well as opportunities for over-wintering waders. The steep earth cliffs along the river itself could provide suitable nest sites for Schedule 1-listed kingfisher.

Invertebrates

2.50. The vast majority of the site (improved grassland / arable grass ley) is considered to be of very limited value to invertebrates as it is species-poor grassland with high levels of herbicide and fertiliser inputs. However, hedges, tree-lines, marsh areas adjacent to Derril Water, and areas of semi-natural broadleaved and wet woodland are all considered likely to support a more diverse invertebrate assemblage. In addition, together with the scattered network of ponds in the area, Derril Water and its tributaries are also likely to support a good assemblage of aquatic invertebrates.

Other Species

2.51. No evidence of other protected or Priority species was recorded during the surveys.

[9] Landowner, personal communication during survey

[10] Eaton M.A. *et al.* (2015) Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. British Birds 108, 708–746. Available online at britishbirds.co.uk/wp-content/uploads/2014/07/BoCC4.pdf

[11] See https://www.legislation.gov.uk/ukpga/1981/69/schedule/1

APPENDIX 2.1A: PHOTOGRAPHS

See Table 2 for target notes.

Photograph 1: Target Note 36

Photograph 2: Target Note 37

Photograph 3: Target Note 38

Photograph 4: Target Note 42

Photograph 5: Target Note 46

Photograph 6: Target Note 50

Photograph 7: Hare form at Target Note 55

Photograph 8: Target Note 74

Photograph 9: Target Note 77

Photograph 10: Target Note 88

Photograph 11: Target Note 90

Photograph 12: Target Note 95

Photograph 63: Target Note 101

Photograph 74: Target Note 103

Photograph 85: Target Note 104

Photograph 96: Target Note 105

Photograph 107: Target Note 114

Appendix 2.2: Wildlife Trigger List

Do you need to submit a Wildlife, Geology or Invasive Species Report with your planning application?

Please remember that anyone causing a wildlife offence (e.g. destruction of a bat roost) can be prosecuted, irrespective of the planning process. Remember to schedule works to ensure no disturbance to protected species, including nesting birds.

Please fill in Parts Ai and ii, B and C of the table below. The completed table must be included with your application.

Part A. If there is a tick in the 'yes' column you must include a **Wildlife Report** with your application. The report may vary from a short written statement (if there is no significant impact) to a comprehensive report with surveys.

Part B. If there is a tick in the 'yes' column you must include a **Geology Report** with your application.

Part C. If there is a tick in the 'yes' column an **Invasive Species Control Plan** is required.

All reports must be produced by a consultant with suitable qualifications and experience. For further information on the reports, including a list of consultants and a generic Wildlife Report brief (which may help when employing a consultant), go to https://new.devon.gov.uk/environment/wildlife

Wildlife and Geology Trigger Table

PART A - TRIGGERS FOR A WILDLIFE REPORT	Yes (Wildlife Report required)	No
1a. The application site (red line) is greater than 0.1 hectares*	√	
1b. The proposal:		
i. Involves demolition of a building.		√
ii. Involves works to a roof, roof space, weather boarding or hanging tiles e.g. loft conversion, roof raising, extensions.		√
iii. Involves works to a quarry or built structures such as bridges, viaducts, aqueducts, tunnels, mines, kilns, ice houses, military fortifications, air raid shelters, cellars and similar underground ducts and structures.		√
iv. Involves the development of wind turbine(s), including domestic turbines.		√
v. Will illuminate / cause light spill onto a building, mature tree (see ix), woodland, field hedge, pasture, watercourse, water body, tree line or a known bat roost.		√
vi. Impacts on a watercourse, intertidal area or standing open water (e.g. ponds, reedbeds) excluding ornamental garden fish ponds.		√
vii. Removes, or moves, part / all of a hedge or line of trees (excluding non native or urban hedges unless > 10m being removed).	√	
viii. Is within, or may impact on (including impacts on hydrology), a woodland or a substantial area of scrub connected to a woodland or hedge.	√	

ix. Involves surgery to or felling of a mature tree with obvious holes, cracks or cavities, dense ivy, deadwood, bird / bat box (i.e features which may be a bat roost).		√
x. Involves removal of tussocky (rough) grassland, wet grassland, flower rich grassland or heathland (heather/gorse present).	√	
xi. **** Householders do not need to answer this question. May impact directly or indirectly (via a watercourse or air pollution pathway) on a designated wildlife site (Special Areas of Conservation, Special Protection Area, Sites of Special Scientific Interest, County Wildlife Site, Local Nature Reserve, Special Verge).	√	
xii. Involves lighting or removal of a tree line, woodland, hedges or pasture within a Greater Horseshoe Bat consultation zone *(please ask the LPA during pre-ap discussions).*		√
PART B – TRIGGER FOR A GEOLOGICAL REPORT	**Yes (Geology Report required)**	**No**
** Application impacts on a geological Site of Special Scientific Interest or County Geological Site (RIGS)		√
PART C – INVASIVE SPECIES Site supports an invasive species such as Japanese Knotweed. *For a list of Schedule 9 non native invasive species see http://www.legislation.gov.uk/ukpga/1981/69/schedule/9 or http://www.nonnativespecies.org/index.cfm?sectionid=23 For more information on Japanese Knotweed see www.devon.gov.uk/japanese_knotweed.htm.*	**Yes (Invasive Species Control Plan required)**	**No**
	not Schedule 9 - see EclA	

* - If you have ticked 'no' to all 1b questions a Wildlife Report will not be required if the LPA confirms in writing that it is reasonably certain that there will be no impact on protected or priority habitats and species.

** - to find out if your site is in, or near, a designated site look on http://map.devon.gov.uk/DCCViewer/ or ask the LPA or Devon Biodiversity Records Centre www.dbrc.org.uk (there will be a small charge). For County Geological Sites (RIGS) see also www.devonrigs.org.uk/07DevonSites.html

IMPORTANT…….

- **If detailed protected species surveys are required these MUST be included with your planning application. The application cannot be validated without them. They cannot be conditioned.**
- **Some surveys can only be undertaken at certain times of year. It is essential that these are timetabled into your project plan in order to avoid wasting time and money. A survey calendar can be found at: http://webarchive.nationalarchives.gov.uk/20140605090108/http://www.naturalengland.org.uk/Images/WhentosurveyFINAL_tcm6-21620.pdf**
- **All details of avoidance, mitigation, compensation and enhancement actions MUST also be included with your application. It is very likely that any planning permission will be conditional on these being implemented.**

Last updated: 15th May 2017

Appendix 2.3: Biodiversity Management Plan

Derril Water Solar Farm

21/05/2021

Disclaimer

Neo Environmental Limited shall have no liability for any loss, damage, injury, claim, expense, cost or other consequence arising as a result of use or reliance upon any information contained in or omitted from this document.

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Contents

EXECUTIVE SUMMARY

2.1. Objectives have been established to enhance and maintain the biodiversity of lands circa 1.2km south-west of the village of Pyworthy, Devon, associated with a proposed 42MW solar farm and associated infrastructure (the "Proposed Development"). The objectives include planting of native trees and species-rich hedgerows to provide a plentiful source of food and shelter for a range of fauna species; developing a species-rich grassland across the site, and installing dormouse, bat and bird boxes, hedgehog houses, herptile hibernacula, invertebrate hotels and bee banks.

2.2. Actions have been formulated within this document to enable the objectives to be met and to maximise the Application Site's potential for supporting wildlife. Species which have been given priority within this management and enhancement plan include dormouse, common pipistrelle bat, hedgehog, house sparrow, bees and herptile species.

2.3. An extended phase 1 habitat survey was conducted in October 2020 in order to assess the ecological condition of the Application Site. As part of the full planning application, an Ecological Impact Assessment ("EcIA") has been conducted to assess the Application Site's ability to support a range of wildlife both now and during all phases of the Proposed Development. The enhancements and mitigation measures set out in this document have been developed in accord with the findings of the extended phase 1 habitat survey.

2.4. Management recommendations have been made for new and existing habitats. Where possible, retaining features such as sections of grassland and maintaining the hedgerow boundary beyond the 40-year lifespan of the Proposed Development will be of benefit to wildlife. This will enable net biodiversity gain to be sustained in the long term.

INTRODUCTION

Background

2.5. Neo Environmental Ltd has been appointed by RES (the "Applicant") to produce a Biodiversity Management Plan ("BMP") for a proposed 42MW solar farm and associated infrastructure (the "Proposed Development") on lands circa 1.2km southwest of the village of Pyworthy, Devon (the "Application Site").

2.6. Please see **Figure 4 of Volume 2: Planning Application Drawings** for the layout of the Proposed Development.

Development Description

2.7. The Proposed Development will consist of the construction of bi-facial solar photovoltaic (PV) panels mounted on metal frames, new access tracks, underground cabling, perimeter fencing with CCTV cameras and access gates, a temporary construction compound, substation and all ancillary grid infrastructure and associated works. The Proposed Development will result in the production of clean energy from a renewable energy resource (daylight) and will also involve additional landscaping including hedgerow planting and improved biodiversity management.

Adopted Design Principles

2.8. Where possible, measures have been implemented as part of the iterative design process to prevent the various phases of the Proposed Development affecting sensitive ecological features. Ecological measures incorporated into the Proposed Development design include the following:

- A 5m buffer from hedgerows,
- 5m drainage ditch buffer,
- Tree buffers,
- 10m watercourse buffer,
- 10m buffer from woodland,
- 25m buffer between PV panels and Hopworthy County Wildlife Site ("CWS"), Lower Hopworthy CWS and Monk's Farm Unconfirmed Wildlife Site ("UWS"),
- 35m buffer between PV panels and Trelana UWS,

- 5m buffer between PV panels and Derril Water 2 UWS,
- 30m badger sett buffer; hand digging permitted over 10m from setts and light machinery use permitted over 20m from setts (though not likely to be needed), and
- 10cm gaps at the bottom of fencing to ensure connectivity for wild mammals.

Site Description

2.9. The Application Site is located on lands circa 1.2km southwest of the village of Pyworthy and c. 1.8km southeast of Bridgerule in Torridge, Devon; the approximate centre point of which is Grid Reference E229936, N101914. Comprising 28 agricultural fields, the Application Site measures 66.33 hectares (ha) in total. See **Figure 1 of Volume 2: Planning Application Drawings** for details.

2.10. Land within the Application Site itself is gently undulating, ranging between 95 - 125m AOD and consists of fields typically of medium scale and generally well enclosed by a mixture of dense treelines, hedgerows and woodland shelter belt, limiting visibility for local settlements and receptors (See **Figure 3 of Volume 2: Planning Application Drawings** for field numbers).

2.11. The Application Site is in an area with existing electricity infrastructure, with a solar farm present c. 0.3km southeast and another c. 1.2km to the southwest. Additionally, the electrical Pyworthy Substation is located c. 75m from the northern parcel's eastern boundary, adjacent to Field 16, where the Proposed Development will connect.

2.12. The local area is generally agricultural in nature, punctuated by individual properties and farmsteads; the nearest residential areas are Hopworthy and Yeomadon, located 0.7km northeast and southeast respectively. Recreational Routes include two Public Rights of Way (PRoW); one which passes the southeastern boundary of the Application Site (linking Crinacott Farm and Northmoor Farm, both outside the Application Site) and another which passes east of the adjacent substation, located circa 75m east of the Application Site.

2.13. While there are a number of drains and water courses throughout the Application Site, it is mostly contained within Flood Zone 1, an area described as having a "Low probability" of flooding. The exception to this is a small part of the Application Site within Flood Zone 2 and 3, towards the eastern boundary of Field 16. These areas have been avoided within the Proposed Development footprint.

2.14. The Application Site will be accessed from four existing entrance points on the unnamed minor road which splits the site into northern and southern parcels. From the western boundary of the site, the road runs in a southwestern direction for c. 0.5km before turning in a general east-northeast direction through the eastern section of the Application Site.

GUIDANCE

2.15. Biodiversity is declining across England; however, recent agri-environment schemes indicate that biodiversity can significantly increase through appropriate land management. Well-designed solar farm developments have the potential to support wildlife and increase biodiversity through appropriate management when located on agricultural land.

2.16. Due to the nature of solar farm developments, a large proportion of the site is accessible for plant growth and potential wildlife enhancements. Each solar farm development in the UK requires a Biodiversity Management Plan ("BMP"), the purpose of which is to identify objectives for biodiversity and the means by which these objectives will be achieved. This can include the protection of existing species and habitats and the establishment of new habitats, as well as their maintenance and monitoring.

2.17. According to 'Biodiversity Guidance for Solar Developments'[1] the BMP should:

- *"identify key elements of biodiversity on site, including legally protected species, species and habitats of high conservation value such as those listed on Section 41 of Natural Environmental and Rural Communities (NERC) Act 2006[2], and designated areas in close proximity to the proposed site;*
- *identify any potential impacts arising from the site's development, and outline mitigations to address these;*
- *detail specific objectives for the site to benefit key elements of biodiversity and the habitat enhancements that are planned to achieve these;*
- *contribute to biodiversity in the wider landscape and local ecological network by improving connectivity between existing habitats;*
- *identify species for planting and suitable sources for seed and plants;*
- *consider wider enhancements such as nesting and roosting boxes;*
- *summarise a management regime for habitats for the entire life of the site;*
- *provide a plan for monitoring the site; and* [sic] *adapting management as appropriate to the findings of this monitoring; and,*
- *set out how the site will be decommissioned."*

[1] BRE (2014) Biodiversity Guidance for Solar Developments. Eds G E Parker and L Greene

[2] Natural Environmental and Rural Communities Act (NERC) 2006, available at www.legislation.gov.uk

2.18. Neo Environmental's BMP has been informed by the extended phase 1 habitat survey that was conducted in October 2020.

OBJECTIVE OF THE BIODIVERSITY MANAGEMENT PLAN

2.19. The objective of this BMP is to minimise any potential negative impacts arising from the Proposed Development, while increasing the habitat diversity. Through generation of renewable energy, the enhancement of the land within the development boundary will increase the site's capability of supporting wildlife.

2.20. This will be achieved by:

- Eradicating invasive non-native Himalayan balsam;
- Creating and maintaining a diverse species-rich grassland with a varied sward structure;
- Creating and maintaining native tree planting and species-rich hedgerows;
- Creating and maintaining wildlife shelters for Priority and locally important species;
- Ensuring no net loss of biodiversity from the site as a result of the habitat creation scheme; and
- Maximising the floral and faunal biodiversity of the created and retained habitats.

CURRENT POLICY

National Conservation & Biodiversity Management

The UK Post-2010 Biodiversity Framework

2.21. The UK Post-2010 Biodiversity Framework supersedes the former UK Biodiversity Action Plan ("BAP"). The Post-2010 Biodiversity Framework was developed in response to two main drivers, namely:

- the Convention on Biological Diversity's ("CBD's") Strategic Plan for Biodiversity 2011-2020[3] and its five strategic goals and 20 'Aichi Biodiversity Targets', published in October 2010, and
- the EU Biodiversity Strategy ("EUBS")[4].

2.22. The first Implementation Plan was produced for the Framework in November 2013, and an updated and revised Plan was produced in 2018. The Framework's aims include setting out:

"a shared vision and priorities for UK-scale activities, in a framework jointly owned by the four countries, and to which their own strategies will contribute."

2.23. This is based on goals such as reducing direct pressures on biodiversity and promoting sustainable use, improving the status of biodiversity by safeguarding ecosystems, species and genetic diversity, and enhancing the benefits to all from biodiversity and ecosystems. The current BMP aims to demonstrate how the Proposed Development will assist in achieving this target.

The Natural Environment and Rural Communities (NERC) Act 2006

2.24. The Natural Environment and Rural Communities (NERC) Act[5] places a duty on planning authorities to have due regard for biodiversity and nature conservation during operations, ensuring that biodiversity is a key consideration in the local planning process.

2.25. A number of habitats and species of principal importance for the conservation of biodiversity ("Priority species" and "Priority habitats") in England are listed under Section 41 of the NERC Act. These are taken into account in this BMP where relevant.

[3] Available at: https://www.cbd.int/sp/
[4] Available at: https://ec.europa.eu/environment/nature/biodiversity/strategy_2020/index_en.htm
[5] Available at: https://www.legislation.gov.uk/ukpga/2006/16/contents

National Pollinator Strategy: For Bees and Other Pollinators in England

2.26. In 2014, the UK joined a small number of countries in Europe who have developed a strategy to address pollinator decline and protect pollination services. England's national pollinator strategy[6] was published in November 2014.

2.27. Twenty-one governmental and non-governmental organisations have agreed a shared Plan that identifies 34 actions to make England pollinator-friendly. The Plan identifies voluntary actions for farmers to make agricultural land more pollinator-friendly, such as:

- Sowing nectar and pollen-rich wildflower seed mixtures on fallow land or buffer strips;
- Managing buffer strips through grazing and cutting to help prevent grass domination and further encourage wildflowers; and,
- Management of hedgerows by reducing the frequency of cutting to encourage hedges to produce flowers.

2.28. The enhancements set out within this BMP will create areas of flower-rich habitat and bee banks that will support England's pollinator species, including bees and flies.

Biodiversity Action Plans

2.29. The UK Biodiversity Action Plan ("UKBAP"; 1994)[7] was organised to fulfil the Rio Convention on Biological Diversity in 1992, to which the UK is a signatory. Lists of national Priority species and habitats were produced with all listed species/habitats having specific action plans, defining the measures required to ensure their conservation.

2.30. While the UKBAP has since been superseded by the UK Post-2010 Biodiversity Framework (see above), regional and local BAPs have been produced to develop plans for species / habitats of nature conservation importance at regional and local levels. The Devon BAP[8] contains a list of Priority habitats including, among others:

- Alder/willow wet woodland,
- Cities, towns and villages,
- Species-rich hedges,
- Rivers, streams, floodplains and fluvial processes.

[6] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/794706/national-pollinator-strategy.pdf

[7] Available at https://data.jncc.gov.uk/data/cb0ef1c9-2325-4d17-9f87-a5c84fe400bd/UKBAP-BiodiversityActionPlan-1994.pdf

[8] Available at: https://www.devon.gov.uk/environment/wildlife/the-devon-biodiversity-action-plan-bap

2.31. Several Priority species are also listed. Those most relevant to the habitats within the Application Site and/or the local area in which the Application Site is found include:

- Primrose,
- Marsh fritillary,
- White-clawed crayfish,
- Atlantic salmon,
- Barn owl,
- House sparrow,
- Skylark,
- Cirl bunting,
- Curlew,
- Brown hare,
- Dormouse,
- Greater horseshoe bat,
- Soprano pipistrelle,
- Otter, and
- Water vole.

Local Conservation & Biodiversity

North Devon and Torridge Local Plan 2011 – 2031

2.32. Adopted in October 2018, this is the current Local Plan for Torridge, the district in which the Application Site falls. The relevant policies set out within the Plan include the following ecological provisions.

Policy ST03: Adapting to Climate Change and Strengthening Resilience

"Development should be designed and constructed to take account of the impacts of climate change and minimize the risk to and vulnerability of people, land, infrastructure and property by […]

(i) conserving and enhancing landscapes and networks of habitats, including cross-boundary green infrastructure links, strengthening the resilience of biodiversity to climate change by facilitating migration of wildlife between habitats and improving their connectivity."

Policy ST14: Enhancing Environmental Assets

"The quality of northern Devon's natural environment will be protected and enhanced by ensuring that development contributes to:

(a) Providing a net gain in northern Devon's biodiversity where possible, through positive management of an enhanced and expanded network of designated sites and green infrastructure, including retention and enhancement of critical environmental capital;

(b) Protecting the hierarchy of designated sites in accordance with their status;

(c) Conserving European protected species and the habitats on which they depend […]."

Policy DM04: Design Principles

"(1) Good design seeks to guide overall scale, density, massing, height, landscape, layout, materials, access and appearance of new development. It seeks not just to manage land use but support the creation of successful places and respond to the challenges of climate change. Development proposals need to have regard to the following design principles […]

(f) retain and integrate existing landscape features and biodiversity to enhance networks and promote diversity and distinctiveness of the surrounding area […]."

Policy DM08: Biodiversity and Geodiversity

"(1) Development should conserve, protect and, where possible, enhance biodiversity and geodiversity interests and soils commensurate with their status and giving appropriate weight to their importance. All development must ensure that the importance of habitats and designated sites are taken into account and consider opportunities for the creation of a local and district-wide biodiversity network of wildlife corridors which link County Wildlife Sites and other areas of biodiversity importance.

<u>European Sites</u>

(2) The highest level of protection will be given to potential and existing Special Protection Areas, candidate and existing Special Areas of Conservation and listed or proposed Ramsar sites. Proposals having an adverse impact on the integrity of such areas that cannot be avoided or adequately mitigated to remove any adverse effect will not be permitted other than in exceptional circumstances. These circumstances will only apply where there are:

(a) no alternative solutions;

(b) imperative reasons of overriding public interest; and

(c) necessary compensatory provisions secured to ensure that the overall coherence of the Natura 2000 network of European sites is protected.

(3) Development will only be supported where any necessary mitigation is included such that, in combination with other plans or projects, there will be no adverse effects on the integrity of European Nature Conservation Sites.

National Sites

(4) Development proposals within or outside a Site of Special Scientific Interest or Marine Conservation Zone which would be likely to affect the designation adversely, either individually or in combination with other developments, will not be supported unless the benefits of the development at this site clearly outweigh both the adverse impacts on the site and any adverse impacts on the wider network of Sites of Special Scientific Interest and Marine Conservation Zones.

Local Sites

(5) Development likely to affect adversely locally designated sites, their features or their function as part of the ecological network, including County Wildlife Sites, County Geological Sites and sites supporting Biodiversity Action Plan habitats and species, will only be permitted where the need for and benefits of the development clearly outweigh the loss, and the coherence of the local ecological network is maintained.

Protected Species and Habitats

(6) Adverse impacts on European and UK protected species and Biodiversity Action Plan habitats and species must be avoided wherever possible, subject to:

(i) the legal tests afforded to them where applicable; or otherwise unless

(ii) the need for and benefits clearly outweigh the loss.

Ancient Woodland and Veteran Trees

(7) Development must avoid the loss or deterioration of ancient woodland and veteran trees, unless the need for, or benefits of development on that site clearly outweigh the loss.

Avoidance, Mitigation and Compensation for Biodiversity and Geodiversity Impacts

(8) Development should avoid adverse impact on existing features as a first principle and enable net gains by designing in biodiversity features and enhancements and opportunities for geological conservation alongside new development. Where adverse impacts are unavoidable they must be adequately and proportionately mitigated, If full mitigation cannot be provided, compensation will be required as a last resort."

Policy DM09: Safeguarding Green Infrastructure

"Development involving the loss of green infrastructure including public open space will only be supported where:

(a) alternative green infrastructure is provided of at least equivalent size, quality and accessibility to that being lost; or

(b) the green infrastructure network in the locality can be retained or enhanced through redevelopment of a small part of the site […]."

BASELINE

Designated Sites

2.33. The Application Site does not lie within or directly adjacent to any statutory designated environmental sites. The Application Site overlaps one non-statutory designated environmental sites and adjoins three others. Derril Water 2 Unconfirmed Wildlife Site ("UWS") overlaps Field 25 and the adjacent woodland to the south. Hopworthy County Wildlife Site ("CWS") is present immediately north of Field 13 and Lower Hopworthy CWS is present immediately northeast of Field 16. Monk's Farm UWS is present immediately north of Fields 15 and 16 (see **Figures 2.3 and 3, Volume 2: Planning Application Drawings**).

2.34. The desk-based assessment identified that within 15km of the Application Site boundary there are three internationally designated sites, all Special Areas of Conservation ("SACs"). The closest of these is the Culm Grasslands SAC, located 5.06km north of the Application Site. There are three Sites of Special Scientific Interest ("SSSIs") within 5km of the Application Site.

2.35. The only designated sites with connectivity to the Application Site are Brendon and Vealand Fen SSSI and the non-statutory sites Hopworthy County Wildlife Site ("CWS"), Lower Hopworthy CWS, Tinneymoor CWS, Tinney CWS, Derril Water 2 Unconfirmed Wildlife Site ("UWS"), Monk's Farm UWS, Trelana UWS, Derril Fields UWS and West Yeomadon UWS. With the implementation of the recommended measures, it has been determined that there will be **no significant adverse effects** on any designated nature conservation site as a result of the Proposed Development.

Habitats

2.36. An extended phase 1 habitat survey was undertaken in October 2020. The survey covered all land within the Application Site and a 50m buffer around the entire site, together comprising the Ecological Survey Area ("ESA"). This highlighted the presence of the following 19 habitat types within the ESA:

- A1.1.1 - Broadleaved Semi-Natural Woodland;
- A1.1.2 - Broadleaved Plantation Woodland;
- A2.1 - Scrub (Dense);
- A2.2 - Scrub (Scattered);
- A3.1 - Scattered Broadleaved Trees;
- B4 - Improved Grassland;
- B5 - Marshy Grassland;

- B6 - Poor Semi-improved Grassland;
- C3.1 - Tall Ruderal;
- G1 - Standing Water;
- G2 - Running Water;
- J1.1 - Cultivated/Disturbed Land – Arable;
- J2.1.1 - Intact Hedge – Native Species-rich;
- J2.1.2 - Intact Hedge – Species-poor;
- J2.3.1 - Hedge with Trees – Native Species-rich;
- J2.4 - Fence;
- J2.6 - Dry Ditch;
- J3.6 – Buildings, and
- J4 - Bare Ground.

Flora

2.37. The majority of the Application Site is dominated by agricultural grassland of low botanical interest. The extended phase 1 habitat survey did not identify any protected flora species.

2.38. Himalayan balsam, an invasive non-native plant species listed in Schedule 2 Part 2 of the Invasive Alien Species (Enforcement and Permitting) Order 2019 (as amended)[9], is present within the Application Site as scattered (individual) plants along the Derril Water river corridor. This suggests fairly recent colonization of the corridor. The baseline against which the proposals are assessed includes a "do-nothing" scenario in which Himalayan balsam spreads, reducing native floristic diversity.

Fauna

Otter

2.39. The presence of otter was confirmed along Derril Water during the site visit with a fresh spraint found beneath a road bridge (TN42 in **Figure 2.2, Volume 2: Planning Application Drawings**). This small river was found to offer numerous potential holt sites along the banks of the river, within undercut banks and around exposed root buttresses. For much of its

[9] https://www.legislation.gov.uk/uksi/2019/527

length, bankside vegetation (particularly dense scrub) also offers suitable habitat for couches. The meandering nature of the river also means that deeper pools are likely to be present, and together with nearby ponds (including man-made fish stocked lakes) these provide optimal foraging opportunities. Of the other natural watercourses within the ESA, only one in the south of the Application Site was assessed as offering suitable habitat for otter.

Badger

2.40. Limited signs of recent Badger activity were noted within the ESA in the form of a single sett entrance, recorded along the southern boundary of the Application Site. This outlier sett showed signs of current / recent use.

Dormouse

2.41. All hedges within the Application Site, together with areas of dense scrub (willow carr) and woodland both within and immediately adjacent to the Application Site, were considered suitable for hazel dormice. These habitats offer good arboreal connectivity and a variety of food and nesting resources.

Bats

2.42. Numerous mature trees were recorded within hedges, along tree-lines (particularly those along the Derril Water and its tributaries) and throughout the woodlands surrounding the Application Site. Many of these trees contain potential roosting features for bats. From a preliminary ground level assessment, many of the trees / tree groups are assessed as having up to high suitability for roosting bats due to the size or number of potential features present.

2.43. The Application Site offers optimal habitats for commuting and foraging bats overall, with good habitat connectivity both within the site and linking it to adjacent areas. Key habitat features include hedges (particularly those containing trees), tree-lined stream corridors, woodlands and woodland edges, the Derril Water river and the marshy grassland / wet woodland mosaic along this. The vast majority of the Application Site is presumed to be unlit at night, given the lack of any street-lighting in the immediate vicinity. However, some localised light spillage from adjacent residences / farm yards may occur.

Other Mammals

2.44. The Application Site offers suitable sheltering / foraging habitat for hedgehog in the form of hedgerows, woodland and dense scrub. The site also offers suitable arable and grassland habitat for brown hare, with regular sightings reported by several landowners. This was corroborated by an incidental sighting of a hare disturbed from its form near to Monks Farm. In addition, the Application Site offers suitable habitat for harvest mouse. This species favours long, tussocky grassland, hedgerows, farmland and woodland edges.

2.45. No signs of other protected or Priority mammals such as water vole were noted. It is expected that the Application Site supports an assemblage of common small mammal species.

Herptiles

2.46. The Application Site does not fall within a Great Crested Newt Consultation Zone. Absence of this species from the ESA can therefore be assumed. With regards to more common and widespread amphibians, suitable aquatic habitat within the ESA includes the small number of ponds and areas of slow-moving water within field drains. Hedges, marsh / grassland mosaics, scrub and woodland habitats present within the Application Site all offer suitable terrestrial habitat for amphibians.

2.47. Much of the Application Site is considered unsuitable for reptiles due to being intensively managed for cattle grazing and silage, with many of the fields regularly cultivated up to the base of the surrounding hedges. The majority of hedges were also noted to be fairly heavily shaded by mature / dense shrubs, and provide limited opportunities for basking.

2.48. However, small pockets of suitable habitat were noted. These include some wider and south-facing hedge margins (particularly where associated with ditches), the mosaic of rush pasture and marshy grassland alongside the Derril Water river corridor, waste piles, areas of previously disturbed ground which have recolonized, and an overgrown / silted-up pond.

Birds

2.49. The ESA provides abundant suitable nesting habitat for a diverse assemblage of birds in the form of hedgerow trees and shrubs, scrub and woodland habitats. This assemblage is likely to also include farmland birds of conservation concern. Buildings within and adjacent to the Application Site also offer suitable opportunities for species such as house sparrow, swallow and barn owl.

2.50. Rush pasture and marsh along the Derril Water corridor also offer suitable habitat for ground-nesting wetland specialists, as well as opportunities for over-wintering waders. The steep earth cliffs along the river could provide suitable nest sites for kingfisher offsite.

Invertebrates

2.51. The vast majority of the site (improved grassland / arable grass ley) is considered to be of very limited value to invertebrates as it is species-poor grassland with high levels of herbicide and fertiliser inputs. However, hedges, tree-lines, marsh areas adjacent to Derril Water, and areas of semi-natural broadleaved and wet woodland are all considered likely to support a more diverse assemblage. Together with the scattered network of ponds in the area, Derril Water and its tributaries are also likely to support a good assemblage of aquatic invertebrates.

Other Species

2.52. No evidence of other protected or Priority species was found within the Application Site.

POTENTIAL IMPACTS

2.53. Potential impacts which could arise from the development of a solar farm include:

- Potential habitat loss and fragmentation;
- Disturbance during construction and decommissioning; and
- Potential contamination of surface waters.

Potential Habitat Loss and Fragmentation

2.54. The main impacts during the construction phase include the direct loss of habitat under the Proposed Development footprint, and indirect loss of habitat due to noise and vibration disturbance, and dust and water pollution. The loss of these primarily arable habitat areas is considered to be of negligible significance to nature conservation interest within the local area.

2.55. The Proposed Development has been designed in such a way to avoid significant losses of agricultural land during the operational stage, with a total ground level footprint of 3.7%. Agriculture can continue on the other 96.3% of the land.

2.56. The main habitat loss will occur under the Proposed Development footprint in regard to structures such as access tracks, cable trenches and hardstanding for buildings and inverters. Solar panels will be mounted on frames which will be pile driven into the ground in a similar way to fence posts, therefore limiting soil disturbance. The Application Site can be fully restored upon termination of its use as a solar farm.

2.57. A number of existing habitats will be enhanced, identified local species will be protected, and proposed habitat loss will be compensated for. New habitats will be created using native species appropriate to the Application Site, and biodiversity value will increase. It is therefore considered that the loss of habitat from the Proposed Development will not be significant.

2.58. Solar PV panels have been kept a minimum of 5m from Derril Water 2 UWS, a minimum of 25m from Hopworthy CWS, Lower Hopworthy CWS and Monk's Farm UWS, and a minimum of 35m from Trelana UWS. However, it is proposed to install approximately 155m of deer fencing within 2m of the western edge of Derril Water 2 UWS. Fencing will also fall less than 5m from the UWS along a further length of approximately 90m. The fence will be dug to a depth of circa 0.8m. In the absence of mitigation, this could cause some limited vibration disturbance of culm grassland within the UWS.

2.59. Fence installation within 5m of Derril Water 2 UWS will be supervised by a suitably experienced Ecological Clerk of Works ("ECoW"). Excavations connected with fence installation in this area will ensure that the material excavated is removed carefully, preserving vegetation and soil structure as far as possible. The material will be stored adjacent to the fence installation trench (i.e. outside the UWS), and carefully laid back either side of the fence to fill the trench as soon as possible.

Disturbance During Construction and Decommissioning

2.60. The construction and decommissioning phases of a development have the potential to impact upon local wildlife.

2.61. To minimise any potential disturbance to wildlife, several measures will be implemented prior to construction and decommissioning work taking place. Avoidance and mitigation measures recommended within the Ecological Impact Assessment (**Technical Appendix 2)** include:

- Avoidance of hedgerows, woodland, watercourses/field drains, trees, badger sett, all but one non-statutory designated site, and all surface water areas including ponding;
- Supervision of fence installation by an ECoW (see above);
- Implementation of non-licensed dormouse method statement;
- Supervision of works to existing hedgerows and woodland by ECoW;
- Pre-construction badger survey;
- Bat roost assessments for any bat roost potential ("BRP") trees to be removed;
- Pre-construction bird surveys, if works commence between March and August inclusive;
- Any vegetation removal from March to September to be carried out directionally towards retained habitat. Careful removal of hedgerow to be performed with hand tools and only when air temperature is above 10°C (ecologist to be contacted if herptiles are found);
- If vegetation removal needs to occur between October and February, dismantling/removal is to be overseen by a suitably qualified and experienced ECoW;
- Securely covering all excavations at the end of each working day to prevent accidental trapping of badger or other mammals; and

- A 10cm gap between fence and ground level to permit the movement of wildlife across the local area.

2.62. During the operational phase, the disturbance to local wildlife will be more limited than the levels of disturbance the land is subject to from the current farming practice.

2.63. With the creation of new species-rich grassland, native hedgerows and trees, along with the enhancement of existing hedgerows and sensitive management, the site's potential for supporting local wildlife is anticipated to be increased post-construction and result in a **net biodiversity gain.**

HABITAT CREATION AND ENHANCEMENT

2.64. Himalayan balsam will be eradicated from the Application Site by a specialist contractor. Through the removal of this invasive non-native plant species, this will lead to enhanced native floristic diversity compared to the baseline do-nothing scenario. Ideally, this eradication will occur between May and August, before the plants set seed. Monitoring and (if plants are found) repeat removal of this species will occur throughout the operational phase.

2.65. The existing arable groundcover will be replaced by a mix of tussocky grasses and wildflower species. Existing hedgerows will be enhanced, with new hedgerow and tree planting undertaken within the Application Site. These habitats will be in place and managed for the duration of the Proposed Development (circa 40 years).

2.66. Various options exist to enhance the biodiversity value of a solar farm site, including the creation of different habitats, such as hedgerows, field margins, wild flower meadows, nectar-rich areas and winter bird crops. Habitat creation planned as part of the Proposed Development is summarised in Table 2-3 below. Habitats that will be created include:

- Species-rich grassland,
- Native hedgerows,
- Native trees,
- Dormouse, bat and bird boxes,
- Hedgehog houses,
- Hibernacula,
- Invertebrate hotels, and
- Bee banks.

2.67. These habitats individually offer shelter and a food source for supporting a variety of wildlife. The mosaic of these new habitats, combined with the existing hedgerows and ditches, will support the existing wildlife within the Application Site. By offering a wider range of habitats that benefit local wildlife, they also have excellent potential to increase the biodiversity of the site.

2.68. The grassland, hedges and trees, invertebrate hotels and bee banks will not only support a wide variety of wildlife, but will also contribute towards the National Pollinator Strategy by offering new habitats that will support important pollinator species such as bees and flies.

MANAGEMENT RECOMMENDATIONS

2.69. Management recommendations have been made below for new and existing habitats with the aim of achieving the following:

- to maintain and improve species biodiversity within the site;
- to enhance the quality of the habitats;
- increase the site's potential for supporting wildlife; and
- to avoid any potential negative impacts arising from the development of the site.

2.70. Recommended management actions required to achieve the desired site conditions are summarised in **Table 2** of this document. The table also provides a brief résumé of the rationale for, and possible constraints on, adopting the recommended management.

Responsibilities

2.71. It will be the responsibility of the Applicant to ensure that the proposed biodiversity management and monitoring is undertaken. It is expected that suitably qualified and experienced vegetation management contractors, arboriculturists and ecologists will be engaged by the Applicant for this purpose.

Grassland

2.72. The planting of species-rich grassland will occur within the Application Site over areas of current arable and improved grassland habitat that will be disturbed during the construction phase. This will primarily be beneath and between the solar PV panels, in all fields where these panels are present. The management regime will ensure a varied sward structure.

2.73. Among other wildlife, species-rich grassland is of benefit to invertebrates such as cockchafers. This will in turn encourage foraging by species such as the greater horseshoe bat, should this Devon Priority bat colonise the local area in the future.

Soil Stabilisation and Sward Establishment

2.74. Prior to sowing, the area of existing grassland will be sprayed with an approved herbicide, with repeat application where necessary to kill off any persistent weeds and regrowth of grasses. Emorsgate EG10 Tussock Grass Mixture or similar will be sown to provide a locally appropriate mixture of wildflowers and tussocky grasses, limiting erosion as well as increasing interest to pollinating invertebrates.

2.75. Species such as common couch, broad-leaved dock, stinging nettle and creeping thistle can be difficult to eradicate and may cause problems with sward establishment. These species should therefore be monitored when undertaking weed control on site. If required, they may need to be targeted by selective scything before they seed in late summer / autumn.

2.76. Low intensity sheep grazing will ensure that areas of shorter sward height will be managed and maintained. In years two and three, grazing will be introduced in the months from August to November inclusive. This limited period will allow the sward to establish, in accordance with Forest Research grassland creation guidance[10].

Grazing Regime

2.77. Due to selective grazing habits, sheep grazing can lead to a diverse sward structure, if stocked at correct numbers. Sheep-grazing the grassland areas after construction will benefit local biodiversity by eliminating the requirement for pesticide use as part of the current management regime for crops in the arable field. It will also lead to an increase in the nesting suitability of fields for the Devon Priority species skylark[11, 12].

2.78. A hardy Devon breed such as Whiteface Dartmoor, Greyface Dartmoor or Devon Closewool will be used due to their strong sward maintenance and ability to limit scrub dominance, their self-reliance, their hardiness and (for some breeds) the lack of assistance they need during lambing[13,14,15,16]. Such breeds are considered suitable for lowland conservation grazing, as well as being more widely used in the southwest uplands. A grazier will be consulted to specify an appropriate welfare regime, though it is noted that the self-reliance of these breeds will limit the need for welfare checks. All checks that are needed will be performed on foot to minimise disturbance to wildlife.

2.79. An appropriate stocking mix (in terms of age and sex) and density will be agreed with the Rare Breeds Survival Trust or a suitably experienced conservation grazier. Stocking density should fall between 0.2 and 0.5 livestock units per hectare per year, as advised by Plantlife[17], with stocking density at the low end of this range for the first three years.

2.80. From the fourth year onwards, grazing will occur between March and November inclusive. Removing grazing over winter will reduce the likelihood of soils becoming poached[18]. Sheep

[10] Harris, P *et al.* (2014) Lowland Neutral Grassland: Creation and management in land regeneration.

[11] RSPB (n.d.) Helping Bird Species: Skylark. Available at: https://www.rspb.org.uk/our-work/conservation/conservation-and-sustainability/farming/advice/helping-species/skylark/

[12] Fuller, R.J. (1996) BTO Research Report No. 164: Relationships Between Grazing and Birds with Particular Reference to Sheep in the British Uplands. British Trust for Ornithology, Thetford.

[13] GAP (2008) The Breed Profiles Handbook: A Guide to the Selection of Livestock Breeds for Grazing Wildlife Sites. Grazing Animals Project. Available at: https://www.rbst.org.uk/Pages/Category/gap-resources

[14] https://www.rbst.org.uk/whiteface-dartmoor

[15] https://www.rbst.org.uk/greyface-dartmoor

[16] https://www.rbst.org.uk/devon-closewool

[17] Rehabilitation of existing priority lowland grassland: Timescales to achieve favourable condition. Available at: http://www.magnificentmeadows.org.uk/assets/pdfs/Lowland_grassland_timescales_for_recovery_advisory_note_FINAL-Design.pdf

[18] Harris, P *et al.* (2014) Lowland Neutral Grassland: Creation and management in land regeneration.

will be contained by the fencing in place during the operational phase, but will be allowed to roam freely inside these boundaries to encourage habitat diversity through a more naturalistic grazing process.

Hedgerows and Trees

2.81. This management plan will enhance the existing hedgerow boundaries by planting new stretches of species-rich hedgerow. Native trees will also be planted (see **Figure 1.14 of Volume 3, Technical Appendix 1: Landscape and Visual Impact Appraisal**) for additional ecological interest and to strengthen green infrastructure across the site and the nearby designated sites. The hedge and tree planting will include cherry trees (*Prunus padus* and *Prunus avium*) to provide autumn foraging for common birds and species such as badger that are known to use the Application Site.

2.82. Creating hedgerows will benefit a range of local species including Priority Species such as terrestrial mammals, snakes and newts. If the correct species are planted and maintained correctly, a hedgerow's potential can be maximised, providing food and shelter throughout the year, as well as connecting existing green infrastructure and wildlife movement corridors.

2.83. New and compensatory hedgerow planting has been provided at a ratio of 13:1. Hedgerow loss will total 93.25m, with 1212m of new hedgerow to be planted.

2.84. The hedgerows will be planted as double staggered rows at 6-8 per metre, with a spacing of 300-400mm between rows. They will contain the species proposed in **Table 1**.

Table 1: Hedgerow Species Mix

SCIENTIFIC NAME	ENGLISH NAME	PERCENTAGE (%)
Crataegus monogyna	Common hawthorn	55
Corylus avellana	Hazel	10
Prunus padus	Bird cherry	5
Ilex aquifolium	Holly	5
Rosa canina	Dog rose	5
Viburnum opulus	Guelder rose	5
Prunus spinosa	Blackthorn	5
Ulex europaeus	Gorse	5
Lonicera periclymenum	Honeysuckle	5

2.85. It is also important to maintain ground flora along the hedgerows to provide suitable commuting corridors for small mammals and herptiles. This will be achieved by allowing natural colonisation of ground flora from nearby hedgerows. These will be best suited to flourish in the shaded conditions created.

2.86. Native tree species will also be planted at field boundaries in the east of the Application Site. These species comprise alder (*Alnus glutinosa)*, downy birch (*Betula pubescens*), goat willow

(*Salix caprea*), bay willow (*Salix pentandra*), rowan (*Sorbus aucuparia*) and wild cherry (*Prunus avium*).

Management Regime

2.87. New hedgerows and trees will be planted within the first available planting season (November to March).

2.88. In year 2, newly planted hedgerow sections will be pruned (see **Figure 1.14 of Volume 3, Technical Appendix 1: Landscape and Visual Impact Appraisal** for further details). Existing hedgerows will be cut on a 2 or 3-year cycle, with no more than 1/3 cut in any one year. From year 5, new hedgerows will also enter this cycle.

2.89. Newly planted trees will be pruned as needed in years 2 and 3, and as necessary until established. They will then be left to continue their natural development.

2.90. For all hedgerows and trees, any pruning or cutting should be done outside of the breeding bird season (which is March to August inclusive) to minimise disturbance to nesting birds. All hedgerow and tree management will be undertaken by a suitably qualified and experienced arboricultural professional.

WILDLIFE SHELTERS

2.91. The creation of wildlife shelters, placed strategically throughout the site, will provide shelter for a range of species.

Bird and Bat Boxes

2.92. Four bird nest boxes will be erected on retained mature trees. These will be a mixture of:

- 2x Schwegler 1B Nest Box with 26mm entrance for very small species, and
- 2x Schwegler 1B Nest Box with 32mm entrance (suitable for birds including the East Devon Priority species house sparrow[19]).

2.93. These will be positioned 2-4m up each tree with a clear flight path to each box entrance. The boxes will be slightly tilted forward so that any driving rain will hit the roof and bounce clear, and will face between north and west, thus avoiding strong sunlight and the harshest winds. Indicative locations are shown in **Figure 1.14 of Volume 3, Technical Appendix 1: Landscape and Visual Impact Appraisal**); final locations will be decided during the installation process.

2.94. Four woodcrete bat boxes will be erected on retained mature trees. These will be a mixture of two each of Schwegler 1FD and 2F-DFP designs (suitable for the Devon Priority species soprano pipistrelle (*Pipistrellus pygmaeus*)) or a similar mix if any of these are not available at the time of purchase. The boxes will be positioned 3-5m up the trees with a clear flight path to each box entrance. Boxes will face between southeast and southwest, thus providing natural heating. Indicative locations are shown in **Figure 1.14 of Volume 3, Technical Appendix 1: Landscape and Visual Impact Appraisal**; final locations will be decided during the installation process.

Maintenance Regime

2.95. All boxes will be maintained for a minimum of five years after installation. Boxes will be checked annually by a suitably competent and qualified ecologist. Where necessary, boxes will be cleaned by removing debris with a clean cloth. Any missing or damaged boxes will be replaced as needed. For boxes where bat roosting is discovered, subsequent checks should be carried out by a licensed bat worker.

Hedgehog Houses

2.96. Two hedgehog houses will be positioned in the Application Site at quiet corners and habitat edges[20], especially adjacent to hedgerows.

[19] See https://www.nhbs.com/1b-schwegler-nest-box
[20] See https://www.nhbs.com/hedgehog-house

Maintenance Regime

2.97. The hedgehog houses will be checked annually for a minimum of five years after installation. Any missing or damaged houses will be replaced within seven weeks (to allow for sourcing and deployment).

Herptile Hibernacula

2.98. Two hibernacula will be constructed within the Application Site, close to other features of potential reptile interest, including the silted-up pond in the west of Field 24 and hedgerows. Each hibernaculum comprises of log, rock and stone piles and is aimed at providing shelter for reptile and amphibians to hibernate. It may also be used by a variety of insects and small mammals. Hibernaculum creation will follow the instructions laid out within **Appendix 2.3A** below.

Management Regime

2.99. The hibernacula can be installed at any stage within the first year, and then left to allow natural vegetation colonisation to continue over the subsequent years.

Invertebrate Hotels

2.100. Two invertebrate hotels will be erected close to the Application Site margins to provide nesting and sheltering habitat for invertebrates including pollinator species. A number of non-swarming bees, which often adopt these habitats, are Priority species for England.

2.101. For optimal warmth, the hotels will be erected in south- or southeast-facing areas not shaded by solar panels (see **Figure 1.14 of Volume 3, Technical Appendix 1: Landscape and Visual Impact Appraisal**).

Maintenance Regime

2.102. The invertebrate hotels will be checked once each summer for a minimum of five years after installation. Any missing or damaged hotels will be replaced within seven weeks (to allow for sourcing and deployment).

Bee Banks

2.103. Two bee banks will be created in south-facing locations across the Proposed Development. These will consist of mounds of loose sand and similar materials, set aside for mining bee species to burrow into. A number of mining bees are Priority species for England.

2.104. To create warm conditions, these will be constructed in areas not shaded by solar panels. Further details are provided in **Appendix 2.3B**.

Management Regime

2.105. The banks can be created at any stage within the first year, and then left to allow a cycle of vegetation colonisation and natural disturbance to continue over the subsequent years.

Table 2: Habitat Creation, Management and Maintenance

Objective	Action Plan Task	Timescale	Notes
Enhance the quality of habitats present	Create a diverse grassland with varied structure After the development of the solar farm, sections of species-rich grassland seed mix will be sown across the site.	Year 1	Most of the site will be sheep-grazed with a light stocking rate that will allow varied sward structure across the site. Species-rich grassland will support invertebrates such as cockchafers, which can encourage foraging by Devon Priority bat species.
Create a diversity of habitats within the site	New tree planting This will include alder *Alnus glutinosa*, downy birch (*Betula pubescens*), goat willow (*Salix caprea*), bay willow (*Salix pentandra*), rowan (*Sorbus aucuparia)* and wild cherry (*Prunus avium*).	Year 1	Planting will strengthen ecological connections between non-statutory designated sites including Derril Water 2 UWS

	Enhance existing hedgerow boundary Plant new hedgerows with hazel (*Corylus avellana*), blackthorn (*Prunus spinosa)*, hawthorn (*Crataegus monogyna*), bird cherry (*Prunus padus*), holly (*Ilex aquifolium*), dog rose (*Rosa canina*), gorse (*Ulex europaeus*), honeysuckle (*Lonicera periclymenum*) and guelder rose (*Viburnum opulus*). These corridors will allow the movement of small mammals and herptile species. To ensure a diverse hedgerow with a good structure it is important to maintain ground flora along the hedgerow.		A hedgerow provides shelter and a source of food for a variety of species including birds, small mammals, amphibians, reptiles and butterflies. If appropriate species are planted and maintained correctly, a hedgerow's potential can be maximised, providing food and shelter throughout the year.
	Install hibernacula		See **Appendix 2.3A** The hibernacula comprise of log, rock and stone piles, which are aimed at providing shelter for herptile species to hibernate. However, the hibernacula may also be used by a variety of insects and small mammals.
Ensure fencing does not inhibit the movement of wildlife	To allow movement of badgers, brown hares, hedgehogs, small mammals and herptiles across the development area the fence will be above ground level, with at least a 10cm gap at the base, allowing access for these species where required.	Year 1 (during construction phase)	Although badgers will not pass through a 10cm gap, they will dig a depression into the ground at the required areas.
Create a diversity of habitats within the site	Create bat roosting habitat Native tree species will be planted, which, in time, will	Year 1	The creation of roosting habitat, along with the creation of species-rich

	create new bat roosting resources.		habitat that will encourage an abundance of invertebrate life (a potential food source), will be beneficial to local bats.
	Create bird nesting habitat Native tree species will be planted, offering new nesting resources. Low intensity sheep grazing will increase nesting opportunities for skylark.		The creation of nesting habitat, along with the creation of species-rich habitat that will encourage an abundance of invertebrate life (a potential food source) and diverse grassland seed-fall, will be beneficial to local birds including specialist farmland birds.
	Create bee banks Five earth banks will be created across the site to support bees and other invertebrates.		See **Appendix 2.3B** Banks will be left bare and south-facing for insects such as solitary bees
	Install hedgehog houses Nine hedgehog houses will be positioned across the site to help support this Priority species.	Year 1	The creation of species-rich habitat that will encourage an abundance of invertebrate life will also benefit hedgehogs, which feed on insects.
	Install invertebrate hotels		Features aimed at raising invertebrate numbers and diversity will also benefit insectivorous predators such as bats, birds and herptiles.
Maintain tree planting	Tree pruning	Years 2 and 3 (longer if needed) between January and February	Management will ensure optimal availability of berry and blossom for wildlife throughout the year as a potential food source.
Maintain new species-rich	Low intensity sheep grazing	Each year	Low intensity sheep grazing will ensure that the areas of

ground flora around solar PV installation			shorter and longer swards will be managed and maintained. This will result in an overall increase in biodiversity within the site.
Maintain hedgerows	Cut section of hedgerow	Each year between January and February	Cutting on a rotational basis, following standard advice[21], to ensure the optimal availability of berry and blossom for wildlife throughout the year as a potential food source. Management will also ensure a good base is maintained within the hedgerow to provide suitable habitat for a range of wildlife.
Maintain new wildlife shelters	Check bird and bat boxes, hedgehog houses and invertebrate hotels	Summer of years 1 to 5+	Licensed bat worker required for future checks for all bat roosts discovered. Bird and bat boxes to be cleaned as necessary. All boxes that are missing or are damaged so as not to be functional will be replaced.

[21] Hedgelink UK, The Complete Hedge Good Management Guide, Available at www.hedgelink.org.uk

GENERAL CONSIDERATIONS

Obligations

2.106. During each of the development phases there are a number of legal obligations that should be considered by all those involved in site work:

- Ensure obligations of the Conservation of Habitats and Species Regulations 2017[22] are met by all involved with the site (see also **Table 2-1** in **Technical Appendix 2: Ecological Impact Assessment (EcIA)**.
- Ensure obligations of the Wildlife & Countryside Act 1981 (as amended)[23] are met by all involved with the site (see **Technical Appendix 2: EcIA** for further detail).
- Ensure all relevant Health & Safety at Work Act obligations[24] are met.

Good Ecological Practice

2.107. Whilst management practices should only be altered if there is a good ecological reason for doing so, they should not rigidly be adhered to if they are obviously detrimental to wildlife.

[22] Parliament of the United Kingdom, 2017. The Conservation of Habitats and Species Regulations 2017. Available at https://www.legislation.gov.uk/uksi/2017/1012/contents/made

[23] Parliament of the United Kingdom, 1981. Wildlife and Countryside Act 1981 (as amended). Available at http://www.legislation.gov.uk/ukpga/1981/69

[24] Parliament of the United Kingdom, 1974. Health and Safety at Work etc. Act 1974 (as amended). Available at https://www.legislation.gov.uk/ukpga/1974/37/contents

INDICATIVE MANAGEMENT SCHEDULE

2.108. **Table 3** below shows possible months in which activities will occur during habitat establishment and continued management.

Table 3: Timeframes for Management Activities

MANAGEMENT ACTIVITY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Year 1 – Initial Habitat Creation and Enhancement												
Himalayan balsam eradication					✓	✓	✓	✓				
Hedgerow and tree planting	✓	✓								✓	✓	✓
Removal of existing vegetation and seeds beneath solar panels			✓	✓	✓							
Cultivate and allow soil to settle						✓	✓					
Grassland sowing beneath solar panels								✓	✓			
Years 2 and 3 - Annual Habitat Management												
Grazing of grassland beneath solar panels (once sward is established)								✓	✓	✓	✓	
Pruning of newly-planted	✓	✓							✓			

hedgerow sections and trees												
Checks by contractor through the initial maintenance period to comprise weed clearance, watering and pruning			✓	✓	✓	✓	✓	✓				
Replacement of any dead, dying or diseased newly planted trees or hedgerow										✓	✓	✓
Existing hedgerows cut on a 2- or 3-year cycle, with no more than 1/3 cut in any one year	✓	✓										
Himalayan balsam monitoring / eradication					✓	✓	✓	✓				
Ongoing Annual Management – Year 3 onwards												
Grazing of grassland beneath solar panels			✓	✓	✓	✓	✓	✓	✓	✓	✓	
Ongoing Annual Management – Year 4 onwards												
Light pruning of newly planted	✓	✓							✓			

hedgerow sections												
Existing hedgerows cut on a 2- or 3-year cycle. All hedgerows from year 5, with no more than 1/3 cut in any one year.	✓	✓										
Himalayan balsam monitoring / eradication					✓	✓	✓	✓				

DECOMMISSIONING

2.109. At the end of the operational period, decommissioning will take place. This will entail dismantling and removing all of the materials and equipment in order to reinstate the land back to its original condition. Where possible, retaining features such as species-rich grassland and maintaining the hedgerow boundary beyond the 40-year lifespan of the Proposed Development will be of benefit to wildlife. This will enable **net biodiversity gain** to be sustained in the long term.

APPENDICES

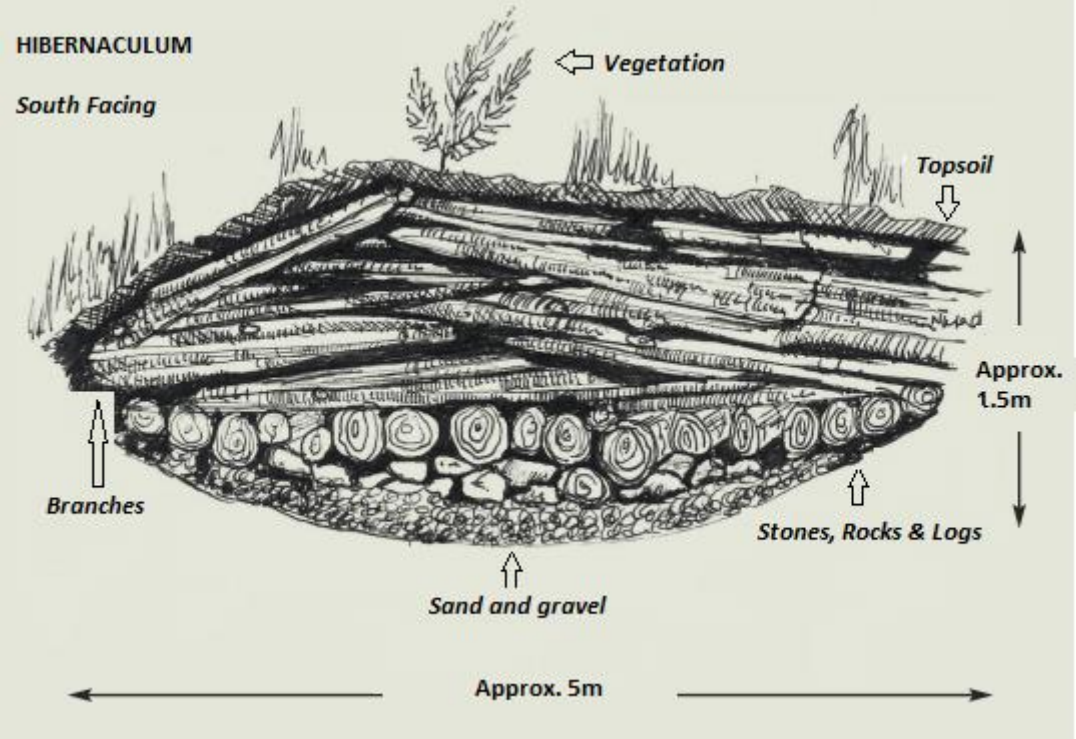
Appendix 2.3A – Hibernaculum Construction

Appendix 2.3B – Bee Bank Construction

Appendix 2.3A: Hibernaculum Construction

APPENDIX 2.3A - HIBERNACULUM CONSTRUCTION

2.110. The hibernaculum will follow the basic construction set out below, with the log and stone piles situated to the north of the hibernaculum.



- A 5m long east-west running ditch 1m deep and 1m wide will be dug.
- The base will be lined with sand and gravel.
- This will be followed with layers of stones, rocks and logs.
- Smaller branches will then be placed on top, and covered soil from the excavation will be placed over the pile, leaving gaps for access.
- The soil will be shaped into a mound.
- The north-facing side of the mound will be seeded / planted with species that will attract insects and will also provide extra shelter.
- The south-facing side will be maintained with a sparse vegetation cover to provide an area to bask.
- A log pile of approximately 2m by 1m will be placed to the north of the hibernaculum.

Appendix 2.3B: Bee Bank Construction

APPENDIX 2.3B – BEE BANK CREATION

- Material will be built into a crescent-shaped mound with various slopes, hollows and angles that may be utilised and favoured by different species.
- Aggregate and/or soil will be used to create the core of the bank. Builders' sand will be used to cap the bank in a layer of >30cm deep. Bank faces will then be compacted with the back of a spade.
- Banks will be between 0.5m and 1.5m high. A variety of bank heights will be created to provide habitat microdiversity.
- Vertical faces created on bee banks take much longer to vegetate, and this makes them attractive to many species. Over time a bee bank will be vegetated over through succession.
- Planting appropriate vegetation in an open structure in front of a bee bank will provide extra habitat for invertebrates that are attracted to the bee bank.
- These banks will be created close to flower-rich areas that will create important foraging opportunities for pollinators.

Appendix 2.4 Net Gain Assessment

Derril Water Solar Farm

21/05/2021

Disclaimer

Neo Environmental Limited shall have no liability for any loss, damage, injury, claim, expense, cost or other consequence arising as a result of use or reliance upon any information contained in or omitted from this document.

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Contents

INTRODUCTION

Background

2.1. Neo Environmental Ltd has been appointed by Renewable Energy Systems (RES) Ltd (the "Applicant") to complete a Net Gain Assessment for a proposed 42MW solar farm and associated infrastructure (the "Proposed Development") on lands circa 1.2km southwest of the village of Pyworthy, Devon (the "Application Site").

2.2. The project team requested pre-application advice from Torridge District Council in September 2020. A meeting with Laura Davies (Planning Officer), held on 22nd October 2020, highlighted that a net gain for biodiversity was expected with the implementation of a Biodiversity Management Plan ("BMP") and Landscape and Ecology Management Plan ("LEMP") for the Proposed Development. It also brought to light that, while a particular percentage of gain is not specified, the Applicant's team would need to complete a DEFRA biodiversity metric assessment for the Council to evaluate.

Development Description

2.3. The Proposed Development will consist of the construction of bi-facial solar photovoltaic (PV) panels mounted on metal frames, new access tracks, underground cabling, perimeter fencing with CCTV cameras and access gates, a temporary construction compound, substation and all ancillary grid infrastructure and associated works. The Proposed Development will result in the production of clean energy from a renewable energy resource (daylight) and will also involve additional landscaping including hedgerow planting and improved biodiversity management.

Site Description

2.4. The Application Site is located on lands circa 1.2km southwest of the village of Pyworthy and c. 1.8km southeast of Bridgerule in Torridge, Devon; the approximate centre point of which is Grid Reference E229936, N101914. Comprising 28 agricultural fields, the Application Site measures 66.33 hectares (ha) in total. See **Figure 1 of Volume 2: Planning Application Drawings** for details.

2.5. Land within the Application Site itself is gently undulating, ranging between 95 - 125m AOD and consists of fields typically of medium scale and generally well enclosed by a mixture of dense treelines, hedgerows and woodland shelter belt, limiting visibility for local settlements and receptors (See **Figure 3 of Volume 2: Planning Application Drawings** for field numbers).

2.6. The Application Site is in an area with existing electricity infrastructure, with a solar farm present c. 0.3km southeast and another c. 1.2km to the southwest. Additionally, the electrical

Pyworthy Substation is located c. 75m from the northern parcel's eastern boundary, adjacent to Field 16, where the Proposed Development will connect.

2.7. The local area is generally agricultural in nature, punctuated by individual properties and farmsteads; the nearest residential areas are Hopworthy and Yeomadon, located 0.7km northeast and southeast respectively. Recreational Routes include two Public Rights of Way (PRoW); one which passes the southeastern boundary of the Application Site (linking Crinacott Farm and Northmoor Farm, both outside the Application Site) and another which passes east of the adjacent substation, located circa 75m east of the Application Site.

2.8. While there are a number of drains and water courses throughout the Application Site, it is mostly contained within Flood Zone 1, an area described as having a "Low probability" of flooding. The exception to this is a small part of the Application Site within Flood Zone 2 and 3, towards the eastern boundary of Field 16. These areas have been avoided within the Proposed Development footprint.

2.9. The Application Site will be accessed from four existing entrance points on the unnamed minor road which splits the site into northern and southern parcels. From the western boundary of the site, the road runs in a southwestern direction for c. 0.5km before turning in a general east-northeast direction through the eastern section of the Application Site.

Statement of Authority

2.10. The assessment has been conducted by an ecologist registered with the Chartered Institute of Ecology and Environmental Management ("CIEEM"). All work has been carried out in line with the relevant professional guidance, including CIEEM's Guidelines for Report Writing[1].

2.11. Daniel Flenley has 14 years of ecology experience including undertaking surveys and writing associated reports. A full member of CIEEM, he has experience in undertaking and managing a range of surveys and assessments including BMPs, Ecological Impacts Assessments ("EcIAs"), extended phase 1 habitat surveys and ornithological and protected species surveys, for over 400 projects. These include a variety of development types such as energy, commercial, industrial and transport infrastructure. Daniel holds a great crested newt class licence and has worked as an accredited agent under bat and amphibian mitigation and reptile survey licences.

[1] CIEEM, 2017. Guidelines for Ecological Report Writing. Second Edition. Available at www.cieem.net

LEGISLATION, PLANNING POLICY AND GUIDANCE

National Legislation

Environment Bill (2019-2021)

2.12. The UK Government's Environment Bill[2] proposes a requirement for developments in England to achieve a minimum 10% **net gain for biodiversity**. The Bill is currently at the report stage in the House of Commons, and is expected to become law later in 2021.

Planning Policy

National Planning Policy Framework (2019)

2.13. The National Planning Policy Framework ("NPPF")[3] sets out the government planning policies for England and how they should be applied. With regards to ecology and biodiversity, Chapter 11 "*Conserving and Enhancing the Natural Environment*", paragraph 170, states that planning policies should:

- Minimise impacts on, and provide **net gains in biodiversity**, where possible.
- Recognise the wider benefits of natural capital and ecosystem services.

2.14. Under these aims, paragraph 171 stresses the need to plan for natural capital at a catchment or landscape scale, linked to national and local targets. Paragraph 175 sets out the principles that local planning authorities should apply when determining planning applications:

- Refuse planning permission if significant harm cannot be avoided, adequately mitigated, or, as a last resort, compensated for;
- Encourage opportunities to incorporate biodiversity in and around developments, especially where this can secure measurable net gains for biodiversity;
- Permission should not normally be permitted where an adverse effect on a nationally designated Site of Special Scientific Interest ("SSSI") is likely;
- Refuse planning permission if development will result in the loss or deterioration of irreplaceable habitats, such as ancient woodland and ancient or veteran trees, unless

[2] https://services.parliament.uk/bills/2019-21/environment.html

[3] Department for Housing, Communities and Local Government (2019). National Planning Policy Framework

there are wholly exceptional circumstances e.g. when the benefits of the development clearly outweigh the loss or deterioration.

North Devon and Torridge Local Plan 2011 – 2031

2.15. Adopted in October 2018, this is the current Local Plan for Torridge[4], the district in which the Application Site falls. The relevant policies set out within the Plan include the following related to biodiversity net gain.

Policy ST14: Enhancing Environmental Assets

"The quality of northern Devon's natural environment will be protected and enhanced by ensuring that development contributes to:

(a) Providing a net gain in northern Devon's biodiversity where possible, through positive management of an enhanced and expanded network of designated sites and green infrastructure, including retention and enhancement of critical environmental capital;

(b) Protecting the hierarchy of designated sites in accordance with their status;

(c) Conserving European protected species and the habitats on which they depend […]."

Policy DM08: Biodiversity and Geodiversity

"(1) Development should conserve, protect and, where possible, enhance biodiversity and geodiversity interests and soils commensurate with their status and giving appropriate weight to their importance. All development must ensure that the importance of habitats and designated sites are taken into account and consider opportunities for the creation of a local and district-wide biodiversity network of wildlife corridors which link County Wildlife Sites and other areas of biodiversity importance.

European Sites

(2) The highest level of protection will be given to potential and existing Special Protection Areas, candidate and existing Special Areas of Conservation and listed or proposed Ramsar sites. Proposals having an adverse impact on the integrity of such areas that cannot be avoided or adequately mitigated to remove any adverse effect will not be permitted other than in exceptional circumstances. These circumstances will only apply where there are:

(a) no alternative solutions;

[4] Torridge District Council - North Devon and Torridge Local Plan (Interactive Version) - North Devon and Torridge Local Plan 2011-2031

(b) imperative reasons of overriding public interest; and

(c) necessary compensatory provisions secured to ensure that the overall coherence of the Natura 2000 network of European sites is protected.

(3) Development will only be supported where any necessary mitigation is included such that, in combination with other plans or projects, there will be no adverse effects on the integrity of European Nature Conservation Sites.

National Sites

(4) Development proposals within or outside a Site of Special Scientific Interest or Marine Conservation Zone which would be likely to affect the designation adversely, either individually or in combination with other developments, will not be supported unless the benefits of the development at this site clearly outweigh both the adverse impacts on the site and any adverse impacts on the wider network of Sites of Special Scientific Interest and Marine Conservation Zones.

Local Sites

(5) Development likely to affect adversely locally designated sites, their features or their function as part of the ecological network, including County Wildlife Sites, County Geological Sites and sites supporting Biodiversity Action Plan habitats and species, will only be permitted where the need for and benefits of the development clearly outweigh the loss, and the coherence of the local ecological network is maintained.

Protected Species and Habitats

(6) Adverse impacts on European and UK protected species and Biodiversity Action Plan habitats and species must be avoided wherever possible, subject to:

(i) the legal tests afforded to them where applicable; or otherwise unless

(ii) the need for and benefits clearly outweigh the loss.

Ancient Woodland and Veteran Trees

(7) Development must avoid the loss or deterioration of ancient woodland and veteran trees, unless the need for, or benefits of development on that site clearly outweigh the loss.

Avoidance, Mitigation and Compensation for Biodiversity and Geodiversity Impacts

(8) Development should avoid adverse impact on existing features as a first principle and enable net gains by designing in biodiversity features and enhancements and opportunities for geological conservation alongside new development. Where adverse impacts are unavoidable they must be adequately and proportionately mitigated, If full mitigation cannot be provided, compensation will be required as a last resort."

METHODOLOGY

2.16. Net gain assessment is currently carried out using DEFRA's Biodiversity Metric 2.0 (JP029)[5]. According to Natural England (the DEFRA agency responsible for creating the biodiversity metric assessment methodology):

> The Biodiversity Metric 2.0 provides a way of measuring and accounting for biodiversity losses and gains resulting from development or land management change. Biodiversity Metric 2.0 updates and replaces the original Defra biodiversity metric. Biodiversity Metric 2.0 has been developed with input from a wide range of environmental NGOs, developers, land managers, Government agencies and other interested parties.
>
> *Biodiversity Metric 2.0 is being published as a 'beta test' version to enable wider user feedback (see below). The metric comes with a free calculation tool designed to simplify and speed-up the whole calculation process.*
>
> *The Biodiversity Metric 2.0 encompasses both area (e.g. grasslands) and linear (such as rivers and streams) habitats.*

2.17. This report uses the methodology and calculation tool referenced above. Broadly speaking, the metric assessment involves calculating scores for 'biodiversity units' (indicators of site's biodiversity value) pre- and post-development. Each score is based on the area (or, for linear habitats, the length) of different habitats present or proposed, their ecological distinctiveness, connectivity, condition, how long they take to create, and how likely it is that any proposed habitat creation will succeed.

Limitations

2.18. Data for a full river condition assessment were not available. Watercourses within the Application Site will remain intact and only experience negligible change as a result of the Proposed Development. Linear habitat assessment was therefore limited to hedgerows, and it is not considered that the inclusion of rivers would substantially alter the conclusions of the assessment.

[5] Available at http://publications.naturalengland.org.uk/publication/5850908674228224

NET GAIN ASSESSMENT

2.19. Biodiversity unit calculations for the habitats within the Application Site pre-construction are given in **Tables 1 and 2** below. Further details of baseline habitats can be found in **Appendix 2.1: Phase 1 Habitat Survey Report**.

2.20. Loss calculations are given in **Tables 3 and 4**, and post-construction biodiversity unit calculations in **Tables 5 to 8** below. Further details of the proposed habitat creation and enhancement can be found in **Appendix 2.3: Biodiversity Management Plan** and **Figure 1.14 of Volume 3, Technical Appendix 1: Landscape and Visual Impact Appraisal**.

2.21. **Table 9** shows the overall results of the net gain calculations. This highlights a **91.18% gain** in area habitat units. Such a large gain well exceeds the 10% requirement that is expected to become law later in 2021.

2.22. A **29.83%** gain in hedgerow units is predicted. This is again well in excess of 10%, showing that the Proposed Development is expected to lead to **significant biodiversity net gain**.

Table 1: Baseline Area Habitat Biodiversity Units

Habitats and areas			Habitat distinctiveness		Habitat condition		Ecological connectivity			Strategic significance			Ecological baseline
Broad Habitat	Habitat type	Area (ha)	Distinctiveness	Score	Condition	Score	Ecological connectivity	Connectivity	Connectivity multiplier	Strategic significance	Strategic significance	Strategic position multiplier	Total habitat units
Cropland	Cropland - Temporary grass and clover leys	37.6896	Low	2	N/A - Agricultural	1	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	75.38
Woodland and forest	Woodland and forest - Other woodland; broadleaved	1.0656	Medium	4	Moderate	2	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	8.52
Woodland and forest	Woodland and forest - Other woodland; broadleaved	0.0071	Medium	4	Poor	1	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	0.03
Woodland and forest	Woodland and forest - Wet woodland	0.0006	High	6	Moderate	2	Medium	Moderately connected habitat	1.1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	0.01
Heathland and shrub	Heathland and shrub - Bramble scrub	0.005	Medium	4	Fairly Poor	1.5	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	0.03
Grassland	Grassland - Modified grassland	22.7988	Low	2	Poor	1	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	45.60
Grassland	Grassland - Modified grassland	2.0466	Low	2	Fairly Poor	1.5	Low	Unconnected habitat	1	Area/compensation not in local	Low Strategic Significance	1	6.14

										strategy/ no local strategy			
Wetland	Wetland - Purple moor grass and rush pastures	1.2507	V. High	8	Moderate	2	Medium	Moderately connected habitat	1.1	Within area formally identified in local strategy	High strategic significance	1.15	25.31
Urban	Urban - Vacant/derelict land/bare ground	0.0195	Low	2	Poor	1	Low	Unconnected habitat	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	0.04
Grassland	Grassland - Tall herb communities	0.0279	High	6	Moderate	2	Medium	Moderately connected habitat	1.1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	0.37
Woodland and forest	Woodland and forest - Other woodland; broadleaved	0.001	Medium	4	Moderate	2	Low	Unconnected habitat	1	Within area formally identified in local strategy	High strategic significance	1.15	0.01

Table 2: Baseline Hedgerow Biodiversity Units

Hedgerow type	Length (km)	Distinctiveness	Score	Condition	Score	Connectivity	Connectivity multiplier	Strategic significance	Strategic position multiplier	Suggested action to address habitat losses	Total hedgerow units
Native Species Rich Hedgerow with trees - Associated with bank or ditch	3.592	High	6	Moderate	2	Moderately connected habitat	1.1	Low Strategic Significance	1	Like for like	47.4144
Native Species Rich Hedgerow - Associated with bank or ditch	4.927	High	6	Moderate	2	Moderately connected habitat	1.1	Low Strategic Significance	1	Like for like	65.0364
Native Hedgerow - Associated with bank or ditch	0.055	Medium	4	Moderate	2	Unconnected habitat	1	Low Strategic Significance	1	Like for like or better	0.44

Table 3: Baseline Area Habitat Loss

Broad Habitat	Habitat type	Area (ha)	Area retained	Area enhanced	Area succession	Baseline units retained	Baseline units enhanced	Baseline units succession	Area lost	Units lost
Cropland	Cropland - Temporary grass and clover leys	37.6896	13.327	0	0	26.65	0.00	0.00	24.36	48.73
Woodland and forest	Woodland and forest - Other woodland; broadleaved	1.0656	1.0656	0	0	8.52	0.00	0.00	0.00	0.00
Woodland and forest	Woodland and forest - Other woodland; broadleaved	0.0071	0.0071	0	0	0.03	0.00	0.00	0.00	0.00
Woodland and forest	Woodland and forest - Wet woodland	0.0006	0.0006	0	0	0.01	0.00	0.00	0.00	0.00
Heathland and shrub	Heathland and shrub - Bramble scrub	0.005	0	0	0	0.00	0.00	0.00	0.01	0.03
Grassland	Grassland - Modified grassland	22.7988	7.4568	0	0	14.91	0.00	0.00	15.34	30.68
Grassland	Grassland - Modified grassland	2.0466	0.993	0	0	2.98	0.00	0.00	1.05	3.16
Wetland	Wetland - Purple moor grass and rush pastures	1.2507	0	1.2507	0	0.00	25.31	0.00	0.00	0.00
Urban	Urban - Vacant/derelict land/bare ground	0.0195	0.0195	0	0	0.04	0.00	0.00	0.00	0.00
Grassland	Grassland - Tall herb communities	0.0279	0.0279	0	0	0.37	0.00	0.00	0.00	0.00
Woodland and forest	Woodland and forest - Other woodland; broadleaved	0.001	0.001	0	0	0.01	0.00	0.00	0.00	0.00

Table 4: Baseline Hedgerow Loss. 'Units retained' refers only to units that will be retained without being enhanced.

Hedgerow type	Length retained	Length enhanced	Units retained	Units enhanced	Length lost	Units lost
Native Species Rich Hedgerow with trees - Associated with bank or ditch	0	3.56215	0	47.02038	0.02985	0.39402
Native Species Rich Hedgerow - Associated with bank or ditch	0	4.8636	0	64.19952	0.0634	0.83688
Native Hedgerow - Associated with bank or ditch	0	0.055	0	0.44	0	0

Table 5: Site Area Habitat Creation

Proposed habitat	Area (ha)	Distinctiveness	Score	Condition	Score	Connectivity	Connectivity multiplier	Strategic significance	Strategic position multiplier	Temporal multiplier		Difficulty multipliers		Habitat units delivered
										Time to target condition (years)	Multiplier	Difficulty of creation	Multiplier	
Grassland - Other neutral grassland	40.75765	Medium	4	Moderate	2	Unconnected habitat	1	Low Strategic Significance	1	10	0.700	Low	1	228.33

Table 6: Site Hedgerow Creation

Habitat type	Length (km)	Distinctiveness	Score	Condition	Score	Connectivity	Connectivity multiplier	Strategic significance	Strategic position multiplier	Time to target condition (years)	Time to target multiplier	Difficulty of creation multiplier	Hedge units delivered
Native Species Rich Hedgerow - Associated with bank or ditch	1.212	High	6	Good	3	Moderately connected habitat	1.1	Low Strategic Significance	1	10	0.700	0.67	11.26
Line of Trees (Ecologically Valuable)	0.248	Medium	4	Good	3	Moderately connected habitat	1.1	Low Strategic Significance	1	30	0.343	0.67	0.75

Table 7: Site Area Habitat Enhancement

Baseline habitat	Proposed	Distinctiveness change	Condition change	Area (ha)	Distinctiveness	Condition	Ecological connectivity	Strategic significance	Time to target condition (years)	Difficulty of enhancement category	Habitat units delivered
Wetland - Purple moor grass and rush pastures	Wetland - Purple moor grass and rush pastures	V.High - V.High	Moderate - Fairly Good	1.2507	V.High	Fairly Good	Medium	Within area formally identified in local strategy	10	High	26.78

Table 8: Site Hedgerow Enhancement

Baseline habitat	Proposed	Distinctiveness movement	Condition movement	Length (km)	Distinctiveness	Condition	Ecological connectivity	Strategic significance	Time to target condition (years)	Difficulty of enhancement category	Hedge units delivered
Native Species Rich Hedgerow with trees - Associated with bank or ditch	Native Species Rich Hedgerow with trees - Associated with bank or ditch	High - High	Moderate - Good	3.56215	High	Good	Medium	Area/compensation not in local strategy/ no local strategy	20	Medium	54.75
Native Species Rich Hedgerow - Associated with bank or ditch	Native Species Rich Hedgerow - Associated with bank or ditch	High - High	Moderate - Good	4.8636	High	Good	Medium	Area/compensation not in local strategy/ no local strategy	10	Medium	79.26
Native Hedgerow - Associated with bank or ditch	Native Hedgerow - Associated with bank or ditch	Medium - Medium	Moderate - Good	0.055	Medium	Good	Low	Area/compensation not in local strategy/ no local strategy	10	Medium	0.54

Table 9: Biodiversity Metric Results

On-site baseline	*Habitat units*	161.44
	Hedgerow units	112.89
	River units	0.00
On-site post-intervention (Including habitat retention, creation, enhancement & succession)	*Habitat units*	308.64
	Hedgerow units	146.56
	River units	0.00
Off-site baseline	*Habitat units*	0.00
	Hedgerow units	0.00
	River units	0.00
Off-site post-intervention (Including habitat retention, creation, enhancement & succession)	*Habitat units*	0.00
	Hedgerow units	0.00
	River units	0.00
Total net unit change (including all on-site & off-site habitat retention/creation)	*Habitat units*	147.20
	Hedgerow units	33.67
	River units	0.00
Total net % change (including all on-site & off-site habitat creation + retained habitats)	*Habitat units*	91.18%
	Hedgerow units	29.83%
	River units	0.00%

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