Asland Walks Energy Park

on behalf of The Bretherton Energy Co-Operative and GA Pet Food Partners

Ecological Assessment Report

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Report Verification and Declaration of Compliance

This report has been prepared with reference to best practice guidelines for Ecological Impact Assessment in the UK and Ireland, as defined by CIEEM (2018) and is provided in accordance with the provisions of British Standard 42020:2013 Biodiversity: Code of practice for planning and development and BS 8683:2021 Process for Designing and Implementing Biodiversity Net Gain - Specification.

Document Control				
Project Name:	Asland Walks Energy Park			
Project Number:	GAPet-794-4080			
Report Title	Ecological Assessment Report			
Issue	**Date**	**Notes**	**Prepared**	**Reviewed**
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1 INTRODUCTION

1.1 Background

1.1.1 Avian Ecology Limited (AEL) was commissioned by The Bretherton Energy Co-Operative and GA Pet Food Partners to undertake an Ecological Assessment in relation to the proposed installation of a solar and wind energy park, together with associated infrastructure (the 'Proposed Development') on land at Plocks Farm near Bretherton, Lancashire (termed the 'Site'), as illustrated on the Site Location Plan (**Figure 1**). The Site's central grid reference is SD 4607 1933.

1.1.2 This report provides baseline information and an assessment of potential ecological effects of the Proposed Development.

1.1.3 The objectives of this Ecological Assessment are to:

- Provide baseline information on the current habitats and ecological features both within the Site and in the immediately surrounding area;
- Identify the presence and proximity of any designated sites for nature conservation interest relative to the Site and provide an assessment of any potential effects the Proposed Development may have on these;
- Identify the presence or potential presence of any protected species or habitats located within and immediately surrounding the Site and provide an assessment of any potential effects the Proposed Development may have on these; and,
- Outline mitigation measures (including pre-construction checks) if required, as well as providing an outline of proposed habitat enhancements that meet Biodiversity Net Gain (BNG) requirements.

1.1.4 The assessment has been informed by a desk-based review of relevant ecological information, extended habitat survey, Modular River Physical (MoRPh) survey, ornithology surveys and bat activity survey. Reference is made to relevant legislation, planning policy and guidance, as appropriate.

1.1.5 Throughout this report, common names for species are favoured over scientific names unless there is potential for confusion and in which case scientific names are also presented.

1.1.6 This Ecological Assessment Report should be read in conjunction with both the *Site Layout Plan* (GSA Consulting Drawing Number: 2022-143-002D - Full Proposed Site Layout) and *Landscape Plan* (BCA Landscape Limited Drawing Number: 22.522-BCAL-ZZ-00-DR-L-102-2-Landscape Structure); which details the Proposed Development layout and landscaping on Site.

1.1.7 This report should also be read in conjunction with the *Green Energy Site A Preliminary Ecological Appraisal*[1] *and Wintering Bird Survey*[2]reports produced by Pennine Ecological Limited in 2021 to inform initial feasibility studies of the Proposed Development.

1.1.8 A separate Extended Habitat Survey Report- 2025 Update (**Appendix 1**), Ornithology Baseline Report (**Appendix 2**), Bat Activity Baseline Report (**Appendix 3**), Biodiversity Net Gain Calculation (**Appendix 4**), Biodiversity Net Gain Report (**Appendix 5**),) Collision Risk Model (CRM) Calculations (**Appendix 6**) and Habitats Regulations Assessment (HRA) (**Appendix 7**) are provided in support of this EAR and the broader application for the Proposed Development. accompany the application.

1.2 Site Overview

1.2.1 The Site, as illustrated by the red-line boundary shown on **Figure 1**, comprises the proposed solar array area, wind turbine area, assocaited landscaping and access routes (together the 'Main Site') as well as two proposed cable routes (the 'Cable Routes').

[1] Pennine Ecological Limited (2021). *Green Energy Site A Preliminary Ecological Appraisal*.
[2] Pennine Ecological Limited (2021). *Green Energy Site A Wintering Bird Survey*.

1.2.2 The Mian Site comprises a parcel of arable land (37.6 ha) bordered by grassland strips, with the River Douglas running directly along the eastern Site boundary and the Leeds and Liverpool Canal located along the western Site boundary. As detailed in **Appendix 1**, pre-development habitat creation (and habitat enhancements) have commenced within the Site since the initial habitat surveys undertaken in 2021 and 2023 which include hedgerow, grassland and woodland planting around the perimeter of the Site, as well as the creation of a drainage ditch. Main Site access is from the north via the A59, as well as from the south of the Site via Eyes Lane.

1.2.3 Two proposed cable routes (i.e. the Cable Routes) are included as part of the Proposed Development. One heads north from the Main Site parcel and connects to the GA Pet Food Ltd manufacturing facility at Plocks Farm (i.e. North Cable Route), whilst the other heads north-east, passing through the village of Bretherton to connect to a proposed substation to the north of the village (i.e. North-East Cable Route).

1.2.4 No ponds are located within the Site itself, however four ponds (numbered P1 to P4) are located within 250m of the Main Site with a further five ponds located within 50m of the Cable Routes (numbered P5 to P9).

1.2.5 The area surrounding the Site comprises farmland, scattered woodlands and residential housing. Tarleton village is located north-west of the Site (separated by the Leeds and Liverpool Canal) with Bretherton village located along the Proposed Development's north-eastern cable route.

1.3 Proposed Development

1.3.1 The Proposed Development is for the construction and operation of single wind turbine, solar farm and battery energy storage with associated infrastructure (Asland Walks Energy Park). The Proposed Development includes associated access, landscaping and infrastructure. The solar farm would be capable of generating up to 12 MW (AC) of electricity, with the addition of a single proposed wind turbine that can generate 4.2 MW (AC) and battery storage of 5 MW (AC). The combined renewable energy resource of Asland Walks Energy Park would be 21.2 MW (AC). The solar panel array is situated within the southern section of the Main Site and comprises 11.80 ha. HV cable routes are proposed to be laid in 1 m deep trenches and to be passed under the River Douglas in two locations using Horizontal Directional Drilling (HDD).

1.3.2 The turbine specification for the Enercon E-138 model is outlined in **Table 1.1** below.

Table 1.1: Proposed Turbine Parameters.

Enercon E-138	
Hub height	110.64m
Blade diameter	138m
Maximum height to blade tip	179.8m
Number of blades	3

1.4 Legislative Framework, Planning Policy and Guidance

Legislation

1.4.1 Reference has been made to the following key pieces of legislation, listed in **Table 1.2.**

Table 1.2: Key legislation.

International

• Convention on Wetlands of International Importance especially as Waterfowl Habitat 1971 (hereafter referred to as the 'the Ramsar Convention'); • Convention on the Conservation of European Wildlife and Natural Habitats 1979 (hereafter referred to as the 'the Bern Convention'; • EU Habitats and Birds Directive; and, • UNESCO convention on the protection of the World Cultural and Natural Heritage (1972).
National
• The Wildlife and Countryside Act 1981 (as amended); • Countryside and Rights of Way Act 2000; • Hedgerow Regulations 1997; • Infrastructure Act 2015; • Natural Environment and Rural Communities (NERC) Act (2006); • Protection of Badgers Act 1992; • The Conservation of Habitats and Species Regulations 2017 (as amended); • The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019; • The Environment Act 2021; • Marine and Coastal Access Act 2009; • The Invasive Alien Species (Enforcement and Permitting) Order 2019; and, • The Town and Country Planning Act 1990.

1.4.2 The Conservation of Habitats and Species Regulations 2017 (as amended) remains in place following the United Kingdom's withdrawal from the European Union with only relatively minor changes coming into force on 31st December 2020, with the 2017 regulations being transposed into national (England and Wales) legislation via the Conservation of Habitats and Species Amendment (EU Exit) Regulations 2019 which came into force on 31st December 2020. They are hereafter referred to as the 'Habitats Regulations'.

Policy and Guidance

1.4.3 Reference has been made to the following key pieces of policy and guidance, listed in **Table 1.3**.

Table 1.3: Policy.

National
• Ancient woodland, ancient trees and veteran trees: advice for making planning decisions (Natural England, 2022)[3]; • Biodiversity Net Gain. Good practice principles for development[4]; • Biodiversity Net Gain Planning Practice Guidance[5];

[3] https://www.gov.uk/guidance/ancient-woodland-ancient-trees-and-veteran-trees-advice-for-making-planning-decisions (Accessed 29th August 2025)
[4] https://cieem.net/resource/biodiversity-net-gain-good-practice-principles-for-development-a-practical-guide/ (Accessed 29th August 2025)
[5] https://www.gov.uk/guidance/biodiversity-net-gain (Accessed 29th August 2025)

- BS 42020:2013 Biodiversity – Code of Practice for Planning and Development[6];
- BS 8683:2021 Process for designing and implementing Biodiversity Net Gain[7];
- European protected species policies for mitigation licences (Natural England, 2022)[8];
- The National Planning Policy Framework 2 (NPPF2, 2023)[9];
- The United Kingdom Biodiversity Action Plan (UK BAP); and,
- Wildlife licensing: comment on new policies for European protected species licence (Natural England, 2016)[10].

Local

- Bretherton Neighbourhood Plan[11];
- Chorley Local Plan 2012 – 2026[12];
- Chorley Borough Policies Map 1[13];
- Central Lancashire Biodiversity and Nature Conservation Supplementary Planning Document[14];
- Central Lancashire Adopted Core Strategy[15];
- Lancashire Ecological Network Approach and Analysis (Version Ia)[16];
- Chorley Climate Change Strategy[17];
- Chorley Biodiversity Net Gain Guidance Note: Strategic Significance – interim approach[18];
- Lancashire Green Infrastructure Strategy[19];
- Lancashire County Council Local Nature Recovery Strategy (draft)[20];
- Lancashire County Council Local Habitat Map[21]; and,
- Lancashire Biodiversity Action Plan[22].

1.4.4 The 'UK Post-2010 Biodiversity Framework' succeeds the UK Biodiversity Action Plan (UK BAP) and 'Conserving Biodiversity – the UK Approach'. The lists of priority species and habitats agreed under UK BAP still form the basis of much biodiversity work and are therefore considered within this report in

[6] https://www.n-somerset.gov.uk/sites/default/files/2022-06/I6%20-%20biodiversity%20-%20code%20of%20practice%20for%20planning%20and%20development%20%282013%29%20BS%20420202013.pdf (Accessed 29th August 2025)

[7] British Standards Institute (BSI) (2021). *BS 8683:2021 Biodiversity. Process for designing and implementing Biodiversity Net Gain — Specification*. British Standards Institute, London. (Accessed 29th August 2025)

[8] https://www.gov.uk/guidance/european-protected-species-policies-for-mitigation-licences (Accessed 29th August 2025)

[9] https://www.gov.uk/government/publications/national-planning-policy-framework--2 (Accessed 29th August 2025)

[10] https://www.gov.uk/government/consultations/wildlife-licensing-comment-on-new-policies-for-european-protected-species-licences (Accessed 29th August 2025)

[11] https://chorley.gov.uk/planning-policy/bretherton-neighbourhood-plan (Accessed 29th August 2025)

[12] https://chorley.gov.uk/downloads/file/260/chorley-local-plan-2012-2026-adopted-2015- (Accessed 29th August 2025)

[13] https://chorley.gov.uk/downloads/file/261/chorley-borough-policies-map-1 (Accessed 29th August 2025)

[14] https://chorley.gov.uk/downloads/file/282/biodiversity-and-nature-conservation-central-lancashire- (Accessed 29th August 2025)

[15] https://centrallocalplan.lancashire.gov.uk/plans-and-documents/core-strategy/ (Accessed 29th August 2025)

[16] https://burnley.gov.uk/wp-content/uploads/2022/06/Lancashire_Ecological_Network_Approach_and_Analysis_v1a_20150629.pdf (Accessed 29th August 2025)

[17] https://chorley.gov.uk/downloads/file/526/climate-change-strategy (Accessed 29th August 2025)

[18] https://chorley.gov.uk/downloads/file/1603/chorley-bng-strategic-significance-interim-may-2025

[19] http://www.lancastergreenspaces.org.uk/uploads/8/1/1/9/8119213/lancashire_green_infrastructure_strategy.pdf (Accessed 29th August 2025)

[20] https://www.lancashire.gov.uk/media/963895/lancashire-local-nature-recovery-strategy.pdf (Accessed 29th August 2025)

[21] https://experience.arcgis.com/experience/92a5cd8951b84c65b9cd842f5ffc2333/page/Habitat-Map (Accessed 29th August 2025)

[22] https://www.lancashire.gov.uk/lern/services/ (Accessed 29th August 2025)

the context of the objectives of the Biodiversity Framework. BAPs identify habitats and species of nature conservation priority on a UK (UK BAP) and Local scale (i.e. Local Biodiversity Action Plan (LBAP)). UK BAPs formed the basis for statutory lists of priority species and habitats in England under Section 41 (England) of the Natural Environment and Rural Communities (NERC) Act 2006, and so are also relevant in the context of this legislation.

1.4.5 This report is provided in accordance with the provisions of British Standard 42020:2013 Biodiversity: Code of Practice for Planning and Development.

2 METHODOLOGY

2.1 Desk Study

2.1.1 A desk study was undertaken to identify existing information on the presence of designated sites for nature conservation, protected and notable species and habitats within proximity to the Site as follows:

- Statutory designated sites for nature conservation within 5 km of the Site, extended to 10 km for internationally protected sites. This was further extended to 20 km for designated sites with mobile qualifying waterbird species in **Appendix 2**;
- Non-statutory designated sites for nature conservation within 2km of the Site; and,
- Existing records of priority habitats and protected and notable faunal species (dated within the last 10 years (i.e. since 2015)), within 2km of the Site.

2.1.2 The following key sources were consulted:

- Natural England and Joint Nature Conservation Committee (JNCC) websites[23,24];
- The Multi Agency Geographic Information for the Countryside (MAGIC) website[25];
- District Level Licencing Data[26];
- The Natural England Open Data Geoportal[27];
- The Woodland Trust Ancient Tree Inventory website[28]; and,
- Lancashire Environmental Records Network (LERN) (including data from South Lancashire Bat Group)[29].

2.1.3 Reference was also made to Ordnance Survey maps of the wider area and online aerial images (www.google.co.uk/maps) in order to determine any features of nature conservation interest in the wider area, including potential ponds and watercourses.

2.2 Field Surveys

Extended Habitat Survey

2.2.1 An extended Phase 1 habitat survey of the Main Site was first undertaken by Pennine Ecological Limited on 16th June 2021. The survey followed UK industry standard JNCC Phase 1 Habitat Methodology and with reference to the Chartered Institute of Ecology and Environmental Management (CIEEM) Technical Guidance Series Guidelines for Preliminary Ecological Appraisal (CIEEM, 2017)[30]. Due to the elapse of time since the original surveys, a validation walkover of the Main Site was then undertaken on 23rd September 2023 to verify the baseline habitats since the 2021 survey.

2.2.2 Due to further delay in the progression of the application for the Proposed Development, an updated extended habitat survey of the full Site (including the cable routes) was undertaken on 11th August and 9th September 2025 by AEL. The practical survey methodology followed the UK industry standard

[23] https://www.gov.uk/government/organisations/natural-england (Accessed: 29th August 2025)
[24] http://jncc.defra.gov.uk/ (Accessed: 29th August 2025)
[25] https://magic.defra.gov.uk/MagicMap.aspx (Accessed: 29th August 2025)
[26] https://naturalengland-defra.opendata.arcgis.com/datasets/great-crested-newts-edna-pond-surveys-for-district-level-licensing-england?geometry=-1.451%2C51.749%2C-1.002%2C51.823 (Accessed: 29th August 2025)
[27] https://naturalengland-defra.opendata.arcgis.com/datasets/Defra::peaty-soils-location-england/explore?location=53.163227%2C-0.801927%2C10.71 (Accessed: 29th August 2025)
[28] https://ati.woodlandtrust.org.uk/ (Accessed: 29th August 2025)
[29] https://www.lancashire.gov.uk/lern/ (Accessed: 29th August 2025)
[30] CIEEM. (2017). *Guidelines for Preliminary Ecological Appraisal, 2nd edition*. Chartered Institute of Ecology and Environmental Management, Winchester.

UKHab methodology V2.01 (UK Habitat Classification Working Group. 2023[31]), with reference to CIEEM (2017).

2.2.3 During the 2025 update survey, all habitats were mapped and described using a series of 'target notes' (TNs) to the highest level of UK habitat classification as possible, with each individual habitat feature being assigned to a primary habitat and then described with secondary codes if applicable. The survey was extended to include the additional recording of specific features indicating the presence, or likely presence, of protected species, invasive species and other species of conservation significance. The extent of the Site and habitats as surveyed is detailed fully (with accompanying photographs) in **Appendix 1.**

2.2.4 All surveys were completed by suitably competent and experienced ecologists.

Preliminary Roost Appraisal

2.2.5 A Preliminary Roost Appraisal was also incorporated into 2025 extended habitat survey, which was based on Bat Conservation Trust (BCT) guidance (Collins*,* 2023[32]). The survey comprised an assessment of structures and trees for potential roost features (PRFs) and bat roost suitability.

Ground Level Tree Assessment (GLTRA)

2.2.6 Notable trees were given an initial suitability appraisal of their potential to support roosting bats (as assigned by professional judgement) based on definitions described within Table 4.2 of the current BCT guidelines (Collins, 2023), as follows:

- **None:** Either no PRF's in the tree or highly unlikely to be any;
- **FAR:** Further assessment required to establish if PRF's are present in the tree; and,
- **PRF:** A tree with at least one Potential Roost Feature (PRF) present.

2.2.7 While trees may be assigned FAR, following Figure 6.1 within Collins (2023) only trees subject to impacts (direct or indirect) are required to have a detailed Ground Level Tree Assessment (GLTA) to assess in detail the suitability of individual PRFs. In instances where a PRF was identified and readily visible, features were further assessed on their potential to support bats based on Table 6.2 of the BCT guidelines (Collins, 2023), as follows:

- **PRF- I:** PRF is only suitable for individual bats or very small numbers of bats due to size or lack of suitable surrounding habitats; and,
- **PRF- M:** PRF is suitable for multiple bats and may therefore be used by a maternity colony.

2.2.8 PRF designations are preliminary and based on a ground-level perspective, and subject to review following additional surveys (e.g., PRF Inspection Surveys at height).

Preliminary Roost Assessment (PRA) – Buildings and Structures

2.2.9 Buildings and structures were assigned a category of suitability to support roosting bats, as described within the BCT guidelines (Collins, 2023) as follows:

- **None** - No habitat features on site likely to be used by any roosting bats at any time of year (i.e. a complete absence of crevices/suitable shelter at all ground/underground levels).
- **Negligible** - No obvious habitat features on site likely to be used by roosting bats; however, a small element of uncertainty remains as bats can use small and apparently unsuitable features on occasion.

[31] https://ukhab.org/ukhab-documentation/ (Accessed: 29th August 2025)

[32] Collins, J. (ed) (2023) *Bat Surveys for Professional Ecologists: Good Practice Guidelines*. 4th edition, BCT: London. Available at: https://cdn.bats.org.uk/uploads/pdf/Resources/For-professionals/Bat-Survey-Guidelines-4th-edition-AMENDED-27.03.24.pdf?v=1711530492&_gl=1*w2mz4c*_ga*MzkxMzk4MjUzLjE3NDAwNDc1Nzg.*_ga_G28378TB9V*MTc0MDA0NzU3OC4xLjAuMTc0MDA0NzU4MS4wLjAuMA.. (Accessed: 2nd October 2025)

- **Low** - a structure with one or more potential roost sites that could be used by individual bats opportunistically at any time of the year. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used regularly by larger numbers of bats (i.e. unlikely to be suitable for maternity and not a classic cool/stable hibernation site but could be used by individual bats).
- **Moderate** - a structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat, but unlikely to support a roost of high conservation status (with respect to roost type only, such as maternity and hibernation – the categorisation described is made irrespective of species conservation status, which is established after presence is confirmed).
- **High** - a structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions, and surrounding habitat. These structures have the potential to support high conservation status roosts, e.g. maternity or classic cool/stable hibernation site.

Modular River Physical (MoRPh) Survey

2.2.10 The MoRPh survey[33] is a hydro-morphological assessment method that includes many of the Environment Agency's River Habitat Survey[34] components and so provides compatible information. However, it provides a number of modifications and additions that allow it to deliver a more detailed local picture of a river and its margins than the River Habitat Survey method.

2.2.11 The MoRPh survey was undertaken on the 14th August 2025 by K. Love *MSc*, who is certified to undertake Modular River Survey River Condition Assessments and to interpret River Corridor Assessment Indicators and Scores for baseline and post-intervention River Metric scenarios.

2.2.12 During a MoRPh survey, information is gathered from three river units of different sizes (module, sub-reach, reach) based upon both primary field survey and secondary sources, e.g., map data. Module (MoRPh) and sub-reach (MultiMoRPh) surveys are conducted in the field using the MoRPh survey method, focusing on a single river channel and its immediate margins. The length of the MoRPh module is approximately double the width of the river channel up to a maximum 40m length. The survey module extends 10m back from the bank tops on both sides of the river to characterise the riparian zone.

2.2.13 For the purpose of surveying the Site, the MultiMoRPh5 methodology was chosen. This methodology allows entire reaches (in the case of the Site, three sub-reaches were studied along the Leeds and Liverpool Canal at the Site's western boundary and two sub-reaches along the River Douglas along the eastern Site boundary) to be surveyed using sub-reaches covering a minimum of 20% of the reach's total length. This method effectively balances local sub-reach MoRPh detail with overall reach coverage. The specific survey areas are shown on **Figure 4.**

2.2.14 On completion of the survey, all information was entered into the Cartographer online platform[35], which determined the river type, and provided indicators of the condition of each sub-reach and an overall condition score for the MoRPh5 sub-reach surveyed.

2.2.15 In order to appropriately assess the post-works impacts of the Proposed Development (positive or negative) upon riverine habitats where impacts would occur to the watercourse (e.g. areas requiring new or updated vehicular crossing points and areas of proposed river corridor habitat enhancements), these changes were modelled as a scenario within the 'Cartographer' platform and the condition forecasted input to the Metric.

[33] https://modularriversurvey.org/wp-content/uploads/MoRPh-Manual-ver-14_Oct22.pdf (Accessed: 29th August 2025)
[34] http://www.riverhabitatsurvey.org/ (Accessed: 29th August 2025)
[35] https://cartographer.io/ (Accessed: 29th August 2025)

Breeding Bird Survey

2.2.16 A breeding bird survey comprising two visits was first undertaken by Pennine Ecological Limited on 22nd April and 20th May 2021. Detailed survey methodologies and full results are available in the *Green Energy Site A Preliminary Ecological Appraisal[1].*

2.2.17 An updated breeding bird survey was undertaken by AEL between April and July 2023 (inclusive), comprising a series of four staggered survey visits undertaken at least seven days apart. The 'BBS Survey Area' is illustrated in **Appendix 2** and comprised all suitable habitats within the Main Site and extended to include a 500m buffer to record the presence of species listed under Schedule 1 of the Wildlife & Countryside Act 1981 (as amended).

2.2.18 Detailed survey methodologies and full results are presented as **Appendix 2**.

Non-breeding Bird Walk-over Surveys

2.2.19 Non-breeding bird walk-over surveys were undertaken twice monthly (roughly fortnightly) between September 2022 to March 2023 (Year 1) and September 2023 to March 2024 (Year 2).

2.2.20 The 'Wintering Survey Area' comprised all habitats within the Main Site (excluding cable routes) and fields within a 600 m buffer from the Site ('Wider Survey Area').

2.2.21 Detailed survey methodologies and full results are presented as the **Appendix 2***.* This includes an assessment of regional significance, as well as functional linkage ('Functionally Linked Land' (FLL)) for qualifying species of two European sites of nature conservation importance designated for their ornithological features of interest; i.e. the Ribble and Alt Estuaries SPA/Ramsar site and Martin Mere SPA/Ramsar site. FLL is the term used to describe areas of land (or sea) occurring outside a designated site, which are considered important (or necessary) in supporting and/or maintaining the viability of the qualifying features of a European site (i.e. SPA, SAC and/or Ramsar site).

2.2.22 The importance of the Wintering Survey Area for qualifying species of the nearby Ribble and Alt Estuaries SPA/Ramsar site and Martin Mere SPA/Ramsar site, as presented in **Appendix 2***,* was assessed based on current Natural England guidance (2021)[36].

Vantage Point Flight Activity Surveys

2.2.23 Vantage Point (VP) Flight Activity surveys were carried out, between September 2022 and May 2023 (Year 1) and September 2023 and May 2024 (Year 2) across the Main Site to determine the frequency and distribution of flight activity by Target Species. A single VP, located to the south of the Site at SD 46114 18798, gave an extensive area of visibility across the Main Site (cable routes excluded), as well as areas of the 600 m buffer.

2.2.24 Detailed survey methodologies and full results are presented as the **Appendix 2:** *Ornithology Baseline Report.*

CRM and Assessment

2.2.25 CRM calculations were conducted based on VP Flight Activity data. Detailed CRM calculations are presented in **Appendix 6:** *Collision Risk Modelling Calculations.* An alternative approach for calculating collision risk to pink-footed geese was also carried out based on guidance produced by NatureScot for small-scale wind farms (NatureScot (2025[37]), the methods and results of which are also presented in **Appendix 6:** *Collision Risk Modelling Calculations*.

2.2.26 Using the CRM results, this report further assesses the impacts of potential turbine mortality risks at a regional scale (Lancashire) for all Target Species incorporated into the CRM analysis, as well as for species listed as either non-breeding qualifying species or Important Component Species[38] of

[36] Bowland Ecology (2021). *Identification of Functionally Linked Land supporting SPA waterbirds in the North West of England. NERC361*. Natural England

[37] NatureScot (2025b). Assessing impacts to pink-footed and greylag geese from small-scale wind farms in Scotland.

[38] i.e. Species represented by at least 1% of their national population (Stroud et al. 2001).

waterbird assemblages associated with both the Ribble and Alt Estuaries SPA/Ramsar site and Martin Mere SPA/Ramsar site.

2.2.27 Regional populations for Target Species were based on BTO data[39], which included the five year average (2019/20 to 2023/24) of peak counts recorded across all sites within Lancashire. Where available, additional regional population data available for pink-footed goose and whooper swan was also incorporated into the assessment. Here an evaluation was made in relation to the pink-footed goose population in 'West England' (i.e. 77,659 birds), which was based upon a five year mean of peak counts reported in the latest available annual census' between 2016 and 2020[40]. An assessment in relation to the whooper swan population in Lancashire (i.e. 2,194 birds) was also made using data reported in Brides *et al.* (2021)[41].

2.2.28 The non-breeding qualifying features of the Ribble and Alt Estuaries SPA/Ramsar site and Martin Mere SPA/Ramsar site are identified as those listed in **Table 3.1**. This includes species individually listed with international importance and those comprising Important Component Species of the waterbird assemblages. Populations sizes were estimated based on BTO data[42].

Static Bat Activity Surveys

2.2.29 Bat activity surveys, comprising three automatic/static surveys, were undertaken on a seasonal basis, with recording periods consisting of spring (April - May), summer (June - mid-August) and autumn (late-August - October), in line with Joint Agencies guidance (2021)[43]

2.2.30 Detailed survey methodologies and full results are presented in **Appendix 3:** *Bat Activity Baseline Report.*

Otter and Water Vole Survey

2.2.31 An otter and water vole survey was conducted 15th April and 20th June 2021 by Pennine Ecological Limited. Detailed survey methodologies and full results are available in the *Green Energy Site A Preliminary Ecological Appraisal*[1].

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[39] Lancashire populations estimated from latest 5 year average for combined WeBS counts in the region(2019/20 to 2023/24). Available at: https://app.bto.org/webs-reporting/numbers.jsp (Accessed 16th October 2025).

[40] The following five annual species accounts for pink-footed goose populations in West England are available at: https://www.bto.org/get-involved/volunteer/projects/goose-and-swan-monitoring-programme/newsletters-and-reports (Accessed 16th October 2025).

I. WWT. 2017. *Goose & Swan Monitoring Programme: survey results 2016/17 Pink-footed Goose Anser brachyrhynchus*. WWT/JNCC/SNH, Slimbridge.
II. WWT. 2018. *Goose & Swan Monitoring Programme: survey results 2017/18 Pink-footed Goose Anser brachyrhynchus*. WWT/JNCC/SNH, Slimbridge.
III. WWT. 2019. *Goose & Swan Monitoring Programme: survey results 2018/19 Pink-footed Goose Anser brachyrhynchus*. WWT/JNCC/SNH, Slimbridge.
IV. WWT. 2020. *Goose & Swan Monitoring Programme: survey results 2019/20 Pink-footed Goose Anser brachyrhynchus.* WWT/JNCC/NatureScot, Slimbridge.
V. WWT. 2021. *Goose & Swan Monitoring Programme: survey results 2020/21 Pink-footed Goose Anser brachyrhynchus*. WWT/JNCC/NatureScot, Slimbridge.

[41] Brides, K., Wood, K.A., Hall, C., Burke, B., McElwaine, G., Einarsson, O. and Rees, E.C., 2021. *The Icelandic Whooper Swan Cygnus cygnus population: current status and long-term (1986–2020) trends in its numbers and distribution*. Wildfowl, 71(71), pp.29-57. Available at https://www.bto.org/sites/default/files/brides_et_al_2021_icelandic_whooper_status_and_trends_1986-2020_wildfowl_71.pdf (Accessed 16th October 2025).

[42] SPA populations estimated from latest 5 year average WeBS counts (2019/20 to 2023/24). Available at: https://app.bto.org/webs-reporting/numbers.jsp (Accessed 11th September 2025). The Ribble and Alt Estuaries SPA population combines average 5 year BTO data for the Ribble Estuary and Alt Estuary sites, whilst the Martin Mere SPA population is based on 5 year average BTO data at the WWT Martin Mere site.

[43] Joint Agencies (2021) Bats and onshore wind turbines: survey, assessment and mitigation. Version: August 2021. https://www.nature.scot/doc/bats-and-onshore-wind-turbines-survey-assessment-and-mitigation (Accessed: 3rd September 2025). This document has been prepared jointly by NatureScot (Scottish Natural Heritage (SNH)), Natural England, Natural Resources Wales, RenewableUK, Scottish Power Renewables, Ecotricity Ltd, the University of Exeter and the Bat Conservation Trust (BCT) with input from other key stakeholders

2.3 Biodiversity Net Gain

2.3.1 In order to assess the measurable biodiversity impacts associated with the Proposed Development, the Defra Statutory Biodiversity Metric Calculator[44] (the 'Metric') was utilised in order to provide evidence of the required biodiversity net-gain. The Metric is a biodiversity accounting tool used to quantify biodiversity losses and gains using habitats as a proxy for overall biodiversity. It is recognised as an industry standard and has been developed through full and widespread consultation with stakeholders across all relevant sectors.

2.3.2 The BNG assessment was undertaken by a suitably qualified and experienced ecologist from AEL with experience utilising biodiversity metrics. Data gathering and Metric calculations were undertaken according to the methodology detailed in the Metric user guide[45], unless otherwise stated.

2.3.3 BNG calculations are provided as **Appendix 4**, with full methods detailed **Appendix 5.**

2.3.1 Pre-development habitat creation / enhancements have commenced within the Site, which include hedgerow and woodland planting, creation of a drainage ditch and the creation of grassland around field boundaries. Biodiversity Net Gain Pre-application Advice provided by Chorley Borough Council (dated 11/12/2024; ref: 2024/00025/PREAPP) states that preliminary tree and hedgerow planting that has been carried out in advance of the planning application (and since January 2020) may be recorded as habitat created (or enhanced, where applicable) in the metric function, provided the date and details of the habitat creation work is provided and evidenced in the BNG report (see **Appendix 5**).

2.4 Limitations

Desk Study

2.4.1 A desk study does not provide a comprehensive account of all species and features of ecological importance within the study area; however, it improves an initial understanding of the Site's ecological value and the likely species and habitats within the area.

Extended Habitat Survey

2.4.2 The Site was not originally surveyed in 2021 using UKHab methodology, due to this methodology not having been released at the time of survey. However, the habitats within the Site were generally of low distinctiveness and were converted to habitats under UKHab definitions e.g. Arable farmland to Cereal Crops. Subsequent surveys were undertaken using the most up to date UKHab methodology, and as such, there is not considered a limitation to these surveys.

2.4.3 An extended habitat survey does not constitute a detailed botanical survey 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:

- Broadly identify the nature conservation value of a site and assess the significance of any potential impacts on habitat/species recorded; and/or,
- Confirm the need and extent of any additional specific ecological surveys that are required to identify the true nature conservation value of a site (if any).

2.4.4 The extended habitat surveys were completed in June 2021, September 2023 and August/September 2025. Surveys were therefore conducted within the optimum period for undertaking habitat surveys (April to September).

Modular River Physical Survey

2.4.5 The survey was conducted in August 2025 and therefore within the optimum botanical survey period as discussed above (i.e. April to September). As such, it is considered that there are no limitations to the survey.

[44] http://publications.naturalengland.org.uk/publication/6049804846366720 (Accessed: 29th August 2025)
[45] https://www.gov.uk/government/publications/statutory-biodiversity-metric-tools-and-guides (Accessed: 29th August 2025)

Ornithology Surveys

2.4.6 Limitations are fully discussed within **Appendix 2**. In summary, there are none considered to substantially influence the assessment.

Static Bat Activity Surveys

2.4.7 Limitations are fully discussed within **Appendix 3:** *Bat Activity Baseline Report.* In summary, there are none considered to substantially influence the assessment.

Biodiversity Metric Calculation

2.4.8 There are no limitations considered to impact the assessment.

3 BASELINE

3.1 Designated Sites for Nature Conservation

Statutory Designated Sites

3.1.1 This Section should be read with reference to **Figure 2**.

3.1.2 Four international statutory designated sites were located within 10 km of the Site, with the closest being the Ribble and Alt Estuaries SPA / SPA Marine Components (GB) and Ramsar site which is located approximately 4.35 km north of the Site (c. 5.08 km from Main Site). The closest to the Main Site land parcel is Martin Mere SPA / Ramsar site, which is located 4.94 km south-west (c. 5.87 km from Site).

3.1.3 A summary of six national statutory designated sites for nature conservation located within 5 km of the Site is provided in **Table 3.1**. The closest national statutory designated site is the Ribble Estuary MCZ, which is located within the Site's cable routes (i.e. where they cross the River Douglas). As presented in **Table 3.1**, all other statutory designated sites are beyond 2 km from the Site.

3.1.4 The review of MAGIC also identified that the Site is located within both the Mere Sands Wood SSSI and Ribble Estuary SSSI Impact Risk Zones (IRZ), whereby the Proposed Development triggers a requirement for the Local Planning Authority (LPA) to consult with Natural England[46]. This requirement is for solar schemes with a footprint > 0.5 ha, all wind turbines, infrastructure comprising cables and new roads, and all proposals outside or extending outside existing settlements/urban areas.

Table 3.1: Statutory designated sites

SPA: Special Protection Area; SAC: Special Area of Conservation; SSSI: Site of Special Scientific Interests; LNR: Local Nature Reserve; MCZ: Marine Conservation Zone; NNR: National Nature Reserve.

Site Name	Approximate Distance and Direction from wider Site (i.e. Cable Routes)	Approximate Distance and Direction from Main Site	Description
Ribble Estuary MCZ	Within the Site cable routes (River Douglas)	Directly adjacent (River Douglas)	An inshore site that covers an area of approximately 15 km². The Ribble is notable for providing critical habitats required to complete smelt lifecycles, including for feeding and post-larval development[47].
Ribble Estuary NNR	2.08 km north	2.90 km north	The reserve occupies over half of the total area of the Ribble Estuary (4520 Ha), including extensive areas of mud and sand flats and one of the largest single areas of saltmarsh in England. It is a key site in the chain of wetlands which make up the east Atlantic flyway or migration route for wintering wildfowl and waders[48].
Mere Sands Wood SSSI	3.95 km south-west	2.94 km south-west	Notable for geological interest[49].

[46] https://irz.geodata.org.uk/IRZ/step2.html?irzcode=3111221632050&notes=&location=349171,417994%20%20(IRZ%20polygon%20centre) (Accessed: 1st September 2025)

[47] https://www.gov.uk/government/publications/marine-conservation-zones-ribble-estuary (Accessed: 1st September 2025)

[48] https://www.gov.uk/government/publications/lancashires-national-nature-reserves/lancashires-national-nature-reserves#ribble-estuary (Accessed: 1st September 2025)

[49] https://designatedsites.naturalengland.org.uk/PDFsForWeb/Citation/1003976.pdf (Accessed: 1st September 2025)

Site Name	Approximate Distance and Direction from wider Site (i.e. Cable Routes)	Approximate Distance and Direction from Main Site	Description
Longton Brickcroft LNR	3.94 km north-east	4.89 km north-east	A former brickworks that contains a lake and supports a wide range of wildlife and birds[50].
Martin Mere Ramsar site	5.87 km south-west	4.94 km south-west	Designated under Ramsar criterion 5 and 6 **Ramsar criterion 5** Wintering bird assemblages of international importance. **Ramsar criterion 6** Species occurring at international levels of importance: • Pink-footed goose (passage); • Bewick's swan (wintering); • Whooper swan (wintering); • Wigeon (wintering); and • Pintail (wintering)[51].
Martin Mere SPA	5.87 km south-west	4.94 km south-west	Qualifying features include: • Bewick's swan (non-breeding); • Whooper swan (non-breeding); • Pink-footed goose (non-breeding); • Teal (non-breeding); • Pintail (non-breeding); and, • Waterbird assemblage[52,53].
Martin Mere Burscough SSSI	5.87 km south-west	4.94 km south-west	A low-lying wetland complex of open-water, marsh and grassland habitats overlying deep peat. Supports notable numbers of migrant winter birds, with numbers of wildfowl regularly in excess of 10,000 and over 100 different species. Of international importance are the wintering populations of pink-footed geese, teal and pintail. Supports over 35 species of breeding bird, including important populations of greylag goose, gadwall, mallard and snipe. In total, over 150 species of birds have been recorded at the site and this includes several unusual species on passage. Also supports two locally important plant species: water dropwort and whorled caraway[54].
Ribble and Alt Estuaries Ramsar site	4.35 km north-west	5.08 km north-west	Designated under Ramsar criterion 2, 4, 5 and 6. Qualifying species listed as part of qualification under Ramsar Criterion 5 and 6 include:

[50] https://designatedsites.naturalengland.org.uk/SiteLNRDetail.aspx?SiteCode=L1009435 (Accessed: 1st September 2025)
[51] https://rsis.ramsar.org/ris/324 (Accessed: 1st September 2025)
[52] Although not definitively specified in SPA citation, waterbird species that make up the assemblage likely to include gadwall, mallard, shoveler, snipe, lapwing, black-tailed godwit and ruff.
[53] https://publications.naturalengland.org.uk/publication/4833056372293632 (Accessed: 1st September 2025)
[54] https://designatedsites.naturalengland.org.uk/PDFsForWeb/Citation/1001769.pdf (Accessed: 1st September 2025)

Site Name	Approximate Distance and Direction from wider Site (i.e. Cable Routes)	Approximate Distance and Direction from Main Site	Description
			Ramsar criterion 2 • Natterjack toad. **Ramsar criterion 5** Wintering bird assemblages of international importance. **Ramsar criterion 6** Species occurring at levels of international importance: • Black-tailed godwit; • Redshank; • Dunlin; • Grey plover; • Knot; • Ringed plover; • Sanderling; • Bar-tailed godwit; • Oystercatcher; • Teal; • Wigeon; • Pintail; • Pink-footed goose; • Tundra swan; and, • Whooper swan. Species occurring at levels of national importance: • Black-headed gull; • Common tern; • Greenshank; • Curlew; • Ruff; • Common scoter; • Golden plover; • Cormorant; • Shoveler; • Red-throated diver; • Spotted redshank; and, • Natterjack toad[55].
Ribble and Alt Estuaries SPA / SPA Marine Components (GB)	4.35 km north-west	5.08 km north-west	Qualifying features include: • Bewick's swan (non-breeding); • Whooper swan (non-breeding); • Pink-footed goose (non-breeding); • Shelduck (non-breeding); • Wigeon (non-breeding); • Teal (non-breeding); • Pintail (non-breeding); • Oystercatcher (non-breeding); • Knot (non-breeding); • Sanderling (non-breeding); • Dunlin (non-breeding); • Ruff (breeding); • Black-tailed godwit (non-breeding); • Bar-tailed godwit (non-breeding); • Redshank (non-breeding); • Lesser black-backed gull (breeding);

[55] https://rsis.ramsar.org/ris/325 (Accessed: 1st September 2025)

Site Name	Approximate Distance and Direction from wider Site (i.e. Cable Routes)	Approximate Distance and Direction from Main Site	Description
			• Ringed plover (non-breeding); • Golden plover (non-breeding); • Grey plover (non-breeding); • Common tern (breeding); • Waterbird assemblage[56]; and, • Seabird assemblage[57].
			Non-qualifying species of interest: • Hen harrier (non-breeding); • Merlin (non-breeding); • Peregrine (non-breeding); and, • Short-eared owl (non-breeding)[58].
Ribble Estuary SSSI	4.35 km north-west	5.08 km north-west	An extensive intertidal sand-silt flats with one of the largest areas of grazed greenmarsh in Britain and includes small areas of recently reclaimed saltmarsh. The estuary is of international importance for the passage and wintering waterfowl it supports[59].

Non-statutory Designated Sites

3.1.5 This Section should be read with reference to **Figure 3**.

3.1.6 A review of the Lancashire County Council Local Habitat Map and data provided by LERN, identified 14 non-statutory designated sites for nature conservation within 2 km of the Site, as detailed in **Table 3.2**. The Site's proposed cable route is located within the River Douglas Estuary Biological Heritage Site (BHS) and the Leeds/Liverpool Canal, Rufford Branch BHS is located within the Site's western boundary.

3.1.7 A review of the Chorley Borough Policies Map 1 also identifies that the Site is within Chorley's Green Belt.

3.1.8 A review of LERN data also indicates that the Main Site is located within a Sensitive Waterbird Area (SWA). Here the Site is situated within both a pink-footed goose and whooper swan major feeding area.

3.1.9 Review of the draft LNRS also indicates that the Site is within an opportunity area for grassland measure G3.2 – appropriate management for arable species assemblages and also within the BHS buffer zone for the adjacent Leeds/Liverpool Canal, Rufford Branch BHS.

3.1.10 A review of MAGIC shows that the Site is not allocated as an Important Bird Area (IBA). The Ribble and Alt Estuaries and Martin Mere are the closest IBAs, which are respectively located approximately 4.35 km north-west and 4.94 km south-west of the Site.

[56] The site qualifies under article 4.2 of the Directive (79/409/EEC) as it is used regularly by over 20,000 waterbirds (waterbirds as defined by the Ramsar Convention) in any season. The non-breeding waterbird assemblage includes cormorant, Bewick's swan, whooper swan, pink-footed goose, shelduck, wigeon, teal, pintail, scaup, common scoter, oystercatcher, ringed plover, golden plover, grey plover, lapwing, knot, sanderling, dunlin, black-tailed godwit, bar-tailed godwit, whimbrel, curlew and redshank.
[57] The site qualifies under article 4.2 of the Directive (79/409/EEC) as it is used regularly by over 20,000 seabirds in any season: The breeding seabird assemblage includes black-headed gull, lesser black-backed gull and common tern.
[58] https://publications.naturalengland.org.uk/publication/4868920422957056 (Accessed: 1st September 2025)
[59] https://designatedsites.naturalengland.org.uk/PDFsForWeb/Citation/1004299.pdf (Accessed: 1st September 2025)

Table 3.2: Non-statutory designated sites

BHS: Biological Heritage Site; LNCS: Local Nature Conservation Site; LGS: Local Geological Site.

Site Name	Approximate Distance and Direction from Main Site	Approximate Distance and Direction from wider Site (i.e. Cable Routes)	Description
Leeds/Liverpool Canal, Rufford Branch BHS	Within the Site's western boundary	0.04 km west	The Rufford branch of the Leeds/Liverpool Canal, from its junction with the main canal on the outskirts of Burscough to where it joins the River Douglas at Tarleton. The section between Strand Bridge and Tarleton Bridge is the old course of the River Douglas and has not been canalised. North of Moss Lock is an abundance of Canadian pondweed and fennel pondweed. Water voles have been recorded on the canal at Rufford.
River Douglas Estuary BHS	Directly adjacent to north-eastern boundary	Within the Site's cable routes	The tidal section of the River Douglas extending from Tarleton Bridge in the south to Longton in the north, not included in the adjoining SSSI. Includes the river and the intertidal mudflats, and the adjoining areas of saltmarsh and neutral grassland. long-stalked orache, a species that is nationally scarce is present. Whooper and Bewick swans winter on Little Hoole Marsh on the eastern side of the river.
Sollom Erratics LGS	0.42 km south-west	1.38 km south-west	Notable for geological interest.
Brickcroft Lane Meadow BHS	1.58 km east	1.13 km south-east	A low-lying, damp, species-rich grassland field with adjacent to the tidal River Lostock.
Carr Heys Plantation LNCS	1.61 km north-west	1.4 km north-west	Notable oak dominant plantation with sycamore, ash, elm and beech.
Croston Marsh BHS	1.88 km south-east	1.76 km south-east	Two small areas of low lying marsh situated on either side of the Preston/Ormskirk railway line.
Rufford Railway Hollows BHS	1.98 km south-east	2.60 km south-east	Areas of woodland, scrub and wetland situated along both sides of the Liverpool to Preston railway. The site supports extensive areas of alder and willow woodland. The site is valuable for invertebrates, with five nationally scarce beetle species occurring.
Clay 'Ole BHS	2.17 km east	0.73 km south-east	The site comprises a flooded brickpit and surrounding grassland and scrub. The site supports a freshwater ribbon-worm species, *Prostoma jenningsi* which is found nowhere else in the world. The site also supports a range of birds.
Bretherton Road Meadow BHS	2.35 km east	1.25 km south-east	An area of low-lying, damp grassland adjacent to the tidal River Lostock. The site supports many herb species characteristic of old, agriculturally unimproved grassland.
Barber's Moor Pasture BHS	2.47 km	1.39 km	A damp, low-lying field, adjacent to the River Lostock, and a disused factory lodge. The field is subject to

Site Name	Approximate Distance and Direction from Main Site	Approximate Distance and Direction from wider Site (i.e. Cable Routes)	Description
			occasional, seasonal flooding. The grassland vegetation supports a rich flora characteristic of wet grassland. The disused factory lodge supports great crested newt (GCN) and smooth newt.
Hesketh Bank Brickworks, South BHS	2.54 km north-west	1.82 km north-west	A former brick pit which supports a range of habitats, including species-rich neutral grassland. Four species of amphibian breed at the site, including common frog, common toad, smooth newt and GCN.
Disused Railway BHS	2.62 km north-west	1.82 km north-west	A high railway embankment running east/west between the River Douglas and Haunders Lane. The vegetation of the site is predominantly neutral grassland interspersed with tall herbs and scrub.
Hunger Hill Farm Fields and Ponds BHS	2.66 km north-east	1.6 km north-east	A series of species-rich pastures with a number of ponds. Two of the ponds show a high diversity of both plants and invertebrates. This relatively large area of semi-improved grassland and pond habitat mosaic makes this site an important reservoir for wildlife. Of particular interest is a record of the 'nationally scarce' leaf beetle *Donacia clavipes*.
Ulnes Walton BHS	3.41 km north-east	1.76 km east	Two adjacent areas of land associated with former clay extraction and the Ulnes Walton Landfill Site. Both units form mitigation/compensation measures relating to phases in the extension of the landfill site. The ponds support an amphibian assemblage of GCN, smooth newt, common frog and common toad. These ponds act as the receptor ponds for GCN and other amphibian translocation. The different habitats on the site are attractive to a range of butterflies including common blue, hedge brown, meadow brown, large skipper, small skipper, green-veined white, orange-tip, small copper and small tortoiseshell.

3.2 Priority Habitats – Existing Records

3.2.1 A review of MAGIC, LERN data, Ordnance Survey maps, aerial imagery and the extended habitat survey (including existing pre-application newly created / enhanced habitats), identified 14 Habitats of Principal Importance (also known as priority habitats) under Section 41 of the NERC Act[60]/UK Biodiversity Action Plan within 2 km of the Site (see **Table 3.3** below). Of these, two were identified within the Site itself (hedgerows and rivers / streams).

3.2.2 A further 20 LBAP listed habitats were also identified within 2 km of the Site. Of these, three were identified within the Site itself. These include rivers / streams, arable farmland and road verges.

[60] https://www.gov.uk/government/publications/habitats-and-species-of-principal-importance-in-england (Accessed: 29th August 2025)

3.2.3 Information on priority habitats within 2km of the Site is presented in **Table 3.3** below. Where numerous records of a particular habitat were recorded, only the closest record to the Site has been provided, to give context for the Site and surrounding area.

Table 3.3: Priority habitats – existing records.
NERC S.41: Natural Environment and Rural Communities (NERC) Act (2006); UKBAP: UK Biodiversity Action Plan Priority Habitat); LBAP: Lancashire Biodiversity Action Plan Priority Habitat.

Priority habitat name	**Designation**	Approximate Distance from Site
Hedgerows	NERC S.41, UKBAP	Within the Main Site (pre-application newly created habitat) and North-East Cable Route.
Rivers and streams	NERC S.41, UKBAP; LBAP	Within both of the Site's proposed cable routes (i.e. River Douglas).
Arable farmland	LBAP	Within the Main Site and North-East Cable Route.
Road verges	LBAP	Within the Site's proposed North-East Cable Route.
Deciduous woodland	NERC S.41, UKBAP; LBAP	Directly adjacent to both of the Site's proposed cable routes. Within the Main Site (pre-application newly created habitat).
Coastal and floodplain grazing marsh	NERC S.41, UKBAP	Directly adjacent to the south-eastern Main Site boundary.
New existing built structures	LBAP	Directly adjacent to the both of the Site's proposed cable route (i.e. buildings).
Community woodlands	LBAP	Directly adjacent to the Site's proposed North-East Cable Route (i.e. trees in private gardens).
Garden backyards	LBAP	Directly adjacent to the Site's proposed North-East Cable Route.
School grounds	LBAP	Directly adjacent to the Site's proposed North-East Cable Route.
Churchyards and cemeteries	LBAP	8 m from the Site's proposed north-East Cable Route.
Ponds	NERC S.41, UKBAP	10 m from the Site's proposed north-East Cable Route.
Traditional orchard	NERC S.41, UKBAP	55 m north of the Site's proposed North-East Cable Route.
Amenity grassland and sports fields	LBAP	330 m east of the Site's proposed North Cable Route.
Urban parks	LBAP	705 m north-west of the Main Site.
Quarry pits	LBAP	730 m south-east of the Site's proposed North-East Cable Route (i.e. Clay 'Ole BHS).
Species-rich neutral grassland (i.e. good quality semi-improved grassland)	LBAP	735 m south-east of the Site's proposed North-East Cable Route.
Lowland meadows	NERC S.41, UKBAP; LBAP	1.14 km south-east of the Site's proposed North-East Cable Route.
Mudflats	NERC S.41, UKBAP	1.21 km north-west of the Site's proposed North Cable Route.
Lowland raise bog	NERC S.41, UKBAP; LBAP	1.25 km south-east of the Main Site.
Lowland calcareous grassland	NERC S.41, UKBAP; LBAP	1.25 km south-east of the Site's proposed North-East Cable Route.

Priority habitat name	Designation	Approximate Distance from Site
Railway sidings	LBAP	1.38 km south-east of the Site's proposed North-East Cable Route.
Open mosaic habitat on previously developed land[61]	NERC S.41, UKBAP; LBAP	1.49 km south-east of the Site's proposed North-East Cable Route.
Coastal saltmarsh	NERC S.41, UKBAP; LBAP	1.76 km north-west of the Site's proposed North Cable Route.
Lowland fens	NERC S.41, UKBAP	1.83 km south-east of the Main Site.
Reedbeds	NERC S.41, UKBAP; LBAP	1.89 km south-east of the Main Site.

3.3 Ancient and Irreplaceable Habitats

3.3.1 Review of MAGIC identified no ancient/semi-natural woodland or ancient replanted woodland within 2 km of the Site.

3.3.2 Review of the Woodland Trust Ancient Tree Inventory[62] and LERN data identified three notable trees within 2 km of the Site. This included a sycamore (notable), ash (veteran) and yew (veteran), with the yew being the closest at approximately 208 m east of the Main Site.

3.3.3 Review of the Natural England Open Data Geoportal[63] identified no ancient or irreplaceable peaty soil habitat within the Site boundary. Deep peaty soils were however identified approximately 320 m south-west of the Main Site.

3.4 Extended Habitat Survey

3.4.1 This section should be read in conjunction with the Habitat Plan as presented in **Appendix 1** and Pond Location Plan as illustrated in **Figure 5.** Current habitats within the Site are listed in **Table 3.4**, with Target Notes presented in **Table 3.5**. Photographs and full details of habitat surveys (including pre-existing habitat conditions) undertaken within the Site are presented in **Appendix 1**.

Table 3.4: UKHab habitats summary

Habitat Code	Descriptions	Main Site	Cable Route - North	Cable Route - North-east
c1c	Cereal crops	X		X
c1	Arable and horticulture	X		
c1c7	Other cereal crops			X
c1d8	Other non-cereal crops			X
g4	Modified grassland			X
g4.10.16	Modified grassland - scattered scrub, tall forbs			X

[61] On review of the MAGIC website, this classification is given as low reliability, with the area described as 'previously developed but no habitat data available'. Review of aerial imagery indicates presence of residential housing, suggesting the priority habitat is absent. For precautionary purposes only, the priority habitat has been included in this report.

[62] https://ati.woodlandtrust.org.uk/ (Accessed: 2nd September 2025)

[63] https://naturalengland-defra.opendata.arcgis.com/datasets/Defra::peaty-soils-location-england/explore?location=53.965987%2C-2.238949%2C8.56 (Accessed: 2nd September 2025)

Habitat Code	Descriptions	Main Site	Cable Route - North	Cable Route - North-east
g4.14	Modified grassland - scattered rushes	X		-
g4.106	Modified grassland - mown	X	X	-
g4.801	Modified grassland - road verge or island			X
g3c	Other neutral grassland	X		-
g3c.10.16.32	Other neutral grassland - scattered scrub, tall forbs, scattered trees	X		-
g3c.16	Other neutral grassland - tall forbs		X	X
w1f7.31	Other Lowland mixed deciduous woodland – secondary woodland			X
w1f7.31.42.500	Other Lowland mixed deciduous woodland - secondary woodland, dry pond			X
w1g.29.201	Other broadleaved woodland - plantation- newly planted trees	X		-
w1g.29	Other broadleaved woodland - plantation		X	X
w1g.33	Other broadleaved woodland - line of trees			X
w1g.10.33	Other broadleaved woodland - line of trees, scattered scrub			X
h2a6	Other native hedgerows (Habitat of Principal Importance)		X	X
h2a5	Species-rich native hedgerow (Habitat of Principal Importance)	X		X
h2b	Non-native and ornamental hedgerow			X
r1g.50.500	Other standing water and canals – dry ditch			X
r1g.50.502	Other standing water and canals – seasonally wet ditch	X		-
r1g.50.503	Other standing water and canals – wet ditch	X		-
u1b	Artificial unvegetated; sealed surface	X		-
u1c	Artificial unvegetated; unsealed surface	X	X	-
u1d	Suburban mosaic of developed and natural surface			X
u1e	Built linear features- fence	-	X	-
u1e.800	Built linear features - road		X	X
u1e.839	Built linear features – track			X

Habitat Code	Descriptions	Main Site	Cable Route - North	Cable Route - North-east
r2b	Other rivers and streams		X	X

Main Site

3.4.2 The Main Site comprises an area of land totalling c.38ha. As detailed in **Appendix 1,** habitats within the Main Site still predominantly comprise a large arable field, but with newly created mown modified grassland, native hedgerows and plantation woodland around the perimeter, and other smaller areas of other neutral grassland, drainage ditches and unsealed surface track.

Arable- cereal crops (UKHab code: c1 and c1c)

3.4.3 The Site is dominated by cereal crops which occupy the vast majority of the redline boundary. At the time of the 2025 survey, roughly half the crop was recently harvested. A smaller section of the arable field, located in the south appeared to either be a temporary ley, or have been left fallow with typical arable weed species colonising the area.

Other neutral grassland (UKHab code: g3c)

3.4.4 An existing drainage ditch within the north of Main Site and surrounded by approximately 2.5 wide grassland strip each side.

Other neutral grassland- scattered scrub, tall forbs, scattered trees (UKHab code: g3c.10.16.32)

3.4.5 Bankside vegetation associated with the Leeds to Liverpool Canal in the north of Main Site, where some lies within the red line boundary. Himalayan balsam presence.

Modified grassland- mown (UKHab code: g4.106)

3.4.6 Newly created managed grassland around the perimeter of Main Site, on average 5-7m wide strip. Associated with the public footpaths which are located around the edges of the field. Mown at the time of survey to a sward of 3cm.

Modified grassland- scattered rushes (UKHab code: g4.14)

3.4.7 Small area of grassland in the south east of the Main Site surrounding a newly dug drainage ditch.

Other broadleaved woodland- plantation- newly planted trees (UKHab code: w1g.29.201)

3.4.8 Newly created young woodland strips around the perimeter of the Main Site, on average 2-8m wide. Trees were between average 0.5m to 2m tall. The understory was similar to the adjacent modified grassland footpath.

Species rich native hedgerow (UKHab code: ha15)

3.4.9 Newly laid hedgerow separating the arable field and young plantation woodland. Only single lined planting, not stockproof with lots of gaps. Average height 0.8-1.4m and width 0.3-0.7m, with no tree guards present.

Artificial unvegetated, unsealed surface (UKHab code: u1c)

3.4.10 Newly created crushed gravel and stone track adjacent to the canal in the north of Main Site, leading from the north of Site down towards the main body. Additionally, a small weather station with utility cabinets in the north of the Main Site, situated within the arable field.

Artificial unvegetated, sealed surface (UKHab code: u1b)

3.4.11 Small section of tarmac access road in the north of the Main Site.

Other standing water- seasonally wet ditch (UKHab code: r1g.50.502)

3.4.12 Newly dug drainage ditch in the south of the Main Site, largely between the southern part of arable field. Artificial drainage ditch, average 2m deep and 2m wide at the top, with steep horizontal edges

narrowing to 20cm wide at the base. Mostly dry at the time of survey, with only a small section of shallow water. Vegetated base and banks and no aquatic vegetation present.

Other standing water- wet ditch (UKHab code: r1g.50.503)

3.4.13 Existing drainage ditch in the north of the Main Site which runs north-west to south-east through the northern part of the arable field, measuring roughly 1.5m wide at the top. Some wet sections but mostly dry and highly vegetated.

Canals- canalside (UKHab code: r1e.318)

3.4.14 The Leeds to Liverpool Canal bordered the majority of the northern and western Main Site boundary but the watercourse itself was not within the red line boundary. This canal was an old branch of the River Douglas, but was repurposed as a canal.

3.4.15 It had clear water with small fish present and a good diversity of floating, submerged and marginal vegetation. Associated bankside vegetation was discussed within the appropriate grassland section above but the banks were prevalent with great willowherb, common nettle and bullrush; with occasional Himalayan balsam. The water channel contained frequent yellow water lily and floating pennywort.

Individual Trees

3.4.16 A low number of individual trees were situated at the Site red line boundary. These comprised mature ash and willow trees, largely located along the eastern and south eastern boundaries.

Cable Route North

3.4.17 This proposed cable route crosses underneath the River Douglas and follows along a mown and actively managed modified grassland track (which supported existing underground cables) and then into GA Petfoods' Plocks Farm manufacturing site. There, the cable route largely follows the edge of existing hardstanding facilities, over temporary cabins and along the backside of an acoustic fence which its proposed to be fixed to. A small section of plantation woodland was included within the 2.5m wide working area for the cable route where it runs adjacent to the fence. A small section of further modified managed grassland and native hedge was included at the northern most extent of the cable route.

3.4.18 Habitats within the northern cable route working area (2.5m wide) predominantly comprises modified grassland and artificial unsealed surfaces, with smaller areas of plantation woodland and native hedgerow.

Cable Route North-East

3.4.19 This proposed cable route crosses underneath the River Douglas and initially follows along the edge of an existing farm track that runs adjacent to arable fields, grassland and woodlands prior to connecting with Eyes Lane. The route then heads north within modified grassland road verges where it then joins the B5247 (South Road). The route then spans east along the road through Bretherton, before spanning north where it terminates in a modified grassland field containing scattered rushes and tall forbs. The cable route largely follows the edge of existing hardstanding or grassland verges associated with tracks and roads, the 2.5m wide working area includes woodlands, tree lines, ditches and hedgerows.

Table 3.5: Target Notes

Map Ref.	Details
1	A mature ash tree located off-Site adjacent to the south-eastern Main Site boundary. Bat roost potential classified as FAR.
2	A dead alder tree located off-Site adjacent to the south-eastern Main Site boundary. Bat roost potential classified as PRF-I.

Map Ref.	Details
3	Himalayan balsam present within an off-Site ditch adjacent to the Main Site's eastern boundary.
4	Himalayan balsam located approximately 1 m from the Main Site north-eastern boundary.
5	Himalayan balsam situated within the Main Site boundary (north-east section).
6	A mature ash tree located off-Site adjacent to the south-western Main Site boundary. Bat roost potential classified as FAR.
7	The proposed North-East Cable Route crossing location situated at the River Douglas.
8	Metal container type buildings within Plocks Farm- North Cable Route proposed to go over these.
9	Himalayan balsam present in canal vegetation adjacent to Main Site western boundary.
10	Offsite bridge over River Douglas. Bat roost potential low. Seemed well sealed with only minimal gaps in the masonry on the sides. Only one arch was able to be viewed underneath so upgraded to moderate on a precautionary basis.
11	Offsite bridge over the Leeds to Liverpool Canal (north of Main Site). Bat roost potential low, access underneath via footpath revealed well sealed on the underside with only small gaps in the mortar between masonry on northern aspect.
12	Offsite bridge over the Leeds to Liverpool Canal (south west of Main Site). Bat roost potential low. Only small gaps on edge on southern aspect but ivy presence inhibited potential access. Underneath sheet concrete with no gaps.

3.5 Protected and Notable Species

Birds

Desk Study

3.5.1 The LERN data search returned 250 records of 54 species within the search area during the last ten years. This included 11 species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), of which only one (quail) was returned within the Site itself during 2021. Schedule 1 species returned during the data search included whooper swan, quail, avocet, black-tailed godwit, ruff, green sandpiper, barn owl, kingfisher, peregrine, redwing and fieldfare.

3.5.2 The data return also included nine species listed on Annex 1[64] of the EU Birds Directive, of which none were returned within the Site itself. These species included Greenland white-fronted goose, whooper swan, avocet, golden plover, ruff, common tern, little egret, kingfisher and peregrine.

3.5.3 A total of 16 Section 41 species (Species of Principal Importance) listed on the NERC Act were included in the data return. Species included grey partridge, lapwing, black-tailed godwit, herring gull, willow tit, skylark, starling, song thrush, tree sparrow, house sparrow, dunnock, yellow wagtail, linnet, corn bunting, yellowhammer and reed bunting.

3.5.4 The data search returned 21 species listed as Red Listed BoCC and 21 species listed as Amber Listed BoCC.

[64] https://ec.europa.eu/environment/nature/conservation/wildbirds/threatened/index_en.htm (Accessed: 29th August 2025)

Field Surveys

Breeding birds

3.5.5 Breeding bird surveys conducted by Pennine Ecological Limited in 2021 identified four species to be breeding within the Site (skylark, lapwing, redshank and oystercatcher). Full details are available within the *Green Energy Site A Preliminary Ecological Appraisal.*

3.5.6 Updated breeding bird surveys conducted by AEL (full details of which are provided in **Appendix 2**), identified 21 species displaying breeding behaviour within or immediately bordering the Main Site, as well as an additional Schedule 1 species (barn owl) within 500m of the Main Site. The breeding bird assemblage recorded within the Main Site comprised a range of species typically associated with farmland, scrub and wetland habitats. Of these, 14 comprised Target Species, including three Schedule 1 species (barn owl, Cetti's warbler and kingfisher). However, no breeding qualifying species of the Ribble and Alt Estuaries SPA/ Ramsar site were recorded as comprising any territories within the Main Site. Ground nesting Target Species recorded within the Site's arable field included skylark (6 territories), lapwing (6 territories) and oystercatcher (2 territories).

VP Flight Activity Surveys

3.5.7 Full details of the VP Flight Activity Surveys are available in **Appendix 2**, with the CRM assessment detailed separately in **Appendix 6.**

3.5.8 A total of 17 Target Species were recorded during the VP Flight Activity surveys in Year 1, whilst 21 Target Species were recorded during Year 2. Target Species associated as non-breeding qualifying features and/or important component species of the waterbird assemblages associated with the Ribble and Alt Estuaries SPA/Ramsar site and Martin Mere SPA/Ramsar site included pink-footed goose, whooper swan, shelduck, teal, golden plover, oystercatcher, redshank, ruff, dunlin, cormorant, mallard, curlew, lapwing and snipe.

3.5.9 Flight activity was typically considered to be low for most Target Species, with collision risk modelling (CRM) only considered necessary for ten Target Species (cormorant, golden plover, lapwing, lesser black-backed gull, mallard, oystercatcher, pink-footed goose, shelduck, snipe and whooper swan) following the two years of survey. Target Species qualified for inclusion in the CRM if there were three or more 'at-risk' flights, or 10 or more individuals, within either baseline survey year.

3.5.10 The percentage of at-risk flights considered to be a potential collision height for each of the assessed species were: cormorant – 69.5%; golden plover – 30.0%; lapwing – 18.6%; lesser black-backed gull – 30.9%; mallard – 13.7%; oystercatcher – 7.5%; pink-footed goose – 90.8%; shelduck – 44.0%; snipe – 50.6%; and whooper swan – 31.2%.

3.5.11 Apart from lapwing (1.14 birds per year), the CRM assessment resulted in an estimated annual mortality of less than one individual bird for all species for the lifetime of the Proposed Development (pink-footed goose: 0.99 (0.56 using NatureScot's alternative method for small scale wind farms (see methods)); shelduck: 0.19; whooper swan: 0.14; golden plover: 0.06; mallard: 0.03; oystercatcher: 0.03; cormorant: 0.03; lesser black-backed gull: 0.02 and snipe: 0.01).

3.5.12 **Table 3.6** details a summary of CRM results and an assessment of annual mortality in respect to the representative regional and SPA/Ramsar site populations. It also estimates the total mortality of each of the ten Target Species for the lifetime of the Proposed Development (25 Years).

Non-breeding Bird Walk-over Surveys- Pennine Ecological Limited

3.5.13 The Wintering Bird Survey report produced by Pennine Ecological Limited in 2021 identified pink-footed goose, whooper swan, shelduck, Canada goose, mute swan and greylag goose during the surveys. These survey results are considered to be superseded by updated results and analysis as presented in **Appendix 2**.

Table 3.6: Summary of CRM results and an assessment of the representative regional and SPA/Ramsar site populations.

Species in bold represent qualifying features of either the Ribble and Alt Estuary SPA and Ramsar site and/or Martin Mere SPA and Ramsar site. Bold italics are those which are Important Component Species of the qualifying waterbird assemblage of either SPA/Ramsar site.

Target Species	Annual Mortality Estimate (± Uncertainty Estimate)	Annual Mortality Estimate Range	Total Mortality for Proposed Development Lifespan (25 Years)	Regional Population		Annual (Range) Percentage of Regional Population		Ribble and Alt Estuaries SPA/Ramsar site	Annual (Range) Percentage of Ribble and Alt Estuaries SPA/Ramsar site	Martin Mere SPA/Ramsar site	Annual (Range) Percentage of Martin Mere SPA/Ramsar site
Pink-footed goose	0.99 (±0.95)	0.05 - 1.93	24.75 (1.25-48.25)	33,537 (Lancashire)	77,659 (West England)	<0.01	<0.01	35,316	<0.01	9,918	<0.01 - 0.02
Whooper swan	0.14 (±0.97)	0.00 - 0.28	3.50 (0.00-7.00)	1,518 (Lancashire)	2,194 (Lancashire)	0.00-0.02	0.00-0.01	759	0.00 – 0.04	889	0.00 - 0.03
Golden plover	0.06 (±0.97)	0.00 - 0.12	1.50 (0.00-3.00)	9,966		0.00 – <0.01		5,472	0.00 - <0.01	NA	NA
Oystercatcher	0.03 (±0.97)	0.00 - 0.06	0.75 (0.00-1.50)	48,631		0.00 - <0.01		16,270	0.00 - <0.01	NA	NA
Shelduck	0.19 (±0.90)	0.02 - 0.36	4.75 (0.50-9.00)	10,435		<0.01		5,571	<0.01 – 0.01	NA	NA
Lapwing	1.14 (±0.97)	0.03 - 2.25	28.50 (0.75-56.25)	33,651		<0.01		15,804	<0.01 – 0.01	1,200	<0.01 – 0.19
Mallard	0.03 (±0.35)	0.02 - 0.04	0.75 (0.50-1.00)	8,140		<0.01		NA	NA	848	<0.01
Snipe	0.01 (±0.97)	0.00 - 0.02	0.25 (0.00-0.50)	566		0.00 - <0.01		NA	NA	25	0.00 – 0.08
Lesser black-backed gull	0.02 (±0.35)	0.01 - 0.03	0.50 (0.25-0.75)	3,987		<0.01		NA	NA	NA	NA
Cormorant	0.03 (±0.35)	0.02 - 0.04	0.75 (0.50-1.00)	2,168		<0.01		NA	NA	NA	NA

Non-breeding Bird Walk-over Surveys- Year 1

3.5.14 During Year 1 of the non-breeding walk-over surveys, a total of 11 Target Species were recorded within the Site, whilst 15 were recorded within the Wider Survey Area (including some of the same species recorded within he Site itself). Four Target Species recorded within the Site (pink-footed goose, whooper swan, shelduck and oystercatcher) were listed as qualifying species of either the Ribble and Alt Estuaries SPA/Ramsar site or Martin Mere SPA/Ramsar site. The same species, plus redshank and teal were also recorded within Wider Survey Area.

3.5.15 During Year 1, one Target Species (whooper swan) was recorded within the Site in peak numbers exceeding 1% of both SPA/Ramsar site populations. However, the species was not recorded in significant numbers regularly, with Site numbers exceeding the threshold on only one visit in October (i.e. 1/14 visits; 7.1%). The Site is therefore infrequently utilised by significant numbers of this species. Whooper swan and teal were also recorded within the Wider Survey Area in significant numbers during Year 1. However, neither species was regularly recorded in significant numbers

3.5.16 Other Important Component Species of the qualifying waterbird assemblages (that are not specific qualifying species) recorded within the Site and Wider Survey Area during Year 1 included mallard, lapwing and snipe.

3.5.17 Similarly, the data collected in Year 1 showed that the Non-breeding Bird Survey Area as a whole does not qualify as FLL for the broader Ribble and Alt Estuaries SPA/Ramsar site or Martin Mere SPA/Ramsar site overwintering waterbird assemblages for Important Component Species. No Important Component Species were found to regularly meet 1% of their respective SPA/Ramsar site populations. Additionally, cumulative counts of all wetland bird Target Species did not regularly exceed 1% of the cumulative non-breeding waterbird assemblage populations of either the Ribble and Alt Estuaries SPA/Ramsar site or the Martin Mere SPA/Ramsar site.

Non-breeding Bird Walk-over Surveys- Year 2

3.5.18 During Year 2 of the non-breeding walk-over surveys, a total of 14 Target Species were recorded within the Site, whilst 18 were recorded within the Wider Survey Area (including some of the same species recorded within the Site itself). Four Target Species recorded within the Site (pink-footed goose, shelduck, oystercatcher and snipe) were listed as qualifying species of either the Ribble and Alt Estuaries SPA/Ramsar site or Martin Mere SPA/Ramsar site, whilst seven such qualifying species (pink-footed goose, shelduck, oystercatcher, teal, ruff, dunlin and redshank) were identified in the Wider Survey Area.

3.5.19 One Target Species (pink-footed goose) was recorded within the Site in numbers exceeding 1.0% of the Martin Mere SPA/Ramsar site population. However, the species was not recorded in significant numbers regularly, with Site numbers exceeding the threshold on only one visit in September (i.e. 1/13 visits; 7.7%). The Site is therefore infrequently utilised by significant numbers of this species. No Target Species were recorded within the Wider Survey Area in numbers exceeding the threshold criteria for significant numbers.

3.5.20 Other Important Component Species of the qualifying waterbird assemblages (that are not specific qualifying species) recorded within the Site included mallard, lapwing and snipe, whilst those recorded in the Wider Survey Area included mallard, lapwing, curlew and snipe.

3.5.21 Similarly, the data collected in Year 2 showed that the Wintering Survey Area as a whole does not qualify as FLL for the broader Ribble and Alt Estuaries SPA/Ramsar site overwintering waterbird assemblage or any of its Important Component Species. No Important Component Species of the waterbird assemblage exceeded 1% of their national populations and no such species regularly exceeded 1% of their respective SPA/Ramsar site populations.

3.5.22 However, lapwing and snipe were found to regularly meet 1% of their respective populations as Important Component Species of Martin Mere SPA/Ramsar site. As only lapwing and snipe were recorded to regularly exceed 1% of their corresponding SPA/Ramsar site populations the Wintering Survey Area is only considered to represent FLL for these species based on the Year 2 survey data. When assessed over the entire survey period however, (i.e. Year 1 and 2 combined) only lapwing was

identified to regularly exceed the 1% threshold of the Martin Mere SPA/Ramsar site population (lapwing: 18 visits (66.7%); snipe: 11 visits (40.7%)). As such, the Wintering Survey Area is only considered to represent FLL for lapwing related to Martin Mere SPA/Ramsar site over the entire survey period.

3.5.23 Additionally, cumulative counts of all wetland bird Target Species did not regularly exceed 1% of the cumulative non-breeding Ribble and Alt Estuaries SPA/Ramsar site waterbird assemblage population. However, the cumulative count of all wetland bird Target Species did regularly exceed 1% of the cumulative non-breeding waterbird assemblage population of Martin Mere SPA/Ramsar site in Year 2. The 1% threshold was met on 11 visits (84.6%) during Year 2. However, when further assessed over the collective two seasons (i.e. Year 1 and 2 combined) the 1% threshold was not regularly achieved for either SPA/Ramsar site (Ribble and Alt Estuaries SPA/Ramsar site: 0/27 visits (0%); Martin Mere SPA/Ramsar site: 14/27 visits (51.9%)). The Wintering Survey Area is therefore not considered to represent FLL for the waterbird assemblage of either SPA/Ramsar site when considering the entire survey period.

3.5.24 Full results are available in **Appendix 2.**

Bats

Desk Study

3.5.25 The combined LERN and South Lancashire Bat Group data search returned 93 bat records within 2 km of the Site during the last ten years. Of these, none were returned directly within the Site itself, however noctule and common pipistrelle were recorded commuting and foraging along the Main Site boundary in 2018. Records for a total of six species were returned within 2km of the Site boundary, as well as three bat species categories that could not be identified to species level. Species returned included an unknown bat species, brown long-eared bat, common pipistrelle, Daubenton's bat, an unknown *Myotis* bat species, noctule bat, an unknown *Pipistrelle* bat species, soprano pipistrelle and whiskered bat. Bat records returned were located predominately in urban and farmland areas surrounding the Site.

3.5.26 A total of 28 known roost sites were returned in the combined data search. The closest roost site was identified approximately 220m east of the Site in 2017, which supported brown long-eared bat.

3.5.27 A review of the MAGIC website identified 11 granted Natural England European protected species licence applications for bats in seven locations within 2km of the Site. No licences were returned within the Site itself. Licences either granted the destruction and / or damage of a resting place for either common pipistrelle, brown long-eared bat and / or whiskered bat. Licences ranged between 2014 and 2025. The following licence applications were returned:

- Case reference: 2014-595-EPS-MIT, 2014-595-EPS-MIT-1 and 2014-595-EPS-MIT-2. Dated between 2014 and 2020. Located c.110 m east of the Site;
- Case reference: 2014-339-EPS-MIT and 2014-339-EPS-MIT-1. Dated between 2014 and 2015. Located c. 375m north-west of the Site's proposed cable route;
- Case reference: 2014-4141-EPS-MIT. Dated between 2014 and 2019. Located c.425 m west of the Site;
- Case reference: 2020-46212-EPS-MIT and 2020-46212-EPS-MIT-1. Dated between 2020 and 2025. Located c.1.21 km north-east of the Site;
- Case reference: 2016-26896-EPS-MIT. Dated in 2017. Located c.1.52 km north-east of the Site;
- Case reference: 2015-8433-EPS-MIT. Dated between 2015 and 2020. Located c.1.74 km north-west of the Site; and,
- Case reference: 2018-37780-EPS-MIT. Dated between 2018 and 2019. Located c.1.91 km south-east of the Site.

Roosting Bats

3.5.28 During the extended habitat survey, two mature ash trees and a dead alder tree located adjacent to the Site boundary were noted to have suitability for roosting bats (TN1, TN2, and TN6). Trees listed in **Table 3.5** were found to have bat roost suitability ranging between FAR and PRF-I suitability.

3.5.29 The extended habitats survey considered several woodlands adjacent to the proposed cable routes to also be of a sufficient age and stature that they may offer bat roost potential (i.e. FAR).

3.5.30 An off-Site bridge for the A59 located over the River Douglas was recorded adjacent to the Site (TN10) with minimal gaps identified in the masonry on the sides. The bridge was considered to have low bat roost potential, however as only one arch was able to be viewed from underneath, the bridge was upgraded to have moderate bat roost potential on a precautionary basis.

3.5.31 Two off-Site bridges over the Leeds and Liverpool Canal were also identified to the north (TN11) and south-west of the Site (TN12). Both were considered to have low bat roost potential, with the northern bridge being recorded with only small gaps in the mortar between the masonry on its northern aspect, whilst the southern bridge had small gaps present on the edge of its southern aspect was well as ivy presence.

Foraging and Commuting Bats

3.5.32 Habitats within the Site are considered to most closely fit the description for land of 'moderate' interest for foraging bats in accordance with the BCT guidance, with continuous habitat that is connected to the wider landscape that could be used as flight-paths by bats.

3.5.33 Linear features within and adjacent to the Site such as hedgerows, woodland edges, tree lines, grassland field margins, ditches and watercourses are considered to offer the most favourable habitats for foraging/commuting bats, particularly the River Douglas and Leeds and Liverpool Canal situated along the Site's eastern and western boundaries.

Field Surveys

3.5.34 A minimum of five species were detected on-Site throughout the seasonal survey periods, which included common pipistrelle, soprano pipistrelle, noctule, *Myotis* species and brown long-eared bat. Overall, collective bat activity across the Site accounted for 13,060 bat passes, equating to an overall Site Bat Activity Index (BAI) of 23.12 calls per hour over the total survey period. Common pipistrelle was identified as the most frequently recorded species on-Site, with an overall BAI of 21.85 call per hour over the combined survey period. Additional bat species recorded accounted for a notably lower number of registrations, with overall BAI for each species equating to <1 call per hour over the combined survey period.

3.5.35 Collective bat activity was also noted to be greater at MS1 overall, accounting for 9,365 call registrations overall, equating to 71.7% of passes recorded on-Site, and an overall BAI of 28.00 calls per hour. Likewise, individual bat activity was noted to be greater at MS1 (i.e., in association with wooded/riparian habitat) for common pipistrelle, noctule, and Myotis bats. In contrast, soprano pipistrelle and brown long eared bat activity was noted to be relatively higher at MS2 overall; however, given the comparably low number of passes recorded, variation in activity between MS1 and MS2 is unlikely to be significantly different.

3.5.36 Full details of the methods and results of the static bat activity surveys are available in **Appendix 3.**

Badger

Desk Study

3.5.37 Review of the LERN data return identified no badger records within 2 km of the Site during the last ten years.

Field Surveys

3.5.38 Field surveys identified no signs of badger within the Site. Despite this, the dry ditch, watercourse banksides, grassland field margins and woodlands are habitats located within or adjacent to the Site

are considered to provide potentially suitable opportunities for sett excavating, foraging and commuting badgers.

Otter

Desk Study

3.5.39 Four otter records were returned within the desk study search area during the last ten years. This included three records along the Leeds and Liverpool Canal and one along the River Douglas. Of these, two were situated within / directly adjacent to the Site boundary itself in both watercourses.

Field Surveys

3.5.40 Otter surveys conducted by Pennine Ecological Limited during 2021 identified no evidence of otter within the Site, however footprints were recorded approximately 230 m south of the Site along the River Douglas at Red Bridge. The surveys concluded wet ditches at the Site boundary to provide potential commuting and foraging opportunities for the species, with fish reported to be present. The Leeds and Liverpool Canal and River Douglas were considered to support an abundance of fish, and to be highly suitable for otter. Full details are available in the *Green Energy Site A Preliminary Ecological Appraisal*.

3.5.41 No signs of otter were found during the AEL extended habitat surveys. The River Douglas and Leeds and Liverpool Canal (including adjacent off-Site riparian woodland) were considered to provide high quality habitat for the species with suitable opportunities for holt excavation, foraging and commuting. Such watercourses were also considered to provide good connectivity to the wider landscape. Although the adjacent watercourses were considered highly suitable, the on-Site banktops included footpaths well-used by dog-walkers, which would potentially cause frequent disturbance to species if entering the Site itself.

Water Vole

Desk Study

3.5.42 As detailed in **Table 3.2** above, the Leeds/Liverpool Canal, Rufford Branch BHS is known to support water vole.

3.5.43 One record of water vole was returned in the data search during the last ten years. The record was of an adult within the Leeds and Liverpool Canal during 2024, situated approximately 519 m north of the Main Site and 410 m west of the proposed North Cable Route. The data return also identified 42 historical water vole records (dating between 1970 and 2011) within the search area. This included a record within the canal directly adjacent to the Site in 1995, as well as numerous records within ditches connected to the River Douglas.

Field Surveys

3.5.44 Water vole surveys conducted by Pennine Ecological Limited during 2021 identified no evidence of the species within surveyed watercourses. The surveys assessed dry ditches to be sub-optimal, and for wet Site boundary ditches to be potentially more suitable. The Leeds and Liverpool Canal was considered as extensive potentially suitable habitat, whilst the River Douglas was unsuitable due to its tidal influence and fluctuating depth range >2 m. Full details are available in the *Green Energy Site A Preliminary Ecological Appraisal.*

3.5.45 No evidence of water vole was found within the Site during the AEL extended habitat surveys. Dry on-Site ditches were considered unsuitable, whilst wet ditches on-Site were considered to provide potentially suitable habitat, including a ditch section along the eastern proposed cable route that was not previously surveyed by Pennine Ecological Limited. Wet ditches and Leeds and Liverpool Canal were considered to potentially provide suitable opportunities for foraging, commuting and burrowing, including vegetation features that have potential to support wintering water vole populations. The River Douglas was considered unsuitable due to fast flowing water.

Amphibians

Desk Study

3.5.46 As detailed in **Table 3.2** above, the Barber's Moor Pasture BHS, Hesketh Bank Brickworks, South BHS and Ulnes Walton BHS are known to support GCN.

3.5.47 The data search returned 42 amphibian records within the desk study search area during the previous ten years. This included 33 records of GCN, six records of smooth newt, two records of common toad and one record of common frog. No records were returned within the Site itself, with the closest comprising two GCN records approximately 210 m east of the Site's proposed cable route during 2021.

3.5.48 Review of MAGIC identified two granted Natural England GCN licence applications within 2 km of the Site. These licence applications (case reference: EPSM2013-6287 and EPSM2010-2283) were identified in two locations respectively 60 m north and 1.42 km south-east of the Site's proposed North-East Cable Route. The licences permitted the destruction of GCN resting locations respectively between 2013 to 2020 and between 2010 and 2011.

3.5.49 Review of MAGIC also identified four locations of GCN class survey licence returns in the wider 2 km Site buffer area. Four related to a ditch surveyed in 2017 (located 375 m north-west of the Site's proposed North-East Cable Route) which all recorded positive GCN results. The three additional locations were located in a cluster of ponds approximately 1.82 km north-west of the Site's proposed North Cable Route. Each comprised two surveys during 2017, which all confirmed GCN presence.

3.5.50 Review of MAGIC and Natural England District Level Licencing Data identified three ponds within 2 km of the Site that were subject to Natural England pond surveys between 2017 and 2019. Of these, one was recorded with GCN presence approximately 1.25 km north of the Site's proposed North-East Cable Route.

Field Survey

3.5.1 No ponds are located within the Site itself, however four ponds are located within 250m of the Main Site (ponds P1 to P4), and five within 50m of the two proposed cable routes (ponds P5 to P9). Ponds within the Site buffers have not been subject GCN surveys. As a precautionary basis, GCN are assumed likely to be present within neighbouring ponds due to being identified within the wider landscape following the desk study results.

3.5.2 The arable and mown grassland margin habitat within and bordering the Site is of negligible/low foraging and refuge value for amphibians. However, woodland, scrub, hedgerow bases, tree line bases, tall sward grassland, ditches and waterbodies in and adjacent to the Site provide more suitable habitat for foraging, sheltering and commuting amphibians.

Reptiles

Desk Study

3.5.3 The LERN data search returned no records of reptile within 2 km of the Site during the last ten years.

Field Survey

3.5.4 The arable and mown grassland margins habitat within and bordering the Site is of negligible/low foraging and refuge value for reptiles. However, woodland, tree line bases, scrub, hedgerow bases, tall sward grassland, ditches and waterbodies in and adjacent to the Site provide more suitable habitat for foraging, sheltering and commuting reptiles.

White-clawed crayfish

Desk Study

3.5.5 The LERN data search returned no records of white-clawed crayfish within 2 km of the Site during the last ten years. As the species is not known to be distributed locally, it is not considered further within this assessment.

Other Notable Species

Desk Study

3.5.6 The LERN data search recorded bluebell as the only species listed under Schedule 8 of the Wildlife and Countryside Act 1981 (as amended) within the search area (c. 1.15 km west). The data search also identified one priority plant species (cornflower) listed under Section 41 of the NERC Act 2006 situated along the A59 approximately 10 m from the Site's proposed North Cable Route. The data search also identified the following eight LBAP plant species within 2 km of the Site during the last ten years; bristly oxtongue, common cornsalad, common meadow-rue, frogbit, Northern yellow-cress, sea spurge, tuberous comfrey and tufted loosestrife. The closest of these included tufted loosestrife (two records) along the Leeds and Liverpool Canal and common meadow-rue (one record) along a wet ditch at the Site's south-eastern boundary.

3.5.7 The LERN data search identified the following five priority invertebrate species listed under Section 41 of the NERC Act 2006; buff ermine (moth), garden tiger (moth), knot grass (moth), small heath (butterfly) and wall (butterfly). LBAP species returned in the data search included garden tiger, ringlet (butterfly), small heath and wall. Of these, none were recorded within the Site itself.

3.5.8 The data search identified the following three priority mammal species listed under Section 41 of the NERC Act 2006; brown hare, hedgehog and red squirrel. All three are also LBAP listed species. Brown hare was the only species returned within the Site.

Field Survey

3.5.9 Following the extended habitats surveys it is considered that on-Site habitats could provide opportunities for other notable species such as brown hare and hedgehog.

3.5.10 The habitats within the Site are not considered to be of a floristic structural quality which could support significant assemblages of notable invertebrate species. However, habitats associated with neighbouring watercourses and surrounding designated sites are likely to support notable species assemblages.

3.6 Invasive Non-native Species

Desk Study

3.6.1 The data search identified ten invasive, non-native plant species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) within the 2 km search area. These included floating pennywort, giant hogweed, Himalayan balsam, hollyberry cotoneaster, Japanese knotweed, Japanese rose, variegated yellow archangel, montbretia, Nuttall's waterweed and water fern. Of these, floating pennywort was frequently recorded along the Leeds and Liverpool Canal, with Himalayan balsam along its bankside at the Site boundary. Giant hogweed was also identified along the bankside of the River Douglas directly adjacent to the Site's proposed North Cable Route. Water fern was identified within the Leeds and Liverpool Canal approximately 180 m further south of the Site.

3.6.2 The data search identified ten invasive, non-native fauna species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) within the 2 km search area. These included American mink, Canada goose, grey squirrel and ring-necked parakeet. Notably this included American mink at the Site boundary along the Leeds and Liverpool Canal in 2017.

Field Survey

3.6.1 During the extended habitat survey and MoRPh surveys, Himalayan balsam was recorded in multiple locations along the bankside and banktop of the Leeds and Liverpool Canal and in a northern section of the River Douglas (see **Table 3.5**). The surveys also identified an abundance of floating pennywort within the Leeds and Liverpool Canal.

4 DISCUSSION

4.1 Overview

4.1.1 This section seeks to identify the potential for effects to occur on habitats and protected and notable species which could be considered as reasonably likely to occur as a result of the Proposed Development. The Site's proximity to statutory and non-statutory designated sites and potential effects on their qualifying interests is discussed. Measures are proposed for the protection of sensitive habitats and species, and recommendations are made for further pre-construction surveys and mitigation (see **Table 5.1**), if required.

4.1.2 The Proposed Development has been designed to minimise the potential for effects on sensitive ecological features; thereby ensuring existing wildlife corridors and habitat connectivity are maintained and enhanced. A series of biodiversity enhancements have also been adopted.

4.2 Statutory Designated Sites

General Measures

4.2.1 Four international statutory designated sites were located within 10 km of the Site, with the closest being the Ribble and Alt Estuaries SPA/SPA Marine Components (GB) and Ramsar site which is located approximately 4.35 km north of the Site (c. 5.08 km from Main Site). The closest to the Main Site land parcel is Martin Mere SPA/Ramsar site, which is located 4.94 km south-west.

4.2.2 A total of six national statutory designated sites for nature conservation are located within 5 km of the Site. The closest such site is the Ribble Estuary MCZ, which is located along both of the Site's cable routes (i.e. where they cross the River Douglas).

4.2.3 The Site is located within both the Mere Sands Wood SSSI IRZ and Ribble Estuary SSSI IRZ, whereby the Proposed Development triggers a requirement for the LPA to consult with Natural England.

4.2.4 Works will be contained within the Site, with no direct impacts to statutory designated sites for nature conservation or their qualifying features. Standard measures to ensure runoff control and pollution prevention (such as dust mitigation measures) will be implemented to safeguard these sites.

4.2.5 This will include the Ribble Estuary MCZ, which incorporates the River Douglas and is located within the Site in two locations proposed for cable route crossings. The MCZ will not be impacted with the implementation of a minimum 10 m stand-off buffer for all permanent above ground infrastructure. The only works within this buffer would be proposed cabling works to be undertaken using Horizontal directional Drilling (HDD) techniques in order to avoid damage or disturbance to the River Douglas and hence the Ribble Estuary MCZ. All entry and exit pits would be located be located at a suitable distance from the MCZ boundaries to avoid any impacts.

Non-breeding Birds

4.2.6 An assessment of impacts on mobile qualifying features listed for ornithological designated sites are detailed below under Section 4.6 (birds).

4.2.7 A Report to Inform a Habitat Regulations Assessment is provided in **Appendix 7** which presents an assessment of the likely significant effects of the Proposed Development on European designated sites and their associated qualifying interests in respect of the provisions of the Habitats Regulations.

4.3 Non-Statutory Designated Sites

4.3.1 The proposed Cable Routes are located within the River Douglas Estuary BHS and the Leeds/Liverpool Canal, Rufford Branch BHS is located directly adjacent to the Main Site western boundary.

4.3.2 As detailed above, construction works will be contained within the Site and therefore there will be no direct impacts to these non-statutory designated sites. Standard measures to ensure runoff control and pollution prevention (such as dust mitigation measures) will be implemented to safeguard these sites (see **Table 5.1**). This will include the River Douglas Estuary BHS, which is located within the Site at the two locations proposed for cable route crossings. The BHS will not be impacted with the

implementation of a minimum 10 m stand-off buffer for all permanent above ground infrastructure. The only works to be undertaken withing this 10m buffer would be HDD underneath the river which would be undertaken at a depth suitable to avoid disturbance to the BHS.

4.3.3 Since the original baseline surveys undertaken in 2021, the riparian banktops of both the River Douglas and the Leeds and Liverpool Canal have been enhanced from arable land to grassland margins through pre-application habitat creation measures. As the Site is within an opportunity area for grassland measure G3.2 – appropriate management for arable species assemblages and within the BHS buffer zone for the adjacent Leeds/Liverpool Canal, Rufford Branch BHS, such newly created grassland margins will enhance riparian habitats and expansion associated with the BHS.

4.3.4 Given the implementation of best practice pollution control measures and HDD works to protect the River Douglas Estuary BHS and the Leeds/Liverpool Canal, Rufford Branch BHS and the physical separation between the Site and other non-statutory designated sites, no adverse impacts to non-statutory designated sites are anticipated as a result of polluted runoff or emissions to air.

4.3.5 The Main Site is located within a SWA and is part of a broad pink-footed goose and whooper swan major feeding area. An assessment of impacts on SWA birds is described in Section 4.6 (Birds) below. However, in summary it can be concluded that given the presence of existing adjacent roadways and resultant habitation to baseline disturbance, no significant disturbance to the SWA is anticipated during the construction of the Proposed Development. Operation of the Proposed Development is considered to result in levels of disturbance comparable with baseline levels.

4.4 Habitats

4.4.1 Baseline habitats within the Site are generally of low ecological importance, consisting of arable land and mown grassland margins, which are common and widespread both locally and nationally. Off-Site, boundary and newly created/enhanced pre-application habitats including ditches, hedgerows, woodland, watercourses and ponds are of greater value.

4.4.2 The construction of solar farms generally requires very low levels of direct and permanent land take (typically less than 5% footprint on the ground) for the infrastructure. Together with a single proposed turbine, direct loss of habitat is therefore considered to be small and will comprise mostly of low ecological value agricultural habitat, which is widely present in the local and regional landscape.

4.4.3 Effects during construction relate to physical disturbance and removal of arable land and short sections of modified grassland margins, primarily comprising temporary compaction and soil disturbance from plant machinery and vehicles. For the operational lifetime of the Proposed Development the intensively managed arable land will be replaced by a more species and structurally diverse grassland, which will be managed throughout the lifetime of the operational Energy Park to provide higher value habitat for a range of wildlife.

4.4.4 The proposed access tracks will exploit existing farm accesses and will also avoid mature trees. The proposed Site access will utilise existing tracks. The layout of the Proposed Development has mostly been designed to maintain a stand-off buffer of at least 5 m from boundary features such as ditches and trees, and 10 m from watercourses (the River Douglas and the Leeds and Liverpool Canal). Newly created hedgerow habitats will also include 5 m buffers, whilst planted woodlands will include 10 m buffers. Overall, the network of hedgerows, trees, watercourses and ditches will be retained and protected, with existing and additional planting undertaken to maintain and enhance habitat connectivity and linkages across the Site itself and with the surrounding wider landscape. These habitats will be enhanced as set out in a separate Landscape and Environmental Management Plan (LEMP) and as illustrated in the *Landscape Plan* (Drawing Number: 22.522-BCAL-ZZ-00-DR-L-102-2-Landscape Structure).

4.4.5 Standard good practice construction methods including pollution prevention and control will ensure that there are no indirect effects on the ditches, watercourses, or other neighbouring habitats (see **Table 5.1**). The perimeter fencing will include mammal gates of gaps at the base at suitable locations to maintain connectivity in the landscape for potential otters, badgers and other small mammals. In addition, the Energy Park will not be lit once constructed, maintaining dark corridors around the Site

as a whole and in particular along hedgerows and ditches. The only requirement for lighting is the 'emergency lighting' at the entrances to the high voltage equipment within the substation compound. Such lighting will only be used in the rare instances of unplanned or emergency works where these need to take place at times of insufficient natural light.

4.4.6 Cable routes are located predominantly in habitats of low ecological value, including roads, tracks and modified grassland. Habitats of higher value include plantation woodland, hedgerows and ditches. All works associated with proposed cabling would be temporary with no permanent above ground impacts. Any habitats impacted would be restored to baseline condition on completion of cabling works.

4.4.7 The construction process and solar panel array and turbine layout has been designed to avoid impact to hedgerows and trees (including newly created habitats), as far as practicable. These will be retained and protected during construction, following British Standards BS5837:2012 *Trees in relation to design, demolition and construction*[65], with measures including root zone protection and clear instructions on the location of materials storage areas away from trees and their root protection zones.

4.4.8 Opportunities have been sought to provide an overall biodiversity gain in line with BS 42020 – *Code of Practice for Biodiversity in Planning and Development*. Habitat enhancement and management measures set out in the *Landscape Plan* (22.522-BCAL-ZZ-00-DR-L-102-2-Landscape Structure) will enhance the Site for the benefit of local wildlife. The design and long-term management of the land seeks to maintain and improve functionality through protecting and enhancing potentially important wildlife corridors i.e. through strengthening connectivity and linked habitats through native species hedgerow and tree planting, woodland planting, creation of ponds, and through the creation of an extensive species and structurally diverse grassland with wader scrapes, as well as grassland under and around the solar panels and around the Site perimeter, which will provide enhanced wildlife benefits compared to the low value arable land which is currently present.

4.4.9 Pre-application newly created and enhanced habitats include woodland and hedgerow planting, as well as the creation of grassland margins and a drainage ditch. Further habitat enhancement measures are proposed for the Site, illustrated in the *Landscape Plan (*22.522-BCAL-ZZ-00-DR-L-102-2-Landscape Structure). These include:

- Native tree and hedgerow planting;
- Development of extensive areas of species and structurally-diverse grassland with wader scrapes;
- Development of extensive areas of species and structurally-diverse grassland under and around the solar panels, including a perimeter of open meadow grassland;
- Creation of screening earth bund; and,
- Creation of a cluster of ponds with associated surrounding marshy grassland and mixed scrub.

4.5 Biodiversity Net Gain Assessment

4.5.1 In order to assess the biodiversity impacts associated with the Proposed Development the Defra Statutory Biodiversity Net Gain Metric Calculator was utilised. Based on the information provided within the *Landscape Plan (*22.522-BCAL-ZZ-00-DR-L-102-2-Landscape Structure) and the existing baseline and newly created/enhanced habitats, the calculation results show that the Proposed Development will result in a biodiversity net gain of 175.05% in Habitat Units, a 162.89% net gain in Hedgerow Units and an 21.12% net gain in Watercourse Units, as shown in the headline results extracted from the full Metric spreadsheet, reproduced below. The full Metric spreadsheet is provided separately to this report in **Appendix 4.**

[65] https://www.bathnes.gov.uk/sites/default/files/2020-01/BS5837%202012%20Trees.pdf (Accessed: 11st November 2025)

4.5.2 The Proposed Development adheres to all trading principles enshrined within the Metric. The Metric does not account for species-specific mitigation or enhancement measures which are referred to elsewhere in this assessment.

Biodiversity Net Gain Calculation Headline Results (Defra statutory metric)

On-site baseline	*Habitat units*	77.93	
	Hedgerow units	9.21	
	Watercourse units	29.41	
On-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	214.34	
	Hedgerow units	24.21	
	Watercourse units	35.62	
On-site net change (units & percentage)	*Habitat units*	136.41	175.05%
	Hedgerow units	15.00	162.89%
	Watercourse units	6.21	21.12%

4.6 Protected and Notable Species

Birds

Breeding Birds

4.6.1 No breeding qualifying species of the Ribble and Alt Estuaries SPA/Ramsar were recorded holding any territories within the Site. Schedule 1 species recorded breeding within and/or adjacent to the Site included barn owl, Cetti's warbler and kingfisher, with quail also being recorded through the desk study in 2021. Ground nesting Target Species recorded within the Site's arable field included skylark, lapwing and oystercatcher.

4.6.2 The breeding bird assemblage associated with the Site is typical of farmland and wetland habitats in the region and is likely to be of no more than local value. The majority of the species (including Target Species) were associated with vegetation and watercourses along field boundaries in the Site. Quail, skylark, lapwing and oystercatcher are ground-nesting species that use open habitats, while the other Target Species will typically nest within or close to scrub and trees, so are mostly associated with vegetation along field boundaries.

4.6.3 Field boundary features such as hedgerows, scrub and trees, which offer the most suitable habitat for breeding bird species, will be retained and protected in line with BS5837:2012 *Trees in relation to design, demolition and construction*.

4.6.4 All wild birds, their nests and eggs are, with few exceptions, protected under the Wildlife and Countryside Act 1981 (as amended). Species listed under Schedule 1 of the Act, have special protection with increased penalties for offences committed towards these birds.

4.6.5 In order to reasonably avoid impacts on nesting birds and to ensure compliance with the provisions of the Wildlife and Countryside Act 1981 (as amended), it is recommended that any vegetation removal takes place outside of the bird breeding season (March-August inclusive)[66]. If vegetation works are necessary during the breeding season (e.g. in order to avoid non-breeding foraging birds), any suitable nesting habitat (including arable and grassland areas) to be affected by works should be checked by a suitably experienced ecologist prior to works commencing. Works would be permitted to proceed only when the ecologist is satisfied that no offence will occur under the legislation.

Breeding Bird Habitat Loss – Energy Park

4.6.6 The physical footprint of a solar farm and single turbine (including associated infrastructure) is relatively small, and the Proposed Development will only result in the loss of approximately 37.56 ha of agricultural land. Habitat in and around the Main Site will be mostly changed from intensively managed arable land to extensive areas of undisturbed species-diverse grassland, including wader scrapes and pond features, which will benefit a range of ground-nesting species.

[66] Notwithstanding precautions to avoid potential disturbance impacts to wintering birds.

4.6.7 Arable cropping regimes strongly affect the actual breeding success of ground nesting birds, and it is considered that a suitably managed low-intensity grassland habitat will enhance breeding opportunities as well as foraging resources for a range of locally occurring bird populations, including ground-nesting Target Species such as skylark, lapwing and oystercatcher.

Breeding Bird Displacement – Solar Farm

4.6.8 The main potential effect of construction of the Proposed Development is the displacement of foraging and nesting birds. Breeding territories of the majority of species were associated with field boundary vegetation, particularly watercourses, ditches, trees and scrub. These boundary features will not be directly impacted by the Proposed Development and will be protected with an appropriate buffer zone to ensure the waterbodies and vegetation (and root systems) are not impacted by the works. With these measures adhered to, those nesting species along field boundaries are likely to be unaffected by the works and are considered at low risk from displacement.

4.6.9 Birds nesting on open ground, such as skylark, lapwing and oystercatcher, may be temporarily displaced if construction takes place during the breeding season. However, in the context of the availability of comparable habitats locally the area lost to disturbance will be small.

4.6.10 Three of the six skylark territories were noted within the southern part of the Site where the Proposed Development's solar array will be sited. It is generally accepted that skylark will not nest within solar arrays, as the panels remove the open aspect favoured by skylark. However, the number of territories is not the only determining factor in the overall breeding success, and hence long-term viability of the skylark population associated with a given area. Other key factors influencing productivity include the number of broods raised, clutch size and the survival rate of chicks. For example, as a short lived bird, typically surviving only two years, to maintain a population skylark typically need to have three to four broods per breeding season. Within intensive lowland agricultural systems, cited as the primary factor contributing to recent declines[67], often only a single brood is raised before habitat becomes unsuitable, particularly where winter sown cereals are grown. Therefore, when assessing the impact of solar farms on skylark it should be borne in mind that the presence of a skylark territory is not alone an indicator of long term success of the species within a site.

4.6.11 While it is accepted that opportunities for nesting will be reduced, solar farms can bring a range of other benefits for skylark, with studies showing that skylark will utilise a suitably managed solar farm for foraging and as a nursery area for recently fledged young. Montag *et al.* (2016)[68] assessed changes in biodiversity between solar farm plots and adjacent "control" plots nearby and found no significant difference between skylark territories. Therefore, while nesting opportunities may be diminished, it is considered that solar farms can contribute to the overall productivity of skylark, and hence maintenance of local skylark populations by offering a stable foraging source that would be incorporated into the territories of skylark nesting in adjacent fields, and increase overall breeding success. Suitable nesting habitat will be provided within the proposed open grassland area in the northern half of the Site, which is currently intensively managed for agriculture. It is therefore considered that the displacement of three skylark territories is likely to be offset by the enhanced breeding success of other territories across the wider Site with a negligible impact overall on the local skylark population. The Site's proposed open grassland with scrapes is also considered to benefit breeding and foraging waders, such as lapwing and oystercatcher, which are both also likely to be displaced from the southern section of the Site (three lapwing territories and one oystercatcher territory). Similar to skylark, the loss of these few territories is likely to have a negligible impact on the local populations, with improved overall breeding success considered likely for both species from the season-round breeding opportunities made available in the northern section of the Site.

[67] https://www.bto.org/understanding-birds/birdfacts/skylark (Accessed: 3rd September 2025).
[68] Montag, H., Parker, G. and Clarkson, T (2016). The effects of solar farms on local biodiversity: A comparative study. https://helapco.gr/wp-content/uploads/Solar_Farms_Biodiversity_Study.pdf (Accessed: 3rd September 2025).

4.6.12 The Site has commenced with pre-application habitat enhancements, and will incorporate further landscape and biodiversity enhancements subject to consent for the Proposed Development. Such habitat enhancement opportunities which form a major part of solar farm developments will benefit a variety of breeding bird species, including a variety of other Section 41 species (Species of Principal Importance) listed on the NERC Act. Measures, including replacing arable fields with species-diverse grassland, planting species-rich hedgerows, creating woodland, ditches, ponds, scrapes and scrub, and deploying  bird boxes (and one barn owl box) will enhance nesting and foraging opportunities for the bird assemblage within and adjacent to the Site.

4.6.13 With mitigation measures adopted to ensure that any works associated with the Proposed Development during the breeding bird season do not negatively impact nesting birds, it is concluded that the breeding bird assemblage is unlikely to be adversely impacted by the Proposed Development, and in the longer term may actually benefit from the delivered and proposed habitat changes.

Non-breeding Birds – Habitat Loss and Displacement

4.6.14 Noise generated during construction and movement of plant and personnel could cause temporary disturbance to roosting and foraging non-breeding birds that are associated with statutory and non-statutory designated sites for nature conservation located in the nearby and wider area surrounding the Main Site. Additionally, the placement of solar panels could result in the loss of suitable foraging habitat for the lifetime of the Proposed Development. The presence of the single turbine, whilst resulting in minimal physical habitat loss, could also cause displacement resulting in indirect habitat loss from areas of suitable habitat in immediate vicinity of the turbine location.

4.6.15 Results of the non-breeding bird survey SPA/Ramsar site FLL assessment demonstrated that the Main Site and Wider Survey Area were not regularly recorded holding significant numbers[69] of the listed qualifying species of the Ribble and Alt Estuaries or Martin Mere SPA/Ramsar site, with the Wintering Survey Area as a whole also found to not meet the FLL criteria for the majority of Important Component Species listed in the waterbird assemblages. Lapwing and snipe were the exception as they regularly met 1% of their respective populations as Important Component Species of Martin Mere SPA/Ramsar site in Year 2. When assessed over the entire survey period however, only lapwing was identified to regularly exceed the 1% threshold of the Martin Mere SPA/Ramsar site population. As such, the Wintering Survey Area is only considered to represent FLL for lapwing related to Martin Mere SPA/Ramsar site over the entire survey period. Additionally, although cumulative counts of all wetland bird Target Species regularly exceeded 1% of the cumulative non-breeding waterbird assemblage population of Martin Mere SPA/Ramsar site in Year 2, the Wintering Survey Area was not considered to represent FLL for the waterbird assemblage of either SPA/Ramsar site when considered over the entire two-year survey period.

4.6.16 In terms of how the direct and indirect (displacement) loss of habitat as a result of the Proposed Development might affect non-breeding birds, particularly those species which are associated with the Ribble and Alt Estuaries or Martin Mere SPA/Ramsar site, the habitat conditions of the Site are entirely unexceptional for the species which were recorded using the Wintering Survey Area. There are extensive areas of alternative and equally suitable habitat present in the nearby and wider surrounding area outside of the Site. This was confirmed through the desk study results and during the field surveys with observations of various Target Species recorded in the Wider Survey Area, some in large flocks, which will be largely unaffected by the Proposed Development. What is more, the northern half of the Site will remain available for certain species to continue to use throughout the winter.

[69] A 'significant number' of alone qualifying feature listed birds is defined as 1% of the non-breeding Ribble and Alt Estuaries SPA / Ramsar site and/or Martin Mere SPA / Ramsar site population (based on BTO data), which is recorded 'regularly' (i.e. when the threshold is met in two thirds of the season). A 'significant number' for non-breeding Important Component Species listed as part of the wattlebird assemblages includes one of the following three thresholds: 1% of the species' SPA population, 1%, or more, of the designated species' Great British (GB) population; and, cumulatively over 2,000 birds of those species listed on the waterbird assemblage.

4.6.17 With regards to potential disturbance of non-breeding birds during both construction and operation of the Proposed Development, it is considered that given baseline agricultural usage of the Site and frequent presence of dog-walkers, non-breeding birds would be habituated to a level of baseline disturbance. It is also considered that movement between areas of arable land is a typical behaviour of such species, both in response to farming practices and food source availability with birds moving as required. Therefore, the temporary disturbance of birds for only a small part of a single winter season would be unlikely to affect their survival.

4.6.18 It is therefore expected that the Proposed Development will result in a negligible loss of foraging resource for non-breeding birds in the context of the local area, including those species associated with the Ribble and Alt Estuaries or Martin Mere SPA/Ramsar site. The Proposed Development is also only anticipated to cause minor, localised disturbance to non-breeding birds, particularly against the backdrop of baseline disturbance sources and primarily during the construction phase. These conclusions are reached in spite of the fact that the Site meets the criteria for representing FLL for lapwing and the broader non-breeding waterbird assemblage of Martin Mere SPA/Ramsar site as the impacts associated with the Proposed Development are not anticipated to affect the survival or viability of any of the site's designated features. The Report to Inform a Habitat Regulations Assessment, provided in **Appendix 7**, presents an assessment of the likely significant effects of the Proposed Development on the relevant European designated sites and their associated qualifying interests in respect of the provisions of the Habitats Regulations.

Wind Turbine Collision Risks

4.6.19 Operational collision mortality effects (as well as displacement) caused by the installed wind turbine are likely to be low for all Target Species based on the results of the VP surveys. Collision-risk modelling (CRM) was conducted for pink-footed goose, whooper swan, shelduck, mallard, golden plover, lapwing, oystercatcher, snipe, lesser black-backed gull and cormorant (see **Appendix 6**). Apart from lapwing, the results indicated an estimated annual mortality risk of less than one individual bird for each of the ten species assessed.

4.6.20 Based on the results detailed in **Table 3.6**, it can be concluded for all ten Target Specie that collision mortality incidents are anticipated to be extremely rare and any which may occur would have negligible to no impact on all species populations at all geographic levels (regional and SPA/Ramsar site). Here none of the Target Species were estimated to have an annual mortality above 0.02% of its regional population. Additionally, none of the Target Species listed as either qualifying species or Important Component Species of the Ribble and Alt Estuaries SPA/Ramsar site was estimated to have an annual mortality rate above 0.04% of their respective SPA/Ramsar site populations and none of the Target Species listed as either qualifying species or Important Component Species of the Martin Mere SPA/Ramsar site was estimated to have an annual mortality rate above 0.19% of their respective SPA/Ramsar site populations.

4.6.21 The proposed turbine is to be located in open arable land proposed to be converted to grassland. The proposed location is approximately 65 m away from the field boundary, resulting in an expansive, open area of proposed grassland suitable for Target Species recorded in the non-breeding bird surveys to forage in. The field boundary itself is also likely to be used by common bird species; however, the turbine is considered appropriately distanced from such features with the nearest such feature being young trees (advance landscaping) approximately 65m east. It is therefore considered that there is unlikely to be any adverse effects to local bird populations as a result of collision with proposed wind turbine, once operational.

4.6.22 This conclusion includes species associated with the Ribble and Alt Estuaries or Martin Mere SPA/Ramsar site, with potential impacts of any collisions not anticipated to affect the survival or viability of any of these sites designated features. The Report to Inform a Habitat Regulations Assessment, provided in **Appendix 7**, presents an assessment of the likely significant effects of the Proposed Development on European designated sites and their associated qualifying interests in respect of the provisions of the Habitats Regulations.

Bats

4.6.23 All species of British bat are listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Bats are further protected under the Habitats Regulations. The Regulations make it an offence to:

- kill, injure or take any wild bat;
- damage, destroy or obstruct access to any place that a wild bat uses for shelter or protection; and,
- intentionally or recklessly disturb any wild bat while it is occupying a structure or place that it uses for shelter or protection.

4.6.24 Seven bat species in the UK are also listed as Species of Principal Importance for the purpose of conserving biodiversity under Section 41 of the NERC Act 2006, with seven species listed within the LBAP.

4.6.25 No buildings or structures will be impacted by the Proposed Development. The Proposed Development will retain and protect hedgerows and trees within the Site in line with BS5837:2012 *Trees in relation to Design, Demolition and Construction*, maintaining foraging and commuting features within the landscape. Furthermore, the landscape design includes newly created hedgerows and woodland edges, together with additional planting of new hedgerows around the Main Site perimeter, which will serve to improve the landscape scale connectivity. Should plans change, bat roost assessments will be undertaken on any trees identified for tree works or removal, which may identify further survey requirements, potentially including dusk emergence/dawn re-entry surveys or inspections at height.

4.6.26 If bats are confirmed to be roosting within any tree or structure to be impacted by proposed works, the data gathered would be used to support a licence application to Natural England to destroy/disturb the bat roost and to inform potential mitigation measure to reduce and/or avoid impacts if appropriate. Any tree subject to impact will require mitigation to be implemented in line with the Roost Resource approach outlined in Collins (2023).

4.6.27 A study by Tinsley *et al.* (2023[70]) concluded that in matched sites (e.g., grazed solar vs grazed undeveloped pasture) some bat species could be negatively affected by solar photovoltaic (PV) panels, suggesting that ground-mounted solar PV panels may contribute to loss and/or fragmentation of foraging/commuting habitat. It should be noted that the study did not address differences in bat activity between arable land and permanent grassland with solar arrays, nor was information available to confirm if any of the sites included habitat enhancement measures for bats and if so, how developed these measures were. Caution should therefore be advised when considering the conclusions of the study.

4.6.28 Nevertheless, it is acknowledged that the Proposed Development could have the potential to affect bat distribution although it does adopt the mitigation measures recommended within the aforementioned paper (i.e., maintaining boundaries and planting vegetation to network with surrounding foraging habitat). Furthermore, conversion of arable land to permanent grassland, creation of species-diverse grassland margins, creation of ponds and ditches, and the planting of extensive hedgerow, scrub and woodlands are likely to lead to increased prey abundance and increased foraging and commuting opportunities post development.

4.6.29 Once constructed the Energy Park will not be routinely lit. Any lighting associated with the substations, transformer and inverter cabinets will be very localised and will only be used on occasion, for example, if an engineer needs to carry out emergency visits to the Site at times when natural light levels are low.

[70] Tinsley, E., Froidevaux, J. S. P., Zsebők, S., Szabadi, K. L. and Jones, G. (2023). *Renewable energies and biodiversity: Impact of ground-mounted solar photovoltaic sites on bat activity*. Journal of Applied Ecology. 60 (9).

4.6.30 Operational effects (displacement or collision mortality) caused by the proposed wind turbine are also likely to be minimal due to being positioned in habitat of low ecological value. This is supported by the results of the activity surveys which indicate higher bat activity along field boundary features (i.e. MS1) in comparison to open arable land (i.e. MS2).

4.6.31 The rotor swept area has been calculated to determine an appropriate buffer zone from nearby linear features.

$$b = \sqrt{(50 + bl)^2 - (hh - fh)^2}$$

Where: b= buffer distance; bl= blade length; hh= hub height; fh= feature height

4.6.32 Using a precautionary feature height of 20 m, 5 m and 2 m respectively for the nearest retained trees, River Douglas and hedgerows, the calculation respectively indicates a minimum buffer distance of 75.24 m, 52.13 m and 45.54 m is sufficient to ensure that a 50 m buffer zone is maintained from bat linear features and blade tips.

4.6.33 The River Douglas is 104.5 m east of the turbine and the closest existing hedgerow (pre-planted enhancement) on-Site is located c. 310 m north-west. No further hedgerow is proposed to be planted within 46 m of the turbine. The closest existing mature woodland is located off-Site c. 150 m east, with the closest existing tree (off-Site) located c. 170 m south-east.

4.6.34 However, pre-planted young trees are situated 65.6 m east of the turbine (0.05 ha), which when mature to a 20 m height, will be within the minimum requirement distance. As such, trees within 75.24 m of the turbine will be maintained at a 12 m height in order to maintain suitable buffers (64.4 m required buffer at a 12 m feature height). As such, no significant operational impacts are expected as a result of the Proposed Development.

4.6.35 No trees or structures with potential bat roost suitability were identified in proximity to the turbine location, with the closest being a dead tree with PRF-I suitability (see TN2 in **Table 3.5**) approximately 338 m south-east.

4.6.36 Any lighting required will be restricted and directed away from retained boundary habitats to maintain dark corridors for foraging and commuting. Light spill can be avoided in a number of ways, including the use of low-level lighting and use of hoods and careful selection of lighting; further information is available in BCT and Lighting Professionals (2023)[71]. As long as lighting is designed and implemented in a sensitive manner, no discernible effects are anticipated on foraging/commuting bats.

4.6.37 With the avoidance and mitigation measures adopted, bat roosting and foraging/commuting assemblages are not expected to be adversely impacted by the Proposed Development.

4.6.38 The landscape planting illustrated on the *Landscape Plan (22.522-BCAL-ZZ-00-DR-L-102-2-Landscape Structure),* together with the inclusion of five bat boxes on mature trees, would enhance roosting, foraging and commuting opportunities for bats. Bat boxes will be located beyond 100 m from the turbine location. Boxes should be of a durable construction material such as woodcrete or similar and installed following BCT advice[72], with several boxes installed on the same trees at a roughly south facing aspect. Overall, the development will retain current habitat features and provide additional benefits for bats.

Badger

4.6.39 Badgers are afforded legislative protection under the Protection of Badgers Act 1992. It is an offence to kill or harm a badger, and to damage an active sett.

[71] Bat Conservation Trust and Institution of Lighting Professionals. (2023). *Guidance Note 08/23: Bats and artificial lighting at night*. https://theilp.org.uk/publication/guidance-note-8-bats-and-artificial-lighting/ (Accessed: 3rd September 2025).
[72] https://www.bats.org.uk/our-work/buildings-planning-and-development/bat-boxes/putting-up-your-box (Accessed: 3rd September 2025).

4.6.40 No setts were identified within or immediately adjacent to the Site. However, habitats within the Site and surrounding areas are considered suitable to support foraging and commuting badgers, as well as badger sett excavation.

4.6.41 The area for the solar panel layout has been designed to avoid impacting the more ecologically valuable habitats, such as along field edges where badgers are most likely to create setts, or use when foraging and commuting. These habitats will be retained, protected and enhanced.

4.6.42 Habitat enhancements include the sowing and management of species-diverse grassland within the Site, creation of hedgerows, ditches and planting of new scrub and woodland habitats. Such enhancements are considered to provide badgers with enhanced foraging and commuting resources within a secure and relatively undisturbed environment.

4.6.43 Badger activity can show seasonal patterns of use and badgers can quickly establish new setts, or re-use setts previously thought to be inactive. Considering the highly mobile nature of badgers and the seasonality of their activity, it is recommended that a pre-construction badger survey should be completed by a suitably qualified ecologist prior to the commencement of development/vegetation clearance works to check for any newly constructed setts in and immediately surrounding the Site.

4.6.1 If a sett is found, suitable advice should be sought from the project ecologist to ensure necessary protection, avoidance or mitigation measures are in place before works proceed such as a licence from Natural England or completion of works under a Reasonable Avoidance Measures (RAMs) Method Statement.

4.6.2 It is proposed that standard good practice measures will be adopted during construction that will safeguard badgers as well as other wildlife that may occasionally be present on Site (e.g., foraging during non-construction hours). These will include covering any excavations left open over night or fitting with a means of escape (set no steeper than a 45^{o} angle), and safe storage of materials in secure compounds or stores.

4.6.3 Once operational, the perimeter fencing will include mammal gates of gaps at the base at suitable locations to maintain connectivity in the landscape for potential badgers (and others small mammal species). Once constructed, the Proposed Development will not sever potential commuting routes used by badgers, with woodland and linear features such as hedgerows to be retained and protected or improved. Taking into account the above measures, no impacts to badger are anticipated as a result of the Proposed Development.

Otter

4.6.4 Otters are listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), they receive further protection under the Habitats Regulations. The Act and Regulations make it an offence to:

- Deliberately capture, injure or kill an otter;
- Damage or destroy a breeding site or resting place, and;
- Deliberately disturb an otter, particularly in a way which is likely to:
    - to impair their ability to survive, breed or reproduce, rear or nurture young; or,
    - to affect significantly the local distribution or abundance of the species.

4.6.5 Otter is listed as a Species of Principal Importance under Section 41 of the NERC Act 2006, as well as the UK BAP and LBAP. Otter is therefore a material consideration within the planning process.

4.6.6 Otter is considered likely to occur along adjacent watercourses (i.e. River Douglas and Leeds and Liverpool Canal), which are considered suitable for foraging, commuting and potentially breeding and resting. No otter holts were recorded on or immediately surrounding the Site during the habitat survey, however adjacent watercourses and woodlands provide potentially suitable habitat for holt establishment. The canal also contains associated riparian scrub/woodland, which could enhance suitability for otters. However, as both watercourses include a public footpath at the Site boundary, it is considered that any otters potentially present would likely be subject to disturbance.

4.6.7 As otter is a highly mobile species, there is the potential for individuals to establish new resting places or holts between the time of baseline surveys and commencement of construction works. The proposed works will however maintain a stand-off buffer of at least 5 m from the banks of on-Site ditches and 10 m from watercourses (i.e. River Douglas and Leeds and Liverpool Canal). Standard good practice measures will also be employed to ensure runoff control and pollution prevention in order to protect aquatic/bankside habitats (see **Table 5.1**). Accesses and construction are proposed to utilise existing farm tracks and field entrances. Woodland edges and hedgerows will also be retained and protected with suitable buffers.

4.6.8 However, two cable route crossings are proposed across the River Douglas using HDD. It is therefore recommended that a pre-construction otter survey is to be completed by a suitably qualified ecologist prior to commencement of works to check for signs of activity and/or newly created holts in and immediately surrounding the Site. The survey should be undertaken 200 m up and downstream of any works impacting watercourses/ditches. Associated woodland habitat within these survey areas will also be checked for evidence of otter holts or resting places.

4.6.9 In the event that baseline conditions have changed, a suitably qualified ecologist will advise on the implementation of necessary mitigation measures to ensure legislative compliance including, if necessary, changes to the Site layout, working methods and/or a derogation licence from Natural England.

4.6.10 Once operational, the Proposed Development is not likely to have any effect on otters or their habitat. The operational Site will not be lit permanently, thus retaining dark corridors, particularly along watercourses. Should any artificial lighting be required during construction, this will be task specific and directed away from sensitive habitats within and adjacent to the Site, including watercourses.

4.6.11 Habitat enhancement and management could benefit otters in the future, in the event that they colonise the area. The Proposed Development will result in species-diverse grassland (including underneath the solar panels) and woodland / hedgerow planting at field margins running adjacent to the watercourses. Woodland creation and the creation of hedgerows could also benefit otters (if present), through the use of these habitats for foraging and commuting purposes. The change in management practices on-Site could also be of benefit to the species, with grassland creation, the cessation of annual cultivation and likely inputs of pesticides and fertilisers, all contributing to improvements in local water quality. Created ponds would also improve foraging opportunities within the Site.

Water Vole

4.6.12 Water vole and its habitats receive full legal protection under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Water vole is listed as a Species of Principal Importance under Section 41 of the Natural Environment and Rural Communities (NERC) Act, UK BAP and LBAP. It is therefore a material consideration within the planning process.

4.6.13 No evidence of water vole presence was observed during the 2021 surveys, habitat surveys or MoRPh surveys. The majority of the adjacent Leeds and Liverpool Canal and associated banksides were considered suitable, as well as some Site boundary wet ditches. The River Douglas itself was considered unsuitable for the species.

4.6.14 The majority of proposed works are situated over 5 m from on-Site ditches, and 10 m from watercourses, with no ditch crossings proposed to be utilised for the Proposed Development.

4.6.15 Standard good practice measures will be employed to ensure runoff control and pollution prevention to protect aquatic/bankside habitats both on-Site and in the wider ditch network (see **Table 5.1**).

4.6.16 Habitat enhancement and management as proposed (and partly established) could benefit water voles, should they colonise the Site in future. The Proposed Development will result in species-diverse grassland at field margins that run adjacent to the ditches, newly created ponds, as well as newly planted hedgerows along both adjacent watercourses. The change in management practices on the Site could also be of benefit to the species, with the cessation of annual cultivation and likely inputs of pesticides and fertilisers, all contributing to improvements in local water quality. Furthermore, the

native floral species assemblage along the bank tops of adjacent watercourses will benefit with the management of Himalayan balsam currently present, which will likely improve the watercourse's functionality for the species.

Amphibians

4.6.17 GCN and their habitats are protected under the Wildlife and Countryside Act 1981 (as amended) and the Habitats Regulations. The Act and Regulations make it an offence to:

- kill, injure or take a GCN;
- damage, destroy or obstruct access to any place that a GCN uses for shelter or protection; and,
- intentionally or recklessly disturb a GCN while it is occupying a structure or place that it uses for shelter or protection.

4.6.18 GCN and common toad are both listed as Species of Principal Importance under Section 41 (England) of the NERC Act 2006 and UK BAP. Common toad, natterjack toad, common frog and GCN are further listed under the LBAP.

4.6.19 Although there are no ponds within the Site, there are four ponds located within 250 m of the Main Site and five ponds within 50 m of the two proposed cable routes. Desk study records indicate GCN are present locally. In the absence of detailed survey information, following a precautionary approach, it is assumed that GCN are present within surrounding ponds.

4.6.20 The vast majority of the Site is arable farmland, which is of low suitability for amphibian species. Higher value terrestrial habitats for amphibian species (e.g., hedgerow bases, ditches, ponds, scrub, watercourses and woodland) will be retained and protected during construction and operation of the development. All works will be confined to the Site boundary, and through the implementation of pollution control measures, there will be no impacts to breeding amphibian habitat.

4.6.21 All ponds will therefore be retained and protected, however proposed cable route works are proposed within 50 m of five ponds. As a precautionary measure, further pre-commencement surveys are suggested in order to determine if GCN are present within such ponds. If absent, then works should be undertaken under RAMs, which would be implemented during the construction phase to safeguard animals during works (required for works within pond buffers or any minor removal of suitable habitat). This would include a fingertip search by a suitably experienced and licensed ecologist, as well as vegetation clearance undertaken following a two stage cut to safeguard any GCN which may be present.

4.6.22 If GCN are confirmed to be present then works involving small-scale vegetation clearance may only be conducted only under a successful application for a European protected species licence.

4.6.23 Given the suboptimal habitats present, it is considered unlikely that GCN would be affected by loss of agricultural land associated with the Proposed Development. Although GCN are known to be present in the local landscape, given the nature of works and suitable mitigation proposed (EPS licence and/or RAMs), it is considered that the Proposed Development will not affect the favourable conservation status of any amphibian species, or risk harm to individual animals as a result.

4.6.24 As a result of habitat enhancements, including the creation of hibernacula, conversion of arable land to extensive areas of grassland, as well as the creation of ponds, ditches, scrapes, hedgerow, scrub and woodland areas, the completed development will provide higher value terrestrial habitat for amphibians. The Proposed Development is therefore considered to benefit GCN and other amphibians species in the local landscape, with long-term areas of undisturbed habitat made available, which have increased landscape connectivity.

Reptiles

4.6.25 Common reptile species namely common lizard, slow-worm, grass snake and adder are protected against killing, injuring and sale under the Wildlife & Countryside Act 1981 (as amended). Such widespread reptile species are also listed as Species of Principal Importance under Section 41 (England) of the NERC Act 2006 and UK BAP. These species are further listed as LBAP species.

4.6.26 The vast majority of the Site is agricultural farmland, which is of very low suitability for reptile species. The higher value habitats for reptile species (e.g., hedgerow bases, ditches, grass field margins, scrub, watercourses and woodland) will be retained and protected during construction and operation of the development. As a precautionary measure, RAMs (as detailed for amphibians above) would be implemented during the construction phase to safeguard animals during works if minor removal of suitable habitat is required.

4.6.27 The Proposed Development will also have no direct effects on neighbouring habitats with buffers incorporated around neighbouring pond habitats and 10 m buffers from adjacent woodlands. With standard good practice pollution prevention and runoff control measures also in place during both construction and operation phases (see **Table 5.1**), these off-Site features and the species they support can be suitably protected from the risk of indirect effects.

4.6.28 Given the measures of mitigation planned, the Proposed Development will not affect any reptile species, or risk harm to individual animals as a result.

4.6.29 As a result of habitat enhancements, including the creation of hibernacula, new grassland, ditches, ponds, hedgerow, scrub and woodland areas, the completed development will provide higher value.

Other species

4.6.30 The Site and nearby surrounding area may potentially support brown hare, red squirrel, hedgehog and a variety of notable plants and invertebrates. However, these species are not considered to be a significant constraint in terms of the Proposed Development. All three mammal species are listed as Species of Principal Importance under Section 41 (England) of the NERC Act 2006, UK BAP and LBAP.

4.6.31 The loss of a relatively small area of agricultural land is not considered to affect local populations of these species, especially when considered in the context of the extensive availability of more suitable habitats in the wider area and the proposed creation of more favourable species diverse grassland, ponds, ditches, scrub and woodland habitat as part of the development. The enhanced grassland habitat, pond creation and hedgerow planting, as well as insect hotels and hibernacula, will benefit these species as landscape connectivity will be increased and further foraging, commuting and overwintering habitat will be created. Installation of five hedgehog boxes will provide greater refuge opportunities for this species.

4.6.32 Security fencing located around the Site perimeter will have gaps or mammal gates positioned at several locations along the base of fences in order to allow mammal species such as brown hare and hedgehog (amongst others) to continue to use the habitats on Site during the operational period. Such gaps or mammal gates will thereby maintain commuting and dispersal routes and opportunities to access relatively undisturbed habitat within the secured Site and connect to the wider landscape.

4.6.33 It is considered that RAMs already required to protect amphibians and reptiles (see above) will also serve to protect hedgehog and brown hare young (leverets) should any be present on-Site.

4.6.34 Cornflower is listed under Section 41 of the NERC Act 2006 and was returned in the data search along the A59 approximately 10 m from the Site's proposed cable route. Two LBAP plant species (tufted loosestrife and common meadow-rue) were also returned at the Site's south-eastern boundary and along the Leeds and Liverpool Canal. These habitats and the species present will be retained and protected.

4.6.35 The retention/creation of hedgerows, and creation of species-diverse grassland, scrub, ponds, ditches and woodland will provide a variety of invertebrate species with suitable habitats. The development of grassland (including beneath and surrounding the proposed solar development) along with new native species planting and the cessation of agricultural chemical spraying will enhance the Site's potential to support a diverse invertebrate assemblage.

4.7 Invasive Non-native species

4.7.1 The data search and field surveys identified floating pennywort along the Leeds and Liverpool Canal and Himalayan balsam along the banksides of both the canal and River Douglas. Water fern was identified within the Leeds and Liverpool Canal approximately 180 m further south of the Site.

4.7.2 It is an offence to plant or otherwise cause to grow in the wild species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended); this includes allowing the species to grow/spread, spreading the species or transferring polluted ground material from one area to another. Any waste containing these species can only be removed from site under appropriate waste management documentation (under the Environmental Protection Act 1990).

4.7.3 Himalayan balsam is the only invasive species within the Site itself. The species spreads from high seed production and explosive seed dispersal, which may also be spread through works. Further, appropriate biosecurity measures will be implemented to prevent the spread of these species with an Invasive Non-native Species Management Plan to be secured via suitably worded planning condition.

4.7.4 A pre-construction survey will be undertaken to monitor the spread of invasive species and identify any new areas of infestation. Should any new area of invasive species be encountered or suspected on Site, prior to or during construction, the advice of a suitably qualified ecologist should be sought, and the appropriate measures taken.

5 REPORT SUMMARY

5.1.1 **Table 5.1** summarises the assessment conclusions and any mitigation and enhancement measures recommended for the Proposed Development.

5.1.2 Subject to the general biodiversity net gain calculation (see **Appendix 4**), a Biodiversity Net Gain Report (see **Appendix 5**) outlines the objectives to achieve BNG.

Table 5.1: Report Summary (including mitigation and enhancement).

Feature	Summary of Assessment, Mitigation and Enhancement
Designated Sites	• Four international statutory designated sites were located within 10 km of the Site, with the closest two being the Ribble and Alt Estuaries SPA/SPA Marine Components (GB) and Ramsar site which is approximately 4.35 km north of the Site (c. 5.08 km from Main Site). The closest to the Main Site land parcel is Martin Mere SPA / Ramsar site, which is located 4.94 km south-west (c. 5.87 km from Site). • Six national statutory designated sites for nature conservation are located within 5 km of the Site, with the closest being the Ribble Estuary MCZ, which is located within the Site (i.e. cable crossings of the River Douglas). • The Site lies within two SSSI IRZs, whereby the Proposed Development triggers a requirement for the Local Planning Authority (LPA) to consult with Natural England. • Apart from lapwing and its population at Martin Mere SPA/Ramsar site, non-breeding bird walk-over surveys indicate the Site and surrounding habitats do not meet the definition of FLL for nearby SPA/Ramsar sites over the collective two years of survey, however surrounding land has been identified as SWA for pink-footed goose and whooper swan. • The Proposed Development will result in a negligible loss of foraging resource and is expected to cause only minor, localised disturbance to non-breeding birds (primarily during the construction phase) to non-breeding birds associated with the Ribble and Alt Estuaries or Martin Mere SPA/Ramsar site. Additionally, potential collision risk to non-breeding birds from the proposed single wind turbine is predicted to be negligible. Impacts associated with the Proposed Development are therefore not anticipated to affect the survival or viability of any of the designated features of the Ribble and Alt Estuaries or Martin Mere SPA/Ramsar site. The Report to Inform a Habitat Regulations Assessment, provided in Appendix 7, presents an assessment of the likely significant effects of the Proposed Development on the relevant European designated sites and their associated qualifying interests in respect of the provisions of the Habitats Regulations. • Both of the Site's proposed cable routes are located within the River Douglas Estuary BHS and the Leeds/Liverpool Canal, Rufford Branch BHS is located directly adjacent to the Site's western boundary. • No impacts on non-statutory designated sites for nature conservation are anticipated due to the implementation of buffer zones, as well as pollution prevention and surface water runoff management measures. Use of directional drilling is proposed for cabling works in order to safeguard the River Douglas Estuary BHS. • The Site is within an opportunity area for grassland and within the BHS buffer zone for the adjacent Leeds/Liverpool Canal, Rufford Branch BHS. Landscape proposals will increase biodiversity and ecological connectivity in the area.
Habitats	• Existing features of biodiversity value will largely be retained and protected throughout the construction and operation phases. • All trees necessitating protection during the construction will be protected during construction works in-line with BS5837:2012 *Trees in relation to design, demolition and construction.*

Feature	Summary of Assessment, Mitigation and Enhancement
	• Pollution prevention measures will be implemented to prevent pollution and run-off occurring during the construction and specific control measures will be implemented to protect the watercourses/ditches/ponds within and off Site. • The scheme delivers an 175.05% net gain in Habitat Units, a 162.89% net gain in Hedgerow Units and an 21.12% net gain in Watercourse Units. Enhancements include newly created hedgerows, ditches, mixed scrub, ponds, woodland and grassland.
Birds	• Construction and operational impacts of the Proposed Development on birds are anticipated to be low, with negligible-minor impacts at all geographic scales (regional and SPA/Ramsar site). • Proposed wader scrapes will benefit waders such as lapwing and oystercatcher. Open grassland and ponds will benefit foraging and roosting waterfowl such as pink-footed goose, whooper swan and mallard. Hedgerows and woodland will benefit common passerine species. • Notwithstanding precautions to avoid potential disturbance impacts to wintering birds, removal of nesting bird habitats should be undertaken outside of the bird breeding season (01 March to 31 August inclusive). If vegetation works are necessary during the breeding season, suitable nesting habitat should be hand-searched by a suitably experienced ecologist prior to works commencing. Only when the ecologist is satisfied that no offence will occur under the legislation will works be permitted to proceed. • Agricultural land converted to botanically-diverse grassland with scrapes, as well as the creation of ponds, hedgerows and woodland, will provide suitable foraging and breeding habitat for a range of species. • Five bird boxes (and one owl box) to be installed on trees within the Site.
Bats	• No works are likely to affect conservation status or risk disturbance to bats. • Should plans change, preliminary bat roost assessments will be undertaken on any trees identified for tree works or removal, which may identify further survey requirements, potentially including dusk emergence/dawn re-entry surveys or inspections at height. • If bats are confirmed to be roosting within any tree or structure to be impacted by proposed works, the data gathered would be used to support a licence application to Natural England to destroy/disturb the bat roost and to inform potential mitigation measure to reduce and/or avoid impacts if appropriate. • Land being lost to the Proposed Development is of low value to bats and their invertebrate prey, which are considered more favourable in surrounding habitats. • Any lighting required during construction and/or operation should be directed away from linear habitats. • The Proposed Development maintains suitable buffers from linear features that may be used by bats. Operational impacts on foraging bats anticipated to be low five bat boxes to be installed on trees within the Site.
Badgers	• No evidence of badger was recorded within the Site, however suitable habitats are present. • A pre-construction badger survey should be completed by a suitable qualified ecologist prior to the commencement of development/vegetation clearance works to check for any newly constructed setts in and surrounding the Site. • Precautionary good practice measures will be adopted during construction to protect badgers and other wildlife such as covering open excavations overnight and securing stored materials.

Feature	Summary of Assessment, Mitigation and Enhancement
Otter & Water Vole	• A pre-construction check for otter will be completed by a suitably qualified ecologist prior to the commencement of any works. • Standard good practice measures will be employed to ensure runoff control and pollution prevention to protect aquatic/bankside habitats both on Site and in the wider ditch network.
Amphibians and Reptiles	• No ponds are located on Site. Four are located within 250 m of the Main Site and five within 50 m of the two cable routes. • Common amphibians and reptiles could use the Site opportunistically although it lacks structural diversity to support large numbers. • Pre-commencement GCN surveys are proposed for surrounding ponds. • Precautionary works to be undertaken under RAMs or Natural England licence. • Habitat enhancements, including the creation of hibernacula, conversion of arable land to extensive areas of grassland, as well as the creation of ponds, ditches, scrapes, hedgerow, scrub and woodland areas, will provide higher value habitat for amphibians and reptiles.
Other Species	• Brown hare, hedgehog, red squirrel, LBAP plants and a range of invertebrate species are potentially present within or immediately surrounding the Site. • Retention and protection of field boundary habitats will avoid disturbance to any notable plants. • Precautionary works to be undertaken under RAMs.
INNS	• Himalayan balsam was recorded within the Site, with floating pennywort within the Leeds and Liverpool Canal. The desk study identified giant hogweed along the River Douglas. • A specialist contractor will be employed to ensure appropriate management and biosecurity measures are implemented to prevent the spread of this species.

FIGURES

Figure 1: Site Location Plan

Figure 2: Statutory Designated Sites Plan

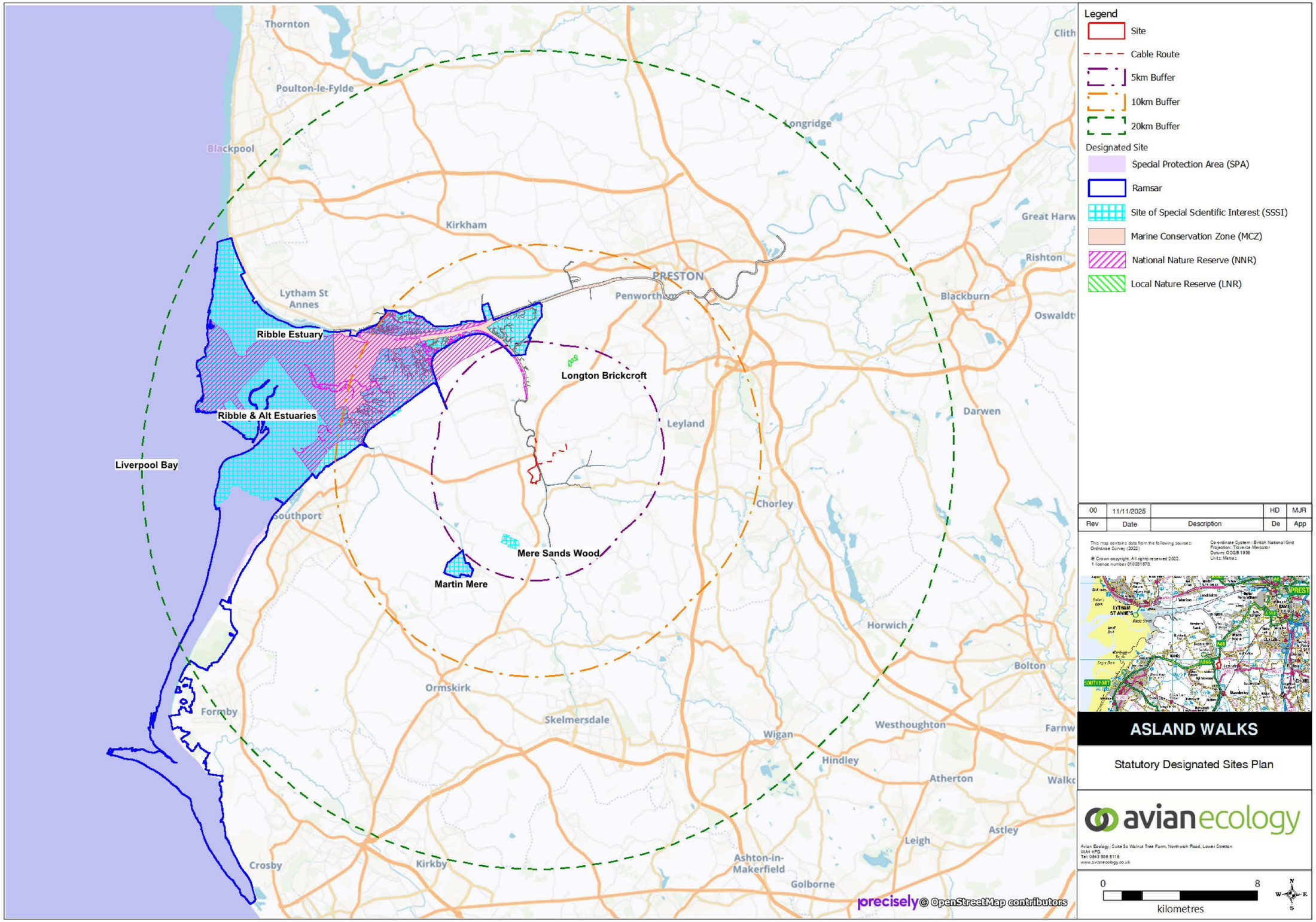


Figure 3: Non-statutory Designated Sites Plan

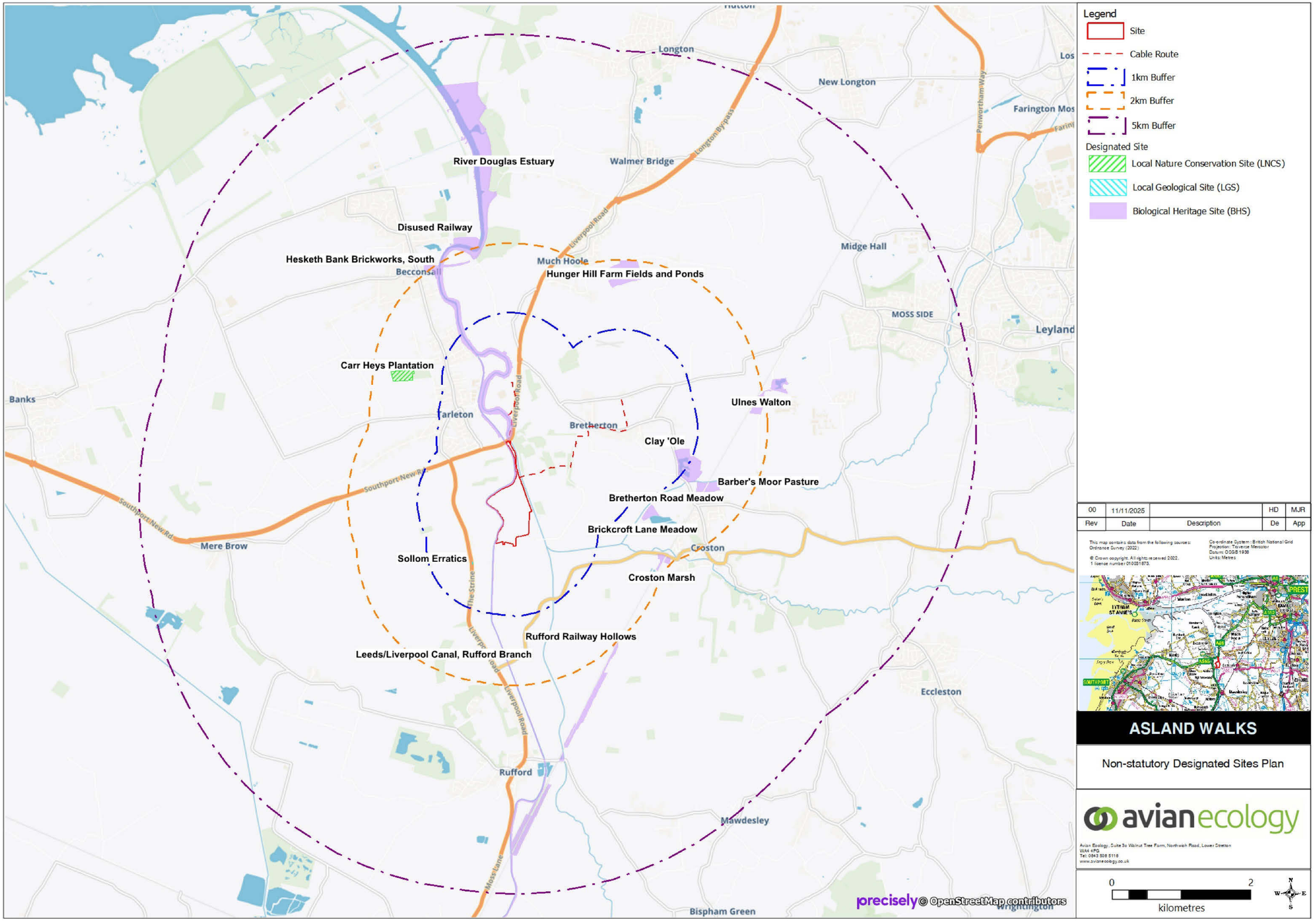


Figure 4: MoRPh Survey Module Location Plan

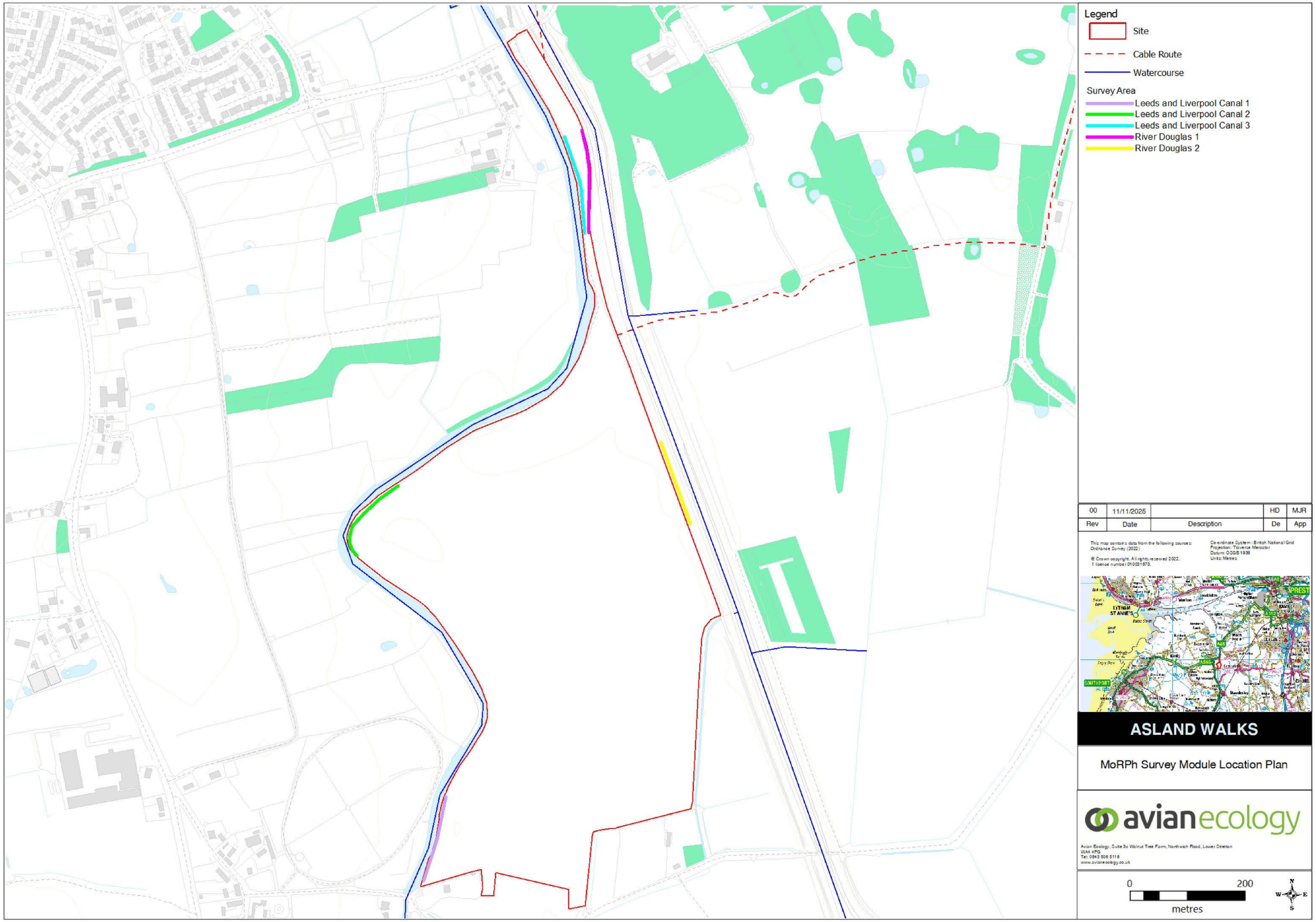
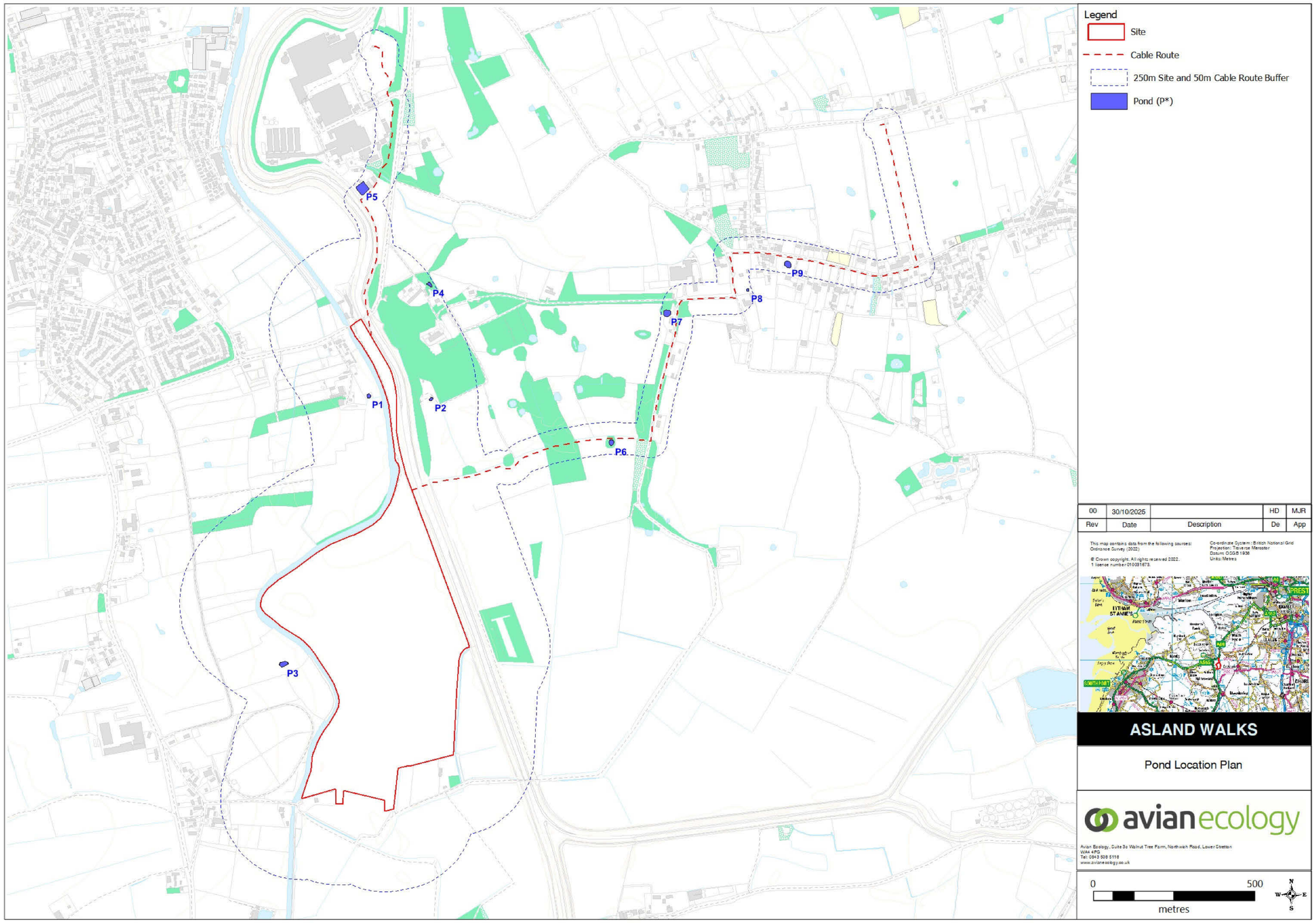


Figure 5: Pond Location Plan



APPENDIX 1: EXTENDED HABITAT SURVEY REPORT- 2025 UPDATE

APPENDIX 2: ORNITHOLOGY BASELINE REPORT

APPENDIX 3: BAT ACTIVITY BASELINE REPORT

APPENDIX 4: BIODIVERSITY NET GAIN CALCULATION

APPENDIX 5: BIODIVERSITY NET GAIN REPORT

APPENDIX 6: COLLISION RISK MODEL CALCULATIONS

APPENDIX 7: REPORT TO INFORM A HABITATS REGULATIONS ASSESSMENT