Hob Lane Solar Farm on behalf of Hob Lane Solar Farm Ltd. Ecological Assessment Report





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.

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CONTENTS

1		1
1.1	Background	1
1.2	Site Overview	1
1.3	Proposed Development	1
1.4	Legislative Framework, Planning Policy and Guidance	2
2	METHODOLOGY	4
2.1	Desk Study	4
2.2	Field Surveys	4
2.3	Biodiversity Net Gain	8
2.4	Limitations	9
3	BASELINE	11
3.1	Designated Sites for Nature Conservation	.11
3.2	Priority Habitats – Existing Records	.14
3.3	Ancient and Irreplaceable Habitats	.15
3.4	Extended Habitat Survey	.15
3.5	Protected and Notable Species	.17
3.6	Invasive Non-native Species	.21
4	DISCUSSION	22
4.1	Overview	.22
4.2	Statutory Designated Sites	.22
4.3	Non-Statutory Designated Sites	.24

5	MITIGATION AND ENHANCEMENT SUMMARY	32
4.7	Invasive Non-native species	. 30
4.6	Protected and Notable Species	.26
4.5	Biodiversity Net Gain Assessment	. 25
4.4	Habitats	.24

Figures

- Figure 1: Site Location Plan
- Figure 2: Statutory Designated Sites Plan
- Figure 3: Non-statutory Designated Sites Plan
- Figure 4: Habitats Plan

Appendices

- Appendix 1: Photographs
- Appendix 2: Great Crested Newt Presence or Absence (eDNA) Survey Report
- Appendix 3: Condifential Badger Report
- Appendix 4: Biodiversity Net Gain Calculation

1 INTRODUCTION

1.1 Background

- 1.1.1 Avian Ecology Limited (AEL) was commissioned by Belltown Power UK Limited on behalf of Hob Lane Solar Farm Ltd to undertake an Ecological Assessment in relation to the proposed installation of a solar farm with associated infrastructure (the 'Proposed Development') on land located north and south of Rake Lane, Dunham-on-the-Hill, Cheshire (the 'Site'), as illustrated on the Site Location Plan (Figure 1).
- 1.1.2 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 proximity of any designated sites for nature conservation interest 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 and provide an assessment of any potential effects the Proposed Development may have on these; and,
 - Provide recommendations for further pre-construction checks and / or mitigation measures, if required, as well as providing an outline of proposed habitat enhancements.
- 1.1.3 The assessment has been informed by desk-based review of relevant ecological information, an extended habitat survey, a preliminary bat roost appraisal of trees and structures, wintering bird surveys, breeding bird surveys and great crested newt (GCN) eDNA surveys. Reference is made to relevant legislation, planning policy and guidance, as appropriate.
- 1.1.4 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.
- 1.1.5 This Ecological Assessment Report should be read in conjunction with both the *Site Location Plan* (Figure 1) and the *Landscape Mitigation strategy* (Drawing Number: 1000_00) produced by Stephenson Halliday; which details the Proposed Development layout and landscaping on Site.
- 1.1.6 A separate Biodiversity Net Gain calculation (**Appendix 4**) accompanies the application.

1.2 Site Overview

- 1.2.1 The Site, as illustrated by the red-line boundary shown on **Figure 1**, comprises a series of agricultural fields bound by hedgerows, tree lines and woodland. The Site also supports numerous large WW2 ammunition storage buildings and five ponds.
- 1.2.2 The area surrounding the Site comprises farmland, scattered woodlands and residential housing. The M56 is situated directly north-west of the Site, with Hapsford village located to the north-east. Access to the Site is off the A5117 to the north-east.

1.3 Proposed Development

1.3.1 The Proposed Development is for the installation of a solar farm with associated access, landscaping and infrastructure. The cable connection route is excluded in this assessment.

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 1.1.**

Table 1.1: 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); 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;
- 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, when the 2017 regulations were transposed into national (England and Wales) legislation via the Conservation of Habitats and Species Amendment (EU Exit) Regulations 2019. 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 1.2**.

Table 1.2: Policy.

National

 Ancient woodland, ancient trees and veteran trees: advice for making planning decisions (Natural England, 2022)⁷;

⁷ <u>https://www.gov.uk/guidance/ancient-woodland-ancient-trees-and-veteran-trees-advice-for-making-planning-decisions</u> (Accessed 20th February 2025)

- Biodiversity Net Gain. Good practice principles for development⁸;
- Biodiversity Net Gain Planning Practice Guidance⁹;
- BS 42020:2013 Biodiversity Code of Practice for Planning and Development;
- BS 8683:2021 Process for designing and implementing Biodiversity Net Gain;
- European protected species policies for mitigation licences (Natural England, 2022)¹⁰;
- The National Planning Policy Framework 2 (NPPF2, 2023)¹¹;
- The United Kingdom Biodiversity Action Plan (UK BAP); and,
- Wildlife licensing: comment on new policies for European protected species licence (Natural England, 2016)¹².

Local

- Cheshire Region Biodiversity Action Plan¹³;
- Adopted Local Plan (Part One)¹⁴;
- Adopted Local Plan (Part Two)¹⁵;
- Interactive Local Plan Map^{16;17};
- Cheshire LNRS Core wildlife sites map¹⁸;
- Dunham on the Hill and Hapsford Neighbourhood Plan Publicity Stage¹⁹; and,
- Cheshire and Warrington Local Nature Recovery Strategy Local Habitat Map²⁰.
- 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 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 (LBAP) scale. 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.

- ¹⁰ https://www.gov.uk/guidance/european-protected-species-policies-for-mitigation-licences (Accessed 20th February 2025)
- ¹¹ <u>https://www.gov.uk/government/publications/national-planning-policy-framework--2</u> (Accessed 20th February 2025)
- ¹² <u>https://www.gov.uk/government/consultations/wildlife-licensing-comment-on-new-policies-for-european-protected-species-licences</u> (Accessed 20th February 2025)
- ¹³ <u>https://www.cheshirewildlifetrust.org.uk/sites/default/files/2018-06/BAP%20list%20-%20updated%20April%202011.pdf</u> (Accessed 20th February 2025)
- ¹⁴ <u>https://www.cheshirewestandchester.gov.uk/your-council/policies-and-performance/council-plans-policies-and-strategies/planning-policy/local-plan/local-plan-part-one</u> (Accessed 10th March 2025)

⁸ <u>https://cieem.net/resource/biodiversity-net-gain-good-practice-principles-for-development-a-practical-guide/ (Accessed 20th February 2025)</u>

⁹ <u>https://www.gov.uk/guidance/biodiversity-net-gain</u> (Accessed 20th February 2025)

¹⁵ https://www.cheshirewestandchester.gov.uk/your-council/policies-and-performance/council-plans-policies-and-

strategies/planning-policy/local-plan/local-plan-part-two (Accessed 10th March 2025)

¹⁶ <u>https://maps.cheshirewestandchester.gov.uk/cwac/localplan</u> (Accessed 20th February 2025)

¹⁷ <u>https://maps.cheshirewestandchester.gov.uk/cwac/webmapping</u> (Accessed 20th February 2025)

¹⁸ <u>https://maps.cheshirewestandchester.gov.uk/cwac/LNRSCoreWildlifeSites</u> (Accessed 20th February 2025)

¹⁹ https://consult.cheshirewestandchester.gov.uk/kse/event/38296 (Accessed 10th March 2025)

²⁰ https://storymaps.arcgis.com/stories/8beef2abd1524c55873fc235b9db88fa (Accessed 20th February 2025)

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 5km of the Site, extending to 10km for internationally protected sites;
 - 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) websites²¹;
 - The Multi Agency Geographic Information for the Countryside (MAGIC) website²²;
 - District Level Licencing Data²³;
 - The Natural England Open Data Geoportal²⁴;
 - The Woodland Trust Ancient Tree Inventory website²⁵; and,
 - RECORD Biodiversity Information Centre for Cheshire, Halton, Warrington & Wirral (RECORD)²⁶.
- 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 habitat survey of the Site was undertaken on 1st, 2nd and 7th June 2023 by Z. Hinchcliffe *MSc*, with an updated survey visit on 12th and 13th February 2025 by K. Love *MSc*. Both are suitably competent and experienced ecologists.

²¹ <u>http://jncc.defra.gov.uk/ (</u>Accessed: 20th February 2025)

²² <u>https://magic.defra.gov.uk/MagicMap.aspx</u> (Accessed: 20th February 2025)

²³ <u>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: 20th February 2025)</u>

²⁴ <u>https://naturalengland-defra.opendata.arcgis.com/datasets/Defra::peaty-soils-location-england/explore?location=53.163227%2C-0.801927%2C10.71</u> (Accessed: 20th February 2025)

²⁵ <u>https://ati.woodlandtrust.org.uk/</u> (Accessed: 20th February 2025)

²⁶ https://record-lrc.co.uk/ (Accessed: 20th February 2025)

- 2.2.2 The practical survey methodology followed the UK industry standard UKHab methodology (UK Habitat Classification Working Group, 2020²⁷ and 2023), with reference to the Chartered Institute of Ecology and Environmental Management (CIEEM *Guidelines for Preliminary Ecological Appraisal* (CIEEM, 2017)²⁸.
- 2.2.3 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 shown on **Figure 4** with accompanying photographs in **Appendix 1**.

Preliminary Bat Roost Appraisal

2.2.4 A Preliminary Roost Appraisal was also incorporated into extended habitat survey, which was based on BCT guidance (Collins *et al.* 2020 and 2023²⁹). The survey comprised an assessment of structures and trees for potential roost features (PRFs) and bat roost suitability.

Ground Level Tree Assessment (GLTA)

- 2.2.5 In accordance with Collins (2023)³⁰ the extended habitat survey also included a daytime bat walkover which identified trees which were observed to contain, or which were of a suitable size and maturity to contain Potential Roost Features (PRFs).
- 2.2.6 Habitat survey data collected in 2023 (prior to the publication of Collins 2023) was reviewed and classifications made under Collins (2016)³¹ have been updated to the more recent guidance, Collins (2023).
- 2.2.7 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 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.
- 2.2.8 While trees may be assigned FAR, following Figure 6.1 within Collins (2023), only trees subject to impacts 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 BCT guidelines (Collins, 2023), as follows:

²⁷ <u>https://ukhab.org/ukhab-documentation/</u> (Accessed: 20th February 2025)

²⁸ CIEEM. (2017). *Guidelines for Preliminary Ecological Appraisal, 2nd edition*. Chartered Institute of Ecology and Environmental Management, Winchester.

²⁹ Collins et al. (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-

<u>27.03.24.pdf?v=1711530492& gl=1*w2mz4c* ga*MzkxMzk4MjUzLjE3NDAwNDc1Nzg.* ga G28378TB9V*MTc0MDA0NzU3OC4xLjA uMTc0MDA0NzU4MS4wLjAuMA</u>.. (Accessed: 20th February 2025)

³⁰ Collins, J. (ed.) (2023). Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition). The Bat Conservation Trust, London.

³¹ Collins, J. (2016). Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edition). Bat Conservation Trust, London.

- **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.
- 2.2.9 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

- 2.2.10 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.
 - 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 as maternity roost 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.

Breeding Bird Survey

- 2.2.1 A breeding bird survey was undertaken between April and June 2023, employing an adapted version of the British Trust for Ornithology (BTO) Common Bird Census (CBC) technique (Gilbert *et al.*, 1998³²) and comprising a series of three staggered survey visits undertaken at least seven days apart. Each survey comprised two visits, surveying part of the site on each.
- 2.2.2 All survey visits were carried out in the hours following dawn and lasted approximately four hours. Surveys were undertaken in conditions suitable for survey (avoiding heavy rain and strong winds). A summary of survey effort is presented in **Table 2.1**.
- 2.2.3 The survey area comprised the Site and also included a 100m buffer observed from the Site boundary to record the presence of species listed under Schedule 1 of the Wildlife & Countryside Act 1981³³ (as amended).

³² Gilbert, G., Gibbons, D.W & Evans, J. (1998) *Bird monitoring methods. A manual of techniques for key UK species*. RSPB, Sandy ³³ Schedule 1 of the Wildlife and Countryside Act 1981 (as amended).

- 2.2.4 Breeding bird survey visits were undertaken by M. Payne, a suitably competent and experienced ornithologist.
- 2.2.5 During each survey visit all bird registrations were recorded on suitably scaled field maps using standard BTO species codes and behaviour notations (such as singing, carrying food, active nest). The approximate locations of bird territories within the Site were determined using standard territory mapping techniques to identify and isolate areas within which birds consistently displayed breeding behaviours (following Gilbert *et al.* 1998).
- 2.2.6 Observations of non-breeding birds just visiting the Site (e.g. gulls feeding in fields) and birds flying over the Site were also made.

Survey Visit	Date	Start time (24hrs)	End time (24hrs)	
1	22/04/2023	06:05	10:15	
	23/04/2023	06:00	09:50	
2	14/05/2023	06:00	09:55	
	20/05/2023	05:30	09:15	
3	17/06/2023	05:15	09:15	
	24/06/2023	06:00	09:45	

Table 2.1. Breeding bird survey effort

Wintering Bird Survey

Survey Area

2.2.7 For ease of interpreting the survey results, fields within the Survey Area were numbered 1-206. Fields within the Site (total 28) and within the Wider Survey Area (total 178) are defined in **Table 2.2** and illustrated on **Figure 6**

 Table 2.2: Field allocations for the Site and Wider Survey Area.

Land Parcel	Field Number Range
The Site	4-9, 13-24, 40-42, 45-51
Wider Survey Area	1-3, 10-12, 25-39, 43, 44, 52-206

Walkover Surveys

- 2.2.8 Surveys were carried out between January 2025 and March 2025 within all suitable habitats within the Site, as well as all suitable fields within a 600m buffer of the Site boundary (the Wider Survey Area), as shown in Figure 6. The combination of the Site and Wider Survey Area will be termed the 'Survey Area' hereafter.
- 2.2.9 Target Species consisted of all species comprising non-breeding (i.e. passage and wintering) qualifying interests of the Mersey Estuary SPA and Ramsar site, as well as all other wetland species including all

swans, geese and ducks (excluding feral species), waders, herons, grebes, gulls, Annex 1/Schedule 1³⁴ raptors and all owls.

- 2.2.10 Secondary Species also recorded consisted of non-Annex 1/Schedule 1 raptors, gulls, notable flocks of non-wetland species, feral species (e.g. Canada goose and Egyptian goose) and Amber and Red-listed Birds of Conservation Concern (BoCC)³⁵ species.
- 2.2.11 A total of six walkover survey visits (two per month) were completed adopting the 'look-see' methodology (Gilbert *et al.* 1998³⁶). During each survey visit surveyors observed each field within the Study Area, walking the boundaries and stopping at intervals and scanning the fields for Target Species, with binoculars. A summary of survey effort is presented in **Table 2.3**.
- 2.2.12 Suitable habitats for Target Species surveyed within the Survey Area included arable/pasture fields and associated boundary features (e.g., ditches). Habitats such as woodland and scrubland were considered unsuitable for Target Species and thus were omitted from the survey.
- 2.2.13 Many fields featured adjacent drainage ditches. Where observations were made of Target Species within these ditches these were recorded as being associated with the closest field.
- 2.2.14 Habitats and fields within the Wider Survey Area were surveyed from within the Site, public rights of way (PRoWs) and access tracks where possible. Access restrictions are described in limitation, below.

Survey Visit	Date	Start time (24hrs)	End time (24hrs)
1	23/01/2025	11:00	13:00
2	31/01/2025	11:30	15:00
3	07/02/2025	11:30	15:00
4	24/02/2025	10:00	13:00
5	10/03/2025	09:45	14:00
6	21/03/2025	08:15	12:15

Table 2.3. Non-breeding bird survey effort

Great Crested Newt Presence/Absence Survey (eDNA)

2.2.1 Detailed survey methodologies and full results are presented as **Appendix 2** GCN Presence/Absence (eDNA) Survey Report.

2.3 Biodiversity Net Gain (BNG)

2.3.1 In order to assess the measurable biodiversity impacts associated with the Proposed Development, the Defra Statutory Biodiversity Metric Calculator³⁷ (the 'Metric) was utilised 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

747. Available online at https://britishbirds. co.uk/content/status-our-bird-populations

³⁴ European Birds Directive Annex I species/ Schedule 1 of the Wildlife & Countryside Act 1981 (as amended)

³⁵ Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. 2021. The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. British Birds 114: 723-

³⁶ Gilbert G, Gibbons D.W. and Evans J. (1998) *Bird Monitoring Methods*. RSPB Sandy.

³⁷ <u>http://publications.naturalengland.org.uk/publication/6049804846366720</u> (Accessed: 20th February 2025)

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 J. Stevens BSc (Hons), a suitably qualified and experienced ecologist with experience utilising biodiversity metrics. Data gathering and Metric calculations were undertaken according to the methodology detailed with the Metric user guide, unless otherwise stated.
- 2.3.3 The Metric calculates the value of a habitat (measured as 'biodiversity units') by multiplying the area (hectares), distinctiveness (intrinsic value and rarity), condition (quality) and strategic significance (ecological value of the location) of each habitat parcel. The distinctiveness of a habitat is pre-set within the Metric and cannot be changed.
- 2.3.4 Information on habitat condition was gathered during the extended habitat survey, assessing habitats against the relevant criteria for each habitat type as set out in the Metric Condition Assessment spreadsheet.
- 2.3.5 For created habitats, additional risk multipliers are assigned to account for the difficulty of creating a particular habitat type, time required to achieve the target condition, and spatial risk, where habitat creation is off site.
- 2.3.6 Where the value of habitats following works is greater than those at the baseline, a net gain will be predicted, or a net loss predicted where the post-works habitat value is lower than the baseline. In addition, the Metric promotes a 'no down-trading' policy within the Metric, whereby habitat loss must be compensated by habitat of the same value or higher; loss of high distinctiveness habitats such as lowland meadow and broad-leaved woodland must be compensated for on a like-for-like basis.

2.4 Limitations

Desk Study

- 2.4.1 A desk study does not identify all species and features of ecological importance within the study area, however it improves the understanding of the Site's ecological value and the likely species and habitats within the area.
- 2.4.2 RECORD could not provide any information for non-statutory designated sites in the search area. Nonstatutory designated sites were therefore identified from both the Interactive Local Plan Map and the Cheshire LNRS Core Wildlife Sites Map, however detailed information (including the name of some sites) was not available on these websites.

Extended Habitat Survey

- 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 it 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 survey was initially completed in June, and therefore within the optimum period for undertaking habitat surveys (April to September). Although the updated habitat survey was undertaken outside this optimum period in February, this is not a substantial limitation to the assessment as it is considered that a robust assessment of habitats in the survey area could still be determined during the survey.

Breeding Bird Surveys

- 2.4.5 It is acknowledged that recent guidance³⁸ suggests six surveys be undertaken, while three were undertaken at the Site. A total of six visits was chosen as it is considered "sufficiently robust to identify the majority of bird species using lowland deciduous woodland" which is "one of the most complex habitats to survey, due to the range of bird species it can support, and the dense vegetation". The Site is not comprised of deciduous woodland, and is predominantly open farmland where visibility and audibility is good. Further, given the potential for impacts is predominantly on ground nesting species (e.g., skylark, lapwing) which are easily identified by obvious display flights, it is likely key species are able to be identified over the course of three visits.
- 2.4.6 A precautionary approach has been taken to analysis of survey results, particularly where sensitive (i.e., ground nesting) species are present)
- 2.4.7 The surveys were all undertaken around dawn and did not include a dusk survey as suggested in the Bird Survey & Assessment Steering Group (2025) guidance. As the survey was designed to target notable ground-nesting species it was considered that a dusk survey would be unlikely to identify any additional ground-nesting species within the Site.

Wintering Bird Surveys

2.4.8 Wintering bird surveys are typically undertaken monthly from October through to March. This was not possible at this site, and as such survey effort has been increased to two visits per month for the duration of the survey period (January to March). On review of the qualifying species for the Mersey Estuary and Natural England advice on seasonality³⁹ it is not considered that the omission of October to December surveys would have substantially reduced detectability of any qualifying species.

Great Crested Newt Presence/Absence Survey (eDNA)

2.4.9 Survey limitations are presented in Appendix 2 GCN Presence/Absence (eDNA) Survey Report.

³⁸ Bird Survey & Assessment Steering Group. (2025). Bird Survey Guidelines for assessing ecological impacts, https://birdsurveyguidelines.org

http://designatedsites.naturalengland.org.uk/ConservationAdvice/Seasonality.aspx?SiteCode=UK9005131&SiteName= Mersey&SiteNameDisplay=Mersey+Estuary+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMari neSeasonality=7,7

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 Five international statutory designated sites were identified within 10km of the Site, as detailed in **Table 3.1**. The closest of these are the Mersey Estuary Special Protection Area (SPA) (SPA Marine Components GB)) and Ramsar site, which occupy the same spatial location approximately 2.91km north.
- 3.1.3 Three national statutory designated sites for nature conservation were identified within 5km of the Site as detailed in **Table 3.1**. The closest of these statutory designated sites is Helsby Quarry Local Nature Reserve (LNR), which is located approximately 2.33km north-east from the Site.
- 3.1.4 The review of MAGIC also identifies that the Site is located within the Mersey Estuary SSSI Impact Risk Zones (IRZ), whereby the Proposed Development triggers a requirement for the Local Planning Authority (LPA) to consult with Natural England⁴⁰. This relates to solar schemes with a footprint > 0.5ha.

Site Name	Approximate Distance and Direction from Site	Description	
Helsby Quarry LNR ⁴¹	2.33km north-east	The three main habitats are woodland, grassland and rock faces. A former sandstone quarry which regenerated naturally. The site also has geological importance.	
Mersey Estuary SPA (SPA Marine Components GB) ^{42,43}	2.91km north	 Qualifying Features: Common shelduck (non-breeding); Eurasian teal (non-breeding); Northern pintail (non-breeding); European golden plover (non-breeding); Dunlin (non-breeding); Black-tailed godwit (non-breeding); Common redshank (non-breeding); Waterbird assemblage. 	
Mersey Estuary Ramsar ⁴⁴	2.91km north	Qualifying species: Dunlin- Wintering; 	

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.

⁴⁰https://irz.geodata.org.uk/IRZ/step2.html?irzcode=0112304432050¬es=11407&location=337358,375468%20%20(IRZ%20polyg on%20centre) (Accessed: 12th March 2025)

⁴¹ <u>https://designatedsites.naturalengland.org.uk/SiteLNRDetail.aspx?SiteCode=L1009511</u> (Accessed: 12th March 2025)

⁴² In the non-breeding season, the area regularly supports 104,599 individual waterbirds (5 year peak mean 1993/94 - 1997/98), including great crested grebe, shelduck, wigeon, teal, pintail, ringed plover, golden plover, grey plover, lapwing, dunlin, black-tailed godwit, curlew and redshank (Accessed: 12th March 2025)

⁴³ <u>https://publications.naturalengland.org.uk/publication/5790848037945344</u> (Accessed: 12th March 2025)

⁴⁴ <u>https://rsis.ramsar.org/ris/785</u> (Accessed: 12th March 2025)

Site Name	Approximate Distance and Direction from Site	Description	
		 Pintail- Wintering Redshank - Passage Redshank - Wintering Shelduck - Wintering Teal - Wintering Curlew - Passage Spotted redshank- Passage Common greenshank- Passage Wigeon - wintering Waterbird assemblage – Wintering. 	
Mersey Estuary SSSI ⁴⁵	3.18km north-east	The Mersey Estuary is an internationally important site for wildfowl and consists of large areas of intertidal sand and mudflats. The site also includes an area of reclaimed marshland, salt-marshes, brackish marshes and boulder clay cliffs with freshwater seepages.	
Dunsdale Hollow SSSI ⁴⁶	4.84km north-east	Dunsdale Hollow is an acidic lowland birch and sessile oak woodland. The ground flora is typically poor in species but supports great wood-rush which is an uncommon plant in Cheshire.	
River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid (England and Wales) SAC ⁴⁷	8.11km south-west	 Qualifying Features: Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho batrachion</i> vegetation; Rivers with floating vegetation often dominated by water-crowfoot; Sea lamprey; Brook lamprey; River lamprey; Atlantic salmon; Bullhead; Otter; Floating water-plantain. 	
Midland Meres & Mosses - Phase 1 Ramsar ⁴⁸	8.26km south-east	 Designated features: Open water transition fen ('mere'), lowland raised bog ('moss') and associated habitats Wetland invertebrate assemblage Wetland plant assemblage 	
Midland Meres & Mosses Phase 2 Ramsar ⁴⁹	8.40km south-east	 Nationally important species occurring on the site. Higher Plants: Calamagrostis stricta, Carex elongata, 	

 ⁴⁵ <u>https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=s1001398</u> (Accessed: 12th March 2025)
 ⁴⁶ <u>https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=s1004483</u> (Accessed: 12th March 2025)

⁴⁷ https://publications.naturalengland.org.uk/publication/4660149109129216 (Accessed: 12th March 2025)

⁴⁸ https://rsis.ramsar.org/RISapp/files/RISrep/GB653RISformer1996.pdf (Accessed: 12th March 2025)

⁴⁹ <u>https://incc.gov.uk/incc-assets/RIS/UK11043.pdf</u> (Accessed: 12th March 2025)

Site Name	Approximate Distance and Direction from Site	Description
		 Cleuta Virosa, Thelypteris palustris Lower Plants: Sphagnum pulchrum, Dicranum undulatum Species currently occurring at levels of national importance: Species with peak counts in spring/autumn: Shoveler - Passage Cormorant - Winter Bittern - Winter Water rail -Winter Nationally important invertebrate species occurring on the site: Limnophila heterogyna, Atylotus plebeius, Hagenella clathrata, Limnophila fasciata, Carorita limnaea, Glyphipteryx lathamella, Trichiosoma vitellinae, Eilema serica, Brachythops wusteneii, Pachinematus xanthocarpos, Sittcus floricola, Lampronia fuscatella, Hybomitra

Non-statutory Designated Sites

- 3.1.5 This Section should be read with reference to **Figure 3**.
- 3.1.6 A review of the data presented on the Interactive Local Plan Map and the Cheshire LNRS Core Wildlife Sites Map confirms that the Site is not located within any non-statutory designated sites for nature conservation. The search identified five Local Wildlife Sites (LWSs) as detailed in **Table 3.2** within 2km of the Site. The closest non-statutory designated site identified was Hoblane Ponds LWS, which was located approximately 420m south-west of the Site.
- 3.1.7 A review of the Local Plan Policies Map also identifies that the Site is entirely within the Cheshire Green Belt. More details on this can be found in the Planning, Design and Access Statement which accompanies the planning application.

Table 3.2: Non-statutory designated sites

LWS: Local Wildlife Site

Site Name	Approximate Distance and Direction from Site	Description
Hoblane Ponds LWS	420m south-west	Small ponds containing notable aquatic flora.
Frodsham, Helsby and Ince Marshes LWS	500m north-east	Notable for its neutral grassland, floodplain, wetland, wildlife corridors, saltmarsh, birds, invertebrates and vascular plants.
Gowy Meadows and Ditches LWS	1.44km west	Notable for its neutral grassland, marshy grassland, floodplain, wetland, ditches, wildlife corridors, birds, mammals, dragonflies and vascular plants.
Station Road Railway Site LWS	1.52km north-west	Notable for open mosaic habitats.
Wood's Poultry farm LWS	1.97km south-east	Notable neutral grassland site.

3.2 Priority Habitats – Existing Records

- 3.2.1 A review of MAGIC, RECORD data, Ordnance Survey Maps, aerial imagery and the extended habitat survey data, identified seven habitats of Principal Importance (also known as priority habitats) under Section 41 of the NERC Act/UK Biodiversity Action Plan within 2km of the Site. These include hedgerows, ponds, deciduous woodland, coastal and floodplain grazing marsh, traditional orchards, rivers and streams, and lowland meadows. Of these, three were identified within the Site itself (hedgerows, ponds and deciduous woodland). All apart from rivers and streams are LBAP listed habitats. Gardens and allotments and roadside verges are two further LBAP habitats identified within 2km of the Site boundary.
- 3.2.2 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 provide context for the Site and surrounding area.

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

Priority habitat name	Designation	Approximate Distance from Site
Hedgerows	NERC S.41, UKBAP; LBAP	Within the Site
Ponds	NERC S.41, UKBAP; LBAP	Within the Site
Deciduous woodland	NERC S.41, UKBAP; LBAP	Within the Site
Roadside verges	LBAP	Directly adjacent to the northern Site boundary (A5117)
Gardens and allotments	LBAP	100m north
Coastal and floodplain grazing marsh	NERC S.41, UKBAP; LBAP	428m north-east
Traditional orchards	NERC S.41, UKBAP; LBAP	975m south-west
Rivers and stream	NERC S.41, UKBAP	1.00km east (Hornsmill Brook)

Priority habitat name	Designation	Approximate Distance from Site
Lowland meadows	NERC S.41, UKBAP; LBAP	1.70km west

3.3 Ancient and Irreplaceable Habitats

- 3.3.1 Review of MAGIC identified no ancient/semi-natural woodland or ancient replanted woodland within 2km of the Site.
- 3.3.2 Review of the Woodland Trust Ancient Tree Inventory⁵⁰ identified no notable ancient trees within 2km of the Site.
- 3.3.3 Review of the Interactive Local Plan Map identified no Tree Preservation Orders (TPO) within the Site. However, a TPO was identified approximately 170m north-east of the Site for a sycamore tree. No other TPOs were identified within 500m of the Site boundary.
- 3.3.4 Review of the Natural England Open Data Geoportal⁵¹ identified no ancient or irreplaceable peaty soil habitat within the Site. The only deep peaty soils identified within 500m of the Site were identified approximately 500m north-east.

3.4 Extended Habitat Survey

- 3.4.1 This section should be read in conjunction with the Habitat Plan as presented in **Figure 4** and Pond Location plan as illustrated in **Appendix 2**. Photographs are presented in **Appendix 1**.
- 3.4.2 The Site consists a mixture of arable fields used for cereal crop production and grassland fields. Within several fields are brick built buildings (old WW2 ammunitions stores) which in many cases were surrounded by areas of grassland and dense hawthorn and blackthorn dominated scrub. Fields were typically enclosed by native hedgerows and occasionally lines of trees. Ditches are occasionally present, holding varying levels of water at the time of the site visit.
- 3.4.3 Habitats are listed in Table 3.4, with target notes presented in Table 3.5.

Habitat Code	Descriptions	Photo No
c1c	<u>Cereal crops</u> Fields across the Site used to grow cereal crops.	1-4
g3c	Other neutral grassland Other neutral grassland within the Site generally associated with field margin habitats; however, also includes areas of infrequently managed grassland around buildings and some highly enclosed fields within the southern portion of the Site.	5-9
	Species present typically comprised: great willowherb, Yorkshire fog, dandelion, common nettle, meadow foxtail, marsh foxtail, curled dock, creeping buttercup, annual meadow grass, common mouse ear, cock's- foot, soft brome, cut leaved cranesbill and broad leaved dock.	

Table 3.4: UKHab habitats summary

⁵⁰ <u>https://ati.woodlandtrust.org.uk/</u> (Accessed: 13th March 2025)

⁵¹ <u>https://naturalengland-defra.opendata.arcgis.com/datasets/Defra::peaty-soils-location-england/explore?location=53.965987%2C-2.238949%2C8.56</u> (Accessed: 13th March 2025)

Habitat Code	Descriptions	Photo No
g4	Modified grassland Agricultural grassland likely used as hay/ silage.	
h2a5	Native species rich hedgerow Species rich hedgerow with greater than 5 species per 30m length. Single bushy and outgrown length of hedgerow containing the following species: hawthorn, blackthorn, sycamore, pedunculate oak, goat willow, ash, plum and dog rose.	19
h2a6	Other native hedgerow Field boundary hedgerows not meeting the definition of species rich. Typically intact and manged, although gappy/defunct hedges are present. Hedgerows are hawthorn dominated with blackthorn and pedunculate oak, occasionally also containing other species including goat willow, dog rose and <i>Prunus</i> sp.	20-24
h2b	Non-native and ornamental hedgerow Extensive stand of Japanese knotweed along Site access.	18
h3d	Bramble scrub Area of bramble dominated scrub surrounding brick built building.	10
h3f	Hawthorn scrub Small area of hawthorn dominated scrub located centrally within a field.	11
h3h	Mixed scrub Areas of mixed scrub often associated with embankments and brick built structures within the Site. Species variable, however typically dominated by hawthorn with bramble and blackthorn. Other species present include: elder, willow, ash and oak. Where open spaces are present, nettle typically dominated the ground flora.	12-17
r1a	Other eutrophic standing water Ponds within the Site. Further information provided within Appendix 2.	25-28
u1b5	Buildings Buildings within the Site. Typically brick built single story and understood to be former ammunition stores.	29-33
u1e	Built linear feature Hardstanding tracks and roads within the Site.	34
w1g	Other woodland broadleavedAreas of woodland forming Site boundaries, surrounding ponds or as outgrown field boundaries.Species present include: pedunculate oak, hawthorn, ash, ivy, goat willow, hazel, aspen and elm.Lines of treesField boundary lines of trees including outgrown hedgerows. Principal tree species is pedunculate oak, with ash and hawthorn also present.	35-37
w1h	Other woodland; mixed; mainly broadleaved Linear plantation woodland block forming northern Site boundary (adjacent M56).	38

Habitat Code	Descriptions	Photo No
	Species present included: ash, pedunculate oak, Scots pine, silver birch, dogwood and blackthorn.	

Table 3.5: Target Notes

Map Ref.	Details
TN1	Small brick built building offering low bat roosting potential (BRP).
TN2	Brick built building 2m tall.
TN3	Mature ash tree offering PRF-M due to presence of woodpecker holes and large cavity.
TN4	Pellets within former ammunition store structure indicating raptor roost site. Considered likely to be kestrel as few bones were present within the pellets, but barn owl could not be ruled out.
TN5	Stand of Japanese knotweed

3.5 Protected and Notable Species

Birds

- 3.5.1 Data provided by RECORD included 1,352 recent records of birds within 2km of the Site. None of the records were located within the Site itself. Of these, 42 species were listed on the BOCC amber list, 19 on the BOCC red list, 14 species listed on Schedule 1 of the wildlife and countryside act, eight species listed on the LBAP and seven species listed under Section 41 of the NERC act.
- 3.5.2 A review of MAGIC shows that the Site is not allocated as an Important Bird Area (IBA), however the Mersey Estuary SPA is located 2.9km north and is designated for its non-breeding ornithological interest.

Wintering Bird Surveys

- 3.5.3 The Site does not fall within an area of known importance to wintering (migratory) waterbirds, however the Mersey Estuary is located approximately 2.9km north of Site and is designated for non-breeding bird interest
- 3.5.4 Table 3.3 summarises the peak counts of waterbird species recorded during each survey

Table 3.3: Peak Count of Waterbirds Recorded within the Site and Wider Survey Area

(**Bold** indicates qualifying species of the Mersey Estuary SPA, *italics* indicates qualifying species of the Mersey Estuary Ramsar)

	Chaoico	Survey number					
Field No.	Species	1	2	3	4	5	6
	S	ite					
5	Snipe					2	
6	Black-headed Gull		16			8	
0	Black-headed Gull	21	18				
o	Little Egret					1	
	Mallard				4		
13	Snipe			5			3
	Teal				2		
14	Black-headed Gull	2					
14	Snipe						1
45	Black-headed Gull	1					
15	Snipe						2
46	Black-headed Gull		66				
16	Moorhen				1		
18	Teal					2	
21	Shelduck					1	
23	Shelduck						1
24	Black-headed Gull	1					2
24	Curlew	11	5			7	
	Wider Si	urvey Are	a				
3	Black-headed Gull		20				
10	Snipe					2	1
10	Teal					1	
11	Moorhen						1
11	Teal						1
25	Curlew				8		
26	Lesser Black-backed Gull						2
105	Black-headed Gull		20				
155	Pink-footed Goose		16				
156	Curlew			26			

Breeding Bird Surveys

- 3.5.5 Breeding bird surveys undertaken in 2023 identified six notable species breeding (or potentially breeding) within the Site. Wren and Song thrush were most the abundant species, with 29 and seven territories respectively. All the remaining species (woodpigeon, skylark, tree sparrow and dunnock) had fewer than five territories.
- 3.5.6 Skylark was the only ground nesting species identified potentially breeding within the Site, with one territory, although this was only observed on one survey. Following a precautionary approach it is assumed the species may breed within the Site.
- 3.5.7 Suitable breeding territory was restricted primarily to field boundary features and patches of dense scrub. While agricultural cropland and grassland may provide suitable habitat for ground nesting

species, the Site is considered sub-optimal for such species due to the relatively enclosed nature of fields and presence of dense scrub and embankments which is likely to encourage predators.

Species	Estimated Territories (total)	Comments
Wren	29	Associated with field boundary and scrub habitat within the Site
Wood pigeon	3	Associated with field boundary and scrub habitat within the Site
Skylark	1	Recorded on a single survey, however assumed to be a territory following precautionary approach
Song thrush	7	Associated with field boundary and scrub habitat within the Site
Tree sparrow	2	Associated with field boundary and scrub habitat within the Site
Dunnock	1	Associated with field boundary and scrub habitat within the Site
Whitethroat	5	Associated with field boundary and scrub habitat within the Site

Table 3.4: Breeding bird territories recorded within the Site

Bats

- 3.5.8 Data provided by RECORD included 23 recent records of bats within 2km of the Site, comprising common pipistrelle, soprano pipistrelle, brown long-eared bat, noctule bat, Natterer's bat, whiskered/ Brandt's bat, unidentified pipistrelle species and unidentified *Myotis* species. No records were located within the Site. Records were primarily located north of the village of Elton, however records of foraging or commuting common pipistrelle, soprano pipistrelle and noctule bat were located approximately 200m east of the Site access.
- 3.5.9 No granted European Protected Species Mitigation Licences (EPSML) relating to bats were identified, through review of MAGIC, within 2km of the Site.

Roosting Bats

- 3.5.10 Surveys identified a single ash tree (TN3) offering PRF-M. However, the majority of mature trees within and adjacent to the Site could potentially possess roost features and would be assessed as FAR, if directly impacted by the Proposed Development.
- 3.5.11 Additionally, several brick built structures are present within the Site, including former ammunition stores. These have been identified as offering no greater than low bat roosting potential, with the only suitable features being behind fascia boards, guttering and within missing mortar between bricks. Internally, structures are relatively open and exposed offering little roosting potential.

Foraging and Commuting Bats

- 3.5.12 Habitats within the Site are considered to fit the description most closely for land of 'moderate' suitability for foraging and commuting bats in accordance with BCT guidelines (Collins. 2023), with 'continuous habitat connected to the wider landscape that could be used by bats for flight-paths such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for flights for foraging such as trees, scrub, grassland or water.'
- 3.5.13 Linear features within and around the Site such as hedgerows and tree lines, ponds, areas of scrub, grassland field margins and ditches are considered to offer the most favourable habitats for foraging/commuting bats.

Badger

- 3.5.14 Data provided by RECORD included 20 recent records of badger within 2km of the Site. No records were located within the Site but were distributed within the local landscape.
- 3.5.15 Badger are discussed in Confidential Appendix 3

Otter

- 3.5.16 Data provided by RECORD included one recent record of otter within 2km of the Site. The record was located approximately 1.1km from the Site and related to roadkill along the M56.
- 3.5.17 Potential habitat within the Site is limited to field boundary ditches and ponds, however the Site is considered to lack sufficient connectivity to larger, more suitable watercourses in the wider landscape to be regularly used by otter. As such, the species is considered absent and is not discussed further.

Water Vole

- 3.5.18 Data provided by RECORD included five recent records of water vole within 2km of the Site, all associated with the Thornton Brook where it crosses the A5117 near Stanlow.
- 3.5.19 Potential habitat within the Site is limited, with field boundary ditches typically holding only low water levels and likely to dry. A larger boundary ditch located approximately 10m west of the Site provided more suitable habitat with vegetated banks, no to low flow and a sufficient water depth. Water vole are also known to utilise ponds where there is connectivity to other suitable habitat within the landscape.

Amphibians

- 3.5.20 Data provided by RECORD included four recent records of great crested newt (GCN) and two recent records of common frog within 2km of the Site. No records were located within the Site, however GCN records were associated with a pond approximately 40m west of the Site.
- 3.5.21 A review of MAGIC identified no recent granted EPSML relating to GCN, however two older EPSML were identified dating from 2013 and 2010 located around the village of Hapsford, north of the A5117 and east of the Site access.
- 3.5.22 Five ponds are located within the Site with a further 26 ponds located within 250m of the Site boundary. Of these, the five ponds within the Site and 16 ponds within a 250m buffer were subject to survey for GCN. The remaining ten ponds could not be accessed.
- 3.5.23 Within the Site, one pond (P30) was found to support GCN, three (P9, P43 and P44) were found to be absent of GCN and one pond (P29) was dry at the time of survey.
- 3.5.24 Within the 250m buffer, two ponds (P10, P12) were found to support GCN, 11 ponds were found to be absent of GCN and three ponds were dry at the time of survey.
- 3.5.25 It is likely that the suitability of ponds to support GCN varies between years; for example pond P3 had records of GCN presence from the desk study but the species was found to be absent during survey.
- 3.5.26 The survey methodology and results of GCN surveys are provided in full in **Appendix 2:** *Great Crested Newt Presence/Absence Survey Report*.
- 3.5.27 The arable habitat that dominates the Site provides negligible/low foraging and refuge value for amphibians. However, areas of dense scrub (e.g., that associated with embankments and former

ammunition stores), grasslands, hedgerow bases and boundary woodlands offer more suitable habitat for amphibians.

Reptiles

- 3.5.28 Data provided by RECORD did not include any records of reptiles within 2km of the Site.
- 3.5.29 The arable habitat that dominates the Site provides negligible/low foraging and refuge value for reptiles. However, areas of dense scrub (e.g., that associated with embankments and former ammunition stores), grasslands, hedgerow bases and boundary woodlands offer more suitable habitat for reptiles.

White-clawed crayfish

- 3.5.30 Data provided by RECORD did not include any records of white clawed crayfish within 2km of the Site.
- 3.5.31 There is no suitable habitat for this species within the Site or immediate surrounds and as such they are not considered further.

Other Notable Species

- 3.5.32 The habitats on Site could provide opportunities for notable species including brown hare and hedgehog, both of which were identified within 2km of the Site in the returned data search.
- 3.5.33 Habitats within the Site are suitable for a range of invertebrate species, with the most suitable habit centred on ponds, areas of scrub and field margin habitat.

3.6 Invasive Non-native Species

- 3.6.1 Data provided by RECORD included three records of Himalayan balsam, comprised of two records east of the village of Hapsford and another at Gowy Meadows.
- 3.6.2 Japanese knotweed was observed along the Site access route along Common Lane (TN5).

4 **DISCUSSION**

4.1 Overview

- 4.1.1 This section identifies the potential for effects that are reasonably likely to occur on habitats and protected and notable species 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, 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

- 4.2.1 Five international statutory designated sites were located within 10km of the Site, the closest of which is the Mersey Estuary SPA and Ramsar site, located approximately 2.91km north. Additionally, three national statutory designated sites for nature conservation are located within 5km of the Site, the nearest being Helsby Quarry LNR located 2.33km north-east of the Site. The Site is located within a SSSI IRZ in relation to the Mersey Estuary.
- 4.2.2 All works will be situated within the Site, and as such due to physical separation of the Site and Statutory Designated Sites, no direct impacts are anticipated.
- 4.2.3 The Proposed Development would implement standard good practice pollution prevention and runoff control measures during the construction, to be secured through a Construction and Environmental Management Plan (CEMP), subject to suitably worded condition. Potential pollution impacts during operation are negligible, with activities limited to periodic cleaning of arrays and maintenance of the Site (e.g., landscaping, repairs).
- 4.2.4 As such, it is considered that there are no impact pathways by which the Proposed Development could impact statutory designated sites with no mobile qualifying features. The Mersey Estuary SPA, Ramsar and SSSI, River Dee and Bala Lake SAC and Midland Meres and Mosses Phase 2 Ramsar are discussed further below.

River Dee and Bala Lake SAC

4.2.5 Mobile qualifying features of the River Dee and Bala Lake SAC (sea lamprey, brook lamprey, river lamprey, Atlantic salmon, bullhead and otter), are all associated with riverine ecosystems which are not present within the Site. Further, the Site has no direct hydrological connectivity with the River Dee. As such, no impacts are anticipated to this site or the mobile qualifying features it supports.

Midlands Meres and Mosses Phase 2 Ramsar

4.2.6 Midlands Meres and Mosses Phase 2 Ramsar is a complex of sites across the Cheshire, Wrexham, Shrophsire and Staffordshire region. Of the 18 sites making up this complex, one component site is within 10km of the Site; this being Linmer Moss, designated for its lowland fen habitats. As such, mobile qualifying features associated with Midlands Meres and Mosses Phase 2 complex of sites (shoveler, cormorant, bittern, water rail and several invertebrate species) are considered irrelevant to this assessment of the Proposed Development. As discussed above, no impact pathways have been identified to non-mobile (e.g. habitat) features of statutory designated sites.

Mersey Estuary SPA, Ramsar and SSSI

- 4.2.7 The Mersey Estuary SPA, Ramsar and SSSI is designated for passage and wintering waterbirds, as well as its waterbird assemblage. Qualifying species of the SPA comprise shelduck, teal, pintail, golden plover, dunlin, black-tailed godwit, common redshank and the waterbird assemblage.
- 4.2.8 Mobile qualifying ornithological features may range from the SPA boundaries into nearby land and utilise such land for foraging. Construction of the Proposed Development has the potential to displace birds using the Site and immediately surrounding land through noise and visual disturbance. The presence of panels also has the potential to displace bird species associated with the Mersey Estuary SPA, should such species be found to be using the Site for foraging.
- 4.2.9 Typically a threshold of 1% of the SPA population is applied to determine if a site supports 'significant numbers' and as such may constitute Functionally Linked Land. Additionally, the site should show 'regular use', typically defined as significant numbers on at least 2/3rds of visits.
- 4.2.10 A review of the Natural England Report 'Identification of Functionally Linked Land Supporting SPA Waterbirds in the North west of England'⁵² does not identify the area as known functionally linked land, however identifies that habitats are suitable for waterbird species.
- 4.2.11 Given the habitats within the Site, pintail and dunlin are unlikely to be present, being open water and estuarine species respectively. Shelduck and teal may use ponds within the Site, while golden plover, black-tailed godwit and redshank may use wet grassland habitats.
- 4.2.12 Wintering bird surveys undertaken to date have shown minimal use of the Site by qualifying species. The only SPA qualifying species observed within the Site were teal, with a peak count of six birds observed on one occasion and shelduck with a peak count of one bird on one occasion. Additionally, curlew is a qualifying species of the Mersey Estuary Ramsar Site and was recorded within the Site on three occasions at peak counts of 11, five and seven birds.
- 4.2.13 Data showing the five year means and corresponding 1% threshold for teal, shelduck and curlew, based on the latest (2022/23) Wetland Bird Survey (WeBS) data, is shown in **Table 4.1 below.** This indicates that the 1% threshold was not met for any of the three species. Additionally, the Site did not meet the definition of regular use for any of the three species.

Species	5-year Mean	1% threshold
Shelduck	13,704	137
Teal	4,393	43
Curlew	1,541	15

Table 4.1: Mersey Estuary SPA and Ramsar Qualifying Species five-year mean and 1% thresholdNote: Only species recorded during surveys are shown

- 4.2.14 Within the wider survey area, curlew were observed in numbers exceeding the significance threshold on one occasion, at 26 birds. As this was on one occasion only, the wider survey area is not considered to meet the definition of regular usage, and is not considered functionally linked.
- 4.2.15 Surveys did not identify a significant waterbird assemblage present at the Site or surrounding area.

⁵² Bowland Ecology (2021). *Identification of Functionally Linked Land supporting SPA waterbirds in the North West of England*. NERC361. Natural England

4.2.16 As such, it is not considered that the Site constitutes functionally linked land to the Mersey Estuary SPA or Ramsar site and no adverse impacts to these sites, or the underlying SSSI is anticipated.

4.3 Non-Statutory Designated Sites

- 4.3.1 Five LWSs are located within 2km of the Site, the closest being Hoblane Ponds LWS, located 420m south-west of the Site and designated for aquatic flora.
- 4.3.2 As discussed in relation to statutory designated sites for nature conservation, the Proposed Development will not directly or indirectly affect habitats beyond the Site boundary and as such no impacts to any such sites are anticipated.

4.4 Habitats

- 4.4.1 The Site consists of arable and grassland fields. Large areas of scrub are also present, associated with embankments and around built structures. Fields are bounded by hedgerows and tree lines.
- 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. 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 landscape.
- 4.4.1 An area of scrub measuring approximately 5x20m and comprised a series of hawthorn shrubs would be lost to the development. A length of defunct hedgerow measuring approximately 110m in length would also be removed. The proposed access tracks would mostly exploit existing farm accesses and gaps in hedgerows and will avoid the need for vegetation clearance.
- 4.4.2 Beyond vegetation clearance outlined above, effects during construction relate to physical disturbance and removal of agricultural land, primarily comprising temporary compaction and soil disturbance from plant machinery and vehicles. This disturbance would be temporary and of relatively limited duration (anticipated to be six to 12 months). Construction would proceed in phases and hence not all the Site would be disturbed at the same time. For the operational lifetime of the Proposed Development, the intensively managed agricultural land would be replaced by a more species rich and structurally-diverse grassland, which would be managed throughout the lifetime of the operational solar farm to provide higher value habitat for a range of wildlife.
- 4.4.3 Trees would be retained and protected during construction, following British Standards *BS5837:2012 Trees in relation to design, demolition and construction.* Similarly, other than removal mentioned previously, existing hedgerow, scrub and field boundary ditches would be retained and protected with buffer zones of at least 5m. The Site boundary maintains a minimum 10m standoff from a ditch to the west of Site. Overall, the network of hedgerows and ditches would be retained and protected, maintaining habitat connectivity and linkages across the Site itself and with the surrounding wider landscape. These habitats would be enhanced as set out in the Landscape and Ecological Management Plan (LEMP), subject to a suitably worded condition.
- 4.4.4 The perimeter fencing around solar panel fields would include mammal gates or gaps at the base, positioned at suitable locations to maintain connectivity in the landscape for badgers and other small mammals. In addition, the solar farm would not be lit once constructed, maintaining dark corridors around the Site as a whole and in particular along hedgerows, tree lines and woodland edges. The only requirement for lighting is the 'emergency lighting' at the entrances to the high voltage equipment within the substation compound. Such lighting would only be used in the rare instances of unplanned or emergency works where these need to take place at time of insufficient natural light.
- 4.4.5 Opportunities have been sought to provide an overall biodiversity gain; in line with BS 42020 A Code of Practice for Biodiversity in Planning and Development, habitat enhancement and management

measures set out in the LEMP would enhance the Site for the benefit of local wildlife. The design and long-term management of the land seeks to maintain and improve functionality primarily through protecting and enhancing potentially important wildlife corridors. Connectivity would be strengthened between linked habitats through:

- native species hedgerow and tree planting,
- woodland buffer planting and
- creating extensive species rich and structurally diverse grassland habitats, both under and around the solar panels and around the Site perimeter, which would provide enhanced wildlife benefits over and above the low value agricultural land currently present.

The inclusion of bat, bird and hedgehog boxes as well as insect hotel/refuges is also proposed and described in the relevant sections below.

4.5 Biodiversity Net Gain Assessment

- 4.5.1 In order to assess the biodiversity impacts associated with the Proposed Development, the Natural England Biodiversity Net Gain Metric Calculator was utilised. Following a precautionary approach, it has been assumed that other than explicitly retained scrub, ponds, buildings and field boundary features, all other baseline habitats (e.g., grassland) would be lost.
- 4.5.2 Based on the information provided within the *Landscape Mitigation Strategy* (Drawing Number: 1000_00) and the existing baseline habitats, the calculation results show that the Proposed Development can deliver a biodiversity net gain of +37.74% in Habitat Units and a +32.50% net gain in Hedgerow 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**.
- 4.5.3 While not explicitly shown on the Landscape Mitigation Strategy, it is proposed that hedgerows throughout the site are enhanced to species rich status (i.e., have at least five species per 30m stretch) through underplanting and gapping up. This would be secured as part of the Landscape and Ecological Management Plan (subject to suitably worded condition) and/ or Habitat Management and Monitoring Plan required for discharge of the general biodiversity gain condition.
- 4.5.4 The Proposed Development adheres to all trading principles enshrined within the Metric. The Metric does not account for additional species-specific mitigation or enhancement measures, which are referred to elsewhere in this assessment.

FINAL RESULTS			
Total net unit change	Habitat units Hedgerow units	98.85	
(Including all on-site & off-site habitat retention, creation & enhancement)	Watercourse units	0.00	
	Habitat units	37.74%	
Total net % change	Hedgerow units	32.50%	
(חוכות שון או סור-אופ א סוו-אופ המסגומ רפופותוסה, כרפמוסה א פווהמוכפותפות)	Watercourse units	0.00%	
Trading rules satisfied? Yes ✓		s √	

Biodiversity Net Gain Calculation Headline Results (Defra statutory metric)

4.6 Protected and Notable Species

Breeding Birds

Protecting Active Nest Sites

- 4.6.1 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. Additional protection is also provided to species listed under Directive 2009/147/EC on the conservation of wild bird (the 'Birds Directive').
- 4.6.2 Additionally, a further 49 bird species are listed under Section 41 of the NERC Act 2006, with six species remaining present within the county also listed within the LBAP. Such species are therefore a material consideration within the planning process.
- 4.6.3 An area of scrub measuring approximately 5x20m and comprised a series of hawthorn shrubs would be lost to the development. A length of defunct hedgerow measuring approximately 110m in length would also be removed.
- 4.6.4 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). If vegetation works are necessary during the breeding season, 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.

Habitat Loss and Displacement

- 4.6.5 The main potential effect of construction of the Proposed Development is the displacement of foraging and nesting birds. The majority of the breeding birds within the Site are associated with woodland, scrub and field boundary vegetation, particularly tree lines, scrub and hedgerows. The majority of these features would not be directly impacted by the Proposed Development and would be protected, with an appropriate buffer zone, to ensure the 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.
- 4.6.6 Birds nesting on open ground, such as skylark and lapwing, may be displaced if construction takes place during the breeding season, with displacement persisting through operation due to the loss of open aspect preferred by such species. The Site offers relatively poor habitat for such species due to the relatively enclosed nature of the fields, with the only ground nesting species identified within the Site through breeding bird surveys being a single potential skylark territory. Suitable skylark breeding habitat is abundant in the area, and as such the potential displacement of a single skylark territory is not considered to affect local populations of this species. Further, solar farms may present benefits to skylark through provision of high quality foraging habitat⁵³.
- 4.6.7 The footprint of a solar farm is relatively low, with built infrastructure typically comprising less than 5% of the Site area and the remaining habitat in and around the Proposed Development available for continued use by bird species for foraging. An area of scrub measuring approximately 5x20m and comprised a series of hawthorn shrubs would be lost to the development. A length of defunct hedgerow measuring approximately 110m in length would also be removed.

 ⁵³ Fox, H. (2022). Blithe Spirit: Are Skylarks Being Overlooked in Impact Assessment? CIEEM. 117 pp. 47-51.
 Hob Lane Solar

- 4.6.8 Other than those habitats mentioned above, the Proposed Development would retain and enhance scrub, hedgerow and field boundary features which provide the principal habitat for bird species within the Site.
- 4.6.9 Habitat creation comprising tree and shrub planting, species diverse grassland creation and gapping up of hedgerow will provide an increased foraging and nesting resource for a range of farmland bird species within the Site, including red and amber listed BOCC species, with research indicating that well managed solar farms contain higher bird abundance and species richness than arable farmland⁵⁴. As such, the Proposed Development is considered to represent habitat enhancements for the farmland breeding bird assemblage as a whole.
- 4.6.10 In addition, at least ten generalist bird boxes and two barn owl boxes will be installed in suitable locations within the Site (e.g., mature trees or internally within ammunition shelter structures).

Wintering Birds

4.6.11 As discussed in relation to the Mersey Estuary SPA, Ramsar and SSSI the Site is not considered of particular importance for non-breeding bird species.

Bats

- 4.6.12 All species of British bat are listed as protected 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.
- 4.6.13 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 five species also listed within the LBAP.
- 4.6.14 Arable land within the Site offers low suitability habitat for foraging and commuting bats, however patches of scrub and field boundary habitats including hedgerows, lines of trees and woodland offer more favourable habitat. An area of scrub measuring approximately 5x20m and comprising a series of hawthorn shrubs would be lost to the development. A length of defunct hedgerow measuring approximately 110m in length would also be removed. These habitats are not well connected to the wider landscape and as such it is not considered that the removal would result in fragmentation.
- 4.6.15 With the exception of habitat mentioned above, suitable foraging and commuting habitats would be retained and protected through construction and operation of the Proposed Development. Better connected hedgerows in the same areas of the Site would be enhanced and strengthened to ensure foraging and commuting routes are maintained and enhanced within the Site.

⁵⁴ Copping, J. P., Waite, C. E., Balmford, A., Bradbury, R. B., Field, R. H., Morris, I., & Finch, T. (2025). Solar farm management influences breeding bird responses in an arable-dominated landscape. Bird Study, 1–6. https://doi.org/10.1080/00063657.2025.2450392

- 4.6.16 While research is limited, it has been shown that the presence of solar panels may affect bat foraging and commuting behaviours (Tinsley *et al*, 2023⁵⁵). Mitigation measures outlined within Tinsley *et al* have been incorporated into the Proposed Development design, including ensuring boundary habitat is maintained and improved and that landscaping proposals are designed to improve foraging and commuting habitat.
- 4.6.17 A single ash offering PRF-M is located within the Site. Further, mature trees within and immediately outside of the Site may also provide suitable habitat for bats and would be classed as FAR if they were likely to impacted. However, no removal of mature trees is anticipated as part of the Proposed Development; all mature trees would be retained and protected throughout works following British Standards *BS5837:2012 Trees in relation to design, demolition and construction*.
- 4.6.18 Should any trees be subsequently considered likely to be affected, then an updated PRA would be undertaken in advance of any removal. If any impacted tree is considered to support potential roosting bats, then appropriate surveys would be conducted. Data gathered would be used to inform potential design amendments in order to avoid or reduce impacts, or failing that, support a licence application to Natural England to destroy/disturb the bat roost.
- 4.6.19 Once constructed, the solar farm would not be routinely lit. Any lighting associated with the substations will be very localised and only be used on occasion, for example in the event of a security breach or if an engineer needs to carry out emergency visits to the Site at times when natural light levels are low.
- 4.6.20 Any lighting required would 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 *Bats and Lighting in the UK, Bats and the Built Environment Series, Bat Conservation Trust and Institute for Lighting Engineers*⁵⁶. As long as lighting is designed and implemented in a sensitive manner, no discernible effects are anticipated on foraging/commuting bats.
- 4.6.21 Structurally and species diverse grassland proposed as part of the development, along with the cessation of agricultural pesticide use, will attract and support a higher number of flying insects compared to the existing agricultural land, which will in turn increase foraging opportunities for bat species locally present.
- 4.6.22 The inclusion of ten bat boxes and proposed landscape planting would enhance opportunities for roosting, foraging and commuting bats. Overall, the Proposed Development will retain current habitat features and provide additional benefits for roosting and foraging bats.

Badger

4.6.23 Discussed separately within the *Confidential Badger Survey Report* (Appendix 3).

Water Vole

4.6.24 Water vole and its habitats receive full legal protection under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Water vole is also listed under Section 41 of the Natural

⁵⁵ Tinsley, E., Froidevaux, J. S. P., Zsebők, S., Szabadi, K. L., & Jones, G. (2023). Renewable energies and biodiversity: Impact of ground-mounted solar photovoltaic sites on bat activity. Journal of Applied Ecology, 60, 1752–1762. https://doi.org/10.1111/1365-2664.14474

⁵⁶ Institution of Lighting Professionals & the Bat Conservation Trust. (2023). *Guidance Note 08/23: Bats and artificial lighting at night, Bats and the Built Environment Series.*

Environment and Rural Communities (NERC) Act, UK BAP and LBAP. It is therefore a material consideration within the planning process.

- 4.6.25 Wet ditches and ponds within the Site may offer suitable habitat for water vole, with the species known to be present within the wider landscape. No specific water vole surveys have been undertaken; however, no evidence of water vole presence was observed during the habitat survey.
- 4.6.26 All field boundary ditches and ponds showing suitability for water vole would be retained and protected with minimum 5m buffer zones in which no works would be undertaken.
- 4.6.27 Standard good practice measures would be employed to ensure runoff control and pollution prevention to protect aquatic/bankside habitats both on Site and in the wider ditch network, and as such no impacts on water vole are anticipated.

Amphibians

- 4.6.28 Great Crested Newts 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.
- 4.6.29 GCN and common toad are listed as priority species under Section 41 (England) of the NERC Act 2006 and UK BAP. GCN and natterjack toad are further listed under the LBAP (natterjack have a restricted distribution, with habitats within the Site unsuitable for this species).
- 4.6.30 Five ponds are located within the Site, of which one (P30) returned a positive result from eDNA surveys, indicating likely presence of GCN. Survey results also showed likely presence of GCN at a further two ponds within 250m (P10, P12) of the Site. It is considered that GCN will use and move between ponds as part of the overall network of ponds, dependent on suitability (e.g. water levels) in any given year.
- 4.6.31 Arable habitats which would be subject to impacts provide sub-optimal habitats for amphibian refuge and shelter. Grasslands, scrub and field boundary habitats including tree lines and hedgerows offer more suitable habitat.
- 4.6.32 The Proposed Development would retain all ponds within the Site with buffers of at least 10m between the pond and any infrastructure. While ponds would not be affected, due to the proximity of ponds known to support GCN, the proposals have the potential to incidentally impact individual GCN through vegetation removal. In addition, small scale scrub removal could impact GCN sheltering places.
- 4.6.33 Throughout construction of the Proposed Development, works would adopt Reasonable Avoidance Measures (RAMs) for all vegetation clearance within 50m of ponds, or for suitable habitats (i.e. anything other than agricultural land) within 250m of ponds. RAMs would include a fingertip search by a suitably experienced ecologist and vegetation clearance being undertaken following a two stage cut (first to c. 150mm, then to ground level) to safeguard individual GCN.
- 4.6.34 Due to construction works in close proximity to ponds (i.e. within 50m), the Proposed Development would only proceed under a licence granted by Natural England. This would be through the District Level Licencing regime or through a traditional licenced Method Statement.

- 4.6.35 Throughout operation of the Proposed Development, the Site would remain accessible for GCN and be undisturbed. As a result of habitat enhancements, including the creation of hibernacula, conversion of arable land to extensive areas of grassland, and the creation and improvement of hedgerow, scrub and woodland areas, the Proposed Development would provide higher value terrestrial habitat for amphibians. The Proposed development would also commit to the maintenance and enhancement of ponds within the Site.
- 4.6.36 Taking into account the above measures to be secured for the lifetime of the Proposed Development, it is not considered that the Proposed Development would have any adverse effect on the favourable conservation status of GCN and would result in overall enhancement of aquatic and terrestrial habitats. The Proposed Development is therefore considered to benefit GCN and other amphibian species in the local landscape, through increased long-term availability of areas of undisturbed habit and increased landscape connectivity within an area considered important for GCN.

Reptiles

- 4.6.37 Common reptile species namely the 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 (common lizard, slow worm, grass snake and adder) are also listed as priority species under Section 41 (England) of the NERC Act 2006 and UK BAP.
- 4.6.38 Arable habitats which would be subject to impacts provide sub-optimal habitats for reptile refuge and shelter. Grasslands, scrub and field boundary habitats including tree lines and hedgerows offer more suitable habitat.
- 4.6.39 Measures discussed in relation to amphibians above will also serve to safeguard common species of reptile, with the proposed landscape design offering overall habitat enhancements.

Other species

- 4.6.40 The Site and wider area may potentially support brown hare, hedgehog, and a variety of invertebrates. However, these species are not considered to be a significant constraint in terms of the Proposed Development.
- 4.6.41 The Proposed Development has been designed to avoid impacts to the most suitable habitats including areas of scrub and field boundary habitats. As such, 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 suitable habitats in the wider area and the proposed creation of more favourable species-diverse grassland, scrub and woodland habitat as part of the development.
- 4.6.42 Security fencing located around the Site perimeter would have gaps or mammal gates positioned at several locations along the base in order to allow mammal species such as brown hare and hedgehog to continue to use the habitats on Site during the operational period. Such gaps or mammal gates would thereby maintain dispersal routes and opportunities to access relatively undisturbed habitat within the secured Site and connect to the wider landscape.

4.7 Invasive Non-native species

4.7.1 It is an offence to plant or otherwise cause to grow in the wild any species listed within Schedule 9 of the Wildlife and Countryside Act 1981; 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).

- 4.7.2 Japanese knotweed was noted within the Site along the proposed access route. This species spreads through fragments of rhizome or stem being transported to new areas, and as such frequent vehicle movements have the potential to cause further spread of this species. Japanese knotweed located along the Site access would be subject to management by a specialist contractor. Further, appropriate biosecurity measures would be implemented to prevent the spread of this species, with an Invasive Non-native Species Management Plan to be secured via suitably worded condition.
- 4.7.3 A preconstruction survey would 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 MITIGATION AND ENHANCEMENT SUMMARY

- 5.1.1 **Table 5.1** summarises the mitigation and enhancement recommended for the Proposed Development.
- 5.1.2 In addition, a Landscape and Ecological Management Plan would be produced following planning consent to outline the objectives to achieve Biodiversity Net Gain, which would include associated management and monitoring.

Feature	Potential Impacts Before Mitigation and Enhancement	Summary of Mitigation and Enhancement	Residual Impacts After Mitigation and Enhancement
Designated Sites	 No direct impacts are anticipated to any Statutory designated Site The Site does not form Functionally Linked Land to the Mersey Estuary SPA or Ramsar No potential impact pathways have been identified to any other statutory or non- statutory designated sites 	 Best practice pollution prevention and control measures to be implemented. Works to be contained to Site boundary. 	• None
Habitats	 Loss of arable land and temporary disturbance and compaction of soils. 	 Existing features of biodiversity value would largely be retained and protected throughout the construction and operation phases. Works to be contained to Site boundary. Landscape design to enhance the Site for biodiversity through hedgerow enhancement and grassland creation. All relevant trees would be protected during construction works in line with BS 5837:2012 <i>Trees in relation to design,</i> <i>demolition and construction.</i> Pollution prevention measures would be implemented to prevent pollution and run-off occurring during the construction and specific control measures would be implemented to protect the watercourses/ditches/ponds within and off Site. 	 The scheme would deliver an 37.74% net gain in Habitat Units and a 32.50% net gain in Hedgerow Units.
Birds	 Damage to nests resulting from vegetation clearance (if within bird nesting season) Habitat loss and displacement (both temporary and permanently for ground nesting species) Disturbance during construction 	 Removal of nesting bird habitats (limited to 110m of defunct hedgerow and 5x20m of hawthorn shrub) 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 would works be permitted to proceed. Habitat creation to provide an increased foraging and nesting resource for a range of farmland bird species within the Site. Arable land converted to botanically-rich grassland would provide suitable foraging habitat for skylark. 	The Site would be enhanced for the local farmland breeding bird assemblage

Table 5.1: Mitigation and Enhancement Summary

Feature	Potential Impacts Before Mitigation and Enhancement	Summary of Mitigation and Enhancement	Residual Impacts After Mitigation and Enhancement
		• Two Barn owl boxes and ten generalist bird nest boxes would be installed within suitable locations within the Site.	
Bats	 Loss of foraging habitat Fragmentation of commuting routes Loss of roosting habitat Disturbance through noise and lighting 	 Trees with roosting potential (one identified as PRA-M and several as FAR) would be retained and protected through construction and operation. Should any trees subsequently be affected, then an updated PRA would be undertaken in advance of any removal and appropriate survey and/ or mitigation implemented. Lighting design would be sensitive to bats. Landscape design would provide enhancements for foraging and commuting bats. A minimum of ten bat boxes would be installed on suitable trees and/ or structures within the Site. 	 The Site would be enhanced for foraging, commuting and roosting bats
Badgers	• See Appendix 3.	• See Appendix 3.	• See Appendix 3.
Otter & Water Vole	 Otter are considered likely to be absent from the Site Damage to water vole burrows and habitat Pollution 	 Pollution prevention measures would be implemented to prevent pollution and run-off occurring during the construction and specific control measures would be implemented to protect the watercourses/ditches/ponds within and off Site. Buffer zones of at least 5m to be implemented around ponds and ditches. 	• None
Amphibians and Reptiles	 Direct killing/ injury Habitat loss Pollution 	 All ponds would be retained with minimum 10m buffers. Works would be undertaken under a licence in relation to GCN (either district level licence or licenced method statement). Works would be undertaken following Reasonable Avoidance Measures (RAMs). Landscape design would enhance the site for amphibians and reptiles. 	 Temporary habitat loss during construction (licensable) Enhancement of terrestrial and aquatic habitats
Other Species	 Direct killing/ injury Habitat loss Disturbance 	 Brown hare, hedgehog and a range of invertebrate species are potentially present within/close to the Site. Works would be undertaken under Reasonable Avoidance Measures (RAMs). Any excavations would be covered overnight or otherwise fitted with a means of escape. Landscape design would enhance the site for a range of species. 	 The Site would be enhanced for a range of species including terrestrial mammals and invertebrates.

Feature	Potential Impacts Before Mitigation and Enhancement	Summary of Mitigation and Enhancement	Residual Impacts After Mitigation and Enhancement
Invasive Non-native Species	• N/A	 Japanese knotweed would be subject to management by a specialist contractor. Biosecurity measures would be implemented and outlined within an Invasive Non-native Species Management Plan, to be secured via suitably worded condition. A preconstruction survey would be undertaken to monitor the spread of invasive species and identify any new areas of infestation. 	• N/A

FIGURES

- Figure 1: Site Location Plan
- Figure 2: Statutory Designated Sites Plan
- Figure 3: Non-statutory designated Sites Plan
- Figure 4: Habitat Plan
- Figure 5: Breeding Bird Plan
- Figure 6: Wintering Bird Plan
- Figure 7: Pond Plan

Figure 1: Site Location Plan



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Figure 2: Statutory Designated Sites Plan



Figure 3: Non-statutory Designated Sites Plan



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Figure 4: Habitat Plan



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Figure 5: Breeding Bird Plan



Legend Site Survey Area Breeding Territory DDunnock GR-Greenfinch HS-House sparrow LLapwing LW-Lesser whitethroat RB-Reed bunting SSkylark ST-Song thrush TS-Tree sparrow WH-Whitethroat WP-Woodpigeon WR-Wren						
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Figure 6: Wintering Bird Plan



нор Lane Solar Ecological Assessment Report

Figure 5: Pond Location Plan



нор Lane Solar Ecological Assessment Report

APPENDIX 1: PHOTOGRAPHS



Photograph 5: Example of other neutral grassland within highly enclosed field within the Site

Photograph 6: Example of other neutral grassland field margin habitat



Photograph 7: Example of other neutral grassland within highly enclosed field within the Site



Photogrpah 9: Example of other neutral grassland associated with building within the Site

Photograph 8: Example of other neutral grassland field margin habitat (associated with a ditch) within the Site.



Photogrpah 10: Area of bramble dominated scrub



Photograph 11: Area of hawthorn dominated scrub



Photograph 12: Area of mixed scrub surrounding brick built structure on embankment









Photograph 25: Example of other eutrophic standing water within the Site



Photograph 27: Example of other eutrophic standing water within the Site

Photograph 26: Example of other eutrophic standing water within the Site



Photograph 28: Example of other eutrophic standing water within the Site



buildings

Photograph 30: External photograph of onsite buildings





Photograph 31: external photograph of onsite buildings

Photograph 32: External photograph of onsite buildings



Photograph 33: External photograph of onsite buildings



Photograph 34: Existing hardstanding access road (Common Lane) with Japanese knotweed



Photograph 35: Example of woodland forming the Site boundary



Photograph 36: Example of woodland forming the Site boundary



Photograph 37: Example of woodland forming the Site boundary

Photograph 38: Example of woodland forming the Site boundary

APPENDIX 2: GREAT CRESTED NEWT PRESENCE OR ABSENCE (EDNA) SURVEY REPORT

APPENDIX 3: CONFIDENTIAL BADGER SURVEY REPORT

APPENDIX 4: BIODIVERSITY NET GAIN CALCULATION