



5686, Westfield Energy Conservation Park, Ecological Impact Assessment



Ecological Impact Assessment

Westfield Energy Conservation Park

Lightrock Power



July 2025

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Issue Sheet

Document Prepared for: Lightrock Power

Ecological Impact Assessment:

5686, Westfield Energy Conservation Park

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Revision: V1-0

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Executive Summary

Lanpro Services Limited ('Lanpro') was appointed by Lightrock Power Limited ('the Applicant') to undertake an ecological impact assessment in relation to the development of Westfield Energy Conservation Park ('the Proposed Development') comprising a Battery Energy Storage System (BESS) and co-located ground mounted solar farm, associated infrastructure, access, biodiversity enhancements and landscaping on land south of A507 at Westfield Common, Hertfordshire ('the Site'), Figure 1, central National Grid reference: TL 29197 30421.

Lanpro undertook a desk study, Extended UK Habitat survey (UKHab) including protected species appraisal and condition assessment in December 2024 (updated in April and May 2025). GCN (Great Crested Newt) surveys were undertaken in the form of Habitat Suitability Index (HSI) Assessment followed by eDNA Surveys. Ground Level Tree Assessment, preliminary roost assessment and bat activity surveys (statics and night time walkover) were also undertaken. Winter and breeding bird surveys were conducted and the results will be discussed in a separate Bird Impact Report which will be submitted once they have been completed.

No statutory designated sites for nature conservation were identified within 10km (Habitats sites ('European sites')) or 2km (National sites). However, there are 40 non-statutory/locally designated sites (Local Wildlife Sites (LWSs)) within 2km. Of these, two are partially within the Site; Rydal's and Coldash Woods (also ancient woodlands), and three within the zone of influence for indirect disturbance. There was a veteran tree on-Site also in the zone of influence for indirect impacts.

Habitats recorded on-site included other neutral grassland (g3c), modified grassland, other broadleaved woodland (w1g), lowland mixed deciduous woodland (w1f7), mixed scrub (h3h), temporary grass and clover leys (c1b), cereal crops (c1c) and other standing water (r1g). There are also lines of trees, six types of hedgerows and ditches on-Site. In respect to Biodiversity Net Gain (BNG), the area-based habitats generated 422.32 Habitat Units (HU) with a total area of 187.37 ha. The total length of hedgerows on-Site was calculated at 7.99 km and the hedgerow habitats generated 73.53 Hedgerow Units (HeU). The total Watercourse Units (WU) on-Site is 6.15 WU with a length of 1.92 km pertaining to ditches.

All habitat losses will be compensated for on-site within the red line boundary. Proposed habitat creation measures on-site include the creation of large areas of grassland beneath solar installations, field margins and other available spaces within the red line boundary, as well as woodland, hedgerow and scrub planting.

The Proposed Development design has incorporated features for protected species including buffers. Protected or notable species present (or assumed present) on-site and assessed as being Important Ecological Features (IEF) included roosting, commuting and foraging bats and breeding birds. Species which are not IEFs but still require mitigation for legislative compliance include GCN, badger, and Schedule 1 birds (barn owl and red kite).

Compensation includes grassland areas for skylark and other ground nesting birds as well as foraging winter starling. A non-licensed method statement (precautionary method of work) is considered necessary for badger, and GCN. Schedule 1 birds including barn owl and red kite require some timing constraints for works. It is not considered that there would be any residual effects as a result of the Proposed Development.

1 Introduction

1.1 Appointment

- 1.1.1 Lanpro Services Limited ('Lanpro') was appointed by Lightrock Power Limited ('the Applicant') to undertake an Ecological Impact Assessment of Westfield Energy Conservation Park ('the Proposed Development') comprising a Battery Energy Storage System (BESS) and co-located ground mounted solar farm, associated infrastructure, access, biodiversity enhancements and landscaping on land south of A507 at Westfield Common, Hertfordshire ('the Site'), Figure 1, central National Grid reference: TL 29197 30421. A summary of the Biodiversity baseline calculation in accordance with the Statutory Biodiversity Metric¹ has also been provided within this report.
- 1.1.2 The initial UKHab fieldwork and this report was undertaken by Isabel Soane MSc MCIEEM. The BNG Metric was completed by Ben Wagstaffe MSc BSc. This report conforms to the requirements of British Standard 42020:2013 'Biodiversity – Code of Practice for Planning and Development' and the Guidelines for Ecological Impact Assessment (CIEEM, 2018).

1.2 Development Proposal

- 1.2.1 The proposal is the construction of an energy conservation park with Battery Energy Storage System (BESS) and co-located ground mounted solar farm, associated infrastructure, access, biodiversity enhancements and landscaping ('the Proposed Development').

1.3 Purpose of Report

- 1.3.1 The purpose of this report is to present the methods and results of the ecology surveys that have been undertaken on the Site and to present the assessment of the likely impacts of the Proposed Development on identified ecological features including habitats, protected and valued species, and any designated conservation sites. Where necessary, advice on how to avoid, mitigate and compensate for identified ecological impacts is provided in order to secure net gains for biodiversity as required by the National Planning Policy Framework (NPPF, 2024).
- 1.3.2 Additionally, this report provides a draft assessment of the anticipated impact on biodiversity as a result of the Proposed Development, as quantified under DEFRA's Statutory Biodiversity Metric ('the Metric').

¹ Department for Environment, Food and Rural Affairs. Guidance – Statutory Biodiversity Metric Tools and Guides. Available at: <https://www.gov.uk/government/publications/statutory-biodiversity-metric-tools-and-guides>

- 1.3.3 This report must be read in conjunction with the accompanying BNG metric and draft Biodiversity Gain Plan. There will also be a Bird impact Report associated with this project following completion of breeding bird surveys.

Figure 1. Site Location



2 Methodology

2.1 Desk Study

- 2.1.1 A data search was undertaken in January 2025 and information was received from the Hertfordshire Environmental Records Centre (HERC).
- 2.1.2 The data search returned records of protected and notable species within 5 km of the Site, and information on any statutory and non-statutory designated nature conservation sites within a 2km radius of the Site. Additionally, bat species data was received within a 10km radius of the Site.
- 2.1.3 Ordnance Survey maps available via Natural England's MAGIC map database² were also reviewed as well as: satellite imagery; historical ordnance survey mapping³; National Character Area profiles; and the Ancient Tree Inventory⁴.
- 2.1.4 The MAGIC map database was used to extend the search for 'Habitats Sites' (Special Protection Areas, Special Areas of Conservation and Ramsar sites) to 10km.

2.2 Field Survey

UK Habitat Survey and Biodiversity Net Gain Habitat Condition Assessment

- 2.2.1 Izzy Soane MSc MCIEEM visited the Site on 18th to 20th December 2024 and completed a protected species walkover and UK Habitat Survey⁵ of the Site. Izzy revisited the Site between May 20th to 21st and 28th to update the condition assessments and collect a more accurate species list, during a favourable time of year. Furthermore Alexander Lowe (MCIEEM, FISC Level 4) visited the Site on 16th April 2025 to complete a condition assessment on the woodland habitats including the Ancient woodlands adjacent to the Site.
- 2.2.2 The official ancient woodland designation (DEFRA MAGIC maps) is not within the red line boundary. However, the satellite imagery shows a mismatch between the exact footprint of the trees and the designation shapefile. As such and due to its significance as a habitat, the woodland has been mapped and has undergone a condition assessment, however we do not consider it to be inside the red line boundary and it is described as adjacent.
- 2.2.3 The initial surveys in December 2024 were undertaken from 9:00am-15:30pm. The air temperature ranged from 1 to 8°C, and no precipitation was recorded, with a range in cloud

² <https://magic.defra.gov.uk/home.htm>

³ Open source 25 inch OS mapping England and Wales 1841-1952

⁴ <https://ati.woodlandtrust.org.uk/>

⁵ UKHab Ltd. (2023) UK Habitat Classification Version 2. Website: www.ukhab.org

cover from 30% to 100%. In May 2025 the surveys were undertaken between 10.00am-17.00pm. The temperature ranged from 11-17°C and no precipitation was recorded, with a range in cloud cover from 0% to 80%.

- 2.2.4 The area within the red line shown in Figure 1 was surveyed. Habitats were classified using the standard UK Habitat methodology⁶, modified for use with biodiversity net gain⁷.
- 2.2.5 The Site was walked over with species noted and photographs taken. Habitat locations and extents were marked up on printed aerial maps. Species abundance within the habitat was recorded using the DAFOR scale: D – Dominant; A – Abundant, F – Frequent, O – Occasional and R – Rare.
- 2.2.6 At the same time as the Extended UK Habitat Survey, habitat condition was also assessed in accordance with the Statutory Biodiversity Metric.

Bats

Roosting Bats

- 2.2.7 A daytime bat walkover (DBW)⁸ with Ground Level Tree Assessment (GLTA) were undertaken to assess the potential bat roosting resource within trees on Site. This was undertaken between 10th-13th February 2025 by Izzy Soane BSc (Hons) MSc MCIEEM and Rebecca Little BSc (Hons) MCIEEM MRSB (Bat Level 2 CL18: 2015-11894-CLS-CLS).
- 2.2.8 The GLTA was undertaken to find Potential Roost Features (PRFs). This was targeted at recording trees with a PRF-M classification due to the high volume of trees on-Site and the low-impact nature of the scheme. This classification means the tree is suitable for multiple bats and may therefore be used by a maternity colony. Trees were observed from ground level using binoculars and a torch and any PRF's suitable for multiple bats were recorded. These details include location (what three words), tree species, type of roost feature, aspect and the height from the ground.
- 2.2.9 The details of the GLTA are discussed within Section 3.

Preliminary Roost Assessment

- 2.2.10 During the GLTA (13th February 2025), a Preliminary Roost Assessment (PRA) was undertaken on two structures, which are within 30 m of the Site boundary (Appendix 8: S1 and S2). This was undertaken to Guidelines⁸, using binoculars and a torch, noting down any PRFs which bats could use for roosting or access, such as loose tiles or cracks. S1 was surveyed externally, while S2 was an open structure and could be entered. Following the results, internal examinations of S1 were not deemed necessary. Structures were assessed as one of the five following categories for roost potential:

6 UKHab (2023). The UK Habitat Classification User Manual Version 2.01 at <http://www.ukhab.org/>

7 DEFRA (2024) Statutory Biodiversity Metric User Guide.

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

Table 2.1 Definitions of Bat Roost Potential

Roost Potential	Description
None	No features on-Site for any roosting bats at any time of year.
Negligible	No obvious features for roosting bats but some uncertainty remains.
Low	One or more PRFs for individual, opportunistic bats. Not enough space, shelter, appropriate conditions or surrounding habitat for larger numbers.
Moderate	One or more PRF's that could be used for multiple bats including maternal and hibernation roosts. Unlikely to support a conservation roost.
High	One or more PRFs suitable for large numbers of bats on a regular basis and for longer time such as conservation status hibernation and maternity roosts.

2.2.11 Structure descriptions and results are discussed within Section 3.

Foraging and Commuting Bats

2.2.12 The habitats on Site were assessed, using best practice guidance, for their potential to be used by foraging and commuting bats. The assessment was based on what suitable habitat features were present on Site and within the local landscape.

2.2.13 Following the assessment, a spring night-time walkover comprising three transects was undertaken on the 7th, 8th and 14th May 2025. In addition, six static bat detectors were deployed across the Site for a week each during both April and May 2025.

2.2.14 The spring night-time walkovers were undertaken by two surveyors each following the Good Practice Guidelines⁸. Transects are presented in Appendix 7. The weather was appropriate on all three nights, with no precipitation and a temperature of 11°C or greater at the start. Both surveyors had an Anabat Scout detector, and all bats heard and seen were recorded on a survey sheet and map. This included species, timing, behaviour and direction of travel. The bat calls were analysed using a two-step quality assurance process after being analysed in Kaleidoscope Pro⁹, first by Clara Robinson BSc (Hons) and secondly by Rebecca Little BSc (Hons) MCIEEM MRSB and Izzy Soane MCIEEM. The percentage of bat calls that were checked after going through Kaleidoscope were based on the accuracy of the program for each species:

- Check 10% of easily identifiable species (common and soprano pipistrelle, noctule, Leisler's, serotine)
- Check 30% of harder to identify species (All Myotis sp., brown long-eared)
- Manual check of all Annex II species

2.2.15 Six Wildlife Acoustics Song Meter Minis were deployed across the Site for a week each in April and in May 2025. Locations of the statics were chosen to capture a range of habitats

⁹ Kaleidoscope Pro Analysis Software

across the Site including woodland, grassland, hedgerows and a ditch. The same two-step quality assurance process was undertaken as with the night-time walkover bat call data.

- 2.2.16 The locations of the statics and transects are presented within this report and the results in Appendix 7.

Badger

- 2.2.17 The Site was surveyed for badger setts and for signs of badger activity including dung pits, foraging marks, feeding signs and pathways (Harris et al., 1989)¹⁰. This was undertaken during the initial walkover in December 2024.
- 2.2.18 As potential and definite sett entrances were identified during the Site walkover in December, avoidance and mitigation requirements were identified in early stages of the design (e.g. buffer zones) and therefore further badger surveys (e.g. camera trapping) was not deemed necessary.

Hazel Dormouse

- 2.2.19 The Mammal Society (2025)¹¹ describe dormouse as extinct from Hertfordshire and therefore a detailed survey was not undertaken as part of this assessment.

Riparian Mammals

- 2.2.20 A desk-based search for watercourses on and immediately adjacent to the Site was undertaken using an Ordnance Survey (OS) map. Where present, these were assessed for their suitability to support riparian mammals.
- 2.2.21 Due to the habitats present on-Site being unsuitable for otter and water vole, a detailed survey was not undertaken as part of this assessment.

Birds

- 2.2.22 The Site was assessed for its value for nesting and foraging birds and the likely species assemblage, including those with enhanced statutory protection. Birds which are Amber and Red-listed on the Birds of Conservation Concern List 5¹² are in decline in the UK and will also be discussed, as well as those listed on the Section 41 of the Natural Environment and Rural Communities Act 2006 (NERC).

¹⁰ Harris, S., Cresswell, P. and Jefferies, D. (1989). Surveying Badgers. Mammal Society (Occasional Publication No 9), London.

¹¹ Bullion, S., Wolton, R. & White, I. (2025) Hazel Dormouse Conservation Handbook – Third edition. The Mammal Society.

¹² Stanbury et al 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 on risk for Great Britain. British Birds 114: 723-747.

- 2.2.23 The Site was identified as providing suitable habitat for both wintering and breeding birds during the initial UKHab Site visit and on satellite imagery. As such, wintering and breeding bird surveys were undertaken, which will be detailed in Westfield Energy Conservation Park Bird Impact Report once surveys are complete. Avian undertook winter surveys while Lanpro are undertaking breeding bird surveys.
- 2.2.24 Six surveys were undertaken for both winter and breeding birds following the bird survey guidance¹³. The Site was split into two transects for winter surveys and three transects for breeding birds for good coverage. Species were recorded using 2-letter BTO codes along with behaviour and number of individuals. Species flying over the site were also recorded

Amphibians

Habitat Suitability Index (HSI) Assessment

- 2.2.25 A desk-based search was undertaken using a 1:2500 scale OS map to identify any water bodies within 250 m of the Site that were not separated by a major barrier to amphibian dispersal. It should be noted that garden ponds within residential properties are often absent from OS map sources but may be identified through aerial photography.
- 2.2.26 Eight waterbodies were assessed on 20th December 2024 for their potential to support great crested newt (GCN) using the Habitat Suitability Index Assessment (HSI) (Oldham et al., 2000). The HSI Assessment is a numerical index between zero and one. Waterbodies are categorised in terms of their suitability to support GCN according to the following scale; excellent suitability (a HSI score of >0.8), good suitability (0.7-0.79), average suitability (0.6-0.69), below average suitability (0.5-0.59) and poor suitability (<0.5). The HSI incorporates ten indices ranging from water quality to fish stocks all of which are factors believed to affect GCN. It should be noted that whilst the HSI Assessment provides a measure of habitat suitability for GCN, it is not a substitute for amphibian surveys. The waterbodies can be viewed in Appendix 1.
- 2.2.27 The habitats within the Site were also assessed for their suitability to support common amphibian species.

Environmental DNA (eDNA) Survey

- 2.2.28 Water samples for eDNA analysis were taken from P1, 2 and 4-7 by Izzy Soane (MCIEEM, CL08 licence registration number 2023-11567-CL08-GCN) and Clara Robinson BSc (Hons) on 16th April 2025. P3 was dry at the time of survey and no access was granted to P8. See Appendix 1 for pond locations.
- 2.2.29 This method comprises taking 20 water samples from waround each pond and pipetting the collated samples into test tubes. The samples were then sent off and analysed in an accredited laboratory by SureScreen. SureScreen then identify whether ponds have a

¹³ <https://birdsurveyguidelines.org/>

positive or negative result for GCN eDNA, thereby identifying a presence or likely absence of GCN.

Reptiles

- 2.2.30 The habitats present on Site were assessed for their suitability to support basking, foraging and hibernating reptiles, with reference to their connectivity with other suitable habitat in the surrounding area. Due to the habitats present on-Site being sub optimal for reptiles, a detailed survey was not undertaken as part of this assessment.

Invertebrates

- 2.2.31 A general appraisal of the suitability of the habitats present to support notable species assemblages was undertaken.
- 2.2.32 Although there is ancient woodland adjacent to the Site, which is likely to contain a notable assemblage, this habitat will not be impacted. As such, due to the affected habitats present on-Site being sub optimal for reptiles, a detailed survey was not undertaken as part of this assessment.

Other Protected and Notable Species

- 2.2.33 Species of Principal Importance that are listed on Section 41 of the Natural Environment and Rural Communities Act (2006) were noted if encountered.

Invasive Non-Native Plant Species

- 2.2.34 During the UKHab survey, any evidence of invasive species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) was recorded.

2.3 Biodiversity Baseline Calculation

Baseline Habitats

- 2.3.1 During the Extended UK Habitat Survey, habitat condition was also assessed in accordance with DEFRA's Statutory Biodiversity Metric condition assessment sheets. Each condition criteria was appraised, and habitats were assessed as being in 'good', 'moderate' or 'poor' condition. Habitat distinctiveness is automatically assigned within the Metric. The information was updated during 20th-21st and 28th May during secondary habitat and condition surveys.

- 2.3.2 All baseline habitat areas were mapped in Quantum Geographic Information Systems (QGIS) software¹⁴ using aerial imagery and topographical survey data.
- 2.3.3 The GIS import tool was used to import data from the baseline maps into the Statutory Biodiversity Metric Calculation Tool¹⁵.
- 2.3.4 Hertfordshire does not currently have a finalised Local Nature Recovery Strategy which can be used to assign the 'strategic significance' of both baseline and proposed habitats. The North Herts Local Biodiversity Action Plan 2006¹⁶ (LBAP) has as been used for the source of information to determine strategic significance:
- 2.3.5 The assessment of strategic significance may require revision once the finalised Hertfordshire Local Nature Recovery Strategy is published.
- 2.3.6 The post development habitats and BNG calculation is discussed in the accompanying document titled 'Draft Westfield Energy Conservation Park Biodiversity Gain Plan' (Lanpro, 2025).

2.4 Impact Assessment Methodology

- 2.4.1 The following plans and reports were reviewed for this impact assessment:
- 5686-LAN-XX-XX-DR-L-1003-P06 - Environmental Masterplan
 - 5686_Clothall Schedule_100625_RG Arboriculture Schedule
- 2.4.2 The anticipated ecological impacts included in this report therefore only relate to the above plans. Should the above plans be changed, an update to this report may be necessary.
- 2.4.3 Ecological impacts have been assessed in terms of: positive or negative; extent; magnitude; duration; frequency, timing; and reversibility in accordance with CIEEM's Guidelines for Ecological Impact Assessment in the UK and Ireland ("CIEEM guidelines")¹⁷.
- 2.4.4 A **positive impact** is "a change that improves the quality of the environment e.g. by increasing species diversity, extending habitat or improving water quality. This may also include halting or slowing an existing decline in the quality of the environment."
- 2.4.5 A **negative impact** is "a change which reduces the quality of the environment e.g. destruction of habitat, removal of foraging habitat, habitat fragmentation, pollution."
- 2.4.6 In line with CIEEM guidelines, the magnitude of an impact has been quantified in terms of size, amount, intensity and volume. Habitats lost are measured and quantified wherever possible using QGIS Software.

¹⁴ "QGIS.org (2024). QGIS Geographic Information System. Open Source Geospatial Foundation Project. <http://qgis.org>

¹⁵ Statutory biodiversity metric tools and guides - GOV.UK (www.gov.uk)

¹⁶ <https://www.north-herts.gov.uk/sites/default/files/ORD4%20Hertfordshire%20Biodiversity%20Action%20Plan.pdf>

¹⁷ Chartered Institute of Ecology and Environmental Management (September 2018) Guidelines for Ecological Impact Assessment in the UK and Ireland – Terrestrial, Freshwater, Coastal and Marine.

- 2.4.7 Ecological features (habitats and species that could be affected by the proposed works) were assigned levels of importance for nature conservation. The hierarchy of importance used in this report scales from international, national, regional, county, and local.
- 2.4.8 Relevant ecological features to the Proposed Development are those that are considered to be important and potentially affected by the Proposed Development. These are termed Important Ecological Features (IEFs) and are scoped in for further consideration.
- 2.4.9 A **“significant” effect** in this report is defined as per the CIEEM guidelines as “an effect that either supports or undermines biodiversity conservation objectives for ‘important ecological features’ or for biodiversity in general”.
- 2.4.10 Important ecological features can include (but are not limited to) priority habitats and species, red-listed, rare and legally protected species. Significant effects can apply at a range of scales from local (parish), district, county, regional, national or international.
- 2.4.11 Impacts are assessed into the following categories as shown in Table 2.2 below.

Table 2.2 Definitions of Impact Magnitudes

Scale of Impact	Definition
Neutral	No predicted impact upon an ecological feature.
Minor	A small adverse impact on an ecological feature, likely to be temporary, and not to the extent of moderate or major as below.
Moderate	A significant impact on an ecological feature, particularly an important ecological feature. The impact is likely to be medium-long term in nature. It has an adverse effect on the ability to achieve positive ecological outcomes but is unlikely to affect the integrity of designated conservation sites or the conservation status of priority/protected species or habitats.
Major	A significant impact on the integrity of a conservation site or the conservation status of a valued or priority/protected species or habitat within a defined geographical area. Likely to be a long-term or irreversible impact.

- 2.4.12 The duration of an impact is defined in relation to the ecological characteristics of the habitat or species (e.g. lifecycle of the species) concerned as well as human timeframes.
- 2.4.13 Residual effects are defined as the predicted ecological effects on a species or habitat provided all advised avoidance, mitigation and compensatory measures are followed.
- 2.4.14 Impacts and effects to bats have been assessed in accordance with section 4 of CIEEM’s UK Bat Mitigation Guidelines¹⁸.

¹⁸ CIEEM (December 2023). UK Bat Mitigation Guidelines V1.1. Available at: <https://cieem.net/wp-content/uploads/2023/09/Bat-Mitigation-Guidelines-2023-V1.1.pdf>

2.5 Constraints and Limitations

- 2.5.1 There was no access granted to P8 and therefore no eDNA survey was undertaken. Permission for access had been attempted through three letters sent between 10th April and 12th June 2025.
- 2.5.2 A targeted Ground Level Tree Assessment (GLTA) was undertaken in respect to roosting bats. The visibility of different trees varied due to the presence of dense vegetation or other vegetation obscuring views. However, a precautionary approach was applied to any trees that could not be fully inspected and as such assigned PRF-M.
- 2.5.3 No other constraints or limitations were experienced during the species or habitat surveys.

3 Results

3.1 Desk Study

Designated Sites

- 3.1.1 There are no statutory designated sites for nature conservation identified within 10 km of the Site, important at an international level (Ramsar, Special Protection Areas and Special Areas of Conservation).
- 3.1.2 There are no statutory designated sites for nature conservation identified within 2km of the Site, important at a national (SSSI) or county (LNR) level.
- 3.1.3 The Site is within the SSSI impact risk zone of two designated sites. These are described below in Table 3.1

Table 3.1: Designated Sites within the SSSI Impact Zone

Name	NGR	Distance from Site	Reasons for Designation/ Citation
Blagrove Common SSSI	TL 326 338	3,930 m north east	Unimproved marshy grassland of a rich-fen meadow type, with dry areas of neutral grassland and a stream. Plants include lesser spearwort <i>Ranunculus flammula</i> , marsh thistle <i>Cirsium palustre</i> , ragged robin <i>Lychnis flos-cuculi</i> , cuckoo flower <i>Cardamine pratensis</i> , carnation sedge <i>Carex panicea</i> and carnation sedge <i>Carex nigra</i> . There are also colonies of orchids with early marsh orchid <i>Dactylorhiza incarnata</i> , common spotted orchid <i>Dactylorhiza fuchsii</i> . and southern marsh orchid <i>Dactylorhiza praetermissa</i> . ¹⁹
Moor Hall Meadows SSSI	TL 330265	3,750 m south-east	A group of meadows on undrained boulder clay soils overlying the chalk of north-east Hertfordshire. A variety of grassland types are present with unimproved neutral to calcareous and marshy grassland. Dry grassland areas display a species-rich sward dominated by grasses such as Crested Dog's-tail

¹⁹ Blagrove Common SSSI Citation <https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=s1000847>

			<i>Cynosurus cristatus</i>, Sweet Vernal-grass <i>Anthoxanthum odoratum</i>, Quaking Grass <i>Briza media</i> and Red Fescue <i>Festuca rubra</i>. Rarer species, notably orchids Orchidaceae. Twayblade <i>Listera ovata</i> and Common Spotted Orchid <i>Dactylorhiza fuchsii</i> are frequent with occasional Fragrant Orchid <i>Gymnadenia conopsea</i> and Green-winged Orchid <i>Orchis morio</i>. Frog Orchid <i>Coeloglossum viride</i> is found at one of its two known county localities. Rushes <i>Juncus</i> spp. and Sedges <i>Carex</i> spp. dominate the wetter marsh areas with Hard Rush <i>Juncus inflexus</i> and Jointed Rush <i>J. articulatus</i> present with frequent Hairy Sedge <i>Carex hirta</i>, Lesser Pond-sedge <i>C. acutiformis</i> and Plicate Sweet-grass <i>Glyceria plicata</i>²⁰
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3.1.4 Local planning authorities (LPAs) have a duty to consult Natural England before granting planning permission for any relevant planning application within the risk zone. Guidance states that the LPA should consult Natural England on likely risk from:

- Infrastructure: Airports, helipads and other aviation proposals.
- Air Pollution: Livestock & poultry units with a floorspace > 500m², slurry lagoons > 750m² & manure stores > 3500 tonnes.

3.1.5 Therefore, the scope of the Proposed Development is unlikely to affect either SSSI and consultation will not be required²¹. The SSSI's are distant from the Site and there is no hydrological pathway present. Therefore, they are not considered to be IEFs.

Non-Statutory Designated Sites

3.1.6 40 Local Wildlife Sites (LWS) within 2km of the Site were identified. These are described in Appendix 2a.

3.1.7 Coldash and Rydal's wood are both Local Wildlife Sites (LWS) and ancient woodlands adjacent to the Site boundary. Although there will be no direct impacts to the woodlands, there could be indirect impacts resulting from the construction phase, such as lighting and noise pollution.

3.1.8 Three further LWS's in the proximity of the Site which may also be in the zone of influence are:

- Hickman's Hill Green Lane, adjacent to the Site on the south westerly edge;
- Basket's Wood 10 m north; and
- Munches Wood 30 m north.

3.1.9 These five non-statutory designated sites can be viewed in Appendix 2b. They are all within the zone of influence for indirect effects and as such are considered to be IEFs, important at a county level (Hickman's Hill Green Lane) and national level (the four ancient

20 Moor Hall Meadows SSSI <https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=s1002523>

21 SSSI IRZ User Guidance MAGIC.pdf (defra.gov.uk)

woodlands). The other 35 LWS are not IEFs due to their distance from the Site and lack of impact pathways.

- 3.1.10 There are 19 areas of ancient woodland within 2 km of the Site. Coldash and Rydal's Wood are ancient woodlands adjacent to the Site boundary, and their LWS description is detailed in Appendix 2a. Baskets and Munches Wood are located across the northern side of the A507, approximately 10 m and 30 m north of the Site boundary at the closest point. There are connections between the ancient woodlands adjacent to the Site to those in the surrounding area whereby species could cross between them on linear pathways including hedgerows. This provides a solid ecological network for wildlife of four nearby ancient woodlands. As such, the ancient woodlands Coldash, Rydal's, Munches and Baskets Wood are an IEF, important at a national level.
- 3.1.11 There are numerous ancient and veteran trees within 2 km, the closest identified on the Ancient tree Inventory being a veteran hornbeam ~375m to the south.²² The survey of Rydal's Wood revealed five veteran trees within the red line boundary. They were all oaks which showed past pollarding, thought to represent a boundary of the ancient woodland. The veteran trees will be assessed for impacts within their designation as ancient woodland. There was also a veteran tree identified in Line of Trees (LOT) 4, which is an oak labelled T107 in the Arboricultural Impact Assessment.
- 3.1.12 The 'priority habitat inventory' revealed the following Habitats of Principal Importance (HPI) within 2km of the Site:
- Lowland Mixed Deciduous Woodland;
 - Good quality semi improved grassland;
 - Traditional orchard; and
 - Coastal and floodplain grazing marsh.
- 3.1.13 Lowland mixed deciduous woodland HPI is present on-Site adjacent to Rydal's Wood (not ancient). The ancient woodland sites Coldash and Rydal's Wood, as detailed in the discussion for LWS's and ancient woodland previous, are an IEF at a national level. The veteran tree T107 is considered to be an IEF at county importance due to it being irreplaceable.

Species Records

- 3.1.14 A total of 14,709 species records were received from HERC. A total of 15 bird records and two plants were from Rydal's and Coldash Wood LWSs, the ancient woodland adjacent to the Site. No records pertained directly within the Site boundary.
- 3.1.15 Table 3.2 below provides a summary of received records for protected and notable species within 5km. Bat records were requested up to 10km from the Site.

²² Ancient Tree Inventory - Woodland Trust

Table 3.2. Biological Records

Species	Number of Records Returned Within 5 km of the Site	Species Recorded Within 5 km of the Site	Distance between Site and Closest Record
Bats	296 (records within 10km) (NB. EPS licence records are described separately below)	Common pipistrelle <i>Pipistrellus pipistrellus</i> (106 records), soprano pipistrelle <i>Pipistrellus pygmaeus</i> (14), brown long-eared <i>Plecotus auratus</i> (42), long-eared bat <i>Plecotus</i> sp. (5), Natterer's bat <i>Myotis nattereri</i> (36), noctule <i>Nyctalus noctula</i> (16), Nathusius's Pipistrelle <i>Pipistrellus nathusii</i> (1), pipistrelle species <i>Pipistrellus</i> sp. (5), serotine <i>Eptesicus serotinus</i> (8), barbastelle <i>Barbastella barbastellus</i> (2), Daubenton's Bat <i>Myotis daubentonii</i> (32), Leisler's Bat <i>Nyctalus leisleri</i> (5), myotis species <i>Myotis</i> sp. (8) and unknown bat species (14).	The closest accurate record (to 10 m) was a roost pertaining to a long eared bat species (<i>Plecotus</i> sp.) and common pipistrelle 1290 m from the Site in 2015
Badger	135	-	The closest accurate record (to 10 m) was 630 m from the Site towards Rushden.
Otter	None	-	-
Water vole	Historic records only	-	-
Great Crested Newt and other amphibians	33	GCN <i>Triturus cristatus</i> (23) and common toad <i>Bufo bufo</i> (10).	GCN 800 m south east of the Site (to 1 km)
Hazel Dormouse	Historic records only	-	-
Reptile Species	6	Slow-worm <i>Anguis fragilis</i> (2) and common lizard <i>Zootoca vivipara</i> (4)	Common lizard 3420 m south of the Site (to 10m)
White Clawed Crayfish	Historic records only	-	-
Fish (Priority species)	Historic records only	-	-
Other priority mammals	235	Brown hare <i>Lepus europaeus</i> (102) West European hedgehog <i>Erinaceus europaeus</i> (132) and harvest mouse <i>Micromys minutus</i> (1)	Brown hare 180 m from the Site (to 100 m)

3.1.16 A total of 13,198 bird records were returned within 5 km of the Site, pertaining to 114 species. 15 records were from Rydal's and Coldash Wood LWSs. These include song thrush

Turdus philomelos, nuthatch *Sitta europaea* and red kite *Milvus milvus* which are a WCA 1981 Schedule 1 species. They were thought to have been flying over during the observation, as there were 3 sighted at once. There are 72 barn owl *Tyto alba* records within 2 km of the Site. Other Schedule 1 birds recorded within 5 km include quail *Coturnix coturnix*, fieldfare *Turdus pilaris* and redwing *Turdus iliacus*.

- 3.1.17 There are a total of 711 invertebrate records within 5km of the Site. There are 38 species recorded which are priority under Section 41 of the NERC Act. The closest records include two cinnabar moths at Basket's wood (c.80 m north) and a small heath recorded at Munches Wood (c.300 m north).
- 3.1.18 There were 95 records returned for flowering plants. Bluebells *Hyacinthoides non-scripta* are present in Rydal's wood and Coldash Wood, owing to their ancient woodland status. There is a fragrant orchid *Gymnadenia conopsea* record pertaining to the Site which has a 10 km precision, and the location is not described. It is not currently present within the arable field at TL33 and is likely to be elsewhere.
- 3.1.19 12 invasive plant species records were returned within 2km of the Site, none of which pertain directly to the Site. Species include giant hogweed *Heracleum mantegazzianum*, yellow archeangel *Lamiastrum galeobdolon* subsp. *Argentatum*, Himalayan balsam *Impatiens glandulifera* and rhododendron *Rhododendron ponticum*.
- 3.1.20 There are five EPS licences returns within 2 km. All licences pertained to the destruction of a resting place for bats, displayed in Table 3.3:

Table 3.3. Bat EPS Licences within 2 km of the Site

Licence Number	Species	Licence Start Date	Licence End Date	Distance from Site
EPSM2013-5455	Common pipistrelle	06/02/2013	31/08/2013	1.1 km south
2015-15824-EPS-MIT	Brown long-eared and soprano pipistrelle	01/03/2016	31/03/2021	1.27 km north
2015-15824-EPS-MIT-1	Brown long-eared and soprano pipistrelle	19/04/2016	31/03/2021	1.27 km north
EPSM2012-5044	Brown long-eared	04/12/2012	30/09/2015	1.55 km south west
EPSM2013-5998	Brown long-eared and common pipistrelle	15/07/2013	01/11/2015	1.57 km south

- 3.1.21 There was one historic positive licence return for GCN 1.8 km, north west in 2014.

3.2 Field Survey

Extended UK Habitat Survey

- 3.2.1 A map of the habitats in the survey area is provided in Appendix 8. There is irreplaceable habitat adjacent to the Site in the form of the Ancient woodlands Coldash and Rydal's Woods (LWS). These woodlands are also known to contain veteran trees.
- 3.2.2 The Site is comprised of 13 fields in which the primary habitat is arable crop. These are numbered in Appendix 1 (note they are numbered up to 16 with offsite fields pertaining to missing numbers). The fields are surrounded by margins of other neutral grassland with an area of modified grassland south of Coldash Wood. There are 26 hedgerows and seven lines of trees across the Site, which present as field boundaries. There are also seven ponds, five areas of other broadleaved woodland and one parcel of scrub. Selected photographs are available in Appendix 3.

Cereal crops / non-cereal crops (UKHabs code: c1c/c1d)

- 3.2.3 In December 2024, Fields 3, 4, 6, 7, 9-14 were either being planted or ploughed ahead of being planted. During the second survey in May 2025, these fields primarily contained cereal crop with some non-cereal crop. There were a few other smaller areas between the numbered fields assigned to cereal cropland whereby in May they had been ploughed in preparation for a later yield.
- 3.2.4 There is no condition assessment required for cropland. It is not an IEF.

Herb-rich Ley (c1b7)

- 3.2.5 There are three fields of clover ley grassland on-Site (Fields 1, 2 and 16) which fit the description for the GS4 Countryside Stewardship. They were dominant in a rye grass and fescue hybrids, with clover hybrids *Trifolium* sp. and contained ley crop throughout the year. There was also a strip of ley to the north of Field 10 identified during the May 2025 surveys.
- 3.2.6 There is no condition assessment required for this habitat. It is not an IEF.

Other Neutral Grassland (g3c)

- 3.2.7 The field boundaries were classified as other neutral grassland. A total of 116 quadrats were undertaken on this habitat during the May 2025 surveys across the Site. There were many species assemblages recorded (Appendix 4), which were categorised under three different condition assessment criterium. Two were in 'poor' condition and one small area was in 'moderate' condition.
- 3.2.8 The small area surrounding Q87 to the west of Field 1, passed essential condition Criteria A: 'is it a good example of its habitat type?'. The species assemblage here was false oat

grass *Arrhenatherum elatius* (D), creeping bent *Agrostis stolonifera* (A), doves-foot cranesbill *Geranium molle* (F), crested dog tail *Cynosurus cristatus* (F), red fescue *Festuca rubra* (F), creeping buttercup *Ranunculus repens* (O), vipers bugloss *Echium vulgare* (O), yorkshire fog *Holcus lanatus* (O), narrow leaved plantain *Plantago lanceolata* (O), broad leaved plantain *Plantago major* (O), creeping thistle *Cirsium arvense* (O), couch grass *Elymus repens* (R), rough meadow grass *Poa trivialis* (R), selfheal *Prunella vulgaris* (R), centuary *Centaureum erythraea* (R), ragwort sp *Jacobea* sp. (R), silverweed *Potentilla anserina* (R), agrimony *Agrimonia eupatoria* (R) and Tare sp. *Vicia* sp. (R). There were 9 species per square metre and so it did not pass essential Criteria F.

- 3.2.9 The remaining Other neutral grassland quadrats were a poor representative of their classification. They do not display a consistent high proportion of characteristic indicator species for other neutral grassland, with modified grassland indicators such as creeping buttercup and suboptimal species including ley hybrids, black grass *Alopecurus myosuroides*, creeping thistle, cow parsley *Anthriscus sylvestris*, nettles *Urtica dioica* and hogweed *Heracleum sphondylium*. As such they were not able to reach a greater than poor condition.
- 3.2.10 All grassland passed on sward height variance (Criteria B), as buffers were growing to 30cm, while the inner most sections were shorter due to tractor movements. They also passed Criteria D (bracken cover). The variance between the grasslands was in Criteria C, whereby quadrats Q59-62, Q68, Q92-4, Q98 were noted for having more than 5% bare ground.
- 3.2.11 Grass species across the Site included perennial ryegrass, cocksfoot *Dactylis glomerata*, Yorkshire fog, rough meadow grass *Poa trivialis*, annual meadow grass *Poa annua*, soft brome *Bromus hordeaceus*, barren brome *Bromus sterilis*, meadow foxtail, crested dogs tail *Alopecurus pratensis*, false oat grass, creeping bent and red fescue. Wildflowers included knapweed *Centaurea nigra*, greater stitchwort *Stellaria holostea*, lesser trefoil *Trifolium dubium*, field bindweed *Convolvulus arvensis*, teasel *Dipsacus fullonum*, cleavers *Galium aparine*, bloody cranesbill *Geranium sanguineum*, cut-leaved crane's-bill *Geranium dissectum*, hedgerow cranesbill *Geranium pyrenaicum*, traveller's joy *Clematis vitalba*, hedge woundwort *Stachys sylvatica*, black horehound *Ballota nigra*, germander speedwell *Veronica chamaedrys*, Willowherb species *Elphorbium* sp., goatsbeard *Tragopogon pratensis*, cowslip *Primula veris*, fat hen *Chenopodium album*, hairy sedge *Carex hirta*, ribwort plantain *Plantago lanceolata*, broad-leaved plantain *Plantago major*, bramble and blackthorn. Not all species listed were captured within quadrats, and no quadrats hit the 10 forb species per square metre criteria F. Quadrat species lists can be viewed in Appendix 4.
- 3.2.12 Neutral grassland is described in the North Hertfordshire LBAP as being a focus habitat, however this habitat is in 'poor' condition and not representative of the hay meadows and species rich verges described. It is also not a Section 41 priority habitat (HPI). As such it is not an IEF.

Modified Grassland (g4)

- 3.2.13 There was modified grassland present north of Field 14, south and west of Coldash Wood. In May 2025 this was identified as containing almost exclusively perennial rye grass *Lolium perenne*. It was thought to be sown in earlier in the year and is managed frequently due to its use as a wedding venue and for camping. There are four quadrats containing species information in Appendix 4.
- 3.2.14 All areas of modified grassland within the Site contained fewer than 6-8 species per m² and were therefore 'poor' condition. This habitat is not an IEF.

Lowland mixed deciduous woodland (w1f)

- 3.2.15 There were two areas of lowland mixed deciduous woodland adjacent to the Site: Coldash Wood (W1), Rydal's Wood (W2).
- 3.2.16 Coldash Wood is comprised of oak (F) with abundant ash and rare instances of hornbeam. There is hawthorn (A), elder (O), crab apple *Malus sylvestris* (R), hazel *Corylus avellana* (F), field maple *Acer campestre* (O) and blackthorn (R) in the understorey. The flora was abundant in dogs mercury *Mercurialis perennis* and frequent in bluebells *Hyacinthoides non-scripta*, nettles *Urtica dioica*, bramble *Rubus fruticosus*, lesser celandine *Ficaria verna*, false brome *Brachypodium sylvaticum*, cleavers *Galium aparine* and *Poa* species. Occasional plants were enchanter's nightshade *Circaea lutetiana*, ground ivy *Glechoma hederacea*, lords-and-ladies *Arum maculatum*, Tufted hair grass *Deschampsia cespitosa*, curled dock *Rumex crispus*, wood sedge *Carex sylvatica* and garlic mustard *Alliaria petiolate*. Rarely observed were primrose *Primula vulgaris*, hedge woundwort *Stachys sylvatica* and early dog violet *Viola reichenbachiana*. This woodland was in moderate condition due to failing on veteran tree count and tree health whereby ash dieback was frequent.
- 3.2.17 Rydal's Wood was comprised of oak (A), ash (A), Scots pine *Pinus sylvestris* (O) wild cherry *Prunus avium* (R) and beech (locally frequent). The understorey comprised frequent hazel and midland hawthorn *Crataegus laevigata*, with occasional goat willow *Salix caprea*, and rare instances of field maple, crab apple, elder *Sambucus nigra*, blackthorn and holly *Ilex aquifolium*. The field layer was abundant in bluebells and dogs mercury and frequent in lesser celandine, cleavers, false brome, bramble, *Poa* sp., and a locally frequent wood anemone *Anemone nemorosa*. Occasional plants were lords-and-ladies, nettles, garlic mustard, greater stitchwort, primrose, ground ivy, wood sedge and ivy leaved speedwell *Veronica hederifolia*. Rarer plants were goldilocks buttercup *Ranunculus auricomus*, enchanter's nightshade, broad-leaved dock, cow parsley, hedge woundwort and cocksfoot. This woodland was in good condition.
- 3.2.18 The woodland W8 is the only parcel of Lowland Mixed Deciduous Woodland on Site. It is an extension of Rydal's Wood and is not classified as Ancient. Species of tree included oak (A), ash (F) and hawthorn (O). The ground flora consisted abundant bluebells with dogs mercury and frequent lords-and-ladies. There were occasional cocksfoot, false

brome and greater stitchwort. This woodland reached 'moderate' condition failing on account of ash dieback and veteran trees.

- 3.2.19 Lowland mixed deciduous woodland is an HPI. In addition, Rydal's and Coldash woodlands are both ancient woodlands and designated Local Wildlife Sites. As such, this habitat is an IEF important at a national level. The parcel W8 is not ancient, however given it is situated adjacent to Ancient woodland, it considered an IEF important at a county level.

Other woodland; broadleaved (w1g)

- 3.2.20 There are five areas of other woodland; broadleaved on-Site (W3-7).
- 3.2.21 W3 is an area of woodland surrounding Field 13 which links up with Rydal's Wood. It was abundant in oak and field maple with occasional ash trees. There was frequent hawthorn, hazel and elder in the understorey. The field layer had an abundance of dogs mercury with frequent bluebells and occasional cleavers, greater stitchwort, cocksfoot and lords-and-ladies. These were present particularly towards the north, where it connects with Rydal's Wood and therefore the flora has spread. This woodland was in moderate condition. Its narrow shape meant some plots didn't hit five species per 10 m². It also contained no veteran trees and showed some signs of herbivore damage.
- 3.2.22 W4 and W5 were significantly larger than W6 and W7 however most of their area sits outside of the red line boundary. Both were dominant in oak *Quercus robur* and hazel *Corylus avellana*. They also contained ash *Fraxinus excelsior*, field maple *Acer campestre*, blackthorn *Prunus spinosa* and hawthorn. They scored moderate condition as they contained no veteran trees, had no identifiable NVC and had ground disturbance with signs of high nutrients.
- 3.2.23 W6 and W7 were very small areas and W7 only contained oak trees. They contained no variation in structure or tree age. Neither contained deadwood or signs of regeneration. W6 was assessed as moderate, while W7 scored poor due its lack of species.
- 3.2.24 There is an area of W3 which will be directly affected by the Proposed Development due to the creation of an access road. No other habitat parcels will be impacted. It is not HPI, but an important habitat within the Site, connecting to the ancient woodland. As such other woodland; broadleaved is considered to be an IEF at local level.

Mixed scrub (h3h)

- 3.2.25 There is one area of Mixed Scrub (Sc1) on-Site, which sits in an old chalk pit between Field 3 and 10. The species present were field maple *Acer campestre* and hawthorn *Crataegus monogyna* in similar ratios. There were not three species present, and due to its density there was no sign of regeneration or glades within the scrub. The only criteria passed was C, where there were no invasive species observed. As such the habitat was assessed as poor condition.

- 3.2.26 A very small amount of this habitat type is within the redline boundary and it will not be directly affected by the Proposed Development, as such it is not an IEF.

Bramble scrub (h3d)

- 3.2.27 There is a small patch of bramble scrub lining a ditch (Sc2). Most of grassland along ditches does contain bramble however in this section it is dominant. This habitat has no condition assessment.
- 3.2.28 A very small amount of this habitat type is within the red line boundary and it will not be directly affected by the Proposed Development, as such it is not an IEF.

Other standing water (r1g, 41, ponds)

- 3.2.29 There were two ponds on-Site (P6 and P7), both of which were non-priority. P6 was a woodland pond and failed only the semi-natural habitat criteria, passing as moderate condition. P7 was in 'poor' condition due to a lack of marginal submerged or emergent aquatic vegetation and shading from trees.
- 3.2.30 As these ponds are non-priority, they are not HPI's. They will not be directly impacted by the Proposed Development and therefore are not an IEF.

Sparsely vegetated land (s, 16, Tall forbs)

- 3.2.31 There was one area of tall forbs in Field 14 within the cropland. Dominating 80% of this habitat was stinging nettles with occasional willowherb species *Elphorbium sp* and common hogweed. As there was little plant diversity and therefore limited opportunity for invertebrates, this habitat was in 'poor' condition.
- 3.2.32 This habitat is not an HPI. It will not be directly impacted by the Proposed Development and therefore is not an IEF.

Ditches

- 3.2.33 There are five ditches across the Site which were all linked together. Water levels ranged from up to 50 cm during winter, to being dry during May. Due to water fluctuations there were no submerged or emergent plants and no aquatic marginal vegetation. Due to this, all ditches were assessed to be in poor condition.
- 3.2.34 Other agricultural ditches are present however they did not contain any water during the year (December or May) and therefore do not fit the UKHabs classification of being wet for 4 months annually.
- 3.2.35 It is thought the water in the ditches is carried to the River Beane. Although the Environmental Masterplan shows there will be no works within 10 m of the ditches, there will be an access route over segments of ditch, therefore direct impacts are possible. As such this habitat is an IEF, important at a local level.

Line of trees (Secondary code: 33 (Line of trees) & 50 (Ditch))

- 3.2.36 There are seven lines of trees (LOT) across the Site. LOT 1 contained oak *Quercus robur* and field maple and contained a number of tree trunks of previously felled trees. Other lines of trees contained a combination of oak, field maple, hawthorn *Crataegus monogyna*, ash and hornbeam. LOT 4 contained a veteran oak tree among other large oaks (T107 in the Arboriculture Report). LOT 2, 3 and 5 were associated with dry ditches.
- 3.2.37 LOT 1-3 and 5-7 were in 'moderate' condition owing to their native tree cover, ecological niches, canopy cover and generally good tree health despite ash dieback. LOT 3 contained no ecological niches and was therefore in 'poor' condition. There was however a lack of undisturbed vegetated ground 6 m either side of the trees, due to them bordering arable fields.
- 3.2.38 The Environmental Masterplan shows no direct impacts are expected to occur to any of the trees in this habitat, however indirect impacts are possible. LOT 4 contained a veteran tree, which was assessed as a separate entity in Section 3.1. Lines of trees are not an HPI and are a common habitat. As such they are not an IEF, but mitigation will be discussed.

Native hedgerow (h2a)

- 3.2.39 There were 10 native hedgerows on the Site. Most hedges contained hawthorn, with differing ratios of field maple, hawthorn, ash, hornbeam and elder.
- 3.2.40 Eight of the hedgerows were in 'good' condition, failing only on width (under a metre wide) and nutrient enrichment. Two (H15 and H21) were in 'moderate' condition as they also had gaps in their canopy.
- 3.2.41 Although native hedgerows will not be directly affected, the works could have indirect impact on this habitat. Native hedgerows are common habitat in the area, however they are an HPI and as such considered to be significant at a local level. Subsequently they are an IEF.

Native hedgerow with trees (h2a, 11 (with trees))

- 3.2.42 There were four native hedgerows with trees on-Site (H6, H16, H17 and H20). They contained ash, oak, spindle, field maple, guelder rose *Viburnum opulus* and hawthorn. The trees within the hedgerows were primarily oak and ash.
- 3.2.43 All four native hedgerows with trees were in 'good' condition, where they failed on nutrient enrichment.
- 3.2.44 Although hedgerows will not be directly affected, the Proposed Development could have indirect impact on this habitat. Native hedgerows with trees are common habitat in the area, however they are an HPI and as such considered to be significant at a local level. Subsequently they are an IEF.

Native hedgerow – associated with a bank or ditch (h2a)

- 3.2.45 There was one hedgerow within this category: H29. It contained only hawthorn with bramble. It was in ‘moderate condition’, failing on canopy gaps and gap between the ground and base canopy.
- 3.2.46 Although hedgerows will not be directly affected, the works could have indirect impact on this habitat. Hedgerows are common habitat in the area, however they are an HPI and as such considered to be significant at a local level. Subsequently they are an IEF.

Native hedgerow with trees - associated with bank or ditch (h2a, 11 (with trees))

- 3.2.47 There were six native hedgerows with trees on the Site associated with a bank or ditch (H10, H11, H22, H24, H26 and H30).
- 3.2.48 Most hedges contained oak, hawthorn, hazel, field maple, hawthorn, and ash. There were three hedgerows in ‘good’ condition, while H24, H26 and H30 were moderate due to having one age of tree class and canopy gaps of greater than 10% of the area.
- 3.2.49 Although hedgerows will not be directly affected, the Proposed Development could have indirect impact on this habitat. Hedgerows are common habitat in the area, however they are an HPI and as such considered to be significant at a local level. Subsequently they are an IEF.

Species-rich native hedgerow (h2a5)

- 3.2.50 There was one species-rich native hedgerow on the Site (H14). It contained maple, hazel, hawthorn, elder and blackthorn. This hedgerow was in ‘good’ condition, failing only on the gap between the ground and canopy, and nutrient enrichment.
- 3.2.51 Species-rich hedgerows are an HPI and as such considered to be significant at a local level. Subsequently they are an IEF.

Species-rich native hedgerow- associated with bank or ditch (h2a5)

- 3.2.52 There were three species-rich hedgerows associated with a bank or ditch on the Site (H19, H25 and H27). They contained hawthorn, with differing ratios of field maple, blackthorn, hazel, willow, dogwood and guelder-rose. H19 and H27 were in ‘good’ condition, failing on nutrient enrichment. H25 was in ‘moderate’ condition due to its canopy ‘gappiness’.
- 3.2.53 Although hedgerows will not be directly affected, the Proposed Development could have indirect impacts on this habitat. Hedgerows are common habitat in the area, however they are an HPI and as such considered to be significant at a local level. Subsequently they are an IEF.

Species-rich native hedgerow with trees- associated with bank or ditch (h2a5)

- 3.2.54 There was one hedgerow within this category: H28. They contained hawthorn, with differing ratios of field maple, hawthorn, elder, ash, spindle and guelder-rose.
- 3.2.55 Although hedgerows will not be directly affected, the Proposed Development could have indirect impact on this habitat. Hedgerows are common habitat in the area, however they are an HPI and as such considered to be significant at a local level. Subsequently they are an IEF.

Individual trees

- 3.2.56 There are 24 trees on-Site which are not associated with a woodland or line of trees. These are all native, rural trees, mostly comprising oak, ash and hawthorn. They range from small to large in size and are concentrated towards the north west of the Site. None of the trees were veteran or ancient. All of the trees reached at least 'moderate' condition as they all over sail vegetation and there is no detrimental impact to them by human activity. Trees 9-11, 14, 21 and 22 reached good condition. This is because they contained ecological niches such as lifting bark and dead wood, partly down to their age.
- 3.2.57 The Environmental Masterplan shows that no trees will be removed to facilitate works however they could be subject to indirect impacts. Individual trees are not a HPI and a common feature in the area. As such they are not an IEF, but mitigation will be discussed.

3.3 Protected and Notable Species

Amphibians

- 3.3.1 The Site provided moderate to good suitability for terrestrial foraging amphibians in the form of woodland. There is also foraging opportunity within the neutral grassland field boundaries, where some areas are dense with long swards. Both hedgerows and ditches on-Site are associated with long swards of grassland running alongside them suitable for foraging and sheltering amphibians. The arable and ley fields provide a low suitability for foraging amphibians with little opportunity for shelter, however they could be used for dispersal between potential breeding ponds on-Site. There were no significant suitable hibernacula recorded on-Site.
- 3.3.2 The Natural England GCN Risk Zones for Hertfordshire²³ show the Site is primarily within the Green zone, with some coverage in the Amber zone.
- 3.3.3 Two ponds were recorded within the Site and seven within approximately 250m of the Site which are displayed in Appendix 1. All ditches on-Site were considered to be unsuitable for

²³ <https://naturalengland-defra.opendata.arcgis.com/datasets/Defra::gcn-risk-zones-hertfordshire/about>

GCN, due to having a flow during times of high rain and because they were all dry by May. P1-8 were subject to a HSI assessment which is displayed in Table 3.4 alongside locations and is detailed in Appendix 5.

Table 3.4. Waterbody locations and Descriptions

Water body Reference	Distance from Site/ Location	What Three Words	HSI Score
P1	6 m; Coldash Wood	skylights.develop.whoever	Average
P2	18 m; Rydals Wood	widen.helm.ships	Below Average
P3	2 m; near Rydal's Wood	candle.micro.melts	Poor
P4	38 m; Rydals Wood	wardrobe.alarm.thrillers	Below Average
P5	23 m; Rydals Wood	forehand.loose.lifelong	Below Average
P6	On-Site	wedding.answers.denim	Poor
P7	On-Site	swanky.brilliant.skill	Below Average
P8	5 m north	beans.prickly.invoices	Poor
P9	252 m north	area.punctual.hook	Not calculated

- 3.3.4 P1 was the only pond considered to be of average suitability, with four ponds at below average and three of poor suitability.
- 3.3.5 P9 was considered to have low connection to the Site due to its location (at 252m to the north), just over the maximum likely distance of GCN dispersal. Additionally, the A507 road presents a partial barrier between the Site and the pond. It is very unlikely that any GCN in this pond would need to disperse further than the Baskets Wood ancient woodland north of the Site for terrestrial habitat. As such a HSI was not undertaken and it was not considered further.
- 3.3.6 As there is some coverage of the Site in the Amber risk zone for GCN and due to the number of ponds close together, eDNA sampling was undertaken. P3 was dry at the time of survey (16th April 2025) and as such considered unsuitable for breeding GCN. Samples for P1-P2 and P4-P7 were successfully undertaken and all six were identified as being negative for eDNA. As such GCN are considered likely absent from P1 to P7.
- 3.3.7 There was one pond (P8) which was not subject to an eDNA survey due to lack of access. Efforts to attain access were attempted three times. This pond varies between mapping from three separate ponds to being absent. The pond can be seen from a vantage point inside Field 7 (Appendix 1). A nearby footpath and aerial imagery was used to assess the current state and shape of the pond. There is an area of seasonally wet grass in the grassland north of Field 7 which is likely at wetter times of the year to merge with the pond visible from the field.
- 3.3.8 The Rapid Risk Assessment Tool concluded that it was likely an offence would likely be committed if P8 did contain GCN, due to the area being impacted between 100-250m of the pond. However, it is considered unlikely there are GCN present in P8 for the following reasons:

- GCN are considered likely absent from seven ponds both on and off-Site (P1-7). P1 scored an HSI of 'average' while others scored 'below average' and 'poor'. P8 scored 'poor' meaning it is assessed to be suboptimal for GCN and a lower likelihood of inhabiting a population than most of the other negative ponds.
- P8 is within an Amber risk zone towards the north-east of the Site. Part of the area around Rydal's and Coldash Wood is also in an Amber zone, however surveys show there is no GCN population in these ponds. Data from an adjacent planning application to the south-east of the Site (Beane Valley Solar 3/24/2245/FUL), details a single pond within 250 m of their boundary, which also had a negative GCN result. As the western and central areas of the Site contain no GCN and the Beane Valley Solar application also had no GCN, it is considered unlikely this pond contains an isolated population.
- There are no ponds within 250 m of P8, inclusive of those on-Site. As such there are no ponds for any potential population in which to disperse.
- There will be no direct works to P8 and no groundworks within 100 m of the pond as Field 7 will not contain solar. The baseline levels of disturbance in Field 7 include ploughing and regular machinery movements associated with farming. Due to the low impact, temporary nature of the works, even if GCN were present, there would be negligible to minor impact during construction compared to this baseline level of disturbance. In addition, while the current arable field is suboptimal for GCN, the habitats created on-Site will provide moderate to good terrestrial habitat in the form of grassland and woodland.
- In the unlikely event that a population is present, it is likely to be contained within the pond and rely on the adjacent woodland for terrestrial habitat, this further lowers the risk of harm to any GCN.

3.3.9 As GCN are very likely to be absent from the zone of influence of the Proposed Development, they are not considered to be an IEF. They are however considered on a precautionary basis within the mitigation to ensure legislative compliance.

Badger

3.3.10 Signs of badger were recorded during the initial site visit in December 2024, including potentially active setts and two latrines. There were also a number of badger footprints across the Site showing foraging and dispersal between fields. These were also seen during breeding bird and May habitat surveys. The following Table 3.5 describes badger setts and their locations on-Site. They are displayed on the species constraints map in Appendix 6.
This information must be redacted if made public.

Table 3.5. Badger Sett Locations and Descriptions

[REDACTED]

- 3.3.11 Note that there are also many rabbit burrows on-Site, centred south of Field 9 and between Fields 10 and 6.
- 3.3.12 It was agreed with Lightrock Power that all setts and potential setts should be treated as active and direct impacts avoided, without further survey.
- 3.3.13 The Site provides ample suitable habitat for badger in the form of sett creation, foraging and commuting opportunities. The Site is however surrounded by further arable land and woodland which could be utilised. There were no sett entrances recorded within Rydal's or Coldash woods despite them being suitable for sett creation. Badger are not an IEF, however they are considered within mitigation for legislative compliance.

Bats

Roosting Bats

Ground Level Tree Assessment

- 3.3.14 All trees on Site were subject to a targeted Ground Level Tree Assessment (GLTA). This assessment was specifically to record PRF-M's, as direct impacts from the Proposed Development works will be limited to the arable fields.
- 3.3.15 There were 28 trees classified as likely PRF-M on Site based on the GLTA. There were a further 13 PRF-M trees off-Site within Coldash and Rydal's Wood. The results are displayed in Appendix 6.
- 3.3.16 The trees were primarily large oak trees with some ash suffering from dieback. The trees were mainly scattered across the eastern end of the Site. The linear habitats in Field 12 contained seven PRF-M's, in the form of six oak trees and one ash. PRF types included limb tear-outs, rotting and large cavities. The south western end of the Site had the least PRF-M's, whereby there were less trees and those present were of a younger age.

Potential Roost Assessment

- 3.3.17 There are two structures off-Site (both 22 m from the red line boundary) which were surveyed for bat potential: a barn building at TL 28413 30499 and a corrugated metal shelter at TL 29121 29904, neither of which will be directly impacted by the Proposed Development.

- 3.3.18 The barn at S1 was a simple building comprised of plastic with metal cladding (see Appendix 3 for photos). It had an open gable roof made of a corrugated metal, potentially over a roof lining. There are no entry points into the barn, with the ventilation areas at the back blocked by chicken wire. No PRFs were recorded. In addition, as metal is a good heat conductor, the roof and cladding cannot provide the required stable conditions for bats. As such this structure was deemed as having a bat roost potential of 'None'.
- 3.3.19 The metal shelter (S2) was open to the elements on the east and west aspects. The walls and roof were comprised only of metal sheeting with no further materials or cladding. There were no PRFs recorded in this structure and it was assessed as having bat roost potential of 'None'.

Foraging and Commuting

- 3.3.20 There were habitats within the Site of good suitability for foraging bats. Bats are known to feed in woodland, and there are two ancient woodlands adjacent and pockets of smaller woodland on Site. Commuting and foraging bats would utilise the hedgerows and lines of trees surrounding the arable fields to reach larger pockets of woodland. The arable fields and modified grassland are of low suitability for bats due to low botanical diversity and therefore fewer prey items. The introduction of solar panels has been proven to have a potential negative impact on bat populations both across the PV panels and within the boundary habitats (Tinsley et al., 2023²⁴).

Statics (automated bat detectors)

- 3.3.21 There was a diverse range of species recorded on the statics. There were common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle, brown long-eared bat, noctule, Leisler's bat, barbastelle and serotine recorded. In addition, there were Myotis species some of which were likely to be Natterer's bat and Daubentons bat, and calls from the Nyctalus and Pipistrellus genus which could not be identified to species. The results are displayed in Appendix 7a-b.
- 3.3.22 Common pipistrelle, soprano pipistrelle and serotine were most common at Static 1, with a peak count of 6892 common pipistrelles in May, the highest of any species over all locations. This was located at Coldash Wood and therefore reflects the roosting and foraging opportunity of the ancient woodland. The only definite Nathusius' pipistrelle call was recorded at Static 6. This individual was likely commuting down the hedgerow.
- 3.3.23 The most common location for barbastelle and Nyctalus species (Noctule, Leisler's and calls which could have been either of the two Nyctalus sp.) was Static 2. Barbastelle had a peak count of 54 in April while 19 Leisler's, five noctules and 67 Nyctalus sp. calls were recorded in May. Myotis species were also the most common at Static 2, with 34 calls in

²⁴ 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

May, likely comprising Daubentons and Natterer's bat among other species. This is thought to reflect a commuting and foraging line from Rydal's Wood up and down a woodland pathway.

- 3.3.24 The most common location for brown long-eared bats was Static 5 at a peak of 19 in May. The individuals may have been travelling down the linear pathway from off-site ancient woodlands onto the Site.
- 3.3.25 Overall, Static 1 had the highest count of bats with 6941 calls recorded in May, and Static 6 had the lowest number with 173 calls (also in May for comparison). This is concurrent with the fact Static 1 was closest to the ancient woodland (Coldash Wood), while Static 6 was furthest away from the woodland toward the east of the Site.

Spring Transect

- 3.3.26 The night-time walkover in May identified at least six bat species utilising the Site. These were common pipistrelle, soprano pipistrelle, brown long-eared bat, noctule, serotine, and bats in the *Myotis* genus which could not be identified to species but thought to be Natterer's bat. The detailed results are displayed in Appendix 7d-f.
- 3.3.27 Common pipistrelle were recorded across all three transects with a maximum count of 298 in transect 1b. They were the only bat recorded in Transect 1a. This is the transect furthest from the ancient woodlands and may reflect a lower diversity in species toward less preferable habitats. Only common pipistrelle were seen during the transect and all other species only heard.
- 3.3.28 Soprano pipistrelle were recorded in their highest numbers in Transect 1b, which followed treelines across the centre of the Site. Noctule were also highest in Transect 1b, with 14 recorded. This is likely because they roost in and prefer to habit woodland areas. Three counts of *Myotis* sp. were also found in Transect 1b and they were not present elsewhere. The Serotine and brown long-eared bats were recorded in low numbers on both Transect 1b and 1c. Therefore, they are thought to be present in small populations.
- 3.3.29 Overall, the habitat mosaic of Transect 1b, with woodland (including ancient), hedgerows, tree lines and grassland verges contained the highest number of bats and variety of bat species.
- 3.3.30 In summary, the Site is highly utilised by bats and the species foraging and commuting on-Site may also be roosting in the trees. The introduction of solar panels has been proven to have a potential negative impact on bat populations both across the PV panels and within the boundary habitats (Tinsley et al., 2023²⁵). There is little to no existing lighting on-Site and therefore minimal light disturbance. Due to the high numbers of individuals (maximum count of 6941 at Static 2 in May) and the diversity of species recorded across the Site,

25 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

combined with the ancient woodland habitat adjacent to the Site which is known to be optimal for bats, they are considered to be an IEF at a county level.

Birds

- 3.3.31 There were nesting opportunities for birds on-Site in the form of arable fields, woodland and hedgerows.
- 3.3.32 Winter and breeding bird survey results will be discussed in detail in an accompanying Bird Impact Report, to be written once breeding bird surveys are completed (four of six complete as of July 2025). This report will include details such as skylark territories, mapping and any updates on the mitigation and compensation detailed in this report. A summary of results is provided below. Schedule 1 species identified during the UKHabs walkover are also discussed below.

Schedule 1 Species

Barn owl

- 3.3.33 There were two barn owl boxes on trees within the Site boundary. One was upside down and therefore not suitable. The second (at TL 29109 30273) had no signs of occupation, however it is treated as being occupied on a precautionary basis. It can be viewed in Appendix 6.
- 3.3.34 There were also two structures off-Site assessed for barn owl. The building at TL 28413 30499 (S1) had no suitability for barn owl as there were no access points. There were ventilation areas at the back however they were blocked by chicken wire. The corrugated metal shelter at TL 29121 29904 (S2) was formed of three walls and was open on two sides to the elements. These walls were flat aside from a panel which jutted out by 8 cm. Subsequently, with no platform available, it is unsuitable for barn owl nesting. In the south west corner, a pile of c.50 barn owl pellets were found. They were all greying and starting to fall apart, indicating they are at least eight months old. As such it is considered that there may have been a platform here in the past, where it is currently unsuitable for roosting. There are no works expected to either S1 or S2 and therefore no impacts associated.
- 3.3.35 The Site has very limited foraging habitat for barn owl in the form of long grassland lining the ditches. The Site has limited nesting and foraging habitat, and as such is considered to be suboptimal for barn owl. Subsequently they are not an IEF, however they are considered within mitigation for legislative compliance.

Red Kite

- 3.3.36 A red kite nest was identified during the initial walkover in December 2024 and confirmed active during breeding bird surveys in 2025. It was located in Coldash Wood at TL 28068 30664 and can be seen viewed in Appendix 6. Red kite are a green listed bird and not

considered to scarce either on Site or in the area; there were 92 records from across the Site during winter bird surveys. As such, they are not an IEF, however they are considered within mitigation for legislative compliance.

Arable Breeding Bird Specialists

- 3.3.37 The breeding bird surveys (to be detailed in the Bird Impact Report) identified a number of species breeding on Site.
- 3.3.38 The provisional results after four surveys (as of 1st July 2025) are as follows. There have been 41 bird species recorded during the four surveys. Most species, including those amber and red listed, were exclusively recorded from the woodland and hedgerow vegetation. This includes the red-listed linnet, yellowhammer and marsh tit, which were in hedgerows and woodland. Thus, there are no long-term impacts expected to most species on Site, whereby they will not lose nesting habitat.
- 3.3.39 There were only two species recorded interacting with the arable field habitat. These were skylark and yellow wagtail which were thought to be nesting in the crop. They are both red-listed and a priority under the NERC Act. Skylark territory numbers varied slightly between surveys, and the highest number was 29 (this includes within the compensation area). There were two yellow wagtail territories recorded, both in Field 12. As such, both species will subsequently lose nesting habitat to the Proposed Development.

Winter Bird Surveys

- 3.3.40 Winter bird surveys were undertaken by Avian from October 2024 to March 2025. There were approximately 5664 records over 40 species. Of these, 11 were red listed, 16 amber-listed and six green-listed.
- 3.3.41 Most species, including those amber and red listed were exclusively recorded from the vegetation, including the ancient woodland. This included linnet, yellowhammer, marsh tit and mistle thrush. Thus, there are no direct or indirect impacts expected to these species, with no habitat loss.
- 3.3.42 There were two red listed birds with significant numbers utilising the arable fields. These were skylark, with 94 recorded across the winter and starling with one flock of 380 recorded foraging in Field 9. Skylark primarily utilise arable habitats throughout the year. Starling have a wider niche, and use a variety of habitats including urban environments. However, due to their status and number recorded, they are still considered to be losing habitat to the Proposed Development.
- 3.3.43 In summary, skylark will lose winter and breeding habitat, starling will lose winter habitat and yellow wagtail will lose breeding habitat to the Proposed Development. In addition, it is possible the Schedule 1 species barn owl and red kite could be disturbed by works. If any vegetation removal works including to the cereal cropland are undertaken during the nesting season (March to August inclusive), individual nesting birds could be at risk of injury or damage to the nest.

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fields and are a priority BAP species, they are considered to be an IEF and are significant at a local level.

Invasive Species

3.3.52 No invasive plant species listed under Schedule 9 of the WCA 1981 were identified on-Site.

BNG Baseline Area Habitats

3.3.53 The baseline habitats on Site are mapped (Appendix 8) according to the UK Habitat Classification system which is largely compatible with the Metric. Habitats recorded within the red line boundary included:

- Cereal crop c1c
- Non-cereal crops (c1d)
- Herb-rich Ley (c1b7) (Temporary grass and clover leys (c1b))
- Other neutral grassland (g3c)
- Modified grassland (g4)
- Lowland mixed deciduous woodland (w1f)
- Other woodland; broadleaved (w1g)
- Mixed scrub (h3h)
- Bramble scrub (h3d)
- Ponds (non-priority habitat) (Secondary code: 41)
- Sparsely vegetated land (Tall forbs (Secondary code:16)
- Artificial unvegetated, unsealed surface (u1c)
- Rural tree (NE0016)

3.3.54 There is irreplaceable habitat adjacent to the -Site in the form of ancient woodland. It has been included within BNG due to it being mapped and will not be affected. Its status gives it 0 Habitat Units (HU).

3.3.55 The total area of the Site within the red line boundary was calculated at 187.37 ha and the area-based habitats generated 422.32HU (Table 3.6).

3.3.56 Following a review of the documents listed in Paragraph 2.3.4, the strategic significance for the ancient woodland (lowland mixed deciduous woodland) has been assigned 'Formally identified in local strategy'. Additionally, the connecting lowland mixed deciduous woodland (W8) has been identified as 'Location ecologically desirable but not in local strategy' due to its proximity to the ancient woodland. All other area habitats were assessed as 'Area/compensation not in local strategy/no local strategy'.

Table 3.6: Baseline of Area Habitats

Habitat Type	Area (hectares)	Distinctiveness	Condition	Strategic Significance	Habitat Units (HU)
Cereal crops	140.7534	Low	Condition Assessment N/A	Low Strategic Significance	281.51
Non-cereal crops	8.8122	Low	Condition Assessment N/A	Low Strategic Significance	17.62
Temporary grass and clover leys	16.7609	Low	Condition Assessment N/A	Low Strategic Significance	33.52
Modified grassland	0.3108	Low	Poor	Low Strategic Significance	0.62
Modified grassland	1.2912	Low	Poor	Low Strategic Significance	2.58
Other neutral grassland	0.0891	Medium	Moderate	Low Strategic Significance	0.71
Other neutral grassland	9.0507	Medium	Poor	Low Strategic Significance	36.20
Other neutral grassland	5.5135	Medium	Poor	Low Strategic Significance	22.05
Bramble scrub	0.0198	Medium	Condition Assessment N/A	Low Strategic Significance	0.08
Mixed scrub	0.0905	Medium	Poor	Low Strategic Significance	0.36
Ponds (non-priority habitat)	0.0309	Medium	Moderate	Low Strategic Significance	0.25
Tall forbs	0.0724	Low	Poor	Low Strategic Significance	0.14
Artificial unvegetated, unsealed surface	0.3956	V.Low	N/A - Other	Low Strategic Significance	0.00
Lowland mixed deciduous woodland	0.5534	High	Good	High strategic significance	0.00

Habitat Type	Area (hectares)	Distinctiveness	Condition	Strategic Significance	Habitat Units (HU)
Lowland mixed deciduous woodland	0.6689	High	Moderate	High strategic significance	0.00
Lowland mixed deciduous woodland	0.0934	High	Moderate	Medium strategic significance	1.23
Other woodland; broadleaved	2.8125	Medium	Moderate	Low Strategic Significance	22.50
Other woodland; broadleaved	0.0483	Medium	Poor	Low Strategic Significance	0.19
Rural tree	0.146574147	Medium	Good	Low Strategic Significance	1.76
Rural tree	0.122145122	Medium	Moderate	Low Strategic Significance	0.98
Total Habitat Units					422.32

NB: Irreplaceable habitats are highlighted in blue

BNG Baseline Hedgerow Habitats

3.3.57 The hedgerow habitats on Site are also mapped (Appendix 8) according to the UK Habitat Classification system which is largely compatible with the Metric. Habitats recorded within the red line boundary included:

- Native hedgerow (h2a)
- Native hedgerow with trees (h2a, secondary code: 11)
- Line of trees (Secondary code: 33 (Line of trees) & 50 (Ditch))
- Native hedgerow with trees - associated with bank or ditch (h2a, secondary code: 11 (with trees) & 50 (Ditch))
- Species-rich hedgerow (h2a5)
- Species-rich native hedgerow- associated with bank or ditch (h2a5, secondary code: 50)

- Species-rich native hedgerow with trees- associated with bank or ditch (h2a5, secondary code: 11 (with trees) & 50 (Ditch))

3.3.58 The total length of hedgerows on Site was calculated at 7.99 km and the hedgerow habitats generated 73.53 Hedgerow Units (HeU) (Table 3.7).

Table 3.7: Baseline of Hedgerow Habitats

Habitat Type	Hedge Number	Length (km)	Distinctiveness	Habitat Condition	Strategic Significance	Hedgerow Units (HeU)
Line of trees	LOT 1, 2, 4, 5, 6, 7	1.902	Low	Moderate	Low Strategic Significance	7.61
Line of trees	LOT 3	0.151	Low	Poor	Low Strategic Significance	0.30
Native hedgerow - associated with bank or ditch	H29	0.219	Medium	Moderate	Low Strategic Significance	1.75
Native hedgerow with trees - associated with bank or ditch	H10, 11, 22	0.571	High	Good	Low Strategic Significance	10.28
Native hedgerow with trees - associated with bank or ditch	H24, 30	0.446	High	Moderate	Low Strategic Significance	5.35
Native hedgerow with trees - associated with bank or ditch	H26	0.162	High	Moderate	Low Strategic Significance	1.94
Native hedgerow with trees	H6, 16, 17, 20	1.154	Medium	Good	Low Strategic Significance	13.85
Native hedgerow	H1, 2, 3, 7, 8, 9, 12, 23	1.847	Low	Good	Low Strategic Significance	11.08
Native hedgerow	H15, 21	0.243	Low	Moderate	Low Strategic Significance	0.97
Species-rich native hedgerow - associated with bank or ditch	H19, 27	0.688	High	Good	Low Strategic Significance	12.38
Species-rich native hedgerow - associated with bank or ditch	H25	0.129	High	Moderate	Low Strategic Significance	1.55

Habitat Type	Hedge Number	Length (km)	Distinctiveness	Habitat Condition	Strategic Significance	Hedgerow Units (HeU)
Species-rich native hedgerow with trees - associated with bank or ditch	H28	0.195	V.High	Moderate	Low Strategic Significance	3.12
Species-rich native hedgerow	H14	0.278	Medium	Good	Low Strategic Significance	3.34
Total Hedgerow Units						73.53

BNG Baseline Watercourse Habitats

- 3.3.59 The watercourse habitats on Site are also mapped (Appendix 8) according to the UK Habitat Classification system which is largely compatible with the Metric. The habitat on Site pertained to ditches (Secondary code: 50).
- 3.3.60 The total length of watercourses (ditches) on Site was calculated at 1.92 km and the hedgerow habitats generated 6.15 Watercourse Units (WU) (Table 3.7).

Table 3.8: Baseline of Watercourse Habitats

Watercourse type	Length (km)	Condition	Extent of watercourse encroachment	Extent of riparian encroachment for both banks	Watercourse Units
Ditches	0.298	Poor	No Encroachment	Major/Major	0.89
Ditches	0.296	Poor	No Encroachment	Major/Major	0.89
Ditches	0.179	Poor	No Encroachment	Major/Major	0.54
Ditches	0.181	Poor	No Encroachment	No Encroachment/ No Encroachment	0.72
Ditches	0.526	Poor	No Encroachment	Major/Major	1.58
Ditches	0.438	Poor	No Encroachment	Major/No Encroachment	1.52
Total Watercourse Units					6.15

Post-development Habitats

- 3.3.61 The outline post-development plan (Appendix 9) includes the creation of modified grassland and other neutral grassland under and surrounding the proposed panels, species rich native hedgerows, and a pond. There will also be woodland created, joining the two

ancient woodland blocks and woodland and scrub along the periphery of the field margins. Species-rich native hedgerow with trees is also proposed. The proposed Development will result in a net unit change of +309.58HU, +12.18HeU, and +1.37WU, equating to a gain of 73.30%, 16.57%, and 22.34%, respectively. Therefore, the proposed Development does achieve an overall scheme-wide biodiversity net gain of at least 10% across the three habitat categories. Additionally, all trading rules within the metric are passed.

4 Designed in Avoidance Measures

- 4.1.1 The following protected species and important habitats were identified as constraints in the early stages of the design process and therefore impacts and the requirement for mitigation could be avoided in the first circumstance.
- 4.1.2 **Habitats (Ancient Woodlands (lowland mixed deciduous woodland), veteran tree, other broadleaved woodland and hedgerows)-** To protect the ancient woodlands and the veteran tree, a minimum buffer of 15 m between the habitat and the Proposed Development has been designed into the Environmental Masterplan. This is the standard buffer as per the standing advice for veteran and ancient trees²⁶. In addition, buffers of 10 m have been instated around hedgerows and (outside of the area being removed) other broad-leaved woodland. This will lower the risk of damage to habitats from direct impacts through construction activities.
- 4.1.3 **Badger-** There are five areas with badger sett entrances on Site being treated as active which can be viewed in Appendix 6. Badger setts could be at risk of disturbance from activities such as driving heavy machinery near sett entrances and indirectly through noise and vibrations. In addition, they are a nomadic species and travel up to a mile each night from their main sett to forage. To avoid impacts to badger setts, a buffer of 30 m has been instated around all sett entrances identified. This is the standard buffer as per the guidance for badger²⁷. As all works will occur outside of this buffer, the setts will not be disturbed by construction or operations.
- 4.1.4 **Roosting bats-** There were 41 potential PRF-M trees identified on Site, which could host larger bat colonies e.g. maternity roosts. Each of these trees is being treated as a potential roost with potential impacts avoided and therefore no further bat surveys required. To avoid disturbance and disruption to roosting bats in trees, including obstruction of flight paths, lighting and noise pollution, the PRF-M trees will be protected by providing a buffer in which works are excluded. This will prevent the risk both at the construction and operational phases. A buffer of 12 m has been instated based on the ecological mitigation for the consented National Infrastructure Planning Scheme Cottam Solar Project²⁸. In addition, all hedgerows and lines of trees are suitable for foraging and commuting bats. To avoid disrupting commuting and foraging lines with indirect effects such as lighting and noise during construction, they have been designed with a 10 m buffer from works.
- 4.1.5 **Schedule 1 birds-** There was a red kite nest identified in Coldash Wood at TL 28068 30664 and a barn owl box identified at TL 29109 30273. These are species listed under Schedule 1 of the WCA 1981, in which disturbance of the nest or adults at the nest would be committing an offence. There has been a 150 m buffer instated around the red kite nest within the Environmental Masterplan. This is based on the recommended buffer by NatureScot for red

²⁶ <https://www.gov.uk/guidance/ancient-woodland-ancient-trees-and-veteran-trees-advice-for-making-planning-decisions>

²⁷ Badger Trust (2023). Badger Protection: Best Practice Guidance for Developers, Ecologists and Planners (England)

²⁸ Clarkson and Woods (2023). Cottam Solar Project: Outline Ecological Protection and Mitigation Strategy.

kite disturbance distances²⁹. Research into red kite disturbance indicates that distances are very particular to individuals, for example, they have been recorded nesting above footpaths. The lower bracket of 150 m has been chosen, due to occasional recreational activities on the modified grassland directly adjacent to Coldash Wood , which generate higher levels of disturbance. As such the red kites utilising the Site will be accustomed to people and noise. This grassland area is within 150 m of the nest and subsequently the buffer exceeds the disturbance distance the red kites are considered to be accustomed to.

- 4.1.6 The barn owl box has been protected by a buffer of 50 m. This exceeds the 40 m buffer for low and medium disturbance distances as described by the barn owl survey methodology³⁰. Further mitigation for barn owl to ensure legislative compliance is discussed in Section 6.

²⁹ <https://www.nature.scot/doc/disturbance-distances-selected-scottish-bird-species-naturescot-guidance>

³⁰ Shawyer C (2012). Barn Owl Tyto alba Survey Methodology and Techniques for use in Ecological Assessment. Wildlife Conservation Partnership.

5 Assessment of Impacts and Effects

5.1.1 The following assessment is made in the absence of mitigation and compensation. Residual effects, following implementation of mitigation and compensation, are assessed in section 6.

5.1.2 Impacts and effects are assessed for IEFs only (CIEEM, 2018).

5.2 Designated Sites

5.2.1 The Site lies adjacent to, and surrounds Coldash and Rydal's wood LWS and ancient woodland habitat. Hickman's Hill Green Lane is also adjacent to the Site on the south westerly edge. Two further LWS's in the proximity of the Site which may also be in the zone of influence are the ancient woodlands:

- Basket's Wood 10 m north; and
- Munches Wood 30 m north.

5.2.2 These five LWS's could be receptors to indirect impacts during the construction phase of the Proposed Development. Sites adjacent are at risk from pollutive substances used during the works such as cement. In addition, all five sites may be impacted by lighting or noise pollution during construction. As four of these Sites contain irreplaceable habitat and are likely to contain a significant species assemblage, in the absence of mitigation the Proposed Development could cause *a moderate impact with effects significant at a national level* to the ancient woodland LWS's, and *significant at the county level* to Hickman's Hill Green Lane.

5.3 Habitats

5.3.1 A small section of Other woodland; broadleaved will be removed to accommodate an access track. The access requires a 4 m wide pathway which can be undertaken through understorey, taking the path of least destruction. As there will only be a small area (c.4 x 4 m) removed, and it is not considered to be a priority habitat, this is considered to cause a *minor impact significant at a local level*.

5.3.2 There are five ditches on-Site which are interconnected. There will be an access track over a section of ditch and therefore a risk of pollution to the ditches. As such, there is a pathway of waterborne pollution which could impact habitat on and potentially off-Site. Where construction works could cause a pollution event, this could cause a *minor impact* to ditches *significant at a local level*.

5.3.3 All types of hedgerow are HPI's and are at risk from indirect effects such as dust and litter during construction. As such, the Proposed Development could cause a *minor impact with effects significant at a local level* to the hedgerows. The veteran tree T107 is also subject to

the same impact risks, however due to its higher significance, the Proposed Development could cause *a minor impact with effects significant at a county level*.

5.3.4 The irreplaceable ancient woodland habitat is discussed above as LWS's in section 5.2.

5.4 Protected and Notable Species

5.4.1 **Bats-** Research into how solar farms affect bat activity³¹ suggest that species including common pipistrelle, Nyctalus species, Myotis species, Plecotus species and serotine may be negatively impacted by solar. This found a lower number of bats utilising periphery vegetation for foraging and commuting when solar panels are installed in adjacent fields. The research shows that Barbastelle were not considered to be impacted by solar, of which there are records from the activity surveys. However ultimately, the foraging and commuting habits of all other species found on Site could be disrupted and therefore impacted by the Proposed Development.

5.4.2 The Site habitats provide opportunity for foraging and commuting bats in the form of linear habitats around the Site including hedgerows, trees and woodland. The connectivity of foraging and commuting lines is not expected to be impacted by works. Significant buffers from suitable foraging and commuting areas have been designed-in (as detailed in Section 4), thus avoiding disturbance impacts and habitat damage.

5.4.3 Changes in lighting could be detrimental to bats. However, it is expected that limited external lighting will be required for temporary use only in emergencies. No other permanent external lighting is required. Lighting plans are not in place (and would be a post-permission matter as standard). In the absence of mitigation, *a minor negative impact at a county level* is anticipated on a precautionary basis.

5.4.4 **Brown hare** – hare could be impacted by the Proposed Development through fragmentation and loss of habitat. They prefer an open farmland or grassland for a good line of sight, and a mosaic of long grass for shelter including for hiding leverets³². The introduction of fencing would split fields up, thereby removing viable habitat and creating obstacles in the open landscape. Due to them being numerous on the Site and in the area, this could cause *a minor impact significant at a local level*.

5.4.5 **Nesting birds** – Nesting birds that could be directly impacted by the Proposed Development through loss of nesting habitat are skylark and yellow wagtail. The provisional results based on four surveys indicate there are up to 29 skylark territories and two yellow wagtail territories on the Site. They are both red-listed birds and the BTO indicates they may be threatened by loss of breeding habitat. Skylark are threatened by agricultural intensification reducing the number of broods possible through the summer³³. Yellow

31 Tinsley et al 2023. Renewable energies and biodiversity: Impact of ground-mounted solar photovoltaic sites on bat activity.

32 <https://ptes.org/get-informed/facts-figures/brown-hare/>

33 <https://www.bto.org/learn/about-birds/birdfacts/skylark>

wagtail declines have also been linked to similar causes and the loss of grasslands for breeding³⁴.

- 5.4.6 All birds in the UK are protected from damage and destruction to their nests. Any small scale vegetation works (to W3 in particular) could injure or kill nesting birds and damage or destroy nests.
- 5.4.7 Without compensating for breeding bird habitat losses and mitigating for the potential destruction of nests, *a moderate negative impact significant at a local level* would be expected.
- 5.4.8 **Winter birds** – Skylark and starling are both red-listed and priority species under the NERC Act. The BTO indicates the decline in starling may be linked to the lack of food resources throughout the year³⁵ among changes in farming practices. The starling were noted to be foraging when recorded on Site. Skylark decline is primarily linked to breeding habitat loss however their breeding and winter habitat is both arable land. Without compensating loss of winter habitat, *a minor negative impact significant at a local level* would be expected.

³⁴ <https://www.bto.org/learn/about-birds/birdfacts/yellow-wagtail>

³⁵ <https://www.bto.org/learn/about-birds/birdfacts/starling>

6 The Mitigation Hierarchy

- 6.1.1 Impacts to ecological receptors identified in Section 5 must first be avoided wherever possible. Should avoidance (through sensitive design around ecological features) be impossible or impractical, mitigation measures must be put in place to reduce the severity or risk of an impact. If impacts cannot be sufficiently avoided or mitigated, then compensation will be required. This sequential process is known as the Mitigation Hierarchy and must be followed for all developments.
- 6.1.2 Avoidance measures are discussed in section 4 of this report.
- 6.1.3 **Mitigation measures** must be incorporated into the design of a scheme to reduce impacts on ecological receptors. This could be by designing certain elements away from sensitive ecological features. In addition, mitigation may also be achieved during construction, by following best practice working methods.
- 6.1.4 **Compensation measures** must be carried out to achieve compensation for the permanent loss or damage to ecological features that may result despite mitigation. Compensation includes the replacement of habitats or improvement of adjacent habitats. Compensation must be focused on the same type of ecological feature that is being affected and be close to where the original feature is lost. Replacement ratios of compensatory habitat greater than one to one are advised to account for the risks inherent with habitat restoration, enhancement or creation.
- 6.1.5 **Enhancement measures** are optional enhancements that are advised to boost the biodiversity on the Site and the habitat available for protected and valued species.

6.2 Mitigation Measures

- 6.2.1 Habitats (ditches, lowland mixed deciduous woodland, other broadleaved woodland, hedgerows and veteran trees) and non-statutory sites (LWS) - it is recommended that control measures are included in a Construction Environmental Management Plan (CEMP), to include control measures for spills, dust, noise, waste etc.
- 6.2.2 The lighting guidance stated under the *Foraging and commuting bats* section also applies to these habitats.
- 6.2.3 Pollution prevention guidance for construction should be followed at all times: <https://www.gov.uk/guidance/pollution-prevention-for-businesses>. This includes details on the safe storage of materials and the unloading and moving potential pollutants.
- 6.2.4 Any storage areas during construction should not be located near these habitats.
- 6.2.5 All ancient woodland habitat and veteran trees have been provided with a buffer of 15 m as is the standing advice³⁶. In most areas the buffer is much greater than this, as can be seen

³⁶ <https://www.gov.uk/guidance/ancient-woodland-ancient-trees-and-veteran-trees-advice-for-making-planning-decisions>

in Appendix 9. As the fields surrounding the woodlands will be taken out of agricultural use, there will be no heavy machinery driving past and causing potential impact in the long-term. Trees and hedgerows will be protected during construction with fencing as per BS5837.

- 6.2.6 In relation to Policy NE4, the woodland habitats, hedgerows and lines of trees will be provided with a 12 m buffer of complimentary habitat. Along some hedgerows, new woodland will be planted to create a better ecological network. In all solar fields, arable crop will be replaced by 'moderate' condition modified grassland and 'poor' condition other neutral grassland field margins will be replaced with 'good' condition other neutral grassland. This will enhance the habitat across the Site between the solar panels and the periphery vegetation.
- 6.2.7 **Amphibians (legislative compliance)-** Due to the very low risk of GCN being on Site, it is considered that a non-licensed method statement will be required. This method statement must be followed throughout the construction period and is likely to feature the following instructions:
- Ecologist to hand search the most suitable vegetation and ensure protection fencing is in place for retained habitats;
 - A toolbox talk regarding GCN and their identification must be given to all new personnel working on-Site;
 - Backfilling excavations overnight to prevent GCN becoming trapped;
 - Correct storage of materials to prevent GCN using them as refugia.
- 6.2.8 **Badgers (and other priority species)-** To prevent the fragmentation of badger foraging areas and that of other species such as brown hare, the permanent fencing surrounding the solar panels will have scrapes underneath to allow access underneath and therefore utilisation of space between the panels. Although badger could dig under the fencing on their own volition, it will prevent their foraging and commuting area from being fragmented off in the first circumstance. It will also benefit other priority species such as brown hare and hedgehog which are less likely to make their own way under the fencing. Small mammal gates were considered too small for badger (150 mm wide) and may not be utilised by hare due to their preference for an open line of site.
- 6.2.9 Best practices measures for mammals should be adhered to throughout construction. Excavations will not be left open overnight, instead they will be sealed over or backfilled the same day or fitted with egress boards sloped at no more than 40° angle to allow any trapped animals to exit. Excavations will be checked the next morning for any animals.
- 6.2.10 **Foraging and commuting bats** - To avoid impacts to foraging and commuting bats, lighting on the Site must be avoided if not necessary. If lighting is essential to construction and operation, then it must be sensitively designed to minimise impacts on bats and overspill towards the woodland habitats.
- 6.2.11 A Lighting Plan is advised to ensure that light spill does not extend into valued ancient woodland habitats. The Bat Conservation Trust has produced Guidance Note 08/23 Bats

and Artificial Lighting in the UK³⁷ which should inform this Lighting Plan. It is advised that the lighting specialist works with an ecological consultant to produce a sensitive lighting design.

- 6.2.12 Night lighting on the Site will be avoided or minimised wherever possible during construction. All external construction works will preferentially take place during daylight hours to avoid disturbance or harm to nocturnal animals.
- 6.2.13 Research into the impacts of solar farms on bat activity is scarce, with little evidence on how or why bats are impacted. As such, mitigative designs are not readily available. Subsequently the landscaping plan includes the planting of c. 6 ha of woodland across the Site to create a more robust ecological network. This will allow bats to commute and forage throughout the Site on linear pathways which connect to each other. In addition, Fields 1, 2, 11 and 16 will not contain any solar panels as they are being utilised for skylark compensation (and BNG). These open fields will allow bats to cross from the Site to the nearby ancient woodlands Munches and Baskets Wood with no potential impacts caused by panels.
- 6.2.14 **Nesting birds-** Occasional heavy construction activity including drive piling could disturb barn owl within 150 m. The buffer designed around the barn owl box is 50 m. As such any driving piling within 150 m of the box will be untaken in winter (November – February) to lower the risk of disturbance of any potential nesting barn owl.
- 6.2.15 In general, any removal of vegetation will be undertaken outside of the bird nesting season (i.e. outside of March – August inclusive). Where minor clearance works need to take place during these months then a suitably qualified ecologist will check the vegetation prior to works commencing to confirm that active nests or nest building are absent. Provided that active birds' nests are found to be absent, works can go ahead within 48 hours of the check by an ecologist. If an active nest is found during works, then all works will cease immediately, and a suitably qualified ecologist will be contacted. The nest will need to be left in situ until it has reached its natural conclusion as confirmed by an ecologist. The nest may need to be protected with a buffer zone which will be advised by an ecologist.
- 6.2.16 To avoid destruction of skylark nests over the construction period, it is recommended that the fields are cut short during winter and then then kept as short as possible over the year. This will discourage them from nesting in the fields during this period.
- 6.2.17 In addition, for any construction undertaken during March to August (inclusive) within the fields, vantage point surveys should be undertaken by an ecologist or suitably competent person. This would entail a single vantage point survey over each field, prior to the start of each construction phase. This would identify any skylark and other birds which could nest in the shorter vegetation including lapwing. If identified, the nest will need to be left in situ until it has reached its natural conclusion as confirmed by an ecologist.

³⁷ Institution of Lighting Professionals (2023). Guidance Note 08/23 Bats and artificial lighting at Night – Bats and the Built Environment Series. The Bat Conservation Trust and the Institution of Lighting Professionals.

6.3 Compensation

- 6.3.1 **Habitats** – The loss of any Site habitats are addressed in the Biodiversity Gain plan. Arable cropland is the primary habitat being lost, which will be compensated for with modified grassland in a moderate condition. This habitat will contain at least eight native species per square metre and is of benefit to a wider range of species than the current arable crop. Furthermore, the planting of 6 ha of Other woodland; broadleaved woodland is included, which well compensates for the 0.002 ha area lost.
- 6.3.2 Coldash and Rydal's Woods will be linked together through a woodland corridor, creating a direct connection between the LWS's on Site. In addition, an area surrounding W5 will be planted up with woodland to create better foraging and commuting habitats for all species. The tree species chosen are all native and reflective of those already found on the Site and therefore known to be compatible.
- 6.3.3 A variety of grasslands will be created across the Site. The panels will have a species-rich modified grassland mix grown underneath them, which will be managed for 'moderate' condition (limited by light availability). In addition, grassland surrounding the fields will be sown with a species-rich, Other neutral grassland mix. This will primarily contain wildflowers for pollinators and provide foraging opportunity for birds, managed for 'moderate' condition. The skylark compensation area will also contain Other neutral grassland, however this area will focus on tussocky grass species, providing greater opportunity for nesting birds. This grassland mosaic will provide a diversity across the Site and provides a large contribution towards BNG.
- 6.3.4 Currently there is major encroachment along most of the length of the ditches on-Site, due to farming practices such as the driving of heavy machinery. Ditches will be improved through the creation of grassland in the riparian zone, where it is currently arable land. This will create a buffer of undisturbed land between panels and the ditches, thereby reducing encroachment of the riparian zone.
- 6.3.5 **Nesting birds (Skylark and Yellow wagtail)**- A provisional total of 29 skylark territories and two yellow wagtails should be compensated for. The standard advice for compensating for skylark is based on creating two plots per hectare within arable fields with cereal crop. This is based on advice for farmers through government schemes and the RSPB³⁸. The fields identified for skylark mitigation (1, 2, 11 and 16) comprise a 29 ha area, currently primarily a grass and clover ley. Reverting these to cereal crop would be ecologically obstructive, creating a monoculture that provides no real benefit to species on-Site (other than skylark) and with a condition that cannot be assessed under the Statutory Metric.
- 6.3.6 Optimal skylark nesting habitat is described by the RSPB as tussocky grassland with a mosaic of sward height. The ley on-Site (which a peak count of three pairs of skylark are nesting in), is not very diverse in structure however it is still being utilised by the skylark. In

38 RSPB (2017). Land management for wildlife: Skylark

addition, some studies show skylark prefer grassland over arable habitats.³⁹ This may be due to grassland having greater food resources alongside nesting opportunity. As farming practices such as spreading pesticides will no longer take place, it is expected a greater number of invertebrate prey will become available. In addition, with a mosaic of grassland available, there will be more diverse invertebrate assemblage encouraged across the Site. Consequently, the compensation area will be a tussocky neutral grassland.

- 6.3.7 The compensation area (29 ha) has been designed based on a one territory per hectare basis (assuming the same density as with cereal plots). This has been calculated using the standard 50 m buffer from the field boundaries. The fields are all adjacent providing an open view preferable to skylark. Maintenance is likely to be a light grazing regime, suitable for ground nesting birds. This low intensity regime is preferred by skylark and would allow for a more naturalised sward structure. The two yellow wagtail territories are also expected to be compensated for within the 29 ha grassland. They nest within similar grassland habitats to skylark and would benefit from the same management.
- 6.3.8 In addition, there will be strips of wildflower grassland created across the Site which will be maintained as a long sward. This could be used for nesting and or foraging opportunity for skylark and yellow wagtail.
- 6.3.9 It is recommended the Site be monitored to ensure a dynamic approach to management and the best possible outcomes.
- 6.3.10 **Winter birds** - The compensation area for skylark is considered to be apt for wintering skylark also, where they utilise the same habitats throughout the year.
- 6.3.11 Starling were recorded foraging in the winter on arable land however they also forage for invertebrates in grazed pasture and in grassland. Research suggests starling often use solar farms and that those with a mosaic of habitats produce the best variety in food resources⁴⁰. As there will be a number of grassland habitats on Site including modified grassland, wildflower (Other neutral grassland) and tussocky grassland, this will provide starling with foraging options throughout the year including during winter. As such, food provisions on Site are expected to be the same or higher for starling post development than current habitats.

6.4 Enhancements

- 6.4.1 The habitats on Site will be enhanced through the strengthening of ecological pathways and diversity of species planted on Site. There will be linear pathways planted across the Site in the form of scrub and woodland. Many of these will be parallel to existing hedgerows, creating a range in vegetation structure beneficial to many species. Coldash and Rydal's Woods will be linked together through a woodland corridor, creating a direct connection

³⁹ Rahman et al (2012) Influence of habitat quality, landscape structure and food resources on breeding skylark (*Alauda arvensis*) territory distribution on restored landfill sites, *Landscape and Urban Planning*; 105: 3.

⁴⁰ <https://solarenergyuk.org/wp-content/uploads/2023/06/Solar-Habitat-Report-2023.pdf>

between the ancient woodlands. There will also be new habitats created including a pond and swales, which could be utilised by birds among other species.

6.5 Residual Effects

6.5.1 Table 6.1 below summarises the anticipated impacts to IEFs stated in section 5, the required mitigation and compensation in section 6 and then the predicted residual effect on each IEF provided that the mitigation and compensation measures are followed.

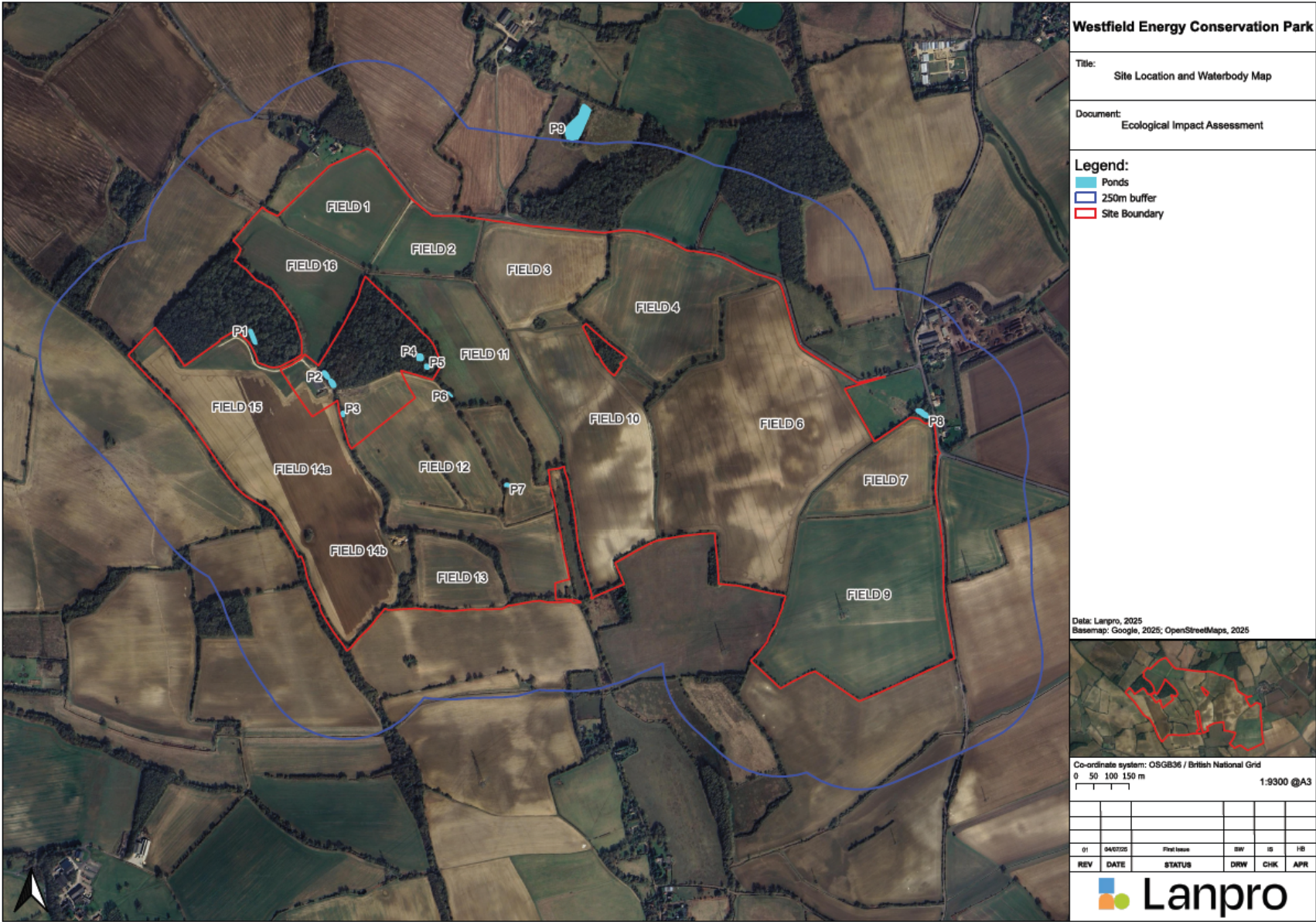
Table 6.1 Summary of Residual Effects to IEFs

IEF	Impact Without Mitigation/Compensation	Mitigation/Compensation Required/ Avoidance Design	Residual Effect to IEF
Local Wildlife Sites Coldash and Rydal's Wood ancient woodland	Moderate negative impact at a national level	15 m buffers CEMP Pollution prevention guidance for construction should be followed at all times. Lighting Plan	Neutral
Hickman's Hill Green Lane LWS	Moderate negative impact at a county level	15 m buffers CEMP Pollution prevention guidance for construction should be followed at all times. Lighting Plan	Neutral
Priority Habitats (Ditch, broadleaved woodland, all hedgerow types)	Minor negative impact at a local level	Compensation and enhancement through BNG CEMP Pollution prevention guidance for construction should be followed at all times.	Neutral
Veteran tree	Minor negative impact at a county level	15 m buffers CEMP Pollution prevention guidance for construction should be followed at all times.	Neutral
Bats	Minor negative impact at a county level and legal breach	PRF-M 12 m buffers Hedgerow and woodland buffers Lighting Plan incorporating sensitive lighting measures. Hedgerow and woodland habitat creation.	Neutral

IEF	Impact Without Mitigation/Compensation	Mitigation/Compensation Required/ Avoidance Design	Residual Effect to IEF
Brown hare	Minor negative impact at a local level	Scrapes under permanent fencing.	Neutral
Badger	legislative compliance / best practice	Precautionary working methods during construction. Scrapes under permanent fencing.	N/A
Schedule 1 birds	legislative compliance / best practice	Species specific buffers designed. Avoidance of percussive piling near barn owl box during breeding season.	N/A
Nesting birds	Moderate negative impact at a local level	Avoid clearance during nesting season. Vegetation in fields to be kept short over the year to discourage nesting skylark. Vantage point surveys for nesting birds prior to each phase (during nesting season). Grassland compensation area of four fields. Enhanced foraging provisions.	Neutral
Winter birds	Minor negative impact at a local level	Grassland compensation area of four fields. Multiple grassland habitats for foraging across the Site.	Neutral
GCN	legislative compliance / best practice	Non-licenced method statement	N/A

- 6.5.2 To conclude, provided that the mitigation and compensation measures advised in this report are followed during the construction and operation of the Proposed Development, a neutral residual impact to protected and notable sites, habitats and species is anticipated.
- 6.5.3 A full BNG assessment will be required once the Environmental Masterplan is finalised. The Proposed Development will result in a net unit change of +309.58HU, +12.18HeU, and +1.37WU, equating to a gain of 73.30%, 16.57%, and 22.34%, respectively.

Appendix 1 Site Location and Waterbody Map



Appendix 2 Non-Statutory Sites

A) Non-Statutory Sites within 2 km

Site Name	OS Grid ref.	Description	Distance from Site (m)
Coldash Wood	TL281307	Ancient broadleaved woodland of Ash (<i>Fraxinus excelsior</i>)/Field Maple (<i>Acer campestre</i>) with Pedunculate Oak (<i>Quercus robur</i>) standards and Hazel (<i>Corylus avellana</i>) coppice. A moderately species-rich ground flora, including woodland indicators such as Bluebell (<i>Hyacinthoides non-scripta</i>), Dog's Mercury (<i>Mercurialis perennis</i>), Pignut (<i>Conopodium majus</i>) and Three-nerved Sandwort (<i>Moehringia trinervia</i>), along with several orchids, plus a varied vertebrate and invertebrate fauna has been recorded. Wildlife Site criteria: Ancient Woodland Inventory site; woodland indicators.	Adjacent
Rydals Wood	TL285306	Ancient semi-natural woodland of Ash (<i>Fraxinus excelsior</i>)/Field Maple (<i>Acer campestre</i>) woodland with Pedunculate Oak (<i>Quercus robur</i>) standards and Hazel (<i>Corylus avellana</i>) coppice. There is also some Larch (<i>Larix decidua</i>) and Beech (<i>Fagus sylvatica</i>) plantation. The ground flora supports a moderate diversity of commoner ancient woodland indicators such as Bluebell (<i>Hyacinthoides non-scripta</i>), Wood Anemone (<i>Anemone nemorosa</i>), Pignut (<i>Conopodium majus</i>), Wood Sorrel (<i>Oxalis acetosella</i>) and Cowslip (<i>Primula veris</i>) plus records of several uncommon species, including Common Twayblade (<i>Neottia ovata</i>) and Early Purple Orchid (<i>Orchis mascula</i>). A ditch is present along the woodland margin and there are two ponds in the south. Wildlife Site criteria: Ancient Woodland Inventory; woodland indicators.	Adjacent
Hickman's Hill Green Lane	TL278306	A long green lane with ancient hedges on either side with trees, including some planted Small-leaved Lime (<i>Tilia cordata</i>). A thin strip of broadleaf woodland occurs in the middle section of the lane, the east side of which is mainly Hazel and the west side mainly Pedunculate Oak pollards and planted Beech (<i>Fagus sylvatica</i>). Bluebell is frequent. Patches of semi-improved calcareous grassland occur in places. Wildlife Site criteria: Green lane with features and structure indicative of ancient origins, woodland indicator species.	adjacent south west
Basket's Wood	TL292310	Ancient semi-natural Ash (<i>Fraxinus excelsior</i>)/Field Maple (<i>Acer campestre</i>) woodland with Pedunculate Oak (<i>Quercus robur</i>). There is some ancient Ash coppice and more recent Hazel (<i>Corylus avellana</i>) coppice plus planted Beech (<i>Fagus sylvatica</i>) and Spruce (<i>Picea abies</i>) in the north-east corner. The ground flora supports typical woodland indicators including abundant Bluebell (<i>Hyacinthoides non-scripta</i>) plus Wood Millet (<i>Milium effusum</i>), Giant Fescue (<i>Festuca gigantea</i>), Wood Sedge (<i>Carex sylvatica</i>), Broad Buckler-fern (<i>Dryopteris dilatata</i>) and Three-nerved Sandwort (<i>Moehringia trinervia</i>). Ditch/moat is present on the southern border. Wildlife Site criteria: Ancient Woodland Inventory; woodland indicators.	10 m north
Munches Wood	TL297310	Ancient semi-natural woodland mainly of Hornbeam (<i>Carpinus betulus</i>) coppice with some Pedunculate Oak (<i>Quercus robur</i>) and Ash (<i>Fraxinus excelsior</i>) standards. There are also areas of Field Maple (<i>Acer campestre</i>), Ash and Hazel (<i>Corylus avellana</i>) coppice, mature hedgerows, a ditch along the north-west edge and patches of dense shrub undergrowth. The ground flora supports typical woodland indicators including much Bluebell (<i>Hyacinthoides non-scripta</i>), Dog's Mercury (<i>Mercurialis perennis</i>) and Wood Melick (<i>Melica uniflora</i>). Wildlife Site criteria: Ancient Woodland Inventory; woodland indicators.	30 m north

Site Name	OS Grid ref.	Description	Distance from Site (m)
Back Lane, N. of Wood End	TL330269	Ancient green lane, which to the north-west is quite open with a hard track and verges of rough neutral grassland bordered by low cut hedges, and to the south-east becomes wooded and supports a range of woody species. The ground flora includes several woodland indicator species such as Bluebell (<i>Hyacinthoides non-scripta</i>) and the grassland contains indicators such as Common Knapweed (<i>Centaurea nigra</i>), Bird's-foot Trefoil (<i>Lotus corniculatus</i>), Meadow Vetchling (<i>Lathyrus pratensis</i>) and Meadow Buttercup (<i>Ranunculus acris</i>). Wildlife Site criteria: Wooded green lane with features and structure indicative of ancient origins; woodland indicators; grassland indicators.	145 m south east
Shaw Green Lane	TL299310	Ancient trackway with old hedgerows of at least medieval date with some old pollards and coppiced trees. The tall, thick hedgerows are relatively species-rich but the ground flora is somewhat impoverished owing to fertilizer drift from the adjacent fields but supports a number of woodland indicators including Bluebell (<i>Hyacinthoides non-scripta</i>), Dog's Mercury (<i>Mercurialis perennis</i>) and Nettle-leaved Bellflower (<i>Campanula trachelium</i>). Wildlife Site criteria: Wooded green lane with features and structure indicative of ancient origins; woodland indicators.	330 m north east
Lolleywood Green Lane	TL278294	Green lane with a gappy ancient hedge supporting a moderate diversity of woody species including some old Pedunculate Oak (<i>Quercus robur</i>) trees, Field Maple (<i>Acer campestre</i>) Hornbeam (<i>Carpinus betulus</i>), Dogwood (<i>Cornus sanguinea</i>) and Small-leaved Elm (<i>Ulmus minor</i>). There are some woodland indicator species recorded in the ground layer, including Bluebell (<i>Hyacinthoides non-scripta</i>), Dog's Mercury (<i>Mercurialis perennis</i>), Wood Meadow-grass (<i>Poa nemoralis</i>) and Primrose (<i>Primula vulgaris</i>). Wet areas add habitat diversity. Wildlife Site criteria: Wooded green lane with features and structure indicative of ancient origins; woodland indicators.	480 m south west
Clothallbury Wood	TL281319	Ancient Ash (<i>Fraxinus excelsior</i>)/Field Maple (<i>Acer campestre</i>) woodland with Pedunculate Oak (<i>Quercus robur</i>) standards and Hazel (<i>Corylus avellana</i>) coppice along with ancient Hornbeam (<i>Carpinus excelsior</i>) coppice at the south-east end. A wide ride cuts across east-west in the centre of the wood. A moderately diverse ancient woodland ground flora has been recorded including frequent Bluebell (<i>Hyacinthoides non-scripta</i>). Wildlife Site criteria: Ancient Woodland Inventory; woodland indicators.	620 m north
Southern Green Copse & Chalk Pit	TL310309	Semi-natural ancient coppice woodland with an old chalk pit at the southern end, including Pedunculate Oak (<i>Quercus robur</i>), Hornbeam (<i>Carpinus betulus</i>), Ash (<i>Fraxinus excelsior</i>), Hazel (<i>Corylus avellana</i>) and Field Maple (<i>Acer campestre</i>). A moderately species-diverse ground flora is recorded with numerous woodland indicators, such as Bluebell (<i>Hyacinthoides non-scripta</i>), Wood Millet (<i>Milium effusum</i>), Enchanter's Nightshade (<i>Circaea lutetiana</i>) and Yellow Archangel (<i>Lamium galeobdolon</i>). Wildlife Site criteria: Ancient woodland with a semi-natural canopy and field evidence suggesting an ancient origin; shown on Bryant (1822); woodland indicators.	920 m north
Cromer Hall Meadows	TL297285	Two fields supporting old neutral/calcareous grassland with no signs of improvement evident. There is a good mix of grasses and herbs including indicators of unimproved grassland such as Sweet Vernal-grass (<i>Anthoxanthum odoratum</i>), Lady's Bedstraw (<i>Galium verum</i>), Common Sorrel (<i>Rumex acetosa</i>), Bird's-foot-trefoil (<i>Lotus corniculatus</i>) and Common Knapweed (<i>Centaurea nigra</i>). Wildlife Site criteria: Grassland indicators.	950 m south

Site Name	OS Grid ref.	Description	Distance from Site (m)
Hooks Green Meadow	TL271315	Site comprises three species rich grazing pastures and their surrounding hedgerows. It also includes a large moated site and an ancient green lane. Diverse site with species recorded including Cowslip (<i>Primula veris</i>), Quaking-grass (<i>Briza media</i>), Pignut (<i>Conopodium majus</i>), Carnation Sedge (<i>Carex panicea</i>), Hoary Ragwort (<i>Senecio erucifolius</i>) and Adder's-tongue (<i>Ophioglossum vulgatum</i>). The ancient wildflower meadows are among the best surviving examples in the County. Wildlife Site criteria: Grassland indicators.	1030 m north west
Cottered Road Verge	TL314294	Grassland along the verges has Red Fescue (<i>Festuca rubra</i>), False Oat-grass (<i>Arrhenatherum elatius</i>) and Cocksfoot (<i>Dactylis glomerata</i>), a large variety of herbs include Black Medick (<i>Medicago lupulina</i>), Tall Melilot (<i>Melilotus altissimus</i>), Chalk Knapweed (<i>Centaurea debeauxii</i>), Greater Knapweed (<i>Centaurea scabiosa</i>), Field Scabious (<i>Knautia arvensis</i>), Ox-eye Daisy (<i>Leucanthemum vulgare</i>), the most species-rich area is the south facing cutting on the north side of the road, where these herbs form the major component of the sward together with Agrimony (<i>Agrimonia eupatoria</i>), Blue Fleabane (<i>Erigeron acer</i>) and Heath Speedwell (<i>Veronica officinalis</i>) also occur. Bird's-Foot Trefoil (<i>Lotus corniculatus</i>) and Tufted Vetch (<i>Vicia cracca</i>) occur on the southern verge. One spike of Knapweed Broomrape (<i>Orobanche elatior</i>) has been found. Wildlife Site Criteria: Grassy Road Verges and Green Lanes.	1060 m south east
Halls Green Grassland	TL277287	Small area of predominantly old, neutral pasture with a variety of habitats and a good diversity of flora for its size. The grassland is variable with Dwarf Thistle (<i>Cirsium acaule</i>), a species characteristic of chalk grassland, on the mounds in the eastern area, and in the central area there is some wet acid grassland flora and two ponds. In the south-east corner of the field is an old pit surrounded by Hawthorn (<i>Crataegus monogyna</i>)/Blackthorn (<i>Prunus spinosa</i>)/Elder (<i>Sambucus nigra</i>) scrub with rough tall grassland at the bottom. There is an old hedgerow along the east boundary. The ponds support a good aquatic flora including two local species Hybrid Sweet Grass (<i>Glyceria x pedicellata</i>) and Sharp-flowered Rush (<i>Juncus acutiflorus</i>). Small hollows and mounds add to the habitat diversity, and mark the site of a former settlement. Wildlife Site criteria: Grassland indicators.	1110 m south west
Rushden Church Area	TL305317	Building and environs important for protected species. Wildlife Site criteria: Species.	1180 m north east
Coles Wood Green Lane	TL294321	Old green lane partly lined with hedges. Flora includes Moschatel (<i>Adoxa mochatellina</i>) and Nettle-leaved Bellflower (<i>Campanula trachelium</i>). Wildlife Site criteria: Wooded green lane with features and structure indicative of ancient origins; woodland indicators.	1200 m north
Southern Green Grassland	TL311311	A linear village green, partly dissected by a road and track, which supporting mainly semi natural acid/neutral clay grassland with scrub and old secondary woodland to the southern end. The grassland supports indicators such as Common Knapweed (<i>Centaurea nigra</i>), Oxeye Daisy (<i>Leucanthemum vulgare</i>), Common Sorrel (<i>Rumex acetosa</i>), Meadow Vetchling (<i>Lathyrus pratensis</i>) and Agrimony (<i>Agrimonia eupatoria</i>). The site is bounded by large trees of Ash (<i>Fraxinus excelsior</i>) with Field Maple (<i>Acer campestre</i>), English Elm (<i>Ulmus procera</i>), Elder (<i>Sambucus nigra</i>), Hawthorn (<i>Crataegus monogyna</i>) and Pedunculate Oak (<i>Quercus robur</i>). Ponds are present with several aquatic species of interest recorded. Wildlife Site criteria: Mosaic site with old secondary woodland with a semi-natural canopy, varied structure and woodland indicators; grassland indicators.	1200 m north east

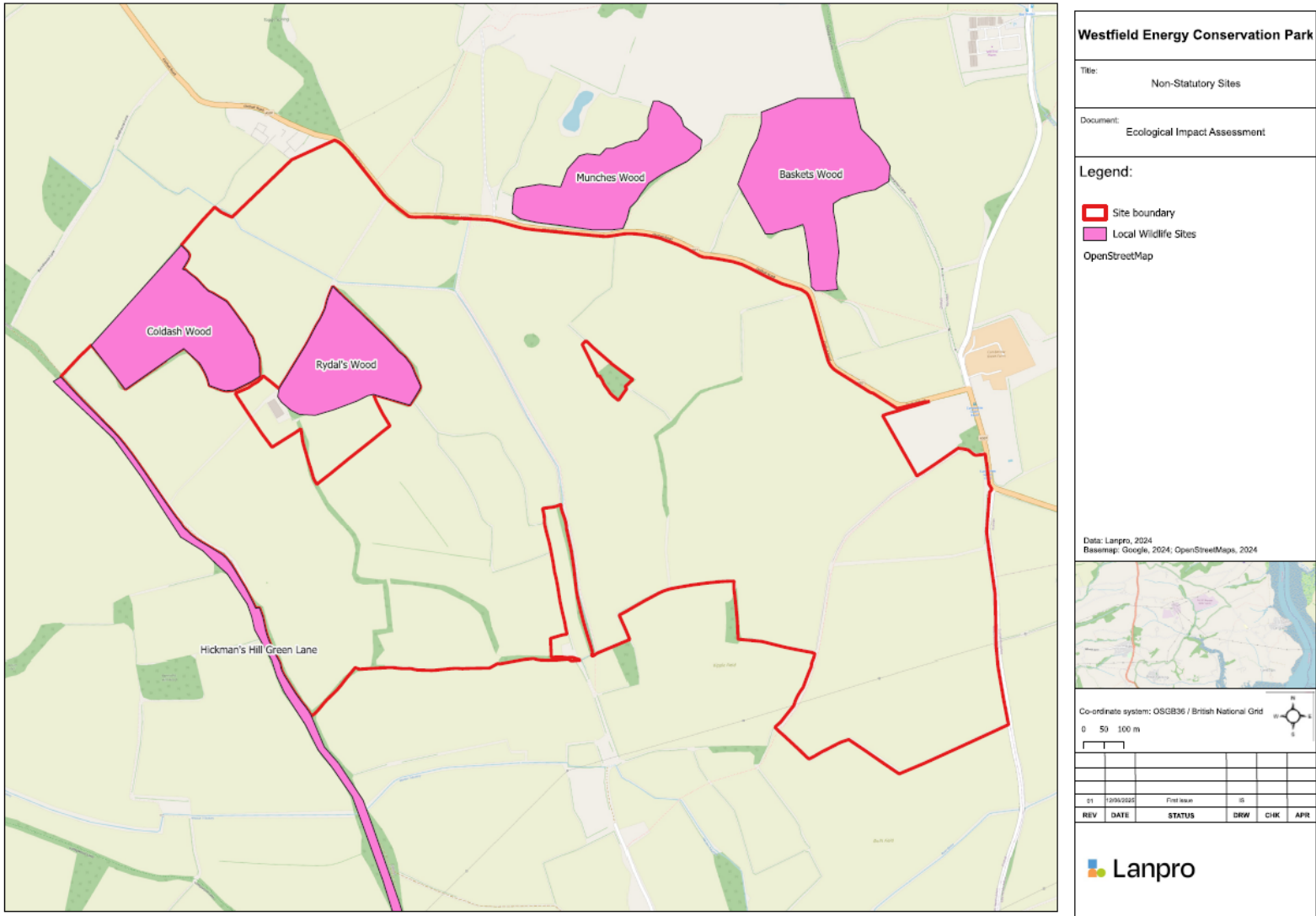
Site Name	OS Grid ref.	Description	Distance from Site (m)
Wallington Common & Coles Wood	TL291325	Wallington Common is dominated by invading scrub of Blackthorn (<i>Prunus spinosa</i>) and Hawthorn (<i>Crataegus monogyna</i>) with a central open area of rank damp grassland and an overgrown pond in the north-west. Mature woodland mainly of Ash (<i>Fraxinus excelsior</i>) with scrub of Hazel (<i>Corylus avellana</i>) and Hawthorn is present, particularly around the boundary at the southern end. Coles Wood to the east is composed mainly of ancient Ash/Field Maple (<i>Acer campestre</i>)/Pedunculate Oak (<i>Quercus robur</i>)/Hazel coppice. More open areas occur where former English Elm (<i>Ulmus procera</i>) scrub died and was cleared. The ground flora includes woodland indicators such as Bluebell (<i>Hyacinthoides non-scripta</i>), Dog's Mercury (<i>Mercurialis perennis</i>) and Wood Anemone (<i>Anemone nemorosa</i>). A green lane separating the common from the wood has an interesting ground flora. Wildlife Site criteria: Wallington Common: Old secondary woodland with a semi-natural canopy and varied structure; woodland indicators. Coles Wood: Ancient Woodland Inventory site; woodland indicators.	1320 m north
Southern Green Farm Green Lane	TL309319	Wooded overgrown green lane with a small, overgrown pond in the north. Woody species recorded include Pedunculate Oak (<i>Quercus robur</i>), Ash (<i>Fraxinus excelsior</i>) and Field Maple (<i>Acer pseudoplatanus</i>). Several woodland indicators, including Bluebell (<i>Hyacinthoides non-scripta</i>) and Ramsons (<i>Allium ursinum</i>), are present in the ground flora. Wildlife Site criteria: Wooded green lane with features and structure indicative of ancient origins; woodland indicators.	1390 m north east
Weston Churchyard	TL266299	Churchyard with a diverse neutral to calcareous grassland flora recorded including Strawberry Clover (<i>Trifolium fragiferum</i>), Meadow Crane's-bill (<i>Geranium pratense</i>), Burnet-saxifrage (<i>Pimpinella saxifraga</i>), Stinking Iris (<i>Iris foetidissima</i>) and Ivy Broomrape (<i>Orobancha hederaceae</i>), the latter a Herts Rare species. The churchyard is bordered by mature trees. Wildlife Site criteria: Grassland indicators.	1390 m west
Ashanger Hill Green Lane	TL267316	Green Lane forming a Parish boundary comprising a hedgerow with mature trees, a hedge bank and ditch feature, grassland and scrub. Coppiced/pollarded Pedunculate Oaks are present. The grassy sward supports species such as Common Knapweed (<i>Centaurea nigra</i>), Oxeye Daisy (<i>Leucanthemum vulgare</i>), Red Bartsia (<i>Odontites vernus</i>) and Bulbous Buttercup (<i>Ranunculus bulbosus</i>). Wildlife Site criteria: Wooded Green Lane.	1420 m north west
Pasture N. of Horseshoe Farm	TL263304	Unimproved grassland, neutral to slightly calcareous in character, with a good diversity of herbs and grasses including much Common Knapweed (<i>Centaurea nigra</i>), plus patches of Lady's Bedstraw (<i>Galium verum</i>) and Pepper-saxifrage (<i>Silene silaus</i>). Wildlife Site criteria: Grassland indicators.	1450 m west
Round Wood (N. of Clothall Bury)	TL280327	Ancient semi-natural Pedunculate Oak (<i>Quercus robur</i>)/Ash (<i>Fraxinus excelsior</i>) woodland with Hazel (<i>Corylus avellana</i>) coppice plus standards of Field Maple (<i>Acer campestre</i>). Ancient Ash stools are present on the eastern edge of wood and Blackthorn (<i>Prunus spinosa</i>) scrub towards the centre. The ground flora includes indicators such as Bluebell (<i>Hyacinthoides non-scripta</i>), Dog's Mercury (<i>Mercurialis perennis</i>), Giant Fescue (<i>Festuca gigantea</i>), Wood Millet (<i>Milium effusum</i>) and Remote Sedge (<i>Carex remota</i>). A drain and pond lies within the southern perimeter. Wildlife Site criteria: Ancient Woodland Inventory; woodland indicators.	1460 m north
Bush Spring, Clothall	TL283326	Ancient semi-natural Pedunculate Oak (<i>Quercus robur</i>)/Ash (<i>Fraxinus excelsior</i>)/Field Maple (<i>Acer campestre</i>) woodland with Hazel (<i>Corylus avellana</i>) old coppice below and a ditch along the eastern border. Wildlife Site criteria: Ancient Woodland Inventory site.	1460 m north

Site Name	OS Grid ref.	Description	Distance from Site (m)
Weston Meadows	TL263300	Two unimproved, damp neutral grasslands on Boulder Clay. The meadows are among the best surviving example of ancient wildflower meadows in the County and support a species-rich flora typical of old undisturbed grassland. Species recorded include Sneezewort (<i>Achillia ptarmica</i>), Lady's-mantle (<i>Alchemilla vestita</i>), Betony (<i>Stachys officinalis</i>), Quaking-grass (<i>Briza media</i>), Pignut (<i>Conopodium majus</i>), Dropwort (<i>Filipendula vulgaris</i>), Adder's-tongue (<i>Ophioglossum vulgatum</i>), Pepper-saxifrage (<i>Silaum silaus</i>), Devil's-bit Scabious (<i>Succisa pratensis</i>) and Strawberry Clover (<i>Trifolium fragiferum</i>), a Herts Vulnerable Species. The overall wildlife value is enhanced by a pond of importance for amphibians, mature hedgerows of Pedunculate Oak standards and pollards and green lanes lined with old coppiced Hazel. Wildlife Site criteria: Grassland indicators.	1480 m west
Hicks Grove	TL283280	Ancient semi-natural coppiced woodland with a few standards. Mainly coppices of Hornbeam (<i>Carpinus betulus</i>) and Ash (<i>Fraxinus excelsior</i>), some very old, with occasional Wild Cherry (<i>Prunus avium</i>), which in one area forms the dominant canopy species. The ground flora includes Bluebell (<i>Hyacinthoides non-scripta</i>), Dog's Mercury (<i>Mercurialis perennis</i>) and Bramble (<i>Rubus fruticosus</i> agg.). A faint bank runs through the wood. Wildlife Site criteria: Ancient woodland with a semi-natural canopy and field evidence suggesting an ancient origin; shown on Bryant's map (1822); >1 ha.	1570 m south west
Cottered Churchyard	TL317292	Churchyard supporting species-rich neutral grassland, with numerous grassland indicators recorded including Field Wood-rush (<i>Luzula campestris</i>), Bird's-foot Trefoil (<i>Lotus corniculatus</i>), Sweet Vernal-grass (<i>Anthoxanthum odoratum</i>), Cowslip (<i>Primula veris</i>), Meadow Buttercup (<i>Ranunculus acris</i>) and Bulbous Buttercup (<i>R. bulbosus</i>). The site is bordered by trees and shrubs. Wildlife Site criteria: Grassland indicators.	1580 m south east
Copses S. of Bury Wood	TL287327	Ancient semi-natural Ash <i>Fraxinus excelsior</i> , Hazel (<i>Corylus avellana</i>), Field Maple (<i>Acer campestre</i>) woodland under active coppice management. Wildlife Site criteria: Ancient woodland site with a semi-natural canopy; on Bryant (1822).	1600 m north
Spital Wood and Prim Spring	TL282331	Ancient semi-natural woodland with Ash (<i>Fraxinus excelsior</i>) and Pedunculate Oak (<i>Quercus robur</i>) standards along with ancient coppiced Field Maple (<i>Acer campestre</i>) and old Hazel (<i>Corylus avellana</i>) coppice. Blackthorn (<i>Prunus spinosa</i>) and Hawthorn grows near the paths and there is a Pine (<i>Pinus nigra</i>) plantation on former Elm (<i>Ulmus</i> sp.) woodland in the north-east corner. Wildlife Site criteria: Ancient Woodland Inventory; woodland indicators.	1620 m north
Copse E. of Prim Spring	TL285328	Ancient semi-natural Ash (<i>Fraxinus excelsior</i>), Field Maple (<i>Acer campestre</i>) with Hazel (<i>Corylus avellana</i>) woodland. Wildlife Site criteria: Ancient woodland site with a semi-natural canopy; on Bryant (1822).	1630 m north
Garthlands bordering Weston Meadows	TL261301	Damp grassland bordered by old hedgerow with species recorded including Common Bistort (<i>Persicaria bistorta</i>), Ragged Robin (<i>Lychnis flos-cuculi</i>), Spiked Sedge (<i>Carex spicata</i>), Common Knapweed (<i>Centaurea nigra</i>) and Lady's Smock (<i>Cardamine pratensis</i>). Wildlife Site criteria: Grassland indicators.	1730 m west

Site Name	OS Grid ref.	Description	Distance from Site (m)
Wind Pump Marsh, Springfield Farm	TL317286	The site comprises three fields surrounded by old hedgerows, with unimproved neutral grassland in the south, semi-improved neutral grassland in the north, and a small central area supporting rush (<i>Juncus</i> spp.) and Common Sedge (<i>Carex nigra</i>) marsh. Additional species recorded in the marsh include Meadowsweet (<i>Filipendula ulmaria</i>), Square-stalked St John's-wort (<i>Hypericum tetrapterum</i>), Marsh Marigold (<i>Caltha palustris</i>), Ragged Robin (<i>Lychnis flos-cuculi</i>) and False Fog-sedge (<i>Carex otrubae</i>). The drier sward supports plants such as Common Knapweed (<i>Centaurea nigra</i>), Meadow Vetchling (<i>Lathyrus pratensis</i>), Field Wood-rush (<i>Luzula campestris</i>), Common Sorrel (<i>Rumex acetosa</i>) and Meadow Buttercup (<i>Ranunculus acris</i>). Old standard trees in the hedges, a species-rich flush line along a former ditch in the southern meadow, two ponds in the central area of marsh, and several old Crack Willow (<i>Salix fragilis</i>) pollards to the north add further habitat diversity. Wildlife Site criteria: Grassland indicators.	1730 m south
Bury Wood (near Wallington)	TL287330	Ancient Ash (<i>Fraxinus excelsior</i>)/Field Maple (<i>Acer campestre</i>) woodland with Pedunculate Oak (<i>Quercus robur</i>) standards and Hazel (<i>Corylus avellana</i>)/Field Maple coppice. The shrub layer supports Blackthorn (<i>Prunus spinosa</i>), Hawthorn (<i>Crataegus monogyna</i>) and Elder (<i>Sambucus nigra</i>). Woodland indicators recorded in the ground flora include Bluebell (<i>Hyacinthoides non-scripta</i>), Dog's Mercury (<i>Mercurialis perennis</i>), Remote Sedge (<i>Carex remota</i>), Wood Millet (<i>Milium effusum</i>), Three-nerved Sandwort (<i>Moehringia trinervia</i>) and Early Dog-violet (<i>Viola reichenbachiana</i>). Ditch and bank features occur within the wood boundary. Wildlife Site criteria: Ancient Woodland Inventory; woodland indicators.	1750 m north
Bush Wood (Weston)	TL262314	Ancient semi-natural woodland of Pedunculate Oak (<i>Quercus robur</i>) and Ash (<i>Fraxinus excelsior</i>) standards with Hazel (<i>Corylus avellana</i>) coppice. There is a reasonable diverse ground flora recorded including species such as Bluebell (<i>Hyacinthoides non-scripta</i>), Dog's Mercury (<i>Mercurialis perennis</i>), Remote Sedge (<i>Carex remota</i>), Wood Millet (<i>Milium effusum</i>), Wood Anemone (<i>Anemone nemorosa</i>) and Primrose (<i>Primula vulgaris</i>). Herb Paris (<i>Paris quadrifolia</i>) has also been recorded, along with a varied fauna. A pond is present in the centre of the wood. Wildlife Site criteria: Ancient Woodland Inventory site; woodland indicators.	1770 m north west
Howell's Wood	TL281278	Ancient coppiced Hornbeam (<i>Carpinus betulus</i>) woodland with coppice and standards of Ash (<i>Fraxinus excelsior</i>) plus occasional Wild Cherry (<i>Prunus avium</i>) and some coppiced Elm (<i>Ulmus</i> sp.) in the north-west corner. The ground flora is typically Bramble (<i>Rubus fruticosus</i> agg.), woodland grasses, Bluebell (<i>Hyacinthoides non-scripta</i>) and Dog's Mercury (<i>Mercurialis perennis</i>). Wildlife Site criteria: Ancient woodland with a semi-natural canopy and field evidence suggesting an ancient origin; shown on Bryant's map (1822); >1 ha.	1780 m south west
Markham's Wood	TL304275	Part ancient semi-natural broadleaved woodland with areas of broadleaved plantation. The groundflora includes abundant Bluebell (<i>Hyacinthoides non-scripta</i>). Wildlife Site criteria: Part Ancient Woodland site.	1800 m south
Bell's Meadow (Weston)	TL260300	Damp, moderately species-diverse neutral grassland with an old hedgerow on the eastern boundary. Strawberry Clover (<i>Trifolium fragiferum</i>), a Herts Vulnerable Species, has been recorded along the track. Other species noted include Pignut (<i>Conopodium majus</i>), Sweet Vernal-grass (<i>Anthoxanthum odoratum</i>), Lady's Bedstraw (<i>Galium Verum</i>), Lady's Smock (<i>Cardamine pratensis</i>) and Pepper-saxifrage (<i>Silva silaus</i>). Wildlife Site criteria: Grassland indicators.	1820 m west

Site Name	OS Grid ref.	Description	Distance from Site (m)
Weston Park North Meadow	TL260296	Semi-improved neutral grassland showing affinities to NVC community MG6a. Approximately 70% of the sward is comprised of grasses including Yorkshire Fog, Meadow Foxtail, Rough Meadow-grass, Perennial Rye-grass, Smaller Catstail, Common Bent (<i>Agrostis capillaris</i>) and Crested Dog's-tail (<i>Cynosurus cristatus</i>). Meadow Buttercup and White Clover are common throughout the compartment, while positive grassland indicators such as Bird's-foot Trefoil (<i>Lotus corniculatus</i>), Meadow Vetchling (<i>Lathyrus pratensis</i>) and Oxeye Daisy (<i>Leucanthemum vulgare</i>) occur in localised patches. Tufted Hair-grass occurs throughout the compartment, but is most prominent in a small patch in the north where the sward takes on a much damper character. Soft and Hard Rush, Hairy Sedge and Yorkshire Fog are all abundant with Meadowsweet occasional. To the south there is also a pond with Soft and Hard Rush and Water Plantain. Adjacent to the woodland in the East of the compartment the sward becomes more ruderal with Bramble (<i>Rubus fruticosus</i> agg.), Nettle (<i>Urtica dioica</i>), Broad-leaved Dock (<i>Rumex obtusifolius</i>), Teasel (<i>Dipsacus fullonum</i>), Hogweed (<i>Heracleum sphondylium</i>) and Large Bindweed (<i>Calystegia silvatica</i>) all encroaching on the grassland. This is also the only section of the site where False Oat-grass (<i>Arrhenatherum elatius</i>) was identified, all of which suggests this area has not been grazed in accordance with the surrounding parkland. Wildlife Site criteria: Grassland indicators.	1840 m west
Sloggar's Wood	TL288277	Ancient semi-natural Pedunculate Oak (<i>Quercus robur</i>)/Hornbeam (<i>Carpinus betulus</i>) woodland with coppiced Hornbeam and Ash (<i>Fraxinus excelsior</i>) dominant. Hazel (<i>Corylus avellana</i>) coppice is present in the south plus old coppiced Wych Elm (<i>Ulmus glabra</i>) is very common and Holly (<i>Ilex aquifolium</i>) is frequent throughout wood. Numerous woodland indicator species have been recorded, predominantly Bluebell (<i>Hyacinthoides non-scripta</i>) and Dog's Mercury (<i>Mercurialis perennis</i>). A hedge of Hawthorn (<i>Crataegus monogyna</i>) partly borders the wood. Wildlife Site criteria: Ancient Woodland Inventory site; woodland indicators.	1890 m south
Bachelor's Wood	TL312322	Ancient semi-natural woodland with derelict Hazel (<i>Corylus avellana</i>) and Field Maple (<i>Acer campestre</i>) coppice plus Ash (<i>Fraxinus excelsior</i>) standards and a small amount of English Elm (<i>Ulmus procera</i>) and other woody species. The ground flora includes Bluebell (<i>Hyacinthoides non-scripta</i>), Enchanter's-nightshade (<i>Circaea lutetiana</i>) and Three-nerved Sandwort (<i>Moehringia trinervia</i>). Wildlife Site criteria: Ancient Woodland Inventory; woodland indicators.	1930 m north east

B) Non-Statutory Sites Map



Appendix 3 Photographs

Pond 1



P2



P3



P4-5



P6



P7



P8



Cropland Ley (Field 1)



Cropland Ley (Field 16)



Modified grassland: MG1



Other neutral grassland: Q7



Q13



Q60



Q68



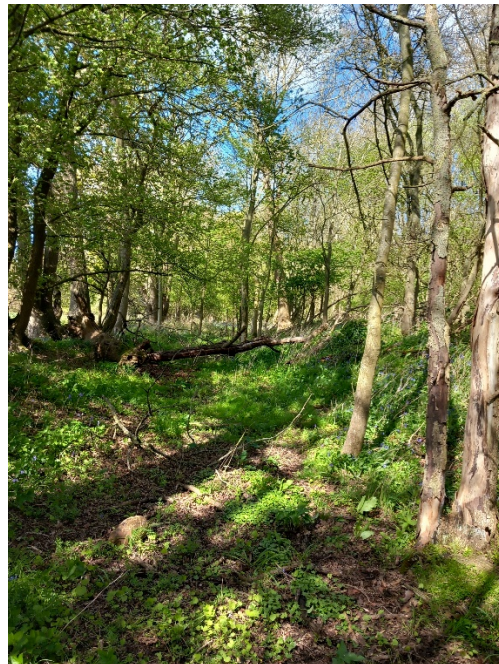
Q86



Lowland Mixed Deciduous Woodland: W1



W2



Scrub: SC1 	Ditch: D1 
D2 	D3 
D4	D5



Hedgerow 1



H2



H3 	 H6
H7 	 H8
H9 	H10 

H11 	H12 
H14 	H15 
H16 	H17 
H23	H24

	
 H25	H26 
 H27	H28 
Line of Trees 1 	LOT 2 

 LOT 3	 LOT 4
 Line of Trees 5	 S1 barn front view
 S1 barn back view	 S2 metal shelter
[REDACTED]	[REDACTED]

[REDACTED]	[REDACTED]
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Appendix 4 Quadrats

A) Quadrat data

Q1	Crested dogs tail (A), perennial rye grass (F), rough meadow grass (F), creeping buttercup (O) cocksfoot (O), dandelion (O)
Q2	Crested dogs tail (F), perennial rye grass (F), rough meadow grass (F), soft brome (F), creeping buttercup (O), prickly ox-tongue (O), dandelion (R)
Q3	Crested dogs tail (F), perennial rye grass (F), rough meadow grass (F), soft brome (F), red fescue (O), creeping thistle (R), dandelion (R)
Q4	Perennial rye grass (D), Yorkshire fog (F), meadow foxtail (O), bloody cranesbill (O)
Q5	False oat grass (A), meadow foxtail (O), barren brome (R), greater stitchwort (O), common ragwort (R), soft brome (O), Elphorbium sp. (R), creeping buttercup (R)
Q6	Rough meadow grass (D), Yorkshire fog (O), barren brome (R), black grass (R)
Q7	False oat grass (D), Bramble (F), teasel (O), cocksfoot (R)
Q8	Rough meadow grass (D) perennial ryegrass (F), cocksfoot (F), narrow leaved plantain (O), dandelion (O), broad-leaved dock (O)
Q9	False oat grass (F), black grass (O), bloody cranesbill (R), rough meadow grass (D), barren brome (F), couch grass (O), field bindweed (F)
Q10	Hogweed (O), bramble (R), couch grass (D), bloody cranesbill (O), rough meadow grass (A), cocksfoot (R)
Q11	Creeping cinquefoil (D), soft brome (F), false oat grass (O), cocksfoot (O), red fescue (F), hogweed (O), barren brome (F), perennial rye grass (F)
Q12	Cocksfoot (A), upright brome (F), perennial rye grass (F), white clover (O)
Q13	Soft brome (F), false oat grass (F), rough meadow grass (A), creeping thistle (O), narrow leaved plantain (O), perennial rye (O)
Q14	Cocksfoot (A), soft brome (F), rough meadow grass (F)
Q15	Perennial rye grass (D), rough meadow grass (A), annual meadow grass (O), cocksfoot (O)
Q16	Red fescue (F), rough meadow grass (F), Yorkshire fog (A), cocksfoot (F), soft brome (F), perennial rye grass (O)
Q17	Festuca sp. (A), cocksfoot (O), Perennial rye grass (F), narrow leaved plantain (O), crested dogs tail (O), field bindweed (O), cats-ear (R), blackthorn (R)
Q18	Perennial rye grass (D), rough meadow grass (F), crested dogs tail (F), cocksfoot (O), creeping thistle (O)
Q19	Rough meadow grass (D), cocksfoot (F), soft brome (F), perennial rye grass (F), Festuca sp. (R), bramble (O)
Q20	Soft brome (D), curled dock (O), Lolium sp. (O), rough meadow grass (O), black grass (O), narrow leaved plantain (R)
Q21	Barren brome (D), hemlock (O), common bent (O), false oat grass (F), rough meadow grass (F), cleavers (R)
Q22	Soft brome (A), Yorkshire fog (F), common bent (O), creeping buttercup (F)
Q23	Cocksfoot (F), false oat grass (F), nettles (O), barren brome (F), bloody cranesbill (O), hemlock (O), rough meadow grass (O)
Q24	Festuca sp. (D), common bent (F), crested dogs tail (A), false oat grass (F), soft brome (O), bramble (O), cats-ear (R)
Q25	Festuca sp. (D), cocksfoot (F), perennial rye grass (F), soft brome (O), curled dock (O)
Q26	False oat grass (D), creeping thistle (F), cocksfoot (F), rough meadow grass (O), curled dock (O), goatsbeard (R)
Q27	Perennial rye grass (D), festuca sp. (F), cocksfoot (O)
Q28	Common bent (A), crested dogs tail (F), rough meadow grass (F), bramble (R), Yorkshire fog (F), field bindweed (O)
Q29	Cocksfoot (F), perennial rye grass (F), festuca sp. (O), red fescue (O), rough meadow grass (O), Yorkshire fog (O)

Q30	Black grass (F), meadow foxtail (O), cocksfoot (O), festuca sp. (O), perennial rye grass (F), Yorkshire fog (O), rough meadow grass (O), common bent (O)
Q31	Yorkshire dog (D), false oat grass (F), nettle (O), cocksfoot (O), common bent (O)
Q32	Yorkshire fog (A), cocksfoot (F), common ragwort (F), false oat grass (O), rough meadow grass (O), narrow leaved plantain (O), crested dogs tail (O), Festuca sp. (R)
Q33	Common bent (D), false oat grass (F), rough meadow grass (F), Bromus sp. (O), Festuca sp. (O), common hogweed (O)
Q34	Cocksfoot (D), false oat grass (F), bramble (A), Festuca sp. (O), common hogweed (O)
Q35	Cocksfoot (D), Yorkshire fog (A), creeping thistle (O), narrow leaved plantain (O), bramble (O), crested dogs tail (O)
Q36	Red fescue (D), false oat grass (A), bramble (R), soft brome (O), common hogweed (O), rough meadow grass (O)
Q37	Cocksfoot (D), soft brome (F), barren brome (F), Festuca sp. (O), perennial rye grass (O)
Q38	Soft brome (A), cocksfoot (F), field bindweed (O), perennial rye grass (O), barren brome (O), bloody cranesbill (O), Festuca sp. (O)
Q39	Barren brome (D), soft brome (F), false oat grass (F), cow parsley (O), black thorn (R), common bent (O), field bindweed (O)
Q40	Barren brome (D), soft brome (A), perennial rye grass (A), common bent (O), poppy (R)
Q41	Soft brome (A), barren brome (A), perennial rye grass (F), cocksfoot (F), yorkshire fog (F), Festuca sp. (F), common hogweed (O)
Q42	Barren brome (D), Yorkshire fog (F), common hogweed (O), false oat grass (F), rough meadow grass (O), cleavers (O), hedgerow cranesbill (R)
Q43	Rough meadow grass (D), cocksfoot (F), barren brome (A), false oat grass (O), nettles (O), soft brome (O), creeping thistle (O), herb-robert (R)
Q44	Barren brome (D), false oat grass (A), poppy (R), goatsbeard (O), crested dogs tail (O), Yorkshire fog (O), rough meadow grass (O), blackgrass (R), herb-robert (R)
Q45	Barren brome (D), nettles (O), cocksfoot (F), rough meadow grass (O), common hogweed (O), cows parsley (O)
Q46	Soft brome (D), prickly sow-thistle (F), barren brome (A), cocksfoot (O), bloody cranesbill (O)
Q47	Rough meadow grass (D), soft brome (A), nettles (O), false oat grass (O), cocksfoot (O), clematis (O), cow parsley (O)
Q48	Soft brome (D), nettles (O), rough meadow grass (R), bloody cranesbill (R)
Q49	Cocksfoot (D), creeping thistle (F), soft brome (F), common bent (O), common hogweed (O), bramble (O), Yorkshire fog (O)
Q50	Cocksfoot (A), false oat grass (A), perennial rye grass (O), Yorkshire fog (O), barren brome (O), barren brome (O), rough meadow grass (O)
Q51	Yorkshire fog (A), cow parsley (O), false oat grass (O), rough meadow grass (O), Festuca sp. (R), creeping thistle (R)
Q52	Festuca sp. (D), cocksfoot (A), false oat grass (F), cow parsley (O), perennial rye grass (O)
Q53	False oat grass (D), cocksfoot (A), cow parsley (F), creeping thistle (O)
Q54	Cocksfoot (D), false oat grass (F), nettles (F), rough meadow grass (O), creeping thistle (O), cow parsley (F)
Q55	Rough meadow grass (D), false oat grass (A), cocksfoot (F), nettles (F), barren brome (O), cow parsley (O)
Q56	Rough meadow grass (D), cocksfoot (A), perennial rye grass (F), bramble (O), barren brome (O), cow parsley (O)
Q57	Festuca sp. (A), bramble (A), perennial rye grass (F), rough meadow grass (O), soft brome (O)
Q58	Perennial rye grass (D), cocksfoot (A), rough meadow grass (F), creeping thistle (O), soft brome (O)
Q59	Cocksfoot (A), Festuca sp. (A), perennial rye grass (F), Yorkshire fog (F), rough meadow grass (O), field bindweed (O)
Q60	False oat grass (D), cow parsley (F), fat hen (O), rough meadow grass (O), goatsbeard (R), bramble (O), blackthorn (R)

Q61	False oat grass (A), bramble (F), soft brome (F), crested dogs tail (O), common ragwort (O), garlic mustard (F), creeping buttercup (R), common hogweed (R), field bindweed (R), rough meadow grass (R), blackgrass (R), cowslip (R), blackthorn (R)
Q62	False oat grass (A), soft brome (F), nettles (F), cleavers (O), poppy (R), hedge woundwort (R), barren brome (O), garlic mustard (O)
Q63	Barren brome (D), false oat grass (F), garlic mustard (F), oak (R)
Q64	Barren brome (D), cocksfoot (F), perennial rye grass (A), curled dock (O)
Q65	Cocksfoot (A), rough meadow grass (A), perennial rye grass (F), nettles (O), soft brome (O)
Q66	Festuca sp. (D), soft brome (A), cocksfoot (A), perennial rye grass (F), bloody cranesbill (O)
Q67	Yorkshire fog (D), rough meadow grass (A), crested dogs tail (F), soft brome (O)
Q68	Rough meadow grass (D), perennial rye grass (F), barren brome (O)
Q69	Perennial rye grass (D), Yorkshire fog (F), rough meadow grass (O)
Q70	Cocksfoot (A), false oat grass (F), field bindweed (O), rough meadow grass (O), soft brome (O), bloody cranesbill, hawthorn (R)
Q71	Barren brome (A), perennial rye grass (F), false oat grass (O)
Q72	False oat grass (D), cocksfoot (A), Elphorbium sp. (O), dandelion (O), rough meadow grass (O), bramble (O), field bindweed (R), hedge horehound (R), cleavers (R)
Q73	Rough meadow grass (D) perennial ryegrass (F), cocksfoot (F), narrow leaved plantain (O), dandelion (O)
Q74	willowherb sp. (F), Hogweed (O), mareetail (O), false oat grass (O), blackthorn (O)
Q75	Mares-tail (A), Couch grass (F), false oat grass (F)
Q76	Couch grass (D), black grass (A), rough meadow grass (F), false oat grass (F), maretail (O), brassica sp. (O)
Q77	Couch grass (D), Yorkshire fog (A), rough meadow grass (A), false oat grass (F), barren brome (O), brassica sp. (O)
Q78	Yorkshire fog (F), creeping thistle (F), cocksfoot (A), smooth tare (O), crested dogs tail (O), black medic (O)
Q79	Festuca sp. (D), cocksfoot (F), Yorkshire fog (O), curled dock (O), black grass (O), smooth tare (R)
Q80	Cocksfoot (F), Yorkshire fog (O), curled dock (O), black grass (O), barren brome (R), smooth tare (R)
Q81	Cocksfoot (D), false brome (O)
Q82	False oat grass (D), Yorkshire fog (F), common bent (A), remote sedge (R), bracken (R)
Q83	Tufted hair grass (F), Yorkshire fog (F), false oat grass (O), creeping buttercup (O), curled dock (O)
Q85	False oat grass (A), rough meadow grass (F), common hogweed (R), nettles (F), greater stitchwort (R) couch (O)
Q86	False oat grass (A), rough meadow grass (F), germander speedwell (R), nettles (F), greater stitchwort (O) couch (O), teasel (R)
Q87	Red fescue (F), Festuca sp. (O), cocksfoot (O), crested dogs tail (F), rough meadow grass (O), autumn hawkbit (O), field bindweed (R), dandelion (O), silverweed (O), agrimony (R), daisy (R), narrow-leaved plantain (F)
Q88	Perennial rye grass (F), red fescue (F), Festuca sp. (F), creeping buttercup (O) cocksfoot (O), dandelion (O)
Q89	Perennial rye grass (F), red fescue (F), Festuca sp. (F), creeping buttercup (O) cocksfoot (O), common ragwort (O)
Q90	False oat grass (A), rough meadow grass (F), nettles (F), greater stitchwort (R) couch (F), teasel (R), bramble (O)
Q91	Yorkshire fog (D), knapweed (F), creeping bent (O), centaury (R), maretail (R), crested dogs tail (F), creeping buttercup (O)
Q92	Wood sedge (D), false oat grass (A), red fescue (A), agrimony (O), bramble (O), creeping cinquefoil (O)
Q93	Perennial rye grass (D), maretail (O), crested dogs tail (O)
Q94	Perennial rye grass (D), maretail (O), crested dogs tail (O)

Q95	Barren brome (F), soft brome (F), yorkshire fog (F), cocksfoot (F)
Q96	Barren brome (F), soft brome (F), yorkshire fog (F), cocksfoot (F)
Q97	Barren brome (F), soft brome (F), yorkshire fog (F), cocksfoot (O)
Q98	Perennial rye grass (D), rough meadow grass (A), cocksfoot (R), creeping thistle (R)
Q99	Perennial rye grass (D)
Q100	Perennial rye grass (D)
Q101	Perennial rye grass (D), Yorkshire fog (F), curled dock (F), bramble (F), creeping bent (O)
Q102	Yorkshire fog (D) curled dock (F), bramble (F), creeping bent (O), cleavers (R)
Q103	Perennial rye grass (D)
Q104	Yorkshire fog (D) curled dock (F), bramble (F), creeping bent (O)
Q105	Cocksfoot (F), rough meadow grass (F), cow parsley (F), Yorkshire fog (O), soft brome (O), clematis (O), common hogweed (R)
Q106	Cocksfoot (A), rough meadow grass (F), cow parsley (F), Yorkshire fog (O), soft brome (O), barren brome (O), common hogweed (R)
Q107	Cocksfoot (A), rough meadow grass (F), cow parsley (O), Yorkshire fog (O), soft brome (O), barren brome (O)
Q108	Cocksfoot (A), rough meadow grass (F), cow parsley (F), Yorkshire fog (O), soft brome (O), barren brome (O), common hogweed (R)
Q109	Cocksfoot (F), bramble (F), Yorkshire fog (O), Lesser trefoil (R), meadow buttercup (F), meadow foxtail (R)
Q110	Cocksfoot (F), rough meadow grass (F), cow parsley (F), Yorkshire fog (O), soft brome (O), clematis (O), common hogweed (R)
Q111	Rough meadow grass (F), cow parsley (F), Cocksfoot (F), Yorkshire fog (O), soft brome (O), common hogweed (R)
Q112	Cocksfoot (A), nettles (A), barren brome (A)
Q113	Barren brome (D), Yorkshire fog (F)
Q114	Barren brome (A), false brome (A), cocksfoot (O), blackgrass (O)
Q115	Blackgrass (A), Barren brome (F), false brome (O), soft brome (O), squirrel-tailed fescue (O)
Q116	perennial rye grass (D) barren brome (A), cocksfoot (A), soft brome (F)
Q117	False brome (A), Yorkshire fog (F), cow parsley (O) cleavers (R)
Q118	False oat grass (D), Barren brome (O), sweet vernal (O)
Q119	False oat grass (A), Yorkshire fog (O), cocksfoot (O) nettles (R), field bindweed (R)
Q120	False oat grass (D), cocksfoot (O) nettles (O), curled dock (R), field bindweed (R)

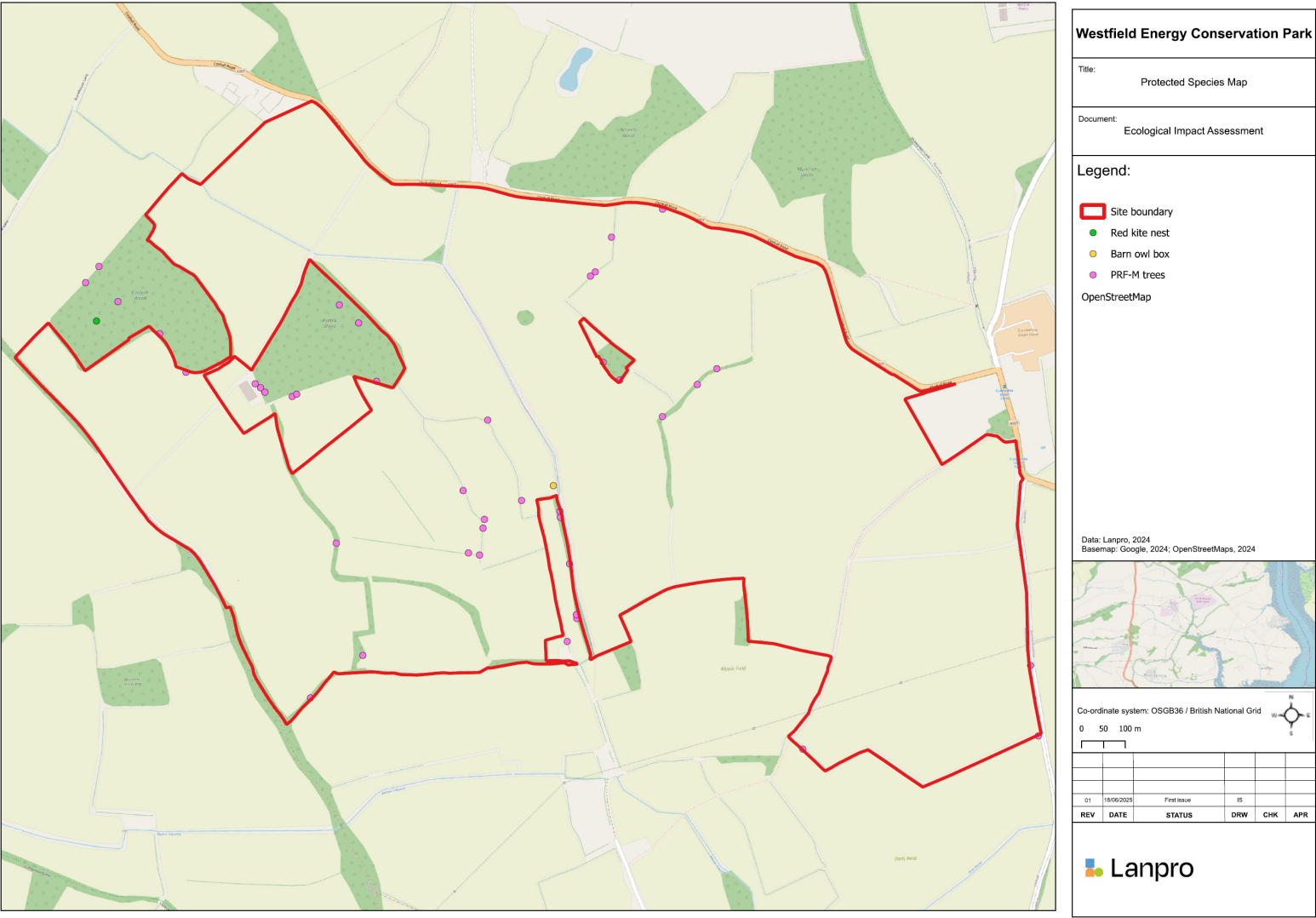
B) Quadrat Location Map



Appendix 5 GCN Habitat Suitability Index Results

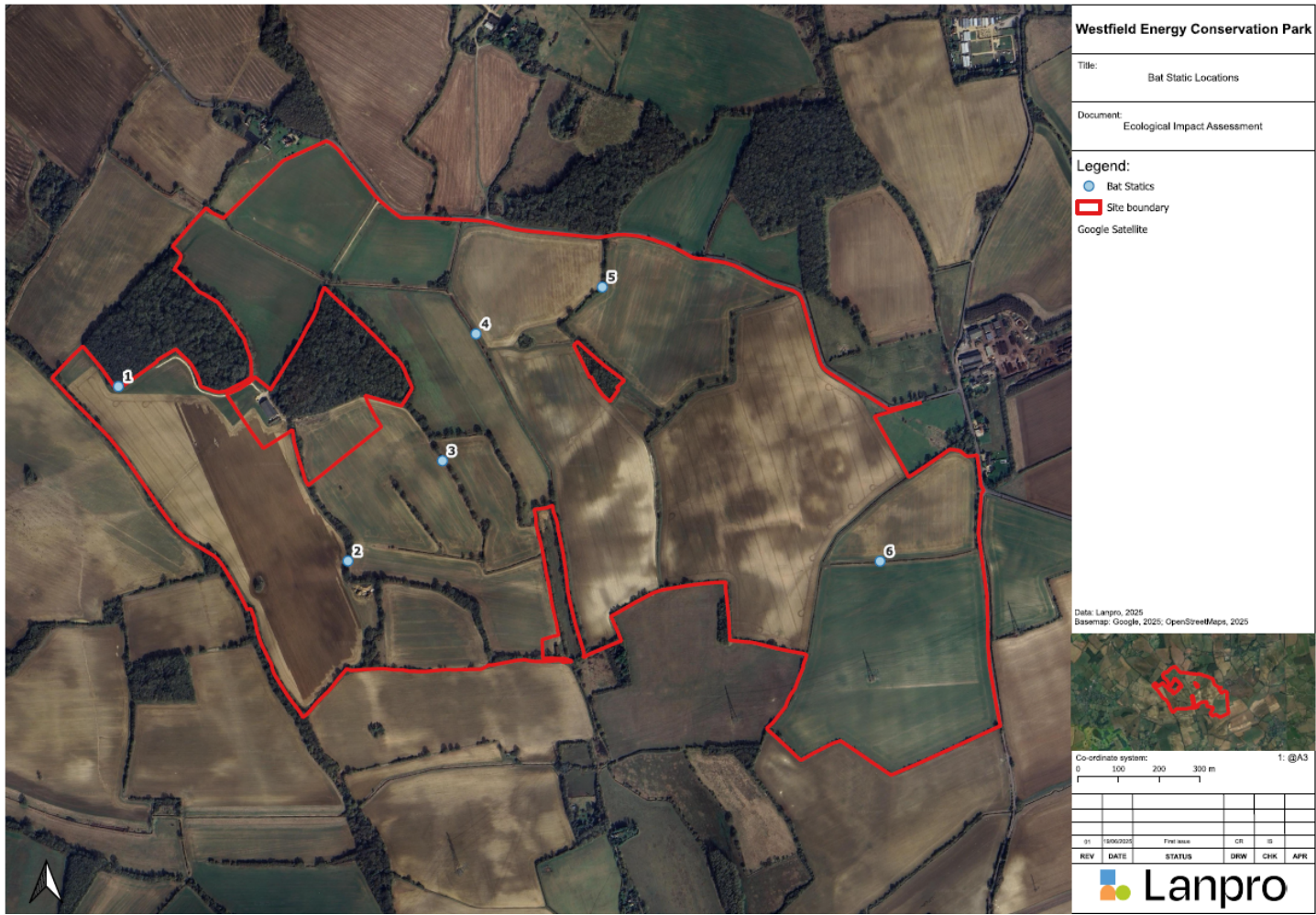
Pond Reference	Geographic Location	Pond Area	Permanence	Water Quality	Shade	Fowl	Fish	Pond Count	Terrestrial	macrophytes	HSI Score	HSI Category
1	1	0.2	0.9	0.67	0.6	0.67	0.67	1	1	0.4	0.648	Average
2	1	0.2	0.9	0.33	0.3	0.67	0.67	1	1	0.3	0.55	Below Average
3	1	0.05	0.1	0.33	0.2	1	1	1	0.67	0.3	0.38	Poor
4	1	0.05	1	0.67	0.2	0.67	1	1	1	0.3	0.52	Below Average
5	1	0.05	1	0.67	0.2	0.67	1	1	1	0.3	0.52	Below Average
6	1	0.05	0.5	0.33	0.2	1	1	1	0.67	0.3	0.45	Poor
7	1	0.05	0.5	0.33	1	1	1	1	0.67	0.3	0.53	Below Average
8	1	0.1	1	0.33	0.2	1	0.67	1	0.67	0.3	0.50	Poor

Appendix 6 Species Constraints Map



Appendix 7 Bat Survey Results

A) Static Location Map



B) Static Data

Static 1: April	
Species	Species Count
<i>Barbastella barbastellus</i>	19
<i>Eptesicus serotinus</i>	8
<i>Myotis daubentoni</i> (potential)	6
Myotis sp.	19
<i>Nyctalus leisleri</i>	16
<i>Nyctalus noctula</i>	2
<i>Pipistrellus pipistrellus</i>	633
<i>Plecotus auritus</i>	2
Grand Total	679

Static 1: May	
Species	Species Count
<i>Barbastella barbastellus</i>	4
<i>Eptesicus serotinus</i>	3
<i>Myotis daubentoni</i> (potential)	3
Myotis sp.	1
<i>Nyctalus leisleri</i>	20
Nyctalus sp.	6
<i>Pipistrellus pipistrellus</i>	6892
<i>Pipistrellus pygmaeus</i>	46
Pipistrellus sp.	18
<i>Plecotus auritus</i>	3
Grand Total	6941

Static 2: April	
Species	Count of Species
<i>Barbastella barbastellus</i>	54
<i>Barbastella barbastellus</i> & <i>Plecotus auritus</i>	1
<i>Myotis</i> sp.	15
<i>Nyctalus leisleri</i>	12
<i>Nyctalus</i> sp.	26
<i>Pipistrellus pipistrellus</i>	254
<i>Pipistrellus</i> sp.	1
Grand Total	356

Static 2: May	
Species	Species Count
<i>Barbastella barbastellus</i>	6
<i>Eptesicus serotinus</i>	1
<i>Myotis daubentoni</i> (potential)	15
<i>Myotis nattereri</i> (potential)	2
<i>Myotis</i> sp.	17
<i>Nyctalus leisleri</i>	19
<i>Nyctalus noctula</i>	5
<i>Nyctalus</i> sp.	67
<i>Pipistrellus pipistrellus</i>	1152
<i>Pipistrellus pygmaeus</i>	1
<i>Pipistrellus</i> sp.	6
<i>Plecotus auritus</i>	9
Grand Total	1282

Static 3: April	
Species	Species Count
<i>Barbastella barbastellus</i>	41
<i>Myotis daubentonii</i> (potential)	2
<i>Nyctalus</i> sp.	2
<i>Pipistrellus pipistrellus</i>	127
<i>Pipistrellus</i> sp.	1
<i>Plecotus auritus</i>	5
Grand Total	178

Static 4: April	
Species	Species Count
<i>Myotis daubentonii</i> (potential)	2
<i>Myotis</i> sp.	1
<i>Nyctalus noctula</i>	3
<i>Pipistrellus pipistrellus</i>	2
Grand Total	8

Static 3: May	
Species	Species Count
<i>Myotis</i> sp.	1
<i>Pipistrellus pipistrellus</i>	1054
<i>Pipistrellus</i> sp.	8
<i>Nyctalus leisleri</i>	2
Grand Total	1063

Static 4: May	
Species	Species Count
<i>Myotis daubentonii</i> (potential)	2
<i>Nyctalus noctula</i>	2
<i>Pipistrellus pipistrellus</i>	105
<i>Pipistrellus</i> sp.	4
<i>Plecotus auritus</i>	4
Grand Total	117

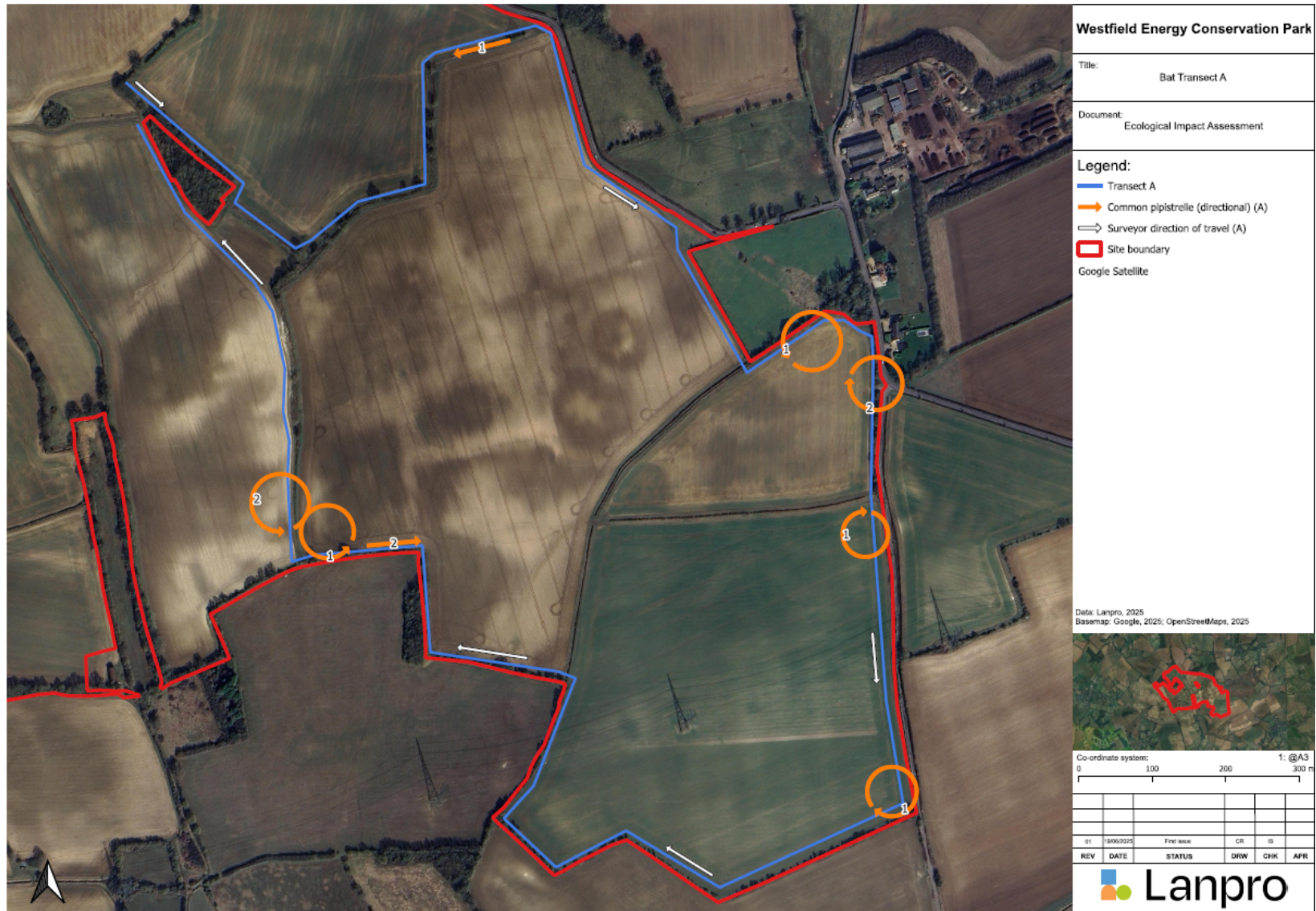
Static 5: April	
Species	Species Count
<i>Barbastella barbastellus</i>	25
<i>Eptesicus serotinus</i>	1
<i>Myotis daubentonii</i> (potential)	2
Myotis sp.	5
<i>Nyctalus leisleri</i>	1
<i>Nyctalus noctula</i>	1
<i>Pipistrellus pipistrellus</i>	180
<i>Plecotus auritus</i>	4
Grand Total	217

Static 5: May	
Species	Species Count
<i>Barbastella barbastellus</i>	12
<i>Eptesicus serotinus</i>	2
<i>Myotis daubentonii</i> (potential)	3
<i>Myotis nattereri</i> (potential)	1
Myotis sp.	6
<i>Nyctalus leisleri</i>	6
<i>Nyctalus noctula</i>	3
Nyctalus sp.	17
<i>Pipistrellus nathusii</i>	2
<i>Pipistrellus pipistrellus</i>	4224
<i>Pipistrellus pygmaeus</i>	11
Pipistrellus sp.	7
<i>Plecotus auritus</i>	19
Grand Total	4296

Static 6: April	
Species	Species Count
<i>Barbastella barbastellus</i>	2
<i>Pipistrellus pipistrellus</i>	168
Grand Total	170

Static 6: May	
Species	Species Count
<i>Barbastella barbastellus</i>	1
<i>Myotis daubentonii</i> (potential)	1
<i>Nyctalus leisleri</i>	3
<i>Pipistrellus nathusii</i>	1
<i>Pipistrellus pipistrellus</i>	163
Pipistrellus sp.	3
<i>Plecotus auritus</i>	1
Grand Total	173

C) Transect Maps







D) Transect Survey Forms

Project number	5686	Project name	Westfield Energy Conservation Park	Survey type	Nighttime bat walkover (NBW)
Transect	1a	Date	14/05/2025		
Surveyors	Izzy Soane and Clara Robinson			Recorder ID	Anabat Scout 4
Sunset time	20:47	Survey start	20:47	Survey end	23:00
Weather start	12°C, 0% cloud cover, no rain, 2 Beaufort wind speed		Weather end	8°C, 0% cloud cover, no rain, 2 Beaufort wind speed	
24hr time of registration	Map symbol / direction of travel	Bat species	Number of bats	Flight height (m)	Behaviour / comments
21:32	South	Common pip.	1	2.5	Commuting
21:47	Circling	Common pip.	1	2.5	Foraging
21:51	Circling	Common pip.	2	2.5	Foraging
21:55	Circling	Common pip.	1	2.5	Foraging
22:01	Circling	Common pip.	1	2.5	Foraging
22:34	East	Common pip.	2	2.5	Commuting
22:37	Circling	Common pip.	1	2.5	Foraging
22:43	Circling	Common pip.	2	2.5	Foraging
End of survey					

July 2025

2025

Project number	5686	Project name	Westfield Energy Conservation Park	Survey type	Nighttime bat walkover (NBW)
Transect	1b	Date	07/05/2025		
Surveyors	Rebecca Little and Zoe Cawthorn			Recorder ID	Anabat Scout C4
Sunset time	20:34	Survey start	20:34	Survey end	23:22
Weather start	10.4°C, 50% cloud cover, no rain, 3 Beaufort wind speed		Weather end	8.6°C, 80% cloud cover, no rain, 3 Beaufort wind speed	
24hr time of registration	Map symbol / direction of travel	Bat species	Number of bats	Flight height (m)	Behaviour / comments
21:16 – 21:18	1	Common pip.	1+	N/A	Commuting / foraging, heard not seen
21:22 – 21:23	2	Common pip.	1	N/A	Commuting / foraging, heard not seen
21:23 – 21:28	3	Common pip.	1-2	N/A	Seen foraging
21:30	4	Common pip.	1	N/A	Commuting, heard not seen, 3 passes
21:33 – 21:37	5	Common pip. / Myotis sp	2+	N/A	Commuting / foraging, multiple passes
21:39 – 21:43		Common pip.	2+	N/A	Commuting / foraging, multiple passes
21:45	6	Common pip.	2+	N/A	Commuting / foraging, multiple passes
21:49	7	Common pip.	2+	N/A	Commuting / foraging, multiple passes
21:51 – 21:54	8	Common pip.	2+	N/A	Commuting / foraging, multiple passes
22:00	9	Common pip.	1	N/A	Commuting, 2 passes
22:03 – 22:05	10	Common pip.	1	N/A	Commuting / foraging, multiple passes
22:13	11	Common pip.	1	N/A	Commuting / foraging, faint
22:30 – 22:35	12	Common pip. / Myotis sp.	1	N/A	Commuting / foraging, heard not seen, multiple passes

22:40	13	Common pip.	1	N/A	Commuting, heard not seen
22:43	14	Common pip.	1	N/A	Commuting, heard not seen, 1 pass
22:47	15	Common pip.	1	N/A	Commuting, heard not seen, 1 pass
22:58	16	Common pip.	1	N/A	Commuting, heard not seen, 1 pass
23:03	17	Common pip.	1	N/A	Foraging, heard not seen, multiple passes
23:17 – 23:22	18	Common pip.	1	N/A	Foraging, heard not seen, multiple passes
End of survey					

July 2025

2025

Project number	5686	Project name	Westfield Energy Conservation Park	Survey type	Nighttime bat walkover (NBW)
Transect	1c	Date	08/05/25		
Surveyors	Hannah Broughton (2) and Clara Robinson (1)			Recorder ID	Anabat Scout 2 and 1
Sunset time	20:36	Survey start	20:36	Survey end	23:01
Weather start	12°C, 20% cloud cover, no rain, 1-2 Beaufort wind speed		Weather end	7°C, 20% cloud cover, no rain, 1-2 Beaufort wind speed	
24hr time of registration	Map symbol / direction of travel	Bat species	Number of bats	Flight height (m)	Behaviour / comments
21:11 (2)	1	Common pip.	1	3	Continuous foraging under woodland edge
21:19 (1)	West to East out of woodland	Common pip.	1	5	Commuting / foraging
21:21 (1)		Common pip.	1	N/A	Commuting / foraging
21:22 – 21:23 (1)		Common pip.	Multiple	N/A	Commuting / foraging
21:23 (2)	1	Common pip.	~ 5	N/A	Continuous foraging under woodland edge
21:24 (1)	Circling	Common pip.	2	5	Commuting / foraging
Anabat scout 1 turned off at 21:28, survey continued with Scout 2 only					
21:33		Serotine	1	N/A	Brief close pass, heard not seen
21:35 – 21:39	2	Common pip.	2-3	3	Foraging along canopy
21:40	3	Common pip.	1-2	N/A	Foraging, potentially outside woodland
21:43	4	Common pip.	1-2	N/A	Foraging, potentially outside woodland
21:45 – 21:48	5	Common pip.	2-3	N/A	Continuous foraging along woodland edge
21:51	6	Common pip.	1	N/A	Not seen, brief pass, loud, close
21:55	7	Common pip.	1	N/A	Not seen, brief faint pass

22:07	8	Noctule	1	N/A	Not seen, commuting
22:12	9	Common pip.	1	N/A	Not seen, commuting, brief pass, close
22:27 – 22:30	10	Common pip. / Myotis sp	2-3	N/A	Not seen, continuous foraging in corner
22:31	11	Common pip.	1	N/A	Not seen, foraging continuous
22:35	12	Common pip.	1	N/A	Not seen, commuting, single pass
22:37	13	Common pip.	2	N/A	Not seen, foraging
22:45	14	Common pip.	1	N/A	Not seen, brief pass
End of survey					

E) Transect Call Analysis

Transect Number	Species	Count
1a (Detector 1)	<i>Pipistrellus pipistrellus</i>	71
	Pipistrelle sp.	1
1a (Detector 2)	No bats.	0
1b (Detector 1)	<i>Pipistrellus pipistrellus</i>	298
	<i>Pipistrellus pygmaeus</i>	3
	<i>Plecotus auritus</i>	1
	Myotis sp. (potentially Natterer's)	2
1b (Detector 2)	<i>Pipistrellus pipistrellus</i>	113
	<i>Pipistrellus pygmaeus</i>	70
	Pipistrelle sp.	6
	<i>Plecotus auritus</i>	2
	<i>Eptesicus serotinus</i>	3
	<i>Nyctalus noctula</i>	14
	Myotis sp.	1
1c (Detector 1)	<i>Pipistrellus pipistrellus</i>	207
	<i>Pipistrellus pygmaeus</i>	18
	Pipistrelle sp.	2
	<i>Plecotus auritus</i>	1
	<i>Eptesicus serotinus</i>	2
	<i>Nyctalus noctula</i>	2
1c (Detector 2)	<i>Pipistrellus pipistrellus</i>	39

Appendix 8

UKHabitat Baseline Map

Appendix 9

Post-Development Habitat Map

