Symmetry Park, Ardley

Technical Appendix 8.1 - Update Ecological Baseline Report

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On behalf of:
Tritax Symmetry Ardley Ltd

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Executive Summary

S1 This Update Ecological Baseline Report has been prepared by The Environmental Dimension Partnership Ltd (EDP). It sets out the technical ecological detail that has informed both the design and the impact assessment of proposed development at Symmetry Park, Ardley (hereafter referred to as 'the Site').

S2 This report updates the findings of the previous Ecological Baseline written in December 2021 (edp2355_r008) and includes updated survey information from surveys undertaken in 2022 and 2023. This report should be read in conjunction with the previous 2021 Baseline.

S3 The investigations undertaken comprise a desk study, update Extended Phase 1 Habitat survey and a suite of additional update Phase 2 surveys including those for wintering and breeding birds, roosting and foraging bats, otter (*Lutra lutra*), badger (*Meles meles*), great crested newt (*Triturus cristatus*) and terrestrial invertebrates.

S4 No changes to the Designated Sites previously identified within the original 2021 Ecological Baseline have been identified within this report, and no additional Designated Sites are present within the relevant zones of influence. However, two additional non-statutory sites will be brought forward into the ES Chapter on the basis of the air quality screening exercise undertaken in Chapter 06 of the ES.

S5 The majority of the Site habitats remain consistent with those previously recorded during the 2021 Baseline Report. The Site continues to comprise seven large, intensive arable fields, which at the time of the update Extended Phase 1 Habitat survey in December 2023 survey were sown with arable grassland ley in fields **F1**–**F6**, whilst the southern field **F7** consisted of oil-seed rape. The arable fields continue to have limited ecological importance. The arable fields are enclosed by a network of native hedgerows with a number of associated mature trees that are of Site to Local ecological importance. Other habitats present on-site include areas of dense and scattered scrub and improved grassland as well as an additional area of species-poor semi-improved grassland, recorded during the December 2023 update survey.

S6 A range of protected/notable species have been confirmed, or are assumed to be present, within the Site. The full suite of Important Ecological Features (IEF), which has been identified for the purposes of assessing potentially significant effects within the formal Ecological Impact Assessment (EcIA), is listed in **Table EDP S1**.

Table EDP S1: Important Ecological Features Identified Within the Site's Zones of Influence

Feature	Summary Description and Relationship with Site	Level of Importance
Statutory Designations		
Ardley Cutting and Quarry (Site of Special Scientific Interest (SSSI)	Located 1.7km south-west of the Site, the features for which the site is designated comprise its invertebrate assemblage on open, short sward vegetation, lowland calcareous grassland and the population of nationally scarce Duke of Burgundy (*Hamearis lucina*) butterfly.	National
Non-statutory Designations		
Stoke Bushes Local Wildlife Site (LWS)	Lowland mixed deciduous woodland. Ancient semi-natural inventory. Located 0.05km north-east of the Site.	County
Stoke Little Wood Local Wildlife Site (LWS)/Ancient Woodland (AW)	Stoke Little Wood is located 1km south-east of the Site. Designated as a LWS for its Ancient Woodland habitat. It has been scoped into further assessment on the basis of the Air Quality screening exercise in Chapter 06 of the ES.	County
Twelve Acre Copse LWS/AW	Twelve Acre Copse is located 2.02km southeast of the Site. Designated as a LWS for its Ancient Woodland habitat. It has been scoped into further assessment on the basis of the Air Quality screening exercise in Chapter 06 of the ES.	County
Habitats		
Species-rich hedgerows and associated mature trees	Hedgerow network across the Site. Low distinctiveness although forms habitat corridors. Scattered broadleaved trees present within boundary features. Hedgerow **H3** assessed as being 'Important' under the Hedgerow Regulations 1997 ecological assessment criteria.	Local
Species		
Birds	In general, no significant breeding or wintering populations on-site as verified through 2022 update breeding bird survey and wintering bird survey, although the hedgerows, trees and woodland offer suitable nesting habitat. However, a significantly greater number of skylark (*Alauda arvensis*) were observed singing above the Site during the 2022 surveys (40 in total), compared to the number of recorded during previous survey (six individuals). The Site is considered to be able to support a maximum of 23 breeding pairs.	District
Bats	Potential for roosting in several trees. Foraging and commuting by mostly common and widespread bat species with low numbers of uncommon species including barbastelle (*Barbastella barbastellus*).	Local

Feature	Summary Description and Relationship with Site	Level of Importance
Badger	Two badger setts recorded offsite in 2022, both with signs of recent activity. The setts were identified as one main sett and one outlier sett. During the 2023 survey an additional potential sett was identified off-site at the northern boundary, although no signs of badger activity were recorded.	Site (but legally protected)
Great Crested Newt	Site habitats are of limited value for great crested newt (*Triturus cristatus*). The hedgerows, scrub and areas of improved and semi-improved grassland offer some limited foraging and sheltering habitats. However, these areas are limited in size and separated by large areas of limited value arable habitats. Surveys of pond **P2** returned a negative eDNA result, although pond **P1** was unable to be surveyed, therefore a precautionary approach has been taken, as the presence of great crested newt within suitable habitats cannot be entirely ruled out. The remaining ponds are separated from the Site by barriers to newt dispersal.	Site (but legally protected)
Butterflies	Non-significant breeding population of brown hairstreak (*Thecla betulae*) butterflies on-site.	Local

Section 1
Introduction

1.1 This Update Ecological Baseline Report has been prepared by The Environmental Dimension Partnership Ltd (EDP) on behalf of Tritax Symmetry Ardley Ltd (hereafter referred to as 'the Applicant'). It sets out the updated technical ecological detail that has informed both the design and the impact assessment of proposed development at Symmetry Park, Ardley (hereafter referred to as 'the Site').

1.2 EDP is an independent environmental planning consultancy with offices in Cirencester, Cardiff and Cheltenham. The practice provides advice to private and public sector clients throughout the UK in the fields of landscape, ecology, archaeology, cultural heritage, arboriculture, rights of way and masterplanning. Details of the practice can be obtained at our website (www.edp-uk.co.uk).

1.3 This report updates the findings of the previous Ecological Baseline written in December 2021 (edp2355_r008) and includes updated survey information from surveys undertaken in 2022 and 2023. This report should be read in conjunction with the previous 2021 Baseline.

1.4 The proposals are to be the subject of an outline planning application and a formal Environmental Impact Assessment (EIA). Following on from changes in the Parameter Plans and Illustrative Masterplans this report will be submitted alongside an update Environmental Statement (ES) chapter as part of an ES addendum under Regulation 25 of the 2017 EIA Regulations. The application is therefore supported by an ES, Chapter 8 of which relates specifically to ecology and biodiversity and details the Ecological Impact Assessment (EcIA) of the proposed development. This report is a Technical Appendix to Chapter 8 of the ES addendum and should be read in conjunction with it.

1.5 This report has been prepared with reference to the following key guidance:

- Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Preliminary Ecological Appraisal[1];
- CIEEM Guidelines for Ecological Impact Assessment[2]; and
- British Standard: Biodiversity – Code of Practice for Planning and Development[3].

SITE CONTEXT

1.6 The Site is located adjacent to the east of the junction between the A43 and B4100, and 0.5km to the east/north-east of Junction 10 of the M40 near Ardley, Oxfordshire. The Site comprises several agricultural, arable fields, with the proposed development footprint covering an area of

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

[2] CIEEM (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.2. Chartered Institute of Ecology and Environmental Management, Winchester

[3] BSI (2013) *Biodiversity - Code of Practice for Planning and Development*. BS 42020:2013. British Standards Institute

83.279 hectares (ha). The Site is centred on National Grid Reference (NGR) 455362, 229178. The Local Planning Authority (LPA) is Cherwell District Council (CDC).

DEVELOPMENT PROPOSALS

1.7 In brief, the proposed development comprises construction of up to new logistics floorspace (Use Class B8) and ancillary offices (Use Class E (g)(i)), a new road junction, HGV parking, parking for electric cars, bicycles, cars (including accessible parking) and motorcycles, and associated landscaping and sustainable drainage features.

REPORT SCOPE

1.8 This Update Ecological Baseline Report describes the current ecological interest within and around the Site, which has been identified through standard desk- and field-based investigations, to inform the EcIA.

1.9 The remainder of this report is structured as follows:

- **Section 2** summarises the methodology employed in determining the update baseline ecological conditions within and around the Site based upon updated surveys undertaken in 2022 and 2023 (with further details provided within Appendices and on Plans where appropriate). The findings from previous surveys as detailed within the 2021 Ecological Baseline report will be referenced here where relevant, but will not be repeated in detail, since these results are detailed fully in the Baseline report (edp2355_r008);

- **Section 3** summarises the updated baseline ecological conditions based on updated surveys (with further details also provided within Appendices and on Plans where appropriate) and identifies and evaluates any Important Ecological Features (IEF); and

- **Section 4** summarises the IEFs that are relevant to the EcIA of the proposed development.

1.10 Potential impacts on IEFs resulting from the proposed development, together with proposed measures to avoid and mitigate impacts and deliver ecological enhancements and any residual significant effects (positive or negative), are described in detail in Chapter 8 of the ES.

1.11 The Biodiversity Net Gain (BNG) Assessment of the proposed development, including the output from a biodiversity metric, is provided separately in Technical Appendix 8.4 (edp2355_r021) of the ES.

Section 2
Baseline Methodology

2.1 This section summarises the methodologies employed in determining the baseline ecological conditions within and around the Site, as derived from the update surveys undertaken in 2022 and 2023. This has been undertaken by appropriately qualified ecologists using relevant best practice methodologies wherever possible. Reasons for any departure from best practice methodology are given and normally relate to the timing of EDP's commission and/or the availability of access to parts of the Site or wider study area. Full details of the techniques and process adopted are, where appropriate, provided within Appendices and on Plans to the rear of this report. The Technical Appendix 8.1: Ecological Baseline report (edp2355_r008) of the original Chapter 8 ES Chapter has details of the methodology and limitations from the original surveys undertaken up to 2021, therefore the methods will not be repeated here.

EXTENDED PHASE 1 HABITAT SURVEY

2.2 The survey technique adopted for the Extended Phase 1 Habitat survey was at a level intermediate between a standard Phase 1 survey technique, involving habitat mapping and description, and a Phase 2 survey, based on detailed habitat and species surveys. The survey involved identifying and mapping the main habitat types (including Priority Habitats) and scoping any potential protected or Priority Species/populations. This level of survey is not intended to compile a complete floral and faunal inventory for the Site.

2.3 An updated assessment of the main habitats within the Site, together with their dominant/characteristic plant species, were identified by undertaking an updated Extended Phase 1 Habitat survey in April 2022 and December 2023. This revised the findings of the original Extended Phase 1 survey undertaken in April 2018.

2.4 The previous iteration of the Defra Metric employing metric version 3.0 completed as part of the EcIA has been updated to following an update habitat condition survey in December 2023. This was undertaken with reference to the Metric user guide[4] and UK Habitat Classification System[5], which underpins the Metric. This information is presented separately within the BNG Assessment (Technical Appendix 8.4, EDP report ref. edp2355_r021).

Limitations

2.5 The update Phase 1 was undertaken during December, which is outside of the optimal period for botanic survey (April to October inclusive), therefore there is potential that some plant species may not have been visibly present or were unable to be identified. However, as the original survey was undertaken during the optimum survey season, and given the habitats present within the Site (predominantly arable fields separated by hedgerows), this was not considered to be a constraint. The survey identified the main habitat types present, with

[4] Natural England Joint Publication JP039. The Biodiversity Metric 3.0 User Guide. April 2022.
[5] UKHAB LTD. (2022) UK Habitat Classification [online]. Available from: http://ukhab.org

associated potential for protected and/or notable species, and given the purpose of the survey it is deemed adequate and robust for the level of detail required.

DETAILED (PHASE 2) SURVEYS

2.6 The scope of updated Phase 2 surveys undertaken within the Site was defined following the initial studies described above.

2.7 The updated surveys 'scoped in' based upon the findings of the Extended Phase 1 Habitat survey are summarised in turn below, with reference to sources of further detailed information where applicable.

Hedgerow Survey

2.8 Owing to the presence of a network of hedgerows within the Site with variable species-diversity, structure and condition, a detailed survey was undertaken to assess the value and condition of all hedgerows within the Site and to identify whether any of them qualify as 'important', with reference to the Wildlife and Landscape criteria provided in Part II of Schedule 1 of the Hedgerows Regulations 1997. The update survey was completed on 22 April 2022 to update the findings of the initial hedgerow assessment undertaken in 2018.

2.9 Full details of the hedgerow survey methodology, and any limitations encountered, are provided in **Appendix EDP 2**. The location of the hedgerow sections surveyed is shown on **Plan EDP 1**.

Breeding Bird Survey

2.10 A single update breeding bird survey was undertaken on 27 May 2022 to update the results of the full set of breeding bird surveys undertaken in 2018. Consistent with the 2018 surveys the update survey was undertaken with reference to standard methodology, entailing a modified Common Bird Census (CBC)[6] 'territory mapping' approach. Full details of the breeding bird survey methodology, and any limitations encountered, are provided in **Appendix EDP 3**.

Wintering Bird Survey

2.11 A single update wintering bird survey was undertaken on 06 January 2022 to update the results of the full set of wintering bird surveys untaken in 2018. Full details of the winter bird survey methodology and any limitations encountered are provided in **Appendix EDP 4**.

Bat Surveys

2.12 The original Ecological Baseline identified several trees with bat roosting potential and furthermore the onsite habitats were considered as offering suitable commuting and foraging habitat for bats. The following updated surveys for bats were therefore undertaken during the active bat season in 2022 with reference to national best practice guidelines: daytime inspections of trees for their bat roosting potential; manual transect surveys; and automated detector surveys.

[6] Marchant, J. (1983). *Common Bird Census Method*. BTO

Bat Roost Inspection Surveys – Trees

- Preliminary ground level roost assessment of trees for bat roosting suitability, undertaken on 22 April 2022 and 07 December 2022.

Update Bat Activity Surveys

- Manual transect surveys conducted in May, July and September 2022; and
- Automated detector surveys conducted in May, July and September 2022.

2.13 Full details of the bat survey methodologies and the limitations encountered are provided in **Appendix EDP 5**.

Badger Survey

2.14 The Site offers suitable foraging or sett building opportunities for badgers (*Meles meles*) within the hedgerows, grassland field margins and across the arable fields, and as such, the Survey Area was subject to update walkover surveys on 23 April 2022 and 07 December 2023 to identify any changes from previous surveys. During the survey any signs of badger activity such as holes, latrines, trails, snuffle holes and hairs on fencing or vegetation were recorded. Where holes of a size and shape consistent with badgers were identified, the following signs of badger activity were searched for in order to determine whether they were currently in use:

- Fresh spoil outside entrances;
- Bedding material (typically dried grass) outside entrances;
- Holes being cleared of leaf litter/other debris;
- Badger guard hairs; and
- Footprints and fresh tracks leading to/from the holes.

Limitations

2.15 Badger surveys can be undertaken at any time of year and are, therefore, not limited by seasonal factors. Access to third party land located offsite was not possible in locations of private land ownership, therefore the badger survey in these locations was undertaken from the boundary of the Site.

Great Crested Newt Survey

2.16 The Site does not include any ponds or suitable water bodies that could support great crested newts (*Triturus cristatus*). The Site includes ditches, which are only seasonally wet during the winter months, and none of these were recorded as holding significant water during the spring months. These would not offer suitable aquatic habitat for great crested newts, and therefore no surveys of these ditches were deemed required.

2.17 The desk study revealed seven ponds present within 500m of the Site boundary, as shown on **Plan EDP 2**. Three of these ponds are located to the west of the A34 road and two are located south of a watercourse. As these features are considered significant barriers to great crested

newt dispersal, surveying these ponds was not considered necessary. Pond **P1** was unable to be surveyed since access was not granted to this pond.

2.18 Therefore, of the two ponds scoped into the surveys, a survey was only able to be undertaken on pond **P2**.

Environmental DNA Sampling of Waterbodies

2.19 Environmental DNA (eDNA) is DNA that is collected from the environment in which an organism lives. In aquatic environments, animals including amphibians shed cellular material into the water via their saliva, urine, faeces, skin cells, etc. This eDNA may persist for several weeks and can be collected through a water sample and analysed to determine if the target species of interest is/has been present in the water body. eDNA sampling of waterbodies between 15 April and 30 June (inclusive) gives a highly reliable indication of the presence or likely absence of great crested newt.

2.20 The sampling was undertaken by a suitably experienced ecologist on 25 April 2022 using sampling kits obtained from SureScreen Scientifics and following a standard protocol set out by the Freshwater Habitats Trust, which is approved by Natural England. Briefly, this protocol involves (per pond):

- Collecting 20 water samples from selected areas evenly spread around the accessible perimeter of the waterbody, including both open water and vegetated areas;
- Collecting a ladle of water at each sampling location, stirring the water column without stirring up sediment during collection;
- Shaking and inverting the combined samples thoroughly once all 20 ladles are collected; and
- Extracting 15ml of this mixed sample into six conical tubes, each containing preservative fluid, a shaking thoroughly to homogenize the sample.

2.21 The water samples were then sent to SureScreen Scientifics to be analysed for great crested newt eDNA, using real-time Polymerase Chain Reaction (PCR). The eDNA results report was returned on the 25 April 2022.

Limitations

2.22 During the eDNA survey, it was noted that there were inflows to the pond from the adjacent stream, which may impact on the reliability of results.

2.23 Furthermore, as stated above, access was only granted for one of the two ponds proposed for survey, representing a significant limitation to the survey. As such, a precautionary approach has been taken to assessing survey findings and recommendations based upon these.

Invertebrate Survey

2.24 The Site was considered to contain suitable habitat for brown hairstreak (*Thecla betulae*), black hairstreak (*Satyrium pruni*) and white-letter hairstreak (*Satyrium w-album*). All three species are Priority Species, which have a stronghold in Oxfordshire. Update surveys for these species,

comprising winter egg searches, were therefore conducted on 24 January 2022, covering the Survey Area.

2.25 Full details of the invertebrate survey methodology and any limitations encountered are provided within **Appendix EDP 7**.

ECOLOGICAL SURVEYS SCOPED OUT

2.26 **Table EDP 2.1** summarises other survey types which, whilst occasionally required to inform a planning submission for development sites, are not deemed to be necessary/appropriate in this case or did not require updating following from the initial surveys undertaken for the 2021 Baseline Report.

Table EDP 2.1: Update Ecology Surveys Scoped Out.

Survey Type	Reasons for Scoping Out
Detailed botanical surveys	The updated Extended Phase 1 Habitat survey information was sufficient to confirm habitat value, with no indication of particularly high value habitats present that would require further survey.
Dormouse (*Muscardinus avellanarius*) survey	As set out within the original baseline ecological report the woodland habitats present along the northern and southern boundary of the Site are considered sub-optimal given their structure and species composition, with a lack of scrubby understorey and linkages to optimal habitat in the wider landscape. Hedgerows within the Site continue to be of a poor structure and are well-managed with regular flailing. Impacts on this habitat are considered likely to be very minor. No records of dormice were returned from within 2km of the Site.
Otter (*Lutra lutra*) and water vole (*Arvicola amphibius*) survey	As set out within the original baseline ecological report there are four wet ditches within the Site. However, they are not deemed suitable to support otter or water vole and no other suitable water courses are present within the vicinity of the Site. As the Site offers no suitable aquatic habitat, these species are not considered present.
Update reptile surveys	Following the pilot reptile surveys in 2018, it was assessed that there was no need for further surveys. The information is deemed sufficient to confirm that the Site is considered unlikely to support or support only a small number of common and widespread reptile species typical of the locality. Potential reptile habitat is limited to the very minor grassland field margins present and these do not offer refuge habitat for reptiles.

Section 3
Update Baseline Results

3.1 This section summarises the baseline ecological conditions determined through the updated field-based investigations described in **Section 2**. In particular, this section identifies and evaluates those ecological features/receptors that lie within the Site's potential zone of influence, and which are pertinent in the context of the proposed development. Further technical details are, where appropriate, provided within Appendices and on Plans to the rear of this report.

3.2 Where a particular ecological feature/receptor has been confirmed to be present, or presence is inferred based on habitat suitability, its ecological importance is assessed. The level of ecological importance assigned to each ecological feature is based upon established geographical value systems and the uses the following scale: International and European (highest) > National > Regional > County > District > Local > Site > Negligible (lowest).

DESIGNATED SITES

3.3 Information regarding Designated Sites was obtained during the desk study in December 2021. As detailed within the original Ecological Baseline report no part of the Site is covered by any statutory designations, and there are two nationally important designations within 5km of the Site of which only one is designated for its ecological value; Ardley Cutting and Quarry Site of Special Scientific Interest (SSSI). The locations of the Designated Sites are shown on **Plan EDP 3**.

Table EDP 3.1: Statutory Designations within the Site's Potential Zone of Influence

Designation	Approx. Distance from Site	Interest Feature(s)
Nationally Important Statutory Designated Sites (within 5km of the Site)		
Ardley Cutting and Quarry SSSI	1.7 km south-west	Designated for its geological and biological interests associated with limestone grassland, scrub, ancient woodland and wetland habitats. The flora of the limestone grassland supports a rich invertebrate fauna, with large populations of calcareous grassland butterflies, including the nationally scare Duke of Burgundy (*Hamearis lucina*). The Site also supports a large population of great crested newts.
Ardley Trackways SSSI	1.9km south	Designated for its geological interest.

3.4 The Site lies within the Impact Risk Zone (IRZ) for the Ardley Cutting and Quarry SSSI. The majority of the Site in the north is not of a size or nature which requires consultation with Natural England on potential impacts. However, the southern part of the Site on the south side of the B4100 and areas in the southern parts of **F3**–**F5** are located within the IRZ, which states that large infrastructure such as warehousing/industry where total net additional gross internal

floorspace following development is 1,000m² or more have potential for impacts relating to water supply and therefore may require consultation with Natural England. No water abstraction works will take place within the Site, with all water requirements met via mains supply. An Air Quality assessment undertaken as part of the application, and set out within Chapter 06 of the ES, concludes that the Development traffic contribution to annual mean NOx and NH3 concentrations, and nutrient N deposition is greater than 1% of the Critical Levels and Critical Loads at the identified sensitive habitats within two locations within the SSSI for the in-solation assessment. The modelling also reported acidifying N deposition rates within the SSSI is >1% of the Critical Load, for the in-combination scenario at both modelled areas of the SSSI. As such, the impacts to the SSSI resulting from the development of the Site cannot be scoped out based on air quality modelling alone, and further assessment is required

3.5 Given the spatial separation between the Site and the SSSI, as well as the spatial barrier presented by the M40, and nature of the development (logistics warehousing), other direct adverse impacts aside from potential air quality impacts are considered unlikely as a result of the proposed development.

3.6 The Air Quality screening assessment undertaken as part of the application, and set out within Chapter 06 of the ES considers sites within 200m of the 'Affected Road Network' (ARN). A distance of 200 metres is used in assessments since concentrations from the road source decrease rapidly with distance from the road and therefore beyond 200m the road source contribution is not typically discernible from fluctuations in the background levels. The screening assessment concludes that the development traffic contribution to annual mean NO_x and NH_3 concentrations, as well as nutrient nitrogen deposition is greater than 1% of the Critical Levels and Critical Loads at two Ancient Woodland/Local Wildlife Sites (LWS): Stoke Little Wood and Twelve Acre Copse. As such, the two sites cannot be scoped out at the Air Quality screening stage, and so further assessment is required within the EcIA. Stoke Wood LWS and Stoke Bushes LWS are beyond 200m from the affected roads and have therefore been excluded from the screening exercise.

3.7 Given the proximity of Stoke Bushes LWS, located 0.05km from the Site, as within the previous ES chapter this will continue to be brought forward in the Addendum to the ES.

3.8 With regard to the remaining non-statutory sites within the Development's zone of influence, no other changes to the conclusions set out in the previous baseline assessment have been made. As such, it is not considered that the proposals will result in significant adverse impacts to the nature conservation interest of the Stoke Wood LWS or the Tusmore and Shellswell Park Conservation Target Area.

HABITATS

3.9 Updated information on habitats within and around the Site was obtained during the updated Extended Phase 1 Habitat survey and hedgerow assessment.

3.10 The update Extended Phase 1 Habitat survey found no significant changes to the habitats present on-site from the findings of the 2021 surveys detailed in the original Ecological Baseline report, however, minor changes in the nature of the arable habitats and presence of wet and dry ditches were recorded. Furthermore, a small additional area of species-poor semi-improved

grassland was noted in field **F7**. The distribution of different habitat types within the Site is illustrated on **Plan EDP 1**. The habitats are further described in **Appendix EDP 1** alongside illustrative photographs and species lists. A summary and qualitative assessment of these habitats is provided in **Table EDP 3.2**.

3.11 Given that no significant changes were noted at the on-site hedgerows during the 2023 surveys from those previously undertaken it is considered that the assessment made in relation to Important Hedgerows remains the same. Only two hedgerows **H1** and **H3** are considered to meet the ecological criteria for an 'Important Hedgerow' under the Hedgerow Regulations 1997 assessment criteria.

Table EDP 3.2: Summary of Habitats within the Site.

Habitat Type	Distribution	Intrinsic Ecological Importance*
Arable	Covers the majority of the Site.	Negligible, owing to intensive management and lack of distinctiveness.
Improved grassland	Restricted to small areas around the field margins. Also bounding either side of B4100, which intersects the Site.	Site, owing to low distinctiveness and diversity of flora species present and managed nature of this habitat.
Species-poor semi-improved grassland	A small fenced off area in the north-west corner of **F7**.	Site, owing to small size and low distinctiveness and diversity of flora species present.
Scrub	A belt of dense scrub boarding the west boundary of the Site. Small, isolated patches of scrub along the B4100.	Site, owing to low distinctiveness and small extent of habitat type.
Semi-natural broadleaved woodland	Off-site, adjacent to southern boundary.	Local, owing to habitat type and connectivity across the landscape. Located off-site.
Ditches (wet and dry)	Wet ditches are associated with three of the hedgerows: **H10**, **H11** and **H13**. Dry ditches are associated with the following hedgerows: **H1**, **H3**, **H4** and **H16** (with the ditch being located offsite), in addition to **H2**, **H6**, **H8** and **H12**. **H14** previously was noted as a wet ditch during the 2021 survey, although was dry during the 2023 survey.	Site, owing to low distinctiveness and small extent of habitat type.

Habitat Type	Distribution	Intrinsic Ecological Importance*
Species-poor hedgerows	Separating the fields throughout the Site. Some are with associated trees. **H1** assessed as being 'Important' under the Hedgerow Regulations ecological assessment criteria.	Site to Local, owing to lack of species diversity and intensive management. Forms habitat corridors across the Site. Priority Habitat.
Species-rich hedgerows	Separating the fields throughout the Site. Some are with associated trees. **H3** assessed as being 'Important' under the Hedgerow Regulations ecological assessment criteria.	Site to Local, owing to lack of species diversity and intensive management. Forms habitat corridors across the Site. Priority Habitat.
Mature trees	Scattered broadleaved trees present associated with boundary features.	Site to Local, owing to connectivity with offsite habitats. Priority Habitat.

*Importance irrespective of any protected, priority or other notable species which may be present

3.12 As noted within **Table EDP 3.2**, the majority of the Site continues to be made up of habitats which are of less than Local, or negligible, intrinsic importance. However, the off-site woodland is of Local value and onsite hedgerows are up to Local level importance and/or are Priority Habitats or are irreplaceable habitats as protected under the National Planning Policy Framework (NPPF). Furthermore, a number of the habitats, including those which are of limited intrinsic importance, also require consideration in relation to their importance in maintaining populations of protected, priority or other notable species. This is discussed further below.

PROTECTED, PRIORITY OR OTHER NOTABLE SPECIES

3.13 Certain species receive legal protection in the UK and are commonly known as 'protected species'. In reality, the level of protection for different species varies considerably, from protection solely against 'killing and injury' to full protection of the species and their places of refuge. Where pertinent, details of legal protection afforded to species/species-groups are provided below.

3.14 In addition to protected species there are other species/species-groups that do not receive legal protection, but which are notable owing to their conservation status. This includes Priority Species, the conservation of which public authorities in England must have due regard to under the NERC Act (2006). The NPPF recognises species as an important component of biodiversity, as does the Adopted Cherwell Local Plan 2011–2031 Part 1, specifically Policy ESD 10.

3.15 The likelihood of presence, or confirmed presence, of protected, priority or other notable[7] wildlife species within the Site is summarised below with reference to desk study records, habitat suitability and detailed surveys where relevant. Further details are made available within the Appendices and Plans where referenced.

[7] Notable species are those which are not legally protected but are formally identified as being of conservation concern

Breeding Birds

3.16 All wild birds, their nests and eggs are protected under the Wildlife and Countryside Act 1981 (as amended) (WCA). This makes it an offence to:

- Intentionally kill, injure or take any wild bird;
- Take, damage or destroy the nest of any wild bird while it is in use or being built;
- Take, damage or destroy the egg of any wild bird; or
- To have in one's possession or control any wild bird (dead or alive) or egg, or any part of a wild bird or egg.

3.17 In addition, further protection is afforded to those wild bird species listed on Schedule 1 of the WCA, prohibiting any intentional or reckless disturbance to these species while it is nest building, or at a nest containing eggs or young, or to recklessly disturb the dependent young of such a bird. A number of species are also included as Priority Species.

3.18 An update breeding bird survey was undertaken within the Site on 27 May 2022. This survey recorded an assemblage of birds typical of the agricultural and urban fringe environment present within the Site. This survey was undertaken with reference to the CBC approach, as detailed in **Appendix EDP 3**, with the results illustrated on **Plan EDP 4**.

3.19 In summary, a total of 31 bird species were recorded within and adjacent to the Site during the breeding bird survey visit. This includes one WCA Schedule 1 species, nine Priority Species and 15 species listed as Birds of Conservation Concern (BoCC); Red or Amber listed.

3.20 Of those species recorded in 2022, only one species, blue tit (*Cyanistes caeruleus*) was confirmed as breeding, with five groups of blue tit including juveniles recorded from the hedgerows on site. In addition, four species were recorded as probable breeders:

- Grey partridge (*Perdix perdix*) (Species of Principal Importance (SPI), Red list): Three pairs of grey partridge were recorded within the central two fields (fields **F2** and **F4**);
- Lapwing (SPI, Red list): A pair of lapwing (*Vanellus vanellus*) was seen in field **F2**, but from their behaviour didn't appear to have eggs or young;
- Yellowhammer (*Emberiza citronella*) (SPI, Red list): a pair seen in close proximity in **H11**;
- A pair of bullfinch (*Pyrrhula pyrrhula*) (SPI, Amber list) was seen in the north-east corner of the site in **H1**;
- Two pairs of red-legged partridge (*Alectoris rufa*) were seen, one pair in **F2** and one pair in **F4**; and
- Four pairs of goldfinch (*Carduelis carduelis*) were seen around the site; two pairs in the scrub at the western site boundary, two flying from **H4** over **F3**, and two flying south along **H8**.

3.21 Sixteen species were recorded as possible breeders, being observed in 'suitable' habitat and 10 species were recorded as non-breeders comprising stock dove (*Columba oenas*), woodpigeon (*Columba palumbus*), rook (*Corvus frugilegus*), jackdaw (*Corvus monedula*), pied wagtail (*Motacilla alba*), buzzard (*Buteo buteo*), red kite (*Milvus milvus*), yellow wagtail (*Motacilla flava*), and swallow (*Hirundo rustica*).

3.22 The majority of species recorded within the Site were recorded in low numbers with the exception of skylark (*Alauda arvensis*), which were recorded in large numbers throughout all fields. During the updated survey, a total of 40 skylark were observed singing over the fields, which contrasts with the findings of the previous surveys in 2018 set out within the original Ecological Baseline report, which recorded up to six individuals in song at the same time during surveys undertaken. Having undertaken an assessment of skylark territory densities for the habitats within the Site, it is considered that the Site could be capable of supporting up to 22.3 territories. Given that there was no significant change in the habitats from the 2018 surveys to the updated breeding bird surveys in 2022, it is considered that the 40 singing birds may be an anomalous result, and furthermore that it is unlikely that these singing birds would represent 40 breeding pairs. At the most it is considered that this may present around 20 breeding pairs. However, given disparity between the survey results from 2018 and 2022, an average has been taken assuming that up to 23 pairs may be present, as an upper limit and six pairs at the lower limit.

3.23 Overall, the assemblage of breeding bird species recorded on site was considered to be broadly typical of the agricultural and urban-fringe environment, with species that are common residents and widespread within agricultural/urban fringe habitats within which the Site is set, consistent with the findings of the 2018 survey. Notable assemblages were generally limited, with the exception of the skylark that were recorded singing, significantly greater than the levels recorded during the 2018 surveys. Taking all this into account the breeding bird assemblage on Site is therefore judged to be of District level importance.

Wintering Birds

3.24 Wintering birds do not receive direct legal protection, although they may form part of a protected assemblage originating from a statutory designation in the vicinity.

3.25 A winter bird survey was undertaken within the Site on 06 January 2022. This survey recorded an assemblage of birds typical of the agricultural and urban fringe environment present within the Site, consistent with previous findings.

3.26 A total of 24 bird species were recorded within and adjacent to the Site during the winter bird survey, of which 3 are listed as WCA Schedule 1 species and 12 of which are of conservation concern. Full results of the winter bird surveys are provided in **Appendix EDP 4** and illustrated on **Plan EDP 5**.

3.27 Based on the survey findings, the breeding bird assemblage supported by the Site is judged to be of no greater than Local-level ecological importance.

Bats

3.28 All species of British bat are listed as European Protected Species (EPS) on Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended) (referred to as the 'Habitats Regulations'). This affords strict protection to bats and their roosts, and makes it an offence to:

- Deliberately capture, injure or kill a wild animal of an EPS;
- Deliberately disturb wild animals of an EPS wherever they are occurring, in particular, any disturbance which is likely to impair their ability to survive, to breed or reproduce, to significantly affect the local distribution or abundance of the species to which they belong, or in the case of hibernating or migratory species, to hibernate or migrate; or
- Damage or destroy a breeding site or resting place of a wild animal of an EPS.

3.29 Additional protection for bats is also afforded under the WCA, making it an offence to intentionally or recklessly disturb bats whilst they are occupying a structure or place which is used for shelter or protection, or to obstruct access to this structure or place. In addition, soprano pipistrelle (*Pipistrellus pygmaeus*), brown long-eared bat (*Plecotus auritus*), greater horseshoe bat (*Rhinolophus ferrumequinum*), barbastelle bat (*Barbastella barbastellus*), Bechstein's bat (*Myotis bechsteinii*), noctule (*Nyctalus noctula*), and lesser horseshoe bat (*Rhinolophus hipposideros*) are also listed as Priority Species.

Bat Roosting

Trees

3.30 The 2021 Ecological Baseline report identified a total of 13 trees with suitable features for bat roosting, including three with High, three with Moderate and seven with Low suitability for roosting bats. No bats or evidence of bats were found during the ground level tree assessment.

3.31 No new trees with bat roosting suitability were identified in the 2022. However, five additional trees with bat roosting suitability were identified on-site during 2023 update ground level tree assessment. Furthermore, one tree (**T2**) was upgraded from Low to Moderate suitability, based on the features present.

3.32 Full details of the bat roost assessment of trees within the Site are provided in **Appendix EDP *5*** and illustrated on **Plan EDP 6**.

Bat Foraging/Commuting Activity

3.33 The findings of the updated manual transect and automated detector surveys are provided in detail within **Appendix EDP 5**, and the approximate distribution and diversity of bat species recorded during the transect surveys are illustrated on **Plan EDP 7**. Automated detector locations, as well as transect routes are shown on **Plan EDP 8**.

3.34 In general, consistent with the previous surveys undertaken in 2018, the updated bat transect surveys recorded low levels of bat foraging/commuting activity, although the number of species recorded differed slightly with the 2022 surveys predominantly comprising common pipistrelle (*Pipistrellus pipistrellus*) (consistent with 2018 findings) with low number of soprano pipistrelle

(*Pipistrellus pygmaeus*) and a single pass by noctule, compared with low numbers of noctule and *Myotis* species and individual passes by long-eared (*Plecotus* sp.) bat and barbastelle in 2018.

3.35 The majority of bat activity recorded during the update transect surveys was associated with the Site boundary hedgerows and areas of woodland at the south of the Site, rather than the internal hedgerows that recorded far less activity across the three transect surveys.

3.36 Bat activity levels recorded by the static detectors varied between the 2018 and 2022, although the distribution of species recorded were broadly similar with the majority of bat activity from 2022 from common pipistrelle and soprano pipistrelle, with fewer registrations recorded from noctule, serotine (*Eptesicus serotinus*), long-eared bat, *Myotis* species and a single recording from barbastelle.

3.37 As detailed in the 2021 baseline report, the 2022 survey results substantiate that the abundance and diversity of bat species recorded on-site is generally considered to be typical of an urban fringe setting, with common and widespread generalist species, common pipistrelle registrations accounting for the majority of foraging and commuting activity. The hedgerows and associated trees provide some suitable foraging opportunities for the local bat population, while the woodland edge and scrub habitats along the south and western boundaries are considered to provide some suitable foraging habitats for a more diverse assemblage, including serotine and brown long-eared bats.

3.38 Barbastelle, an Annex II species, was recorded during the automated detector survey on one occasion in September 2022. This single recording indicates that there is unlikely to be a roost nearby, and that this species is only using the Site for occasional foraging and commuting.

3.39 Given the limitations to the 2022 surveys, which are detailed within **Appendix EDP 5**, a precautionary approach has been taken when assessing the findings of the update surveys. However, given that the broad trends between the 2018 and 2022 bat activity surveys remain similar and considering that the quality of habitats has not significantly altered from those recorded in 2018, the assessment provided within the 2021 Ecological Baseline report is considered to remain valid.

3.40 Best practice guidelines for assessing the importance of a bat assemblage within a Site indicate that based on the total number of different species recorded during the 2022 surveys the bat assemblage within the Site would be of less than County level importance, following the assemblage scoring approach set out in the mitigation guidelines for the Southern England region.

3.41 Taking into account the diversity of bat species utilising the Site and the extent of their roosting, foraging and commuting activity, the overall bat species assemblage using the Site is considered to be of Local importance, consistent with the findings of the 2021 Ecological Baseline report.

Badger [CONFIDENTIAL]

3.42 Badgers and their setts are protected under the Protection of Badgers Act 1992, which makes it an offence (*inter-alia*) to:

- Wilfully kill, injure, take, or cruelly ill-treat a badger; and
- Damage or interfere with a sett, by doing one of the following things:
    - Damage a badger sett or any part of it;
    - Destroy a badger sett;
    - Obstruct access to, or any entrance of, a badger sett;
    - Cause a dog to enter a badger sett; or
    - Disturb a badger when it is occupying a sett.

3.43 The 1992 Act defines a badger sett as "*any structure or place which displays signs indicating current use by a badger*".

3.44 The protection afforded to badgers is primarily due to animal welfare issues and history of persecution rather than concerns over their unfavourable nature conservation status.

3.45 Levels of badger activity on-site have increased since the surveys undertaken to inform the original Ecological Baseline report, which previously found no setts on-site and only badger foraging activity recorded. During the 2022 update survey, evidence of new badger setts was recorded within the Site and off-site along hedgerow **H16**. Two of these setts were considered active badger setts, with a third possible sett that showed evidence of use by rabbits (*Oryctolagus cuniculus*), with potential use by badgers.

3.46 Sett **S1**, an off-site sett (see **Plan EDP 6**), was identified as an active outlier sett, with two entrances facing west (away from the Site boundary). A large pile of fresh spoil was noted from digging activity. Sett **S2**, another off-site sett further south, was identified as a main sett with eight western-facing entrances, five of which were active and two partially used. The other entrance was too small for badgers and likely dug by other mammals such as rabbits. A large spoil pile was present near sett **S2**. Three eastern-facing holes (**PS1**) were identified within **H16** between the two setts, with rabbit hair and droppings present at the entrances. Two of the holes were small and surveyors concluded that these holes were rabbit holes that may have previously been used by badger. No signs of recent badger use were recorded.

3.47 During the 2023 surveys sett **S1** could not be located. Sett **S2** continues to remain in active use now with four well-used holes with entrances clear and unobstructed, four partially used entrances comprising holes that have since partially collapsed but could be re-excavated by badgers, as well as four holes clearly too small for badger but with clearance entrances that may be utilised by rabbits. No evidence of recent badger activity was noted around the sett, however, areas of foraging and an indistinct pathway from the general direction of the sett through the field in **F7** were noted. The spoil mounds varied in size from small to medium and not recently excavated. During the assessment it was noted that the signs of recent badger

activity were limited, however, this may be a result of the timing of the survey, with badger activity generally lower during winter months.

3.48 The potential sett **PS1** previously identified was considered to no longer be in use by badgers with the holes present now far too small for badger but were most likely to be currently used by rabbits, as evidenced by the presence of rabbit droppings. An additional potential sett (**PS2** on **Plan EDP 6**) was recorded off-site to the north of **H1** on the northern boundary of the Site. This comprised a single northward facing hole 40cm by 40cm, large enough for use by badger. However, no evidence of badger activity (hair, prints, latrines etc.) was found and it was noted that there were several rabbit holes directly around this hole, with a large amount of rabbit activity including digging and droppings recorded. As such, there is potential that this may only be a rabbit hole that has enlarged over time. Since there is no evidence of badger activity at this location, this has been classed as a potential sett, which if used badger would represent an outlier sett only.

3.49 The Site offers suitable foraging for badgers within the hedgerows, grassland field margins and across the arable fields.

3.50 Given that badgers are mobile animals with dynamic populations it is possible that new badger setts could arise in the future.

3.51 Taking into account the common status of badger within the country and the extent of badger activity within the Site, which was limited with the majority of activity located off-site, the overall population is considered to be of Site level importance.

Otter and Water Vole

3.52 The update Extended Phase 1 survey in 2023 has concluded that site habitats remain consistent with those recorded as part of the 2021 Ecological Baseline report.

3.53 The wet and dry ditches present along hedgerows continue to offer negligible value for water vole or otters, given their limited size, shallow water levels or lack of water in several, lack of extensive suitable marginal vegetation and no connection to more suitable habitats for these species. As the Site offers no suitable aquatic habitat, these species are not considered present at the Site and will therefore not be taken forwards to EcIA.

Other Mammal Species

3.54 Brown hare (*Lepus europaeus*) was recorded in three locations within the Site during the winter bird survey undertaken in 2022.

3.55 The Site habitats, comprising arable fields and hedgerows are considered to offer suitable habitat for brown hare. Given the availability of similar suitable habitat within the wider context it is considered that brown hare are unlikely to be reliant on the Site. The populations of brown hare occurring on the Site are only considered to be of Site level importance.

Great Crested Newt

3.56 Great crested newt is an EPS receiving strict protection under the Habitats Regulations as summarised above in respect of bats. Additional protection is also afforded to this species

under the WCA as summarised above in respect of bats. This species is also listed as a Priority Species.

3.57 There are no on-site ponds or other suitable waterbodies, although the desk study found seven ponds located within 500m of the Site (see **Plan EDP 2**).

3.58 An environmental DNA (eDNA) survey was undertaken for pond **P2** on 19 April 2022. The test returned a negative result indicating that newts were not inhabiting this pond at the time of the survey. The results of the eDNA test are provided in **Appendix EDP 6**.

3.59 Pond **P1** is located in the 194m west of the Site in an adjacent landownership. No access to this pond was granted to allow for survey during the 2022 surveys, as such, the status of great crested newt in this pond cannot be determined.

3.60 Ponds **P3**, **P4** and **P5** are all separated by the A43, whilst ponds **P6** and **P7** are located on the south side of a flowing watercourse, which act as a dispersal barrier to any commuting amphibians.

3.61 The Site continues to offer limited suitable terrestrial habitat for great crested newt, with grassland margins to the fields, scrub and hedgerows offering only limited suitable terrestrial habitat. At the time of survey in December the northern arable fields predominantly comprised arable ley, which was starting to grow. It is unknown as to whether the arable lay comprises a winter growing cover or whether the Site is under a crop rotation including arable ley. Once established, arable grass ley has potential to offer some foraging and dispersal habitat for great crested newt, although given the species-poor nature of ley crop it would be limited. The on-site ditches continue to offer negligible potential for great crested newt, since as discussed within the previous Ecological Baseline report, the ditches are only seasonally wet during the winter months, with none of these recorded as holding significant water during the spring months, so would not offer suitable aquatic habitat for great crested newt.

3.62 Given the limited suitability of the Site habitats, the negative eDNA result for pond **P2** and the spatial separation of the remaining ponds it is considered great crested newt are unlikely to use the Site. However, given the limitations with pond **P1** being unable to be surveyed a precautionary approach has been taken and the potential for their presence cannot be entirely ruled out.

3.63 Given the poor-quality nature of the Site habitats for great crested newt, it is considered that if they were to be present the population would be of Site level importance only.

Reptiles

3.64 The update Extended Phase 1 survey in 2023 has concluded that Site habitats remain broadly consistent with those recorded as part of the 2021 Ecological Baseline report, although as noted above, at the time of survey in December the northern arable fields predominantly comprised arable ley. Once established arable grass ley has the potential to offer some foraging and commuting habitat for reptiles. However, given the species-poor nature of ley crop it would be limited. As such, site habitats continue to offer limited suitability habitat, with the intensive agricultural fields considered of limited value and the more restricted areas of grassland and hedgerows of low value for foraging, commuting and sheltering.

3.65 The reptile survey undertaken to inform the original baseline report found no reptiles during the surveys undertaken. However, as noted above there were limitations associated with the reptile survey.

3.66 Given that the habitats remain of limited value for reptiles, the conclusions of the original Ecological Baseline report from 2021 remain the same and reptiles are considered unlikely to be present and will not be taken forwards to EcIA.

Invertebrates

3.67 The 2021 Ecological Baseline report highlighted the potential for presence of brown and black hairstreak butterfly, based on the presence of records within the wider area and the presence of blackthorn (*Prunus spinosa*) and elm (*Ulmus* sp.) within the on-site hedgerows.

3.68 During the survey carried out in January 2022, brown hairstreak eggs were recorded in the scrub bordering the west of the Site and hedgerow **H17** within the site. The locations of brown hairstreak eggs found is shown on **Plan EDP 6**, and full results are presented in **Appendix EDP 7**. No eggs of black hairstreak or white-letter hairstreak were recorded during these surveys.

3.69 White-letter hairstreak are associated with elm (*Ulmus* sp.), which is present throughout the Site in low quantities. The hedgerows in which the elm is found are subject to regular flailing as discussed previously, which reduces their suitability. In addition, no eggs of this species were recorded. It is, therefore, not considered that the Site supports a significant, viable population of white-letter hairstreak.

3.70 It is considered that the ability of the Site to support significant numbers of brown hairstreak adults is limited by the current agricultural management of the hedgerow network, which includes heavy flailing on all sides on at least an annual basis, thereby, periodically destroying the vast majority of the egg-laying habitat and eggs themselves.

3.71 Nevertheless, owing to the scarcity of the species, it is considered that the brown hairstreak population present at the Site is of Local-level ecological value.

Section 4
Summary of Important Ecological Features

4.1 Based on the results of the updated surveys undertaken in 2022 and 2023 as described in **Section 3**, and the detailed baseline investigations set out within the original Ecological Baseline report, a total of nine IEFs have been identified for the purposes of assessing potentially significant effects in the EcIA. These are made up of: three designated sites, one habitat with associated habitat features, and five species/species assemblages.

4.2 These features, identified on the basis of being of Local level ecological importance or greater (or subject to legal protection), are summarised in **Table EDP 4.1**.

Table EDP 4.1: Important Ecological Features Identified within the Site's Zone of Influence.

Feature	Summary Description and Relationship with Site	Level of Importance
Statutory Designations		
Ardley Cutting and Quarry SSSI	Located 1.7km south-west of the Site, the features for which the site is designated comprise its invertebrate assemblage on open short sward vegetation, lowland calcareous grassland and the population of nationally scarce Duke of Burgundy butterfly.	National
Non-statutory Designations		
Stoke Bushes LWS	Lowland mixed deciduous woodland. Ancient semi-natural inventory.	County
Stoke Little Wood LWS/AW	Stoke Little Wood is located 1km south-east of the Site. Designated as LWS for its Ancient Woodland Habitats. It has been scoped into further assessment on the basis of the Air Quality scoping exercise in Chapter 06 of the ES.	County
Twelve Acre Copse LWS/AW	Twelve Acre Copse is located 2.02km south-east of the Site. Designated as an LWS for its Ancient Woodland Habitats. It has been scoped into further assessment on the basis of the Air Quality scoping exercise in Chapter 06 of the ES.	County
Habitats		
Species-rich hedgerows and associated mature trees	Hedgerow network across the Site. Low distinctiveness although forms habitat corridors. Scattered broadleaved trees present within boundary features.	Local

Feature	Summary Description and Relationship with Site	Level of Importance
Statutory Designations		
Species		
Birds	In general, no significant breeding or wintering populations on-site as verified through 2022 update breeding bird survey and wintering bird survey, although the hedgerows, trees and woodland offer suitable nesting habitat. However, a significantly greater number of skylark were observed singing above the Site during the 2022 surveys (40 in total), compared to the number of recorded during previous survey (6 individuals), although the Site is considered to be able to support a maximum of 23 breeding pairs.	District
Bats	Potential roosting in several trees. Foraging and commuting by mostly common and widespread bat species with low numbers of uncommon species including barbastelle.	Local
Badgers	Two badger setts recorded offsite in 2022, both with signs of recent activity. The setts were identified as one main sett and one outlier sett. During the 2023 survey an additional potential sett was identified off-site at the northern boundary, although no signs of badger activity were recorded.	Site (but legally protected)
Great Crested Newt	Site habitats of limited value for great crested newt. The hedgerows, scrub and areas of improved and semi-improved grassland offer some limited foraging and sheltering habitats. However, these areas are limited in size and separated by large areas of limited value arable habitats. Surveys of pond **P2** returned a negative eDNA result, although pond **P1** was unable to be surveyed, therefore a precautionary approach has been taken, as the presence of great crested newt within suitable habitats cannot be entirely ruled out. The remaining ponds are separated from the Site by barriers to newt dispersal.	Site (but legally protected)
Invertebrates (butterflies)	Non-significant breeding population of brown hairstreak butterflies on-site.	Local

Appendix EDP 1
Extended Phase 1 Habitat Survey

A1.1 The principal habitats within the Site together with their dominant/characteristic plant species identified during the original survey and update surveys are discussed in turn below. The type, distribution and species composition of the habitats present is discussed below.

A1.2 The following should be read in conjunction with **Plan EDP 1**, and illustrative photographs provided where appropriate.

ARABLE

A1.3 The majority of the Site comprises arable fields (see **Image EDP A1.1**). The northern part of the Site consists of seven field parcels with an individual field parcel south of the B4100. The fields were intensively managed and sown with cereal crops with fields **F2** and **F4** having a strip of sunflowers (*Helianthus annus*), for game cover, planted along the eastern edge during the 2018 survey.

A1.4 During the 2023 update survey it was noted that fields **F1** to **F6** comprised arable grass ley cover, rather than cereal crops. The field margins in **F2** have expanded in areas further to the west from the original location, and this margin as well as the margin in **F4** comprised a strip of millet (*Panicum miliaceum*) crop considered likely a game bird arable margin seed mix (**TN1** on **Plan EDP 1**). Field **F7** was recorded as comprising oil-seed rape (*Brassica napus* subsp. *Oleifera*), which was being grazed by sheep at the time of survey. In the north-east corner of field **F3** was a large manure pile (**TN2**).

A1.5 Arable habitats offer minimal opportunities for protected species except for a small number of farmland birds, bats, brown hare and invertebrate species. The arable habitats of the Site are considered to be of negligible inherent ecological value.

Image EDP A1.1: Example of arable field.

Improved Grassland

A1.6 Along the western edge of field **F2** is a strip of grass track, with species present including false oat grass (*Arrhenatherum elatius*), perennial rye grass *(Lolium perenne)*, cock's-foot grass (*Dactylis glomerata*), white clover (*Trifolium repens*), common nettle (*Urtica dioica*) and hogweed *(Heracleum sphondylium)* (see **Image EDP A1.2**).

Image EDP A1.2: Improved grass track in field **F2**.

A1.7 The B4100 road intersecting the north and south of the Site was bound by grass verges with species present including false oat grass, perennial rye grass, cock's-foot grass, common nettle, ground ivy (*Glechoma hederacea*), ribwort plantain (*Plantago lanceolata*), red fescue *(Festuca rubra),* yarrow (*Achillea millefolium*) and creeping buttercup (*Ranunculus repens*) (see **Image EDP A1.3**).

Image EDP A1.3: Grass roadside verge.

A1.8 Given the extent of these habitat areas and their lack of distinctiveness they are considered to be of Site-level ecological importance only.

Semi-improved Grassland

A1.9 During the 2023 update survey it was noted that the north-west corner of field **F7**, outside of the temporary electric fencing for the grazing sheep, comprised an area of species-poor semi-improved grassland. The sward height varied from 3–15cm in height with some areas of more tussocky grass. Species present include cock's-foot grass, barren brome (*Bromus sterillis*), red fescue, sowthistle (*Sonchus* sp.), cleavers (*Galium aparine*), a hawkweed (*Hieracium* sp.), false oat grass, white clover , broadleaved dock (*Rumex obtusifolius*), creeping thistle (*Cirsium arvense*), dove's-foot cranesbill (*Geranium molle*), dandelion (*Taraxacum officinale* agg.), common nettle, common ragwort (*Jacobaea vulgaris*) and spear thistle (*Cirsium vulgare*).

A1.10 Given the extent of this habitat area and their lack of distinctiveness it is considered to be of Site-level ecological importance only.

Scrub

A1.11 There are small extents of scrub along the B4100 roadside and adjacent to field **F2** dominated by blackthorn (*Prunus spinosa*) and bramble (*Rubus fruticosus* agg.).

A1.12 Outside of the Site boundary along the A43 is a band of scrub, approx.5m wide, separated from the Site by a wooden post and rail fence. The scrub is relatively young and species present include field maple (*Acer campestre*), hawthorn (*Crataegus monogyna*), dogwood (*Cornus sanguinea*), hazel (*Corylus avellana*), bramble, ivy (*Hedera helix*), holly (*Ilex aquifolium*), wild privet (*Ligustrum vulgare*) and blackthorn (see **Image EDP A1.4**).

A1.13 Given the limited extent of these habitat areas and their lack of distinctiveness they are considered to be of Site-level ecological importance only.

Image EDP A1.4: Off-site planted scrub.

Hedgerows

A1.14 The field parcels are bound by a total of 18 hedgerows with variable quality and species-diversity, structure, and condition. Hedgerows **H10**, **H11 H13** have associated wet ditches, increasing their value for wildlife. Hedgerow **H4** was previously noted as having a wet ditch associated with it, but this was dry at the time of the December 2023 survey. A number of the hedgerows were associated with dry ditches (see **Image EDP A1.5**).

A1.15 The hedgerows within the Site are mostly regularly flailed in a box cut shape, which reduces their value for wildlife. Typical species present within the hedgerows are hawthorn, blackthorn, dog rose (*Rosa canina*), elder (*Sambucus nigra*), wild privet and bramble.

A1.16 Given their limited species diversity and intensive management, the hedgerows are of low to moderate distinctiveness (those with trees and wet ditches being of greater interest) and of Site- to Local-level ecological importance.

Image EDP A1.5: Showing a typical on-site hedgerow, with associated trees.

Mature Trees

A1.17 There are mature oak (*Quercus robur*) and ash (*Fraxinus excelsior*) trees associated with the hedgerow network within the Site (see **Image EDP A1.5**).

A1.18 The scattered trees are considered to be of low distinctiveness (although those with bat roost potential are of higher interest). They provide some connectivity to the wider landscape as part of the wider hedgerow network, as such, in of themselves they are of Site level interest, but as part of the hedgerow network they are of up to Local-level ecological importance.

Wet Ditches

A1.19 Hedgerows **H10**, **H11**, and **H13** have associated wet ditches, the ditch channels are overshaded by the adjacent hedgerows with shallow water (see **Image EDP A1.6**). Furthermore, no aquatic or marginal species were recorded during the surveys.

A1.20 Given the low distinctiveness of these habitat areas and their lack of suitability to support any notable or protected species such as otter or water vole, they are considered to be of Site to Local-level ecological importance only.

Image EDP A1.6: Hedgerow with associated wet ditch.

Woodland

A1.21 To the south of the Site is an area of woodland, although outside of the Site boundary, the woodland edge runs adjacent to the boundary separated by a wire fence. The woodland is predominantly coniferous including pine (*Pinus* sp.) and larch (*Larix decidua*) with a mix of deciduous trees also present, including ash, sycamore, field maple, beech, and elm. With an understory including elder, ivy, dog rose, spindle (*Euonymus europaeus*), hawthorn and blackthorn (see **Image EDP A1.7**).

A1.22 Log piles suitable for hibernacula for reptiles and insects were present and bird boxes were installed on some of the trees.

A1.23 Although the woodland itself lies outside the Site boundary, the woodland and the woodland edge are of moderate distinctiveness and offer habitat suitable for use by a number of protected/Priority Species and is considered to be of Local level ecological importance.

Image EDP A1.7: Woodland edge forming southern boundary of field **F7**.

Appendix EDP 2
Hedgerow Survey

METHODOLOGY

A2.1 Hedgerows within the Survey Area were assessed on 03 May 2018 to determine if they qualify as ecologically 'Important' following the Wildlife and Landscape criteria provided in Part II of Schedule 1 of the Hedgerows Regulations 1997. It should be noted that only hedgerows within the Survey Area were subject to an assessment, which comprised **H2**, **H3**, **H5**, **H6**, **H7**, **H8**, **H12**, **H18** and the western boundary.

A2.2 An update assessment was undertaken in 2022 to incorporate the hedgerows within the additional land within the Site, comprising **H1**, **H4**, **H9**, **H10**, **H11**, **H13**, **H14** and **H15**.

A2.3 The Hedgerow Regulations 1997 serve the purpose of ensuring the retention of important countryside hedgerows, their removal only being approved by the relevant Local Authority.

A2.4 The aim of the hedgerow assessment was to:

- Identify hedgerows that are classified as 'Important' under the ecological criteria of the Hedgerow Regulations 1997; and
- Identify hedgerows that, although not deemed 'Important' under the ecological criteria of the Hedgerow Regulations 1997 have ecological value in terms of species diversity or as potential wildlife corridors.

A2.5 Details of the hedgerows surveyed are provided in **Table EDP A2.1** and the hedgerow numbers are given on **Plan EDP 1**.

A2.6 Hedgerows qualify for assessment by exceeding 20m in length or by being connected at both ends to another hedgerow of any length. The middle 30m of all hedgerows up to 100m in length were surveyed, whilst two 30m sections were surveyed for hedgerows up to 200m in length where access was possible. For hedgerows exceeding 200m in length, three 30m sections were surveyed. Hedgerows surveyed were assigned points dependent upon the number of qualifying 'features' as defined by the Hedgerows Regulations, with total scores per hedgerow determining their status.

A2.7 Qualifying as an 'Important' hedgerow requires the hedgerow assessed to be greater than 30 years of age and contain species listed in Schedule 5 (animals) and 8 (plants) of the WCA, birds categorised as declining breeders (Category 3) within the Birds of Conservation Concern (BoCC) 5 (Eaton et al, 2015), or any species categorised as 'endangered', 'extinct', 'rare' or 'vulnerable' by any of the British Red Data Books.

A2.8 Hedgerows are also considered important should they satisfy any of the following criteria:

- That the hedgerow is referred to in a record held by a biological records centre as containing protected plants (within 10-years) or birds and animals (within 5-years); or

- That the hedgerow contains one of the following criteria per average 30m section surveyed:
    - Seven Schedule 3 species;
    - Six Schedule 3 species and three listed features (see below);
    - Six Schedule 3 species, including one of the following: black poplar (*Populus nigra*), large-leaved lime (*Tilia platyphyllos*), small-leaved lime (*Tilia cordata*) or wild service-tree (*Sorbus torminalis*);
    - Five Schedule 3 species and four listed features; or
    - Four Schedule 3 species, two listed features and lying adjacent to a bridleway or footpath.
- Listed features to include:
    - A bank or wall, which supports the hedgerow along at least half of its length;
    - Gaps, which together do not exceed 10% of the length of the hedgerow;
    - At least one standard tree per 50m of hedge;
    - At least three Schedule 2 woodland species within the hedgerow;
    - A ditch along at least one half of the length of the hedgerow;
    - Connections scoring four points or more (one point per connection of the hedgerow with another, two points per connection of the hedgerow to a pond or broad-leaved woodland; and
    - A parallel hedge within 15m of the hedgerow.

A2.9 Where a hedgerow did not meet the 'Important' hedgerow criteria, it was considered whether this boundary feature had ecological value, in terms of species diversity, or as potential wildlife corridors.

Limitations

A2.10 Hedgerows **H16** and **H17** do not have a mean count of Schedule 3 data available for them. However, an assessment has been made based on surveyor notes and hedgerow characteristics. As such, it is assumed that the mean number of Schedule 3 woody species present per 30m hedgerow section surveyed would be fewer than seven. A mean of seven species, which would be the number required for these hedgerows to be classified as 'Important' under the Hedgerow Regulations, given that the two hedgerows have an insufficient number of associated features or presence of a public footpath, bridleway or similar feature to qualify for a lower Schedule 3 species count. Based on the data available it is considered unlikely that either of these two hedgerows would be classified as 'Important', although this does represent a limitation to the findings. However, since **H16** is proposed for retention in its

entirety and **H17** will only be subject to breaching of around 44m (approximately 6%), rather than removal in order to facilitate access to the southern site, this limitation is not considered significant, as ultimately the hedgerows will be retained.

RESULTS

A2.11 A total of nine hedgerows located within the Site were surveyed against the Hedgerow Regulations (1997) criteria in 2018, with a further eight in 2022. The detailed results of the hedgerow survey are provided in **Table EDP A2.1**.

A2.12 As set out in **Table EDP A2.1**, **H3** and **H1** were found to qualify as 'Important'.

Table EDP A2.1: Hedgerow Regulations Assessment

Hedgerow Number	Hedgerow Description and Notes	Woody Species (Recorded within the Entire Length of the Hedgerow)													Mean Count of Schedule 3 Species from the 30m Samples	Schedule 2 and 3 Woodland Plants	Additional Features						Adjacent Footpath, Bridleway, Road Used as Public Path or Byway Open to all Traffic?	Important Hedgerow
		Schedule 3 Species															Bank/Wall	Gaps <10%	Standard Trees	Ditch	Connections (>4)	Parallel Hedge		
		Blackthorn (*Prunus spinosa*)	Hawthorn (*Crataegus monogyna*)	Dogwood (*Cornus sanguinea*)	Elder (*Sambucus nigra*)	Elm sp. (*Ulmus* spp.)	Ash (*Fraxinus excelsior*)	Field maple (*Acer campestre*)	Oak, pendunculate (*Quercus robur*)	Hazel (*Corylus avellana*)	Rose (*Rosa* sp.)	Guelder Rose (*Viburnum opulus*)	Spindle (*Euonymus europaeus*)	Way-faring tree (*Viburnum lantana*)	Wild privet (*Ligustrum vulgare*)										
2018 Assessment																								
H3	Previously flailed, with trees	✓	✓	✓	✓		✓		✓		✓					6	3		✓	✓	✓		✓		✓
Western Boundary	Previously flailed on eastern side, tall on western side	✓	✓	✓				✓		✓	✓					5			✓						×
H5	Previously flailed on northern side, tall on south side, with trees	✓	✓		✓		✓	✓	✓		✓					5	2		✓		✓				×
H18	Previously flailed on northern side, tall on south side, with trees		✓	✓				✓								2			✓		✓				×
H6	Previously Flailed	✓	✓	✓	✓		✓	✓		✓						5	1				✓				×
H8	Flailed on both sides	✓	✓	✓						✓	✓					3			✓		✓				×
H7	Flailed on both sides		✓	✓	✓	✓		✓	✓		✓					5					✓			✓	×
H12	Flailed on both sides		✓		✓	✓					✓					3			✓		✓				×
H2	Flailed on both sides	✓	✓			✓					✓					3	1		✓		✓				×
2022 Assessment																								
H1	Box cut and flailed	✓	✓		✓		✓						✓			5			✓	✓	✓		✓		✓
H4	Sides cut	✓	✓		✓		✓	✓	✓							4.5			✓	✓			✓		×
H9	Box cut	✓	✓		✓	✓										2			✓			✓	✓		×
H10	Box cut		✓			✓		✓			✓					4			✓		✓	✓			×
H11	Box cut	✓	✓		✓											4					✓				×
H13	Box cut	✓	✓					✓								4				✓	✓	✓			×
H14	Box cut		✓			✓		✓								4					✓	✓	✓		×
H15	Box cut	✓	✓			✓		✓								5			✓		✓		✓		×

Hedgerow Number	Hedgerow Description and Notes	Woody Species (Recorded within the Entire Length of the Hedgerow)													Mean Count of Schedule 3 Species from the 30m Samples	Schedule 2 and 3 Woodland Plants	Additional Features						Adjacent Footpath, Bridleway, Road Used as Public Path or Byway Open to all Traffic?	Important Hedgerow
		Schedule 3 Species															Bank/Wall	Gaps <10%	Standard Trees	Ditch	Connections (>4)	Parallel Hedge		
		Blackthorn (*Prunus spinosa*)	Hawthorn (*Crataegus monogyna*)	Dogwood (*Cornus sanguinea*)	Elder (*Sambucus nigra*)	Elm sp. (*Ulmus* spp.)	Ash (*Fraxinus excelsior*)	Field maple (*Acer campestre*)	Oak, pendunculate (*Quercus robur*)	Hazel (*Corylus avellana*)	Rose (*Rosa* sp.)	Guelder Rose (*Viburnum opulus*)	Spindle (*Euonymus europaeus*)	Way-faring tree (*Viburnum lantana*)	Wild privet (*Ligustrum vulgare*)										
H16	Cut sides	✓	✓		✓			✓			✓	✓	✓	✓		<7[a]					✓				×[a]
H17	Cut sides, along road.	✓	✓		✓		✓	✓			✓		✓		✓	<7[a]			✓				✓		×[a]

a) NOTE: **H16** and **H17** do not have a mean count of Schedule 3 data available. However, based on surveyor notes and hedgerow characteristics it is assumed that fewer than seven species are present per 30m hedgerow section, which would be the number required for these hedgerows to be classified as 'Important', given that the hedgerows have an insufficient number of associated features to qualify for a lower Schedule 3 species count.

Appendix EDP 3
Breeding Bird Survey

METHODOLOGY

A3.1 A single breeding bird survey was undertaken to update the findings of the previous suite of breeding bird surveys undertaken in 2018. The survey was undertaken on 27 May 2022. The dates and timings of the survey, and the weather conditions, are summarised in **Table EDP A3.1**.

Table EDP A3.1: Breeding Bird Survey Visit Details.

Date	Timing of Survey	Wind Speed (Beaufort Scale)	Cloud Cover (octans)	Precipitation
27/05/2022	06:00–08:50	2–3	7/8 to 1/8	No precipitation

A3.2 During the survey the Site was walked at a slow pace to enable all birds detected to be identified and located. Frequent stops were made to scan suitable habitats and to listen for singing and calling birds. All areas of suitable breeding habitat within the Site boundary and immediately adjacent areas were approached to within 50m.

A3.3 During the survey the location and activity of each bird detected (including those seen or heard) was recorded and mapped using standard two-letter British Trust for Ornithology (BTO) species codes. The breeding status of each bird species identified at the Site was determined according to the nature and frequency of the behavioural elements recorded, as set out in **Table EDP A3.2**.

Table EDP A3.2: Field Evidence Used to Determine Bird Breeding Status.

Breeding Status	Examples of Behaviour Exhibited
Confirmed	• Distraction display; • Nest building; • Nest with eggs; • Nest with young; • Used nest; • Recently fledged young; and • Adult carrying faecal sac/food.
Probable	• Pair observed in suitable nesting habitat in breeding season; • Permanent territory presumed through registration of territorial behaviour (song, etc.) on at least two different occasions, a week or more apart at the same place; • Courtship and display; • Visiting a probable nest site; • Agitated behaviour or anxiety calls from adults; • Brood patch on adult examined in the hand; and • Nest building or excavating nest-hole.

Breeding Status	Examples of Behaviour Exhibited
Possible	• Species observed in breeding season in possible nesting habitat; • Male in song; and • Adult giving alarm call.
Non-breeder	• Feeding birds only; • Birds flying over only; and • Lack of suitable breeding habitat.

A3.4 To inform the assessment in this report, the numbers of potential territories identified, the abundance of species at the County and National level, the quality of the habitat present and the geographical range of the birds concerned have been considered, based on national and regional accounts.

A3.5 The conservation status of each species of bird was also taken into account and the following lists were considered:

- Schedule 1 of the WCA – affords greater protection to certain breeding species that are considered appropriately at risk nationally and are listed additional legal protection accordingly;
- Priority Species; and
- Birds of Conservation Concern[8] - under this approach UK bird populations are assessed, using quantitative criteria, to determine the population status of each species and then placed on one of three lists; Red, Amber or Green;

Limitations

A3.6 As with all breeding bird surveys following this technique, the process is open to some subjectivity in interpretation, except where active nests are located. Therefore, recorded locations indicate the 'centre' of a territory and not necessarily the breeding location.

A3.7 Following best practice, the survey visit was also undertaken during suitable weather conditions, i.e. days/periods with strong winds and heavy or persistent rain were generally avoided. The results are therefore not significantly limited by seasonal or climatic factors. No site specific limitations to the survey were noted.

RESULTS

A3.8 A total of 31 bird species were recorded during the surveys, of which 1 was confirmed as breeding on or immediately adjacent to the Site, 6 were recorded as probably breeding, and 14 were recorded as possibly breeding. Full details of each species recorded, including their breeding status on-site and their conservation status, are provided in **Table EDP A3.3**.

[8] Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. 2021. *The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain*. British Birds 114: 723-747.

A3.9 Of the seven bird species that were recorded as breeding or probably breeding on-site, four are species of nature conservation importance, namely being listed as being Priority Species and/or being species included on the latest Red and Amber lists of Birds of Conservation Concern. The distribution of these species recorded within the Site is shown on **Plan EDP 4**.

A3.10 During the survey a total of 40 skylark were observed singing over the fields, which contrasts with the findings of the previous surveys in 2018 set out within the original Ecological Baseline report, which recorded up to 6 individuals in song at the same time during surveys undertaken. Given that there was no significant change in the habitats from the 2018 surveys to the updated breeding bird surveys in 2022, it is considered that the 40 singing birds is unlikely to represent 40 individual territories. It may be that the singing birds represent double counting where birds flushed from one part of the site were subsequently encountered in another part of the Site over the course of the survey. Skylark territory densities for arable farmland are estimated at 0.28 per ha, and for improved grassland are estimated at 0.05 per ha. Based on these estimated skylark territory densities it is considered that the Site, which has c.79.5ha of arable farmland habitat and 0.03ha of grassland habitat (including on grassland road verges which are of reduced suitability) could be capable of supporting up to 22.3 territories within the Site. As such, it is considered unlikely the singing birds recorded would represent 40 breeding pairs, and this is far above the predicted carrying capacity of the Site habitat. As such, an average of the survey results from 2018 and 2022 have been taken representing 23 pairs as the upper limit and 6 pairs at the lower limit.

A3.11 The abundance and diversity of bird species recorded on-site was generally consistent with the extent and diversity of nesting habitats present. The majority of species recorded were associated with the hedgerows on-site and to a lesser extent the arable fields. The limited extent, or absence, of other suitable habitats, limits the ability of the Site to support large breeding populations of habitat specialist species. Given the abundance of skylark noted during the update survey, which represents a significantly greater number of singing birds compared with the 2018 surveys a precautionary approach has been followed in assigning importance to the breeding bird assemblage. The 2021 Ecological Baseline report based on the 2018 surveys assessed the breeding bird assemblage as being of no more than Local level importance. However, given the findings in relation to skylark the breeding bird assemblage is now judged to be District level ecological importance.

Table EDP A3.3: Results of the Breeding Bird Survey 2022.

Common Name	Scientific Name	UK Status	On-site Status	Estimated No. Breeding Pairs	Survey Observations
Blackbird	*Turdus merula*	Green listed	Possible breeder	0–5	Two male blackbirds were recorded singing, and another three seen.
Blackcap	*Sylvia atricapilla*	Green listed	Possible breeder	0–2	Two male blackcaps were recorded singing; one at the north end and one at the southern end of the Site.
Blue tit	*Cyanistes caeruleus*	Green listed	Confirmed breeder	5–7	Five family parties of blue tits were heard calling in hedges around the boundaries of the Site, and two other singles seen.
Bullfinch	*Pyrrhula pyrrhula*	Amber listed., SPI	Probable breeder	0–1	A pair of bullfinch was seen in the north-east corner of the Site.
Buzzard	*Buteo buteo*	Green listed	Non-breeder	0	Two buzzards were seen in flight over the Site; one at the north-east end and one over the south-western boundary/B4100.
Carrion crow	*Corvus corone*	Green listed	Possible breeder	0–4	Seven were seen around the Site, including a group of three and a group of two.
Chaffinch	*Fringilla coelebs*	Green listed	Possible breeder	0–4	Four male chaffinches were recorded singing, all in the northern half of the Site.
Common whitethroat	*Curruca communis*	Amber listed	Possible breeder	0–2	Two common whitethroats were recorded singing; one near the centre of the Site and one in the south-east corner.
Dunnock	*Prunella modularis*	Amber listed, SPI	Possible breeder	0–7	Seven dunnocks were recorded singing around the Site.
Goldcrest	*Regulus regulus*	Green listed	Possible breeder	0–1	One male bird was singing in the north-west corner of the Site.
Goldfinch	*Carduelis carduelis*	Green listed	Probable breeder	0–3	Three sets of two birds were seen flying across site habitats from the hedgerows onsite.
Grey partridge	*Perdix perdix*	Red listed, SPI	Probable breeder	0–3	Three male/female pairs recorded, two in **F2** and one in **F4**.
Jackdaw	*Corvus monedula*	Green listed	Non-breeder	0	One bird flew over the southern field and out of the Site.

Common Name	Scientific Name	UK Status	On-site Status	Estimated No. Breeding Pairs	Survey Observations
Lapwing	*Vanellus vanellus*	Red listed, SPI	Probable breeder	0–1	A pair of lapwing was seen in field **F2**, however, the surveyors noted that from their behaviour they didn't appear to have eggs or young. Both flew into the adjacent field to the east.
Linnet	*Linaria cannabina*	Red listed, SPI	Possible breeder	0–3	Five linnets were recorded; all calling birds, with one in **H6** and the others flying across site habitats, including two birds flying from **F6** to off-site.
Long-tailed tit	*Aegithalos caudatus*	Green listed	Possible breeder	0–2	Two birds were seen in the north-west corner of the Site.
Magpie	*Pica pica*	Green listed	Possible breeder	0–1	One bird was seen at the western end of the Site.
Pheasant	*Phasianus colchicus*	-	Possible breeder	0–3	Three pheasants were seen feeding in **F2**.
Pied wagtail	*Motacilla alba*	Green listed	Non-breeder	0	One bird flew over the north-western field.
Red-legged partridge	*Alectoris rufa*	-	Probable breeder	0–2	Two pairs of red-legged partridge were seen, around the centre of the Site.
Red kite	*Milvus milvus*	WCA Sch 1, Green listed	Non-breeder	0	Two birds were seen; one circling high over the southern field, and one flew north-east through the middle of the Site.
Robin	*Erithacus rubecula*	Green listed	Possible breeder	0–8	Five birds were recorded singing, and another three heard calling.
Rook	*Corvus frugilegus*	Amber listed	Non-breeder	0	One bird flew south-east over the westernmost field.

Common Name	Scientific Name	UK Status	On-site Status	Estimated No. Breeding Pairs	Survey Observations
Skylark	*Alauda arvensis*	Red listed, SPI	Possible breeder	6–23	Forty singing birds recorded in all the fields, however, this is considered to be an anomalous result given the findings of the previous surveys in 2018, which noted up to 6 pairs and that site habitats have not altered significantly since the 2018 surveys. Estimated skylark territory densities based on habitat type indicate the Site could support up to a maximum of 22 territories. An average has been taken between the 2018 and 2022 findings of 23 pairs as the upper limit and 6 as the lower limit.
Starling	*Sturnus vulgaris*	Red listed, SPI	Possible breeder	0–1	One bird flew into one of the fields on the east.
Stock dove	*Columba oenas*	Amber listed	Non-breeder	0	Thirteen stock dove were seen around the Site, all in flight.
Swallow	*Hirundo rustica*	Green listed	Non-breeder	0	One bird flew over the north-western corner of the Site.
Willow warbler	*Phylloscopus trochilus*	Amber listed	Possible breeder	0–2	Two willow warblers were recorded singing, both on the northern boundary of the Site.
Woodpigeon	*Columba palumbus*	Amber listed	Non-breeder	0	Three woodpigeon were seen, all in flight.
Wren	*Troglodytes troglodytes*	Amber listed	Possible breeder	0–5	Five individuals recorded singing, all in hedgerows.
Yellowhammer	*Emberiza citrinella*	Red listed, SPI	Probable breeder	0–4	Six recorded across the Site including one singing male yellowhammer and a pair. Based on the locations of birds noted this equates to four potential territories.
Yellow wagtail	*Motacilla flava*	Red listed, SPI	Non-breeder	0	One individual seen, flying out of the Site to the south-east.

Appendix EDP 4
Winter Bird Survey

METHODOLOGY

A4.1 The species targeted were those of nature conservation importance (i.e. WCA Schedule 1, Priority Species and Red and Amber listed species of conservation concern), including the species whose main habitat is farmland, but also those species that use farmland in large numbers in winter but for which it is not necessarily their main habitat.

A4.2 A single wintering bird survey was undertaken on 06 January 2022. The survey was conducted over a pre-defined transect routes designed to take surveyors to within 75m of the suitable habitats for the target species. Surveyors used binoculars and telescopes. Each surveyor recorded any Amber and Red list species encountered, along with any notable behaviour.

A4.3 The dates and timing of the survey visit, and the weather conditions encountered, are summarised in **Table EDP A4.1**.

Table EDP A4.1: Winter Bird Survey Visit Details.

Date	Timing of Survey	Wind Speed (Beaufort Scale)	Cloud Cover (octans)	Precipitation/Visibility
06.01.2022	09.45	2	8/8	No rain. Good visibility

A4.4 Registrations of target bird species were recorded and assigned to the location where they were first detected (if flushed). Flying birds were only recorded if they were clearly associated with the Site (e.g. just flushed or about to land).

A4.5 To inform the assessment in this report, the abundance of species on-site, the abundance of species at the County and National level, the quality of the habitat present and the geographical range of the birds concerned have been considered, based on national and regional accounts.

A4.6 The conservation status of each species of bird was also taken into account and the following lists were considered:

- Schedule 1 of the WCA – affords greater protection to certain breeding species that are considered appropriately at risk nationally and are listed additional legal protection accordingly;
- Priority Species; and
- Birds of Conservation Concern[9] - under this approach UK bird populations are assessed, using quantitative criteria, to determine the population status of each species and then placed on one of three lists; Red, Amber or Green.

[9] Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. 2021. *The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain*. British Birds 114: 723-747.

Limitations

A4.7 Survey visits were completed on calm days with good visibility, and avoiding periods of heavy rain where possible, although some days of higher wind speed are expected due to the time of year. It is therefore considered that the results provide a representative overview of the wintering bird interest at the Site and have not been limited by seasonal or climatic factors.

A4.8 A limitation with surveying birds on arable land in winter is that birds vary in detectability. This is typically a function of the species size, species behaviour (including 'flushing' distance, flocking behaviour, crypticity), foraging, ecology and field characteristics (including vegetation density and height, area of the field) [10]. As such, a simple 'field perimeter' based count can miss significant numbers of birds, particularly where the field vegetation is tall or dense. This is particularly true for certain bird species, including the Red listed skylark, and the Amber listed meadow pipit (*Anthus pratensis*).

A4.9 It should be noted that for a large number of species, including thrushes, sparrows, finches and buntings in most field types, the overall majority (i.e. >90%) can be recorded using a 'perimeter count'. However, where detectability may be an issue, comparisons of bird densities or total numbers between fields will not be possible purely from using perimeter counts as the field characteristics, and hence detectability, vary between field parcels.

A4.10 The survey methodology therefore involved, where access allowed, walking to within a maximum distance of 75m of all suitable habitats for the target wintering bird species. However, with regard to the effect of vegetation density and height on the ability to record birds, the survey method relies on the judgement of an experienced surveyor to assess when a count is complete.

A4.11 'Double counting' could also affect results, particularly with the whole-area search approach where birds could be flushed from one field to another. With reference to Wilson *et al*. (1996)[11], although this source of error cannot be eliminated, it can be minimised by taking account of birds flushed to fields yet to be counted (namely through the detailed recording of bird movements on site plans).

RESULTS

A4.12 A total of 12 bird species of nature conservation importance were recorded during the course of the winter bird survey (see **Table EDP A4.2**), with a further 13 species not of conservation importance recorded incidentally (see **Table EDP A4.3**).

A4.13 The diversity and abundance of species recorded is considered to be fairly typical for a site of this size and type, although the surveys did record low numbers of several declining farmland species such as skylark and linnet, as well as flocks of other Red-list species including redwing (*Turdus iliacus*), fieldfare (*Turdus pilaris*) and yellowhammer. A flock of 15 fieldfare was recorded in **F1**, 10 woodpigeon in **F4** and 10 yellowhammer were recorded in **H2**.

[10] Atkinson, P.W., Fuller, R.A., Gillings, S. & Vickery, J.A. (2006). Counting birds on farmland habitats in winter. *Bird Study*, 53:3, 303-309

[11] Wilson, J.D., Taylor, R. & Muirhead, L.B. (1996) Field use by farmland birds in winter: an analysis of field type preferences using re-sampling methods. Bird Study, 43, 320–332

A4.14 Low numbers of other Priority Species or Birds of Conservation Concern were also recorded including dunnock, linnet, wren, red kite and snipe (*Gallinago gallinago*).

A4.15 It is concluded that that the diversity and abundance of over-wintering birds within the Site reflects the diversity of habitats present but is not exceptional. The wintering bird assemblage present within the Site is judged to be of no greater than Local ecological importance.

Table EDP A4.2: Winter Bird Survey Results January 2022, Notable Species Only.

Common Name	Scientific Name	UK Status	Distribution On-site	Abundance On-site	
				Range	Total
Dunnock	*Prunella modularis*	Amber listed	Five individuals recorded.	1–2	5
Fieldfare	*Turdus pilaris*	Red listed	Twenty-eight individuals recorded, including a group of 15 in **F1** and a group of eight in **F7**.	1–15	28
Oystercatcher	*Haematopus ostralegus*	WCA Sch1, Amber listed	Four individuals flew over the Site.	0	0
Linnet	*Linaria cannabina*	Red listed, S41 NERC	Six individuals recorded.	2–4	6
Red kite	*Milvus milvus*	WCA Sch1	Two individuals recorded.	1	2
Redwing	*Turdus iliacus*	WCA Sch1, Amber listed	Six individuals recorded.	1–3	6
Rook	*Corvus frugilegus*	Amber listed	Seventy-five birds recorded in a rookery offsite within the adjacent motorway services.	0	0
Skylark	*Alauda arvensis*	Red listed, S41 NERC	Seven individuals recorded, one of which was calling.	1–3	7
Snipe	*Gallinago gallinago*	Amber listed	Two individuals recorded.	2	2
Woodpigeon	*Columba palumbus*	Amber listed	Fourteen birds recorded in total including a group of 10 in **F4**.	1–10	14
Wren	*Troglodytes trodlodytes*	Amber listed	Single individual recorded.	1	1
Yellowhammer	*Emberiza citrinella*	Red listed	Eighteen individuals recorded.	1–10	18

Table EDP A4.3: Winter Bird Survey Results January 2022, Unlisted Species.

Common Name	**Scientific Name**
Blackbird	*Turdus merula*
Blue tit	*Cyanistes caeruleus*
Buzzard	*Buteo buteo*
Carrion Crow	*Corvus corone*
Chaffinch	*Fringilla coelebs*
Great tit	*Parus major*
Jackdaw	*Corvus monedula*
Magpie	*Pica pica*
Pheasant	*Phasianus colchicus*
Pied wagtail	*Motacilla alba*
Red-legged partridge	*Alectoris rufa*
Red kite	*Milvus milvus*
Robin	*Erithacus rubecula*

Appendix EDP 5
Bat Surveys

METHODOLOGY

A5.1 The scope of bat surveys undertaken at the Site was determined following completion of the Extended Phase 1 Habitat survey and review of relevant desk study findings and with reference to best practice guidelines published by the Bat Conservation Trust[12].

Bat Roost Surveys

Preliminary Roost Assessment of Trees

A5.2 Owing to the presence of suitably mature trees within or adjacent to the Site, a preliminary ground level roost assessment of these trees was undertaken to record any external evidence of roosting bats or any features capable of supporting roosting bats during the original 2018 surveys.

A5.3 An update survey to confirm the status of trees with bat roosting potential on the Site was completed on 22 April 2022 and 07 December 2022 by a suitably experienced ecologist in accordance with the best practice guidelines referred to above. The trees were searched as thoroughly as possible from ground level with all elevations covered where these could be accessed.

A5.4 Suitable features for roosting bats recorded (where present) include the following:

- Loss/peeling/fissured bark;
- Natural holes e.g. rot holes, cavities and wounds from fallen limbs;
- Woodpecker holes;
- Cracks/splits or hollow tree trunks/limbs;
- Bat, bird or dormouse boxes; and
- Crevices formed by thick-stemmed ivy.

A5.5 Signs of roosting bat presence recorded (where present) include the following:

- Bat(s) roosting *in situ*;
- Bat droppings within, around or beneath a potential roost feature;
- Staining around or beneath a feature;

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

- Audible squeaking from the roost at dusk or during warm weather; and
- Large/regularly used roosts may produce a distinctive odour.

A5.6 Based upon the evidence/features identified, each tree was assigned to one of the following categories:

- Known or confirmed roost – EPS licence likely to be required for works to tree to be completed lawfully;
- High suitability – One or more potential roost features present that are obviously suitable for use by larger numbers of bats on a more regular basis, and potentially for longer periods of time;
- Moderate suitability – One or more potential roost features present that could be used by bats but are unlikely to support a roost type of high conservation status (with respect to roost type only);
- Low suitability – A tree of sufficient size and age to contain potential roost features but with none seen from the ground, or features seen but with only very limited roosting potential; and
- Negligible suitability – No potential to support roosting bats.

Limitations

A5.7 As with any ground level assessments of trees, certain features may not be visible or fully visible from the ground. However, surveys were undertaken in April and in winter when fewer leaves on the trees allow for increased visibility of potential features.

A5.8 Bats are mobile animals and will move between a series of different tree roost sites, frequently establishing and occupying different potential roost features, depending on seasonal requirements and resources available locally. Furthermore, existing potential roost features on trees can be transient and new features formed regularly. This survey, therefore, only provides a snapshot of the conditions present at the Site at the time of survey.

A5.9 It should be noted that this type of assessment is based on features visible from ground level and is not considered to be a definitive bat roosting survey. Should the proposals require that any trees of potential to support roosting bats be subject to tree felling/surgery, additional survey work may be required to establish if any bats are roosting within the trees. If trees are found to support bat roosting during pre-commencement investigations, such works would be subject to an EPS licence to commence lawfully.

Bat Activity Surveys

Transect Surveys

A5.10 A suite of update manual transect surveys were undertaken across the Site to update the findings of the 2018 activity surveys with the objective of identifying important foraging areas and/or commuting routes used by bats, and determine if there is a change in activities levels

from the surveys previously undertaken. A total of three dusk surveys were undertaken over the course of the active bat season in 2022.

A5.11 Details of the survey type, date, timing, and weather conditions during each of the transect surveys are given in **Table EDP A5.1**. All visits were completed in weather conditions that were suitable for such surveys.

Table EDP A5.1: Date, Timing and Weather Conditions during Transect Surveys.

Survey Date	Sunset/ Sunrise Time	Start–Finish Time	Weather Conditions			
			Temp (°c)	Cloud Cover (%)	Wind (Beaufort Scale)	Precipitation
04/05/2022	20:34	20:34–23:07	13–9	5–15	1	Nil
07/07/2022	21:24	21:24–00:15	19	30	1	Nil
07/09/2022	19:39	19:39–21:51	18–17	30–80	2–3	Nil

A5.12 A single transect route was walked, with the route designed to provide coverage of the most suitable foraging or commuting habitats on the Site, namely the on-site hedgerows and adjacent off-site woodland. The transect route is illustrated on **Plan EDP 8**. The transect route was walked by experienced bat surveyors and an assistant at a slow and steady pace for two hours after sunset. All bats were recorded, and their behaviour marked on survey maps, in order to characterise the value of the Site and its component habitats for foraging and commuting bats.

A5.13 The transect surveys were conducted using Elekon Batlogger M bat detectors. Observations of the time, location, and activity of all bats seen or heard were noted. Bats were identified on the basis of their characteristic echolocation calls, which were recorded and analysed using computer sonogram analysis (BatExplorer) to confirm species identification. Species of *Myotis* bat and long-eared bat are difficult to tell apart solely from their echolocation calls and were therefore grouped as such.

Limitations

A5.14 The identification of calls and species using call analysis software is dependent upon the quality of the recording made, which can be influenced by the following factors, and may limit levels of activity and species recorded: weather conditions including rainfall and wind; distance of bat from detector/surveyor; presence of obstructions through which the noise must pass, i.e. trees; and proximity of other noise sources such as roads.

A5.15 Bat detectors are naturally biased to record bat species that produce louder echolocation calls and may not record some bat passes of quieter echolocating species, such as long-eared bats (*Plecotus* sp.).

Automated Detector Surveys

A5.16 To supplement the bat transect survey data, bat activity within the Site was also sampled using Anabat Swift detectors (hereafter referred to as 'automated detectors'), which are deployed in

fixed locations to automatically trigger and record bat echolocation calls over multiple nights at a time. In this case, automated detectors were deployed at two locations within the Site during each survey, as shown on **Plan EDP 8**, which were judged to be representative of the habitats within the Site. The automated detectors were fixed in secure locations, with an external microphone attached circa 1–2m above ground, where possible, and directed away from the tree/branch to maximise detection sensitivity. In total three surveys were completed over the course of the active bat season in 2022, each comprising sampling by automated detectors for at least five consecutive nights. Details of dates, sampling locations and weather conditions during each of the surveys are given in **Table EDP A5.2**.

Table EDP A5.2: Automated Detector Survey Details.

Sampling Period Dates	Location (Reference number and OS grid reference)	Microphone	
		Height	Direction
04/05/22–10/05/22	L5 – SP 55995 29111	1.5	North-west
	L2 – SP 55292 29112	1.5	North-east
07/07/22–11/07/22	L3 – SP 55378 29284	2	West
	L4 – SP 55666 29008	1	South-west
07/09/22–12/09/22	L1 – SP 55725 29120	1	North-west
	L2 – SP 55301 29133	1	South-west

A5.17 The sound files recorded by the automated detectors were filtered for each of the UK's bat species/species groups using Analook Insight software's filter function. The parameters for the species filters are based on those proposed by Chris Corben and Kim Livengood[13] and have been fine-tuned using known call parameters for each of the species/contained within the BatClassify UK Auto ID plugin feature. All files passing the various filters were checked manually using sonogram analysis in accordance with published guides to confirm the species identification of each bat call.

Limitations

A5.18 The identification of calls and species using Analook Insight software is dependent upon the quality of the recording made, which can be influenced by the following factors, and may limit levels of activity and species recorded:

- Weather conditions – rainfall and wind;
- Distance of bat from the detector's microphone;
- Presence of obstructions through which the noise must pass i.e. trees/leaves; and
- Proximity of other noise sources such as roads.

[13] Taken from Analook W training course and workshop, September 2013

A5.19 It was noted that during the July and September surveys that one of each of the pairs of the detectors did not record any bat sound files. However, the detector logs indicated that on both occasions the detectors were on and active during the required recording times. As such, there is potential that either no bats were present within the hedgerows during these survey dates, or there was an equipment failure with the microphone that prevent bat calls being registered. Should the latter be the case, then this would represent a significant limitation to the interpretation of the survey results. No May bat detector data is available for either of the two detector locations deployed. This also represents a significant limitation to interpreting the bat survey data. On the basis of these limitations a precautionary approach has been taken when interpreting and assessing the results.

RESULTS

Bat Roost Surveys

Preliminary Roost Assessment of Trees

A5.20 During the original site surveys, a total of 13 trees were identified as having bat roosting potential, including three with High, three with Moderate and seven with Low bat roosting suitability. The update survey undertaken on 22 April 2022 found no additional trees with bat roosting suitability and reported no changes to previous findings.

A5.21 During the update survey on 07 December 2023 one tree (**T2**) was upgraded in terms of its suitability category from Low to Moderate potential, and an additional five trees with low bat roosting potential (**T14**–**T18**). Further details on each of these trees are provided in **Table EDP A5.3** and their locations are shown on **Plan EDP 6**.

A5.22 All other trees were found to be of negligible suitability for roosting bats and have not been mapped/described.

Table EDP A5.3: Details of Trees with Bat Roost Suitability

Tree Reference	Tree Species	Potential Roost Features	Roosting Suitability
T1	Ash	Rot holes. Large branch with scar and further crevices present with branch scars.	High
T2	Ash	Some cracks/peeling in bark. Overgrown with ivy, potential hidden features. During 2023 survey it was noted that there was butt rot at base of tree and areas of lifting bark with gaps beneath from 1–1.5m on south facing side.	Moderate (upgraded during 2023 survey from Low)
T3	Ash	Overgrown with ivy, potential hidden features and some deadwood present.	Low
T4	Oak	Significant hole in branch scar.	High
T5	Ash	Multiple features present including woodpecker (*Picidae* spp.) holes, rot holes, cracks and splint along trunk.	High
T6	Oak	Overgrown with ivy on trunk, potential hidden features. Assessed as low due to age/size.	Low

Tree Reference	Tree Species	Potential Roost Features	Roosting Suitability
T7	Oak	Overgrown with ivy on trunk, potential hidden features. Assessed as low due to age/size.	Low
T8	Ash	Overgrown with ivy, potential hidden features. Assessed as low due to age/size.	Low
T9	Oak	Some raised bark and branches with crevices.	Low
T10	Ash	Significant hole in branch scar.	Moderate
T11	Ash	Significant hole in branch scar. Large open crack in trunk (open to top).	Moderate
T12	Ash	Rot hole with branch scar in trunk.	Moderate
T13	Ash	Rot hole in dead wood on trunk.	Low
T14	Ash	Dense ivy cover on tree. Rotten limb at 10m from ground on north-west facing side with minor crevice, but which opens upwards, exposing it to rain, reducing the suitability.	Low
T15	Ash	Large central split down centre of trunk, which is highly exposed and open to the rain. Potential for small cavities in heartwood inside but would likely be of limited value given how exposed and open the split is. Knot hole at 3m high on north-west side of tree, but open into clutter in hedge.	Low
T16	Oak	Dense ivy cover on mature tree with some thicker stems that could offer some limited opportunistic roosting opportunities for bats.	Low
T17	Ash	Broken tree limb north facing at 5m high with possible minor crevice that may offer limited roosting potential. Dense ivy cover on tree but not with thick enough stem or matted to provide opportunities for bats.	Low
T18	Ash	Long split in trunk with minor desiccation fissures features. However, open to rain. In clutter of hedgerow reducing access.	Low

Bat Activity Surveys

A5.23 During the transect surveys in 2022 a total of three species were recorded, with the majority of registrations recorded from common pipistrelle bat, with fewer registrations recorded from soprano pipistrelle and noctule. During the 2018 transect survey, individual registrations of long-eared bats were recorded in August 2018 and an individual registration of barbastelle bat recorded in September 2018, which were not recorded in the 2022 surveys.

A5.24 During the May 2022 transect, the majority of calls recorded were from in the north-west of the Site, by hedgerows **H4** and **H11**, as well as by the woodland area on the southern boundary. However, during the July 2022 recordings also originated from these locations but with recordings also from across the wider site, with single or a low number of calls from **H1**, **H17**, **H18** and **H5**. Similarly, during September 2022, although some limited activity was associated with **H4** and the woodland, there was also low levels of activity at **H5**, **H18** and **H8**.

A5.25 The majority of bat activity was associated with the Site boundary hedgerows and areas of woodland at the south of the Site, rather than the internal hedgerows that recorded far less activity across the three transect surveys.

A5.26 Overall, the total number of registrations recorded during each survey were low as illustrated in **Table EDP A5.4**.

Table EDP A5.4: Results of Transect Surveys 2022

Bat Species	Number of Bat Passes Recorded per Night			Total
	04/05/2022	07/07/2022	07/09/2022	
Common pipistrelle	12	14	22	**48**
Soprano pipistrelle	10	0	0	**10**
Noctule	0	1	0	**1**
Total	**22**	**15**	**22**	**59**

A5.27 The findings of the 2022 transect surveys differ from the 2018 transect surveys; in the species recorded and distribution of calls across the months surveyed. Overall, a slightly greater number of bats were recorded during the 2018 transect surveys, with common pipistrelle noted predominantly (consistent with the 2022 findings), however, the 2018 surveys also recorded noctule bat and individual recordings from brown long-eared bat and barbastelle bat. Activity levels in 2022 were also lower than those recorded in 2018, with September representing the peak in bat activity recorded in 2018, whilst in 2022 a similarly low number of calls were recorded in May and September. A comparison of distribution across the Site cannot be made directly since the 2018 transects only incorporated fields **F2**–**F4**, therefore much of the current survey area surveyed in 2022 was outside of the scope of the 2018 surveys.

A5.28 The results of the 2022 update transect surveys are illustrated on **Plan EDP 7** and results of the automated detector surveys are provided, in detailed and summary form, within **Tables EDP A5.5** to **A5.6**. As noted in the limitations there is no May data available from the static detectors and only one of the detectors during each of the July and September survey recorded bat data, despite detectors being installed and operational.

Automated Detector Data Tables

A5.29 A total of six bat species/species groups (*Myotis* and long-eared bat species were not identified to species level), were confirmed to be present foraging and/or commuting within the Site during the transect and/or automated detector surveys. With reference to the automated detector data tables, the majority of recorded bat calls were of common pipistrelle with calls of soprano pipistrelle the next most abundant species recorded. Calls of *Myotis* species, noctule, serotine, long-eared bat and barbastelle making up a small minority of the total.

Table EDP A5.5: Automated Detector Survey Results – July

Detector Position	Bat Species	Number of Bat Passes Recorded per Night					Total (and %)
		07/07/2022	08/07/2022	09/07/2022	10/07/2022	11/07/2022	
L3	Common pipistrelle	133	168	133	133	28	**595 (84.3%)**
	Soprano pipistrelle	0	26	70	3	0	**99 (14.0%)**
	Myotis sp.	1	0	0	0	0	**1 (0.1%)**
	Serotine	0	0	0	1	3	**4 (0.57%)**
	Noctule	0	2	1	2	1	**6 (0.85%)**
	Total	**134**	**196**	**204**	**139**	**32**	**705**

Table EDP A5.6: Automated Detector Survey Results – September

Detector Position	Bat Species	Number of Bat Passes Recorded per Night					Total (and %)
		07/09/2022	08/09/2022	09/09/2022	10/09/2022	11/09/2022	
L2	Common pipistrelle	5	3	2	4	3	**17 (51.5%)**
	Soprano pipistrelle	0	0	0	1	2	**3 (9.1%)**
	Myotis sp.	0	0	2	2	0	**4 (12.1%)**
	Long-eared bat sp.	1	0	1	0	0	**2 (6.1%)**
	Noctule	2	2	2	0	0	**6 (18.2%)**
	Barbastelle	0	0	0	1	0	**1 (3.0%)**
	Total	**8**	**5**	**7**	**8**	**5**	**33**

A5.30 To summarise; the 2022 activity levels were significantly higher in July than in September, with the September survey recording low levels of bat activity. No bat registrations were recorded in locations **L3** in July and **L5** in September. The automated detector location with the highest total number of bat registrations overall was location **L3**, which was positioned in the north-west of the Study Area, in central hedgerow **H11**.

A5.31 Overall, the majority of registrations recorded relate to common and widespread bat species, in particular common pipistrelle, accounting for over 50% of the total activity in September and over 84% in July. Soprano pipistrelle made up approx. 14% of the total registrations recorded in July and 9% in September. Noctule made up approximately 6% of registrations in July and 18% in September. Other species made up a very small proportion of the total registrations

recorded, with *Myotis* sp., long-eared bat and barbastelle making up 2% or less of the registrations in each month.

A5.32 Of note is the presence of the rarer barbastelle, an Annex II species. Only one call was recorded in September 2022 in Location **L25**, with no recordings in July 2022.

A5.33 Direct comparison of bat activity levels between the 2018 and 2022 bat surveys is not possible due to the 2018 surveys deploying four detectors per survey, and with the 2022 surveys deploying two with only one location recording bat activity, and these locations varying from those originally surveyed. However, comparisons can be made when looking at individual detector locations, and general trends in bat activity.

A5.34 In 2022 location **L3** recorded significantly higher bat activity levels than all four detectors deployed in 2018 (with 207 registrations, compared with 705). However, when comparing September surveys, the 2022 survey recorded a lower number of registrations compared with three of the four locations surveyed in 2018, although the closest location to **L2** in September 2022 from September 2018 was location A4 (which is shown on Plans EDP 6–8 in the original Technical Appendix 8.1: Ecology Baseline, edp2355_r008), which had a similarly low level of bat activity recorded with 33 passes in 2022 compared with 29 in 2018.

A5.35 In terms of species, the data collected during 2022 largely reflected the findings of the 2018 surveys, with the majority of most registrations recorded relating to common and widespread bat species, in particular common pipistrelle. Other species made up a very small proportion of the total registrations recorded, with species recorded in 2022 the same as those from 2018, although the numbers of rarer Annex II bat species: barbastelle, much lower in 2022 than 2018, with only one registration in September 2022 compared with up to a peak of nine recorded for barbastelle recorded on a detector in September 2018, with activity recorded on three nights at this location (A1; which is shown on Plan EDP 8 in the original Technical Appendix 8.1:Ecology Baseline, edp2355_r008).

Evaluation of Overall Bat Assemblage

A5.36 The updated assessment of the trees within the Site indicates there is potential for bat roosting within 18 trees across the Site, the majority of which offer low bat roosting suitability, with three trees offering high suitability and four offering moderate suitability for roosting bats.

A5.37 The abundance and diversity of bat species recorded during the course of manual transect and automated detector surveys is considered to be relatively typical of an urban edge farmland site in southern England, with common and widespread generalist species such as common pipistrelle accounting for the vast majority of foraging and commuting activity. The hedgerows and associated trees provide some suitable foraging opportunities for the local bat population, and across the wider site the woodland edge along the south boundary is considered to suitable foraging resource. The majority of the on-site habitats are considered typical of the wider surroundings and based on their quality/extent, only capable of supporting moderate numbers of bats.

A5.38 Best practice guidelines[14] for assessing the importance of a bat assemblage within a Site indicate that based on the total number of different species recorded during surveys the bat assemblage within the Study Area would be of less than County level importance, following the assemblage scoring approach set out in the mitigation guidelines for the Southern England region.

A5.39 Given the limitations to the 2022 surveys, as noted above, a precautionary approach has been taken when assessing the findings of the update surveys. However, given that the broad trends within the transect surveys were similar between the 2018 and 2022 surveys, and the range of species was comparable between the 2018 and 2022 static detector surveys, it is considered likely that current status of commuting and foraging bats within the Site is not significantly different to the findings of reported in 2018. This is also judges to be the case when considering that the quality of habitats has not significantly changed from those recorded in 2018. As such, the assessment made during the previous submission, as set out within the original Ecological Baseline report, is considered to remain valid.

A5.40 Based on the findings summarised above and consistent with the previous surveys, the bat population present within the Site is considered to be of Local-level ecological importance.

[14] CIEEM (2023). UK Bat Mitigation Guidelines 2023. Available at: UK Bat Mitigation Guidelines 2023 | CIEEM

Appendix EDP 6
Great Crested Newt eDNA Analysis Report

Folio No: E12751
Report No: 1
Purchase Order: 2355
Client: EDP LTD
Contact: EDP

TECHNICAL REPORT

ANALYSIS OF ENVIRONMENTAL DNA IN POND WATER FOR THE DETECTION OF GREAT CRESTED NEWTS (TRITURUS CRISTATUS)

SUMMARY

When great crested newts (GCN), *Triturus cristatus*, inhabit a pond, they continuously release small amounts of their DNA into the environment. By collecting and analysing water samples, we can detect these small traces of environmental DNA (eDNA) to confirm GCN habitation or establish GCN absence.

RESULTS

Date sample received at Laboratory: 21/04/2022
Date Reported: 25/04/2022
Matters Affecting Results: None

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
0812	P2 2355	SP 56310 28597	Pass	Pass	Pass	Negative	0

If you have any questions regarding results, please contact us: ForensicEcology@surescreen.com

Reported by: Chris Troth **Approved by:** Esther Strafford

METHODOLOGY

The samples detailed above have been analysed for the presence of GCN eDNA following the protocol stated in DEFRA WC1067 'Analytical and methodological development for improved surveillance of the Great Crested Newt, Appendix 5.' (Biggs et al. 2014). Each of the 6 sub-sample tubes are first centrifuged and pooled together into a single sample which then undergoes DNA extraction. The extracted sample is then analysed using real time PCR (qPCR), which uses species-specific molecular markers to amplify GCN DNA within a sample. These markers are unique to GCN DNA, meaning that there should be no detection of closely related species.

If GCN DNA is present, the DNA is amplified up to a detectable level, resulting in positive species detection. If GCN DNA is not present then amplification does not occur, and a negative result is recorded.

Analysis of eDNA requires scrupulous attention to detail to prevent risk of contamination. True positive controls, negative controls and spiked synthetic DNA are included in every analysis and these have to be correct before any result is declared and reported. Stages of the DNA analysis are also conducted in different buildings at our premises for added security.

SureScreen Scientifics Ltd is ISO9001 accredited and participate in Natural England's proficiency testing scheme for GCN eDNA testing. We also carry out regular inter-laboratory checks on accuracy of results as part of our quality control procedures.

INTERPRETATION OF RESULTS

SIC: **Sample Integrity Check** [Pass/Fail]
When samples are received in the laboratory, they are inspected for any tube leakage, suitability of sample (not too much mud or weed etc.) and absence of any factors that could potentially lead to inconclusive results.

DC: **Degradation Check** [Pass/Fail]
Analysis of the spiked DNA marker to see if there has been degradation of the kit or sample between the date it was made to the date of analysis. Degradation of the spiked DNA marker may lead indicate a risk of false negative results.

IC: **Inhibition Check** [Pass/Fail]
The presence of inhibitors within a sample are assessed using a DNA marker. If inhibition is detected, samples are purified and re-analysed. Inhibitors cannot always be removed, if the inhibition check fails, the sample should be re-collected.

Result: **Presence of GCN eDNA** [Positive/Negative/Inconclusive]
Positive: GCN DNA was identified within the sample, indicative of GCN presence within the sampling location at the time the sample was taken or within the recent past at the sampling location.
Positive Replicates: Number of positive qPCR replicates out of a series of 12. If one or more of these are found to be positive the pond is declared positive for GCN presence. It may be assumed that small fractions of positive analyses suggest low level presence, but this cannot currently be used for population studies. In accordance with Natural England protocol, even a score of 1/12 is declared positive. 0/12 indicates negative GCN presence.
Negative: GCN eDNA was not detected or is below the threshold detection level and the test result should be considered as evidence of GCN absence, however, does not exclude the potential for GCN presence below the limit of detection.

Appendix EDP 7
Invertebrate Surveys

METHODOLOGY

A7.1 The presence of blackthorn and elm within the on-site hedgerows provides potential for the Site to support a range of notable Lepidoptera namely, brown hairstreak, black hairstreak and white-letter hairstreak.

A7.2 To confirm the presence, or likely absence, of hairstreak butterflies from the Survey Area an egg search was completed on 07 December 2018, with an update survey undertaken 24 January 2022 to update the findings and extend the survey into the additional land within the Site. During the survey all blackthorn and elm was searched by hand to identify eggs laid on the branches.

White-letter Hairstreak

A7.3 White-letter hairstreak butterflies lay their eggs on elm trees and are typically located on:

- The underside of the girdle scar, where the most recent growth meets the older wood (often on older side-shoots rather than the leading stem);
- At the base of side shoots;
- On old leaf scars; and/or
- At the base of buds.

A7.4 As such, the survey covered all of the elm present within the hedgerow network. The surveyor walked to the southern or eastern side of each hedgerow, pulling down the more robust growth at the top of the hedgerow and inspecting the branch for eggs.

Brown and Black Hairstreak

A7.5 Both brown and black hairstreak butterflies target blackthorn to lay their eggs on, although, brown hairstreak females typically have a preference for laying on the young suckers and new growth on lower branches while black hairstreak eggs are more often found on the broader stems near the top of the hedgerows and also on growth located deeper into the hedge.

A7.6 As with the white-letter hairstreak surveys, the surveyor targeted the sunnier southern or eastern sides of the hedgerow, searching the new young growth and suckers as well as pulling down the more mature growth at the top of the hedgerow.

Limitations

A7.7 The hedgerows within the Site are subject to a cycle of flailing, which strips the young growth off the hedgerows in winter thereby removing the habitat and destroying the eggs.

A7.8 Not all egg-laying habitat is accessible using the survey methods employed, such that the absence of recorded eggs is not definitive evidence of the absence of these species.

RESULTS

A7.9 During the 2018 survey, a total of five brown hairstreak butterfly eggs were identified within the western boundary and **H3**. During the update survey in 2022 brown hairstreak eggs were found in four locations; three along the western boundary of the Site, further north of the previous egg locations, and one found at **H17** at the southern land parcel. The results of the update survey are shown on **Plan EDP 6**.

A7.10 No black or white-letter hairstreak eggs were recorded during the survey. However, the presence of small populations of these species within the Site cannot be entirely ruled out.

A7.11 Based on the findings summarised above and owing to the scarcity of the species, it is considered that the population present at the Site is of Site to Local-level ecological value.

Plans

Plan EDP 1: Update Phase 1 Habitats Plan – December 2023
(edp2355_d052a 25 March 2024 MCa/CHl)

Plan EDP 2: Pond Location Plan
(edp2355_d051a 25 March 2024 MCa/CHl)

Plan EDP 3: Designated Sites
(edp2355_d033a 30 January 2024 DJo/JSn)

Plan EDP 4: Breeding Bird Survey – May 2022
(edp2355_d050a 25 March 2024 PDr/CHl)

Plan EDP 5: Winter Bird Survey Results – January 2022
(edp2355_d048a 25 March 2024 MCa/CHl)

Plan EDP 6: Update Protected Species Plan – December 2023 [CONFIDENTIAL]
(edp2355_d040c 07 May 2024 DJo/JSn)

Plan EDP 7: Bat Transect Results – May, July and September 2022
(edp2355_d047a 26 March 2024 MCa/MSk)

Plan EDP 8: Bat Detector Locations and Bat Transect Route
(edp2355_d046a 25 March 2024 MCa/MSk)

Site Boundary

Broadleaved Semi-natural Woodland

Dense Continuous Scrub

A — Arable

I — Improved Grassland

SI — Poor Semi-improved Grassland

Hardstanding

Bare Ground

Intact Species-rich Hedgerow and Trees

Intact Species-rich Hedgerow

Intact Species-poor Hedgerow and Trees

Intact Species-poor Hedgerow

Defunct Species-rich Hedgerow

Wet Ditch

Dry Ditch

Fence

Scattered Trees (Broadleaved)

Scattered Scrub

TN1 — Target Note

H1 — Hedgerow Number

F1 — Field Number

client

Tritax Symmetry Ardley Ltd

project title

Symmetry Park, Ardley

drawing title

Update Phase 1 Habitats Plan – December 2023

date	**25 MARCH 2024**	drawn by	**MCa**
drawing number	**edp2355_d052a**	checked	**CHI**
scale	**1:5,000 @ A3**	QA	**GYo**

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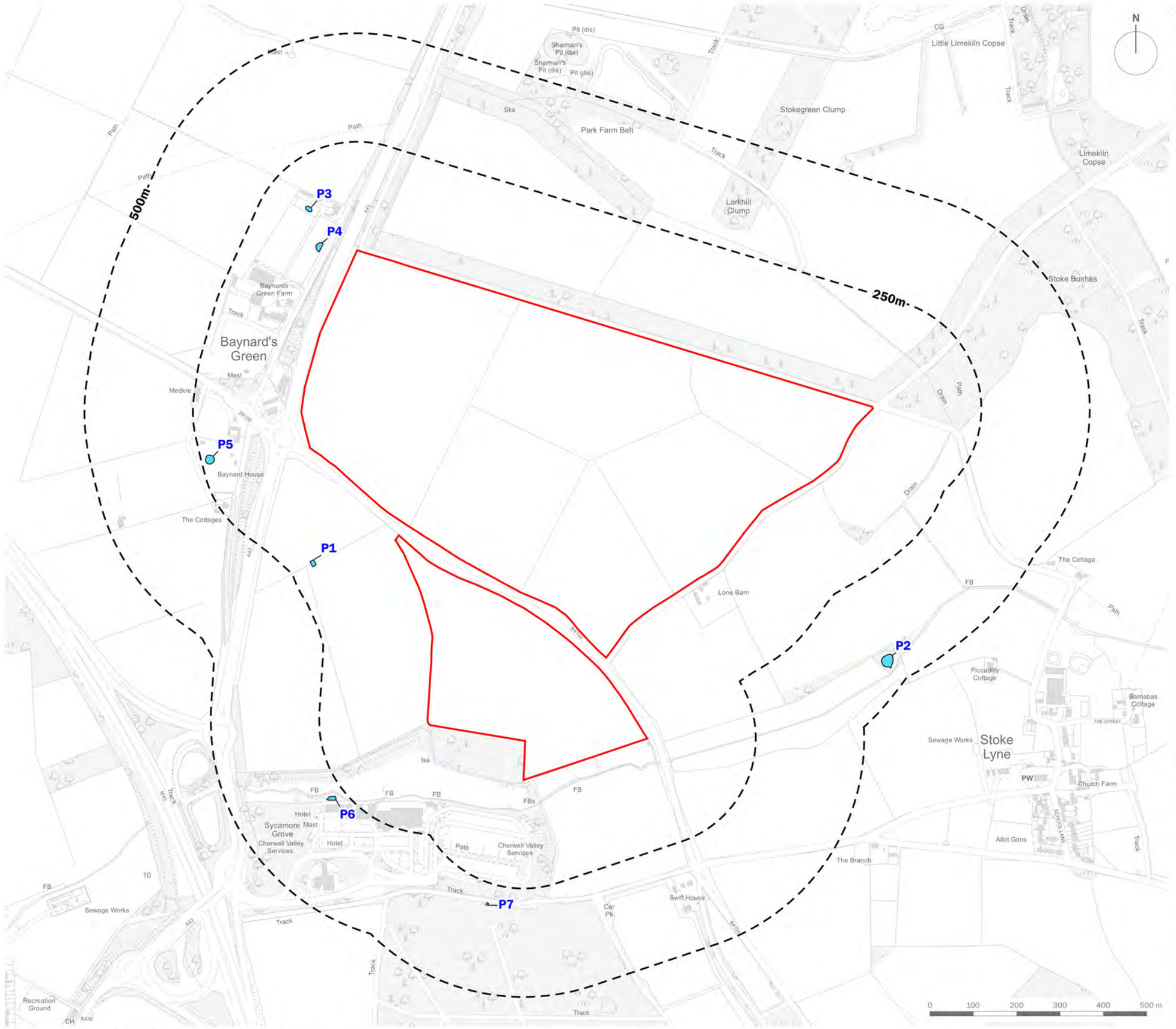

client

Tritax Symmetry Ardley Ltd

project title

Symmetry Park, Ardley

drawing title

Pond Location Plan

date	**25 MARCH 2024**	drawn by	**MCa**
drawing number	**edp2355_d051a**	checked	**CHI**
scale	**1:8,500 @ A3**	QA	**GYo**

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Site Boundary

Range Ring at 1km Intervals

Local Wildlife Site (LWS)

Woodland Trust Reserve

Wildlife Trust Reserve (WTR)

Biodiversity Opportunity Area (BOA)

Site of Special Scientific Interest (SSSI)

- Ardley Cutting and Quarry SSSI (Biological andGeological Designation)
- Ardley Trackways SSSI (Geological Designation)

Ancient Woodland Inventory (Natural England)

Ancient Semi-natural Woodland

Plantation on Ancient Woodland Site

client

Tritax Symmetry Ardley Ltd

project title

Symmetry Park, Ardley

drawing title

Designated Sites

date	**30 JANUARY 2024**	drawn by	**DJo**
drawing number	**edp2355_d033a**	checked	**JSn**
scale	**1:30,000 @ A3**	QA	**RBa**

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Site Boundary

Conservation Status

Schedule 1

Species of Principal Importance

Not Listed as Schedule 1 or SPI

Birds of Conservation Concern

Red List

Amber List

BTO Code	Common Name
BF	Bullfinch
D.	Dunnock
L.	Lapwing
LI	Common Linnet
P.	Grey Partridge
RO	Rook
S.	Skylark
SD	Stock Dove
SG	Common Starling
WH	Common Whitethroat
WP	Woodpigeon
WR	Wren
WW	Willow Warbler
Y.	Yellowhammer
YW	Yellow Wagtail

NB. Points shown are an indicative point within a bird's territory and not necessarily the exact breeding location.

client

Titrax Symmetry Ardley Ltd

project title

Symmetry Park, Ardley

drawing title

Breeding Bird Survey – May 2022

date	**25 MARCH 2024**	drawn by	**PDr**
drawing number	**edp2355_d050a**	checked	**CHI**
scale	**1:5,000 @ A3**	QA	**GYo**

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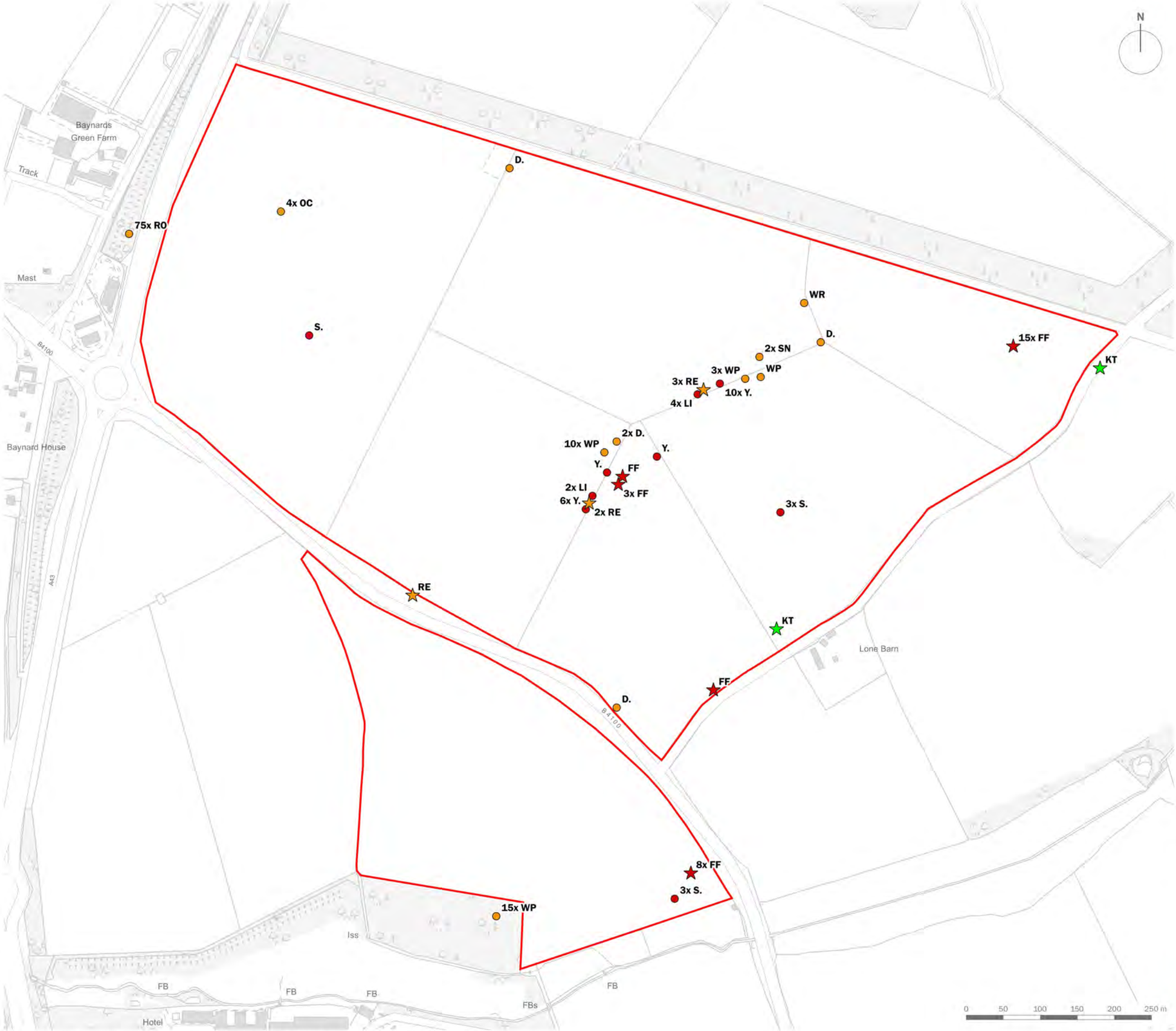

Site Boundary

Conservation Status

- Red Listed
- Amber Listed
- Green Listed
- ☆ Schedule 1 Species

Code	Species
D.	Dunnock
FF	Fieldfare
KT	Red Kite
LI	Linnet
OC	Oystercatcher
RE	Redwing
RO	Rook
S.	Skylark
SN	Snipe
WP	Woodpigeon
WR	Wren
Y.	Yellowhammer

client

Tritax Symmetry Ardley Ltd

project title

Symmetry Park, Ardley

drawing title

Winter Bird Survey Results - January 2022

date	**25 MARCH 2024**	drawn by	**MCa**
drawing number	**edp2355_d048a**	checked	**CHI**
scale	**1:5,000 @ A3**	QA	**GYo**

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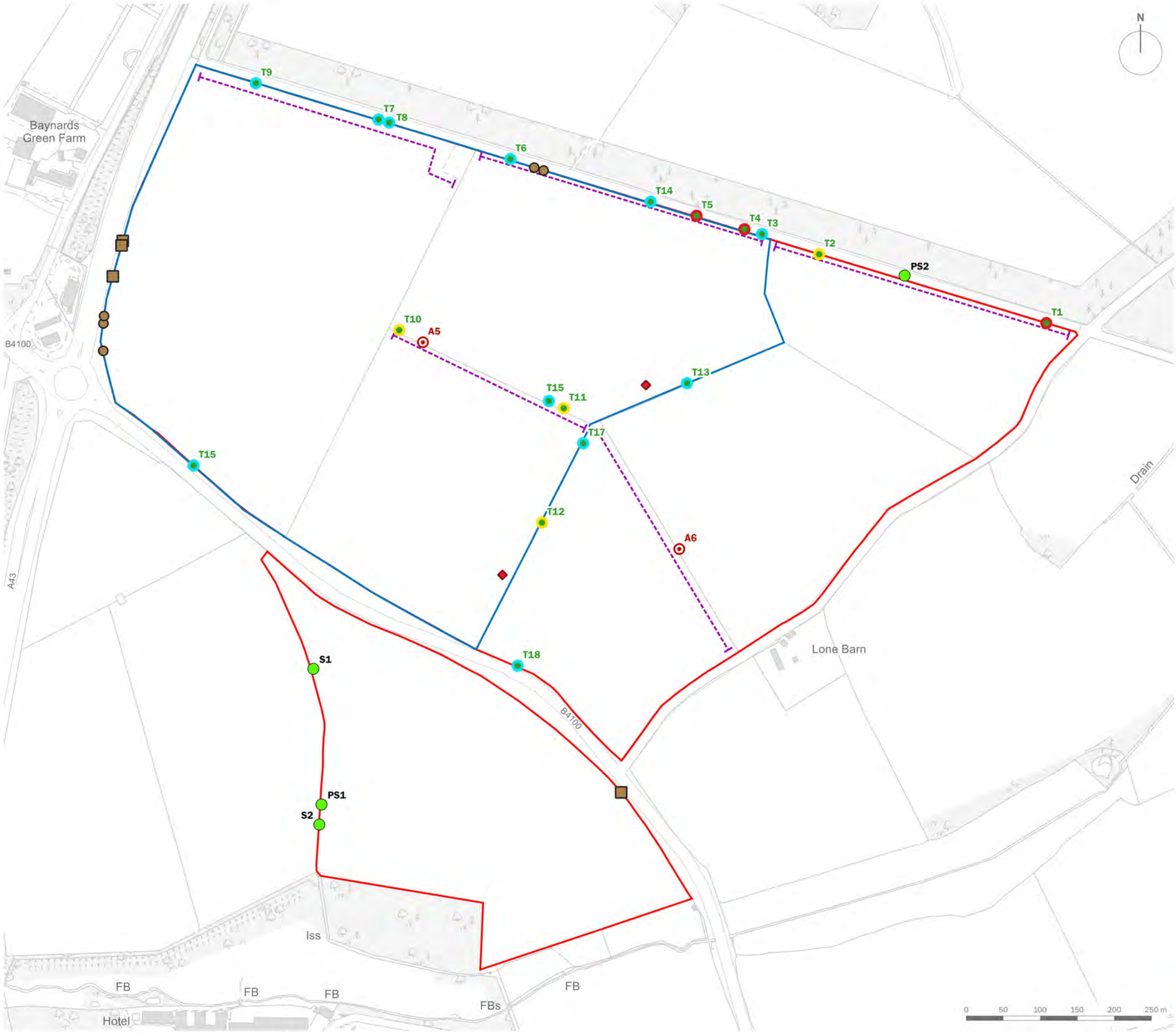

Site Boundary

Survey Area (2018)

Bat Roost Potential Trees (2023)

- High
- Moderate
- Low
- T1 Tree ID
- Anabat Locations (2014)

Badger

- Badger Sett Locations (2022/2023)
- Badger Foraging Evidence (2018)

Reptile

- Reptile Mat Locations (2014)

Hairstreak Butterflies

- Brown Hairstreak Eggs (2018)
- Brown Hairstreak Eggs (2022)

client

Tritax Symmetry Ardley Ltd

project title

Symmetry Park, Ardley

drawing title

Update Protected Species Plan – December 2023 [CONFIDENTIAL]

date	**07 MAY 2024**	drawn by	**DJo**
drawing number	**edp2355_d040c**	checked	**JSn**
scale	**1:5,000 @ A3**	QA	**RBa**

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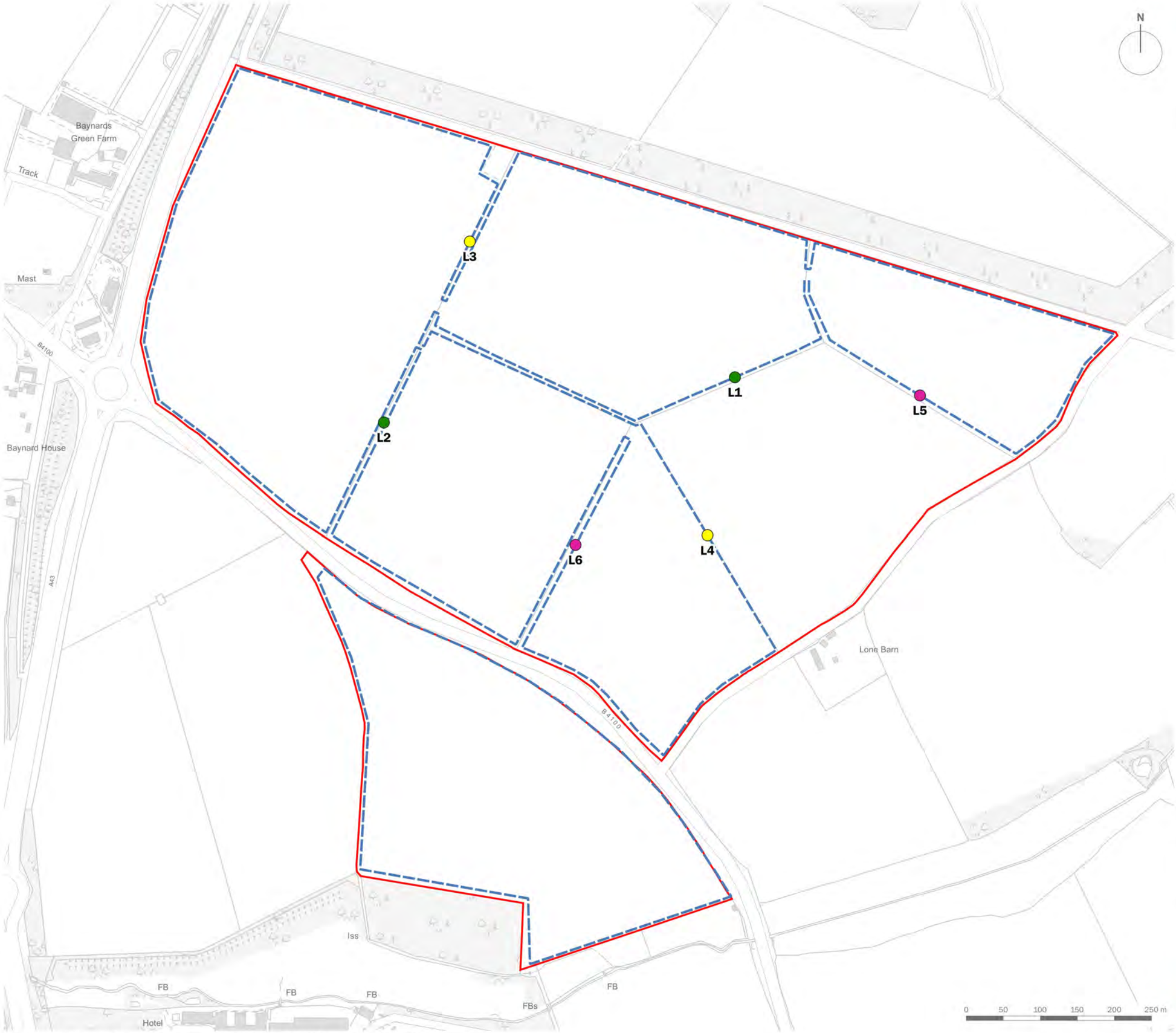

client

Tritax Symmetry Ardley Ltd

project title

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drawing title

Bat Detector Locations and Bat Transect Route

date	**25 MARCH 2024**	drawn by	**MCa**
drawing number	**edp2355_d046a**	checked	**MSk**
scale	**1:5,000 @ A3**	QA	**GYo**

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URBAN DESIGN GROUP REGISTERED PRACTICE

IEMA CORPORATE PARTNER

Landscape Institute
Registered practice