Symmetry Park, Ardley

Technical Appendix 8.1: Ecological Baseline

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On behalf of:
Tritax Symmetry Ltd

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Executive Summary

S1 The Environmental Dimension Partnership Ltd (EDP) was commissioned by Tritax Symmetry Ardley Ltd. (hereafter referred to as 'the Client') to undertake a range of baseline ecological investigations in order to inform a planning application for commercial development on land at Symmetry Park, Ardley. (hereafter referred to as 'the Site').

S2 The baseline ecological investigations undertaken across the Site as part of the appraisal included a desk study, Extended Phase 1 survey and detailed (Phase 2) surveys relating to breeding birds, roosting and foraging/commuting bats, badger (*Meles meles*), reptiles, and hairstreak butterflies. All surveys were undertaken with reference to best practice guidance.

S3 There are no internationally designated sites within 10km. There is one biological statutory designated sites within 5km of the Site, Ardely Cutting and Quarry Site of Special Scientific Interest (SSSI), although given the distances involved, it is not considered there would be any negative impacts on this SSSI as a result of the Proposed Development.

S4 There are four non-statutory designated Local Wildlife Sites (LWS) within 2km of the Site: Stoke Bushes LWS, Stoke Wood LWS and Stoke Little Wood LWS and Tusmore and Shellswell Park Biodiversity Opportunity Area (BOA). Of these, only Stoke Bushes LWS and the BOA is considered, in the absence of appropriate mitigation, to be at risk of adverse effects as a result of the proposed development.

S5 The majority of the Site comprises large, intensive arable fields sown with commercial cereal crops that are of negligible ecological importance. The arable fields are enclosed by a network of native hedgerow with a number of associated mature trees that are of Site to Local ecological importance.

S6 In terms of protected and Priority Species, surveys have confirmed the presence of populations of breeding birds, foraging/commuting bats, badgers and brown hairstreak (*Thecla betulae*) within the Site.

S7 The Important Ecological Features (IEFs) identified within the Site that are pertinent to an Ecological Impact Assessment (EcIA) in respect of the proposed development are listed in **Table EDP S1**.

Table EDP S1: Important Ecological Features to be assessed within the EcIA.

Important Ecological Feature	Key Attributes	Level of Ecological Importance
Designated Sites		
Stokes Bushes LWS	Lowland mixed deciduous woodland. Ancient semi-natural inventory.	District

Important Ecological Feature	Key Attributes	Level of Ecological Importance
Habitats		
Species rich hedgerows	Hedgerow network across the site. Low distinctiveness although forms habitat corridors.	Site/Local
Mature trees	Scattered broadleaved trees present associated with boundary features.	Site/Local
Wet ditches	Four wet ditches associated with hedgerows.	Site
Woodland	Woodland edge forming southern boundary of the Site.	Local
Species		
Birds	No significant breeding populations on-site, although the hedgerows, trees, scrub and adjacent woodland offer suitable nesting habitat.	Local
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
[redacted]	[redacted]	[redacted]
Butterflies	Non-significant breeding population of brown hairstreak butterflies on-site.	Local

Section 1
Introduction, Purpose and Context

1.1 This 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 Client'). This report describes the baseline ecological conditions relevant to land at Symmetry, Ardley (hereafter referred to as 'the Site').

1.2 EDP is an independent environmental planning consultancy with offices in Cirencester, Cheltenham and Cardiff. 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).

Site Context

1.3 The Site is located to the immediate 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 eight agricultural, arable fields, with the proposed development footprint covering an area totalling 82.58 hectares (ha). The Site is centred on National Grid Reference (NGR) 455362, 229178. The Local Planning Authority is Cherwell District Council (CDC).

1.4 EDP has been associated with this Site since 2014, the initial redline boundary was encompassed by the north-west of the current Site Boundary. **Plan EDP 1** displays the current Site boundary in red and the previous boundary in blue (see **Plan EDP 9**) (hereafter referred to as 'Survey Area' boundary).

1.5 The Site is in two parts located to the north (Zone A) and south (Zone B) of the B4100 road. The western boundary of the Site is formed by the A43 dual carriageway and the north and east by minor roads. The southern part of the Site is adjacent to further fields of arable land and woodland. The boundaries within and around the Site are formed mainly by well-maintained hedgerows. The principal ecological features within the Site (identified through site survey) are illustrated on **Plan EDP 1**, with habitat descriptions and illustrative site photographs provided in **Annex EDP 1**.

Development Proposals

1.6 The Site is proposed for commercial development, at this stage there are no fixed details for the proposed development. The object of this report is therefore to provide early information on ecological sensitives at the Site, by identifying the key ecological implications and opportunities.

Scope of Ecological Baseline

1.7 This Ecological Baseline report describes the current ecological interest within and around the Site, which has been identified through standard desk- and field-based investigations. This information forms the basis of an Ecological Impact Assessment (EcIA) of proposed commercial development within the Site, as set out within Chapter 8 (Biodiversity) of the Environmental Statement accompanying the planning application.

1.8 The remainder of this report is structured as follows:

- **Section 2** summarises the methodology employed in determining the baseline ecological conditions within and around the Site (with further details provided within annexes and on plans where appropriate);

- **Section 3** summarises the results of the baseline ecological surveys (with further details also provided within annexes and on plans where appropriate) and identifies and evaluates any pertinent ecological features/receptors; and

- **Section 4** summarises the results of the baseline report and provides the overall conclusions.

Section 2
Methodology (Baseline Investigations)

2.1 This section summarises the methodologies employed in determining the baseline ecological conditions within the Site. The baseline surveys have 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. Full details of the techniques and process adopted are, where appropriate, provided within annexes and on plans to the rear of this report.

Desk Study

2.2 The desk study is an important element of undertaking an ecological baseline assessment of a site proposed for development, enabling the initial collation and review of contextual information, such as designated sites, together with known records of protected and Priority Species.

2.3 An ecological desk study of the Site was undertaken in May 2014, updated in April 2018, and again in December 2021. The organisations contacted/resources accessed, and the type of information requested, are summarised within **Table EDP 2.1**.

Table EDP 2.1: Organisations Contacted for Ecological Records.

Organisation/Resource	Information Requested (Search Distance from Study Area Boundary)
Thames Valley Environmental Records Centre (TVERC)	• Non-statutory local sites (2km); and • Protected/notable species records (2km).
Northants Bat Group	• Bat Species Records
Multi-Agency Geographic Information for the Countryside (MAGIC) website[1]	• International statutory designations (15km); and • National statutory designations (5km).

2.4 The scope and search areas of the ecological desk study are considered sufficient to cover the potential zones of influence[2] of the proposed development in relation to designated sites, habitats and species.

2.5 Any pertinent information received as a result of the desk study has been specifically referenced within **Section 3**.

[1] www.magic.defra.gov.uk
[2] Zone of Influence - the areas and resources that may be affected by the proposed development

Extended Phase 1 Survey

2.6 The survey technique adopted for the initial habitat assessment was at a level intermediate between a standard Phase 1 survey technique[3], based on habitat mapping and description, and a Phase 2 survey, based on detailed habitat and species surveys. The survey technique is commonly known as an Extended Phase 1 survey. This level of survey does not aim to compile a complete floral and faunal inventory for the Site.

2.7 The level of survey involves identifying and mapping the principal habitat types and identifying the dominant plant species present in each principal habitat type. In addition, any actual or potential protected species or species of principal importance likely to be supported are identified and scoped, in consideration with the findings of the above ecology scoping survey.

2.8 An Extended Phase 1 survey of the Survey Area was originally undertaken by a suitably experienced surveyor on 23 April 2018, which was updated on 08 December 2021, to include the expanded redline area of the Site. Further details of the Extended Phase 1 survey, habitat descriptions and site photographs are provided in full at **Annex EDP 1** and shown on **Plan EDP 1**.

Limitations

2.9 The updated Extended Phase 1 surveys was conducted outside the optimum survey season (April to October inclusive) and there is potential that some habitats or species were not recorded. 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) it is not considered a constraint, the survey identified the main habitat types present, with 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. The weather during the 2018 surveys was warm, dry, and sunny with little to no wind, and although the weather during the 2021 survey was partly wet, cool and breezy, it is not considered this affected recording of the species and habitats present. The surveys are, therefore, not considered to have been constrained by seasonal or climatic conditions.

Detailed (Phase 2) Surveys

2.10 The scope of Phase 2 surveys undertaken at the Site was defined following the initial studies described above (desk study and Extended Phase 1 survey). The surveys 'scoped in' are summarised in turn below and a brief explanation of those potential surveys 'scoped out' is provided thereafter.

[3] Joint Nature Conservation Council (2004) *Handbook for Phase 1 Habitat Survey – A Technique for Environmental Audit* (reprinted with minor corrections for original Nature Conservancy Council publication).

Hedgerow Survey

2.11 Owing to the presence of a network of hedgerows within the Site, with variable quality and species-diversity, structure and condition, a detailed survey was undertaken to assess their value and whether any of the hedgerows qualify as 'important', with reference to the Wildlife and Landscape criteria provided in Part II of Schedule 1 of the *Hedgerows Regulations* 1997. A survey was completed on 03 May 2018, of all hedgerows within the Survey Area, and checked on 08 December 2021. Further details are provided in **Annex EDP 2**, with hedgerow locations and references provided on **Plan EDP 1**.

Breeding Bird Surveys

2.12 The value of the Site for breeding birds was assessed through the completion of a breeding bird survey undertaken on three occasions in 2018 (19 April, 17 May and 20 June 2018) to assess the value of the assemblage. The survey was undertaken with reference to the Common Bird Census (CBC) approach[4], as detailed in **Annex EDP 3** and illustrated on **Plan EDP 3**, **4** and **5**.

Bat Surveys

2.13 The habitats within the Site have potential to support a foraging and commuting assemblage of bats, while trees within the hedgerows were assessed for their potential to support roosting bats. The following surveys for bats were therefore undertaken during the active bat season in 2018 with reference to national best practice guidelines[5]: daytime inspections of trees for their bat roosting potential; manual transect surveys; and automated detector surveys. Full details of the bat surveys are provided in **Annex EDP 4** and illustrated on **Plans EDP 6**, **7** and **8**.

Bat Roosting - Trees

2.14 All trees within the Survey Area were visually assessed from ground level for the presence of bats/evidence of bats and potential to support roosting bats by a suitably experienced ecologist on 14 May 2018 (of the Survey Area), with updated surveys carried out on 08 December 2021, to include the expanded redline area of the Site. This included searching for the presence of potential bat roosting features such as: loss/peeling/fissured bark; natural holes e.g. rot holes and holes from fallen limbs; woodpecker holes; cracks/splits or hollow tree trunks/limbs; and thick-stemmed ivy. On the basis of this evidence, trees were assigned a rating of low, medium or high potential.

[4] Eaton, M.A., Aebischer, N.J., Brown, A.F., Hearn, R.D., Lock, L., Musgrove, A.J., Noble, D.G., Stroud, D.A. and Gregory, R.D. (2015). *Birds of Conservation Concern 4: the population status of birds in the UK, Channel Islands and Isle of Man*. British Birds, Vol. 108, 708-746.

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

Bat Foraging/Commuting

2.15 Features such as trees, hedgerows, scrub and rough grassland within the Site were identified as being potentially suitable for foraging and commuting bats. Therefore, bat activity across the Survey Area was investigated through a combination of manual transect surveys and automated detector surveys undertaken April, July and September 2018. automated detector surveys were also undertaken in July and August 2014.

[redacted]

Reptile Surveys

2.18 Previous survey work by EDP was conducted at the Site to investigate the potential presence/absence of reptiles at the Site, which was considered to be suitable to support common and widespread reptile species. Therefore, artificial refugia were deployed throughout the Survey Area and checked for reptiles on four occasions during between June and July 2014.

2.19 Full details of the reptile surveys are provided in **Annex EDP 6** and illustrated on **Plan EDP 9**.

2.20 During the updated Phase 1 survey carried out in 2021, the fields were recorded as having been ploughed up to the hedgerow bases, with very little grassland field margins present.

Brown, Black and White-letter Hairstreak (Butterfly) Surveys

2.21 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. Surveys for these species, comprising winter egg searches, were therefore conducted on 04 December 2018, covering the Survey Area.

2.22 Full details of the butterfly surveys are provided in **Annex EDP 7** and illustrated on **Plan EDP 9**.

Surveys Scoped Out

2.23 **Table EDP 2.2** summarises other survey types, which, while commonly required as part of an EcIA of development sites, were not considered necessary/appropriate in this case.

Table EDP 2.2: Ecology Surveys Scoped Out

Survey Type	Reasons for Scoping Out
Botanical surveys	Extended Phase 1 Habitat survey information was sufficient to confirm habitat value, with no indication of particularly high value habitats present.
Wintering bird surveys	Limited extent and/or quality of on-site habitats for wintering birds.
Dormouse survey	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 are 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 and Water vole Survey	There are four wet ditches within the Site, although they are not deemed suitable to support otter or water vole and no other suitable water courses within the vicinity of the Site. As the Site offers no suitable aquatic habitat, these species are not considered present.
Great crested Newt Surveys	There are no on-site ponds or other suitable waterbodies and the Site offers limited suitable terrestrial habitat along the grassland field margins and do not offer refuge habitat for great crested newt, therefore, this species are not considered present.
Update Reptile Surveys	Following the pilot reptile survey, 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 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.
Additional invertebrates	Vast majority of the natural habitats within the Site are of low quality, maturity or distinctiveness. Adjacent suitable habitats to be retained.

Limitations

2.24 Further Phase 2 surveys are scheduled to be updated in 2022 in order to conform to best practice guidelines, although given that the additional habitats present within the eastern and southern parts of the Site are very similar to those assessed during the 2018 surveys, and that there has been no material change in the habitats present within the Site from the 2018 surveys, the likelihood of the baseline results having changed materially is very low. However, where relevant and depending on development timescales, certain detailed species surveys may require updating prior to commencement of development.

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Section 3
Results (Baseline Conditions)

3.1 This section summarises the baseline ecological conditions determined through the course of the desk- and field-based investigations described in **Section 2**. In particular, it identifies and evaluates those Important Ecological Features (IEFs) that lie within the Site's potential zone of influence (ZOI), and which are pertinent in the context of the proposed development.

3.2 The evaluation of potential IEFs has been undertaken in accordance with the latest Chartered Institute of Ecology and Environmental Management (CIEEM) guidance[6] with professional judgement and available guidance used to assign a value to IEFs at a geographical scale. Further technical details are, where appropriate, provided within annexes and on plans to the rear of this report.

Designated Sites

3.3 Information regarding designated sites was obtained during the desk study from the MAGIC website and TVERC. Statutory designations (those receiving legal protection) and non-statutory designations (those receiving planning policy protection only) are discussed in turn below.

Statutory Designations

3.4 Statutory designations represent the most significant ecological receptors, being of recognised importance at an international and/or national level. International designations include Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and Ramsar Sites. National designations include Sites of Special Scientific Interest (SSSIs) and National Nature Reserves (NNRs).

3.5 The Site is not within or adjacent to any international/national statutory designations. There are no international designations within a 15km search radius of the site. However, the Site lies within the Impact Risk Zone (IRZ) of two SSSIs, as detailed in **Table EDP 3.1**.

[6] CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.1. Chartered Institute of Ecology and Environmental Management, Winchester.

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

Name and Designation	Designation and Importance	Distance from Site	Interest Feature(s)
Ardley Cutting and Quarry	SSSI – national importance; statutory. LWS, Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust	1.7km 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 *(Triturus critatus*).
Ardley Trackways	SSSI – national importance; statutory	1.9km south	Designated for its Geological Interests.

3.6 Although the Site lies within the IRZ for the Ardley Cutting and Quarry SSSI, the development is not of a size or nature which requires consultation with Natural England on potential impacts. Given the spatial separation between the Site and the SSSI, and the M40 barrier, no adverse impacts are anticipated as a result of the proposed development.

3.7 The IRZ that covers the southern parcel of the Site states that there could be adverse impacts on statutory designated sites from:

- Any industrial development that could cause air pollution; and
- Large infrastructure such as warehousing/industry where total net additional gross internal floorspace following development is 1,000m² or more.

3.8 Owing to the nature of the proposed development, the separation distances between the Site and the SSSIs and the absence of any impact pathways, it is not considered that any significant adverse effects on these SSSIs would arise from the proposed development. Accordingly, these have been scoped out of the EcIA as IEFs.

Non-statutory Designations

3.9 Non-statutory designations are also commonly referred to in planning policies as 'local sites', although in fact these designations are typically considered to be important at a County-level. In Oxfordshire, such designations are named Local Wildlife Sites (LWS). Additional designated sites, which should be considered at this level, include Local Nature Reserves (LNR), Cherwell District Wildlife Sites (CDWS), the selection criteria for which are based on LWS criteria although with lower thresholds and requirements,

proposed Cherwell District Wildlife Sites (pCDWS), and Ancient Semi-natural Woodland (ASNW) where these are not covered by other designations.

3.10 No part of the Site is covered by any LWS, there are three areas of ancient woodland, which are also designated as Local Wildlife Sites (LWS), within a 1km radius of the Promoted Site as detailed in **Table EDP 3.2**, the location of these designation in relation to the Site are shown on **Plan EDP 2**.

Table EDP 3.2: Statutory Designations Within the Site's Potential Zone of Influence.

Name and Designation	Designation and Importance	Distance from Site	Interest Feature(s)
Stoke Bushes	LWS – national importance; non-statutory	0.3km east (adjacent to north-east corner)	Lowland mixed deciduous woodland with twenty-two ancient woodland indicator species recorded in 2011. Bird of conservation concern recorded including marsh tit, yellow hammer and green woodpecker.
Stoke Wood	LWS – national importance; non-statutory. Woodland Trust Reserve	0.8km south	Lowland mixed deciduous woodland. Ancient woodland, at least 400 years old with records for 31 species of long-established woodlands. Supports a good butterfly population, including Silver washed fritillaries, white admiral.
Stoke Little Wood	LWS – national importance; non-statutory	1.4km south-east	Lowland mixed deciduous woodland. Species rich ground flora including early purple orchid.
Tusmore and Shellswell Park	Conservation Target Area (CTA)	0.3km east	Encompasses wooded estate land and a number of ancient woodlands sites neat Stoke Lyne. Biodiversity Action Plan Targets included management of the existing woodland and management and restoration of the parkland.

3.11 The targets set out for the Tusmore and Shellswell Park CTA in Oxfordshire Biodiversity Action Plan are as follows;

"1. Lowland mixed deciduous woodland – management and creating.

2. Parkland (including veteran trees) – management and restoration."

3.12 As neither of these habitats are present with the Site it is not considered that the proposals will result in significant adverse impacts to the targets associated with this CTA and therefore, has been scoped out as an IEF and will not be considered further in the EcIA.

3.13 Owing to the nature of these designations and the development proposed, it is not considered that the proposals will result in significant adverse impacts to the nature conservation interest of the three Cherwell District Wildlife Sites. As a result, the non-statutory designations have been scoped out as IEFs and will not be considered further in the EcIA.

Habitats

3.14 Information on habitats within and around the Site was obtained during the desk study, and the Extended Phase 1 survey.

3.15 The desk study returned a number of records of plants within 2km of the Site. Of these records, the nearest records returned were associated with Stoke Bushes LWS for bluebell (*Hyacinthoides non-scripta*), a *Wildlife and Countryside Act* 1981 (as amended) Schedule 8 species protected from sale only, recorded approximately 30m east of the Site, and greater butterfly orchid *(Platanthera chlorantha*), which is a Red List near-threatened species. The Citation for Stoke Bushes states that 22 ancient woodland indication species have been recorded. None of these species were recorded within the Site. Records were returned for corn mint *(Mentha arvensis),* field scabious *(Knautia arvensis)*, quaking grass *(Briza media)* and many-leaved sedge *(Carex divulsa subsp. Leersii)*, listed as locally scare, from approximately 500m west of the Site.

3.16 The distribution of different habitat types within and adjacent to the Site is illustrated on **Plan EDP 1**. In addition, detailed descriptions of these habitat types, together with illustrative photographs, are provided in **Annex EDP 1**. A summary, and qualitative assessment of these habitats is provided in **Table EDP 3.2**.

Table EDP 3.2: Summary of Habitats within the Site.

Habitat or Feature	Distribution within Site	Level of 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.
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.
Wet ditches	Associated with four of the hedgerows, **H10**, **H11**, **H13** and **H14**.	**Site**, owing to low distinctiveness and small extent of habitat type.

Habitat or Feature	Distribution within Site	Level of Intrinsic Ecological Importance
Species poor hedgerows	Separating the fields throughout the Site. Some are with associated trees.	**Site to Local**, owing to lack of species diversity and intensive management. Forms habitat corridors across the Site.
Species rich hedgerows	Separating the fields throughout the Site. Some are with associated trees.	**Site to Local**, owing to lack of species diversity and intensive management. Forms habitat corridors across the Site.
Mature trees	Scattered broadleaved trees present associated with boundary features.	**Site to Local,** owing to connectivity with offsite habitats.

3.17 As noted within **Table EDP 3.2**, the majority of habitats within the Site are of Site-level or Negligible ecological importance. However, the scrub, wet ditches, hedgerow network and associated scattered mature trees are of up to Local-level importance and are therefore taken forwards as an IEF in the EcIA. Furthermore, a number of the habitats or other features, which are of negligible intrinsic ecological importance may require consideration in relation to their importance in maintaining populations of protected and/or notable species. This is discussed further below.

Protected and/or Notable Species

3.18 The likelihood of presence, or confirmed presence, of protected/and or notable 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 annexes and plans where referenced.

3.19 Where a particular species or taxonomic group has been confirmed to be present, or presence is inferred based on habitat suitability, the ecological importance or significance of the population or assemblage is assessed on a geographical scale.

Birds

3.20 A total of 243 records for 32 different species of birds were returned from the desk study. Of these, some are considered to be pertinent to the habitats within the Site. These include barn owl (*Tyto alba*), bullfinch (*Pyrrhula pyrrhula*), house sparrow (*Passer domesticus*), lesser redpoll, (*Acanthis cabaret*), lesser spotted woodpecker (*Dryobates minor*), linnet (*Linaria cannabina*), red kite (*Milvus milvus*), reed bunting (*Emberiza schoeniclus*), skylark (*Alauda arvensis*), song thrush (*Turdus philomelos*), starling (*Sturnus vulgaris*), and yellowhammer (*Emberiza citrinella*). Of these, the nearest record was for red kite, recorded from the grid square containing the northern tip of the Site in 2015.

3.21 A number of bird species were recorded within the Site by visiting surveyors outside of the designated breeding bird surveys. Notably a flock of lapwings were observed on

07 December 2018, included on the Red List of Birds of Conservation Concern[7] (BoCC). In addition, there were individual sighting of yellowhammer, skylark in July 2018 and fieldfare (*Turdus pilaris*) in December 2021, also listed as Red on the BoCC. Redwing (*Turdus iliacus*), on the Amber list of the BoCC was also recorded In December 2021. Due to chance sightings it is not possible to assess with confidence the breeding status of yellowhammer or skylark at the time of their sightings.

Breeding Bird Surveys

3.22 Three breeding bird surveys were undertaken within the Site in 2018, These surveys recorded an assemblage of birds typical of the agricultural and urban fringe environment present within the Site.

A3.1 A total of 36 bird species were recorded within and adjacent to the Site during the three breeding bird survey visits completed during 2018. Thirteen of which are of conservation concern.

A3.2 Of those species recorded in 2018, seven species were confirmed as breeding, these being yellowhammer, starling, robin, blue tit, carrion crown, great tit and whitethroat. In addition, four species were recorded as probable breeders, as it was not possible to provide confirmation of breeding (skylark, dunnock, chaffinch, and goldfinch). A further 19 species were recorded as possible breeders, being observed in 'suitable' habitat (linnet, song thrush, yellow wagtail, willow warbler, stock dove, bullfinch, wren, blackbird, pheasant, partridge, garden warbler, green woodpecker, long-tailed tit, jackdaw, blackcap, pied wagtail, greenfinch, and chiffchaff). Five species were recorded as non-breeders (red kite, swallow, lesser black-backed gull, grey heron and swift). The majority of species recorded within the Site were recorded in low numbers.

3.23 Full results of the breeding bird surveys are provided in **Annex EDP 3** and illustrated on **Plans EDP 3**, **4** to **5**.

3.24 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

3.25 Seventy-four records for bat species were returned from TVERC for the following species: common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*), brown long-eared (*Plecotus auritus*), noctule (*Nyctalus noctula*), Leisler's (*Nyctalus leisleri*), Natterer's (*Myotis nattereri*), whiskered (*Myotis mystacinus*), Daubenton's (*Myotis daubentonii*), and serotine (*Eptesicus serotinus*). The closest records included a common pipistrelle roost, located approx. 1.0km north of the Site.

[7] 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 Britai*n. British Birds 114: 723-747

3.26 A single record for the Annex II[8] species barbastelle (*Barbastella barbastellus*) was returned from TVERC, located approx. 4.2km east of the Site.

3.27 Three granted European Protected Species applications in relation to bats were identified within 2km of the Site, these related to common pipistrelle and brown long-eared bats.

Bat Roost Assessment Trees

3.28 In 2021 a total of 13 trees were identified for having bat roost potential, including three with high potential, 3 with moderate potential and seven with low potential. No bats or evidence of bats were found during the ground level tree assessment.

3.29 Full details of the bat roost assessment of trees within the Site are provided in **Annex EDP 4** and illustrated on **Plan EDP 9**.

Bat Foraging/Commuting Activity

3.30 In general, the bat transect and automated detector surveys recorded low levels of bat foraging/commuting activity. The majority of bat activity was recorded in September and nearly all activity was from common pipistrelle, with fewer registrations recorded from myotis, noctule and soprano pipistrelle.

3.31 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 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.

3.32 Barbastelle, an Annex II species, was recorded during the transect surveys on one occasion. Barbastelle calls accounted for approximately 3% of the total number of registrations recorded on the automated detectors in 2018, with the total number of registrations recorded over the three surveys totalling 25. Most of the recordings were associated with Location 1 on **Plan EDP 6** in May and September. In 2014 only a single Barbastelle call was registered. Indicating that there is unlikely to be a roost nearby, and that this species is only using the Site for occasional foraging and commuting.

3.33 Overall, the majority of registrations recorded relate to common and widespread bat species, in particular common pipistrelle. Most other species made up a very small proportion of the total registrations recorded, although there were slightly higher numbers of registrations of *Myotis* sp. It should be noted that species of *Myotis* sp. bat are difficult to tell apart solely from their echolocation calls and are therefore grouped, although

[8] Species listed on Annex II of the Habitats Directive are those for which internationally protected SACs are selected to ensure they reach a favourable conservation status within the EU

many are widespread but less abundant species. Of note is the presence of the rarer barbastelle, an Annex II species. Generally, only very low levels of barbastelle activity were recorded.

3.34 Full details of the survey results are provided in **Annex EDP 4** and illustrated on **Plans EDP 6**, **7** and **8**.

3.35 Based on the survey findings, the bat population supported by the Site is considered to be of no greater than Local-level ecological importance.

Otter and Water Vole

3.36 The TVERC data search returned two records for water vole located approx. 1.4km north of the Site. However, both are historical records from 1980. No records of otter were returned by TVERC. An absence of records does not indicate an absence of species within the local area, although no records were returned in the last ten years since 2021.

3.37 Although wet ditches are present along hedgerows, these are not considered suitable to support water vole or otters. There are no other watercourses within or adjacent to the Site and no suitable watercourses within the vicinity of the Site.

3.38 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 Mammals

3.46 The desk study returned a small number of records for brown hare (*Lepus europaeus*), polecat (*Mustela putoriuopaeus*) and hedgehog *(Erinaceus europaeus)*, which are Priority Species.

3.47 It is considered the hedgerows, and grassland habitats within the Site offer some suitable opportunities for these species. Hares were recorded within the Site during other surveys undertaken in 2014/2018.

3.48 It is not considered these species would be reliant on the Site, given there are extensive opportunities for these species in the wider landscape, and will therefore not be taken forwards to EcIA.

Great Crested Newt

3.49 The desk study returned a single record of great crested newt *(Triturus cristatus)*, located approx. 0.8km east south-west of the Site in 2017. Three records for smooth newt *(Lissotriton vulgaris)* were also returned. A number of great crested newt pond survey results were returned from MAGIC, this included an absent result for the four-figure grid reference which covers the northern part of the Site. The closet positive record was located approx. 0.8km east of the Site, a positive eDNA result in 2018.

3.50 There are no on-site ponds or other suitable waterbodies, although the desk study found four ponds located within 500m of the Site. However, these are all separated by the A34 which would act as a dispersal barrier to any commuting amphibians.

3.51 The Site offers limited suitable terrestrial habitat along the grassland field margins and do not offer refuge habitat for great crested newt. Owing to the separation distance of records returned the data search to the Site it is considered they are unlikely to use the Site and no impacts on their populations are anticipated.

3.52 Great crested newts are not considered present at the Site and will therefore not be taken forwards to EcIA.

Reptiles

3.53 The TVERC returned no records for reptiles, an absence of records does not indicate and absence of species.

3.54 The Site is largely unsuitable to support widespread reptiles owing to the occurrence of intensive agricultural management, which results in frequent disturbance to, and loss of, suitable reptile habitat. The grass track and road verges of improved grassland is considered potentially suitable to support basking, foraging and dispersing reptiles. Albeit

these areas account for a very small proportion of the overall Site, with the grass track being isolated and surrounded by unsuitable habitat.

3.55 A pilot survey recorded no reptiles within the Site during any of the survey visits.

3.56 Full details of the survey results are provided in **Annex EDP 6** and illustrated on **Plan EDP 9**.

3.57 Based on the survey findings and lack or records returned from the data search, reptiles are not considered present and will therefore not be taken forwards to EcIA.

Butterflies

3.58 The TVERC returned records of six butterfly species from within the 2km search area. These are the Priority Species small heath (*Coenonympha pamphilus*), grizzled skipper *(Pyrgus malvae)*, wall *(Lasiommata megera)*, white admiral *(Limenitis camilla)*, and small blue *(Cupido minimus)*. A large proportion of the records returned dated pre-2000s. In addition, there are known hairstreak butterfly populations supported within the SSSIs, approx. 1.7km south of the Site.

3.59 In addition, the following species were recorded when EDP surveyors visited the Site in 2014: Essex skipper *(Thymelicus lineola)*, common brown *(Heteronympha merope)*, tortoise shell *(Aglais urticae)* and common blue *(Polyommatus icarus)*.

Hairstreak Egg Search

3.60 The presence of blackthorn (*Prunus spinosa*) and elm (*Ulmus* sp.) within the on-site hedgerows provides potential for the Site to support a range of notable Lepidoptera namely, brown hairstreak and black hairstreak.

3.61 During the survey carried out in December 2018, brown hairstreak eggs were recorded within the Site, within hedgerows **H2** and **H1** within the Site, confirming the presence of a breeding population of the species. No eggs of black hairstreak or white-letter hairstreak were recorded during this survey.

3.62 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.

3.63 Nevertheless, 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.

3.64 White-letter hairstreak are associated with elm (*Ulmus* sp.) which is present throughout the Site in low quantities. The hedgerows in which the elm are 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.

3.65 Full details of the butterfly surveys are given in **Appendix EDP 7** and results detailed on **Plan EDP 9**.

Other Invertebrates

3.66 The TVERC returned records of a number of species of beetles and moths from within 2km of the Site. Nearly all were associated with Ardle Quarry Nature Reserve, and all were recorded pre-2000s. It is considered the hedgerow and grassland within the Site offer some suitable habitat for these species, although it is not considered any of these species would be reliant on the habitats present within the Site.

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Section 4
Summary of Findings

4.1 Based on the investigations described above, the IEFs pertinent to the EcIA (i.e. those of Local-level ecological importance or greater, or those receiving legal protection) of the proposed development, are listed in **Table EDP 4.1**.

Table EDP 4.1: Important Ecological Features to be assessed within the EcIA.

Important Ecological Feature	Key Attributes	Level of Ecological Importance
Designated Sites		
Stokes Bushes LWS	Lowland mixed deciduous woodland. Ancient semi-natural inventory.	District
Habitats		
Improved grassland	Restricted to small areas around the field margins and roadside with low distinctiveness.	Site
Scrub	Restricted to small areas along the roadside with low distinctiveness.	Site
Species rich hedgerows	Hedgerow network across the Site. Low distinctiveness although forms habitat corridors.	Site/Local
Mature trees	Scattered broadleaved trees present associated with boundary features.	Site/Local
Wet ditches	Four wet ditches associated with hedgerows.	Site
Woodland	Woodland edge forming southern boundary of the Site.	Local
Species		
Birds	No significant breeding or wintering populations on-site, although the hedgerows, trees and woodland offer suitable nesting habitat. Barn owl recorded foraging, but no breeding confirmed.	Local
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
Badger	No sett evidence recorded within the Site, but setts and other evidence recorded in wider area such that future presence in the Site cannot be ruled out.	Site
Butterflies	Non-significant breeding population of brown hairstreak butterflies on-site.	Local

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Annex EDP 1
Habitat Descriptions and Site Photographs

A1.1 The Site comprises predominantly of large, intensive arable fields sown with commercial cereal crops. Arable fields within the Site are enclosed by a native hedgerow network with a number of associated trees. The habitats within the Site are described further below, with illustrative photographs provided where appropriate. The following should be read in conjunction with **Plan EDP 1**.

Arable

A1.2 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.

A1.3 Fields **F2** and **F4** had a strip of sunflowers, for game cover, planted along the eastern edge.

A1.4 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 negligible inherent ecological value.

Image EDP A1.1: Example of Arable field

Improved Grassland

A1.5 Along the western edge of field **F2** is a strip of grass track, species present include false oat grass (*Dactylis glomerata*), perennial rye grass *(Lolium perenne)*, cocks foot grass (*Dactylis glomerata*), white clover (*Dactylis glomerata*), common nettle (*Urtica dioica*) and hogweed *(Heracleum sphondylium)* (see **Image EDP A1.2**).

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

A1.6 The B4100 road intersecting the north and south of the Site was bound by grass verges with species present including false oat grass (*Dactylis glomerata*), perennial rye grass *(Lolium perenne)*, cocks foot grass (*Dactylis glomerata*), common nettle, ground ivy (*Ranunculus repens*), ribwort plantain (*Ranunculus repens*), red fescue *(Festuca rubra),* yarrow (Achillea millefolium) and creeping buttercup (*Ranunculus repens*) (see **Image EDP A1.3**).

Image EDP A1.3: Grass roadside verge

A1.7 Given the extent of these habitat areas and their lack of distinctiveness they are considered to be of Site-level ecological importance only.

Scrub

A1.8 There are small extents of scrub along the B4100 roadside and adjacent to field **F2** dominated by blackthorn and bramble.

A1.9 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 (*Rubus fruticosus* agg.), ivy, holly *(Ilex aquifolium)*, wild privet *(Ligustrum vulgare)* and blackthorn *(Prunus spinosa)* (see **Image EDP A1.4**).

A1.10 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: Offsite planted scrub

Hedgerows

A1.11 The field parcels are bound by a total of 18 hedgerows with variable quality and species-diversity, structure, and condition. Hedgerows **H10**, **H11 H13** and **H14** have associated wet ditches, increasing their value for wildlife. A number of the hedgerows were associated with dry ditches (see **Image EDP A1.6**).

A1.12 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 (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), dog rose *(Rosa canina),* elder (*Sambucus nigra*), wild privet and bramble (*Rubus fruticosus* agg.).

A1.13 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 A1.6: Showing a typical on-site hedgerow, with associated trees

Mature Trees

A1.14 There are mature oak *(Quercus robur)* and ash *(Fraxinus excelsior)* trees associated with the hedgerow network with the Site, (see **Image EDP A1.6**).

A1.15 The scattered trees are considered to be of low distinctiveness (those with bat roost potential are of higher interest) and do provide some connectivity to the wider landscape Site to Local level ecological importance.

Wet Ditches

A1.16 Hedgerows **H10**, **H11**, **H13** and **H14** have associated wet ditches, the ditch channels are overshaded by the adjacent hedgerows with shallow water (see **Image EDP A1.7**).

A1.17 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 A1.7: Hedgerow with associated wet ditch

Woodland

A1.18 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, hawthorn, and blackthorn (see **Image EDP A1.8**).

A1.19 Log piles suitable for hibernacula for reptiles and insects were present and bird boxes were installed on some of the trees.

A1.20 Although the woodland itself lies outside the Site boundary, the woodland and the woodland edge are of moderate distinctiveness offer habitat suitable for use by a number of protected/priority species and is considered to be Local level ecological importance.

Image EDP A1.8: Woodland edge forming southern boundary of field **F7**

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Annex 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, as show on **Plan EDP 1**.

A2.2 Following updated walkover surveys in 2021, there were deemed to have been no material changes to the hedgerows present in the previously recorded hedgerows and as such updated *Hedgerow Regulations* (1997) surveys of these hedgerows were not carried out.

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 aims of the hedgerow assessment were 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 *Wildlife and Countryside Act* 1981 (as amended), birds categorised as declining breeders

(Category 3) within the Birds of Conservation Concern (BoCC) 5 (Eaton *et al*, 2015)[9], 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 ten-years) or birds and animals (within five-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, large-leaved lime, small-leaved lime or wild service-tree;

    - 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.

[9] Andrew Stanbury, Mark Eaton, Nicholas Aebischer, Dawn Balmer, Andy Brown, Andy Douse, Patrick Lindley, Neil McCulloch, David Noble and Ilka Win (December 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* – vol. 114, issue 12, pp 723–747

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.

Results

A2.10 A total of nine hedgerows located within the Site were surveyed against the *Hedgerow Regulations (*1997) criteria in 2018. The detailed results of the hedgerow survey are provided in **Table EDP A2.1**.

A2.11 As set out in this table, only **H3** was found to qualify as 'important'.

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Table EDP A2.1: Hedgerow Regulations Assessment 2018.

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, penduculate (*Quercus robur*)	Hazel (*Corylus avellana*)	Rose (*Rosa sp.*)										
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		✓		✓				×

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Annex EDP 3
Breeding Bird Surveys

Methodology

A3.3 Breeding bird surveys of the Survey Area were undertaken in 2018 with reference to a standard methodology, entailing a modified CBC 'territory mapping' approach. This involved three visits to the Site, undertaken between approximately mid-April and early July, which is the height of the breeding bird season for lowland Britain.

A3.4 Following best practice, the survey visits were timed to start around first light, to coincide with the period of peak activity for birds, most particularly passerine songbird species. They were also undertaken during suitable weather conditions. Days/periods with strong winds and heavy or persistent rain were generally avoided. It is therefore considered that the results are not significantly limited by seasonal or climatic factors.

A3.5 The dates and timings of all three survey visits and the weather conditions encountered are summarised within **Table EDP A3.1**.

Table EDP A3.1: Background Information of the Breeding Bird Survey Visits in 2018

Visit	Date	Time	Cloud (%)	Rain (% of survey)	Wind (Beaufort)	Temp (°C)	Visibility
1	19/04/2018	06:20–07:50	100	0	1	12	Good - Moderate
2	17/05/2018	05.15-07:00	100	0	1	7	Good
3	20/06/2018	05:30-07:00	100	0	2	16	Good - Moderate

A3.6 The survey methodology involved walking to within c.50m of all parts of the Survey Area and recording all birds listed within the BoCC report[10] and their activity status, with a particular emphasis placed upon those elements considered to relate to, or be indicative of, breeding. This ensured that the survey identified all birds using the margins of the Survey Area, as well as those in the interior. Following the completion of the survey, 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**.

[10] Eaton, M.A., Aebischer, N.J., Brown, A.F., Hearn, R.D., Lock, L., Musgrove, A.J., Noble, D.G., Stroud, D.A. and Gregory, R.D. (2015). *Birds of Conservation Concern 4: the population status of birds in the UK, Channel Islands and Isle of Man*. British Birds, Vol. 108, 708-746.

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

Status	European Bird Census Council (EBCC) Criteria for Categorisation of Breeding Status
Confirmed	• Distraction-display or injury feigning; • Used nest or eggshells found (occupied or laid within period of survey); • Recently fledged young (nidicolous species) or downy young (nidifugous species); • Adults entering or leaving nest-site in circumstances indicating occupied nest (including high nest or nest-holes, the contents of which cannot be seen) or adult seen incubating; • Adult carrying faecal sac or food for young; • Nest containing eggs; or • Nest with young seen or heard.
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 days 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; or • Nest building or excavating nest-hole.
Possible	• Species observed in breeding season in possible nesting habitat; or • Singing male(s) present (or breeding calls heard) in breeding season.
Non-breeder	• Feeding birds only; • Birds flying over only; or • Lack of suitable breeding habitat.

A3.7 To provide further detail with regards to the total assemblage of bird species present within the Site, a list of all other bird species recorded (i.e. those that are not considered to be of conservation concern) was made for each survey visit.

A3.8 The breeding bird survey was carried out by an experienced ornithologist, at an appropriate time of year for the locality and in suitable weather conditions. It is therefore considered that the results provide a representative overview of the breeding bird interest at the Site.

A3.9 An assessment of the individual bird species recorded at the Site, as well as the overall assemblage, was subsequently made with reference to the National and Local conservation status of the different breeding species recorded according to the BoCC report and Birds of Oxfordshire 2019 (BoO 2019)[11].

A3.10 An assessment of the individual bird species recorded in the Site, as well as the overall assemblage, has been made with reference to the national conservation status of the different breeding species according to the following key lists/criteria:

[11] Birds of Oxfordshire 2019, Oxford Ornithological Society

- Schedule 1 of the *Wildlife and Countryside Act* 1981 (as amended) – affords greater protection to certain breeding species that are considered appropriately at risk nationally and are listed additional protection under Schedule 1 accordingly;

- BoCC in England – 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:

    - Red list species are of high conservation concern, being either globally threatened, having historical UK population declines between 1800 and 1995 or a rapid population decline, or breeding range contraction by 50% or more in the last 25 years;

    - Amber list species are of medium conservation concern due to a number of factors, for example having suffered between 25% and 49% contraction of UK breeding range or a 25–49% reduction in breeding or non-breeding populations over the last 25 years. Species which have a five year mean of 1–300 breeding pairs in the UK, or an unfavourable European conservation status, or for which the breeding population in the UK represents 20%, or more of the European breeding populations are also listed on the Amber list; and

    - Green list species have a favourable conservation status.

- Species of Principle Importance (Priority Species) included under Section 41 (England) of the *Natural Environment and Rural Communities* (NERC) *Act* 2006.

Limitations

A3.11 The surveys were carried out by an experienced ornithologist, at an appropriate time of year for the locality, and in suitable weather conditions. It is therefore considered that the results provide a representative overview of the breeding bird interest at the Survey Area.

A3.12 The breeding bird surveys have not been updated since 2018 and therefore only covered the area within the Survey Area. Although some of the Site was not included within the surveys, given that the red line boundary was expanded following completion of the surveys, the habitats in these additional areas are very similar and it is considered that the breeding bird assemblage would consist of similar species and a robust assessment can be made of the Site.

Results

A3.13 The results of the information received by TVERC is set out above, and the Site is considered to support habitat for a range of bird species that would commonly be associated with the urban fringe and agricultural habitats present.

A3.14 The following paragraphs summarise the results of the breeding bird surveys with respect to species richness, abundance and distribution. Thereafter, an evaluation of the importance of the overall assemblage and individual species at the Site is provided.

Species Richness

A3.15 A total of 36 bird species were recorded within and adjacent to the Site during the 3 breeding bird survey visits completed during 2018. Thirteen of which are of conservation concern.

A3.16 Of those species recorded in 2018, seven species was confirmed as breeding, yellowhammer, starling, robin, blue tit, carrion crown, great tit and whitethroat. In addition, four species were recorded as probable breeders, as it was not possible to provide confirmation of breeding (skylark, dunnock, chaffinch, and goldfinch). A further nineteen species were recorded as possible breeders, being observed in 'suitable' habitat (linnet, song thrush, yellow wagtail, willow warbler, stock dove, bullfinch, wren, blackbird, pheasant, partridge, garden warbler, green woodpecker, long-tailed tit, jackdaw, blackcap, pied wagtail, greenfinch, and chiffchaff). Five species were recorded as non-breeders (red kite, swallow, lesser black-backed gull, grey heron and swift).

Distribution

A3.17 In general, species are distributed across the Site, generally associated with the boundary features and internal hedgerows, although with slightly higher numbers recorded associated towards the east of the Survey Area.

A3.18 A small number of birds were recorded with the arable fields themselves, mainly relating to Skylark at the start of the breeding season. Multiple individuals were recorded to be in song at the same time across field **F2**, **F3** and **F4**.

Non-breeding Species

A3.19 These species include red kite, lesser black-backed gull, grey heron and swifts, which were all recorded flying over the Site. However, no breeding by these species was confirmed within the Site, and it is not considered the Site offers suitable breeding habitat for these species.

A3.20 Protected and notable species recorded during the 2018 breeding bird surveys are set out in **Table EDP A3.3**. Sightings of protected and notable species made during the surveys are illustrated on **Plans EDP 3**, **4** and **5**.

Table EDP A3.3: Protected/Notable Bird Species Recorded During the Survey within the Site.

Species	On-site Breeding Likelihood	Observations	Conservation Status (2021)[12]
Bullfinch (*Pyrrhula pyrrhula)*	Possible (0-1 pairs)	Maximum of one individual recorded at any one time.	Amber List
Dunnock (*Prunella modularis*)	Probable breeding (1-2 pairs)	Maximum of two individuals recorded singing at any one time.	Amber List
Lesser black-backed gull (*Larus fuscus*)	Non-breeder	Fly over.	Amber list
Linnet (*Linaria cannabina*)	Possible (0-6pairs)	Up to six sighted at same time.	Red List
Red kite (*Milvus milvus*)	Non-breeder	Fly over.	WCA Sch 1
Skylark (*Alauda arvensis*)	Probable (0-6pairs)	Aggressive encounter observed between two individuals. Multiple individual record at any one time.	Red List
Song thrush (*Turdus philomelos*)	Possible (0-1 pairs)	Maximum one recorded within the Site.	Amber List
Starling (*Sturnus vulgaris*)	Confirmed	Two adults returning to nest in June.	Red List
Stock dove (*Columba oenas*)	Possible	Small flock recorded with a maximum of 16 individuals on one occasion.	Amber List
Swift (*Apus apus*)	Non-breeder	Fly over.	Red List
Willow warbler (*Phylloscopus trochilus*)	Possible (0-2 pairs)	Maximum of two individuals recorded.	Amber List
Yellow wagtail (*Motacilla flava*)	Possible (0-1 pairs)	Maximum of one individual recorded at any one time.	Red List
Yellowhammer (*Emberiza citrinella*)	Confirmed	Occupied nest observed.	Red List
Greenfinch (*Carduelis chloris*)	Possible (0-1 pairs)	Maximum of one individual recorded at any one time.	Red List
Wren (*Troglodytes troglodytes*)	Possible (0-1 pairs)	Maximum of one individual recorded at any one time.	Amber List

A3.21 Eighteen generalist, Green-listed species were recorded within the Site (see **Table EDP A3.4**), though with 'hotspots' of activity located along boundaries and the

[12] Andrew Stanbury, Mark Eaton, Nicholas Aebischer, Dawn Balmer, Andy Brown, Andy Douse, Patrick Lindley, Neil McCulloch, David Noble and Ilka Win (December 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* – vol. 114, issue 12, pp 723–747

north-west corner of the Site. Blue tit, carrion crow, great tit, robin and blue tit were confirmed to be breeding.

Table EDP A3.4: Green Listed Bird Species Recorded During the Surveys within the Site.

Species	
Green listed	
Blackbird	(*Turdus merula*)
Blackcap	(*Sylvia atricapilla*)
Blue tit	(*Cyanistes caeruleus*)
Carrion Crow	(*Corvus corone*)
Chaffinch	(*Fringilla coelebs*)
Chiffchaff	(*Phylloscopus collybita*)
Garden Warbler	(*Sylvia borin*)
Goldfinch	(*Carduelis carduelis*)
Great tit	(*Parus major*)
Green woodpecker	(*Picus viridis*)
Grey Heron	(*Ardea cinerea*)
Jackdaw	(*Corvus monedula*)
Long-tailed tit	(*Aegithalos caudatus*)
Pheasant	(*Phasianus colchicus*)
Pied wagtail	(*Motacilla alba*)
Robin	(*Erithacus rubecula*)
Swallow	(*Hirundo rustica*)
Whitethroat	(*Sylvia communis*)

Evaluation

A3.22 The status of the 15 'confirmed' or 'possible' breeding birds at the Site has been determined and the paragraphs below evaluate the importance of (1) the different species supported and (2) the overall assemblage.

Schedule 1 Species

A3.23 A single statutorily protected 'Schedule 1' bird species, red kite, was recorded in May and June 2018, flaying over the Site, no evidence of breeding behaviour was recorded within the Site. However, it is considered the woodland adjacent to the south of the Site, offer suitable habitat for this species to breed. The single individual adult is evaluated to be of no greater than Local-level ecological importance.

Red List Species

A3.24 There were seven 'Red List' bird species recorded within the Site, two of which were confirmed to be breeding, one probable and the remaining four considered to possibly be breeding.

Starling

A3.25 During the May 2018 survey a pair of adult starlings were observed returning with food to a nest within a woodpecker hole of a tree along hedgerow **H3** along the north boundary of **F2**. Starling are a common and widespread species across the UK, although their numbers have decreased in recent years. In Oxfordshire they are a widespread winter visitor but with a much-reduced breeding distribution in the last 40 years (BoO 2019).

Yellowhammer

A3.26 During the May 2018 survey an occupied Yellowhammer nest was identified within **H12** diving field **F2** and **F6**. In addition, in April a male and female pair were observed together although no evidence of breeding was recorded. Yellowhammer are considered a very common, breeding, resident in Oxfordshire. The population of yellowhammer is therefore considered to be of value at the Site-level only.

Skylark

A3.27 Skylark were recorded widely across the Survey Area, with up to six individuals in song at the same time. In addition, an aggressive encounter between two individuals was observed in May 2018. Therefore, it is considered probable that the Site supports a small population (0–6 pairs) of breeding pairs within the Site. The species is known to breed successfully with on arable fields, such as those found across the Site, the grass track along the west of **F2** offers further suitable habitat for nesting.

A3.28 This species has been 'Red Listed' because it has experienced a greater than 50% decline in its UK breeding population over the course of the last 25 years, although there has been an increase in numbers in Oxfordshire from 2018 to 2019, where this species is regarded as being a common resident and passage migrant (BoO 2019). This species is widespread throughout the UK both in winter and breeding. It is probable that the on-site breeding population of skylark at the Site is considered to be of value at the Site-level only.

Linnet

A3.29 A maximum of six individuals were recorded as a flock within the Site. Distribution of this species within the Site is limited fields **F2** and **F4** in the centre of the Site. It is considered that the Site supports a small population of (0–6 pairs), with no evidence of breeding having been recorded during the surveys. Despite being 'Red Listed' at the National level, records of this species remain consistently high in Oxfordshire, where it is a common resident species, as well as a passage migrant and winter visitor (BoO 2019). Linnet are widespread throughout lowland areas of the UK. Therefore, the on-site population of linnets is considered to be of value at the Site and immediate environs level only.

Yellow wagtail

A3.30 A maximum of two yellow wagtails were recorded at any one time in May 2018 and therefore, it is considered possible that the Site supports a small population of (0–2 pairs), with no evidence of breeding having been recorded during the surveys. Yellow wagtails are considered a common species in Oxfordshire that is recorded regularly breeding within the county in the summer months. Therefore, the yellow wagtail population is evaluated as being of value at the Site and immediate environs level only.

Greenfinch

A3.31 A maximum of two greenfinches were recorded in June 2018, no evidence of possible breeding was recorded, and it is considered that the population within the Site is low (0.1 pairs). Both sightings were along the northern boundary of the Site. Greenfinch were moved directly from a 'Green List' to a 'Red List' species as a result of worsening declines in breeding populations for more than a decade, although are a common resident and winter visitor in Oxfordshire (BoO 2019). Therefore, the on-site population of greenfinch is considered to be of value at the Site and immediate environs level only.

Swift

A3.32 Swifts were recorded to fly over the Site in June 2018. However, no individuals were recorded within the Site and no evidence of breeding having been recorded during the surveys. Although it is not considered that swifts are breeding with the Site, it should be notes that despite being 'Amber Listed' as a bird of conservation concern at the time of the survey the latest review of the BoCC in December 2021 placed Swifts on the 'Red List'. Therefore, any probably swift population is evaluated as being of value at the Site and immediate environs level only.

Amber List Species

A3.33 Eight 'Amber List' bird species were recorded within the Site, of which only dunnock was at least a probable breeder in 2018.

Dunnock

A3.34 A maximum of five individuals were recorded during the 2018 surveys, with six individuals recorded in 2021. This species was widely distributed across the Site, associated with the hedgerows and woodland, and the population is estimated to be between 1–2 pairs. The species is 'Amber-Listed' at the National level but remains a common and widespread species in Oxfordshire. Therefore, the on-site population of dunnocks is considered to be of value at the Site and immediate environs level only.

Song Thrush

A3.35 The population of song thrush is estimated to be around 0–1 pair, with only one individual recorded within the Survey Area in April and June in 2018. Song thrush have been recorded associated with hedgerow **H3** and **H8**, no evidence of possible breeding

was recorded, and it is considered the population within the Site is low. Despite being 'Red Listed' as a bird of conservation concern at the time of the survey the latest review of the BoCC in December 2021 placed Song Thrust on the 'Amber List'.

A3.36 This species remains a common resident species but one which is considered to be declining in suburban areas in the county, although there remain strong autumn immigration and winter populations (BoO 2019). Song thrush are widespread throughout the UK with the exception of the highlands of Scotland. Therefore, the song thrush population is evaluated as being of value at the Site and immediate environs level only.

Bullfinch

A3.37 A maximum of two individuals were recorded in June 2018, no evidence of breeding was recorded and it is considered the population within the Site is low (0-1 pairs). Bullfinch are considered a common, resident species in Oxfordshire (BoO 2019). Therefore, the bullfinch population is evaluated as being of value at the Site and immediate environs level only.

Stock Dove

A3.38 Flock of Stock Dove (maximum count sixteen) were recorded in May and June 2018, in the north of the Site. Stock doves are widespread throughout the UK. Therefore, their population is evaluated as being of value at the Site and immediate environs level only.

Willow warbler

A3.39 Willow warblers were recorded in all three survey visits, albeit in very low numbers. No breeding was recorded, but it is considered that it is possible they could breed on-site, the population is considered law (0-1 pairs). Willow warblers are considered a very common species that breed regularly within the County of Oxfordshire, but are a declining summer visitor in the county (BoO 2019). Therefore, the on-site population of willow warbler is considered to be of value at the Site and immediate environs level only.

Wren

A3.40 An individual sighting of a wren was recorded in April and June 2018, it is considered possible that the Site supports a small population (0–1 pairs) of breeding pairs. Wren have recently being moved up the list on the BoCC to 'Amber' as the UK is considered a strong hold for this species and are a very common resident within Oxfordshire (BoO 2019). Therefore, any possible wren population is evaluated as being of value at the Site and immediate environs level only.

The Overall Assemblage

A3.41 The assemblage of bird species recorded at the Site is entirely typical for the diversity and quality of habitats present at a site in this geographic and topographic location. The species are common resident species, which are widespread in urban-fringe and

agricultural habitats. The assemblage of breeding birds at the Site is therefore considered to be of no greater than Local-level importance as a whole.

Annex EDP 4
Bat Surveys

Methodology

A4.1 Due to the presence of suitable habitats for roosting, foraging, and commuting bats within the Site, the following bat surveys were undertaken in 2014, 2018 and 2021 within the Survey Area, with reference to national best practice guidelines[13]:

- Bat Roosting;
    - Daytime inspections of trees for bat roosting potential; and
- Bat foraging/commuting activity;
    - Dusk and dawn manual transect surveys; and
    - Automated detector surveys.

Visual (Ground-level) Assessment of Trees

A4.2 A visual assessment of suitable trees within, or on the boundary of, the Survey Area for the presence of, or potential to support, roosting bats was undertaken by a suitably experienced ecologist in accordance with Bat Conservation Trust (BCT) guidelines. The visual assessment was undertaken on 30 April 2018, during which the trees were searched as thoroughly as possible from ground level, with all elevations covered where accessibility allowed. The tree assessment was updated on 08 December 2021 to encompass all trees within or on the boundary of the Site.

A4.3 Suitable features for roosting bats include:

- Loss/peeling/fissured bark;
- Natural holes e.g. rot holes and holes from fallen limbs;
- Woodpecker holes;
- Cracks/splits or hollow tree trunks/limbs; and
- Thick-stemmed ivy.

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

A4.4 Signs of roosting bats include:

- Bat(s) roosting *in-situ* – live, dead or skeletons;
- Bat droppings within or beneath a feature (hole or split);
- Staining around or beneath a feature;
- Oily marks (staining) around roost access points;
- Audible squeaking from the roost;
- Large/regularly used roosts or regularly used sites may produce an odour; and
- Flies around the roost, attracted by the smell of guano.

A4.5 Based upon the results of the visual assessment and features/evidence identified as above, the following ratings for trees were used during the assessment:

- Known or confirmed roost: European Protected Species (EPS) licence required for works to tree to be completed lawfully;
- High potential – One or more features that are suitable for roosting bats due to their size, conditions and surrounding habitat, that could support either large numbers of bats or roosting on a regular basis;
- Medium potential – One or more features that have potential due to their size and condition, but the features are unlikely to support a high conservation roost;
- Low potential –The tree is of sufficient size and age to contain features but none seen or the features have only very limited potential; and
- Negligible potential – No features with potential to support roosting bats.

Limitations

A4.6 Visual assessments for roosting bats can be undertaken at any time of year; this assessment was therefore not limited by seasonal or climatic factors.

A4.7 Bats are mobile animals and will move between a series of different roost sites, frequently establishing and occupying new roost sites depending on seasonal requirements and resources available locally. This survey, therefore, only provides a snapshot of the conditions present at the Site at the time of survey.

A4.8 It should be noted that this type of assessment is based on features visible from the ground level and is not considered to be a definitive bat roosting survey. Should the proposals require that any trees of sufficient 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 at the time of the proposed works. If trees are found to support bat roosts during pre-commencement investigations, such works would be subject to an EPS licence to commence lawfully.

Manual Transect Surveys

A4.9 Manual transect surveys were undertaken across the Survey Area to identify areas of bat foraging activity and commuting routes used by bats. Full details including the dates, timings and weather conditions of the transect surveys undertaken during 2018 and are given in **Table EDP A4.1**. The weather conditions during each visit were within the optimal range for bat surveys.

Table EDP A4.1: Date, Timing and Weather Conditions of Bat Activity Transect Surveys.

Survey Date	Survey Type	Survey Time	Sunset Time	Weather Conditions			
				Temp (°C)	Cloud (%)	Rain	Wind (Beaufort scale)
08/05/2018	Dusk	20:41-22:41	20:41	15-11	10-30	Nil	3
03/07/2018	Dusk	21:27-23:27	21:27	19-16	5-10	Nil	3-4
04/09/2018	Dusk	19:45-21:45	19:45	18-16	100	Nil	1-2
05/09/2018	Dawn	06:23-04:23	06:23	13-15	80-90	Nil	1-2

A4.10 Manual transect surveys were completed by two experienced bat surveyors completing one transect route covering the Survey Area. One surveyor started halfway along the transect, with each surveyor completing one full lap of their transect, and as such the route was effectively doubled. Transect routes were designed to cover all boundaries and other potential foraging or commuting habitat within the Survey Area, as illustrated on the Transect Activity plans (**Plans EDP 6**, **7** and **8**). Transect routes were walked at a slow and steady pace, with 'pacing points' used as a guide for the surveyors. All bats were recorded, and their behaviour marked on survey maps in order to characterise the value of the Site and its component habitats to foraging and commuting bats.

A4.11 Activity surveys were conducted using Elekon Batlogger M 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 software Bat Explorer, to confirm species identification. Species of *Myotis* sp. bat and long-eared bat (*Plecotus* sp.) are difficult to tell apart solely from their echolocation calls and are therefore grouped as such.

Limitations

A4.12 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, which may limit levels of activity and species recorded:

- Weather conditions – 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.

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

A4.13 To supplement the transect survey data, bat activity within the Survey Area was also sampled using automated bat detectors, which automatically trigger and record bat echolocation calls. These surveys were conducted during the months of May, July and September 2018. Two surveys were also carried out in 2014 during the months of June and August. The automated detectors were left to record each month for periods lasting for a minimum of five consecutive nights each, although in September 2018 the detectors only recorded for four nights.

A4.14 Full details including the dates, timings and weather conditions for the automated surveys undertaken during 2018 are given in **Table EDP A4.2**. The weather conditions during each visit were within the optimal range for bat surveys.

Table EDP A4.2: Date, Timing and Weather Conditions of Bat Automated Surveys.

Survey Month and Year	Survey Night	Weather Conditions				
		Sunset Temp. (°C)	Temp. Range (°C)	Cloud (%)	Rain	Wind (Beaufort scale)
May 2018	03/05/2018	12	12-10	25-50	Nil	1-3
	04/05/2018	13	13-8	50-75	Nil	1-2
	05/05/2018	14	14-5	0	Nil	1-2
	06/05/2018	15	15-8	0-25	Nil	1-2
	07/05/2018	19	19-11	0-25	Nil	1-2
July 2018	28/06/2018	18	18-12	0-25	Nil	1-2
	29/06/2018	18	18-12	25-50	Nil	1-3
	30/06/2018	18	18-12	0-25	Nil	1-2
	01/07/2018	21	21-14	25-50	Nil	1-3
	02/07/2018	19	19-11	0-25	Nil	1-3

Survey Month and Year	Survey Night	Weather Conditions				
		Sunset Temp. (°C)	Temp. Range (°C)	Cloud (%)	Rain	Wind (Beaufort scale)
September 2018	31/08/2018	14	14-8	0-25	Nil	1-2
	01/09/2018	16	16-9	25-50	Nil	1-2
	02/09/2018	20	20-9	50-75	Nil	1-2
	03/09/2018	19	19-12	0-50	Nil	1-2
	04/09/2018	17	17-11	25-75	Nil	2-3

A4.15 Anabat Express bat detectors were deployed in four locations within and adjacent to the Site during the 2018 surveys, as shown on **Plans EDP 6** to **8**. Anabat detectors were previously deployed in two locations during 2014, as show on **Plan EDP 9**. The detectors were fixed in secure locations, with an external microphone attached 1–2m above ground and directed away from dense vegetation to maximise detection sensitivity. **Table EDP A4.3** gives the sampling dates and location details for the detectors.

Table EDP A4.3: Automated Detector Sampling Dates and Location Details.

Dates	Position	Adjacent/Nearby Habitat	Microphone Direction
03/05/2018 – 07/05/2019	A1	North-west of the Site. In hedgerow adjacent to arable field and A43.	south
	A2	North boundary of the Site. Deployed in hedgerow adjacent to arable field.	east
	A3	Centre of Site. In fence under mature oak tree south of hedgerow with improved grassland surrounding.	south
	A4	South boundary of north parcel. Next to gateway, deployed in hedgerow adjacent to arable field.	east
28/06/2018 – 02/07/2018	A1	In hedgerow adjacent to arable field and A43.	south
	A2	Deployed in hedgerow adjacent to arable field.	south-east
	A3	Near large tree, deployed in hedgerow adjacent to arable field.	south-west
	A4	Next to gateway, deployed in hedgerow adjacent to arable field.	east
31/08/2018 - 0/09/2019	A1	In hedgerow adjacent to arable field and A43.	south
	A2	Near manure pile, deployed in hedgerow adjacent to arable field.	east
	A3	Near large tree, deployed in hedgerow adjacent to arable field.	south-west
	A4	Next to gateway, deployed in hedgerow adjacent to arable field.	east
18/06/2014 - 23/06/2014	A5	In hedgerow adjacent to arable field.	east
	A6	In hedgerow adjacent to arable field.	east
22/08/2014 - 27/08/2014	A5	In hedgerow adjacent to arable field.	east
	A6	In hedgerow adjacent to arable field.	east

A4.16 The echolocation calls recorded by the detectors were filtered for noise files (i.e. sound files created when background noise triggers the detector to record) and then specifically for each of the UK's bat species using the Analook software filter function. The parameters for the noise filter are based on those proposed by Chris Corben and Kim Livengood[14] and are provided in **Table EDP A4.4**. All files passing the various filters were checked manually using sonogram analysis (AnalookW) in accordance with published parameters[15] to confirm the species identification of each bat call.

Table EDP A4.4: Filtration Values used by AnalookW Software to Remove Noise Files.

Filter	Smoothness	Frequency (Fc (kHz))		Duration (ms)	
		Min	Max	Min	Max
Noise filter	50	15	120	2	50

Limitations

A4.17 The identification of calls and species using Analook software is dependent upon the quality of the recording made, which can be influenced by the following factors, which may limit levels of activity and species recorded:

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

A4.18 Although the overnight temperatures dropped by morning, and indeed dropped to 5°C on the 05 May 2018, all surveys had temperatures of 10°C or above at sunset. Overall, the automated detector surveys were not considered to be constrained by unseasonably cold/wet conditions.

A4.19 During the automated surveys in September 2018, although the detectors were placed out within the Study Area for five consecutive nights, they only recorded data for four consecutive nights. However, given that the data recorded during these nights showed similar patterns of activity to the same detector locations from previous months, it is not considered the automated detectors surveys were materially constrained.

[14] Taken from Making an Antinoise Filter presentation from 2010 Annual Bat Conference
[15] Russ (2012). *British Bat Calls, a guide to species identification*. Pelagic Publishing, Exeter

Results

Visual (Ground-level) Roost Assessment of Trees

A4.20 In 2021 a total of 13 trees were identified for having bat roost potential, including three with high potential, three with moderate potential and seven with low potential. This included trees previously identified, although the potential suitability assigned might have varied due to natural changes over time.

A4.21 Details of these trees are set out in **Table EDP A4.5**, and their location can be seen on **Plan EDP 9**.

A4.22 The 2018 daytime assessment of trees within the Site identified ten trees that have the potential to support roosting bats, including three trees with moderate potential and eight trees with low potential, details of these trees are set out in **Table EDP A4.6**.

Table EDP A4.5: Bat Tree Roost Assessment Results 2021.

Tree Reference	Tree Species	Bat Roost Potential	Bat Roost Features
T1	Ash	High	Rot holes. Large branch with scare and further crevices present with branch scars.
T2	Ash	Low	Some cracks/peeling in bark. Overgrown with ivy, potential hidden features.
T3	Ash	Low	Overgrown with ivy, potential hidden features and some deadwood present.
T4	Oak	High	Significant hole in branch scar.
T5	Ash	High	Multiple features present including woodpecker holes, rot holes, cracks and splint along trunk.
T6	Oak	Low	Overgrown with ivy on trunk, potential hidden features. Assessed as low due to age/size.
T7	Oak	Low	Overgrown with ivy on trunk, potential hidden features. Assessed as low due to age/size.
T8	Ash	Low	Overgrown with ivy, potential hidden features. Assessed as low due to age/size.
T9	Oak	Low	Some raised bark and branches with crevices.
T10	Ash	Moderate	Significant hole in branch scar.
T11	Ash	Moderate	Significant hole in branch scar. Large open crack in trunk (open to top).
T12	Ash	Moderate	Rot hole with branch scar in trunk.
T13	Ash	Low	Rot hole in dead wood on trunk.

Table EDP A4.6: Bat Tree Roost Assessment Results 2018.

Tree Reference	Tree Species	Bat Roost Potential	Bat Roost Features
T7	Oak	Low	Overgrown with ivy, potential hidden features. Had deadwood present.
T9	Oak	Low	Deadwood present at crown.
T12a	Hawthorn	Low	Areas of flaking bark and deadwood present.
T12	Ash	Moderate	Hollow trunked

Tree Reference	Tree Species	Bat Roost Potential	Bat Roost Features
T13	Ash	Moderate	Four rot holes on the south-east at 4m height. Also had areas of flaking bark.
T11a	Ash	Low	Hollow trunked,
T11	Ash	Moderate	One limb hole in the north aspect at 6m and a hollow trunk,
T6	Oak	Low	Overgrown with ivy, potential hidden features. Assessed as low due to age/size.
T5	Ash	Low	A rot hole in the west aspect at 12m height and a limb hole on the south aspect at 10m height.
T3	Ash	Low	A tear out on the south aspect at 11m height.

A4.23 No bats or evidence of bats were found during the ground level tree assessment.

Manual Transect Surveys

A4.24 The detailed results of the manual transect surveys are provided below, and the distribution of bat activity within the Survey Area recorded during the transect surveys is illustrated on **Plans EDP 6** to **8**.

A4.25 During the surveys in 2018 a total of five species were recorded, with the majority of registrations recorded from common pipistrelle bat, with fewer registrations recorded from noctule and myotis, with only individual registrations of long-eared bats recorded in August 2018 and an individual registration of barbastelle bat recorded in September 2018. The majority of bat activity was recorded in September, nearly all of which was common pipistrelle registrations, with much less activity recorded in May and August.

A4.26 The total number of registrations recorded during each survey can be seen in **Table EDP A4.7** below.

A4.27 During the May 2018 transect surveys, the majority of bat registrations were associated with the northern boundary of the Study Area. In July, there were a number of common pipistrelles registrations through the centre of the Study Area. The vast majority of calls in September were concentrated in two distinct areas, associated with a gateway on the northern boundary and two mature trees in the centre of the Study Area, along hedgerow **H7**. A single barbastelle registration was detected between hedgerow **H8** and **H9** in the eastern side of the Study Area.

Table EDP A4.7: Transect Recordings 2018.

Bat Species	Number of Bat Passes Recorded per Night			Total
	08/05/2018	03/07/2018	04/09/2018	
Common pipistrelle	4	8	70	**82**
Myotis sp.	0	0	9	**9**
Long-eared bat sp.	1	0	0	**1**
Noctule	0	0	6	**9**
Barbastelle	0	0	1	**1**
Total	**5**	**8**	**86**	**102**

A4.28 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 common pipistrelle accounting for the majority of foraging and commuting activity. Only an individual barbastelle, and Annex II species, was recorded during the transect surveys on one occasion, indicating that there is unlikely to be a roost nearby, and that this species is only using the Study Area for occasional foraging and commuting.

Automated Detector Surveys

A4.29 The results of the automated detector surveys are summarised below in **Tables EDP A4.8** to **A4.10** for 2018 and **Tables EDP A4.11** to **A4.12** for 2014.

Table EDP A4.8: Automated Recordings per Night – May 2018.

Detector Position	Bat Species	Number of Bat Passes Recorded per Night					Total
		03/05	04/05	05/05	06/05	07/05	
A1	Common pipistrelle	14	14	8	18	0	**54**
	Soprano pipistrelle	0	0	0	0	0	**0**
	Myotis sp.	3	2	4	6	0	**15**
	Long-eared bat sp.	0	0	0	0	0	**0**
	Serotine	0	0	0	1	0	**1**
	Noctule	0	0	2	1	0	**3**
	Barbastelle	0	0	4	0	0	**4**
	Total	**17**	**16**	**38**	**50**	**0**	**121**
A2	Common pipistrelle	25	27	26	17	6	**101**
	Soprano pipistrelle	1	1	2	1	0	**5**
	Myotis sp.	0	1	2	0	1	**4**
	Long-eared bat sp.	0	1	0	0	0	**1**
	Serotine	0	0	0	0	0	**0**
	Noctule	0	2	0	3	0	**5**
	Barbastelle	0	0	0	4	2	**6**
	Total	**26**	**32**	**30**	**21**	**7**	**116**
A3	Common pipistrelle	0	3	7	5	4	**19**
	Soprano pipistrelle	0	1	1	0	0	**2**
	Myotis sp.	1	2	0	1	0	**4**
	Long-eared bat sp.	0	0	1	0	0	**1**
	Serotine	0	0	0	0	0	**0**
	Noctule	0	0	0	1	0	**1**
	Barbastelle	0	0	0	0	0	**0**
	Total	**1**	**6**	**9**	**7**	**4**	**27**

Detector Position	Bat Species	Number of Bat Passes Recorded per Night					Total
		03/05	04/05	05/05	06/05	07/05	
A4	Common pipistrelle	1	1	6	0	3	**11**
	Soprano pipistrelle	1	0	0	0	1	**2**
	Myotis sp.	0	3	1	0	0	**4**
	Long-eared bat sp.	0	0	0	0	1	**1**
	Serotine	0	0	0	0	0	**0**
	Noctule	0	1	0	0	0	**1**
	Barbastelle	0	0	0	0	0	**0**
	Total	**2**	**5**	**7**	**0**	**5**	**219**

Table EDP A4.9: Automated Recordings per Night – June/July 2018.

Detector Position	Bat Species	Number of Bat Passes Recorded per Night					Total
		28/06	29/06	30/06	01/07	02/07	
A1	Common pipistrelle	15	5	9	23	10	**62**
	Soprano pipistrelle	0	0	0	0	1	**1**
	Myotis sp.	1	0	5	2	1	**9**
	Long-eared bat sp.	0	0	0	0	0	**0**
	Serotine	0	0	0	1	0	**1**
	Noctule	2	0	1	0	0	**3**
	Barbastelle	0	0	0	0	0	**0**
	Total	**18**	**5**	**15**	**26**	**12**	**76**
A2	Common pipistrelle	7	4	8	13	11	**43**
	Soprano pipistrelle	0	2	0	0	1	**3**
	Myotis sp.	0	0	0	1	2	**3**
	Long-eared bat sp.	0	0	0	0	0	**0**
	Serotine	0	2	0	0	0	**2**
	Noctule	1	2	0	0	2	**5**
	Barbastelle	0	0	1	0	0	**1**
	Total	**9**	**8**	**9**	**14**	**16**	**56**
A3	Common pipistrelle	3	0	2	10	9	**24**
	Soprano pipistrelle	0	0	1	0	0	**1**
	Myotis sp.	0	0	0	0	0	**0**
	Long-eared bat sp.	0	0	0	0	0	**0**
	Serotine	0	0	0	0	0	**0**
	Noctule	0	0	0	1	0	**1**
	Barbastelle	0	0	0	0	0	**0**
	Total	**3**	**0**	**9**	**11**	**9**	**26**
A4	Common pipistrelle	1	0	3	22	17	**43**
	Soprano pipistrelle	0	0	0	1	0	**1**
	Myotis sp.	0	0	1	1	0	**2**
	Long-eared bat sp.	0	0	0	0	0	**0**
	Serotine	0	0	1	0	1	**2**
	Noctule	1	0	0	0	0	**1**
	Barbastelle	0	0	0	0	0	**0**
	Total	**2**	**0**	**5**	**24**	**18**	**49**

Table EDP A4.10: Automated Recordings per Night – September 2018.

Detector Position	Bat Species	Number of Bat Passes Recorded per Night				Total
		31/08	01/09	02/09	03/09	
A1	Common pipistrelle	13	38	64	26	**141**
	Soprano pipistrelle	4	3	6	1	**14**
	Myotis sp.	11	13	24	9	**57**
	Long-eared bat sp.	0	1	3	0	**4**
	Serotine	0	0	0	0	**0**
	Noctule	4	3	5	5	**17**
	Barbastelle	2	2	5	0	**9**
	Total	**34**	**60**	**107**	**41**	**242**
A2	Common pipistrelle	12	29	29	8	**78**
	Soprano pipistrelle	0	0	3	0	**3**
	Myotis sp.	5	3	6	1	**15**
	Long-eared bat sp.	1	0	1	0	**2**
	Serotine	3	0	0	0	**3**
	Noctule	1	2	3	2	**8**
	Barbastelle	2	0	1	1	**4**
	Total	**24**	**34**	**42**	**13**	**113**
A3	Common pipistrelle	6	1	11	0	**18**
	Soprano pipistrelle	0	0	3	0	**3**
	Myotis sp.	8	8	9	3	**28**
	Long-eared bat sp.	0	0	1	0	**2**
	Serotine	1	0	3	0	**4**
	Noctule	0	1	2	1	**5**
	Barbastelle	0	0	1	0	**1**
	Total	**15**	**10**	**30**	**5**	**60**
A4	Common pipistrelle	2	5	3	0	**10**
	Soprano pipistrelle	1	0	1	1	**3**
	Myotis sp.	1	4	1	0	**6**
	Long-eared bat sp.	0	2	0	0	**2**
	Serotine	0	0	2	0	**2**
	Noctule	2	1	2	1	**6**
	Barbastelle	0	0	0	0	**0**
	Total	**6**	**12**	**9**	**2**	**29**

Table EDP A4.11: Automated Recordings per Night – June 2014

Detector Position	Bat Species	Number of Bat Passes Recorded per Night						Total
		18/06	19/06	20/06	21/06	22/06	23/06	
A5	Common pipistrelle	35	16	21	52	194	18	**336**
	Soprano pipistrelle	0	0	0	0	1	2	**3**
	Myotis sp.	5	0	0	0	1	1	**7**
	Long-eared bat sp.	0	0	0	0	0	0	**0**
	Serotine	0	0	0	0	0	0	**0**
	Noctule	0	0	0	0	0	0	**0**
	Barbastelle	0	0	0	0	0	0	**0**
	Total	**40**	**16**	**21**	**52**	**196**	**21**	**346**
A6	Common pipistrelle	69	24	23	18	143	61	**338**
	Soprano pipistrelle	0	0	1	0	0	0	**1**
	Myotis sp.	0	0	3	0	0	1	**4**
	Long-eared bat sp.	0	0	0	0	0	0	**0**
	Serotine	0	1	0	0	0	0	**1**
	Noctule	2	0	1	0	2	8	**13**
	Barbastelle	0	0	0	0	0	0	**0**
	Total	**71**	**25**	**28**	**18**	**145**	**70**	**357**

Table EDP A4.12: Automated Recordings per Night – August 2014

Detector Position	Bat Species	Number of Bat Passes Recorded per Night						Total
		22/08	23/08	24/08	25/08	26/08	27/08	
A5	Common pipistrelle	4	0	60	17	551	30	**662**
	Soprano pipistrelle	0	0	0	0	4	0	**4**
	Myotis sp.	1	0	0	0	0	0	**1**
	Long-eared bat sp.	0	0	0	0	0	0	**0**
	Serotine	0	0	1	0	0	2	**3**
	Noctule	0	0	1	0	6	0	**7**
	Barbastelle	0	0	0	0	1	0	**1**
	Total	**5**	**0**	**62**	**17**	**562**	**32**	**678**
A6	Common pipistrelle	5	2	12	5	745	14	**780**
	Soprano pipistrelle	0	0	0	0	2	0	**2**
	Myotis sp.	3	0	0	1	1	1	**6**
	Long-eared bat sp.	0	0	0	0	0	0	**0**
	Serotine	0	0	0	0	0	1	**1**
	Noctule	0	0	0	0	2	5	**7**
	Barbastelle	0	0	0	0	0	0	**0**
	Total	**5**	**2**	**12**	**6**	**750**	**20**	**796**

A4.30 To summarise, the 2018 activity levels were significantly higher in September than in May or July, although activity levels overall were low. The automated detector location with the highest total number of bat registrations overall was Location 1 (**Plan EDP 6**), which was positioned in the north-west of the Study Area, in a hedgerow that separates the arable field of the Site from the A34.

A4.31 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. Myotis species made up approx. 20% of the total registrations recorded. Other species made up a very small proportion of the total registrations recorded, soprano pipistrelle and noctule accounted for 6% of the registrations each, with long-eared and serotine bat each accounting for 2.5% of the total registrations recorded.

A4.32 Of note is the presence of the rarer barbastelle, an Annex II species. Generally, only very low levels of barbastelle activity were recorded in 2018, approximately 3% of the total, although the total number of registrations recorded over the three surveys totalled 25 passes. Most of the recordings were associated with Location 1 in May and September, no barbastelle passes were returned from Location 4.

A4.33 The data collected during 2014 largely reflect the findings of the 2018 surveys, with the majority of registrations recorded relate to common and widespread bat species, in

particular common pipistrelle. Other species made up a very small proportion of the total registrations recorded, and only a single barbastelle registration was recorded in August 2014.

Evaluation of Overall Assemblage

A4.34 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 species 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.

A4.35 Based on the findings summarised above, the bat population present within the Site is considered to be of Local-level ecological importance.

Annex EDP 5

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Appendix EDP 6
Reptile Survey

Methodology

A6.1 The Site is largely unsuitable to support widespread reptiles owing to the occurrence of intensive agricultural management, which results in frequent disturbance to, and loss of, suitable reptile habitat. EDP has been associated with this Site since 2014, and at this time pilot reptile surveys were undertaken.

A6.2 The field margins of improved grassland habitats were considered suitable to support limited basking, foraging and dispersing reptiles, albeit these areas account for a very small proportion of the overall Site and there is a lack of records for reptiles within the local area.

A6.3 Therefore, to investigate the presence or likely absence of reptiles and the extent of their usage of the Site, detailed refugia-based surveys were undertaken with reference to best practice guidance[16]. The surveys took place in 2014 with four survey visits undertaken in June and July inclusive.

A6.4 A total of 103 artificial refugia, comprising bitumen undertile felt cut to approximately 1m x 0.5m, were deployed within suitable reptile habitat across the Study Area on 09 June 2014. The approximate location of reptile refugia is illustrated on **Plan EDP 9**.

A6.5 Reptile refugia were left undisturbed *in situ* for a minimum period of 15 days prior to the commencement of reptile surveys. Detailed weather conditions recorded during each survey visit undertaken are summarised in **Table EDP A6.1**.

Table EDP A6.1: Date, Timing and Weather Conditions of Reptile Surveys Undertaken during 2014

Visit No.	Date	Start-Finish Time	Air Temp (°C)	Wind Speed (Beaufort)	Cloud Cover (%)	Rain
1	24/06/2014	14:30-16:30	21.5-23.5	0	0	Nil
2	07/07/2014	15:00-16:00	16.5-22	1	100	Light Showers
3	16/07/2014	16:00-17:15	21-23	3	80	Nil
4	28/07/2014	11:00-13:30	20-22	1-2	50	Nil

A6.6 During each survey visit, artificial refugia were individually checked by an experienced ecologist with any reptiles observed recorded, along with notes on their life stage (adult/juvenile) and sex.

[16] Froglife (1999) *Reptile survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife Advice Sheet 10*, Froglife, Halesworth

Limitations

A6.7 Reptile surveys undertaken within the Survey Area were completed within recognised optimal months for detecting reptiles. However, during the surveys visit 1, 2 and 4 the temperature did rise above 20ºC during the survey, while occasional showers were recorded during survey visit 2, as detailed in in **Tables EDP A6.1.**

A6.8 Although only a pilot reptile survey was completed, given the small site size, habitats present and the lack of records within the local area, the survey is considered to be sufficient detail to infer absence of significant populations of common reptile species from the Survey Area.

Results

A6.9 No reptiles were found within the Survey Area during any of the survey visits.

A6.10 Following the pilot reptile survey it was assessed that there was no need for further surveys. The information is deemed sufficient to confirm that the Survey Area is considered unlikely to support, or only a small number, of common and widespread reptile species, typical of the locality. The habitats within the wider Site were recorded as also being suboptimal for supporting reptiles, with the arable fields ploughed right up to the hedgerow bases, and it is therefore considered that reptiles are also unlikely to be present in the wider Site. Further reptile surveys were thus scoped out.

Appendix EDP 7
Butterfly Surveys

Methodology

A7.1 The presence of blackthorn (*Prunus spinosa*) and elm (*Ulmus* sp.) within the on-site hedgerows provides potential for the Site to support a range of notable Lepidoptera namely, brown, black 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. 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 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.

A7.4 The white-letter hairstreak eggs 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.

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 survey, a total of five brown hairstreak butterfly eggs were identified within two of the hedgerows, namely hedgerows **H2** and **H1** within the Site. The results of the survey are shown on **Plan EDP 9**.

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 Extended Phase 1 Habitat Survey
(edp2355_d034 10 December 2021 VMS/JSn)

Plan EDP 2 Designated Sites
(edp2355_d033 10 December 2021 DJ/JSn)

Plan EDP 3 Breeding Bird Survey – April 2018
(edp2355_d030 10 December 2021 VMS/JSn)

Plan EDP 4 Breeding Bird Survey – May 2018
(edp2355_d031 14 December 2021 VMS/JSn)

Plan EDP 5 Breeding Bird Survey – June 2018
(edp2355_d032 10 December 2021 VMS/JSn)

Plan EDP 6 Bat Activity Survey May 2018
(edp2355_d035 10 December 2021 DJ/JSn)

Plan EDP 7 Bat Activity Survey July 2018
(edp2355_d036 10 December 2021 DJ/JSn)

Plan EDP 8 Bat Activity Survey September 2018
(edp2355_d037 10 December 2021 DJ/JSn)

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Site Boundary

Broadleaved Semi-natural Woodland

Dense Continuous Scrub

A — Arable

I — Improved Grassland

Bare Ground

Intact Species-rich Hedgerow and Trees

Intact Species-poor Hedgerow and Trees

Intact Species-rich Hedgerow

Intact Species-poor Hedgerow

Wet Ditch

Fence

Scattered Trees (Broadleaved)

Scattered Scrub

TN1 — Target Note

F1 — Field Number

client

Tritax Symmetry Ardley Ltd

project title

Symmetry Park, Ardley

drawing title

Plan EDP 1: Extended Phase 1 Habitat Survey

date	**10 DECEMBER 2021**	drawn by	**VMS**
drawing number	**edp2355_d034**	checked	**JSn**
scale	**1:5,000 @ A3**	QA	**RB**

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client

Tritax Symmetry Ardley Ltd

project title

Symmetry Park, Ardley

drawing title

Plan EDP 2: Designated Sites

date	**10 DECEMBER 2021**	drawn by	**DJ**
drawing number	**edp2355_d033**	checked	**JSn**
scale	**1:20,000 @ A3**	QA	**RB**

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Site Boundary

Survey Area

Conservation Status

- Red List
- Amber List
- WCA Schedule 1 Only

Code	Species
D.	Dunnock
KT	Red Kite
Li	Linnet
S.	Skylark
ST	Song Thrush
WR	Wren
WW	Willow Warbler
Y.	Yellowhammer
YW	Yellow Wagtail

client

Tritax Symmetry Ardley Ltd

project title

Symmetry Park, Ardley

drawing title

Plan EDP 3: Breeding Bird Survey April 2018

date	**10 DECEMBER 2021**	drawn by	**VMS**
drawing number	**edp2355_d030**	checked	**JSn**
scale	**1:5,000 @ A3**	QA	**GY**

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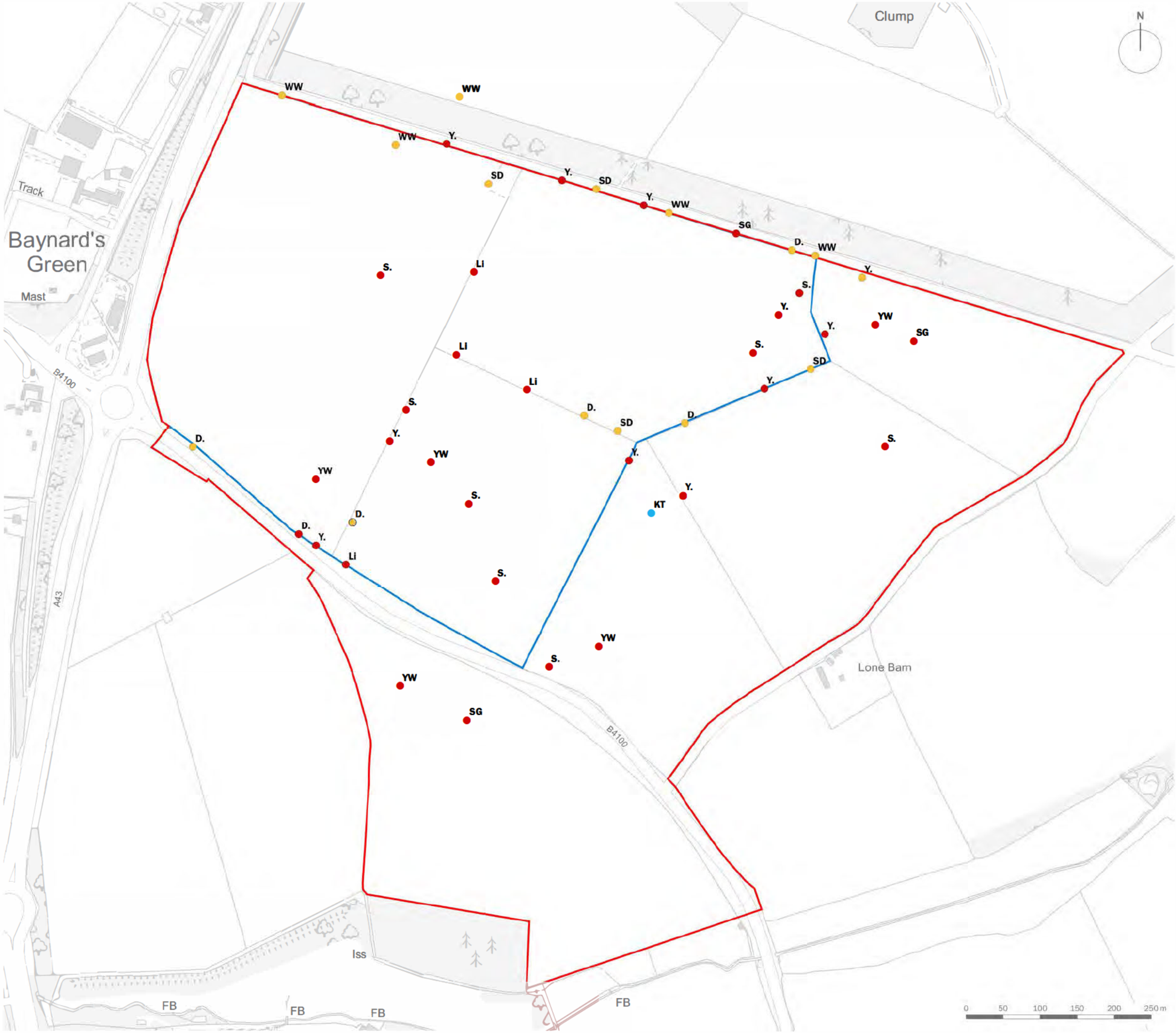

Site Boundary

Survey Area

Conservation Status

Red List

Amber List

WCA Schedule 1 Only

Code	Species
D.	Dunnock
KT	Red Kite
Li	Linnet
S.	Skylark
SD	Stock Dove
SG	Starling
WW	Willow Warbler
Y.	Yellowhammer
YW	Yellow Wagtail

client

Tritax Symmetry Ardley Ltd

project title

Symmetry Park, Ardley

drawing title

Plan EDP 4: Breeding Bird Survey May 2018

date	**14 DECEMBER 2021**	drawn by	**VMS**
drawing number	**edp2355_d031**	checked	**JSn**
scale	**1:5,000 @ A3**	QA	**GY**

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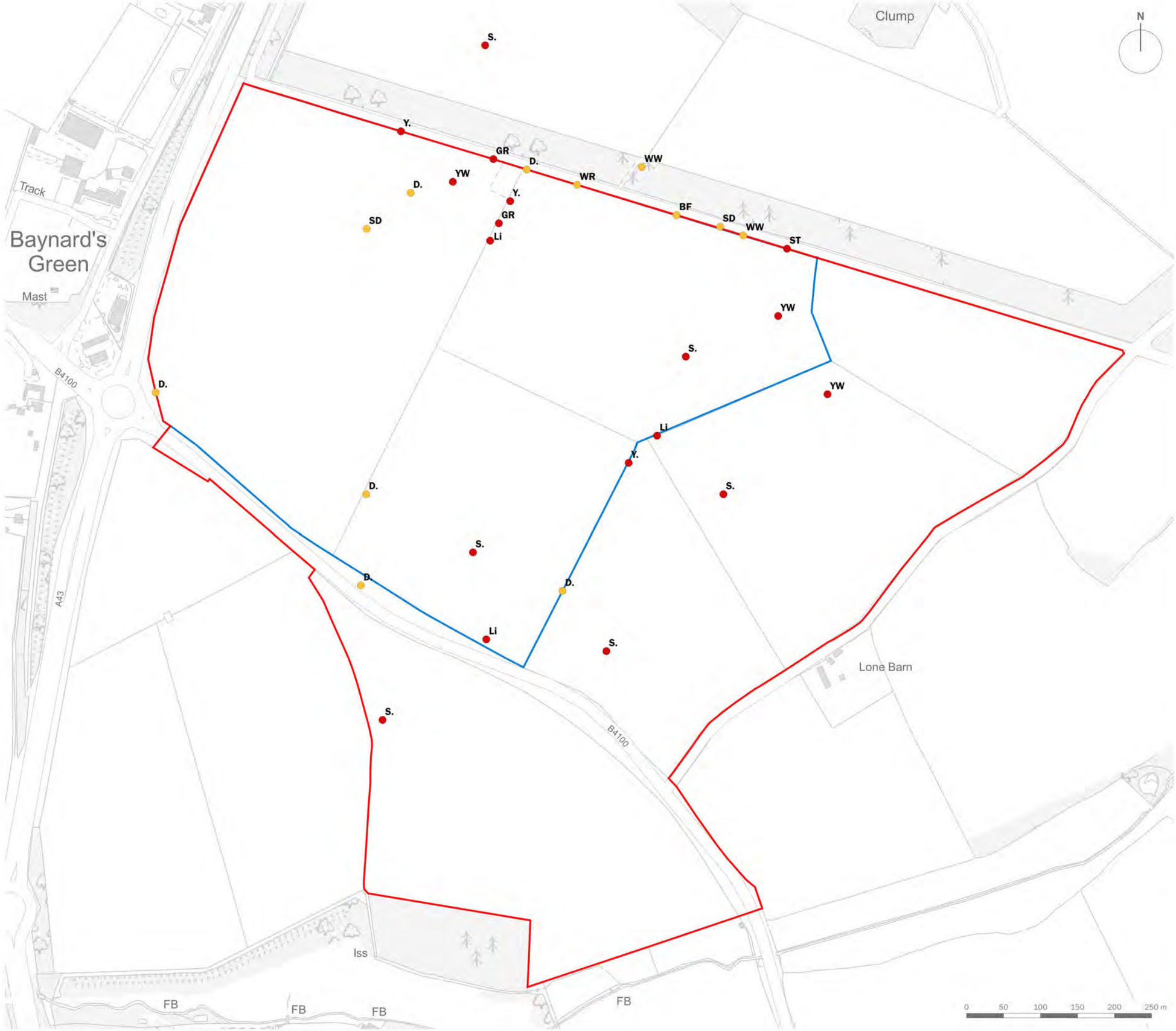

Site Boundary

Survey Area

Conservation Status

Red List

Amber List

WCA Schedule 1 Only

Code	Species
BF	Bullfinch
D.	Dunnock
GR	Greenfinch
Li	Linnet
S.	Skylark
SD	Stock Dove
ST	Song Thrush
WR	Wren
WW	Willow Warbler
Y.	Yellowhammer
YW	Yellow Wagtail

client

Tritax Symmetry Ardley Ltd

project title

Symmetry Park, Ardley

drawing title

Plan EDP 5: Breeding Bird Survey June 2018

date	**10 DECEMBER 2021**	drawn by	**VMS**
drawing number	**edp2355_d032**	checked	**JSn**
scale	**1:5,000 @ A3**	QA	**GY**

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Site Boundary

Survey Area

Automated Detector Location

Transect Route

Species

Common Pipistrelle

Brown Long-eared Bat

client

Tritax Symmetry Ardley Ltd

project title

Symmetry Park, Ardley

drawing title

Plan EDP 6: Bat Survey May 2018

date	**10 DECEMBER 2021**	drawn by	**DJ**
drawing number	**edp2355_d035**	checked	**JSn**
scale	**1:5,000 @ A3**	QA	**RB**

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Site Boundary

Survey Area

Automated Detector Location

Transect Route

Species

Common Pipistrelle

client

Tritax Symmetry Ardley Ltd

project title

Symmetry Park, Ardley

drawing title

Plan EDP 7: Bat Survey July 2018

date	**10 DECEMBER 2021**	drawn by	**DJ**
drawing number	**edp2355_d036**	checked	**JSn**
scale	**1:5,000 @ A3**	QA	**RB**

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drawing title

Plan EDP 8: Bat Survey September 2018

date	**10 DECEMBER 2021**	drawn by	**DJ**
drawing number	**edp2355_d037**	checked	**JSn**
scale	**1:5,000 @ A3**	QA	**RB**

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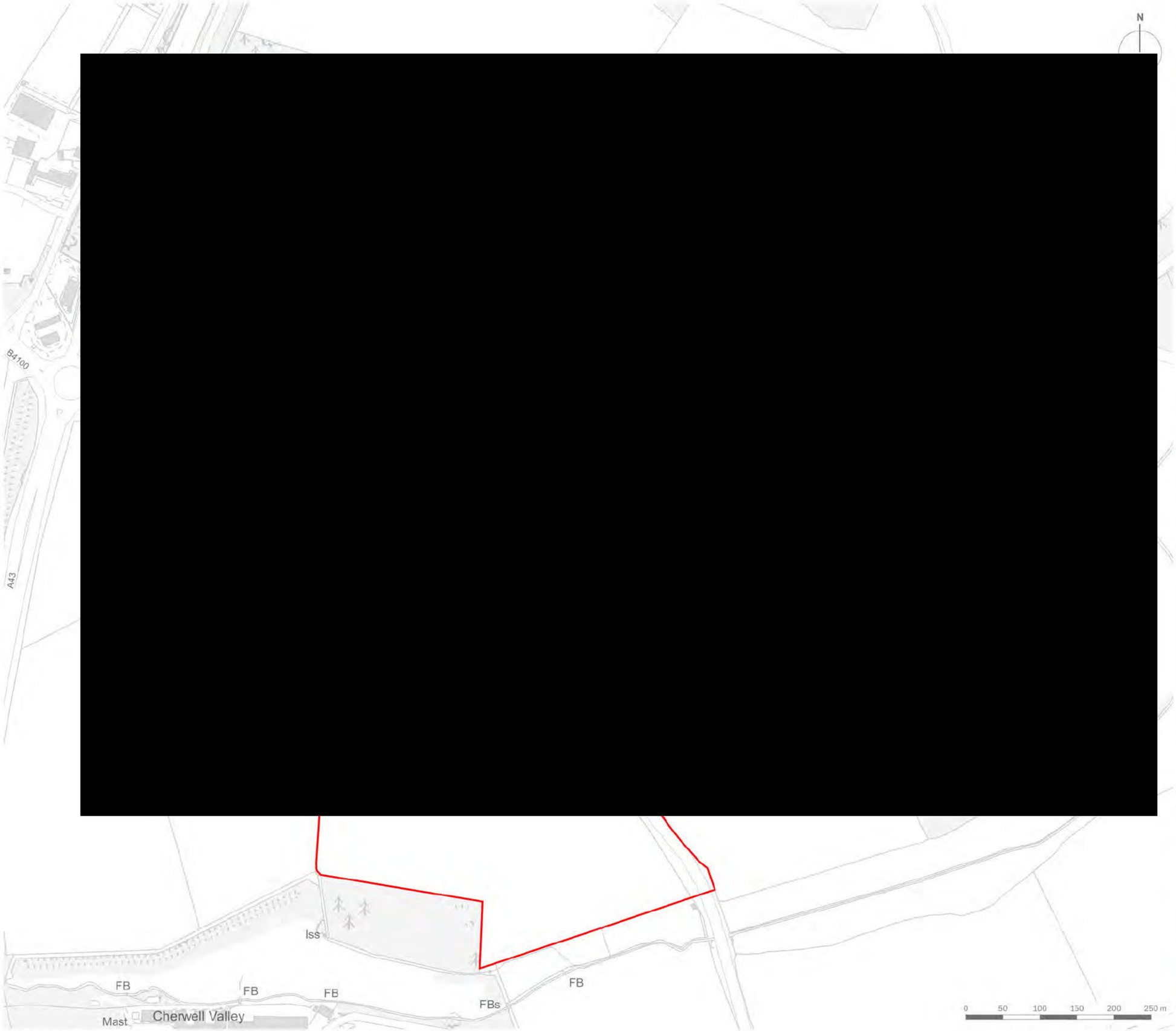

Site Boundary

SurveyArea

Bat Roost Potential Trees

High

Low

Moderate

T1 Tree ID

Anabat Locations (2014)

Badger

Badger Foraging Evidence (2018)

Reptile

Reptile Mat Locations (2014)

Hairstreak Butterflies

Brown Hairstreak Eggs (2018)

client

Tritax Symmetry Ardley Ltd

project title

Symmetry Park, Ardley

drawing title

Plan EDP 9: Protected Species Surveys

date	**10 DECEMBER 2021**	drawn by	**DJ**
drawing number	**edp2355_d040**	checked	**JSn**
scale	**1:5,000 @ A3**	QA	**RB**

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