



**Land off Hob Lane and
Pheasant Oak Farm,
Balsall Common**

Ecological Appraisal

Prepared by:
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Partnership Ltd**

On behalf of:
**Barwood Development
Securities Ltd**

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Executive Summary

- S1 The Environmental Dimension Partnership Ltd (EDP) was commissioned on behalf of Barwood Development Securities Ltd to undertake an Ecological Appraisal at land at Pheasant Oak Farm, Balsall Common, within the Local Planning Authority area of Solihull Metropolitan Borough Council (Solihull MBC) and within the Berkswell Parish Neighbourhood Plan Area.
- S2 The Site is subject to an outline planning application for residential development (up to 250 homes including 30% affordable) with vehicular access off Waste Lane; associated landscaping and new public open spaces; community growing area/orchard; and enhancements to Millenium Way through the Site.
- S3 The baseline ecological investigations, which informed this Ecological Appraisal, include a desk study, Extended Phase 1 Habitat survey and more detailed (Phase 2) surveys relating to breeding birds, roosting bats, badgers (*Meles meles*), great crested newts (*Triturus cristatus*), and reptiles. All surveys were undertaken with reference to best practice guidance where it exists.
- S4 No part of the Site is covered by any internationally important statutory designations, the nearest is Ensor's Pool Special Area of Conservation (SAC) and is 16.6km north-east of the Site. There are three nationally important designations within 2km of the Site, and ten county important designations within 5km of the Site. No part of the Site is covered by any non-statutory designations. However, there are 11 Local Wildlife Site's, 14 ecosites, and 9 Potential Local Wildlife Sites (pLWS) located within 2km of the Site. None of the statutory or non-statutory designations are considered to be at risk of direct or indirect impact from the proposals.
- S5 The habitats on-site are predominantly habitats of only limited, Site-level or Local-level, intrinsic nature conservation value, comprising mainly of large intensively managed grassland. However, valuable hedgerows, mature trees, and ponds are present, that provide a network of habitats across the Site and connections with the wider landscape.
- S6 The enhancement of existing habitats and hedgerows combined with new habitat and hedgerow creation will deliver significant biodiversity gain (well in excess of 10% gain in both habitat and hedgerow units), as demonstrated by biodiversity impact assessment calculations.
- S7 Recommendations are made for the protection of habitats and species during construction including protective fencing and sensitive clearance methods. Such mitigation measures are proposed to be detailed in an Ecological Construction Method Statement (ECMS), or equivalent document, secured via planning condition. With respect to protected species, enhancement measures include the establishment and management of new habitats and provision of new bat boxes and invertebrate features, in addition to mammal gates to allow for the continued movement of species such as hares and badgers across the Site.
- S8 In summary, the ecological mitigation strategy for the scheme includes: (1) avoidance measures already embedded within the masterplan; (2) measures that should be

incorporated at the construction stage; and (3) those that are to be designed and specified within the landscaping scheme.

- S9 On this basis, EDP considers that the scheme is capable of delivering significant long-term ecology and wider ecosystem service benefits that meet or exceed relevant planning policy requirements for the conservation of the natural environment at all levels.

Section 1 Introduction

- 1.1 This Ecological Appraisal has been prepared by The Environmental Dimension Partnership Ltd (EDP) on behalf of Barwood Development Securities Ltd (hereafter referred to as ‘the Applicant’). This Appraisal considers the ecological implications of proposed development at Pheasant Oak Farm, Balsall Common (hereafter referred to as ‘the Site’).
- 1.2 This report has been prepared with reference to the following key guidance:
- Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Preliminary Ecological Appraisal¹;
 - CIEEM Guidelines for Ecological Impact Assessment²;
 - British Standard: Biodiversity – Code of Practice for Planning and Development³; and
 - British Standard: Process for designing and implementing Biodiversity Net Gain⁴.
- 1.3 EDP is an independent environmental planning consultancy with offices in Cirencester, Cardiff, and Cheltenham. The practice provides advice to private and public sector clients throughout the UK in the fields of landscape, ecology, archaeology, cultural heritage, arboriculture, rights of way and masterplanning. Details of the practice can be obtained at our website (www.edp-uk.co.uk).

SITE CONTEXT

- 1.4 The Site is centred approximately at Ordnance Survey Grid Reference (OSGR) SP25 167 624. The Local Planning Authority is Solihull Metropolitan Borough Council (SMBC) and the Site is located within the Berkswell Parish Neighbourhood Plan Area. The location and extents of the Site are illustrated on **Plan EDP 1** and described in the material supporting the planning application, particularly the Design and Access Statement.
- 1.5 The Site measures 12.66 hectares (ha) and is located within the Parish of Berkswell, approximately 1.3km south-east of Berkswell Village and on the south-eastern edge of Balsall Common. It comprises hardstanding, bare ground, buildings, improved grassland, species-poor grassland, wet ditches, and species-poor defunct hedgerows. Other features on site include five ponds, mature trees, and some intact species-poor hedgerow and

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

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

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

⁴ BSI (2021) *Process for designing and implementing Biodiversity Net Gain. Specification*. BS 8683:2021. British Standards Institute

hedgerow with trees. Land uses in surrounding landscape are predominantly farmland, with residential areas to the west.

DEVELOPMENT PROPOSALS

- 1.6 In brief, the proposed development comprises up to 250 homes (including 30% affordable) with vehicular access off Waste Lane; demolition of existing buildings/structures; associated landscaping and new public open spaces; community growing area/orchard; and enhancements to Millenium Way through the Site.
- 1.7 The proposals are to be the subject of an outline planning application and the Illustrative Masterplan is provided as **Appendix EDP 1** to this report.
- 1.8 The ecological sensitivities of the Site have influenced the final layout through an iterative design process. Thus, the masterplan incorporates a degree of 'inherent' mitigation to avoid or reduce the severity of potential ecological impacts.

SCOPE OF THE ASSESSMENT

- 1.9 This Ecological Appraisal describes the current ecological interest within and around the Site, which has been identified through standard desk- and field-based investigations. It then considers the potential ecological impacts and opportunities for ecological enhancement based on the final masterplan (incorporating inherent mitigation) in the context of relevant legislation and planning policy. Finally, this Appraisal identifies the necessary additional measures to avoid, mitigate or provide compensation for potential impacts, and the mechanisms for securing such measures.
- 1.10 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 Appendices and on Plans where appropriate);
 - **Section 3** summarises the baseline ecological conditions (with further details also provided within Appendices and on Plans where appropriate) and identifies and evaluates any pertinent ecological features/receptors;
 - **Section 4** describes how the development design has responded to the ecological constraints and any embedded/inherent mitigation, and then considers the potential impacts of the proposals on pertinent ecological features; and
 - **Section 5** proposes mitigation and enhancement measures for the current and possible future planning stages, in the context of relevant legislation and planning policy, and mechanisms to secure their delivery, and provides the overall conclusions of the Appraisal.

Section 2 Baseline Methodology

2.1 This section of the Ecological Appraisal summarises the methodologies employed in determining the baseline ecological conditions within and around the Site. This has been undertaken by appropriately qualified ecologists using relevant best practice methodologies wherever possible. Reasons for any departure from best practice methodology are given and normally relate to the timing of EDP's commission and/or the availability of access to parts of the Site or wider study area. Full details of the techniques and process adopted are, where appropriate, provided within Appendices and on Plans to the rear of this report.

DESK STUDY

2.2 The desk study is an important element of undertaking an initial ecological appraisal of a site proposed for development, which entails the initial collation and review of contextual information, such as designated sites, together with known records of important habitats or species.

2.3 The desk study involved collating biodiversity information from the following sources:

- Warwickshire Biological Records Centre (WaBRC); and
- Multi-Agency Geographic Information for the Countryside (MAGIC) website⁵.

2.4 The desk study was initially carried out in 2019 but was updated during November 2022 and involved obtaining the following information:

- International statutory designations (10km radius around the Site);
- National statutory designations (5km radius around the Site);
- Non-statutory local sites (2km radius around the Site);
- Annex II bat species⁶ records (6km radius around the Site); and
- All other protected, priority and notable species records (2km radius around the Site).

2.5 These search areas are considered sufficient to cover the potential zones of influence⁷ of the proposed development in relation to designated sites, habitats, and species.

2.6 The adopted Solihull MBC Local Plan and Berkswell Parish Neighbourhood Plan were also reviewed as part of the desk study, to understand local priorities with regard to protection of ecological features/biodiversity.

⁵ www.magic.gov.uk

⁶ Bat species listed in Annex II of the EC Habitats Directive, namely Greater horseshoe, Lesser horseshoe, Barbastelle and Bechstein's bats

⁷ Zone of Influence - the areas and resources that may be affected by the proposed development

CONSULTATION

- 2.7 In addition to the above, Solihull MBC's Ecology Officer (Jenni Blakeman) was consulted in 2022 (as part of a wider pre-application consultation process) regarding the scope of the baseline survey work, the assessment approach and the ecological mitigation and enhancement strategy.

EXTENDED PHASE 1 HABITAT SURVEY

- 2.8 The main habitats within the Site, together with their dominant/characteristic plant species, were identified by undertaking an Extended Phase 1 Habitat survey. The survey technique adopted was at a level intermediate between a standard Phase 1 survey technique⁸, involving habitat mapping and description, and a Phase 2 survey, based on detailed habitat and species surveys. This level of survey does not aim to compile a complete floral and faunal inventory for the Site.
- 2.9 Habitat type and condition were also recorded to meet the Defra Biodiversity Metric 3.1 data requirements for calculating biodiversity net gain/loss. This was undertaken with reference to the Metric user guide⁹ and UK Habitat Classification System¹⁰ which underpins the Metric.
- 2.10 The survey involved identifying and mapping the main habitat types (including Priority Habitats¹¹) and scoping any potential protected or Priority Species¹² populations.
- 2.11 The Extended Phase 1 Habitat survey was first undertaken by a suitably experienced surveyor on 05 February 2019 and was subsequently updated on 18 May 2022, during which the weather was dry and warm. Further details of the survey are provided in **Appendix EDP 2**.

Limitations

- 2.12 No limitations were experienced during the original or update surveys.

DETAILED (PHASE 2) SURVEYS

- 2.13 The scope of Phase 2 Surveys undertaken within the Site was defined following the initial studies described above.

⁸ Joint Nature Conservation Council (2010) *Handbook for Phase 1 Habitat Survey – A Technique for Environmental Audit* (reprinted with minor corrections for original Nature Conservancy Council publication).

⁹ Panks, S. *et al* 2022. Biodiversity metric 3.1: Auditing and accounting for biodiversity – User Guide. Natural England.

¹⁰ UKHAB LTD. (2022) UK Habitat Classification [online]. Available from: <http://ukhab.org>

¹¹ Priority habitats are those listed either on the UK Biodiversity Action Plan or England-specific list of Habitats of Principal Importance set out in conjunction with Section 41 of the NERC Act 2006.

¹² Priority species are those listed either on the UK Biodiversity Action Plan or England-specific list of Species of Principal Importance set out in conjunction with Section 41 of the NERC Act 2006.

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

Breeding Birds

2.15 The Site contains several habitats which are suitable for nesting birds including hedgerows, and mature trees. A pilot breeding bird survey was therefore undertaken with reference to standard methodology, entailing a modified Common Bird Census (CBC)¹³ 'territory mapping' approach. This involved the completion of a single visit to the Site, undertaken in May to coincide with the height of the breeding bird season for lowland Britain.

2.16 Full details of the breeding bird survey methodology, and any limitations encountered, are provided in **Appendix EDP 3**.

Bat Surveys

2.17 During the Extended Phase 1 Habitat survey, seven of the buildings present within the Site were identified as having potential to support roosting bats. In addition, a number of habitats present within the Site, including ponds, hedgerows, mature trees, and open grassland, were identified as being of moderate suitability to support foraging and commuting bats. The following surveys for bats were therefore undertaken, with reference to good practice guidelines¹⁴:

Bat Roosting

- Preliminary ground level visual assessment of mature trees for bat roosting suitability, undertaken on 05 February 2019;
- Preliminary visual assessment and inspections of buildings for bat roosting suitability and/or evidence of roosting, initially undertaken on 05 February 2019 and then updated on 18 May 2022; and
- Emergence and/or re-entry surveys of buildings **B3, B11, B13, B14, B16, B17, and B21** (see **Plan EDP 2**) were undertaken during between June and September 2022.

Bat Foraging/Commuting Activity:

- Transect surveys conducted in May to September in 2019 and updated in May, July, and September 2022; and
- Automated detector surveys conducted in May, July, and September 2022.

2.18 Full details of the bat survey methodologies, and any limitations encountered, are provided in **Appendix EDP 4**.

¹³ Marchant, J. (1983). *Common Bird Census Method*. BTO

¹⁴ Collins, J. (ed.) (2016). *Bat Surveys: for Professional Ecologists: Good Practice Guidelines (3rd edition)*. The Bat Conservation Trust, London

Badger Survey

2.19 A survey to record any evidence of badger (*Meles meles*) activity within the Site was undertaken in 2019, as part of the Extended Phase 1 Habitat survey and this was subsequently updated on 18 May 2022 during the Extended Phase 1 Habitat survey. An additional badger survey was also carried out on 07 September 2022. During the surveys, any signs of badger activity, such as holes, latrines, trails, snuffle holes, and hairs on fencing or vegetation were recorded. Where holes of a size and shape consistent with badgers were identified, the following signs of badger activity were searched for in order to determine whether they were currently in use:

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

Limitations

2.20 Badger surveys can be undertaken at any time of year and are, therefore, not limited by seasonal factors.

Great Crested Newt Survey

2.21 In 2019 an initial assessment of the Site's suitability to support great crested newt (*Triturus cristatus*) was undertaken during the Extended Phase 1 survey and with reference to desk study records as described above. This assessment was then updated in 2022. Five ponds were identified within the boundaries of the Site. In addition, three ponds were identified adjacent and within a 250m radius of the Site.

2.22 All waterbodies on site, and those within 250m of the Site (but not separated from the Site by significant dispersal barriers) to which access was granted, were subject to the following survey types in accordance with relevant good practice guidance:

- Habitat Suitability Index (HSI) Assessment¹⁵;
- Environmental DNA (eDNA) Sampling¹⁶; and
- Population Surveys¹⁷.

¹⁵ Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000). Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*). *Herpetological Journal* 10 (4), 143-155

¹⁶ As approved by Natural England. <http://www.freshwaterhabitats.org.uk/wordpress/wp-content/uploads/2013/09/eDNA-water-sample-methods-FHT.pdf>

¹⁷ English Nature (2001). Great Crested Newt Mitigation Guidelines. English Nature, Peterborough

2.23 Waterbodies more than 250m from the Site were not surveyed as the likelihood of great crested newts dispersing over this distance from the Site is much reduced, and surveys of the nearer waterbodies are sufficient to assess impacts on the local population.

2.24 Full details of the great crested newt survey methodology and any limitations encountered, are provided in **Appendix EDP 5**.

Reptile Survey

2.25 Areas of scrub, ponds, piles of wood and rubble, and an earth-bank present within the Site provide potentially suitable basking, foraging, dispersal, and hibernation habitats for common and widespread reptile species. A detailed refugia-based reptile survey was therefore undertaken in 2019 to confirm the presence and distribution, or likely absence, of reptiles within the Site with reference to good practice guidelines¹⁸.

2.26 A total of 161 artificial refugia were deployed in all suitable habitats across the Site on 18 April 2019. Areas of exceptionally low or negligible suitability for reptiles, such as hard-standing, were excluded from the survey. This equates to 12 refugia per hectare, which is greater than the recommended 5 to 10 refuges per hectare as set out in the good practice guidelines. Survey visits were undertaken on nine subsequent occasions in suitable weather conditions and involved two techniques:

- Walking a transect across the Site to undertake a visual search for basking animals in suitable habitat or evidence of animals (e.g. sloughed skin); and
- Checking of the artificial refugia for sheltering or basking animals to establish the presence/likely absence of reptiles.

2.27 This ensured that all areas were represented in the survey, and that the survey was not biased towards those reptiles more likely to use refugia, such as slow worm (*Anguis fragilis*).

2.28 During each survey visit, the following information was recorded: species, number of animals observed, and sex where possible, location (refugia number or marked on map if visual encounter), date, start and finish times, and weather.

2.29 Detailed weather conditions recorded during each survey visit undertaken in between May and September 2019 are summarised in **Table EDP 2.1**.

Table EDP 2.1: Date, Timings, and Weather Conditions of Reptile Survey Visits 2019.

Survey	Date	Time		Wind Speed		Temp (°C)		Cloud Cover (%)	
		Start	End	Min	Max	Min	Max	Min	Max
1	02/05/19	15:10	16:30	1	2	12.2	15.4	50	90
2	16/05/19	15:45	17:00	0	1	17.0	17.5	60	60
3	24/05/19	09:45	11:30	3	6	15.8	19.4	50	80

¹⁸ Froglife (1999) *Reptile survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation*. Froglife Advice Sheet 10, Froglife, Halesworth

Survey	Date	Time		Wind Speed		Temp (°C)		Cloud Cover (%)	
		Start	End	Min	Max	Min	Max	Min	Max
4	06/06/19	05:45	07:00	2	3	16.0	16.3	10	10
5	12/07/19	09:10	10:28	4	5	16.2	19.2	40	100
6	31/07/19	08:45	09:45	4	5	17.2	17.6	80	90
7	19/08/19	09:30	10:30	1	2	16.2	16.6	40	60
8	11/09/19	16:30	17:30	3	3	19.0	20.4	40	80
9	26/09/19	13:35	15:00	2	4	17.2	18.1	75	90

Limitations

- 2.30 All reptile surveys undertaken at the Site were conducted in suitable weather conditions and within recognised optimal months for reptile surveys.
- 2.31 On 06 June 2019, some of the reptile mats were not found during the fourth reptile check. To overcome this limitation the missing reptile mats were replaced on 19 June 2019 and were given three weeks to bed in before the next survey visit, on 12 July 2019. The mats were distributed in areas deemed to be more suitable for reptiles (for example, some field corners where vegetation was still long and near to locations of natural refugia). Therefore, the plan of reptile mat locations shows redeployed mats in different locations.
- 2.32 On 12 July 2019, during the first survey visit after the redeployment, it was found that some of the fields on site had been recently cut and a number of reptile mats were no longer *in-situ*. Additional mats were deployed on 16 July 2019 to these same areas to replace the missing mats and given two weeks to bed in before the next survey on 31 July 2019. Additional surveys were also carried out, increasing the number from the standard seven surveys to nine surveys, to ensure the new mats and locations were adequately surveyed.
- 2.33 These instances of missing mats are not considered a significant limitation to the survey findings and at no point did the number of reptile mats fall below the minimum recommended density as described in good practice guidelines.

ECOLOGICAL SURVEYS SCOPED OUT

- 2.34 **Table EDP 2.2** summarises other survey types which, whilst occasionally required to inform a planning submission for development sites, are not deemed to be necessary/appropriate in this case.

Table EDP 2.2: Ecology Surveys Scoped Out.

Survey Type	Reasons for Scoping Out
Botanical Surveys (e.g. National Vegetation Classification (NVC) Surveys)	The Phase 1 surveys identified habitats common in the locality and none are of particularly high ecological value to warrant further detailed assessment.
Dormouse Survey	Many of the hedgerows on site are defunct and those that are intact are species-poor and deemed unlikely to support a dormouse (<i>Muscardinus avellanarius</i>) population. Additionally, there were no records for dormice returned during the 2019 and 2022 desk studies.
Invertebrate Survey	The 2022 desk study returned 71 records for notable invertebrates within 2km of the Site but none within the Site boundary. Most of the Site is of low quality, maturity, or distinctiveness. Additionally, the habitats of higher quality for invertebrates are restricted to the boundaries of the Site and these habitats (e.g. hedgerows and trees) will be primarily retained through design.
Otter and Water Vole Survey	Whilst the Site does contain wet ditches, they were deemed to not be able to support these species. The ditches are also not connected to the nearest watercourses, Canley Brook and Finham Brook, which are more than 500m distant. Additionally, there were no records for otter (<i>Lutra lutra</i>) or water vole (<i>Arvicola amphibius</i>) returned during the 2019 and 2022 desk studies.
Winter Bird Surveys	The Site is unlikely to support a winter bird assemblage of any greater than Site-level value, owing to the limited extent of tree/scrub habitat and only having intact species-poor hedgerows.

Section 3 Baseline Results

- 3.1 This section of the Ecological Appraisal summarises the baseline ecological conditions determined through the course of desk-based and field-based investigations described in **Section 2**. In particular, this section identifies and evaluates those ecological features/receptors that lie within the Site's potential zone of influence and are pertinent in the context of the proposed development. Further technical details are, where appropriate, provided within Appendices and on Plans to the rear of this report.
- 3.2 Where a particular ecological feature/receptor has been confirmed to be present, or presence is inferred based on habitat suitability, its ecological importance is assessed. The level of ecological importance assigned to each ecological feature is based upon established geographical value systems and the uses the following scale: International and European (highest) > National > Regional > County > District > Local > Negligible (lowest).

DESIGNATED SITES

- 3.3 Information regarding designated sites was obtained during the desk study in 2019 and again in 2022. Statutory designations (those receiving legal and planning policy 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. Internationally important statutory designations include Special Protection Areas (SPA), Special Areas of Conservation (SAC), Ramsar sites (including potential SPAs and possible SACs and proposed Ramsar's). These designations are protected under the Conservation of Habitats and Species Regulations 2017 (as amended) (the Habitats Regulations). These designations are referred to as 'habitats sites' in the National Planning Policy Framework (NPPF, July 2021) and development which would adversely affect a habitats site cannot benefit from the NPPF presumption in favour of sustainable development.
- 3.5 Nationally important statutory designations include Sites of Special Scientific Interest (SSSI) and National Nature Reserves (NNR). NNRs are also SSSIs, both of which are protected under the Wildlife and Countryside Act 1981 (as amended) (WCA) and the NPPF states that development which would adversely affect as SSSI should not normally be permitted.
- 3.6 Local level statutory designations include Local Nature Reserves (LNR) and are generally considered to be of importance at the County level or lower. LNRs are designated under the National Parks and Access to the Countryside Act 1949, however, protection of LNRs is given via local planning policies and/or by-laws.
- 3.7 Statutory designations are also recognised as key natural assets within the adopted Solihull Local Plan. It is noted in Policy P13 that any gravel extraction that will impact on an adjacent Sites of Special Scientific Interest will be permitted only if the necessary avoidance and/or

mitigation is incorporated. Policy P10 outlines that any development will look to conserve, enhance, and restore biodiversity and that all developments will take statutory designations, such as the River Blythe SSSI, into account.

3.8 No part of the Site is covered by any internationally important statutory designations, the nearest is Ensor's Pool SAC and is 16.6km north-east of the Site.

3.9 However, there are three nationally important designations and ten county important designations within 5km of the Site. These sites are summarised in **Table EDP 3.1**.

Table EDP 3.1: Statutory Designations Within the Site's potential Zone of Influence.

Designation	Approx. Distance from the Site	Interest Feature(s)
Nationally Important Statutory Designated Sites (within 5km of the Site)		
Tilehill Wood SSSI and LNR	3.2km North-east	This site is one of the largest areas of semi-natural woodland remaining in the County. Fluctuating water-levels due to impeded drainage have influenced the overlying vegetation. This has resulted in small acidic pools and mires, which add interest to the woodland.
River Blythe SSSI	3.6km West-north-west	A fine example of a lowland river on clay. Botanically, the River Blythe is one of the richest rivers in lowland England with the rich flora and a diverse invertebrate community.
Berkswell Marsh SSSI	3.8km North-west	The site is made up of an area of fen meadow bisected by a tributary of the River Blythe and two blocks of wet woodland. The marsh forms the largest-known example of fen meadow in the West Midlands. Wet and dry fen meadow; mixed plantation woodland with dry ditches and diverse flora; semi-natural woodland with locally rich ground flora.
Statutory Designated Sites of County Importance (within 5km of the Site)		
Lavender Hall Park LNR	1.3km North-west	Grassland, plantation, old hedgerows, and ponds.
Park Wood LNR	2.6km East-north-east	Ancient woodland site.
Ten Shilling Wood LNR	3.6km East-north-east	Ten-shilling Wood and Park Wood are linked by an open grassland to the south, creating a quiet stretch of countryside between the Charter Avenue housing estate and Westwood business park.

Designation	Approx. Distance from the Site	Interest Feature(s)
Plants Hill Wood LNR	2.8km North-east	A mixed wood of 22 acres containing pedunculate oak (<i>Quercus robur</i>) approximately 160 years of age and a number of sessile oak (<i>Quercus petraea</i>) with some 180-year-old beech (<i>Fagus sylvatica</i>) trees. lime (<i>Tilia</i> sp.), many Scots pine, (<i>Pinus sylvestris</i>), European larch (<i>Larix decidua</i>), Norway spruce (<i>Picea abies</i>) and one solitary crack willow (<i>Salix × fragilis</i>) (a species that favours moist ground) is located in the west corner where a shallow pool forms in very wet weather when water seeps down the steep incline.
mesig Wood LNR	3.3km North-east	Ancient woodland site with a canopy of pedunculate oak, lime, beech, Scots pine, European larch, Norway spruce, silver birch (<i>Betula pendula</i>), ash (<i>Fraxinus excelsior</i>), sweet chestnut (<i>Castanea sativa</i>), rowan (<i>Sorbus aucuparia</i>), holly (<i>Ilex aquifolium</i>), whitebeam (<i>Sorbus aria</i>) and aspen (<i>Populus tremuloides</i>). There is also some evidence of planting ten years ago of oak, hornbeam (<i>Carpinus betulus</i>) and a few ash. Pig Wood relates to the use of this wood for the grazing of swine. The right to graze swine on fallen acorns and beech mast in woodlands was known as 'pannage' and the Domesday Book records that there was grazing for 2,000 pigs within the manor of Stoneleigh, which included Canley and Tile Hill.
Limbrick Wood LNR	4.0km North-east	A mixed wood of broadleaves and conifers. Variety of wildlife.
Crackley Wood LNR	3.9km South-east	This old woodland used to be coppice with standards but fell into neglect and exotic species were introduced. The site is managed to gradually remove the exotic species and to re-introduce coppicing. The site has ponds, ditches, and hedges. In spring bluebells (<i>Hyacinthoides non-scripta</i>) carpet the wood. It is a good place for invertebrates including a rare sawfly (<i>Symphyta</i> sp.) and three notable hoverflies (<i>Syrphidae</i> sp.).
Parliament Piece LNR	4.5km South-east	The reserve has grassland and a pond surrounded by mature trees and scrub.
Millisons Wood LNR	4.8km North-north-east	Millison's Wood was once part of the large Arden Forest, which covered much of the countryside. The woods attract unusual butterflies, birds, and wildflowers.

Designation	Approx. Distance from the Site	Interest Feature(s)
Tocil Wood and Meadow LNR	4.9km East	An ancient oak woodland with a swamp and small wet meadow. The wood is at least 400 years old and earthworks in the wood date back to the first and second century AD. More recent features include ridge and furrow. Woodland plants include guelder rose (<i>Viburnum opulus</i>), dogwood (<i>Cornus</i> sp.), field maple (<i>Acer campestre</i>), bluebells, wood anemone (<i>Anemone nemorosa</i>), wood sorrel (<i>Oxalis acetosella</i>) and dog's mercury (<i>Mercurialis perennis</i>). The marshy area has marsh marigolds (<i>Caltha palustris</i>). The invasive Himalayan balsam (<i>Impatiens glandulifera</i>) is being controlled. The Reserve is noted for its range of bats and many breeding birds.

Non-statutory Designations

- 3.10 Non-statutory designations are also commonly referred to in planning policies as 'local sites', although such designations are typically considered to be of importance at a County level. In Warwickshire, such designations are termed Local Wildlife Sites (LWS). Additional sites such as non-designated nature reserves (e.g., Wildlife Trust nature reserves), potential Local Wildlife Sites (pLWS), ecosites (sites with ecological value), and Ancient Semi-natural Woodland (ASNW) are considered here when not covered by other designations. The importance of LWSs is recognised in the NPPF, in Policy P10 of the Solihull District Local Plan and the background text of the Berkswell Neighbourhood Plan.
- 3.11 No part of the Site is covered by any non-statutory designations, however, there are 11 LWS, 14 ecosites, and 9 pLWS located within 2km of the Site. Further details of these designations are provided in **Appendix EDP 6**.

HABITATS

- 3.12 There are several mechanisms by which habitats that lie outside of statutory and non-statutory designations are protected, or by which their importance is recognised at a national level. This includes the following:
- 'Important' hedgerows are protected from removal (out with the planning process) by the Hedgerows Regulations 1997;
 - Certain habitats are listed Priority Habitats, the conservation of which public authorities in England must have due regard to as part of policy or decision making under Section 40 of the Natural Environment and Rural Communities (NERC) Act 2006;
 - Paragraph 180 of the NPPF includes a presumption against development which results in significant harm to biodiversity (including habitats), or results in the loss of

irreplaceable habitat¹⁹. This paragraph also encourages development to secure measurable net gains for biodiversity; and

- The importance of protecting habitats, and networks of habitats, is reflected in the Solihull District Local Plan, specifically Policy P10, and in Policy B1 and B3 of the Berkswell Neighbourhood Plan. In addition, Policy P10 of the emerging new Local Plan will require development to deliver a minimum biodiversity net gain of 10%.

3.13 The distribution of different habitat types within the Site is illustrated on **Plan EDP 1**. The habitats are further described in **Appendix EDP 2** alongside illustrative photographs and species lists. A summary and qualitative assessment of these habitats, using both the Joint Nature Conservation Committee (JNCC) Phase 1 and Defra Biodiversity Metric 3.1 terminology, is provided in **Table EDP 3.2**. **Plan EDP 1** also shows the hedgerow reference numbers referred to in the table.

¹⁹ Irreplaceable habitats are technically very difficult (or take a very significant time) to restore, recreate or replace once destroyed. They include ancient woodland, ancient and veteran trees, blanket bog, limestone pavement, sand dunes, salt marsh and lowland fen.

Table EDP 3.2: Summary of Habitats Within the Site.

JNCC Phase 1	Defra Metric 3.1			Area/ Length	Distribution	Intrinsic Ecological Importance*
Habitat Type	Habitat Type	Distinctiveness	Condition			
Improved grassland	Modified grassland	Low	Poor	8.47ha	The grassland fields encompassing the majority of the Site.	Negligible
Amenity grassland	Modified grassland	Low	Poor	0.78ha	Grassland area south of the caravan park and buildings B11-B21.	Negligible
Scrub	Mixed scrub	Medium	Moderate	0.07ha	To the west of the amenity grassland.	Site
Standing water	Ponds (non-priority Habitat)	Medium	Moderate	0.03ha	Ponds 1 and 3.	Site
Standing water	Ponds (Priority Habitat)	High	Moderate	0.02ha	Ponds 4 and 5.	Local (Priority Habitat)
Tall ruderal	Ruderal/ephemeral	Low	Moderate	0.66ha	Across the Site, focused around the buildings and hard-standing areas.	Site
Building/hard-standing	Developed land; sealed surface	Very low	N/A - Other	1.98ha	The farm buildings, caravan storage facility, and all other buildings across the Site.	Negligible
Building/hard-standing	Vacant/derelict land/ bare ground	Low	Poor	0.66ha	Marked on the Extended Phase 1 Habitat plan as bare ground.	Negligible
Intact species-poor hedgerow with trees	Native hedgerow with trees	Medium	Moderate	0.785km	H4, H5, H6, H12, H13, H22, H23, H24.	Site
Defunct species-poor hedgerow with trees	Native hedgerow with trees	Medium	Poor	0.427km	H8, H10, H14, H16.	Site

JNCC Phase 1	Defra Metric 3.1			Area/ Length	Distribution	Intrinsic Ecological Importance*
Habitat Type	Habitat Type	Distinctiveness	Condition			
Intact species-poor hedgerow	Native hedgerow	Low	Moderate	0.5356km	H1, H2, H3, H15, H21, H25.	Site
Defunct species-rich hedgerow	Native hedgerow	Low	Poor	0.115km	H9, H18.	Site
Defunct species-poor hedgerow	Native hedgerow	Low	Poor	0.113m	H19, H20.	Site
Defunct species-rich hedgerow with trees	Native species-rich hedgerow with trees	Medium	Poor	0.457km	H7, H11, H17	Site

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

- 3.14 As noted within **Table EDP 3.2**, the vast majority of the Site is made up of habitats which are of Negligible or Site-level intrinsic importance. However, some of the ponds and the species-rich hedgerows are judged to be of Local-level importance and are Priority Habitats. In addition, whilst not described individually in **Table EDP 3.2**, there are a number of mature trees within the hedgerows, including a veteran oak tree (T17) in hedgerow H14, which are of Local-level importance.
- 3.15 Furthermore, a number of the habitats, including those which are of limited intrinsic importance, also require consideration in relation to their importance in maintaining populations of protected, priority, or other notable species. This is discussed further below.

PROTECTED, PRIORITY OR OTHER NOTABLE SPECIES

- 3.16 Certain species receive legal protection in the UK and are commonly known as 'protected species'. In reality, the level of protection for different species varies considerably, from protection solely against 'killing and injury' to full protection of the species and their places of refuge. Where pertinent, details of legal protection afforded to species/species-groups are provided below.
- 3.17 In addition to protected species there are other species/species-groups that do not receive legal protection, but which are notable owing to their conservation status. This includes Priority Species, the conservation of which public authorities in England must have due regard to under the Natural Environment and Rural Communities (NERC) Act 2006. The NPPF recognises species as an important component of biodiversity, as does Policy P10 of the Solihull District Local Plan and Policy B1 of the Berkswell Neighbourhood Plan.
- 3.18 The likelihood of presence, or confirmed presence, of protected, priority or other notable²⁰ wildlife species within the Site is summarised below with reference to desk study records, habitat suitability and detailed surveys where relevant. Further details are made available within the appendices and plans where referenced.

Breeding Birds

- 3.19 All wild birds, their nests and eggs are protected under the WCA (as amended). This makes it an offence to:
- Intentionally kill, injure or take any wild bird;
 - Take, damage or destroy the nest of any wild bird while it is in use or being built;
 - Take, damage or destroy the egg of any wild bird; or
 - To have in one's possession or control any wild bird (dead or alive) or egg, or any part of a wild bird or egg.
- 3.20 In addition, further protection is afforded to those wild bird species listed on Schedule 1 of the WCA, prohibiting any intentional or reckless disturbance to these species while it is nest

²⁰ Notable species are those which are not legally protected but are formally identified as being of conservation concern

building, or at a nest containing eggs or young, or to recklessly disturb the dependent young of such a bird. A number of species are also included as Priority Species.

- 3.21 A large number of records of bird species were retrieved during the desk study in 2022, including 42 records of WCA Schedule 1 species, 806 records of Priority Species, and a further 1,098 records of species included on the latest Red and Amber lists of Birds of Conservation Concern²¹. None of the records were from within the Site boundary. Records of the species with possible suitable breeding habitats on site include mallard (*Anas platyrhynchos*), stock dove (*Columba oenas*), house sparrow (*Passer domesticus*), and dunnock (*Prunella modularis*).
- 3.22 The full results of the breeding bird survey are provided in **Appendix EDP 3** and illustrated on **Plan EDP 3**. In summary, a total of 20 bird species were recorded as breeding or possibly breeding onsite. This includes two Priority Species and nine other species of conservation concern. Those species of note include:
- Dunnock (*Prunella modularis*); and
 - House Sparrow.
- 3.23 Overall, the assemblage of breeding bird species recorded on site is of a low to moderate abundance, in keeping with the limited diversity of nesting habitats present. The breeding bird assemblage on site is therefore judged to be of Local-level importance.

Bats

- 3.24 All species of British bat are European Protected Species (EPS) as they receive strict protection under the Conservation of Habitats and Species Regulations 2017 (as amended) (the Habitats Regulations), which makes it an offence to:
- Deliberately capture, injure or kill a wild animal of an EPS;
 - Deliberately disturb wild animals of an EPS wherever they are occurring, in particular, any disturbance which is likely to impair their ability to survive, to breed or reproduce, to significantly affect the local distribution or abundance of the species to which they belong, or in the case of hibernating or migratory species, to hibernate or migrate; or
 - Damage or destroy a breeding site or resting place of a wild animal of an EPS.
- 3.25 Additional protection for bats is also afforded under the WCA, making it an offence to intentionally or recklessly disturb bats whilst they are occupying a structure or place which is used for shelter or protection, or to obstruct access to this structure or place. In addition, soprano pipistrelle (*Pipistrellus pygmaeus*), brown long-eared bat (*Plecotus auritus*), greater horseshoe bat (*Rhinolophus ferrumequinum*), barbastelle bat (*Barbastella barbastellus*),

²¹ Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. 2021. *The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain*. British Birds 114: 723-747.

Bechstein's bat (*Myotis bechsteinii*), noctule (*Nyctalus noctula*), and lesser horseshoe bat (*Rhinolophus hipposideros*) are also listed as Priority Species.

- 3.26 The 2022 desk study returned 168 records for bats within the 2km search radius around the Site. These records relate to at least 11 different species, with the closest record of a confirmed bat roosting being for common pipistrelle (*Pipistrellus pipistrellus*) located approximately 25m from the Site.
- 3.27 The only records of Annex II species returned within 6km of the Site were 4 records of Barbastelle. All four records were for passing bats/foraging bats.
- 3.28 Thirty-seven nearby records relating to EPS licences issued for bats were returned from the data search on MAGIC.

Bat Roosting

- 3.29 With respect to trees, a total of 22 trees were identified with suitable features for bat roosting, with none having High suitability, two having Moderate and 20 having Low suitability for bat roosting. Full details are provided within **Appendix EDP 4** with tree locations shown on **Plan EDP 1**.
- 3.30 In terms of buildings, a total of seven buildings were identified with suitable features for bat roosting, with one confirmed as a bat roost, none having High suitability, two having Moderate and three having Low suitability for bat roosting. Building B11 was confirmed as a bat roost based on the presence of three droppings.
- 3.31 With regards to the emergence surveys carried out in 2022, these identified and confirmed a total of six bat roosts (of three different species) within four of the buildings. Full details are provided within **Appendix EDP 4** with building locations shown on **Plan EDP 2**. **Table EDP 3.3** provides a summary of the bat roosts recorded.

Table EDP 3.3: Bat Roosts Identified Within Buildings 2022.

Building Number	Bat Species	Estimated Number	Roost Location/Access Point	Roost Status
B11	<i>Myotis</i> sp.	5	Chimney stack on eastern elevation.	Day roost.
B11	Common pipistrelle	1	From tiles below chimney stack on eastern elevation.	Day roost.
B13	Common pipistrelle	1	Under tiles on west side of the roof near the northern gable end.	Day roost.
B13	Serotine (<i>Eptesicus serotinus</i>)	1	Seen on two occasions, first re-entering above the window on the east side and then emerging from under an apex tile on the east side.	Day roost.
B14	Common pipistrelle	1	Between bargeboard and timber cladding on western gable end.	Day roost.

Building Number	Bat Species	Estimated Number	Roost Location/Access Point	Roost Status
B17	Brown long-eared	1	Flew from the centre of the building.	Day roost.

Bat Foraging/Commuting Activity

- 3.32 Overall, the habitats present within the Site were assessed as being of Low suitability for foraging and commuting bats.
- 3.33 The findings of the walked transect and automated detector surveys are provided in detail within **Appendix EDP 4**. The approximate distribution and diversity of bat species recorded during the transect surveys and the locations of the Automated Detectors are illustrated on **Plans EDP 4 to 6**.
- 3.34 In summary, levels of bat activity recorded during the walked transects were generally low and comprised common pipistrelle, Leisler's (*Nyctalus leisleri*) bat, *Myotis* sp., noctule, and soprano pipistrelle. Activity was generally concentrated on ponds and hedgerows. Levels of bat activity recorded during the automated detector surveys were generally low and comprised common pipistrelle, *Myotis* sp., soprano pipistrelle, noctule, Leisler's, long-eared bat, serotine, barbastelle, and Nathusius' pipistrelle (*Pipistrellus nathusii*). The automated detector in the north of the Site recorded the majority of calls in May and September. The detector in the north of the Site was situated near to a pond and intact-species-poor hedgerows, which were habitats with high levels of activity during the transect surveys. The detectors in the west and south of the Site recorded the majority of calls in July and these detectors are situated around the farm buildings.
- 3.35 Taking into account the diversity of bat species utilising the Site and the extent of their roosting, foraging and commuting activity, the overall bat species assemblage using the Site is considered to be of Site-level importance.

Badger

- 3.36 Badgers and their setts are protected under the Protection of Badgers Act 1992. Restrictions under this act, which apply to development include any killing, injuring, possession or cruel treatment to badgers, any interference to a sett through damage or destruction, any obstruction of access to any entrance of a sett, or any disturbance to a badger whilst it is occupying a sett. The protection afforded to badgers is primarily due to animal welfare issues and history of persecution rather than concerns over their unfavourable nature conservation status.
- 3.37 No records of badger were returned within 2km of the Site from the 2019 or the 2022 desk study. The grassland and scrub within the Site offer opportunities for badger foraging and sett building.
- 3.38 Three potential badger sett entrances were identified, within close proximity of each other, along the northern and western boundary of the caravan storage facility (see **Plan EDP 7**). A mammal path was also noted linking the three entrances. A further mammal path was also noted crossing hedge **H9**. These entrances and mammal paths were still present at the time of the Extended Phase 1 Update survey in 2022 but all three are considered inactive. An additional

badger survey was also carried out on 07 September 2022, and this confirmed that all three entrances are inactive. No other evidence of badger activity, such as latrines, hairs, snuffle holes or footprints, were found in 2019 or 2022.

3.39 Taking into account the common status of badger within the county and district and the extent within the Site, the overall population is considered to be of Site-level importance.

Other Mammal Species

3.40 Records of the following priority mammal species were returned within 2km of the Site:

- Polecat (*Mustela putorius*) – two records;
- European hedgehog (*Erinaceus europaeus*)²² – 33 records, two of which are within the Site boundary;
- Harvest mouse (*Micromys minutus*) – no records; and
- Brown hare (*Lepus europaeus*) – two records.

Great Crested Newt

3.41 Great crested newt is an EPS receiving strict protection under the Habitats Regulations as summarised above in respect of bats. Additional protection is also afforded to this species under the WCA as summarised above in respect of bats. This species is also listed as a Priority Species.

3.42 Twenty-two records of great crested newt were returned within 2km of the Site from the 2022 desk study, the nearest record was recorded in pond **P4** within the Site boundary (see **Plan EDP 8**). Thirteen records within 2km of the Site relating to EPS licences issued for great crested newt were returned from the data search on MAGIC.

3.43 The full results of the great crested newt surveys are detailed in **Appendix EDP 5** and on **Plan EDP 9** and these are summarised in **Table EDP 3.4**.

Table EDP 3.4: Great Crested Newt Survey Results.

Waterbody Ref. No.	Distance to Site	HSI Result	eDNA Result	Population Survey Results 2019	Population Survey Results 2022
P1	On site	0. – 1 - Average	Not surveyed	N/A	N/A
P2	5m	0.59 – Below average	Not surveyed	N/A	Small
P3	On site	0.49 – Poor	Not surveyed	N/A	N/A

²² Hedgehogs are also protected from capture or killing by specific methods under Schedule 6 of the WCA.

Waterbody Ref. No.	Distance to Site	HSI Result	eDNA Result	Population Survey Results 2019	Population Survey Results 2022
P4	On site	0-8 - Excellent	Not surveyed	Small	N/A
P5	On site	0.73 - Good	Not surveyed	N/A	N/A
P6	145m	0.8 - Excellent	Surveyed in 2022 only - Negative result	N/A	N/A
P7	153m	0.82 - Excellent	Not surveyed	N/A	N/A
P8	On site	0.58 - Below average	Not surveyed	N/A	N/A

3.44 Based on the survey results above, the population of great crested newt using the Site is judged to be of Local-level importance.

Other Amphibian Species

3.45 Other legally protected amphibians are rare and have a very restricted distribution²³. Twelve records for common toad (*Bufo bufo*), which is listed as a Priority Species, were returned from the desk study in 2022.

3.46 The following records were returned for other common amphibians within 2km:

- Common frog (*Rana temporaria*) - 41 records; and
- Smooth newt (*Lissotriton vulgaris*) - 29 records.

Reptiles

3.47 All species of common reptile, namely common lizard (*Zootoca vivipara*), slow worm, grass snake (*Natrix helvetica*) and adder (*Vipera berus*), receive at least limited protection from harm under the WCA, making it an offence to cause intentional killing and injuring of these species. In addition, these species are also listed as Priority Species.

3.48 One reptile record was returned within 2km of the Site in 2022, relating to grass snake.

3.49 The detailed reptile survey in 2019 recorded no reptiles within the Site and, since the suitability of the habitats within the Site for reptiles was unchanged in 2022, reptiles are currently considered to be absent from the Site and do not require any further consideration.

²³ Natterjack toad (*Epidaeia calamita*) and Northern pool frog (*Pelophylax lessonae*) are EPS, protected under WCA and Priority Species

SUMMARY OF KEY SURVEY FINDINGS

3.50 The key ecological features/receptors pertinent to the development proposals, based on the survey findings described above, are set out in **Table EDP 3.5**.

Table EDP 3.5: Summary of Ecological Features.

Feature	Key Attributes	Ecological Importance
Habitats		
Ponds	There are five on-site ponds, two of which contained evidence of great crested newt in 2019 and are a Priority Habitat.	Site-Local
Trees	The Site contains a veteran oak and other mature trees, providing important habitat and foraging for bats, birds, and invertebrates.	Local
Hedgerows	The Site has hedgerows of variable botanical diversity and condition but are a Priority Habitat.	Site-Local
Species		
Breeding Birds	Two Priority Species, dunnock, and house sparrow, were recorded across the Site, along with nine other species of conservation concern.	Site
Bats	Two trees have Moderate bat roosting suitability. Day roosts were recorded in four buildings within the Site. Low levels of foraging and commuting activity by common and widespread species were recorded, primarily along the hedgerows.	Local
Great Crested Newts	A small population size of great crested newt has been recorded on Site in 2019 and off-site only in 2022.	Local

Section 4 Predicted Impacts and Mitigation

4.1 This section of the Ecological Appraisal considers the likely impacts of the development proposals, as illustrated in **Appendix EDP 1**, on the existing ecological resource. Where impacts cannot be avoided by inherent mitigation alone, additional mitigation or enhancement measures are recommended, which if implemented, would as a minimum enable the proposed development to meet legislative and/or planning policy requirements.

EMBEDDED MITIGATION

4.2 EDP has provided input throughout the iterative design process so the development layout, although illustrative, reflects some important measures to avoid, mitigate or compensate for ecological impacts as well as other measures designed to provide long-term ecological enhancements. This embedded mitigation comprises the following:

- Retention of valuable habitats, such as ponds, hedgerows, and mature trees, known to support birds, bats and great crested newts;
- Inclusion of informal greenspace within the development where the creation of wildflower areas will be ecologically valuable and create a biodiverse habitat; and
- Inclusion of a sustainable drainage system (SuDS), to maintain run-off rates, maintain or improve the quality of surface water discharging into ditches and watercourses and to create ecological valuable wetland habitat.

DESIGNATED SITES

Statutory Designations

4.3 Statutory designations receive legal protection under various international and national legislative instruments. This protection is also reflected in policies included within the NPPF, which are given material consideration during the planning application process.

4.4 There are no statutory designated sites of international importance within 10km of the Site. There are three nationally important statutory designations and ten county important designations within 5km of the Site, as detailed within **Section 3**. However, when considering the effects of the proposed development at the Site, no significant direct or indirect adverse effects are considered likely to occur to these statutory designations due to the degree of geographical separation from the Site, their reasons for the designation, the lack of any effect-receptor pathways connecting statutory designations to the Site and the nature of the development proposals.

Non-statutory Designations

4.5 No part of the Site is covered by any non-statutory designations but there are 34 non-statutory designated Sites within 2km of the Site, these are detailed in **Section 3**. The nearest ecosite is

Fields East of Balsall located 42m north-west of the Site and the nearest LWS is Little Beanit Farm Meadow located 200m east of the Site.

4.6 In general, given the spatial separation of the non-statutory sites and Ancient Woodland, and the nature of the development proposals, there is not considered to be a risk of any direct or indirect effects arising. With respect to Fields East of Balsall ecosite, this a grassland field, which is separated from the Site by substantial hedgerows and a road (Waste Lane) and therefore, despite being in close proximity to the Site, is not considered to be at risk of adverse impacts.

HABITATS

4.7 As described above with respect to embedded mitigation, the development design has sought to retain important habitats within the layout as far as possible. However, some habitat loss is unavoidable to make way for the proposed development. The assumed habitat losses during construction are quantified within the biodiversity net gain (BNG) calculations, which have been undertaken using a Biodiversity Metric, which is contained within **Appendix EDP 7**.

4.8 Based on the Illustrative Masterplan and associated landscape proposals, assumptions can be made regarding the habitats present post-development, made up of habitats retained in their current state, habitats retained and enhanced, and newly created habitats. These assumptions are described in further detail within the Biodiversity Metric and are summarised below:

- 1.06km of existing hedgerows retained in their current state;
- Enhancement of 0.73km of existing hedgerows, which are either currently species-poor or species-rich but in poor condition, through gap planting and long-term management to improve structure;
- Enhancement of 0.022ha of existing ponds.
- Enhancement of 1.15ha of existing grassland, which is currently modified (species-poor), through seeding and long-term management to promote botanical diversity; and
- Creation of 0.002 ha of new species-rich grassland and planting of 0.4km of new species-rich hedgerow and 0.55km of native hedgerow within the Site's public open space.

4.9 The net effect of all habitat retention, enhancement and creation is described fully within **Appendix EDP 7** and is summarised in **Table EDP 4.1**.

Table EDP 4.1: Headline Results from Biodiversity Metric based on the Illustrative Masterplan.

	Habitat Units	Hedgerow Units
Total net unit change	8.59	5.34
Total net % change	36.63%	38.67%

- 4.10 Based on the BNG calculations described above, the net impact on habitats, following implementation and maturation of the proposed landscaping, is predicted to be positive. However, in the absence of further mitigation measures, there is a risk of the following:
- Damage/deterioration/pollution of retained habitats from adjacent construction activities; and
 - Not achieving target condition for retained and new habitats due to inappropriate management.
- 4.11 To avoid damage/disturbance of retained habitats during construction, it is proposed that Ecological Protection Zones (EPZ) with an appropriate buffer are established during the construction phase, including temporary protective fencing and signage. It is recommended that such measures should be set out in an Ecological Construction Method Statement (ECMS) or similar document, which can be secured through an appropriately worded planning condition.
- 4.12 Specifications for new planting and other habitat creation, such as wildflower meadows, should be provided with a detailed Soft Landscaping Scheme secured by a planning condition. In addition, it is proposed that measures to restore and enhance existing habitats, to ensure successful establishment of new habitats, and to maintain the value of all ecological features in the long-term, are detailed within a Landscape and Ecology Management Plan (LEMP), or similar, which can be secured by planning condition.
- 4.13 Some of the habitats present within the Site, including those of Low or Negligible intrinsic value, require further consideration in relation to supporting protected species and these are discussed in turn below.

PROTECTED, PRIORITY OR OTHER NOTABLE SPECIES

- 4.14 Baseline investigations have identified protected and/or notable species implications for the Site relating to birds, bats, great crested newts, reptiles/other amphibians, and badgers.

Birds

- 4.15 The hedgerows, on-site trees and ponds support a variety of generalist and farmland breeding bird species. Two Priority Species found on the Site are house sparrow and dunnock.
- 4.16 Inherent mitigation incorporated in the development layout will include the retention and buffering of the majority of hedgerows and trees, which represent the main nesting habitats on-site. It is proposed that measures to protect these habitats are included in the ECMS as described above.
- 4.17 Some hedgerow and tree loss is unavoidable to facilitate the proposed development. In order to avoid disturbance to nesting birds, it is proposed that any vegetation clearance works should be undertaken outside of the main bird breeding season (i.e. between April to August inclusive). If this is not practical, then a check for any active nests by a suitably qualified ecologist, should be undertaken immediately prior to the start of any demolition or tree/hedge clearance works. Should any active nests or nests under construction be found, then the nest should be left undisturbed, with a 5m buffer created around it, until it is no longer occupied.

4.18 The illustrative landscape proposals include new hedgerow, tree and scrub/woodland planting, which would mitigate the effects of habitat loss and provide a net gain in suitable habitat for breeding birds.

Bats

Bat Roosting

4.19 Two trees were identified as having Moderate bat roosting suitability within the Site, namely **T17** and **T23** (see **Plan EDP 1**), however, these are not anticipated to require removal and will be retained within public open space²⁴. A further 20 trees have Low bat roosting suitability, none of which would require removal to facilitate the proposed development. In line with best practice, the removal of any such trees should follow a soft felling methodology under the supervision of a Natural England bat licensed ecologist. This can be secured via the ECMS.

4.20 Four buildings (**B11**, **B13**, **B14**, and **B17**) were identified as supporting a total of six bat day roosts. An EPS licence from Natural England will be therefore required prior to the demolition of these buildings in order for the proposed works to lawfully commence, in accordance with the Conservation of Habitats and Species Regulations 2017 (as amended). A detailed method statement including all mitigation measures proposed to ensure the avoidance, mitigation and/or compensation for any potential impacts upon bats and their roost sites will be required before such a licence will be granted. A summary of the mitigation measures likely to be required is provided below.

4.21 It is considered that mitigation measures suitable for EPS licensing requirements will be achievable given the scale and nature of the proposals. The following outline strategy is based upon the current understanding of the roosts present:

- The demolition works to the buildings will be timed to coincide with the time of year when bats are least vulnerable, namely in spring or autumn (outside of the winter hibernation and summer maternity periods);
- Prior to any works commencing four no. Schwegler universal summer 2FTH bat boxes (or similar), ideal as a unit for all bat species, will be installed on suitable retained trees within the Site. This will provide continued roosting opportunities for bats in addition to being retained as enhanced roosting provision at the site in the long-term;
- Prior to any works commencing, the site managers and contractors will be briefed by a bat licensed ecologist, to make them aware of the possible presence of bats within the buildings, their legal protection and of the working practices that would avoid harming any bats that may be present. A copy of the licence documents will be available on-site at all times during the works;
- Immediately prior to works commencing, the bat licensed ecologist will undertake a thorough search of the buildings using a Clulite, ladder and endoscope where necessary.

²⁴ Based upon Table EDP 2.3 (Summary of Tree Losses and Retention) within EDP Arboricultural Impact Assessment (edp5006_r013)

Any bats found will be removed by the licensed ecologist and safely moved to one of the bat boxes;

- The bat licensed ecologist will then supervise the soft-strip of the roof tiles in areas that have bat roost potential or have been identified as being used by roosting bats. A soft-strip methodology involves the careful removal by hand/hand tools, with materials removed carefully away and not rolled or sprung to avoid potential harm to bats. Any bats found will be removed by the licensed ecologist and immediately safely moved to one of the bat boxes;
- When all features with bat roost potential have been removed by the above methodology and the bat licensed ecologist has declared the buildings free of bats, the remainder of the buildings work can be undertaken without supervision; and
- Further replacement roost habitat is also likely to be required for brown-long eared bats, which require open roof voids rather than crevice features or bat boxes. This can either be provided within a building constructed as part of the development (such as a garage/outhouse) or within a dedicated structure/bat house constructed in a suitable location, which provides direct access to nearby foraging habitat.

4.22 Subject to the implementation of the strategy outlined above, impacts upon roosting bats can be avoided or mitigated and a net gain in roosting opportunities provided overall.

Bat Foraging/Commuting

4.23 The hedgerows and tree lines within the Site were found to support low levels of bat foraging and commuting activity. The majority of suitable habitat will be retained and buffered within the proposed development layout, however, in the absence of mitigation there is a risk that light spill onto these habitats would deter bats from using them. It is therefore proposed that a wildlife sensitive streetlighting design is secured by planning condition, which ensures that such light spill is avoided or minimised.

4.24 New opportunities for foraging and commuting bats will be provided through the enhancement of retained habitats and the creation of new habitats, such as tree planting, species-rich grassland creation, and the creation of an orchard and/or allotments. This will mitigate the impact of the limited loss of foraging and committing habitat that would be lost to development.

4.25 With these measures in place, EDP considers that the proposed development will have a beneficial effect on the local bat assemblage overall.

Badger and Other Mammals

4.26 Three potential badger sett entrances were identified, within close proximity of each other, along the northern and western boundary of the caravan storage facility (see **Plan EDP 7**). A mammal path was also noted linking the three entrances. A further mammal path was also noted crossing hedge **H9**. These entrances and mammal paths were still present at the time of the Extended Phase 1 Update survey in 2022 but all three setts are considered inactive. No other evidence of badger activity, such as latrines, hairs, snuffle holes or footprints, were found in 2019 or 2022.

- 4.27 The hedgerow in which the sett entrances were found is to be retained within the development layout, however, should the setts become active prior to the development commencing, badgers could be disturbed or harmed during construction in close proximity. An update walkover survey of the Site by a suitably qualified ecologist, immediately prior to the commencement of construction or site clearance works, is therefore proposed to determine whether any new setts have been established during the interim period. This can be secured via the ECMS.
- 4.28 In the event that active badger setts are recorded in future, and works within 30m cannot be avoided by design, a Natural England development licence will be required prior to works commencing. Depending on impacts that are anticipated, badgers may need to be temporarily or permanently excluded from the sett in question.
- 4.29 There were records returned from the desk study for polecat, hedgehog, and brown hare within 2km of the Site boundary and two records of hedgehog within the Site boundary. Hedgehogs and polecats are protected by under Schedule 6 of the WCA, making it illegal to kill or capture them using certain methods. Along with brown hare they are also protected in Britain under the Wild Mammals Protection Act (1996), prohibiting cruelty and mistreatment, and they are listed as a Priority Species.
- 4.30 As hedgehogs may seek refuge and hibernate within piles of dead vegetation and man-made materials, and polecat may use these features for refuge in the winter, removal of such material should be conducted outside of November to February inclusive. During the construction phase, it is also recommended that materials should not be stored near areas of retained habitat to avoid them attracting wildlife. If removal is necessary, these should be hand searched prior to removal.
- 4.31 In addition, the following measures are proposed to be put in place throughout the construction phase of the development (secured via the ECMS):
- Night working will be restricted to an essential minimum;
 - All trenches/excavations will be covered up overnight and/or a means of escape provided to avoid wildlife becoming trapped; and
 - Mammal gates are proposed at 250m intervals around the security fence to maintain access to the Site and surrounding landscape.
- 4.32 The landscape enhancements will increase foraging opportunities for this species and potentially benefit the local populations.

Great Crested Newt

- 4.33 Evidence of great crested newt (including evidence of breeding) was found in 2019 in ponds **P2**, **P4**, and **P5**, whilst in 2022 evidence was only found in pond **P2**. As **P2** is an off-site pond it will not be impacted by the development and **P4** and **P5** are to retained within the development layout within the northern public open space, such that there will be no loss of breeding ponds.
- 4.34 Additional permanently wet SuDS features are also proposed elsewhere within the development, which will provide further aquatic habitat for great crested newts, whilst proposed

woody planting and species-rich grassland creation, in particular that proposed within the northern public open space, will provide new terrestrial habitat for this species.

- 4.35 The loss of great crested newt terrestrial habitat within 250m of ponds **P2**, **P4**, and **P5** will require a Natural England EPS licence to be obtained in advance of works. This could be achieved via a traditional site-based licence, or via the District level licence, which is expected to be available in Solihull within the next 12 months.
- 4.36 Whether under a site-based or District level licence, precautionary measures will be required to avoid harming great crested newts during site clearance and construction works, including some or all of the following:
- Exclusion of great crested newts from the construction footprint;
 - Capture and translocation of great crested newts from relevant terrestrial habitats; and
 - Supervised vegetation clearance and topsoil stripping.

Section 5 Summary and Conclusions

5.1 This section of the Ecological Appraisal summarises the Ecology Strategy for the proposed development, in terms of inherent and recommended additional mitigation measures, and then provides the overall conclusions of the appraisal.

SUMMARY OF ECOLOGY MITIGATION STRATEGY

5.2 **Table EDP 5.1** provides an overview of Mitigation and Enhancement Strategy described in **Section 4**.

Table EDP 5.1: Summary of Proposed Mitigation and Enhancement.

Mitigation Type	Key Principles	Mechanism(s) to Secure Delivery
Avoid by design	Retention of habitats with appropriate development buffers: <ul style="list-style-type: none"> • 79% of existing tree stock²⁵; and • 1km hedgerows. 	Habitat retention is embedded in the development Parameter Plan, which will be an ‘approved plan’ to which future detailed designs must align.
Avoid or minimise construction impacts	Sensitive methods of operation during enabling and construction works: <ul style="list-style-type: none"> • Control of working hours; • Minimise noise and vibration; • Air quality measures/ dust suppression; • Control/eradication of invasive species; • Surface water management; • Storage of fuels/chemicals; and • Sensitive lighting. 	Construction Environmental Management Plan (CEMP) secured via pre-commencement planning condition.
	Protection of retained habitats <ul style="list-style-type: none"> • Fencing and signage to create development exclusion zones. 	Arboricultural Method Statement (AMS) and ECMS secured via pre-commencement planning condition.

²⁵ Based upon Table EDP 2.3 (Summary of Tree Losses and Retention) within EDP Arboricultural Impact Assessment (edp5006_r013)

Mitigation Type	Key Principles	Mechanism(s) to Secure Delivery
	<p>Methods to avoid harming individuals or interfering with breeding of protected species prior to/during habitat destruction:</p> <ul style="list-style-type: none"> • Pre-commencement checks/surveys; • Avoidance of trapping animals in excavations; • Timings to avoid sensitive periods/breeding seasons; • Capture and translocation of animals from construction footprint; • Phased vegetation clearance/draining of water bodies; • Maintaining dispersal routes; • Destructive searches; and • Supervision by Ecological Clerk of Works (ECoW). 	<p>ECMS secured via pre-commencement planning condition.</p> <p>Detailed Method Statements for bats and great crested newts submitted as part of Natural England licence applications.</p>
Mitigate or compensate for habitat loss and deliver net gains	<p>Habitat enhancement:</p> <ul style="list-style-type: none"> • Existing hedgerows; and • Existing grasslands. <p>Habitat creation:</p> <ul style="list-style-type: none"> • New hedgerow planting; and • New grassland seeding. 	<p>Space for new habitat is embedded in the development Parameter Plan, which will be an 'approved plan' to which detailed designs must align.</p> <p>Landscape and Ecological Management Plan (LEMP) to be secured by planning condition.</p>
	<p>Habitat features to be provided in suitable locations:</p> <ul style="list-style-type: none"> • Bat boxes and/or bat bricks; • Bird boxes; and • Great crested newt hibernacula. 	<p>LEMP to be secured by planning condition.</p> <p>Measures for bats and great crested newts submitted as part of Natural England licence applications.</p>
	<p>Measures to maintain or enhance habitat connectivity:</p> <ul style="list-style-type: none"> • Amphibian friendly kerbs/drains. 	<p>LEMP to be secured by planning condition.</p> <p>Detailed engineering designs submitted as part of Reserved Matters applications.</p> <p>Measures for great crested newts submitted as part of Natural England licence application.</p>

Mitigation Type	Key Principles	Mechanism(s) to Secure Delivery
	Lighting strategy to avoiding disturbance of nocturnal species, in particular foraging/commuting bats	Detailed lighting design to be secured by planning condition.
Maintenance, Monitoring and Management post-construction	Habitat-specific, namely measures to: <ul style="list-style-type: none"> Enhance retained habitat, and to ensure new habitat becomes established, to achieve target condition; and Monitor and maintain habitats in good ecological condition once enhanced/established. 	LEMP to be secured by planning condition.
	Species-specific, namely measures to: <ul style="list-style-type: none"> Monitor key species populations, including great crested newt and bats; Maintain habitat features (bat/bird boxes and newt hibernacula) in good condition or replace as necessary. 	LEMP to be secured by planning condition. Monitoring proposals for bats and great crested newts submitted as part of Natural England licence applications.

CONCLUSIONS

- 5.3 EDP’s desk- and field-based baseline investigations have demonstrated that there are no designations present that are pertinent to, or would be materially affected by, the development proposals.
- 5.4 The majority of habitats within the Site are of only limited (Site-level) intrinsic nature conservation value or less, comprising intensively managed grassland. Locally valuable habitats are primarily restricted to the field boundaries, including the hedgerows, trees and two ponds. These habitats support, or potentially support, only small populations/typical assemblages of protected/Priority Species, of Site to Local-level importance including birds, badgers, and bats, great crested newts, and to a lesser extent hedgehogs.
- 5.5 Accordingly, a proportionate and appropriate response for the avoidance, mitigation and compensation of any predicted impacts and ecological effects is considered in this report in outline and summarised above. These measures include: those avoidance and habitat retention measures already embedded within the layout design; those sensitive timings and working methods, which should be implemented at the construction stage (where required); those habitat enhancement and creation measures, which should be designed and specified in detail along with the ongoing management of these features to ensure that the Landscape and Ecology Strategy is achieved in the long-term.
- 5.6 EDP concludes that, in light of the embedded mitigation and subject to the full implementation of the additional measures summarised above, the proposed development is capable of

compliance with relevant planning policy and legislation and can deliver net benefits for wildlife and biodiversity. Indeed, the predicted net gains in biodiversity resulting from the proposed development (36.63% gain in Habitat Units and 38.67% gain in Hedgerow Units based on the Illustrative Masterplan) are well in excess of the 10% level, which is expected to become mandatory in November 2023 under the Environment Act 2021 and should therefore be viewed as a significant benefit of the proposals.

Appendix EDP 1 Illustrative Masterplan

The following risks are identified as unusual or unfamiliar to a competent contractor

CONSTRUCTION RISKS
There are no significant or unfamiliar risks

DEMOLITION RISKS (FUTURE)
There are no significant or unfamiliar risks

It is assumed that all work will be carried out by a competent contractor working, where appropriate, to an approved method statement

Notes:



Key

	Proposed Site Boundary (total area 12.7ha)		New Area of Play
	Potential Site Access Point (subject to detailed design)		Children's Play Trail
	'Millennium Way' Existing Promoted Pedestrian Route		Proposed Residential Development (circa 6.7ha) for up to 250 homes
	Existing Pedestrian Route		Existing Trees and Hedges Retained
	Pedestrian/Emergency Access Point		New or Enhanced Planting to Supplement Existing Field Boundaries and Protect Amenity of Neighbouring Properties
	Provision for Potential Pedestrian/Cycle Link to Neighbouring Future Development		Possible Location of Community Orchard or Other Similar Use
	Proposed Pedestrian Crossing Point		Potential Landscaping and new tree planting
	Existing Bus Stop		Wild-flower Meadow providing ecological enhancements
	Existing Bus Stop to be Relocated		
	Relocated and Enhanced Bus Stop		

REV	DETAILS	DATE	CHECKED
 chartered architects			
0143 24457 - mail@bhbarchitects.co.uk Land at Pheasant Oak Farm, Balsall Common Barwood Land		DRAWING NO. 3444 - 04	DATE Aug '22
PLANNING		DRAWN MJM	CHECKED MW
The copyright of this drawing and design is vested in the Author and shall not be copied or reproduced without written consent. All dimensions given are to be verified on site by the responsible contractor. Do not scale dimensions from this drawing.			

Appendix EDP 2 Extended Phase 1 Habitat Survey

METHODOLOGY

- A2.1 The update Extended Phase 1 survey was completed by a suitably experienced surveyor on 18 May 2022 following the methodology described in **Section 2** of this report.

RESULTS

- A2.2 The different habitats present within the Site are described and evaluated in turn below. The following should be read in conjunction with **Plan EDP 1**.

Improved Grassland

- A2.3 Of the 12 fields on the Site, 11 are improved grassland. The sward is dominated by perennial rye (*Lolium perenne*), Yorkshire fog (*Holcus lanatus*), common bent (*Agrostis capillaris*), poa sp., daisy (*Bellis perennis*), and ribwort plantain (*Plantago lanceolata*). **Image EDP A2.1** provides an example of these fields.



Image EDP A2.1: An example of the improved grassland fields.

A2.4 Given the species-poor composition of the grassland sward across these areas, and the common nature of this habitat within the local area, improved grassland is considered to be of Negligible ecological importance.

Poor Semi-improved Grassland

A2.5 There are two areas of poor semi-improved grassland on the Site, one large field on the western boundary and the other is an area of grassland between building **B8** and buildings **B1–5**. Both have a similar species composition to the improved grassland fields, except the large field on the western boundary is more tussocky with occasional rushes (*Juncus* sp.), as can be seen in **Image EDP A2.2** from 2019. It was not possible to access these field in 2022 due to the presence of geese and ducks. The sward height was significantly reduced and so likely the species composition. Significant patches of bare ground were also recorded.



Image EDP A2.2: Semi-improved grassland field on western boundary.

A2.6 The smaller area of semi-improved grassland outside of the duck and geese grazed fields form part of a mosaic habitat, intermixed with scrub, rank grassland, and tall ruderal, offering potential reptile and amphibian hibernacula. There is also a large amount of farm machinery scattered around this area.

A2.7 Given the species-poor composition of the grassland sward this habitat is considered to be of Negligible ecological importance.

Scrub and Marshy Grassland

- A2.8 There is only a small area of dense continuous scrub and marshy grassland found in one area of the Site, forming part of the mosaic habitat with the smaller area of semi-improved grassland, south of building **B8**. The scattered scrub is limited and only found around the farm buildings **B8**, **B9** and to the north of this area. Bramble (*Rubus fruticosus* agg.) is dominant with common nettle intermixed. Dispersed through these habitats are piles of rubble, old pallets and bricks and larger vehicles and caravans, as seen in **Images EDP A2.3** and **A2.4**.



Image EDP A2.3: Dense continuous scrub.



Image EDP A2.4: An example of the rubble and waste piles.

- A2.9 The scrub and marshy grassland habitats are considered to be of Site-level ecological importance due to the potential for the scrub to provide potential reptile and amphibian hibernacula.

Tall Ruderal

- A2.10 The Site supports several areas of tall ruderals, mostly around the farm buildings in the west of the Site and netted fowl enclosures where there are likely to be higher nutrients.
- A2.11 Tall ruderals can be aggressive species and can easily outcompete more desirable wildflowers which favour nutrient poor areas. Tall ruderals are considered to be Site-level ecological importance.

Amenity Grassland

- A2.12 To the south of buildings **B11**, **B13** and **B14** is an area of amenity grassland. Due to its poor species composition it is considered to be of Negligible ecological importance.

Hedgerows

- A2.13 Hedgerows are present along the majority of field margins, and an example photograph is provided as **Image EDP A2.5**. The majority of hedgerows are intact and species-poor hedgerow or hedgerow with trees, with the rest comprising a line of trees (**H7**), an intact species-poor conifer hedge and defunct hedges. The hedges primarily contain common hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*) and oak (*Quercus robur*), elm (*Ulmus* sp.), and holly (*Ilex aquifolium*). The conifer hedge is leylandii (*Cupressus × leylandii*) and the line of trees

along the western boundary consists of oak, holly, hazel (*Corylus avellana*), and beech (*Fagus sylvaticus*).



Image EDP A2.5: An example of the intact species-poor hedges found on site.

A2.14 The hedgerows are a Priority Habitat and are considered to be of Site level ecological importance.

Trees

A2.15 The Site supports many broadleaved trees, one of which (**T17** on **Plan EDP 1**) is classed as a veteran oak (*Quercus robur*). The remaining trees are primarily mature, and species predominantly comprise pedunculate oak, ash (*Fraxinus excelsior*) and *Eucalyptus* sp. An example of a mature oak tree is given in **Image EDP A2.6**.



Image EDP A2.6: A mature oak tree within a hedgerow.

A2.16 Mature trees are considered to be of Local-level ecological importance.

Standing Water

A2.17 There are five ponds on the Site, although one of these, referenced as **TN2** on **Plan EDP 1** is a very shallow, boggy area, with *Phragmites* sp. and soft rush (*Juncus effusus*) and ponds **P1** and **P3** hold very little water.

A2.18 Ponds **P4** and **P5** are considered to be a priority due to the historic presence of great crested newts (see **Appendix EDP 5** for details) and are considered to be of Local-level importance. All remaining ponds are considered to be of Site-level importance.

Ditches

A2.19 There are wet and dry ditches across the Site, with a wet ditch along the eastern boundary, and along hedges **H2** and **H16**. There is also a dry ditch along hedge **H10**, within the caravan storage facilities hard-standing.

A2.20 Both the dry and wet ditches are considered to be of Site-level ecological importance.

Buildings

A2.21 There are 21 buildings around the Site. Buildings **B2 - B7, B9, B15, and B17-B19**, are barns for storage and livestock, with a mix of tile and corrugated iron metal roofs. Buildings **B1** and **B12**, are brick sheds and/or outbuildings, whilst **B10** and **B21** are wooden sheds. Building **B8** is two metal shipping containers with a metal corrugated roof over the top. Building **B11** is a two-storey brick house with a pitched roof covered in clay tiles. Building **B13** is a two-storey brick barn, converted for offices, with a tile roof. Building **B14** is a single storey brick building (part breeze block) with a metal roof. Buildings **B16** and **B20** are both single storey converted barns with metal corrugated roofs.

A2.22 All the buildings are of Negligible ecological value except **B3, B13, B14, B17, and B21**, which have bat roosting potential and **B11**, which has a confirmed roost (see **Appendix EDP 4** and **Plan EDP 2** for more details).

Hardstanding

A2.23 Predominantly though the middle and in the west of the Site, a tarmacked road dissects the amenity grassland and leads to the largest area of hardstanding where buildings **B11-B21** are, along with a caravan storage facility.

A2.24 This habitat is considered to be of Negligible ecological importance.

Earth Bank and Wall

A2.25 There is an earth-bank around the hardstanding caravan storage facility. There is sparse tall ruderal vegetation along it and it has low reptile potential. There is also a wall made of 2.5m high concrete slabs forming a barrier around a waste heap.

A2.26 Both features are considered to be of Negligible ecological importance.

Bare Ground

A2.27 There are several areas of bare earth, predominantly around the farm and in pockets amongst the improved grassland fields that house the various ducks and geese. The habitat is considered to be of Negligible ecological importance.

Appendix EDP 3 Breeding Bird Survey

METHODOLOGY

- A3.1 A pilot breeding bird survey visit was first carried out in 2019. The survey was subsequently updated in 2022.
- A3.2 The dates and timings of both pilot breeding bird survey visits, and the weather conditions encountered, are summarised in **Table EDP A3.1**.

Table EDP A3.1: Pilot Breeding Bird Surveys – Visit Details.

Visit Number	Date	Timing of Survey	Wind Speed (Beaufort Scale)	Cloud Cover (%)	Precipitation
1	24.04.2019	06:30–09:30	2	100	Nil
1	11.05.2022	05:20–09:30	3-4	30	Nil

- A3.3 During the surveys the Site was walked at a slow pace to enable all birds detected to be identified and located. Frequent stops were made to scan suitable habitats and to listen for singing and calling birds. All areas of suitable breeding habitat within the Site boundary and immediately adjacent areas were approached to within 50m.
- A3.4 During the survey the location and activity of each bird detected (including those seen or heard) was recorded and mapped using standard two-letter British Trust for Ornithology (BTO) species codes. The breeding status of each bird species identified at the Site was determined according to the nature and frequency of the behavioural elements recorded, as set out in **Table EDP A3.2**.

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

Breeding Status	Examples of Behaviour Exhibited
Confirmed	<ul style="list-style-type: none"> • Distraction display; • Nest building; • Nest with eggs; • Nest with young; • Used nest; • Recently fledged young; and • Adult carrying faecal sac/food.
Possible	<ul style="list-style-type: none"> • Species observed in breeding season in possible nesting habitat; • Male in song; and • Adult giving alarm call.
Non-breeder	<ul style="list-style-type: none"> • Feeding birds only; • Birds flying over only; and • Lack of suitable breeding habitat.

A3.5 To inform the assessment in this report, the numbers of potential territories identified, the abundance of species at the County and National level, the quality of the habitat present and the geographical range of the birds concerned have been considered, based on national and regional accounts.

A3.6 The conservation status of each species of bird was also taken into account and the following lists were considered:

- Schedule 1 of the WCA – affords greater protection to certain breeding species that are considered appropriately at risk nationally and are listed additional legal protection accordingly;
- Priority Species, namely Species of Principal Importance included under Section 41 (England) of the NERC Act 2006²⁶; and
- Birds of Conservation Concern²⁷ - under this approach UK bird populations are assessed, using quantitative criteria, to determine the population status of each species and then placed on one of three lists; Red, Amber or Green.

Limitations

A3.7 As with all breeding bird surveys following this technique, the process is open to some subjectivity in interpretation except where active nests are located. Therefore, recorded locations indicate the 'centre' of a territory and not necessarily the breeding location.

A3.8 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, i.e. days/periods with strong winds and heavy or persistent rain were generally avoided. The results are therefore not significantly limited by seasonal or climatic factors.

RESULTS

A3.9 A total of 26 bird species were recorded during the 2022 survey, of which 2 were confirmed as breeding on or immediately adjacent to the Site and 18 were recorded as possibly breeding. Full details of each species recorded, including their breeding status on-site and their conservation status, are provided in **Table EDP A3.3**.

A3.10 Of the 20 bird species that were recorded as breeding or possibly breeding onsite, 11 are species of nature conservation importance, namely being listed on Schedule 1 of the WCA, being a Priority Species and/or being species included on the latest Red and Amber lists of

²⁶ DEFRA and Natural England, (2022), List of habitats and species of principal importance in England. Available online, <https://www.gov.uk/government/publications/habitats-and-species-of-principal-importance-in-england>

²⁷ Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. 2021. *The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain*. British Birds 114: 723-747.

Birds of Conservation Concern. The distribution of these species recorded within the Site is shown on **Plan EDP 3**.

A3.11 The abundance and diversity of bird species recorded onsite was consistent with the extent and diversity of nesting habitats present. The majority of species recorded were associated with the buildings, hedgerows, and ponds on-site. The limited extent, or absence, of other suitable habitats such as scrub, mosaic, and woodland limits the ability of the Site to support large breeding populations of habitat specialist species. For this reason, the breeding bird assemblage is judged to be of no greater than Local-level ecological importance.

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

Common Name	Scientific Name	UK Status	Regional Status ²⁸	Onsite Status	Estimated No. Breeding Pairs	Survey Observations
Blackbird	<i>Turdus merula</i>	Green List	Abundant resident, passage migrant and winter visitor	Confirmed	5	A total of five males observed across the Site, mostly in hedgerows.
Blackcap	<i>Sylvia atricapilla</i>	Green List	Very common to abundant summer resident	Possible	0–2	A total of two males seen on-site and one seen just offsite to the north.
Blue Tit	<i>Cyanistes caeruleus</i>	Green List	Abundant resident	Possible	3–9	Three pairs and six males seen on site, mostly in hedgerows.
Carrion Crow	<i>Corvus corone</i>	Green List	Abundant resident	Non-breeder	N/A	A total of five birds recorded across the Site, though no nests recorded, so presumed to not be nesting on-site.
Chaffinch	<i>Fringilla coelebs</i>	Green List	Very common to abundant resident	Possible	0–1	Only one male recorded along the south-east corner hedgerow.
Chiffchaff	<i>Phylloscopus collybita</i>	Green List	Very common summer resident	Possible	0–2	Two males recorded along the northern boundary of the Site.
Collared Dove	<i>Streptopelia decaocto</i>	Green List	Common to very common resident	Possible	2–3	Two pairs and one individual recorded in the south-west of the Site.

²⁸ West Midland Bird Club, D.W. Emley BEM (ed.), (2021), The Birds of Staffordshire, Warwickshire, Worcestershire and the West Midlands 2019, Annual Report No.86.

Common Name	Scientific Name	UK Status	Regional Status ²⁸	Onsite Status	Estimated No. Breeding Pairs	Survey Observations
Dunnock	<i>Prunella modularis</i>	Amber List Priority List	Abundant resident	Possible	0-5	Five males recorded across the Site in hedgerows.
Goldfinch	<i>Carduelis carduelis</i>	Green List	Very common summer visitor and partial migrant	Possible	2-4	Two pairs and two males recorded across the Site.
Great Tit	<i>Parus major</i>	Green List	Abundant resident	Possible	1-6	One pair and five males observed across the Site.
Greenfinch	<i>Chloris chloris</i>	Red List	Fairly common to common resident	Possible	0-4	Four birds observed in one spot on the west side of the Site.
House Sparrow	<i>Passer domesticus</i>	Red List Priority List	Abundant to very common, though much declined, resident	Possible	0-19	A total of 56 birds recorded on-site, with 19 confirmed males. Recorded around the buildings in the south of the Site.
Jackdaw	<i>Corvus monedula</i>	Green List	Very common resident	Non-breeder	N/A	A total of 21 birds recorded across the Site, though no nests recorded, so presumed to not be nesting on-site.
Magpie	<i>Pica pica</i>	Green List	Very common resident	Possible	0-2	Two recorded on-site and one recorded just off-site.
Mallard	<i>Anas platyrhynchos</i>	Amber List	Common resident	Possible	1	A male and a female were recorded on pond P4 , in the north of the Site.
Moorhen	<i>Gallinula chloropus</i>	Amber List	Very common resident	Confirmed	1	Recorded just off site on pond P2 .

Common Name	Scientific Name	UK Status	Regional Status ²⁸	Onsite Status	Estimated No. Breeding Pairs	Survey Observations
Pied Wagtail	<i>Motacilla alba</i>	Green List	Common resident, summer resident, and passage migrant	Possible	0-1	One male recorded around the farm buildings in the south of the Site.
Raven	<i>Corvus corax</i>	Green List	Frequent visitor and uncommon to frequent, but increasing, resident	Non-breeder	N/A	A total of two birds recorded across the Site, though no nests recorded, so presumed to not be nesting on-site.
Robin	<i>Erithacus rubecula</i>	Green List	Abundant resident	Possible	0-7	A total of seven males recorded across the Site.
Rook	<i>Corvus frugilegus</i>	Amber List	Very common or abundant resident	Non-breeder	N/A	A total of five birds recorded in one field, with no rookery recorded, so presumed to not be nesting on-site.
Starling	<i>Sturnus vulgaris</i>	Red List	Very common to abundant resident	Non-breeder	N/A	One individual recorded.
Stock Dove	<i>Columba oenas</i>	Amber List	Very common resident	Possible	1-3	One pair and two individuals recorded across the Site.

Common Name	Scientific Name	UK Status	Regional Status ²⁸	Onsite Status	Estimated No. Breeding Pairs	Survey Observations
Swallow	<i>Hirundo rustica</i>	Green List	Very common, though declined, summer resident and passage migrant	Non-breeder	N/A	Foraging over the Site only.
Whitethroat	<i>Sylvia communis</i>	Amber List	Very common to abundant summer resident	Possible	0-3	Three individuals recorded across the Site in hedgerows.
Woodpigeon	<i>Columba palumbus</i>	Amber List	Abundant resident	Possible	8-9	Eight pairs and one male recorded across the Site.
Wren	<i>Troglodytes troglodytes</i>	Amber List	Abundant resident	Possible	0-6	Six males recorded across the Site.

A3.12 A list of the species recorded in 2019 can be found in **Table EDP A3.4**.

Table EDP A3.4: Species List for the Pilot Breeding Bird Survey 2019.

Common Name	Scientific Name
Blackbird	<i>Turdus merula</i>
Blackcap	<i>Sylvia atricapilla</i>
Black-headed gull	<i>Chroicocephalus ridibundus</i>
Blue Tit	<i>Cyanistes caeruleus</i>
Carrion crow	<i>Corvus corone</i>
Chaffinch	<i>Fringilla coelebs</i>
Chiffchaff	<i>Phylloscopus collybita</i>
Coal Tit	<i>Periparus ater</i>
Collared Dove	<i>Streptopelia decaocto</i>
Dunnock	<i>Prunella modularis</i>
Goldfinch	<i>Carduelis carduelis</i>
Great Tit	<i>Parus major</i>
Greenfinch	<i>Chloris chloris</i>
House Sparrow	<i>Passer domesticus</i>
Jackdaw	<i>Corvus monedula</i>
Linnet	<i>Linaria cannabina</i>
Magpie	<i>Pica pica</i>
Mallard	<i>Anas platyrhynchos</i>
Marsh Tit	<i>Poecile palustris</i>
Moorhen	<i>Gallinula chloropus</i>
Pied Wagtail	<i>Motacilla alba</i>
Robin	<i>Erithacus rubecula</i>
Song Thrush	<i>Turdus philomelos</i>
Sparrowhawk	<i>Accipiter nisus</i>
Starling	<i>Sturnus vulgaris</i>
Stock Dove	<i>Columba oenas</i>
Swallow	<i>Hirundo rustica</i>
Wood pigeon	<i>Columba palumbus</i>
Wren	<i>Troglodytes troglodytes</i>

Appendix EDP 4 Bat Surveys

METHODOLOGY

A4.1 The scope of bat surveys undertaken at the Site was determined following completion of the initial Extended Phase 1 survey in 2019 and the update Extended Phase 1 survey in 2022, and review of relevant desk study findings and with reference to good practice guidelines published by the Bat Conservation Trust²⁹.

Bat Roost Surveys

Preliminary Assessment of Trees

A4.2 Owing to the presence of suitably mature trees within or adjacent to the Site, a preliminary (ground level) visual assessment of these trees was undertaken to record any evidence of roosting bats or any features capable of supporting roosting bats.

A4.3 The survey was completed on 05 February 2019 by a suitably experienced ecologist in accordance with the good practice guidelines referred to above. An update survey was undertaken in 2022. The trees were searched as thoroughly as possible from ground level with all elevations covered where these could be accessed.

A4.4 Suitable features for roosting bats recorded (where present) include the following:

- 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.

A4.5 Signs of roosting bat presence recorded (where present) include the following:

- Bat/s roosting *in situ*;
- 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;

²⁹ Collins, J. (ed.) (2016). *Bat Surveys: for Professional Ecologists: Good Practice Guidelines (3rd edition)*. The Bat Conservation Trust, London

- Large/regularly used roosts or regularly used sites may produce an odour; and
- Flies around the roost, attracted by the smell of guano.

A4.6 Based upon the evidence/features identified, each tree was assigned to one of the following categories:

- Known or confirmed roost – EPS licence likely to be required for works to tree to be completed lawfully;
- High suitability – Multiple highly suitable features capable of supporting larger roosts;
- Moderate suitability – Definite bat roosting suitability, albeit with fewer suitable features than those of high potential;
- Low suitability – Trees supporting a single feature, or features which may have limited suitability for roosting bats; and
- Negligible suitability – No potential to support roosting bats.

Limitations

A4.7 As with any ground level assessments of trees, certain features may not be visible or fully visible from the ground. However, the survey was during optimal conditions at an optimal time of year (i.e. wintertime when the canopy is clear of leaves) and so is not seasonally constrained.

Preliminary Assessment of Buildings

A4.8 Owing to the presence of potentially suitable buildings within or adjacent to the Site, a preliminary visual assessment of these buildings was undertaken to record any evidence of roosting bats or any features capable of supporting roosting bats.

A4.9 The survey was first completed on 05 February 2019 and was then updated on 18 May 2022. Both surveys were conducted by bat licensed ecologists in accordance with the good practice guidelines referred to above. All external features considered potentially suitable for bats were assessed using a high-powered torch, from all aspects, where access allowed. In addition, an internal inspection of the buildings (including roof voids) was undertaken where access was possible in 2019 only.

A4.10 Suitable features for roosting bats recorded (where present) include the following:

- Cracks/crevices in stone/brickwork/timber;
- Missing/broken/raised roof/ridge/hanging tiles;
- Loose/lifted lead flashing/bitumen felt;
- Loft voids (particularly if relatively undisturbed, potential bat access points present, clear flight space with simple truss formation, roof lining and insulation present);
- Gaps in soffits, barge boards or fascias; and

- Cavity walls with potential bat access.

A4.11 Signs of roosting bat presence recorded (where present) include the following:

- Bat(s) roosting *in situ*;
- Bat droppings within or beneath a feature;
- 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.

A4.12 Based upon the evidence/features identified, each building was assigned to one of the following categories:

- Known or confirmed roost – EPS licence may be required for modifications, and will be required for demolition, to be completed lawfully;
- High suitability – Structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat;
- Moderate suitability – Structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status;
- Low suitability – Structure with one or more potential roost sites that could be used by individual bats opportunistically. These roost sites do not provide enough space, shelter, protection, appropriate conditions and suitable surrounding habitat to be used on a regular basis or by large numbers of bats; and
- Negligible suitability – No potential to support roosting bats.

Limitations

A4.13 External and internal access was granted to all buildings, except for **B14** and **B21** where there was no internal access granted.

A4.14 The survey was not seasonally constrained.

Dusk Emergence/Dawn Re-entry Surveys

A4.15 Owing to the presence of buildings with features suitable for roosting bats which are at risk of impacts from development, dusk emergence and dawn re-entry surveys of these buildings were conducted in 2022, in accordance with the good practice guidelines referred to above. The date

and type of surveys conducted on each relevant building are set out in **Table EDP A4.1**. Location of Bat Roosts are shown on **Plan EDP 4**.

Table EDP A4.1: Dusk Emergence and Dawn Re-entry Surveys.

Building Reference	Date	Dusk/Dawn	Number of Surveyors and Cameras (IR)
B3, B11, B17	22/06/2022	Dusk	4, 4, 4
B13, B21	06/07/2022	Dusk	4, 4
B17	07/07/2022	Dawn	4
B11, B17	25/07/2022	Dusk	4, 4
B17	17/08/2022	Dawn	3
B11, B13, B16	24/08/2022	Dawn	4, 1 and IR, 2
B13	07/09/2022	Dusk	2 and 2 IR

A4.16 During each survey, suitably qualified ecologists were positioned in appropriate locations, as shown on **Plan EDP 4**, so that all the relevant building elevations/features could be observed. The dusk surveys commenced 15 minutes prior to sunset and continued until at least one and a half hours after, and the dawn surveys started at least an hour and a half before sunrise and finished 15 minutes after sunrise, as per good practice guidelines. The surveyors used Elekon Batlogger M bat detectors to record the echolocation calls of the bats on-site during the survey. The weather conditions were generally suitable for such surveys, as detailed in **Table EDP A4.2**.

Table EDP A4.2: Weather Conditions During Emergence/Re-entry Surveys.

Date	Sunset/- Sunrise Time	Start-Finish Time	Temp (°C)	Cloud Cover (%)	Wind (Beaufort)	Precipitation
22/06/22	21:33	21:18-23:03	21-23	0-5	0-1	Nil
06/07/22	21:30	21:15-23:00	19-24	70-80	2-3	Nil
07/07/22	04:53	03:23-03:50	18	70	6	Light to heavy shower
25/07/22	21:08	20:53-22:38	17-20	45-90	3-5	Nil
17/08/22	05:52	04:20-06:07	17	100	5	Light drizzle
24/08/22	06:00	04:30-06:15	20-21	80-90	1-4	Nil
07/09/22	19:40	19:25-21:10	17-20	5-90	1	Nil

A4.17 All sonogram recordings made during the dusk/dawn surveys were later analysed using BatExplorer sound analysis software to confirm species identification.

A4.18 In addition to surveyors, infrared cameras were used on two surveys, with one being used on **B13** on 24 August and two used to cover **B14** on 07 September.

Limitations

- A4.19 Some species (such as long-eared bats) often echolocate quietly, or do not always echolocate, and as such, are not always picked up by the detector.
- A4.20 In addition, *Myotis* sp. bats are difficult to tell apart solely from their echolocation calls and were therefore grouped as such.
- A4.21 On 07 July 2022 the dawn survey of **B17** was forced to finish early, at 03:50 rather than 05:07, owing to health and safety concerns due to piles of rubble that contained asbestos sheeting. The weather conditions had deteriorated, and gusts of wind were causing dust to be swept off the rubble piles. It also started to rain, which, along with the strong winds, had not been forecast.
- A4.22 Similarly, on 25 July 2022 the survey of **B17** finished 15 minutes early due to strong winds blowing dust from the same rubble piles.
- A4.23 On 17 August 2022 there was light drizzle at the start of the survey and strong wind but there were no health and safety concerns as the heavy rain earlier in the day had meant no dust was raised from the rubble piles.

Bat Activity Surveys

- A4.24 During the Extended Phase 1 survey in 2019 and again in 2022, an initial assessment was undertaken of suitability of the habitats within and immediately adjacent to the Site for foraging and commuting bats. In accordance with the good practice guidelines referred to above, the Site was assigned to one of the following categories:
- High suitability – Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, treelined watercourses and grazed parkland. Site is close to and connected to known roosts;
 - Moderate suitability – Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water;
 - Low suitability – Habitat that could be used by small numbers of commuting bats such as a hedgerow with gaps or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub; and
 - Negligible suitability – Negligible habitat features on-site likely to be used by commuting or foraging bats.

A4.25 In 2019 it was determined that the overall suitability of the Site was Low–Moderate but the level of survey effort (in terms of the number and frequency of manual transect surveys and automated detector surveys) adopted in 2019 was appropriate for habitat of Moderate suitability. In 2022, owing to the level of existing survey information from 2019, a lower level of survey effort was deemed to sufficient to provide an update. This described in further detail below.

Transect Surveys

A4.26 Manual transect surveys were undertaken across the Site in 2019 and 2022 with the objective of identifying important foraging areas and/or commuting routes used by bats. In 2019, a total of five dusk surveys were undertaken over the course of the active bat season. In 2022, a total of three dusk surveys were undertaken over the course of the active bat season.

A4.27 Details of the survey type, date, timing, and weather conditions during each of the transect surveys are given in **Table EDP A4.3**. All visits were completed in weather conditions that were generally suitable for such surveys.

Table EDP A4.3: Date, Timing and Weather Conditions during Transect Surveys 2019 and 2022.

Survey Date	Survey Time	Sunrise/ Sunset Time	Weather Conditions			
			Temp (°c)	Cloud (%)	Rain	Wind (Beaufort Scale)
13/05/19	20:52–22:52	20:52	11–15	0	Nil	0
13/06/19	21:30–23:30	21:30	13–14	100	Heavy shower for ten minutes	1–2
11/07/19	21:26–23:26	21:26	16–19	60–100	Nil	0–1
12/08/19	20:38–22:38	20:38	11–13	10–20	Nil	2
11/09/19	19:32–21:32	19:32	15–18	0–80	Nil	1
25/05/22	21:09–23:09	21:09	12–18	0–10	Nil	1
20/07/22	21:16–23:16	21:16	16–18	50–100	Nil	2–3
21/09/22	19:08–21:08	19:08	14–08	100	Nil	0–2

A4.28 In 2019, during each survey a total of two transect routes were walked simultaneously by different surveyors, with the routes designed to provide coverage of the most suitable foraging or commuting habitats on the Site; namely grassland, hedgerows, and farm buildings. The transect routes were walked by experienced bat surveyors at a slow and steady pace for two hours after sunset. All bats were recorded, and their behaviour marked on survey maps, in

order to characterise the value of the Site and its component habitats for foraging and commuting bats.

A4.29 In 2022, during each survey only one transect route was walked, with the route designed to provide coverage of the most suitable foraging or commuting habitats on the Site; namely grassland, hedgerows, and farm buildings. The transect route is illustrated on **Plans EDP 4 to 6**. The transect route was walked by experienced bat surveyors at a slow and steady pace for two hours after sunset. All bats were recorded, and their behaviour marked on survey maps, in order to characterise the value of the Site and its component habitats for foraging and commuting bats.

A4.30 The transect surveys were conducted using Elekon Batloggers. Observations of the time, location, and activity of all bats seen or heard were noted. Bats were identified on the basis of their characteristic echolocation calls, which were recorded and analysed using computer sonogram analysis (BatExplorer) to confirm species identification. Species of *Myotis* bat and long-eared bat are difficult to tell apart solely from their echolocation calls and were therefore grouped as such.

Limitations

A4.31 One transect survey in 2019 experienced heavy rain, which can be a limiting factor for bat activity, as it can force bats back to their roosts. However, the heavy shower only lasted ten minutes and the level of activity recorded on the survey was comparable to the other surveys that season.

A4.32 Although one transect route was walked in 2022, compared to two transect routes in 2019, the route covered the same habitats and could be comfortably walked during the two hours from sunset, and this is not considered to be a limitation to the survey.

Automated Detector Surveys

A4.33 To supplement the bat transect survey data in 2022, bat activity within the Site was also sampled using Anabat Express detectors (hereafter referred to as 'automated detectors'), which are deployed in fixed locations but which automatically trigger and record bat echolocation calls over multiple nights at a time. In this case, automated detectors were deployed at four locations within the Site during each survey, as shown on **Plans EDP 4 to 6**, which were judged to be representative of the habitats within the Site. The automated detectors were fixed in secure locations, with an external microphone attached circa 1–2m above ground, where possible, and directed away from the tree/branch to maximise detection sensitivity. In total three surveys were completed over the course of the active bat season in 2022, each comprising sampling by automated detectors for at least five consecutive nights. Details of dates, sampling locations and weather conditions during each of the surveys are given in **Table EDP A4.4**.

Table EDP A4.4: Automated Detector Survey Details.

Sampling Period Dates	Location (Reference and OS grid reference)	Anabat ID	Microphone		Weather (max, min temp/ rainfall/ max, min wind speed)
			Height	Direction	
25/05/22 – 30/05/22	North SP 25234 76386	AEX23	1.5	N	Temp. – 7-14 Rainfall – nil Wind (mph) – 5-17
25/05/22 – 30/05/22	South SP 25079 76092	AEX27	1.5	NW	Temp. – 7-14 Rainfall – nil Wind (mph) – 5-17
25/05/22 – 30/05/22	East SP 25310 76171	AEX25	1.5	NW	Temp. – 7-14 Rainfall – nil Wind (mph) – 5-17
25/05/22 – 30/05/22	West SP 25072 76290	AEX26	1.5	NE	Temp. – 7-14 Rainfall – nil Wind (mph) – 5-17
20/07/22 – 25/07/22	North SP 25234 76386	AEX9	1.5	E	Temp. – 13-21 Rainfall – scattered showers on 21 and 24/07 Wind (mph) – 4-12
20/07/22 – 25/07/22	South SP 25079 76092	AEX10	1.5	N/N E	Temp. – 13-21 Rainfall – scattered showers on 21 and 24/07 Wind (mph) – 4-12
20/07/22 – 25/07/22	East SP 25310 76171	AEX18	1.5	W	Temp. – 13-21 Rainfall – scattered showers on 21 and 24/07 Wind (mph) – 4-12
20/07/22 – 25/07/22	West SP 25072 76290	AEX11	1.7	NW	Temp. – 13-21 Rainfall – scattered showers on 21 and 24/07 Wind (mph) – 4-12
21/09/22 – 26/09/22	North SP 25234 76386	AEX1	2	NE	Temp. – 8-17 Rainfall – showers on 26/09 Wind (mph) – 4-16
21/09/22 – 26/09/22	South SP 25079 76092	AEX2	1.5	NE	Temp. – 8-17 Rainfall – showers on 26/09 Wind (mph) – 4-16
21/09/22 – 26/09/22	East SP 25310 76171	AEX4	2	NW	Temp. – 8-17 Rainfall – showers on 26/09 Wind (mph) – 4-16

Sampling Period Dates	Location (Reference and OS grid reference)	Anabat ID	Microphone		Weather (max, min temp/ rainfall/ max, min wind speed)
			Height	Direction	
21/09/22 – 26/09/22	West SP 25072 76290	AEX3	2	N	Temp. – 8-17 Rainfall – showers on 26/09 Wind (mph) – 4-16

A4.34 The sound files recorded by the automated detectors were filtered for each of the UK's bat species/species groups using Analook software's filter function. The parameters for the species filters are based on those proposed by Chris Corben and Kim Livengood³⁰ and have been fine-tuned using known call parameters for each of the species. All files passing the various filters were checked manually using sonogram analysis in accordance with published guides to confirm the species identification of each bat call.

Limitations

A4.35 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, and 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.

A4.36 There were no access issues for any of the surveys and all anabats were deployed successfully. There were good weather conditions during each survey period, with only minimal rain and wind speeds recorded, therefore the surveys were not constrained by the weather conditions.

RESULTS

Bat Roost Surveys

Preliminary Assessment of Trees

A4.37 The ground level visual assessment of trees carried out in 2019 identified a total of 22 trees with suitable features for bat roosting, but no confirmed roosts were recorded. Of this total, none were found to be of High suitability, two were of Moderate and 20 were of Low suitability. Further details on each of these trees are provided in **Table EDP A4.5**.

³⁰ Taken from Analook W training course and workshop, September 2013.

A4.38 All other trees were found to be of Negligible suitability for roosting bats and have not been described.

A4.39 The update assessment of trees in 2022 returned the same results as 2019.

Table EDP A4.5: Details of Trees with Bat Roost Suitability.

Tree/Group Ref. No.	Tree Species	Potential Bat Features	Roosting Suitability
1	Ash (<i>Fraxinus excelsior</i>)	A split on the south side at 2m.	Low
2	Eucalyptus (<i>Eucalyptus</i> sp.)	Flaking bark.	Low
3	Oak	One limb hole on the east side at 3m.	Low
4	Oak	One lib tear-out on the western side, flaking bark and some ivy (<i>Hedera helix</i>).	Low
5	Oak	One tear-out and some ivy.	Negligible
6	Oak	One split limb and very dense ivy.	Low
7	Oak	Dense ivy that could be obscuring features.	Low
8	Oak	One split limb and flaking bark.	Low
9	Oak	No features visible from the east side, marked as low as there could be other features that have not been visible.	Low
10	Oak	Three small splits low on the trunk.	Low
11	Oak	One split on the west side.	Low
12	Oak	Flaking bark and some ivy coverage	Low
13	Oak	One lateral split on the east side.	Low
14	Oak	One limb hole on the south side.	Low
15	Oak	Two small splits and some flaking bark.	Low

Tree/Group Ref. No.	Tree Species	Potential Bat Features	Roosting Suitability
16	Oak	One split and some flaking bark.	Low
17	Oak	One limb hole, one tear-out, some flaking bark, four splits, and some hollowing at the base of the trunk.	Moderate
18	Oak	Some flaking bark on the east limb.	Low
19	Oak	Some flaking bark and sparse ivy coverage.	Low
20	Oak	Very dense ivy that could be obscuring features.	Low
21	Oak	Two splits and flaking bark. The tree is also suffering from die-back.	Low
22	Oak	A very large oak, with no visible features but given a precautionary suitability of Low in case features have been missed due to its size.	Low
23	Oak	A very large oak, with a possible hole in a dead branch on the south side and four splits. There was also some flaking bark.	Moderate



Preliminary Assessment of Buildings


A4.40 In 2019 and 2022, the visual assessment/inspection of buildings identified a total of seven buildings with suitable features for bat roosting and one of these buildings also contained evidence of roosting bats (2019). Of this total, one was classified as a confirmed roost, none were found to be of High suitability, with two of Moderate and three of Low suitability. The remaining 12 buildings onsite were found to be of Negligible suitability for roosting bats.

A4.41 Further details on each of the buildings inspected are provided in **Table EDP A4.6** and their locations are shown on **Plan EDP 2**.


Table EDP A4.6: Preliminary Bat Roost Assessment of Buildings 2019 and 2022.


Building Ref. No.	Photograph	Potential Bat Features	Roosting Suitability
B1		Small brick dilapidated building with collapsed roof. No areas suitable for roosting bats.	Negligible

Building Ref. No.	Photograph	Potential Bat Features	Roosting Suitability
B2		Wooden framed building with corrugated metal roof. No areas suitable for roosting bats.	Negligible
B3		From the exterior there were lifted, cracked and/or missing tiles.	Low


Building Ref. No.	Photograph	Potential Bat Features	Roosting Suitability
B4	 A photograph showing the interior of a large, industrial-style building with a high, vaulted metal roof and corrugated metal walls. The floor is covered in straw bedding. In the foreground, there are several metal stalls or pens, some with wooden slats. A horse is visible in one of the stalls. The lighting is somewhat dim, with light coming from the roof's skylights.	Metal framed building with corrugated metal roof. No areas suitable for roosting bats.	Negligible



Building Ref. No.	Photograph	Potential Bat Features	Roosting Suitability
B5		Metal framed building with corrugated metal roof. No areas suitable for roosting bats.	Negligible



Building Ref. No.	Photograph	Potential Bat Features	Roosting Suitability
B6		Wooden framed building with corrugated roof. No areas suitable for roosting bats.	Negligible



Building Ref. No.	Photograph	Potential Bat Features	Roosting Suitability
B7	 A photograph showing the interior of a large, open-sided wooden barn. The roof is made of corrugated metal supported by a network of wooden beams and posts. The floor is covered with straw bedding. Several metal pens are visible, containing sheep. A person in a blue jacket is partially visible in the background near a blue tarp.	Wooden framed building with corrugated metal roof. No areas suitable for roosting bats.	Negligible



Building Ref. No.	Photograph	Potential Bat Features	Roosting Suitability
B8		Metal containers. No areas suitable for roosting bats.	Negligible

Building Ref. No.	Photograph	Potential Bat Features	Roosting Suitability
B9		Wooden framed building with corrugated metal roof. No areas suitable for roosting bats.	Negligible
B10	No image	Collapsed chicken shed with no structure remaining. No areas suitable for roosting bats.	Negligible

Building Ref. No.	Photograph	Potential Bat Features	Roosting Suitability
B11		<p>Within the roof void there were gaps under tiles and the chipboard lining. From the exterior, the roof had lifted, cracked and missing tiles, missing mortar, and lifted lead flashing. There was also a gap between the porch overhang and the brick wall. Three bat droppings were also found.</p>	Confirmed
B12		<p>Small brick shed with concrete fibreboard roof. No areas suitable for roosting bats.</p>	Negligible

Building Ref. No.	Photograph	Potential Bat Features	Roosting Suitability
B13		<p>From the exterior there were lifted/cracked/missing tiles on the west and east sides. There was missing mortar on the north and south sides of the building.</p>	Moderate
B14		<p>Newly cladded building with some gaps under weather board and under roof flashings.</p>	Low

Building Ref. No.	Photograph	Potential Bat Features	Roosting Suitability
B15		Metal framed building with metal internal structure. No areas suitable for roosting bats.	Negligible
B16		No internal access was granted for this building. External gaps under the roofing sheets providing cavities.	Low

Building Ref. No.	Photograph	Potential Bat Features	Roosting Suitability
B17		A two-storey storage barn with corrugated sheet walls peeling away from the building. Lots of gaps all over the building.	Moderate
B18		Metal covered farm building. No internal access (food processing area). No areas suitable for roosting bats.	Negligible