

Hixham Hall Barns, Buntingford, Hertfordshire.

Preliminary Ecological Appraisal.
Abi Ford Design.

Job Number	6227			
Author	Dr James Redfern - BSc (Hons); Maithri Jayasuriya BSc (Hons)			
Version	Checked by	Approved by	Date	Type
3.0	-	Dr Rachel Saunders BSc (Hons) MCIEEM	23/03/22	Final
4.0	Katie May-Snowden, MSc, BSc, ACIEEM		10/08/2023	Barns J & K

Contents

1	Introduction	4
2	Methodology	8
3	Results	15
4	Potential Impacts and Recommendations	28
	References	38
	Appendix 1: Habitat Map	40
	Appendix 2: Photographs	45
	Appendix 3: Plant Species List	48
	Appendix 4: Preliminary Roost Assessment	50
	Appendix 5: Target Notes	57
	Appendix 6: Legislation and Planning Policy	59

LIABILITY

Temple Group Limited (TGL) has prepared this report for the sole use of the commissioning party in accordance with the agreement under which our services were performed. No warranty, express or implied, is made as to the advice in this report or any other service provided by us. This report may not be relied upon by any other party without the prior written permission of Temple Group Limited. The content of this report is, at least in part, based upon information provided by others and on the assumption that all relevant information has been provided by those parties from whom it has been requested. Information obtained from any third party has not been independently verified by Temple, unless otherwise stated in the report.

COPYRIGHT

© This report is the copyright of Temple Group Limited. Any unauthorised reproduction or usage by any person is prohibited.

Summary of key issues

Temple (formerly Temple Group comprising The Ecology Consultancy, Temple Group and Arbeco) was commissioned to carry out a Preliminary Ecological Appraisal (PEA) comprising a Phase 1 habitat survey, protected species assessment and ecological evaluation, and a Preliminary Roost Assessment (PRA) for bats of three barns (Barns A, J and K) on the land adjacent to Hixham hall, Furneux Pelham, Buntingford, Hertfordshire, SG9 0LR.

This report presents the findings of the survey undertaken across the whole survey area; however, an initial planning application received approval for the development to Barn A. This report solely relates to Barns J and K and the surrounding habitat (hereafter referred to as the Site to distinguish between this and the wider survey area where necessary). The main findings of the PEA and PRA are as follows:

The survey area consists of a parcel of land within the Hixham Hall Estate, located on land immediately to the north of Hixham Hall. The survey area comprised three wooden barns set within amenity lawn (Barns J and K) and hard standing (Barn A), with a section of species-poor native hedgerow, a dry ditch, a line of scattered trees along the northern boundary, and a gravel access track along forming the western boundary. The survey area was bounded by a private road to the north, a working stable yard to the east, two ponds with a dried moat section and Hixham Hall to the south, and a small mixed deciduous woodland to the west.

The survey area/Site is not subject to any statutory or non-statutory nature conservation designations. There are statutory designated sites within a 2km radius; these are Hillcollins Pit geological Site of Special Scientific Interest (SSSI) and Patmore Heath SSSI. The survey area and Site lies within the Impact Risk Zone (IRZ) for Patmore Heath SSSI.

The nearest non-statutory designated site is a species-rich meadow (Meadow south of Hixham Hall) Local Wildlife Site (LWS) which lies adjacent to the garden at the south of Hixham Hall.

The heavily managed amenity grassland habitat present within the wider survey area is considered of low ecological value (but may assume higher value where it supports protected and/or notable species). The line of scattered trees bounding the private road to the north includes mature trees along the section of hedgerow, which have intrinsic ecological value and provide green infrastructure and connectivity in the form of wildlife corridors.

Bats – The three barns within the survey area all had evidence of bat use, with one barn (Barn K) confirmed as supporting a roost. In order to ensure compliance with the relevant

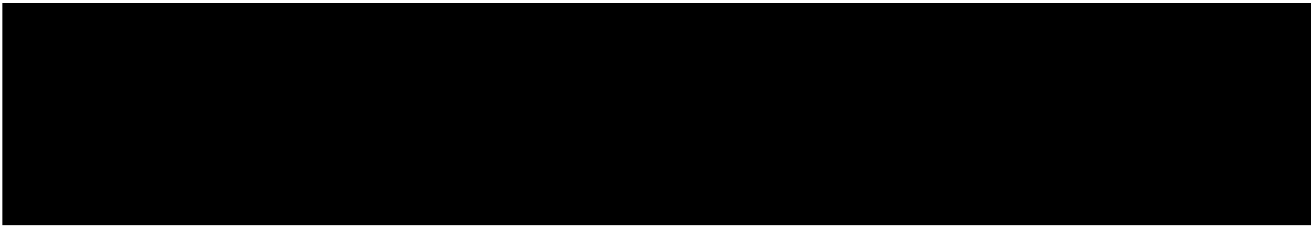
legislation, further survey is required to ascertain the type of roost present in Barn K, and if bats are using the other two barns (Barn A and J) for roosting purposes.

Should bats be found to be present within Barn A (on-Site), it is considered that a mitigation licence (previously referred to as a European Protected Species Mitigation (EPSM) licence) from Natural England licence will be required. Likewise, any subsequent works on the remaining barns may also require appropriate licensing.

A bat sensitive lighting strategy will be required if any external lighting is proposed in order to protect the adjacent woodland, the vegetation within the Site and wider survey area and any compensatory bat roost features incorporated into the renovated barns.

Great crested newts – terrestrial habitats with **high** potential to support great crested newts are present within the wider survey area and Site (hedgerow base to the north) and within the immediate vicinity. There are two ponds within 500m search radius; these are located present 250 metres (m) south of the survey area. There is habitat connectivity between the ponds and the Site. At least one barn (Barn K, but potentially also Barn A on-Site) offers suitable hibernation habitat for newts in the form of loose brick work and mortar providing access to the foundations. Patches of dense scrub and ruderal vegetation were present within the patch of mixed deciduous trees adjacent to the survey area, which is suitable foraging and sheltering habitat for newts. In order to ensure compliance with the relevant legislation, it is recommended that a **further survey** for great crested newts should be conducted during the appropriate season.

Breeding birds – breeding birds were confirmed as being **present** within the survey area. There was an unoccupied bird nest present in Barn K. The trees and hedgerows within the survey area and/or Site all have potential to support breeding birds and could be affected by the development. In order to ensure compliance with the relevant legislation, these habitats should be removed September to February inclusive which is outside of the main bird breeding season. Where this is not possible, a check for nesting birds prior to vegetation clearance should be undertaken by an experienced ecologist and, if any nests are found, the nests should be protected until such time as the young have left the nest or the nest is no longer active. If any nesting birds are found at any time during clearance works, work should stop immediately, and an ecologist consulted.



Reptiles – habitats with **low** potential to support reptiles were present within the survey area and Site (hedgerow base on northern boundary). In order to ensure compliance with the relevant legislation, it is recommended that a **precautionary approach** to any clearance is taken, whereby habitats are removed in such a way as to minimise the risk of killing and injuring reptiles and dissuade them from using the area during construction.

Hedgehog – habitat suitable for hedgehog is present – if habitat with suitability to support nesting or hibernating hedgehog is to be removed, precautionary measures should be implemented to avoid killing or injury. Measures should also be taken to continue accommodating this species on site post-development.

Recommendations to enhance the biodiversity value of the site in accordance with national and local planning policies and the Environment Act 2021 comprise the inclusion of wildlife planting; using a planting scheme that aims to increase nectar rich plant species to improve pollinator diversity. On the basis of information available to date, outline recommendations for enhancement have been made which include the creation of new habitat through provision of bird nesting and bat roosting opportunities, although a certain number of these provisions maybe required compensation for lost roosting and nesting opportunities.

1 Introduction

BACKGROUND TO COMMISSION

- 1.1 Temple (formerly Temple Group comprising The Ecology Consultancy, Temple Group and Arbeco) was commissioned by Abi Ford Designs on the 2nd August 2021, to carry out a Preliminary Ecological Appraisal (PEA) and a Preliminary Roost Assessment (PRA) of three barns and surrounding land at Hixham Hall, Furneux Pelham, Buntingford, Hertfordshire, SG9 0LR. The appraisal was carried out in order to provide ecological information to accompany an outline planning application for a proposed conversion of the three barns to residential units. This appraisal considers land within the whole survey area as indicated on the plan provided by the client (Abi Ford Designs, 2023).
- 1.2 Since the survey was carried out, planning permission for the development to Barn A has been granted. A second application for the developments of Barns J and K will be submitted. Barns J and K will hereon be referred to as 'The Site' where distinction is required).

SCOPE OF THE REPORT

- 1.3 This aim of this appraisal and assessment is to provide baseline ecological information about the Site and wider survey area. This will be used to identify any potential ecological constraints associated with the proposed development and/or to identify the need for additional survey work to further evaluate any impact that may risk contravention of legislation or policy relating to protected species and nature conservation. Where necessary, and possible on the basis of information available to date, avoidance, mitigation/compensation and/or enhancement measures have been recommended to ensure compliance.
- 1.4 This report has been updated in August 2023 to reflect a slight change to the design proposals alter the scope of works to refocus on on-site areas, specifically Barns J and K. No updated walkover survey has been conducted and all information provided is from the original 2021 survey.
- 1.5 Since the PEA in 2021, Barn A has been granted planning permission. Details of the inspection of Barn A and all recommendations for the barn have been left in this report

for completeness. The planning proposal which this updated report informs pertains only to Barns J & K.

1.6 This appraisal is based on the following information sources:

a desk study of the survey area/Site and land within a 2km surrounding radius;

a Phase 1 habitat survey (JNCC, 2010) of the survey area/Site to identify and map the habitats present;

a protected species assessment of the survey area/Site to identify features with potential to support legally protected species; and

an evaluation of the survey area/Site's importance for nature conservation.

1.7 This appraisal has been prepared with reference to best practice guidance published by the Chartered Institute for Ecology and Environmental Management (CIEEM, 2017) and as detailed in British Standard 42020:2013 Biodiversity - Code of Practice for Biodiversity and Development (BSI, 2013).

1.8 The survey, assessment and report were conducted and written by Bethany Holmes BSc and Dr James Redfern BSc. The ecologists have over six years' experience are competent in carrying out Phase 1 habitat surveys and protected species assessments. Bethany Holmes is an experienced bat ecologist and currently holds a Natural England Level 2 class licence for bats.

1.9 This report has been amended in 2023 by Maithri Jayasuriya, BSc (Hons), MSc, an Ecologist with five years of experience in ecological consultancy.

SITE CONTEXT AND STATUS

1.10 The wider survey area is 0.3 hectares (ha) in size and is centred on Ordnance Survey National Grid reference TL 4530 2680. The Barn A and surrounding hard standing lies in the north of the survey area. The Site (Barns J and K) are in the south-east of the wider survey area. Both the Site and wider survey area lie on the land immediately adjacent to Hixham Hall and are not subject to any nature conservation designations.

1.11 Three barns are located within the grounds of Hixham Hall Estate, the barns are situated within amenity lawn (Barns J and K), and hard standing (Barn A) immediately to the north of the Hixham Hall residence. Also, within the survey area are scattered mature trees, a section of species-poor hedgerow (on-Site) and a dry ditch. A gravel access track forms

the western boundary of the survey area, which links to the Hixham Hall residence which is situated immediately to the south. Immediately to the north of the Site is a private road which provides access to the adjacent stables, to the Site via the east, and links to the surrounding farmland. To the east of the Site is a concrete courtyard with large stables and commercial farm buildings. To the west of the Site is amenity grassland and beyond that, outside the survey area, a patch of mixed broadleaf woodland with a small dry ditch and dry section of old moat which connects to one of two ponds, which are located immediately south of Hixham Hall residence.

DEVELOPMENT PROPOSALS

- 1.12 The development proposals entail the **change of use from two storage barns (J and K) to holiday lets (Use Class C1), with planning permission already granted for Barn A to be converted into a residential property.** The gravel access road along the western boundary of the wider survey area may be renovated to provide access and potentially create areas for car parking. The aim will be to retain as much of the grassland, hedgerow and scattered trees as possible during the development. Landscaping proposals have not yet been finalised but are expected to include some new areas of native planting.

RELEVANT LEGISLATION AND PLANNING POLICY

- 1.13 The following key pieces of nature conservation legislation are relevant to this appraisal. A more detailed description of legislation is provided in Appendix 6:

The Conservation of Habitats and Species Regulations 2019 (as amended) (commonly referred to as the Habitats Regulations);

Wildlife and Countryside Act 1981 (as amended);

Natural Environment and Rural Communities Act 2006;

Protection of Badgers Act 1992; and

Wild Mammals (Protection) Act 1996.

- 1.14 The National Planning Policy Framework (Ministry of Housing, Communities and Local Government, 2021) and The Environment Act 2021 requires local authorities to avoid and minimise impacts on biodiversity and to provide net gains in biodiversity when taking planning decisions. In addition, in England, under Section 40 of the Natural Environment and Rural Communities Act 2006, all public bodies are required to have regard to biodiversity conservation when carrying out their functions.

1.15 Other planning policies at the local level which are of relevance to this development include The East Herts District Plan (2018). Further information is provided in Appendix 6.

2 Methodology

DESK STUDY

- 2.1 The following data sources were reviewed to provide information on the location of statutory designated sites¹, non-statutory designated sites², legally protected species³, Species and Habitats of Principal Importance⁴ and other notable species⁵ and notable habitats⁶ that have been recorded within a 2km radius of the Site, and Ramsar, Special Areas of Conservation (SAC) and Special Protection Areas (SPA) within 15km:

Herts Environmental Records Centre (HERC), the local Biological Records Centre, principally for species records and information on non-statutory sites;

MAGIC (<http://www.magic.gov.uk/>) - the Government's on-line mapping service; and

Ordnance Survey mapping and publicly available aerial photography.

- 2.2 Key records provided by the desk study are provided in Section 3 of this report. Other records for relevant protected or noteworthy species have been used to inform the assessment of the potential for protected species within the survey area, including the Site, and to provide a preliminary view of the Site's ecological value but are not presented in the report.

HABITAT SURVEY

- 2.3 A habitat survey of the survey area was carried out on the 30 November 2021 in clear, dry conditions. It covered the entire survey area, including boundary features. Habitats were described and mapped following standard Phase 1 habitat survey methodology

¹ **Statutory designations** include Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites (referred to collectively as National Site Network sites in England), National Nature Reserves (NNR), Sites of Special Scientific Interest (SSSI) and Local Nature Reserves (LNR).

² **Non-statutory sites** are designated by local authorities (e.g. Sites of Importance for Nature Conservation or Local Wildlife Sites).

³ **Legally protected species** include those listed in Schedules 1, 5 or 8 of the Wildlife and Countryside Act 1981; Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended); or in the Protection of Badgers Act 1992.

⁴ **Species of Principal Importance** are those defined by Section 41 of the Natural Environment and Rural Communities Act, 2006.

⁵ **Notable species** include Species of Principal Importance under the Natural Environment and Rural Communities Act 2006; Local Biodiversity Action Plan (LBAP) species; Birds of Conservation Concern (Stanbury *et al.*, 2021); and/or Red Data Book/nationally notable species (JNCC, undated).

⁶ **Notable habitats** include Habitats of Principal Importance under the Natural Environment and Rural Communities Act, 2006; those included in an LBAP; Ancient Woodland Inventory sites; and Important Hedgerows as defined by the Hedgerow Regulations 1997.

(JNCC, 2010). Habitats were marked on a paper base map and subsequently digitised using ESRI ArcGIS software. Habitats were also assessed against descriptions of Habitat of Principal Importance as set-out by the JNCC (BRIG, 2008)⁷.

- 2.4 Records for dominant and notable plants are provided, as are incidental records of birds and other fauna noted during the course of the habitat survey.
- 2.5 Common names are used where widely accepted for amphibians, birds, fish, mammals, reptiles and vascular plants. Scientific names are provided for other groups but at first mention only if there is also an accepted common name.
- 2.6 The area was also surveyed for the presence of invasive plant species as defined by Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). However, detailed mapping of such species is beyond the scope of this commission and the location on habitat plan are indicative only.
- 2.7 Target notes are used to provide information on specific features of ecological interest (e.g., mature oak tree) or habitat features that were too small to be mapped.

PRELIMINARY ROOST ASSESSMENT – BUILDINGS The PRA consisted of an external and internal inspection of all features/surfaces of the three barns within the survey area. The survey and assessment were undertaken by Beth Holmes, BSc (Hons), an experienced ecologist with over six years' commercial bat survey experience. Beth Holmes possesses a Natural England Level 2 Class Licence for bats (licence number 2021-530-031-CLS-CLS).

- 2.2 The aim of the surveys outlined below was to establish the suitability of the three barns, known as Barn A, Barn J and Barn K to support bat roosts. The suitability of structures to support roosting bats, ranging from negligible to the presence of a confirmed roost, is assessed using the findings of the survey and the desk study. The following criteria were used to determine the suitability of the buildings for roosting bats (adapted from Collins, 2016):

⁷ Data required to confirm that certain habitats (including rivers and ponds) meet criteria for Habitats of Principal Importance is beyond that obtained during a Phase 1 habitat survey. In these cases the potential for such habitats to meet relevant criteria is noted but further surveys to confirm this assessment may be recommended

Negligible – While presence cannot be absolutely discounted there were no significant visible features that could be used by bats for roosting.

Low – A structure with one or more potential roost sites that could be used by individual bats opportunistically; however, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation). A tree of sufficient size and age to contain Potential Roost Features (PRFs) but with none seen from the ground or features seen with only very limited roosting potential.

Moderate – A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).

High – A structure or tree 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.

Confirmed roost⁸ – Evidence indicates a building or other structure is used by bats, for example:

- bats seen roosting or observed flying from a roost or freely in the habitat;
- droppings, carcasses and feeding remains indicative of a roost; and
- bats heard ‘chattering’ inside on a warm day or at dusk.

2.3 The gathered information has been used to inform whether further survey is required in the form of dusk emergence and/or dawn re-entry surveys to fully understand how bats are using the site and the potential impacts of the proposals on bats, or whether an assessment can be made on the basis of the building inspection alone.

⁸ Adapted from Cowan, A. (2006) Trees and Bats. Guidance Notes 1. Arboricultural Association, Cheltenham

Internal and External Inspections

- 2.11 The PRA was carried out on the 30 November 2021 in weather conditions of 9°C, 2/12 Beaufort scale wind, 6/8 okta cloud cover.
- 2.12 The survey comprised both an external and internal inspection of three barns, involving a detailed search of all accessible architectural features for bat droppings, urine staining, scratch marks, staining around suitable crevices and feeding remains. Windowpanes and other external surfaces were checked for droppings or other secondary evidence. This included external features, such as soffits and fascias, roof lining, brickwork and window casements. Any features that could potentially provide access into internal areas (such as cavity walls) were noted.
- 2.13 An internal inspection of the three barns was completed, whereby the surveyor walked through the interior of the building in logical progression. All surfaces, including floor areas, were checked for discarded feeding remains and bat droppings. A high-powered torch was shone along the interior of the roof, where appropriate, to look for bats, staining and droppings.
- 2.14 The survey methodology followed best practice guidelines (Mitchell-Jones 2004; Collins, 2016). Equipment used during the building inspection included an extendable ladder, endoscope, close-focusing binoculars, a hand-held LED torch and a high-powered torch.
- 2.15 Finally, all buildings/structures were inspected for evidence of/potential for breeding and/or roosting birds.

PROTECTED AND INVASIVE SPECIES ASSESSMENT

- 2.8 The suitability of the survey area for legally protected species was assessed on the basis of relevant desk study records⁹ combined with field observations from the habitat survey. The likelihood of the habitat(s) supporting protected and/or notable species was ranked on a scale from 'negligible' to 'present' as described in Table 2.1
- 2.9 The assessment of habitat suitability for protected or notable species was based on professional judgement drawing on experience of carrying out surveys of a large number of urban and rural sites and best practice survey guidance on habitat suitability and

⁹ Primarily dependent on the age of the records, distance from the site and types of habitats at the site.

identifying field signs. Further information is provided in CIEEM's Sources of Survey Methods¹⁰

Table 2.1: Protected species assessment categories

Category	Description
Present	Presence confirmed from the current survey or by recent, confirmed records.
High	Habitat present provides all of the known key requirements for a given species/species group. Local records are provided by desk study. The site is within or close to a national or regional stronghold for a particular species. Good quality surrounding habitat and good connectivity.
Moderate	Habitat present provides all of the known key requirements for a given species/species group. Several desk study records and/or site within national distribution and with suitable surrounding habitat. Factors limiting the likelihood of occurrence may include small habitat area, barriers to movement and disturbance.
Low	Habitat present is of relatively poor quality for a given species/species group. Few or no desk study records. However, presence cannot be discounted on the basis of national distribution, nature of surrounding habitats or habitat fragmentation.
Negligible	Habitat is either absent or of very poor quality for a particular species or species group. There were no desk study records. Surrounding habitat unlikely to support wider populations of a species/species group. The site may also be outside or peripheral to known national range for a species.

2.10 The findings of this assessment establish the need for protected species surveys that are required to achieve compliance with relevant legislation. Surveys are commonly required for widespread species such as bats, great crested newt, reptiles and [REDACTED] but may be necessary for other species if suitable habitat is present.

2.11 Surveys may be required where a site is judged to be of suitability for a particular species/species group. However, in some cases, where suitability is low for example, there may be opportunities to comply with legislation, without further survey, through precautionary measures prior to and during construction.

SITE EVALUATION

2.12 The ecological importance of the survey area has been evaluated broadly following guidance issued by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2018) which ranks the nature conservation importance of a site according to a geographic scale of reference: international, national, regional, county/metropolitan,

¹⁰ <http://www.cieem.net/sources-of-survey-methods-sosm->

district/borough, local/parish or of importance at the site scale. In evaluating the nature conservation importance, the following factors were considered: nature conservation designations; species/habitat rarity; naturalness; fragility and connectivity to other habitats.

- 2.13 The wider survey area and Site are situated in a large agricultural mosaic with few residential properties, which are in the form of separated farmhouses set in the wider landscape. The north of the Site is separated from the surrounding farmland by a small private lane. The south of the Site comprises Barn J and amenity grassland, and beyond that, Hixham Hall building and amenity lawned garden with two large ponds. To the east is the hardstanding and stable yard, and immediately to the west is a further area of amenity grassland, and beyond that, outside the survey area boundary, a small (0.012ha) woodland.

DATA VALIDITY AND LIMITATIONS

- 2.14 Every effort has been made to provide a comprehensive description of the survey area and Site; however, the following limitations apply to this assessment.

The protected species assessment provides a preliminary view of the likelihood of protected species occurring within the survey area and Site. It should not be taken as providing a full and definitive survey of any protected species group. Additional surveys may be recommended if on the basis of the preliminary assessment or during subsequent surveys it is considered reasonably likely that protected species may be present.

The ecological evaluation is preliminary and may change subject to the findings of further ecological surveys (should these be required).

Even where data for a particular species group is provided in the desk study, a lack of records for a defined geographical area does not necessarily mean that there is a lack of ecological interest, the area may simply be under-recorded.

Where only four figure grid references are provided for protected species by third parties, the precise location of species records can be difficult to determine, and they could potentially be present anywhere within the given 1km x 1km square. Equally six figure grid references are accurate to the nearest 100m only.

The Phase 1 habitat survey does not constitute a full botanical survey or provide accurate mapping of invasive plant species.

Ecological survey data is typically valid for two years unless otherwise specified (CIEEM 2019).

- 2.15 Despite these limitations, it is considered that this report accurately reflects the habitats present, their biodiversity importance and the potential of the wider survey area and Site to support protected and notable species.
- 2.16 The survey data on which this report has reached the end of its validity period and is out of date. The client has confirmed that there has been no changes in use to Barns J and K in the intervening period and as such it can be assumed that the survey information and recommendations pertaining to these barns are still broadly relevant.

3 Results

DESIGNATED SITES

Statutory designated nature conservation sites

- 3.1 There were no SPAs, SACs or Ramsar sites within a 15km search radius of the survey area/Site.
- 3.2 The survey area/Site is not subject to any statutory nature conservation designations. There are no National Site Network sites (formerly referred to as European sites) within 2km. The nearest statutory designated site is Hillcollins Pit, a geological Site of Special Scientific Interest (SSSI) which is c. 1.13 km to the west. Patmore Heath SSSI is located c. 1.25km to the southwest.

Impact Risk Zones (IRZ)

- 3.3 The survey area/Site falls within the impact risk zone of the SSSI Patmore Heath 1.25 km southwest; however, the proposed development does not meet any criteria¹¹ that require the local planning authority (East Hertfordshire District Council) to consult with Natural England regarding this development proposal. IRZ are intended as a tool for local planning authorities to identify when specific types of development may require consultation with Natural England regarding their potential impact on SSSIs.

Table 3.1: Statutory Designated Sites

Site Name	Distance from site and orientation	Reason for designation
Hillcollins Pit	1.13km west	Hillcollins Pit is a 0.2ha geological Site of Special Scientific Interest near Furneux Pelham in Hertfordshire. It was identified as a site of national importance in the Geological Conservation Review in 1988. It comprises a small pit with earliest gravels (Westland Green Gravels) from protoThames (1,600-1,800ka).
Patmore Heath	1.20km south-west	This is a SSSI site with an area of ancient woodland. The site is home to a large amount of dry grass, as well as marshy-areas. Much of the turf is dominated by <i>Deschampsia</i> , as well as occurrences of <i>Anthoxanthum odoratum</i> . Uncommon plants are heath rush and heath grass. There are a wide variety of dragonfly, including the emperor dragonfly.

¹¹ Residential development of 100 units or more or if any residential development of 50 or more houses outside existing settlements/urban areas.

Non-statutory designated nature conservation sites

3.4 The survey area/Site are not subject to any non-statutory nature conservation designations. The nearest non statutory designated nature conservation site is a Local Wildlife Site (LWS), the Meadow South of Hixham Hall (LWS), which lies 150m to the south of the survey area boundary. It is designated a LWS for its plant species assemblage and grassland indicator species. There are nine other LWS within 2 km of the survey area, which are described below (Table 3.2).

Table 3.2: Non-Statutory Designated Sites: Local Wildlife Sites

Site Name	Distance from site and orientation	Reason for designation
Meadow South of Hixham Hall	150m south	Species-rich meadow on boulder clay supporting indicators for neutral, calcareous and acid grassland. Species recorded include clustered bellflower <i>Campanula glomerata</i> , cowslip <i>Primula veris</i> , meadow buttercup <i>Ranunculus acris</i> , upright tormentil <i>Potentilla erecta</i> , wood rush <i>Luzula sp.</i> and abundant pepper saxifrage <i>Silaum silaus</i> , a species decreasing in Herts. Scattered trees include mature pedunculate oak <i>Quercus robur</i> and some planted birch <i>Betula sp.</i> , cypress <i>Chamaecyparis sp.</i> and other exotic tree species. Wildlife Site criteria: Grassland indicators.
Patmore Hall Wood	510m southwest	Mainly ancient semi-natural hornbeam <i>Carpinus betulus</i> coppice woodland with pedunculate oak <i>Quercus robur</i> standards. Parts have been planted with conifers such as scots pine <i>Pinus sylvestris</i> , European larch <i>Larix decidua</i> and Norway spruce <i>Picea abies</i> . There are large area of bluebell <i>Hyacinthoides non-scripta</i> and dog's mercury <i>Mercurialis perennis</i> under the hornbeam coppice plus areas of Bracken <i>Pteridium aquilinum</i> . Other species of note are wood anemone <i>Anemone nemorosa</i> , hairy wood-rush <i>Luzula pilosa</i> , early purple orchid <i>Orchis mascula</i> and primrose <i>Primula vulgaris</i> . The woodland has heathy rides and supports important glade floras as well as being important for bryophytes. A large recent ditch surrounds the wood. Wildlife Site criteria: Ancient Woodland Inventory site; woodland indicators.
East End Farm	880m northwest	Building and environs important for protected species. Wildlife Site criteria: Species.
Grassy wood	900m southwest	Long-standing secondary broadleaved, semi-natural woodland consisting of pedunculate oak <i>Quercus robur</i> with silver birch <i>Betula pendula</i> on the lighter soils and ash <i>Fraxinus excelsior</i> with field maple <i>Acer campestre</i> on the Boulder Clay, which may represent an ancient woodland remnant. The ground flora supports a good number of ancient woodland indicators including the uncommon plants, Soft Shield-fern <i>Polystrichum setiferum</i> and small teasel <i>Dipsacus pilosus</i> . Wildlife Site criteria:

Table 3.2: Non-Statutory Designated Sites: Local Wildlife Sites

Site Name	Distance from site and orientation	Reason for designation
		Old secondary woodland with a semi-natural canopy and a varied structure; > 1ha; woodland indicators.
Patmore Hall Area	1.07Km south	Buildings and environs important for protected species. Wildlife Site criteria: Species.
Patmore Heath	1.22Km north	This is a county wildlife site with an area of ancient woodland. There is a lot of fallen or cut deadwood, including a large pile of rotting logs, but no standing deadwood recorded. Ash <i>Fraxinus excelsior</i> is the main standard tree, with just a few compartments having oak <i>Quercus robur</i> . The understorey in the woodland is dominated by hazel <i>Corylus</i> , which is being coppiced, with some ash as re-grown <i>avellana</i> coppice; hornbeam <i>Carpinus betulus</i> occurs as a sub-canopy. A shelved pond is also present on site with two ponds bordering the site.
Stocking Pelham Field Centre	1.29Km south	A site predominantly of grassland but with a variety of other habitats present. The grassland supports neutral grassland indicator species, including abundant cowslip <i>Primula veris</i> . There are small areas of broadleaf woodland supporting several woodland indicator species, for example wood anemone <i>Anemone nemorosa</i> , dog's mercury <i>Mercurialis perennis</i> and bluebell <i>Hyacinthoides non-scripta</i> , and a boundary hedge. A pond adjoins the hedgerow with a long ditch supplying water to the pond. The site is locally important for birds and mammals and supports protected species. Wildlife Site criteria: Woodland indicator species; grassland indicators.
Inzetts Wood	1.85Km southeast	Old plantation on an ancient semi-natural woodland site. The narrow strip of woodland supports trees such as pedunculate oak <i>Quercus robur</i> , hornbeam <i>Carpinus betulus</i> , Ash <i>Fraxinus excelsior</i> , field maple <i>Acer campestre</i> , sycamore <i>Acer pseudoplatanus</i> , European larch <i>Larix decidua</i> , hazel <i>Corylus avellana</i> , birch <i>Betula</i> spp. and wayfaring tree <i>Viburnum lantana</i> . It also supports an interesting ground flora which includes cowslip <i>Primula veris</i> , sanicle <i>Sanicula europaea</i> , wood millet <i>Milium effusum</i> , nettle-leaved bellflower <i>Campanula trachelium</i> and yellow archangel <i>Lamiastrum galeobdolon</i> . The orchid common twayblade <i>Neottia ovata</i> has also been recorded. Wildlife Site criteria: Ancient woodland site with a semi-natural canopy; woodland indicators.
Silla Farm Northern Meadows	1.89Km northwest	Two fields of neutral grassland surrounded by thick hedges, mainly of Hawthorn <i>Crataegus monogyna</i> . The rough pasture of both fields is species-rich with a particular abundance of common knapweed <i>Centaurea nigra</i> and patches of cowslip <i>Primula veris</i> plus other grassland indicators including oxeye daisy <i>Leucanthemum vulgare</i> , meadow buttercup <i>Ranunculus acris</i> and Meadow vetchling <i>Lathyrus pratensis</i> . Wildlife Site criteria: Grassland indicators.

Table 3.2: Non-Statutory Designated Sites: Local Wildlife Sites

Site Name	Distance from site and orientation	Reason for designation
Middle Park Square Spring	2Km southeast	Ancient semi-natural pedunculate oak <i>Quercus robur</i> / hornbeam <i>Carpinus betulus</i> woodland with some tall ash <i>Fraxinus excelsior</i> . There are a number of planted poplars <i>Populus sp.</i> in the wood. Bluebell <i>Hyacinthoides non-scripta</i> and common nettle <i>Urtica dioica</i> are dominant on the ground. Other species recorded include giant fescue <i>Festuca gigantea</i> , Hairy-brome <i>Bromopsis ramosa</i> , Three-nerved sandwort <i>Moehringia trinervia</i> , enchanter's nightshade <i>Circaea lutetiana</i> and the uncommon species barberry <i>Berberis vulgaris</i> . Wildlife Site criteria: Ancient Woodland Inventory site; woodland indicators.

Habitat inventories and landscape-scale conservation initiatives

Ancient woodland

- 3.5 There are six areas of woodland on the Ancient Woodland Inventory (AWI) within a 2km search radius and they are also designated as LWS. Five of the six AWIs are within Patmore Hall Wood; these woodland patches are between 500m-1.5km southwest of the site (see Table 3.3 for details). The other area of AWI is Shaw Wood located 1.5km southeast from the Site (Table 3.3.).

Table 3.3: Ancient Woodland Inventory Sites

Site Name	Distance from site and orientation	Reason for designation
Patmore Hall Wood	500m south-west	Woodland that retains a native tree and shrub cover that has not been planted, although it may have been managed by coppicing or felling and allowed to regenerate naturally. This covers all stands of ancient woodland which do not obviously originate from planting.
Patmore Hall Woodland AWI Patches	550m, 800m, 980m, 1.1km, 1.5km Southwest	Mainly ancient semi-natural hornbeam <i>Carpinus betulus</i> coppice woodland with pedunculate oak <i>Quercus robur</i> standards. Parts have been planted with conifers such as Scots pine <i>Pinus sylvestris</i> , European larch <i>Larix decidua</i> and Norway spruce <i>Picea abies</i> . There are large area of bluebell <i>Hyacinthoides non-scripta</i> and dog's mercury <i>Mercurialis perennis</i> under the hornbeam coppice plus areas of bracken <i>Pteridium aquilinum</i> . Other species of note are wood anemone <i>Anemone nemorosa</i> , hairy wood-rush <i>Luzula pilosa</i> , early purple orchid <i>Orchis mascula</i> and primrose <i>Primula vulgaris</i> . The woodland has heathy rides and supports important glade floras as well as being important for bryophytes. A large recent ditch

Table 3.3: Ancient Woodland Inventory Sites

Site Name	Distance from site and orientation	Reason for designation
		surrounds the wood. Wildlife Site criteria: Ancient Woodland Inventory site; woodland indicators.
Shaw Wood	1.5km Southeast	woodland that retains a native tree and shrub cover that has not been planted, although it may have been managed by coppicing or felling and allowed to regenerate naturally. This covers all stands of ancient woodland which do not obviously originate from planting.

Habitats of Principal Importance

- 3.6 No HPI have been identified within the wider survey area or Site. Habitats identified within a 2km radius include lowland meadow, ancient woodland, deciduous woodland, coastal and floodplain grazing marsh, and good quality semi-improved grassland (non-priority).
- 3.7 Immediately adjacent to the western boundary of the wider survey area is a patch of mixed broadleaf woodland (HPI). On the edge of the woodland patch is a large veteran oak tree (Appendix 1, Figure 1, Target Note 4). This veteran tree is situated immediately beyond the survey area boundary by the northwest corner of the entrance driveway.

European Protected Species Mitigation (EPSM) Licences within 2km

- 3.8 There was a single EPSM licences evident from the Magic search (www.magic.gov.uk) within the 2km search area. There EPSM bat licence from 2011 was for the destruction of a resting place for brown long eared bat, common pipistrelle and Natterer's bat approximately 1.9km south-east from the survey area boundary.

Great Crested Newt Surveys 2017-2019 for District Level licencing (DLL)

- 3.9 In addition, survey data for the District Level Licencing scheme confirmed the presence of great crested newts 2km south-east of the survey area boundary (www.magic.gov.uk).

PHASE 1 HABITAT SURVEY

Overview

- 3.10 The wider survey area consists of amenity grassland, species-poor hedgerow, scattered mature trees, hard-standing, dry ditch, and three barns. The Phase 1 habitat types are mapped in Figure 1, Appendix 1, areas are given in Table 3.4. A description of dominant

and notable species and the composition of each habitat is provided below. Photographs are provided in Appendix 2; a species list is provided in Appendix 3, the preliminary roost assessments are included in Appendix 4 and target notes are detailed in Appendix 5.

Table 3.4: Phase 1 Habitat Areas

Phase 1 Habitat	Extent	%
Amenity grassland	2056.6 m ²	74.7
Hardstanding	416 m ²	15.1
Buildings	280.1 m ²	10.2

Habitat description

Amenity grassland

- 3.11 The survey area predominantly comprised amenity grassland lawn. The amenity lawn formed the area immediately surrounding Barns J and K and included, among other species, frequent meadow-grass and creeping buttercup. The sward was mown very short and appeared to be regularly managed in this way.

Hard standing

- 3.12 The area surrounding Barn A comprised hard standing with compacted aggregate to the east, forming a car park for the barn, and to the east of Barn A the hard standing comprised concrete pad. These habitats lie within the Site.

- 3.13 The access track forming the western boundary of the Site comprised gravel.

Buildings

- 3.14 The buildings within the wider survey area comprised three barns (Barns A, J and K) which are proposed for conversion to residential dwellings; Barn A has received planning permission. Barns J and K are the subject of a second application. Barn A was the largest barn and was being used as a wood workshop. It was of a timber weatherboard construction on a brick-built base with some damaged mortar and gaps in the lower brickwork. The roof is a gable-ended, intersecting hipped roof with slate tiling. The external weather boards are covered in a bitumen paint. There is a small area of brickwork above the base and rendered brickwork on the northern aspect. The slate tiled roof has lead flashing in the valley that is not present on the ridge. Internally there was a mix of historic and new timbers within the walls and roof, with the roof lining comprising bitumen felt.

- 3.10 Barn J is the larger of the two barns within the application area. It is dry inside and currently used for storage. It is built on a rendered brick base and is of a timber construction, again with bitumen coated weatherboard. The roof is a gable end roof with clay peg tiles. This barn has wooden framed window in the wall on the western aspect. Internally there are rough sawn timber joists and joints with metal fixings which are relatively modern, however the walls and some of the cross beams are constructed of much other hand-hewn timbers. There is no cavity wall present in the upper sections of the barn, but the lower walls have a wooden cavity section. The floor is a concrete base.
- 3.11 Barn K is the smallest of the barns. It is built on a brick base with loose mortar and gaps in the lower brickwork. The condition of the barn is becoming quite poor, it is dry inside but in need of some maintenance. The barn is of a timber weatherboard construction with the timbers covered in a bitumen paint. There are wooden framed windows in the wall on the eastern aspect. The roof is a Dutch roof with an intersecting gable hip on the western aspect; the roof tiles are clay peg tiles with several damaged tiles either cracked or missing. The original hand-hewn timbers show signs of repair with rough sawn timber replacements. There are large gaps around the aged mortise tenon joints. The floor is a concrete base and there is no cavity wall present.

Species-poor hedgerow

- 3.12 The northern boundary of the survey area and Site, which is bounded by Hixham Road (a private road to the property), had a section of species-poor intact native hedgerow. The hedgerow runs almost the entire northern boundary of the Site with the exception of a large entrance and very few sparse gaps. It is intact and maintained. Species present within and at the base of the hedgerow included hawthorn, elderflower, spindle, bryony, ivy, alder and holly.

Scattered trees

- 3.13 There were several mature trees of mixed species scattered in a rough line adjacent to the hedgerow on the northern boundary of the Site. The mature tree species were cherry, horse-chestnut, field maple, beech and hornbeam. There is a mature ornamental tree immediately next to Barn J.

Dry ditch

- 3.14 There was a small (c. 4m) section of dry ditch within the amenity grassland of the wider survey area. This section of ditch extends through the adjacent woodland and connects to one of the two ponds which are located south of the Hixham Hall residence. The

section of ditch connects to the woodland ditch section via a culvert beneath the gravel access track.

PROTECTED AND INVASIVE SPECIES ASSESSMENT

3.15 The potential for the survey area and Site to support protected species has been assessed using criteria defined in Table 2.1. The assessment results are presented in Table 3.5 and are based on the results of the desk study and observations made during the habitat survey. Other legally protected species are not referred to as it is considered that the survey area/Site does not contain habitats that would be suitable to support them. The following species/species groups are potentially present at the site:

bats;

great crested newts;

breeding birds;

reptiles; and



3.16 The table also summarises relevant legislation and policies relating to protected and invasive species. Key pieces of statute are summarised in Section 1 and set out in greater detail in Appendix 6.

Table 3.5: Protected and Invasive Species Assessment

Habitat/ species	Status 12, 13	Likelihood of occurrence
Bats Roosting Foraging/co mmuting	HR WCA S5	<p>HIGH-(SITE) CONFIRMED (WIDER SURVEY AREA): There was a confirmed bat roost in the mortise and tenon joint in Barn K (see Photograph 1 in Appendix 2, and Target Note 1 in Appendix 5). Barn A and Barn J were considered to be of high suitability for roosting bats owing to the presence of various potential roost features. There was evidence of bat use in all three barns in the form of various sized bat droppings, both fresh and old, and feeding remains of lepidopteran wings predominantly large yellow underwing moths.</p> <p>Barn A: There were scattered bat droppings present on internal mezzanine floor, potential access points through missing or broken tiles and gaps around the eaves (Appendix 1, figure 1, and Appendix 4, Table 4.1).</p> <p>Barn J: Scattered bat droppings present, the internal timber beam terminals provide potential external access for bats, and damaged tiles also provide potential external access for bats (Appendix 1, figure 1, Appendix 4, Table 4.2).</p> <p>The scattered bat droppings in barn A and J were distributed over a wide area and not concentrated under roost features, this type of evidence may be indicative of bats foraging and flying into the barns it does not confirm the presence of a roost in the two barns A and J. A confirmed bat roost was present in barn K with at least one bat roosting in a mortise tenon joint on the western elevation.</p> <p>Barn K: had loose fitting doors externally with access gaps, missing and cracked roof tiles providing potential access points for bats, Internally the barn has timber rafters, beams and joists with suitable roosting locations. There are several mortise and tenon joints with large gaps leading to recessed voids suitable for roosting bats, one of which was found to be supporting a bat roost. There was at least one bat roosting in this mortise tenon joint, a small number droppings were scattered on the timber beam and wall beams below the feature (Appendix 1, Figure 1 and Figure 3; Appendix 2, Photograph 1 and 5; Appendix 4, Table 4.3, and Appendix 5, Target Note 1).</p> <p>There is potential for bats to use the hedgerow for commuting and foraging along the northern boundary as well as the off-site woodland on the western boundary of the survey area. There is one veteran oak tree off-site immediately west of the entrance to the survey area which has aged features, including thick stem ivy covering suitable for roosting bats (see Appendix 1 Figure 1; Appendix 5 Target Note 4 and Photograph 4). The Site is linked to suitable off-site roosting and foraging habitat via hedgerows, woodland and grassland and contains habitats suitable for foraging bats.</p>

¹² The following abbreviations have been used to signify the legislation regarding different species: HR = Conservation of Habitats and Species Regulations 2017 (as amended); WCA S1 = Schedule 1 of the Wildlife and Countryside Act 1981 (as amended); WCA S5 = Schedule 5 of the Wildlife and Countryside Act 1981 (as amended); WCA S9 = Schedule 9 of the Wildlife and Countryside Act 1981 (as amended); PBA = Protection of Badgers Act, 1992.

¹³ The following abbreviations have been used to signify the policy of conservation assessments applying to notable species: SPI = Species of Principal Importance under the NERC Act 2006; LBAP = Local Biodiversity Action Plan species; BoCC = Birds of Conservation Concern - amber list / red list (Stanbury *et al.* 2021); and/or RD/NN = red data book/nationally notable species (JNCC, undated).

Table 3.5: Protected and Invasive Species Assessment

Habitat/ species	Status 12, 13	Likelihood of occurrence
		<p>There are 90 desk study records of eight species of bats within 2km of the survey area/Site including brown long eared bat, common pipistrelle, soprano pipistrelle, Natterer's bat, serotine, whiskered bat, western barbastelle and Leisler's bat.</p> <p>Buildings with a confirmed bat roost as well as high suitability for roosting bats are present on or adjacent to the Site and will be affected by the proposals. Therefore, bats are considered further in Section 4 of this report.</p>
Great crested newts	HR WCA S5	<p>HIGH: There are two ponds identified within 250m of the survey area/Site that could support breeding great crested newt. There are desk study records for this species within 2km of the survey area/Site. The majority of records are from within the village of Gravesend 1.1km south. A single record was from a site 1.2km north of the Site. Connectivity from the great crested newt locations to the Site would be via an arable and wooded landscape. Habitats on and adjacent to Site are potentially suitable for great crested newts during the terrestrial phase of the life cycle for foraging, refuge and hibernation. These include the woodland patch, and open brickwork and small rubble area at the foot of Barn K (Appendix 2 Photograph 2 and Appendix 5, Target Note 2).</p> <p>Habitat suitable for great crested newts are present and may be affected by this proposal. Therefore they are considered further in Section 4 of this report.</p>
Birds	WCA	<p>PRESENT: The data search returned several records for farmland birds, including but not limited to song thrush, swallow, wryneck, fieldfare and yellowhammer. Several of which are red listed Birds of Conservation Concern (BoCC). The data search also returned records for both swallows, which are BoCC and swifts, which are red listed BoCC. One record for Barn owl (Schedule 1 WCA) was returned from the data search. There is potentially suitable habitat for nesting small passerine such as dunnock (SPI) and barn owl present on site within the barns; however, no evidence of use was recorded during the survey. There was an unoccupied bird nest present in Barn K (Appendix 2, Photograph 3. Appendix 5, Target Note 3). The species-poor hedgerow and scattered trees provided suitable nesting habitat for common bird species. Several common bird species were observed during the habitat survey including wren, blue tit, coal tit, great tit, blackbird, robin, dunnock (Amber BoCC & SPI).</p> <p>It is likely that breeding birds will occur at the site in low numbers and as such they are considered further in Section 4 of this report.</p>
Reptiles	WCA S5	<p>LOW: Habitats within the survey area/Site suitable for supporting breeding or foraging reptiles include hedgerows, tree stumps and leaf litter within the off-site but adjacent broadleaf woodland. The Site is connected to similar suitable off-site habitat including, grassland, woodland and hedgerows. However, suitable habitat at the Site was of limited extent.</p> <p>There are 19 desk study records for two reptile species within 2km of the survey area/Site; common lizard and grass snake all occurring at Patmore Heath SSSI (c. 1.2 km south-west).</p>

Table 3.5: Protected and Invasive Species Assessment

Habitat/ species	Status 12, 13	Likelihood of occurrence
		Considering the above, there is a low likelihood that widespread reptiles may occur at the site in low numbers and as such they are considered further in Section 4 of this report.
Invasive species	WCA S9	<p>NEGLIGIBLE: There are desk study records for invasive species within 2km of the survey area/Site, including some listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). Whilst a number of species occurring on Schedule 9 are commonly found in the area none were recorded during the habitat survey.</p> <p>As there is a negligible likelihood of presence, invasive species listed on Schedule 9 are not considered further in this report.</p>

NATURE CONSERVATION EVALUATION

- 3.17 The wider survey area and Site is not subject to any nature conservation designations. The survey area contains small areas of common and widespread habitats, which are considered to be of importance at the local site level only, with the Site itself comprising barns, hard standing and a species-poor hedgerow to the north. There is no public access to the survey area/Site. The habitat types present within the survey area/Site do not qualify as Habitats of Principal Importance or Hertfordshire Biodiversity Action Plan (BAP) habitats.
- 3.18 Approximately 150m to the south is a LWS the 'meadow south of Hixham Hall' and there is connectivity between the survey area/Site, meadow and the wider landscape via woodland, tree lines and hedgerows. Adjacent to the survey area, immediately to the west, is a patch of mixed broadleaf woodland with mature and veteran trees present; this woodland patch is a Habitat of Principal Importance and a Hertfordshire BAP habitat and is considered of local importance due to connectivity in the landscape to several woodlands in the area potentially providing a supporting function to ancient woodland, Patmore Hall Woods. There are several parcels of HPI habitats scattered across the landscape with 2 km of the survey area/Site.
- 3.19 The habitats within the survey area/Site were suitable for a range of noteworthy species, including Species of Principal Importance (SPI) and Hertfordshire BAP species, as reported in the desk study or recorded during the survey, as follows:
- great crested newts;
 - bats;
 - reptiles;
 - dunnock and other widespread but declining species of birds that are also species of conservation concern¹⁴;
 - hedgehog (SPI);
- 3.20 . On-site habitats at the Site, and within the wider survey area, are likely to be of importance within the immediate vicinity of the Site only. It is unlikely that the Site, or wider survey area, would support large populations of any noteworthy species.

¹⁴ Birds of Conservation Concern - amber list / red list (Stanbury *et al.*, 2021);

3.21 Records for brown long-eared bat, Leisler's bat, common pipistrelle, soprano pipistrelle, whiskered bat, Natterer's bat, western barbastelle and serotine which are all Species of Principal Importance (SPI), were provided in the desk study. It is not possible to confirm the importance of bat populations that may be present at the Site (Barns J and K) until further surveys have been undertaken. Recommendations for further survey are provided in Section 4.

4 Potential Impacts and Recommendations

4.1 This section summarises the potential impacts on habitats and notable species that may be present at the Site and within the wider survey area. The impact assessment is preliminary and further detailed assessment and surveys will be required to assess impacts and design suitable mitigation, where appropriate.

4.2 The following key ecological issues have been identified:

A confirmed bat roost is present in Barn K – further survey will be required to establish the type of roost present prior to an application for its conversion;

habitat suitable for roosting bats is present on Site and within the wider survey area – further survey will be required to establish their presence/likely absence in Barns A (planning permission granted) and J and elsewhere within Barn K prior to an application for their conversion;

terrestrial habitat suitable for great crested newts is present within the wider survey area and hedgerow habitat on site – further survey will be required to establish their presence or absence at the site;

habitat suitable for breeding birds is present within the wider survey area and hedgerow habitat and building on site – measures must be taken to avoid killing birds or damaging/destroying their nests;

habitat suitable for widespread reptiles is present within the wider survey area and hedgerow habitat on site – measures must be taken to avoid killing or injuring reptiles;

habitat suitable for hedgehog is present within the wider survey area and hedgerow habitat on site – measures should be taken to continue accommodating this species on Site post-development;

a range of measures must be undertaken to satisfy the requirement for ecological enhancement included in planning policy and the Environment Act 2021.

CONSTRAINTS AND MITIGATION/COMPENSATION

Designated Nature Conservation Sites

4.3 No impacts are envisaged on statutory or non-statutory designated sites due to the small scale of the proposed development and distance of the Site from any designated site. The site is within the Impact Risk Zone (IRZ) of Patmore Heath SSSI; however, the

proposals do not meet the criteria¹⁵ that require the Local Planning Authority to consult with Natural England. Therefore, there are no constraints to the proposed development in this regard.

Habitats

- 4.4 There will be very little loss to any habitat within the wider survey area or on the Site due to the buildings being present already and only soft landscaping and possible parking will be required, which could result in a small loss of amenity grassland (wider area).
- 4.5 It is unlikely that any of species-poor hedgerow along the northern border of the Site will have to be removed during the proposed development. However, if retention of the entire hedgerow is not possible, then any loss should be compensated through appropriate landscaping e.g. the creation of new species-rich native hedgerows in order to strengthen wildlife corridors throughout the Site and wider area.
- 4.6 Any trees present within the wider survey area should be retained where possible. The line of scattered mature trees provide both habitat and ecological connectivity. Best environmental practice measures should be implemented to protect retained trees and provide root protection zones following the recommendations and guidelines to comply with BS 5837:2012.
- 4.7 No further constraints were identified in relation to the intrinsic value of the habitats present; however further surveys are required to establish their role in supporting protected species and the results of these will inform how clearance of any habitat and works on the buildings should be undertaken. The adjacent woodland patch, which is a habitat of principal importance and has a local biodiversity action plan in Hertfordshire will not be directly affected by the proposed development but should be protected from light spill during construction and operational phases of the development, in relation to nocturnal wildlife such as bats (see below).

Bats

- 4.8 All British species of bat are listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended). Under this legislation it is an offence to deliberately capture, kill and disturb bats and to damage, destroy or obstruct access to a bat roost.

¹⁵ "Residential development of 100 units or more or if any residential development of 50 or more houses outside existing settlements/urban areas"

Some species of bat are also Species of Principal Importance and Hertfordshire BAP species.

- 4.9 One of the three barns, Barn K, had a confirmed bat roost present. Therefore, three bat activity surveys, comprising dusk emergence and/or dawn re-entry surveys, should be carried out during the active period for bats which is between May and September inclusive to inform any subsequent planning application for its conversion. These surveys will be required to characterise the roost type present as well as identify whether there are other roost locations within the barn. The information gathered will inform any subsequent mitigation licence application to Natural England and the design of an appropriate mitigation strategy.
- 4.10 Both Barns A and J have evidence of use by bats. Further survey is required to determine the current status of the barns as bat roosts and to characterise any roost present. Further survey requirements are outlined below (Table 4.1). Should a bat roost be present and be affected by proposed works, a mitigation licence and strategy will also be needed for these barns.
- 4.11 It is recommended that measures are implemented to avoid night-time lighting of all retained (or proposed) features with potential for roosting bats, as well as areas that could provide flight lines and foraging habitats for bats, such as the sections of hedgerow or the edges of woodland patch. Further advice and, if required, a Lux plan, should be produced to show predicted light levels across key areas of the Site and wider survey area, with a strategy produced to avoid or minimise light emissions in these areas.

Great crested newts

- 4.12 Great crested newts are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and under Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended). The great crested newt is a Species of Principal Importance protected under Section 41 (S41) of the Natural Environment and Rural Communities (NERC) Act 2006. The great crested newt is also a Hertfordshire BAP species.
- 4.13 Further survey of the two ponds within 250m of the Site (Appendix 1, Figure 2) will be required to identify if great crested newts are present/likely absent at the ponds. The ponds provide potentially suitable breeding habitat and have connectivity to the Site and wider survey area, which has suitable terrestrial habitat for hibernation, sheltering and foraging.

Breeding birds

- 4.14 All wild birds and their active nests are protected under the Wildlife and Countryside Act 1981 (as amended). The wider survey area supports at least two common species of breeding bird, which are wren and blackbird, and is highly likely to support others.
- 4.15 Where the proposed works require the removal of vegetation (such as trees or hedgerows on/adjacent to the Site) or structures with the potential to support breeding birds, this must be carried out September to February inclusive to avoid any potential offences relating to breeding birds (Newton *et al.*, 2011).
- 4.16 If removal during the breeding season is unavoidable then potential nesting habitat must be inspected by a suitably qualified ecologist to identify active birds' nests. This inspection should take place no more than 48 hours before the work commences. If the ecologist identifies an active nest, the nest and a suitable buffer of habitat around it must be retained until the young have left the nest or the nest is no longer active.

Reptiles

- 4.17 All species of reptile are listed as SPI and protected from killing and injury under the Wildlife and Countryside Act 1981 (as amended). The slow worm (*Anguis fragilis*), grass snake (*Natrix natrix*) and common lizard (*Zootoca vivipara*) are all Hertfordshire LBAP species.
- 4.18 Habitats with the potential to support reptiles were present within the wider survey area and on the Site including the base of the hedgerow. However, both the Site and wider survey area are unlikely to support large numbers of reptiles due to the limited extent of suitable habitat, the low number of desk study records in the immediate area. Any populations present are likely to be small and comprise widespread species such as grass snake and would more likely be present in the adjacent woodland and wetland habitats off-site.
- 4.19 Due to the potential for low numbers of reptiles to be present it is not necessary to carry out reptile surveys but management of suitable habitat is required, as a precaution, to dissuade reptiles from using the site (should they be present). This precautionary approach aims to avoid any potential impacts on reptiles and to ensure compliance with the relevant legislation.



Hedgehogs and other small mammals.

- 4.22 During the construction phase it is important to leave a plank of wood or similar as a mammal ladder in all excavations to allow small mammals an opportunity to climb free from the excavation.
- 4.23 The proposed development may include the use of fencing to divide the residential properties, which will fragment an area of foraging and nesting habitat of value to generalist wildlife such as hedgehogs and other small mammals.
- 4.24 It is therefore recommended that if permanent fencing is erected during the proposed development that the connectivity is maintained across the site by installing wildlife-friendly fencing, with gaps or tunnels in the bottom panels/gravel boards to allow easy passage for small mammals to continue foraging in this area. This can be achieved for example by cutting a hole (approximately 13cm²) in certain gravel boards, which is large enough for small mammals to pass through, but small enough to contain pets.

Environmental best practice

- 4.25 Retained trees within the wider survey area should be protected in accordance with British Standards Institution (2012) guidelines.
- 4.26 Table 4.1 lists further survey requirements as recommended in the constraints section.

Table 4.1: Further survey requirements

Species/ Habitat	Survey Requirement	Number of surveys and seasonal considerations
Bats	Emergence/re-entry surveys.	Three emergence/re-entry survey visits are required to characterise the roost present within Barn K and identify any other roost locations. The other two barns both had evidence of bat use and high suitability to support roosting bats. Three emergence/re-entry survey visits are required to identify if bats are roosting in these barns. Activity surveys must be carried out between May and September and ideally spread evenly across this period with at least two weeks between visits (Collins, 2016).
Great crested newts	To survey the ponds present that are within 250m of the site for the presence of great crested newts. If present, further survey may be required.	Presence or absence of great crested newt is determined by taking a sample of the water for environmental DNA (eDNA) analysis. A habitat suitability index (HSI) for great crested newts will be calculated to assess the suitability of the two pond habitats for great crested newts. If further surveys are required, they must be conducted during mid-March to mid-June.

MITIGATION & COMPENSATION

Bats - Roost sites

4.27 It will be necessary to undertake further survey of Barn K before detailed mitigation/compensation recommendations in relation to the known roost can be provided; this is to ensure that they are the most appropriate measures for the species and roost type concerned, and also to ensure that any other roosts within the barn are identified. However, in general terms, options should follow the established Mitigation Hierarchy as set out in Section 5.2 of BS42020:2013. This seeks, as a preference, to avoid impacts, then to mitigate unavoidable impacts and, as a last resort, to compensate for unavoidable residual impacts that remain after avoidance and mitigation measures.

4.28 In the event that bats are also found to be roosting within Barns A (on-Site) & J and the loss or damage of the roost sites and/or disturbance of bats is unavoidable, the appropriate licence will need to be obtained prior to works commencing (but after planning permission has been granted). Depending on the species present and the size, number and status of the roost(s) present, a mitigation licence (formerly known as a European Protected Species Mitigation (EPSM) licence) may be required. Alternatively,

it may be more appropriate to register the site on the Bat Mitigation Class Licence (BMCL) – this is, however, limited to low impact works affecting only small numbers of common species of bat.

4.29 Depending on the above, compensatory roost sites may need to be designed and incorporated into the proposed development to ensure that the favourable conservation status of the species concerned is maintained in the long-term. The design of these replacement roosts is dependent on the species present and the status and size of the roost. The loss of low status roosts of common species such as common and soprano pipistrelle can often be compensated for by the provision of bat boxes or the incorporation of small numbers of roost features in new builds. Higher status roosts require more substantial provision. Careful timing of works may also be required, for example, by avoiding the removal of roost features within the breeding or hibernation seasons when bats are most sensitive to disturbance.

Bats -Foraging and commuting habitat

4.30 The hedgerow (on-Site) and scattered tree line habitats provide suitable foraging and commuting habitat for bats in the local area and should be retained wherever possible, particularly the section of hedgerow along the northern boundary due to its provision of connectivity with suitable off-site habitat within the wider landscape. Any unavoidable loss should be compensated for through appropriate wildlife planting with input from a suitably experienced ecologist to ensure that habitat connectivity is maintained, and that an appropriate mix of species is used. In line with current national and local planning policy and the principle of Biodiversity Net Gain, measures should also aim to enhance the site's value for biodiversity as a result of the development. Outline recommendations are provided below in the ecological enhancements section.

4.31 As some bat species can be deterred by artificial lighting (Jones, 2000), it is recommended that a sensitive lighting strategy is designed with input from a suitably experienced ecologist to minimise illumination of retained foraging habitat and potential flight corridors. Construction works should only be conducted during daylight hours. No lighting should be used near or aimed at the woodland patch to the west. Particular care should be taken to avoid lighting the veteran tree (TN4), the hedgerow or scattered tree line. Any intended lighting strategy should incorporate the use of low impact and directional lighting. Specific recommendations can be made once it is more fully understood how the site is being used and by which species, but general recommendations can be found in below in the 'opportunities for ecological enhancement' section.

Birds

- 4.32 Depending on the results of the bat surveys which may necessitate certain timings, Barn K should either be converted to its proposed use outside the bird breeding season (i.e. converted between September to February inclusive), or be thoroughly checked by an ecologist for the presence of active nests no more than 48 hours prior to construction work beginning. Clearance of any vegetation suitable for nesting birds, such as hedgerow should also be undertaken in this manner. If any empty nests need to be removed from inside the barns, then these should be taken down between September and February.
- 4.33 To compensate for the loss of bird nesting opportunities within Barn K, four suitable bird boxes should be erected either on the new builds and on trees in undisturbed locations. The boxes to be installed should be suitable for use by species such as house sparrow (Red Listed BoCC), spotted fly catcher (Red Listed BoCC), and barn owl which are all recorded locally. These should be positioned at least 3m up and away from sources of potential disturbance from cats and public. Woodcrete models are recommended as these are longer lasting, require little maintenance and provide a more stable environment for inhabitants.

Great crested newts

- 4.34 A further survey of the two ponds for great crested newts is required. The ponds will be surveyed using environmental DNA (eDNA) surveys. A water sample from each pond will be sent to a laboratory for analysis, to identify if great crested newt DNA is present in the water body. This survey should be performed between mid-April and late June. A habitat suitability index will also be calculated for each pond, to identify how suitable each pond habitat is for great crested newts.
- 4.35 The mitigation strategy for great crested newts will be informed by the required survey of the two ponds within 250m of the site. The removal of any potential refugia sites or hibernation sites must be done by hand if newts are found to be present in the ponds close to the site. It may be suitable to complete the removal of refugia or hibernation sites under a watching brief of suitably qualified ecologist, this will be dependent on the results of the of the eDNA survey.

Reptiles

- 4.36 All reptiles receive protection against killing and injury under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended).

- 4.37 Suitable habitat exists on site and within the wider survey area for common and widespread reptiles such as the hedgerow base for foraging, hibernation and refuge in the brickwork of the foundations in Barns A and K.
- 4.38 If grassland or hedgerows is to be cleared it should be carried out using hand tools, using a two stage clearance method; whereby vegetation is cut to a minimum height of 200mm before taking to ground level. Any potential refugia should be dismantled by hand, particular care should be taken working on the loose brickwork in the footings of Barn A and Barn K. This work should be carried out between March-October, best carried out in April, May and September. Finally, during the construction phase material storage should be off-ground on pallets to avoid creating refugia and attracting reptiles onto the site.

OPPORTUNITIES FOR ECOLOGICAL ENHANCEMENT

- 4.39 Planning policy at the national and local level and strategic biodiversity partnerships require inclusion of ecological enhancements in development projects. Ecological enhancements can also contribute to green infrastructure and ecosystem services such as storm water attenuation and reducing the urban heat island effect. The following measures would be suitable for integration into the site's design but would require a more detailed design to successfully determine and implement.

Wildlife planting

- 4.40 Wildlife planting should be integral to the soft landscape plans and should include native species and/or species of recognised wildlife value¹⁶. The use of nectar-rich and berry producing plants will attract a wider range of insects, birds and mammals and continue to accommodate those already recorded at the site. Trees should also be provided and can be under-planted to improve structure and cover for wildlife. Consideration should also be given to creation of species-rich native hedgerows.
- 4.41 Good horticultural practice should be utilised, including the use of peat-free composts, mulches and soil conditioners, native plants with local provenance and avoidance of the use of invasive species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

¹⁶ For example The Royal Horticultural Society (RHS) Perfect for Pollinators Scheme <https://www.rhs.org.uk/science/conservation-biodiversity/wildlife/encourage-wildlife-to-your-garden/plants-for-pollinators> and the joint RHS/Wildlife Trust's Gardening With Wildlife In Mind Database <http://www.joyofplants.com/wildlife/home.php>

4.42 Landscaping should include the use of climbing plants growing on a support structure to provide vertical nesting habitat and foraging resources for birds and invertebrates. The support structure should ideally be placed 50-100mm off the façade. Plants should comprise native species or non-native species of recognised wildlife value and either deciduous or evergreen species depending on the specification.

Provision of bird nesting opportunities

4.43 The provision of bird boxes would be appropriate at this site. Many different designs are available including boxes to support colonial species such as house sparrow. Woodcrete bird boxes (e.g. Schwegler) are recommended as they are long lasting compared to wooden boxes, insulate occupants from extremes of temperature and condensation and are available in a broad range of designs. It would be appropriate to add specific bird boxes into the building plans. The installation of swift nest boxes or house sparrow nest boxes into the eaves would be appropriate at this site. A range of nest boxes to support small passerine species such as wren, robin and starling could be placed on suitable trees in the scattered tree line. The installation of these various nest boxes in addition to any nest boxes required for compensation of lost nesting opportunities offer good ecological enhancement measures that aim to maximise biodiversity benefits.

References

Biodiversity Reporting and Information Group (2008) *UK Biodiversity Action Plan Priority Habitat Descriptions*. JNCC. Peterborough.

British Standards Institution (BSI) (2012) BS 5837:2012- *Trees in relation to design, demolition and construction*. BSI, London.

British Standards Institution (2013) Biodiversity. Code of practice for planning and development: 42020. BSI, London.

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

CIEEM (2019) Advice note: The lifespan of ecological reports and surveys. Publication prepared by Chartered Institute of Ecology and Environmental Management, Winchester. <https://cieem.net/wp-content/uploads/2019/04/Advice-Note.pdf> [accessed 21 September 2021].

CIEEM (2021) Good Practice Guidance for Habitats and Species. Version 3. Chartered Institute of Ecology & Environmental Management, Winchester.

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

Connolly, S. & Charles, P. (2005) *Environmental good practice pocket book*. CIRIA, London.

Environment Agency (2007) *Pollution Prevention Guidelines – Works and maintenance in or near water: PPG5*. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/290145/pmho1107bnkg-e-e.pdf [accessed 18 September 2021].

Gent, T. and Gibson, S. (2003) *Herpetofauna Workers Manual*. JNCC, Peterborough.

JNCC (2010) *Handbook for Phase 1 Habitat Survey – A Technique for Environmental Audit*. England Field Unit, Nature Conservancy Council. Reprinted by Joint Nature Conservation Committee, Peterborough.

Langton, T.E.S., Beckett, C.L., and Foster, J.P. (2001) *Great Crested Newt Conservation Handbook*. Froglife, Halesworth.

MAGIC (2021) *Multi-Agency Geographic Information for the Countryside*. <http://www.magic.gov.uk/> [accessed 18 November 2021].

Ministry of Housing, Communities and Local Government (2021) *National Planning Policy Framework*. DCLG. London [accessed 12 January 2022].

Natural England (2021) *GIS Digital Boundary Datasets – Priority Habitat Inventory*. http://www.gis.naturalengland.org.uk/pubs/gis/GIS_register.asp [accessed 18 November 2021].

Newton, J., Nicholson, B., Saunders, R., Willets, R. & Venables, R. (2011) *Working with wildlife: guidance for the construction industry* (2nd Ed.). CIRIA, London.

Roper, T.J. (2010) *Badger*. Harper Collins, London.

Stace, C.A. (2010) *New Flora of the British Isles* (3rd Ed.). Cambridge University Press, Cambridge.

Stanbury, Andrew & Eaton, Mark & Aebischer, Nicholas & Balmer, Dawn & Brown, Andy & Douse, Andy & Lindley, Patrick & Mcculloch, Neil & Noble, David & Win, Ilka. (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.

The East Herts District Plan (2018). The district plan for eastern Hertfordshire as the local planning authority. <https://www.eastherts.gov.uk/planning-building/planning-policy/east-herts-district-plan-2018> [accessed 30/01/2022].

Appendix 1: Habitat Map

Figure 1: Habitat Survey Map (survey area with Site (Barn A, hard standing and hedgerow section) in the north)

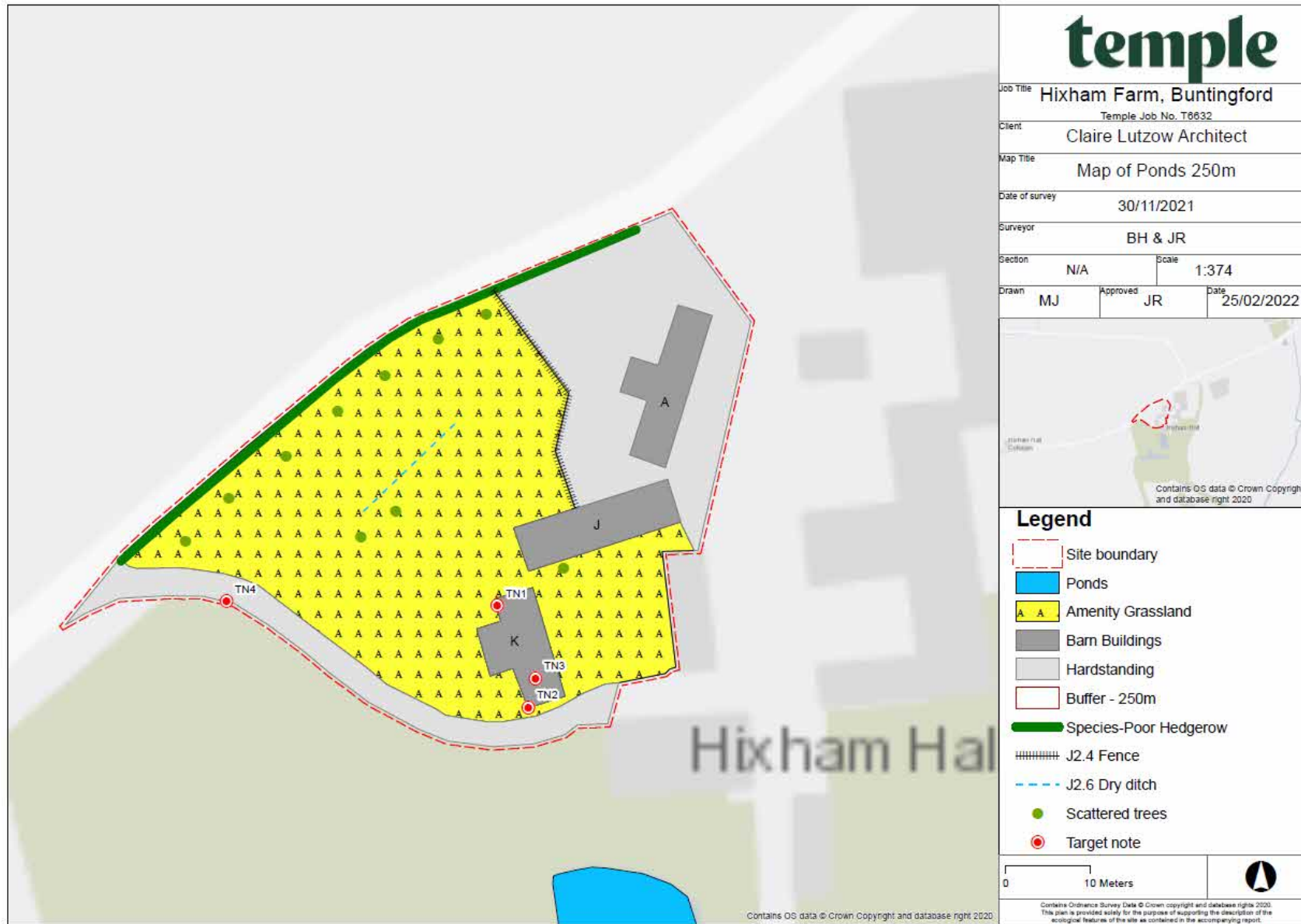


Figure 2: Pond habitat Survey Map

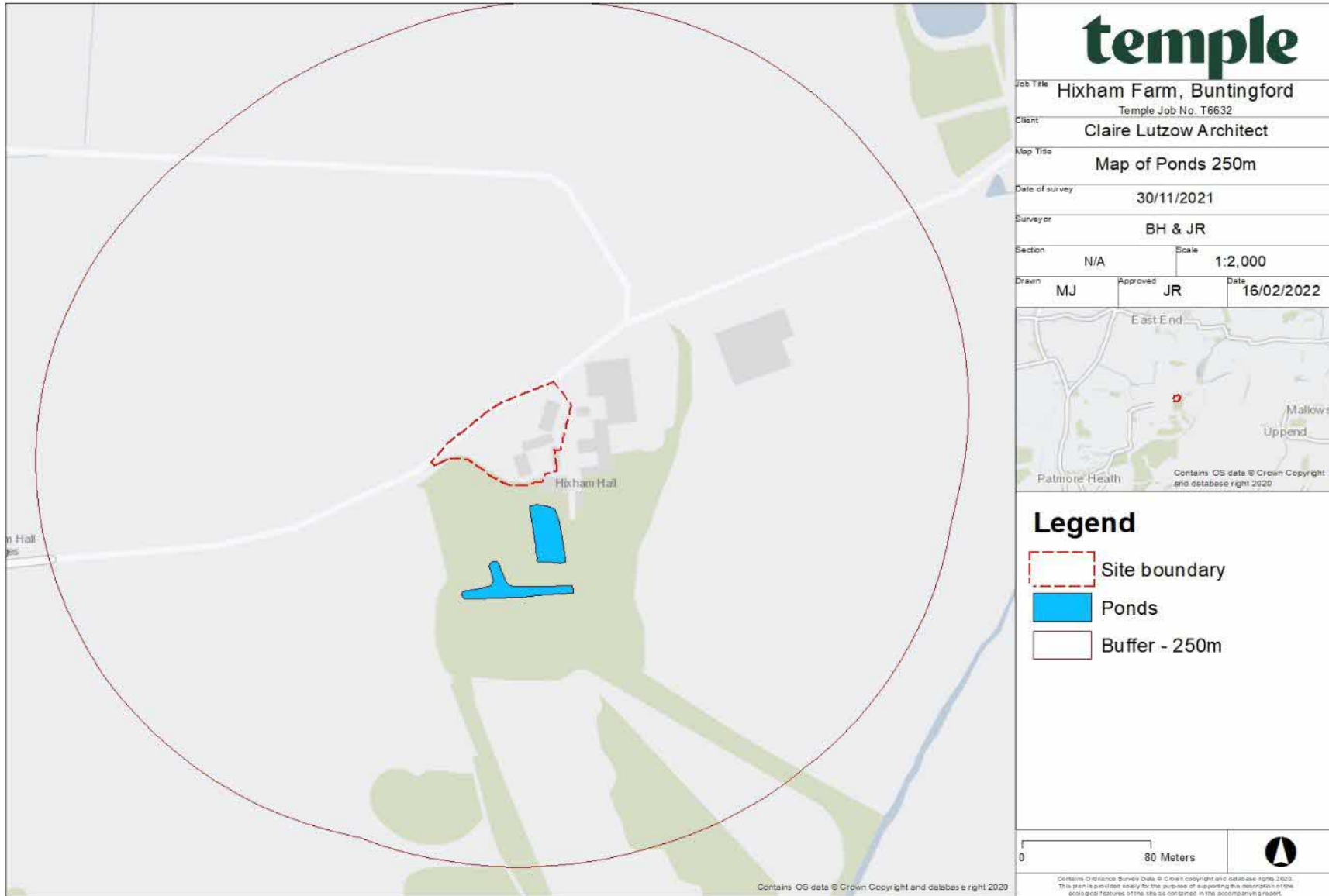


Figure 3: Preliminary Roost Assessment (PRA) Map of the three barns A, J and K

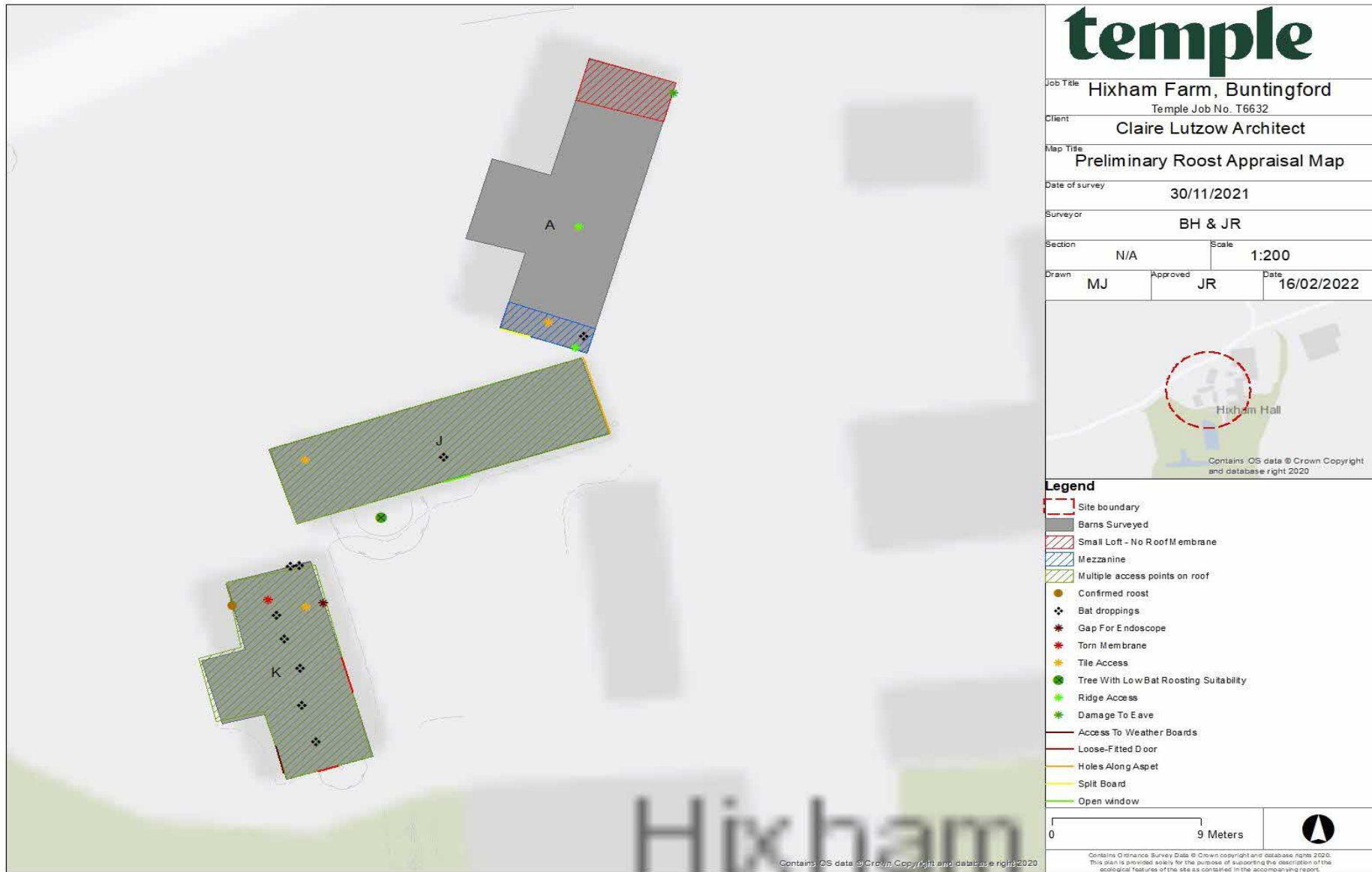
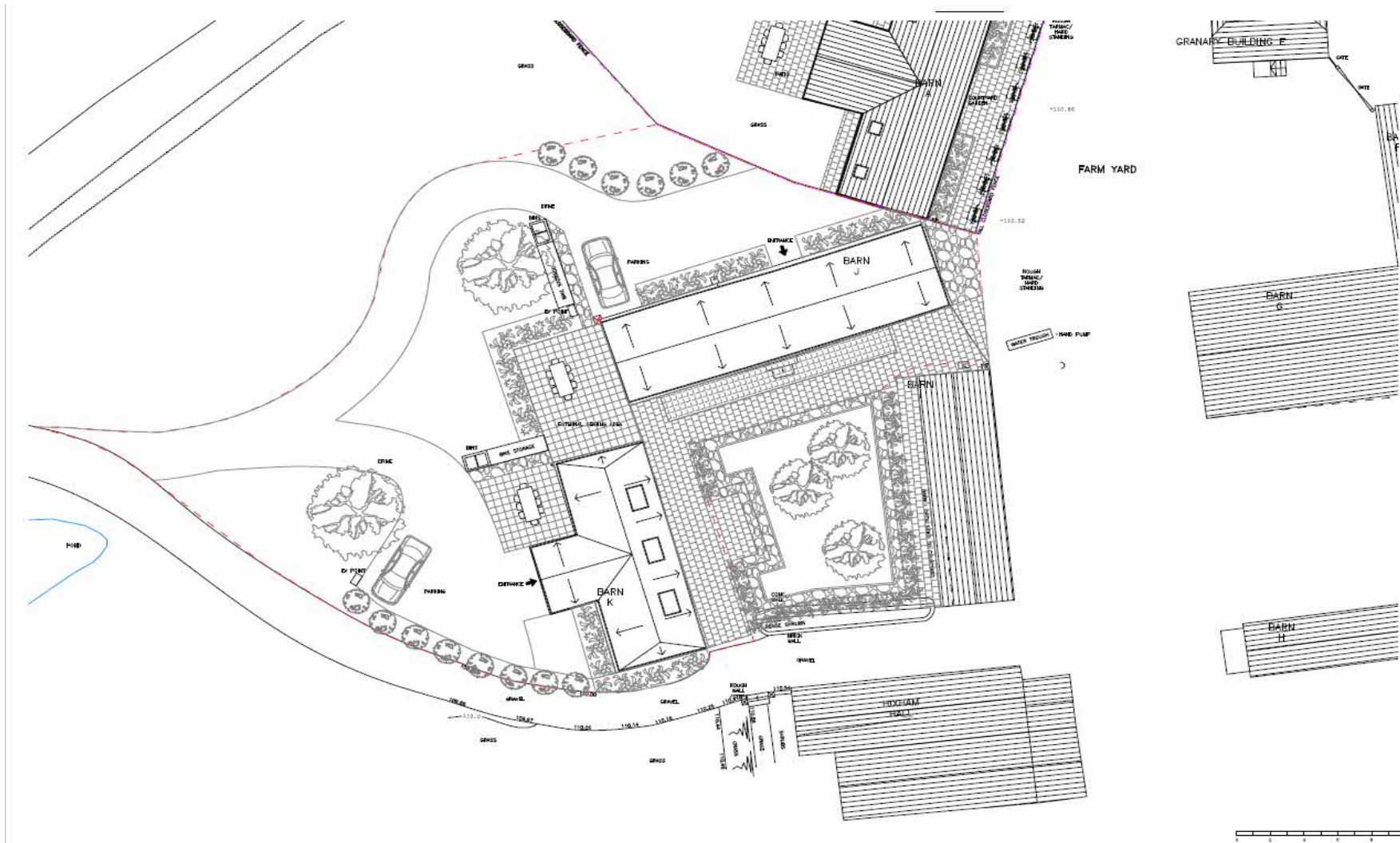


Figure 4: Application Site boundary (Barn J & K) – Abi Ford Design (2023)



abi ford design
 www.abiforddesign.co.uk Tel: 07508225598

Drawing Purpose:
FOR PLANNING
 Drawings to be checked prior to purchase or construction.
 If not checked by client, it is the responsibility of the recipient
 to ensure the drawings are the author of the drawings.

Red line illustrates the boundary of application site Barns JK
 Purple line illustrates the boundary of Barn A



Project:
 Hixham Hall Barns JK
 Hixham Hall,
 Furneux Pelham,
 Buntingford, SG9 6LR

Drawing title: Proposed Block Plan	
Drawing no: HH-PL-23	Date: 19-06-23
Scale @ A3: 1:200	Revised: *

Appendix 2: Photographs

Photograph 1

Confirmed bat roost in mortise and tenon joint in Barn K (see target note 1).



Photograph 2

A view of the potential great crested newt refugia in the rubble and loose mortar in brickwork at the base of Barn K (see target note 2).



Photograph 3

Empty bird nest in barn K – denoted by red arrow (see Target Note 3).



Photograph 4

The veteran oak tree on the survey area boundary with a thick ivy plates, and aged features offering potential roosting opportunities for bats (see Target Note 4).



Photograph 5

Barn K, showing the worn timber weather boards, gap around the door, and damaged tiles. The southern aspect looking north.



Photograph 6

A view showing the northern hedgerow, scattered trees; offering potential breeding and nesting sites for birds. View looking east.



Appendix 3: Plant Species List

Plant Species List for Hixham Hall Farm Barns compiled from Phase 1 habitat survey carried out on the 30 November 2021.

Scientific nomenclature and common names for vascular plants follow Stace (2010) and Blockeel & Long (1998) for bryophyte species. Please note that this plant species list was generated as part of a Phase 1 habitat survey, does not constitute a full botanical survey and should be read in conjunction with the associated results section of this PEA.

Abundance was estimated using the DAFOR scale and additional notes taken as follows:

D = dominant, A = abundant, F = frequent, O = occasional, R = rare, L = locally
c=clumped, e=edge only, g=garden origin, p=planted, y = young, s=seedling or sucker, t=tree, h=hedgerow, w=water

SCIENTIFIC NAME	COMMON NAME	ABUNDANCE	QUALIFIER
<i>Alnus glutinosa</i>	Alder	R	t
<i>Acer campestre</i>	Maple	R	t
<i>Aesculus hippocastanum</i>	Horse chesnut	R	t
<i>Alliaria petiolata</i>	garlic mustard	O	
<i>Anthriscus sylvestris</i>	Cow parsley	O	
<i>Bellis perennis</i>	Daisy	A	
<i>Bryonia dioica</i>	Bryoni	O	
<i>Carpinus betulus</i>	Hornbeam	R	t
<i>Crataegus rhipidophylla</i>	Hawthorn	O	h,p,y
<i>Euonymus europaeus</i>	Spindle	O	
<i>Fagus sylvatica</i>	Beech	R	t
<i>Galium aparine</i>	Cleavers	F	
<i>Geranium robertianum</i>	Herb Robert	O	
<i>Glechoma hederacea</i>	Ground-ivy	LF	
<i>Hedera helix</i>	Ivy	F	
<i>Ilex aquifolium</i>	holly	O	
<i>Lamium album</i>	White dead-nettle	R	e
<i>Plantago lanceolata</i>	Plantain	O	
<i>Poa annua</i>	Annual meadow-grass	F	
<i>Poa sp.</i>	Meadow-grass	F	
<i>Prunus domestica</i>	Plum	R	t, p

Appendix 4: Preliminary Roost Assessment

Table 4.1: Barn A PRA Form

Project		6632 Hixham Hall barns		Building reference		Barn A	
Surveyor		B.Holmes & J.Redfern		Date		30/11/2021	
Grid ref - Easting,Northing		545325	226798	Equipment used		Red light torch, endoscope	
General weather conditions		Dry, fine, overcast					
Temperature	9	Cloud cover (0-8)	6/8	Wind (Beaufort 0-12)	0	Rain (0-5)	0
External Assessment							
Structure type	Agricultural			In use as:	wood workshop		
Approximate age	200 years			Roof material	Slate tile		
Roof shape	Gabled			Cladding?	Timber horizontal	Soffits?	None
Hanging tiles?	None			Chimney?	No	Lead flashing?	Yes
Shape of Building	Gable ended, intersecting hip- Shallow T shape			Dormers?	No	Bargeboard?	Wooden
Constructed of:	Timber			General condition	fairly poor condition with gaps and damage to external area		
Internal Assessment							
Roov void present?	No			Frame type			
Truss Type				Insulation type	no cavity and asbestos roof tiles		
Floor type (void)				Cavity in wall?	No		
Evidence of use by bats	Droppings	Feeding remains					
Description / notes	Scattering of droppings on plywood mezzanine on the southern side of the building. The mortise and tenon joints are tight fitting with only small access gaps Light ingress through poly carbonate roof skylights. There is a small loft void section on the northern aspect, made from a ply lining with potential for access from outside, no evidence of bat use this end of the building. No roof lining present. Slate tile roof with broken tiles and access gaps. Lead flashing in the roof valleys with gaps, gaps around doors, a small area of rendered brick work with exposed gaps on the norther gable aspect. Bricks at the base of the building with gaps and access for reptiles and amphibians.						

Building Features						
Feature ref	Feature type	Height	Elevation	Size	Roosting potential	Notes
	slate tiles	~3.2 m	West	many small access gaps	Low	
	Roof void	~2.1 m	South		Moderate	Small roof void above asbestos roof tiles
Potential to support roosting bats (high/medium/low/negligible)		High		Species confirmed/likely to be present		<i>Pipistrelle sp</i>

Table 4.2: Barn A PRA Form

Project		6632 Hixham Hall barns		Building reference		Barn J	
Surveyor		B.Holmes & J.Redfern		Date		30/11/2021	
Grid ref - Easting,Northing		545325	226798	Equipment used		Red light torch, endoscope	
General weather conditions		Dry, fine, overcast					
Temperature	9	Cloud cover (0-8)	6/8	Wind (Beaufort 0-12)	0	Rain (0-5)	0
External Assessment							
Structure type	Agricultural			In use as:	storage		
Approximate age	200 years			Roof material	Clay tile		
Roof shape	Gabled			Cladding?	Timber horizontal	Soffits?	None
Hanging tiles?	None			Chimney?	No	Lead flashing?	No
Shape of Building	Gabled rectangle			Dormers?	No	Bargeboard?	Wooden
Constructed of:	Timber			General condition			
Internal Assessment							
Roof void present?	Yes			Frame type			
Truss Type				Insulation type			
Floor type (void)	Other			Cavity in wall?			
Evidence of use by bats	Droppings	Feeding remains					
Description / notes	<p>Wood weatherboard with tar paint. Brick base including blocks, rendered. Multiple missing and cracked tiles with access gaps. Ridge tiles and ridge mortar cracked with gaps. Internal timber beam terminals provide access gaps. Internally the floor is of a concrete base. The rafters and joists are rough sawn timber with some newer replacements. Gaps in the bitumen roofing membrane present. Gaps in the mortis and tenon joints present. The barn is partitioned into three with wooden internal walls, the roof void is open over one wall top. Internal cladding to approximately 1.5 m from the ground.</p>						

Building Features						
Feature ref	Feature type	Height	Elevation	Size	Roosting potential	Notes
	roof rafters and joints		South		Medium	
	Mortise and tenon joints		South		High	
	ridge beam				Medium	
Potential to support roosting bats (high/medium/low/negligible)		High		Species confirmed/likely to be present		PIP, BLE

Table 4.3: Barn A PRA Form

Project		6632 Hixham Hall barns		Building reference		Barn K	
Surveyor		B.Holmes & J.Redfern		Date		30/11/2021	
Grid ref - Easting,Northing		545325	226798	Equipment used		Red light torch, endoscope	
General weather conditions		Dry, fine, overcast					
Temperature	9	Cloud cover (0-8)	6/8	Wind (Beaufort 0-12)	0	Rain (0-5)	0
External Assessment							
Structure type	Agricultural			In use as:	Storage		
Approximate age	200 years			Roof material	Clay tile		
Roof shape				Cladding?	Timber horizontal	Soffits?	None
Hanging tiles?				Chimney?	No	Lead flashing?	No
Shape of Building				Dormers?	No	Bargeboard?	Wooden
Constructed of:				General condition	old worn condition with some replaced timbers externally and internally		
Internal Assessment							
Roov void present?	Yes			Frame type			
Truss Type				Insulation type	none		
Floor type (void)	None			Cavity in wall?	Yes		
Evidence of use by bats	Individual bats	Droppings	Feeding remains				

Description / notes		Externally: Worn timber weatherboards painted with black tar paint, multiple gaps with potential access around timber weather boarding. The barn stands on a brick base with some loose mortar and bricks. There are a couple of sealed windows on the western aspect. The doors are loose fitting with access gaps at the edges. The roof and tiles are in relatively poor condition with many loose tiles, damaged, missing and cracked tiles, all potentially providing access. There are open eaves present in sections. The internal wall only has a cavity below 1.5 meter high only. Internally : Non clad unlined walls, sealed windows – with light ingress. Rough sawn modern timber supports. Aged beams with mortise and tenon joints with voids large enough for bats to roost. Bitumen roof lining with tears and rips that could provide access for bats.				
Building Features						
Feature ref	Feature type	Height	Elevation	Size	Roosting potential	Notes
TN 1	Mortise and tenon joint	~2.7m	West	Small (10 cm * 15 cm)	Confirmed roost	One bat visible in roost – features indicative of pipistrelle
	Terminal beam access					
	Several missing, damaged roof tiles providing access					
Potential to support roosting bats (high/medium/low/negligible)		Confirmed		Species confirmed/likely to be present		PIP, BLE

Appendix 5: Target Notes

Target Notes List for Hixham Hall farm Barns from the Phase 1 habitat survey and protected and notable species assessment carried out on the 30 November 2021.

Target note (TN)	Description
1	A confirmed bat roost in Barn K in mortise and tenon joint on the eastern elevation.
2	Potential refugia and hibernacula for great crested newts
3	Disused bird nest on beams in Barn K
4	Veteran oak tree with various aged features and thick ivy growth offering suitable roosting opportunities for bats.

Appendix 6: Legislation and Planning Policy

Important Notice: This section contains details of legislation applicable in England and Wales only (i.e. not including Scotland, the Isle of Man, Northern Ireland, the Republic of Ireland or the Channel Islands) and is provided for general guidance only. While every effort has been made to represent the current (at the time of writing) situation with respect to the UK's position outside of the EU and to ensure accuracy throughout, this section should not be relied upon as a definitive statement of the law.

Over the past few years, three important bills have been published which are intended to shape how growing pressures on the environment post-Brexit (post-transition period) are tackled. Both the Agriculture Bill and Fisheries Bill gained Royal Assent in November 2020 and are now the Agriculture Act 2020 and Fisheries Act 2020 respectively; and, more recently, the Environment Bill was passed into law in November 2021, becoming the Environment Act 2021. *N.B. as environment policy is a devolved matter, most of this Act applies to England only.*

A LEGISLATION AFFORDED TO SPECIES

The objective of the EC Habitats Directive¹⁷ is to conserve the various species of plant and animal which are considered rare across Europe. The Directive is transposed into UK law by **The Conservation of Habitats and Species Regulations 2017 (as amended)** and **The Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended)**.

Various amendments to the 2017 Regulations in England and Wales have been made through the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. These changes came into effect on the 1 January 2021 following the UK's departure from the EU and the end of the Transition Period. The changes are largely limited to 'operability changes' that will ensure the Regulations can continue to have the same working effect as before.

The Wildlife and Countryside Act 1981 (as amended) is a key piece of national legislation which implements the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and implements the species protection obligations of Council Directive 2009/147/EC (formerly 79/409/EEC) on the Conservation of Wild Birds (EC Birds Directive) in Great Britain.

¹⁷ Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora

Since the passing of the Wildlife & Countryside Act 1981, various amendments have been made, details of which can be found on www.opsi.gov.uk. Key amendments have been made through the Countryside and Rights of Way (CRoW) Act (2000).

As well as delivering long-term targets to reduce waste and improve resource efficiency and improve air and water quality targets, the **Environment Act 2021** aims to halt the decline of nature by 2030, mandates Biodiversity Net Gain for developments in England and amends the Wildlife and Countryside Act 1981 (as amended) to introduce an additional purpose for granting a protected species licence in relation to development which is 'for reasons of overriding public interest'. The Act also introduces the Office for Environmental Protection (OEP), which will be a new public body intended to hold government and public authorities to account, although the government will be able to issue guidance to the OEP on how it enforces policies and legislation.

Some of the key biodiversity elements in the Act that will have a bearing on species protection in the UK include:

- A strengthened biodiversity duty on Local Planning Authorities;
- Biodiversity net gain to ensure developments, including Nationally Significant Infrastructure Projects (NSIP), deliver at least 10% increase in biodiversity;
- Local Nature Recovery Strategies to support a Nature Recovery Network;
- Duty upon Local Authorities to consult on street tree felling;
- Strengthen woodland protection enforcement measures;
- Conservation Covenants;
- Protected Site Strategies and Species Conservation Strategies to support the design and delivery of strategic approaches to deliver better outcomes for nature;
- Introduces the power for the Habitats Regulations to be amended or 'refocused' to 'to deliver creative public policy thinking that delivers results'.

This section does not provide further detail on the Environment Act 2021 as, at the time of writing (November 2021), the Act, in its final form, has not been published and it remains to be seen how and when the various elements will be enacted at a national and local level.

Other legislative Acts affording protection to wildlife and their habitats include:

- Salmon and Freshwater Fisheries Act 1975
- Deer Act 1991
- Protection of Badgers Act 1992

Wild Mammals (Protection) Act 1996
Countryside and Rights of Way (CROW) Act 2000
Natural Environment & Rural Communities (NERC) Act 2006
The Eels (England and Wales) Regulations 2009
Environment (Wales) Act 2016

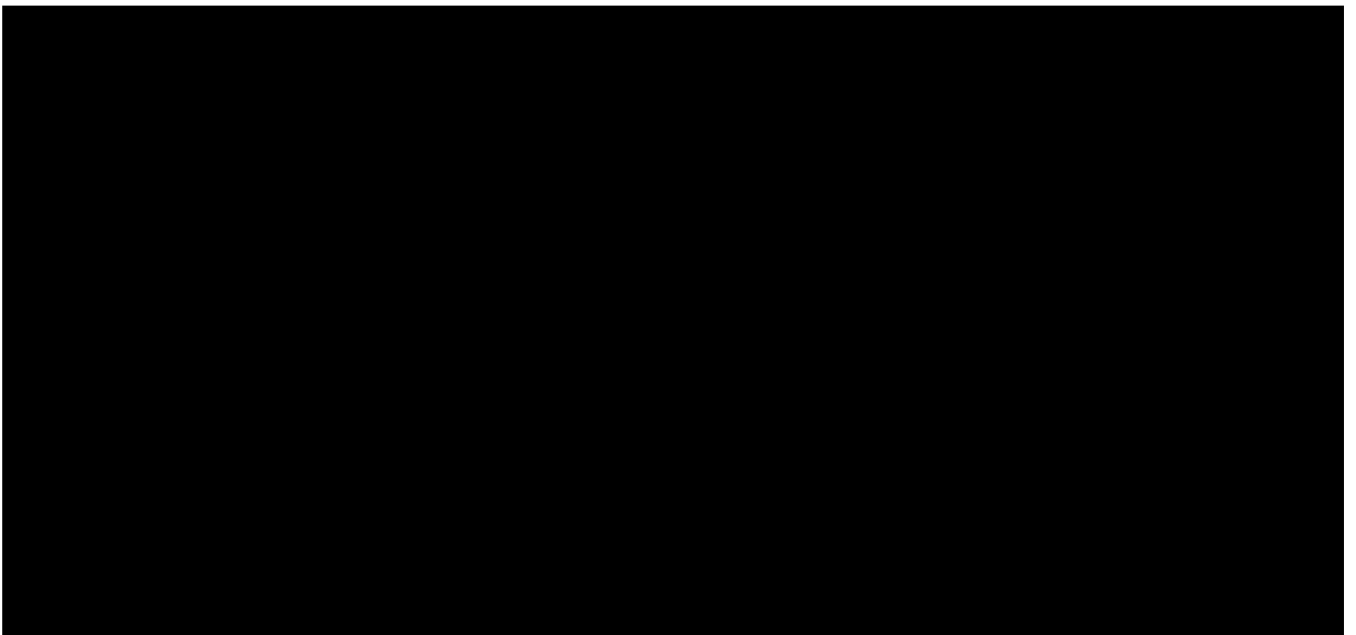
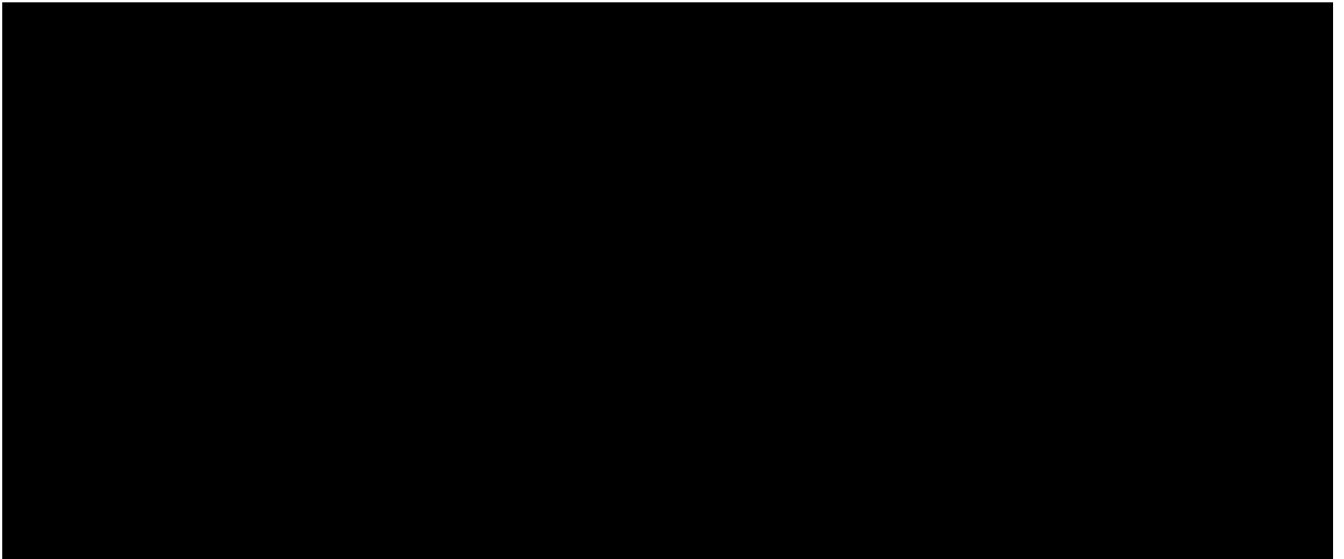
Species and species groups that are protected or otherwise regulated under the aforementioned legislation, and that are most likely to be affected by development activities, include herpetofauna (amphibians and reptiles), badger, bats, birds, dormouse, invasive species, otter, plants, red squirrel, water vole and white clawed crayfish.

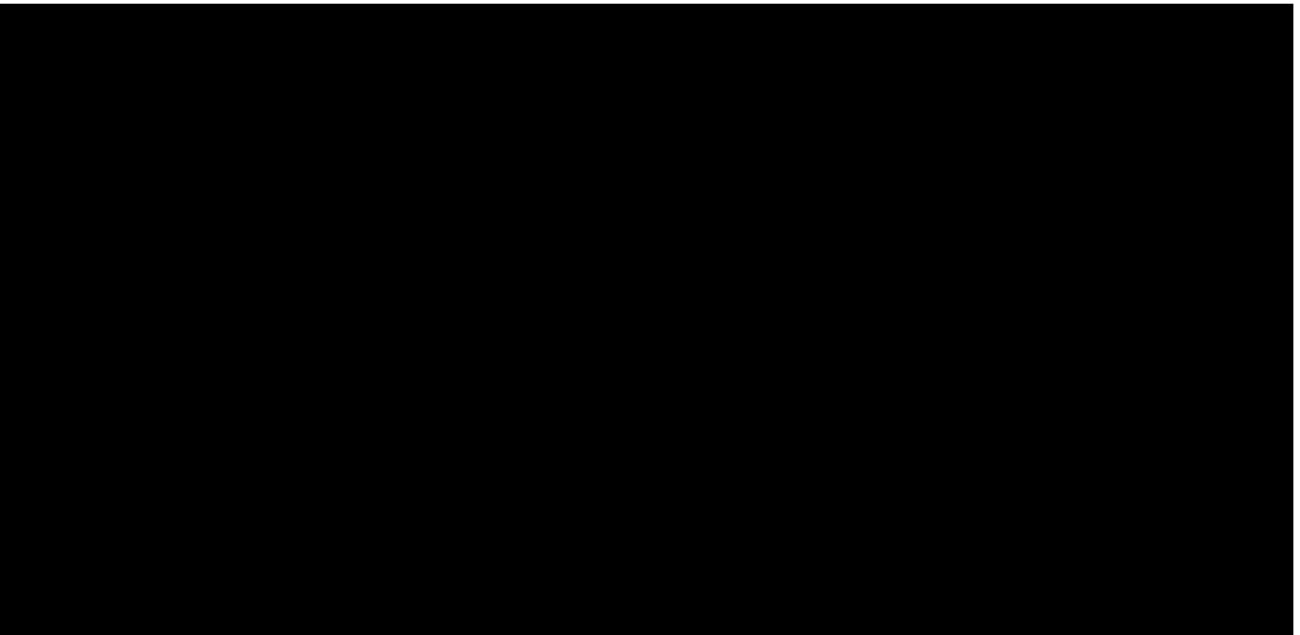
Explanatory notes relating to species protected under The Conservation of Habitats and Species Regulations 2017 (as amended), which includes smooth snake, sand lizard, great crested newt, natterjack toad, all bat species, otter, dormouse and some plant, invertebrate and fish species, are given below. **These should be read in conjunction with the relevant species sections that follow.**

In the Habitats Directive, the term 'deliberate' is interpreted as being somewhat wider than intentional and may be thought of as including an element of recklessness.

The Conservation of Habitats and Species Regulations 2017 (as amended) does not define the act of 'migration' and therefore, as a precaution, it is recommended that short distance movement of animals for e.g. foraging, breeding or dispersal purposes are also considered where relevant.

In order to obtain a mitigation licence for species protected under the Conservation of Habitats and Species Regulations 2017 (as amended), the application must demonstrate that it meets all of the following three 'tests': i) the action(s) are necessary for the purpose of preserving public health or safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequence of primary importance for the environment; ii) that there is no satisfactory alternative and iii) that the action authorised will not be detrimental to the maintenance of the species concerned at a favourable conservation status in their natural range.





Bats

All species of bat are fully protected under The Conservation of Habitats and Species Regulations 2017 (as amended) through their inclusion on Schedule 2. Regulation 41 prohibits:

Deliberate killing, injuring or capturing of Schedule 2 species (e.g. all bats)

Deliberate disturbance of bat species as:

a) to impair their ability:

(i) to survive, breed, or reproduce, or to rear or nurture young;

(ii) to hibernate or migrate

b) to affect significantly the local distribution or abundance of the species

Damage or destruction of a breeding site or resting place

Keeping, transporting, selling, exchanging or offering for sale whether live or dead or of any part thereof.

Bats are also protected under the Wildlife and Countryside Act 1981 (as amended) in respect to sub-sections 9 (4) (b) and (c) and 9 (5) through their inclusion on Schedule 5. Under this Act, they are additionally protected from:

Intentional or reckless disturbance while in their place of shelter (at any level)

Intentional or reckless obstruction of access to any place of shelter or protection

Selling, offering or exposing for sale, possession or transporting for purpose of sale.

How is the legislation pertaining to bats liable to affect development works?

The appropriate licence issued by the relevant countryside agency (e.g. Natural England, Natural Resources Wales) will be required for works liable to affect a bat roost or for operations likely to result in a level of disturbance which might impair their ability to undertake those activities mentioned above (e.g. survive, breed, rear young and hibernate). The licence is to derogate from the relevant legislation but also to enable appropriate mitigation measures to be put in place and their efficacy to be monitored.

Though there is no case law to date, the legislation may also be interpreted such that, in certain circumstances, important foraging areas and/or commuting routes can be regarded as being

afforded protection, for example, where it can be proven that the continued usage of such areas is crucial to maintaining the integrity and long-term viability of a bat roost²¹.

Birds

All wild birds, their nests and eggs are protected under Sections 1-8 of the Wildlife and Countryside Act 1981 (as amended). A wild bird is defined as any bird of a species that is resident in or is a visitor to the European Territory of any member state in a wild state. Among other things, the legislation makes it an offence to:

Intentionally kill, injure or take any wild bird

Intentionally take, damage or destroy the nest of any wild bird while it is in use or being built

Intentionally take or destroy an egg of any wild bird

Sell, offer or expose for sale, have in his possession or transport for the purpose of sale any wild bird (dead or alive) or bird egg or part thereof.

Certain species of bird, for example the barn owl *Tyto alba*, black redstart *Phoenicurus ochruros*, hobby *Falco subbuteo*, bittern *Botaurus stellaris* and kingfisher *Alcedo atthis* receive additional special protection under Schedule 1 of the Act. This affords them protection against:

Intentional or reckless disturbance while it is building a nest or is in, on or near a nest containing eggs or young

Intentional or reckless disturbance of dependent young of such a bird

How is the legislation pertaining to birds liable to affect development works?

To avoid contravention of the Wildlife and Countryside Act 1981 (as amended), works should be planned to avoid the possibility of killing or injuring any wild bird, or damaging or destroying their nests. The most effective way to reduce the likelihood of nest destruction is to undertake work outside the main bird nesting season which typically runs from March to August²². Where this is not feasible, it will be necessary to have any areas of suitable habitat thoroughly checked for nests prior to vegetation clearance.

²¹ Garland & Markham (2008) Is important bat foraging and commuting habitat legally protected? Mammal News, No. 150. The Mammal Society, Southampton.

²² It should be noted that this is the main breeding period. Breeding activity may occur outside this period (depending on the particular species, geographical location of the site and vagaries of the season in any particular year) and thus due care and attention should be given when undertaking potentially disturbing works at any time of year.

Those species of bird listed on Schedule 1 are also protected against disturbance during the nesting season. Thus, it will be necessary to ensure that no potentially disturbing works are undertaken in the vicinity of the nest. The most effective way to avoid disturbance is to postpone works until the young have fledged. If this is not feasible, it may be possible to maintain an appropriate buffer zone or standoff around the nest. It should be noted that there is no threshold under which disturbance is not an offence, that is to say that disturbance need not be 'significant' for an offence to be committed.

While it is possible to obtain a licence to permit some activities that would otherwise constitute an offence, these can only be issued for specific purposes set out in the Act. This includes damage to crops, to preserve public health or safety and to preserve air safety, but does not include development, some land management and recreational activities and damage to property.

Herpetofauna (Amphibians and Reptiles)

The sand lizard *Lacerta agilis*, smooth snake *Coronella austriaca*, natterjack toad *Epidalea calamita*, great crested newt *Triturus cristatus* and pool frog *Pelophylax lessonae* receive full protection under The Conservation of Habitats and Species Regulations 2017 (as amended) through their inclusion on Schedule 2. Regulation 41 prohibits:

Deliberate killing, injuring or capturing of species listed on Schedule 2

Deliberate disturbance of any Schedule 2 species as:

b) to impair their ability:

(i) to survive, breed, or reproduce, or to rear or nurture young;

(ii) in the case of animals of a hibernating or migratory species, to hibernate or migrate

c) to affect significantly the local distribution or abundance of the species

Deliberate taking or destroying of the eggs of a Schedule 2 species

Damage or destruction of a breeding site or resting place

Keeping, transporting, selling, exchanging or offering for sale whether live or dead or of any part thereof.

With the exception of the pool frog, these species are also listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) in respect to sub-sections 9 (4) (b) and (c) and 9 (5). The pool frog is afforded protection in respect of sub-sections 9(4) (b) and (c) for England only. Under this Act, they are additionally protected from:

Intentional or reckless disturbance while in their place of shelter (at any level)

Intentional or reckless obstruction of access to any place of shelter or protection
Selling, offering or exposing for sale, possession or transporting for purpose of sale
(excluding pool frog).

Other native species of herpetofauna are protected solely under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended). Species such as the adder *Vipera berus*, grass snake *Natrix natrix*, common lizard *Zootoca vivipara* and slow-worm *Anguis fragilis* are listed in respect to sub-section 9 (1) & (5). For these species, it is prohibited to:

Intentionally kill or injure these species
Sell, offer or expose for sale, possess or transport for purpose of sale these species,
or any part thereof.

Common frog *Rana temporaria*, common toad *Bufo bufo*, smooth newt *Lissotriton vulgaris* and palmate newt *L. helveticus* are listed in respect to sub-section 9 (5) only which affords them protection against sale, offering or exposing for sale, possession or transport for the purpose of sale.

How is the legislation pertaining to herpetofauna liable to affect development works?

The appropriate licence issued by the relevant countryside agency (e.g. Natural England, Natural Resources Wales) will be required for works liable to affect the breeding sites or resting places of those amphibian and reptile species protected under The Conservation of Habitats and Species Regulations 2017 (as amended). A licence will also be required for operations liable to result in a level of disturbance which might impair their ability to undertake those activities mentioned above (e.g. survive, breed, rear young and hibernate). The licences are to derogate from the relevant legislation but also to enable appropriate mitigation measures to be put in place and their efficacy to be monitored.

Although not licensable, appropriate mitigation measures may also be required to prevent the intentional killing or injury of adder, grass snake, common lizard and slow worm, thus avoiding contravention of the Wildlife and Countryside Act 1981 (as amended).

Invertebrates (excluding white-clawed crayfish)

Three species of invertebrate are afforded protection under Schedule 2 of The Conservation of Habitats and Species Regulations 2017 (as amended): the large blue butterfly *Phengaris*

arion, Fisher's estuarine moth *Gortyna borelii lunata* and the little whirlpool ramshorn snail *Anisus vorticulus*. Regulation 41 prohibits:

Deliberate killing, injuring or capturing of Schedule 2 species

Deliberate disturbance of Schedule 2 species as:

a) to impair their ability:

(i) to survive, breed, or reproduce, or to rear or nurture young;

(ii) to hibernate or migrate

b) to affect significantly the local distribution or abundance of the species

Damage or destruction of a breeding site or resting place

Keeping, transporting, selling, exchanging or offering for sale whether live or dead or of any part thereof.

These species, and numerous other invertebrates, including the Norfolk hawker *Aeshna isosceles*, marsh fritillary *Euphydryas aurinia*, purple emperor *Apatura iris*, freshwater pearl mussel *Margaritifera margaritifera* and medicinal leech *Hirudo medicinalis*, are also protected under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended). The degree to which the various invertebrate species are protected by this Act varies widely, ranging from full protection of the animal and its habitat to protection from sale only. Useful summaries of the level of protection afforded individual species can be found at <https://hub.jncc.gov.uk/assets/478f7160-967b-4366-acdf-8941fd33850b>.

For those afforded full protection, it is an offence to:

Intentionally kill, injure or take (capture) a wild Schedule 5 invertebrate

Intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection

Intentionally or recklessly disturb Schedule 5 invertebrates while they are occupying a structure or place used for shelter or protection

Sell, offer or expose for sale, or have in his possession or transport for the purpose of sale, any live or dead Schedule 5 invertebrate or part thereof.

How is the legislation pertaining to protected invertebrates liable to affect development works?

A mitigation licence issued by the relevant countryside agency (e.g. Natural England, Natural Resources Wales) will be required for works liable to affect invertebrate species protected under The Conservation of Habitats and Species Regulations 2017 (as amended). A licence

will also be required for operations liable to result in a level of disturbance which might impair their ability to undertake those activities mentioned above (e.g. survive, breed and rear young). The licences are to derogate from the relevant legislation but also to enable appropriate mitigation measures to be put in place and their efficacy to be monitored.

There is no provision in law for the issuing of licences to permit the killing, injuring or taking of protected invertebrates, the damage, destruction or obstruction of access to places of shelter or protection, or the disturbance of invertebrates for the purposes of development. In situations where there is potential for impact, it must be shown that all reasonable effort has been made to avoid contravening the legislation, for example, by ensuring adequate surveys and mitigation measures are in place, that the use of alternative sites has been explored and that there has been liaison with the relevant countryside agency (e.g. Natural England or Natural Resources Wales). It will be necessary to carefully plan any development activities in areas with protected invertebrates; this is likely to require appropriate timing of works with measures to ensure minimal loss of habitat.

Wild Mammals (Protection) Act 1996

All wild mammals are protected against intentional acts of cruelty under the above legislation. This makes it an offence to:

Mutilate, kick, beat, nail or otherwise impale, stab, burn, stone, crush, drown, drag or asphyxiate any wild mammal with intent to inflict unnecessary suffering.

To avoid possible contravention, due care and attention should be taken when carrying out works (for example operations near burrows or nests) with the potential to affect any wild mammal in this way, regardless of whether they are legally protected through other conservation legislation or not.

Non-native species (fauna)

Under Section 14 (1) of the Wildlife and Countryside Act 1981 (as amended), it is an offence to release, or allow to escape into the wild, *any* animal that is not ordinarily resident in and is not a regular visitor to Great Britain in a wild state, or is listed on Schedule 9 of the Act. Examples of species included on Schedule 9 are signal crayfish *Pacifastacus leniusculus*, American mink *Neovison vison*, grey squirrel *Sciurus carolinensis* and European pond terrapin *Emys orbicularis*. In the main, Schedule 9 species are those that are already established in the wild, but which continue to pose a threat to the conservation of native biodiversity and habitats, such that further releases should be regulated. The Schedule also includes some

native species, such as barn owl *Tyto alba*, to ensure that any releases or re-introduction programmes are undertaken in consultation with the relevant authorities and in accordance with best practice guidelines.

How is the legislation pertaining to non-native faunal species liable to affect development works?

In most cases, development works are unlikely to infringe the legislation. This is because such operations are unlikely to result in the release or escape of non-native faunal species. However, there may be circumstances, particularly where works involve watercourses or water bodies, which have the potential to exacerbate the spread of e.g. signal crayfish or certain fish or amphibian species. If this is deemed a possibility, it will be necessary to ensure appropriate preventative measures are in place prior to and during the works.

Plants & Fungi

All wild plants are protected under the Wildlife and Countryside Act 1981 (as amended). This makes it an offence for an 'unauthorised' person to intentionally uproot wild plants. An authorised person can be the owner of the land on which the action is taken, or anybody authorised by them.

Certain rare species of plant and fungi, for example some species of orchid, red-tipped cudweed *Filago lutescens*, spiked speedwell *Veronica spicata*, holly-leaved naiad *Najas marina*, field cow wheat *Melampyrum arvense* and sandy stilt puffball *Battarraea phalloides* are also fully protected under Schedule 8 of the Wildlife and Countryside Act 1981 (as amended) in respect of Section 13. This prohibits any person:

Intentionally picking, uprooting or destruction of any wild Schedule 8 species
Selling, offering or exposing for sale, or possessing or transporting for the purpose of sale, any wild live or dead Schedule 8 plant species or part thereof.

In addition to the legislation outlined above, several plant species, such as slender naiad *Najas flexilis*, fen orchid *Liparis loeselii* and early gentian *Gentianella anglica*, are fully protected under Schedule 5 of The Conservation of Habitats and Species Regulations 2017 (as amended). These are species of European importance. Regulation 45 makes it an offence to:

Deliberately pick, collect, cut, uproot or destroy a wild Schedule 5 species
Be in possession of, or control, transport, sell or exchange, or offer for sale or exchange any wild live or dead Schedule 5 species or anything derived from such a plant.

How is the legislation pertaining to protected plants liable to affect development works?

A mitigation licence issued by the relevant countryside agency (e.g. Natural England, Natural Resources Wales) will be required for works liable to affect species of plant listed under The Conservation of Habitats and Species Regulations 2017 (as amended). The licence is to derogate from the relevant legislation but also to enable appropriate mitigation measures to be put in place and their efficacy to be monitored.

Invasive Plant Species

Under Section 14 (2) of the Wildlife and Countryside Act 1981 (as amended), it is an offence to plant or otherwise cause to grow in the wild any species of plant listed on Part II of Schedule 9. Schedule 9 plant species include Japanese knotweed *Fallopia japonica*, giant hogweed *Heracleum mantegazzianum* and Himalayan balsam *Impatiens glandulifera*. In the main, Schedule 9 species are those that are already established in the wild, but which continue to pose a threat to the conservation of native biodiversity and habitats, such that further releases should be regulated.

How is the legislation pertaining to invasive plants liable to affect development works?

Although it is not an offence to have these plants on your land *per se*, it is an offence to *cause* these species to grow in the wild. Therefore, if they are present on site and development activities (for example movement of spoil, disposal of cut waste or vehicular movements) have the potential to cause the further spread of these species to new areas, it will be necessary to ensure appropriate measures are in place to prevent this happening prior to the commencement of works.

As a rule, planting on managed land (private gardens, estates and amenity planting, for example), where it is expected that the spread of the plant will be kept under control, and where the plant will not have an adverse impact, is not regarded as planting in the wild and thus would not constitute an offence. However, where the plant is inadequately managed or contained and is likely to have an adverse effect, it may. Whether or not planting is an offence should therefore be judged on a case by case basis, taking into account the potential impacts on habitats and native flora and fauna, and the existence or extent of management practices to be employed²³.

Plants: Injurious Weeds

²³ Defra (2010) Guidance on Section 14 of the Wildlife and Countryside Act, 1981. [\[ARCHIVED CONTENT\] \(nationalarchives.gov.uk\)](https://www.nationalarchives.gov.uk)

Under the Weeds Act 1959 any land owner or occupier may be required prevent the spread of certain 'injurious weeds' such as spear thistle *Cirsium vulgare*, creeping thistle *Cirsium arvense*, curled dock *Rumex crispus*, broad-leaved dock *Rumex obtusifolius*, and common ragwort *Senecio jacobaea* onto agricultural land, particularly grazing areas or land which is used to produce conserved forage. It is a criminal offence to fail to comply with a notice requiring such action to be taken. The Ragwort Control Act 2003 establishes a ragwort control code of practice²⁴ as common ragwort is poisonous to horses and other livestock. This code provides best practice guidelines on how to prevent the spread of this species but is not legally binding.

B EUROPEAN AND NATIONAL LEGISLATION AFFORDED TO SITES & HABITATS

As for certain species described above, habitats and sites are also protected directly through the Wildlife & Countryside Act 1981 (as amended), The Conservation of Habitats and Species Regulations 2017 (as amended) and The 'Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) through the notification, classification or designation of various protected sites as detailed below.

In addition, The Environment Act 2021 and the Water Framework Directive indirectly afford protection to non-designated habitats through the duties placed on public and private bodies to promote nature conservation and biodiversity, for example, the creation of Local Nature Recovery Strategies (LNRS) and associated Species Conservation and Protected Site strategies, and to reduce or avoid harmful activities. Many of these duties and targets form the basis for national and local planning policy and wider conservation strategies and are not covered in detail here.

Statutory Site Designations: National

Nationally important areas of special scientific interest, by reason of their flora, fauna, or geological or physiographical features, are notified by the countryside agencies as statutory **Sites of Special Scientific Interest** (SSSI) under the National Parks and Access to the Countryside Act 1949 and latterly the Wildlife & Countryside Act 1981 (as amended). As well as underpinning other national designations (such as **National Nature Reserves** which are declared by the countryside agencies under the same legislation), the system also provides

²⁴ Defra (2004) Code of Practice on How to Prevent the Spread of Ragwort:
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69264/pb9840-cop-ragwort.pdf

statutory protection for terrestrial and coastal sites which are important within a European context (formerly referred to as part of the Natura 2000 network and recently amended to the National Site Network in line with the UK's departure from the EU) and globally (such as Wetlands of International Importance) - see subsequent sections for details of these designations. Improved provisions for the protection and management of SSSIs have been introduced by the Countryside and Rights of Way Act 2000.

The Wildlife & Countryside Act 1981 (as amended) also provides for the making of **Limestone Pavement Orders**, which prohibit the disturbance and removal of limestone from such designated areas, and the designation of **Marine Nature Reserves**, for which byelaws must be made to protect them.

Statutory Site Designations: International

Special Protection Areas (SPAs), together with **Special Areas of Conservation** (SACs) form the basis of the **National Site Network** (until recently, these were part of the Natura 2000 network whilst the UK was part of the EU). SPAs are identified and classified by the Government under the EC Birds Directive (Council Directive 2009/147/EC (formerly 79/409/EEC)) on the Conservation of Wild Birds) via the mechanisms set out in the Habitats Regulations (as applicable at the time of classification).

SPAs are areas of the most important habitat for rare (listed on Annex I of the Directive) and migratory birds within the European Union. Protection afforded SPAs in terrestrial areas and territorial marine waters out to 12 nautical miles (nm) is given by The Conservation of Habitats & Species Regulations 2017 (as amended). The 'Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) provide a mechanism for the classification and protection of European Marine Sites or EMS (SPAs and SACs) in UK offshore waters (from 12-200 nm).

SACs are identified and designated under the EC Habitats Directive (Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora) via the mechanisms set out in the Habitats Regulations (as applicable at the time of designation). These are areas which have been identified as best representing the range and variety of habitats and (non-bird) species listed on Annexes I and II to the Directive within the European Union. SACs in terrestrial areas and territorial marine waters out to 12 nautical miles are protected under The Conservation of Habitats & Species Regulations 2017 (as amended). The 'Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended)

provide a mechanism for the designation and protection of European marine sites or EMS (SACs and SPAs) in UK offshore waters (from 12-200 nm).

Ramsar sites are listed under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. The Convention covers all aspects of wetland conservation and wise use, in particular recognizing wetlands as ecosystems that are globally important for biodiversity conservation. Wetlands can include areas of marsh, fen, peatland or water and may be natural or artificial, permanent or temporary. Wetlands may also incorporate riparian and coastal zones adjacent to the wetlands. Ramsar sites are underpinned through prior notification as Sites of Special Scientific Interest (SSSI) and as such receive statutory protection under the Wildlife & Countryside Act 1981 (as amended) with further protection provided by the Countryside and Rights of Way (CROW) Act 2000. Policy statements have been issued by the Government highlighting the special status of Ramsar sites. This effectively extends the level of protection to that afforded to sites in England and Wales which have been designated under the EC Birds and Habitats Directives as part of the Natura 2000 network and now the National Site Network (e.g. SACs & SPAs).

Statutory Designations: Local

Under the National Parks and Access to the Countryside Act 1949 **Local Nature Reserves** (LNRs) may be declared by local authorities after consultation with the relevant countryside agency. LNRs are declared for sites holding special wildlife or geological interest at a local level and are managed for nature conservation and provide opportunities for research and education and enjoyment of nature.

Statutory Protection of Aquatic Habitats

Water Framework Directive and The Environment Act 2021

Aquatic habitats are also afforded protection under The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017, which transposes the Water Framework Directive 2000/60/EC (The WFD). At its core it aims to prevent deterioration of the water environment and improve water quality by managing water in natural river basin districts, rather than by administrative boundaries. It looks at ecological, physico-chemical, quantitative and morphological aspects of the water environment and requires that improvements take account

of economic aspects, including costs and benefits. Plans to improve the status of water bodies are set out in River Basin Management Plans (RBMPs). The Directive aims for ‘good status’ of all ground and surface water (rivers, lakes, transitional water and coastal waters) in the EU and the UK. The Environment Agency and Natural Resources Wales are the competent authorities for river basin planning in England and Wales.

Any works which could affect the hydro-morphology, ecology or water quality of any classified waterbody up to 1nm out to sea requires an assessment under the WFD to demonstrate how any adverse impacts will be mitigated and, where possible, the status of the waterbody enhanced in order to achieve the required good status targets. Construction must have no permanent, unmitigated effects which cause any deterioration in the current status of any surface-water or groundwater body. If a WFD assessment shows an activity will either cause a deterioration in the status of a water body or jeopardise a water body achieving good status, it may then be necessary to consider whether it meets the criteria for an Article 4(7) exemption²⁵.

The Environment Act also places a new statutory duty on government to produce a plan to reduce discharges from storm overflows, on water companies and the Environment Agency to publish data on storm overflow operation and on water companies to monitor the water quality upstream and downstream of storm overflows and sewage disposal works. The Act also contains a new duty on the water sector to create drainage and sewerage management plans and enables the revocation or variation of permanent abstraction licences where the change is necessary to protect the environment. This is because some older abstraction licences do not take account of fluctuating water availability and may enable too much water to be taken from the environment.

Non-Statutory Designations

Areas considered to be of local conservation interest may be designated by local authorities as a **Wildlife Site**, under a variety of names such as **Local Wildlife Sites** (LWS), **County Wildlife Sites** (CWS), **Listed Wildlife Sites** (LWS), **Local Nature Conservation Sites** (LNCS), **Sites of Biological Importance** (SBIs), **Sites of Importance for Nature Conservation** (SINCS), or **Sites of Nature Conservation Importance** (SNCIs). The criteria for designation may vary between counties.

²⁵ https://circabc.europa.eu/sd/a/e0352ec3-9f3b-4d91-bdbb-939185be3e89/CIS_Guidance_Article_4_7_FINAL.PDF

Together with the statutory designations, these are defined in Local Plan documents under the Town and Country Planning system and are a material consideration when planning applications are being determined. The level of protection afforded to these sites through local planning policies may vary between counties.

The Hedgerow Regulations 1997

The Hedgerow Regulations 1997 are intended to protect 'important' countryside hedgerows from destruction or damage. Under the 'Wildlife and Landscape' criteria of the Regulations, a hedgerow is considered important if (a) it has existed for 30 years or more; and (b) satisfies at least one of the criteria listed in Part II of Schedule 1 of the Regulations.

Under the Regulations, it is against the law to remove or destroy important hedgerows without permission from the local planning authority. Hedgerows on or adjacent to common land, village greens, SSSIs (including all terrestrial SACs, NNRs and SPAs), LNRs, land used for agriculture or forestry and land used for the keeping or breeding of horses, ponies or donkeys are covered by these regulations. Hedgerows '*within or marking the boundary of the curtilage of a dwelling-house*' are not.

D LOCAL PLANNING POLICY

The East Hertfordshire district Plan (2018) deals with matters of strategic importance for the East Hertfordshire district. Key chapters include Chapter 7-20 – Environmental issues , the main strategic objective being "Ensuring that future generations can enjoy the district's rich geological and biological inheritance as well as the wider experience that a healthy, functioning natural environment can provide means that we must continue to improve the protection and management of what we have today."

Policy NE1 International, National and Locally Designated Nature Conservation Sites

I. Development proposals, land use or activity (either individually or in combination with other developments) which are likely to have a detrimental impact which adversely affects the integrity of a designated site, will not be permitted unless it can be demonstrated that there are material considerations which clearly outweigh the need to safeguard the nature conservation

value of the site, and any broader impacts on the international, national, or local network of nature conservation assets.

II. Evidence will be required in the form of up-to-date ecological surveys undertaken by a competent ecologist prior to the submission of an application. The type of evidence required will be commensurate to the scale and location of the development and the likely impact on biodiversity, the legal protection or other status of a site. Where insufficient data is provided, permission will be refused.

III. Where a site of International or National designation for nature conservation importance is adversely affected by the proposals, permission will only be permitted where the Council is satisfied that:

(a) There are imperative reasons of overriding public interest, which could be of a social or economic nature, sufficient to override the harm to the site; or

(b) There are imperative reasons of overriding public interest relating to human health, public safety or benefits of primary importance to the environment; and in either case

(c) There are no satisfactory alternatives to the proposal.

Policy NE2 Sites or Features of Nature Conservation Interest (Non-Designated)

IV. Proposals should avoid impacts on sites of nature conservation value and wherever possible, alternative options which reduce or eliminate such impacts should be pursued. Where adverse impacts are unavoidable, measures to mitigate the impact will be sought, commensurate to the importance of the site in terms of its status in the hierarchy and the contribution it makes to the wider ecological networks.

V. Where adequate mitigation measures are not possible, compensatory measures may be appropriate. Such compensatory schemes should seek to achieve a net gain for nature and the Council will consider the use of conditions and/or planning obligations to secure appropriate mitigation/compensation commensurate to the type and scale of development. Compensatory measures can be situated on or off the development site. The availability of compensatory measures will be a material consideration in the determination of development proposals.

VI. Ecological impacts will be quantified by utilising and taking into account a locally approved Biodiversity Metric where appropriate. Development must demonstrate a net gain in ecological units. Ecological information must be supplied in accordance with BS 42020 2013.

Policy NE3 Species and Habitats

I. Development should always seek to enhance biodiversity and to create opportunities for wildlife. Proposals must demonstrate how the development improves the biodiversity value of the site and surrounding environment. Evidence will be required in the form of up-to-date ecological surveys undertaken by a competent ecologist prior to the submission of an application.

The Biodiversity value of a site pre and post development will be determined by applying a locally approved Biodiversity Metric where appropriate. Submitted information must be consistent with BS 42020 2013. Where insufficient data is provided, permission will be refused.

II. Proposals should detail how physical features will be maintained in the long term. Development which would result in the loss or significant damage to trees, hedgerows or ancient woodland sites will not be permitted. The Council will seek their reinforcement by additional planting of native species where appropriate. Protective buffers of complementary habitat will be expected to adjoin these features, sufficient to protect against root damage and improvement of their long term condition. A minimum buffer zone of 10m (or greater if required) is considered appropriate.

IV. Proposals will be expected to protect and enhance locally important biodiversity sites and other notable ecological features of conservation value.

V. Proposals should avoid impacting on Species and Habitats of Principle Importance as published under section 41 of the Natural Environment and Rural Communities Act 2006 (or as subsequently amended).

VI. Where adverse impacts are unavoidable, appropriate mitigation and compensation measures must be employed, commensurate to the importance, the legal protection or other status of the species or habitat.

The District Council will impose conditions / planning obligations which seek to:

(a) Facilitate the survival of existing populations as well as encouraging the establishment of new populations;

(b) Reduce disturbance to a minimum;

(c) Provide adequate alternative habitats to sustain at least the current levels of populations.

VII. Development adjoining rivers or streams will be required to preserve or enhance the water environment in accordance with Policy WAT3 (Water Quality and the Water Environment).

VIII. Integrated bird and bat boxes will be expected in all development bordering public green space and beneficial habitat.

Policy NE4 Green Infrastructure

I. A diverse network of accessible, multi-functional green infrastructure across the district will be protected and enhanced for its biodiversity, recreational, accessibility, health and landscape value and for the contribution it makes towards combating climate change.

II. Development proposals should:

(a) Avoid the loss, fragmentation or functionality of the green infrastructure network, including within the built environment, such as access to urban waterways;

(b) Maximise opportunities for improvement to the green infrastructure network in accordance with the Council's Green Infrastructure Plan, its Parks and Open Spaces Strategy, the Hertfordshire Biodiversity Action Plan, Living Landscape Schemes, locally identified Nature Improvement Areas and any future relevant plans and programmes as appropriate;

(c) Maximise opportunities for urban greening such as through appropriate landscaping schemes and the planting of street trees;

(d) Consider the integration of green infrastructure into proposals as an alternative or to complement 'grey' infrastructure.

(e) Demonstrate how lighting will not adversely impact on green infrastructure that functions as nocturnal wildlife movement and foraging corridors, in line with Policy EQ3 Light Pollution.

III. Contributions towards local green infrastructure projects will be sought where appropriate. If providing green infrastructure as part of a development, applicants should detail how it will be maintained in the long term.

IV. Proposals which affect the district's river environments, including built development and recreation and leisure proposals, should take into account and contribute towards achieving, the aims of any statutory or non-statutory plans, such as the Lee Valley Regional Park Authority Park Development Framework, relevant River Catchment Management Plans and the Water Framework Directive, and any future relevant plans and programmes.

E REGIONAL AND LOCAL BAPs

Many local authorities in the UK have also produced a local Biodiversity Action Plan (LBAP) at the County or District level. Hertfordshire Biodiversity Action Plan is based on the UK list of Species and Habitats of Principal Importance and contains 1,149 species and 65 habitats.

- London: 3rd floor, The Clove Building, 4 Maguire Street, London, SE1 2NQ. T: +44 (0)20 7394 3700
- Haywards Heath: Unit 6 Basepoint; John De Mierre House, 20 Bridge Road, Haywards Heath, RH16 1UA. T: +44 (0)20 7394 3700
- Lewes: 3 Upper Stalls, Ilford, Lewes, East Sussex, BN7 3EJ. T: +44 (0) 1273 813739
- Lichfield: 1-2 Trent Park, Eastern Avenue, Lichfield, Staffordshire, WS13 8RN. T: +44 (0)1543 229049
- Manchester: Express Building, 3 George Leigh Street, Manchester, M4 5AD. T: +44 (0)161 509 4900
- Norwich: 60 Thorpe Road, Norwich, Norfolk, NR1 1RY. T: +44 (0)1603 628408
- Wakefield: The Paine Suite, Nostell Business Park, Doncaster Road, Wakefield, WF4 1AB. T: +44 (0)1924 921900