



Preliminary Ecological Appraisal (PEA)



Land north of Penpell Farm

Penpell, Par

Cornwall, PL24 2SA

GR: SX 07848 56813

August 2021

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1. Contract Details

Preliminary Ecological Appraisal: Extended Phase 1 Ecology Survey	
Grid Reference:	SX 07848 56813
Client:	David and Jackie Sanders
Architect/Planning Consultant:	Charles Hunt
Date of Survey:	19/08/2021
Date of Report:	01/09//2021
Report Reference:	PEA_LandNorthOfPenpellFarm_Sanders_August_2021
Associated Reports Reference:	n/a
Workflow Number	PEA2021386
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Revision no:	01
Issue date:	07/09/2021
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Declaration of Compliance

BS 42020:2013

This study has been undertaken in accordance with British Standard 42020:2013 Biodiversity, Code of practice for planning and development, unless specifically stated otherwise.

Code of Professional Conduct

The information which we have prepared is true and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions.

Validity of Survey Data and Report

The findings of this report are valid for 12 months from the date of survey, unless the site has been maintained in exactly the same condition, in which case the report can be considered valid for 24 months. Please be aware that some Local Planning Authorities (LPAs) require an update once 12 months has elapsed. If work has not commenced within this period, an updated survey by a suitably qualified ecologist may be required.

Legal and Moral Constraints and Responsibilities Summary

An overview of relevant legislation and responsibility is given within the Appendices: Planning Policy and Legislation. Constraints exist for development where specific habitats or species are, or are potentially, within or adjoining a site proposed for development. Therefore, avoidance, mitigation, compensation and enhancement for a site will apply.

In all instances where Mitigation is given, also refer to:

- Any further survey work for protected species (Phase 2 Surveys) recommended, or their results.
- General Good Practice during Construction Stage.
- Law and Legislation pertaining to specific species (plants and animals)
- Prevention of the spread of native and non-native invasive plants and animals.
- Avoidance of Wildlife Crime <http://www.nwcu.police.uk/>

Further advice if species are found onsite during development may be sought from Ecological Surveys Ltd (Tel: 01503 240846 or 07736 458609) or Natural England.

What is a Preliminary Ecological Appraisal (PEA)?

Preliminary Ecological Appraisal (PEA) is the term used to describe a rapid assessment of the ecological features present, or potentially present, within a site and its surrounding area (the zone(s) of influence in relation to a specific project (usually a proposed development)). A PEA normally comprises a desk study and a walkover survey. It should be considered to be a simplified form of an ecological survey and assessment.

The key objectives of a PEA are to:

- identify the likely ecological constraints associated with a project;
- identify any mitigation measures likely to be required, following the 'Mitigation Hierarchy'
- identify any additional surveys that may be required to inform an Ecological Impact Assessment (EcIA) should one be required; and
- identify the opportunities offered by a project to deliver ecological enhancement.

[CIEEM, 2017a]

The primary audience for a PEA is the client or developer and relevant members of the project team, such as the architect, planning consultant and landscape architect. It is normally produced to inform a developer (or other client), and their design team, about the key ecological constraints and opportunities associated with a project, possible mitigation requirements and any detailed further surveys required to inform an Ecological Impact Assessment (EcIA).

Many PEA's are written in a form which might not be accepted by the LPA as it might lack sufficient detail. Our report is written in a manner to support smaller scale developments, or developments taking place in locations which are not of high biodiversity value, without upgrading to a full EcIA.

Please Note: if the PEA reveals the presence of protected / priority species and / or habitats or the potential for the proposal to impact upon protected sites, it may be necessary to upgrade the PEA into an EcIA to ensure its acceptance by the LPA.

2. Non-technical Summary

Proposed development:	The construction of a bungalow with associated parking and garden for an agricultural worker.
Purpose of the report:	To present the results of the Extended Phase 1 Habitat Survey undertaken at the land north of Penpell Farm, hereafter referred to as 'the site'; assess the impacts of the proposed development on the important ecological features identified; and detail applicable compensation, mitigation measures and biodiversity enhancements as appropriate.
Is this PEA report considered sufficient on its own to submit with a planning application, or does it require upgrading to an Ecological Impact Assessment (EcIA)?	This report is considered sufficient for the size and scale of predicted impacts as a result of the proposal.

Further Survey Work	- None required.
Further Assessment or Mitigation Method Statements	- None required
Habitat Regulation Assessment (HRA) likely?	- It is considered unlikely that an HRA will be requested by the LPA – albeit that this is not our decision to make.
Important Ecological Features (IEFs)	The presence of an IEF on site, or in a location which could potentially be impacted by the development or post development activities will need to be Mitigated for.
IEF Designated sites	<p>Onsite:</p> <ul style="list-style-type: none"> - None <p>Offsite:</p> <ul style="list-style-type: none"> - None (that will be affected by the development)
IEF Habitats	<p>Onsite:</p> <ul style="list-style-type: none"> - Cornish hedge with native species astride <p>Offsite:</p> <ul style="list-style-type: none"> - Woodland and traditional orchard
IEF Species	<p>Onsite:</p> <ul style="list-style-type: none"> - Bats (potential for foraging and commuting) - Dormice (potential) - Hedgehogs (potential) - Nesting birds (potential)

	<ul style="list-style-type: none"> - Reptiles (potential for commuting and hibernation) <p>Offsite:</p> <ul style="list-style-type: none"> - Otters - Badgers
<p>Invasive Non-native Species (Schedule 9 species) If present, you have a legal obligation to avoid spreading these plants into the wider environment</p>	<ul style="list-style-type: none"> - On site: None recorded. - In the immediate vicinity: Japanese knotweed (<i>Fallopia japonica</i>) and Himalayan balsam (<i>Impatiens glandulifera</i>).
<p>Avoidance Measures</p>	<p>You must avoid impacts to the following habitats:</p> <ul style="list-style-type: none"> - Cornish hedges with native species astride.
<p>Mitigation Measures</p>	<p>Habitats retained: All Cornish hedges.</p> <ul style="list-style-type: none"> - Construction Exclusion Zones around both Cornish hedges (3 metres). - Permanent buffers (3 metres) to protect Cornish hedges and increase the biodiversity net gain for the site. - Artificial Lighting Strategy. - Covered trenching and capped pipework at night. - General Good Practice during Construction Phase.
<p>Enhancement Measures The LPA have an obligation to ensure that all developments result in a 'net biodiversity gain'. Consequently, even if there are no perceived negative biodiversity impacts, you will still have to provide some form of biodiversity enhancement.</p>	<ul style="list-style-type: none"> - Management of existing habitats: both Cornish hedges. - The inclusion a built-in bat tube or box. - Inclusion of a solitary bee brick into wall. - Creating a new Cornish hedge with native species astride, or a species-rich hedgerow around a section of the new dwelling (requirement for Biodiversity Net Gain). - Landscaping to Benefit Wildlife.
<p>Landscape and Ecological Management Plan (LEMP) A LEMP clarifies the timings and process which must be followed to ensure the biodiversity protection and enhancement of the site, during and post-development, as well as landscape considerations.</p>	<ul style="list-style-type: none"> - Not recommended for this site.

Baseline Biodiversity Habitat Calculation (Biodiversity Metric 3.0)	Some local authorities require Biodiversity Net Gain to be achieved onsite. The site's baseline habitat value has been calculated using the latest 3.0 DEFRA Biodiversity Net Gain Metric (BNG).
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On-site baseline	<i>Habitat units</i>	0.32
	<i>Hedgerow units</i>	0.62
	<i>River units</i>	0.00

Summary: - The biodiversity calculation of this site has been calculated as following:

Area: Total Habitat Units (cropland – temporary grass and clover leys) = 0.32

Linear: Hedgerow Units (native hedgerow – associated with bank or ditch) = 0.62

To achieve a net gain of 10% or above, specific mitigation and enhancement of the site will be required.

- An overview of mitigation requirements is provided within this report.
- An overview of general onsite Enhancement features is also provided within the report.

Specific Enhancement measures to increase the biodiversity value of the site's area and linear habitats to achieve the expected % net gain can only be provided where accurate area and linear feature measurements and an Illustrated Proposal have been provided.

Where BNG is a requirement for the site – this will be provided in a separate Biodiversity Net Gain Calculation document.

Any works which negatively impact the biodiversity of this site, post the results of this ecological survey being received verbally, or in writing, could constitute a Wildlife Crime ([Appendix F. Wildlife Crime](#); <http://www.nwcu.police.uk/>).

3. Introduction

Ecological Surveys Ltd were commissioned to undertake a Preliminary Ecological Appraisal (PEA) to include the potential for legally protected and notable species of the Site, and to assess the potential impact of the development on the biodiversity of the Site and its immediate environs. Ecological Surveys Ltd has not been informed of any previous surveys undertaken on this site that need to inform this report.

Only habitats which are present on site or adjoining the site are included and no discussion is entered into regarding habitats which are not present.

3.1 Survey Aims

The survey and this report identify features of conservation importance that could constitute a constraint to the proposals for this Site. Where appropriate, recommendations for impact avoidance, mitigation and post-development enhancement are made to ensure compliance with wildlife legislation and relevant planning policy.

This survey has been prepared in accordance with the 'Guidelines for Preliminary Ecological Appraisal' produced by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2017a).

3.2 Site Location and Size

The site is located approximately 3.6km inland, between the towns of St Austell and Lostwithiel in south Cornwall. The site is associated with Polharmon Farm, but the field is situated just north of Penpell Farm. It is in a rural setting dominated by farmland that is mostly improved, with areas of woodland to the east and west.

Access is from the A390, just north of Penpillick village, along a gravel lane travelling west to a large barn, under the same ownership. The site location is given in Figure 3.1. A gateway permits access into a large agricultural field, which contains just one grass crop. Cornish hedges with native species astride form the southern and eastern boundaries. The western and northern boundaries are open.

The area surveyed is approximately 0.16 hectares in extent.

3.3 Proposed Development

The proposed development comprises the construction of a new bungalow with associated parking and garden, for use by an agricultural worker to assist on the dairy farm.

An illustrated proposal has been provided and is given in Figure 1.2.

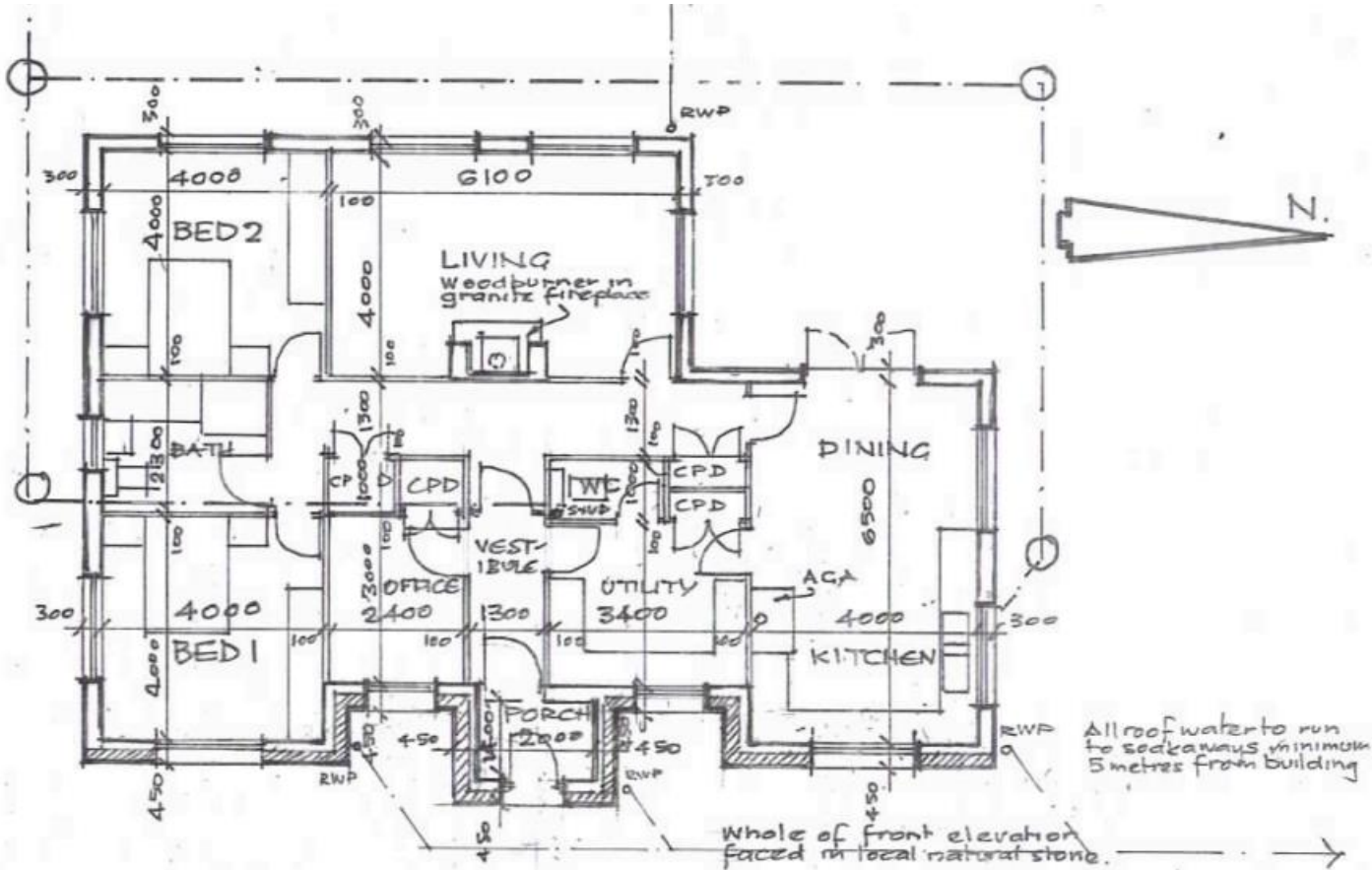
Figure 3.1 Location of Proposed Development



**Location map of the site
(red line boundary – surveyed area)**

**Wider landscape location map to put site (red circle) in
context**

Figure 3.2 Illustrated Proposal



FLOOR AREA = 136.32 sqm includes Porcht.

4. Methodology

This Preliminary Ecological Appraisal encompasses the establishment of the ecological baseline by undertaking a desktop survey, drawing on existing information and data, and a field survey; initial evaluation of the impacts of the proposed development on the designated sites, habitats and species found both on the Site and in the immediate vicinity of the Site and the identification of measures to mitigate the impacts; and the identification of ways to enhance the biodiversity of the area.

4.1 Desktop Survey

A desk-top survey was undertaken, collating existing data for the following relating to both the Site itself and the area within a two-kilometre radius:

- Statutory and non-statutory wildlife and earth science sites
- BAP Priority Inventory Habitats
- Legally protected and nationally notable species

Websites were consulted (refer to [References](#)).

In light of the habitats present within the site, a biological records search was not commissioned as it was not considered appropriate for the scale and probable impact of the proposed development.

4.2 Field Survey

A field survey was undertaken by Paul Diamond RHS Cert (Hort), BSc (Hons), MSc, MCIEEM, MA ArborA and Anna Martlew BSc (Hons) on the 19th of August 2021 and the weather was warm with low cloud and steady rain.

The field survey included carrying out an Extended Phase 1 Habitat Survey, consisting of a walkover assessment of the Site using Phase 1 Habitat Survey methodology (JNCC, 2010, as amended by the Institute of Environmental Assessment (IEA, 1995)). This is a standard technique for classifying and mapping British habitats. All areas within the Site were surveyed, the main plant species recorded, and habitat type mapped. Indicators of ecological value were also noted, including the presence or signs of any legally protected or rare species.

Plant species were identified according to Stace (2019).

A search was also made to identify the presence of any invasive non-native species (particularly those listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended)), including Japanese knotweed (*Reynoutria japonica*) and Himalayan balsam (*Impatiens glandulifera*).

Any buildings onsite were assessed for their potential to support roosting bats (using the criteria set out in Appendix D). Buildings were examined both externally and internally to consider the potential and actual use by bats, as well as by nesting birds.

4.3 Survey Constraints

All areas of the site were readily accessible, and the time spent on site was considered appropriate to obtain all the details required for each habitat and species to enable an assessment to be made. Although some plant species would not have been visible during the survey period, the botanical diversity was considered sufficient to be able to classify and assess

the habitats present, as well as their potential for supporting legally protected and notable species.

The weather was not optimum for survey work, but the floristic diversity of the site was very low, and it was not considered a constraint in this instance.

It should be noted that habitats, and the species they may support, change over time due to natural processes and because of human influence. In line with current guidelines, the survey on which this report is based is only valid for two years, after which time it will need updating. It being accepted that some LPA's now expect a survey to be updated after twelve months.

4.4 Assessment

All ecological data and information gained through both the desktop survey and the survey work were evaluated. The important ecological features were then identified and evaluated against the potential impacts/effects that the proposed development may have on the ecology of the Site and surrounding area.

The biodiversity importance of each designated site, habitat and species is evaluated on a geographic scale: international, national, county and local.

Evaluation of designated sites considers their designation; their ecological and landscape relationship with the proposed site; and the species and/or habitat types for which the site was designated.

Evaluation of habitats considers their designation; their area, quality and viability; diversity and connectivity to the wider landscape; and structural diversity and species-richness.

Evaluation of species considers their designation, including legal protection and rarity.

When assessing the impact of the development and changes to the baseline conditions on site, predictions will be made which focus solely on the zone of influence whilst taking into consideration the lifespan of the development and the significant impacts as identified from the proposed work operations throughout the lifespan of the development.

The proposed development aims to firstly avoid and then mitigate against any potential effects/impacts on the local ecology/biodiversity, ensuring compliance with nature conservation legislation. It aims to achieve this by applying the mitigation hierarchy (as mentioned in Paragraph 175 of the National Planning Policy Framework and detailed in Paragraph: 018 Reference ID: 8-018-20140306 of National Planning Practice Guidance) as follows:

Avoidance – Significant harm to wildlife species and habitats should be avoided through design.

Mitigation – where significant harm cannot be wholly or partially avoided, it should be minimised by design, or by the use of effective mitigation measures that can be secured by, for example, conditions or planning obligations.

Compensation – where, despite whatever mitigation would be effective, there would still be significant residual harm, as a last resort, this should be properly compensated for by measures to provide for an equivalent value of biodiversity.

Appropriate measures to avoid and/or minimise the significant negative effects on the important ecological features have been identified. These mitigation measures aim firstly to avoid the overall effect/impact, or for those that cannot be avoided, reduce their overall effect value. It is not always possible to fully mitigate an adverse effect to neutral levels.

Under the National Planning Policy Framework, NPPF, (HM Government, 2021) local planning policies and decisions should 'contribute to and enhance the natural and local environment by:

- a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);
- b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;
- c) maintaining the character of the undeveloped coast, while improving public access to it where appropriate;
- d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;
- e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and
- f) remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.

[Taken from NPPF 2021, Section 15. Conserving and enhancing the natural environment, paragraph 174]

Thus, the mitigation hierarchy should be applied when considering the impacts of developments and local planning decisions on the natural environment, with the protection of important wildlife sites, habitats, species and ecosystem services; the avoidance of impacts, mitigating these impacts where appropriate, and then achieving biodiversity net gain through enhancements.

Section 15 of the NPPF 2021 goes on to state that 'when determining planning applications, local planning authorities should apply the following principles:

- a) if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;
- b) development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the

features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;

c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and

d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.'

[Taken from NPPF 2021, Section 15. Conserving and enhancing the natural environment, paragraph 180]

The aim of development should be to deliver biodiversity net gain on site as well as limiting damage to important ecological features. Using the information gained during the desktop survey and the extended Phase 1 habitat survey, and the ecological requirements of habitats, species and local environmental conditions, biodiversity enhancements for the Site have been considered, providing opportunities to increase the diversity of habitats and species on site.

5. Results/Baseline Ecological Conditions

This section presents the findings from the site survey and desktop study. The information is presented in three distinct sections:

- Designated sites
- Habitats
- Species

5.1 Designated Sites

Designated sites of international, national and local importance are listed below, along with their approximate distance from the proposed development.

Designation	Name (if applicable)	Distance
Statutory Sites		
Special Area of Conservation (SAC):	None	n/a
Special Protection Area (SPA):	None	n/a
RAMSAR:	None	n/a
World Heritage Site:	None	n/a
Site of Special Scientific Interest (SSSI):	None	n/a
Areas of Outstanding Natural Beauty (AONB):	None	n/a

National Nature Reserve (NNR):	None	n/a
Local Nature Reserve (LNR):	None	n/a
Non-statutory Sites		
County Wildlife Site (CWS):	North Hill Wood CWS Carruggarratt Wood CWS Par Marsh CWS	420m to the south-west 600m to the north-east 1.8km to the south-east
County Geology Site (CGS):	None	n/a

The site lies within a SSSI Impact Risk Zone, but the type of development (rural, residential) does not require Natural England to be consulted.

A '**Habitats Regulation Assessment' (HRA)** is **unlikely** to be required on this site. Refer to [Appendix G. Habitats Regulation Assessment \(HRA\)](#) for details.

Designated sites considered Important Ecological Features with respect to the proposed development:

- None

5.2 Habitats

This section details the habitats present on the Site and recorded during the Extended Phase 1 Habitat Survey, along with important habitats within the vicinity of the site. Figure 5.1 maps the Phase 1 habitats recorded onsite during the field survey and Table 5.1 summarises the area of each of these habitats.

Table 5.1. Phase 1 habitats associated with the site

Phase 1 habitat type	Area (ha) or length (m)
Arable	0.16ha
Cornish hedges with native woody species astride	78m

Figure 5.1 Extended Phase 1 Habitat Survey Map



Semi-natural Broadleaved Woodland

Onsite	None.
Area of semi-natural broadleaved woodland on site	n/a
Offsite	Woodlands are a prominent feature of the surrounding landscape, with a heavily wooded valley less than 500m to the west and an area of woodland 600m to the north-east. Both woodlands are designated as County Wildlife Sites. Several woodlands designated as Habitats of Principal Importance under the NERC Act 2006 lie within a 2km radius of the site (lowland mixed deciduous woodland and traditional orchard).
Legal Constraints	Woodland designated as a Habitat of Principal Importance under the NERC Act 2006 lies within 500m of the site (lowland mixed deciduous woodland and traditional orchard). The woodland offers habitat for protected species.
Important Ecological Feature (IEF)	No – on site - a one storey building would not overlook either of the woodland habitats. Yes – off site
Further Survey Work	Phase 2 survey not required.
Avoidance Measures	None required.
Mitigation Measures	Required as follows: 1. Artificial Lighting Strategy
Biodiversity Enhancement Measures	None required.
Habitat loss/gain	n/a

Arable**Monoculture grass crop**

Onsite	<p>Arable grassland forms the dominant habitat on site.</p> <p>The grassland comprises of perennial rye grass (<i>Lolium perenne</i>) only. The client, who manages the land for a dairy herd, informed the surveyors that the field was in rotation and laid to temporary grass lay or arable crop each year. The field is not grazed but cut for silage/haylage.</p> <p>This grassland monoculture offers negligible value to wildlife.</p> <p>Creating good quality buffer strips internally around the Cornish hedges and improving the ecological value of the land by creating amenity grassland or vegetated gardens, should enable the site to reach the 10% uplift in Biodiversity Net Gain required, although this cannot be confirmed without further calculations.</p>
Area of amenity grassland on site	0.16 hectares.
Offsite	The proposed site is in the south-eastern corner of a field that contains the same monoculture of rye grass. The surrounding fields are also agriculturally improved.
Legal Constraints	None
Important Ecological Feature (IEF)	No
Further Survey Work	Phase 2 survey not required.
Avoidance Measures	None required.

Mitigation Measures	Required as follows: - Permanent Buffers (3m).
Biodiversity Enhancement	Not required.
Habitat loss/gain	Not known.

Cornish hedge



Two Cornish hedges on site	Southern Cornish hedge
<p>Onsite</p>	<p>Cornish hedges with native species astride form the boundaries along the south and east aspects of the site. Both Cornish hedges have post and wire and comprise of the same woody species and very similar ground flora species as noted below.</p> <p>The dominant woody species is blackthorn (<i>Prunus spinosa</i>), with some hazel (<i>Corylus avellana</i>). Bramble (<i>Rubus fruticosus</i> agg.), bracken (<i>Pteridium aquifolium</i>) and honeysuckle (<i>Lonicera periclymenum</i>) are also present.</p> <p>Ground flora comprises red campion (<i>Silene dioica</i>), foxglove (<i>Digitalis purpurea</i>), cocksfoot (<i>Dactylis glomerata</i>), herb Robert (<i>Geranium robertianum</i>), common nettle (<i>Urtica dioica</i>), hedge bedstraw (<i>Galium album</i>) and cleavers (<i>Galium aparine</i>). In addition, tufted vetch (<i>Vicia cracca</i>) and black Bryony (<i>Tamus communis</i>) were recorded in the eastern hedge ground flora.</p> <p>The hedgerows on site are important for several animal species and provide habitat for potential protected species such as: small mammals and birds. They are an important biodiversity feature providing an area of semi-natural habitat for a range of species,</p>

	<p>and corridors through the landscape for the dispersal of small animals such as bats and dormice.</p> <p>It is not expected that any hedgerows will be removed, due to the access already being in place in the south-eastern corner of the site.</p> <p>Creating a length of Cornish hedge with woody species astride, or a native hedgerow, will be required somewhere on site to ensure the 10% net gain in linear habitats is achieved.</p>
Length of hedgerows on site	Cornish hedge with native species astride: Approx. 38m (southern boundary) and approx. 40m (eastern boundary).
Offsite	Hedgerows are a feature of the surrounding landscape and connect the site to habitats within the wider landscape.
Legal Constraints	The Cornish hedges on site could support nesting birds and other protected species (dormice, hedgehogs).
Important Ecological Feature (IEF)	Yes
Further Survey Work	Phase 2 survey not required (if no Cornish hedge is to be removed).
Avoidance Measures	All Cornish hedges must be retained, and mitigation measures put in place to avoid damage (see below).
Mitigation Measures	<p>Required as follows:</p> <ol style="list-style-type: none"> 1. Construction Exclusion Zones (3m). 2. Permanent buffers (3m). 3. Artificial Lighting Strategy.
Biodiversity Enhancement Measures	<p>Required as follows:</p> <ol style="list-style-type: none"> 1. Hedgerow / Cornish hedge creation. 2. Management of existing hedgerows for wildlife.
Habitat loss/gain	A gain in linear habitats will be required to satisfy BNG requirements (suggested hedgerow creation along western boundary).

5.3 Species

This section includes details concerning the species recorded on site during the Extended Phase 1 Habitat Survey, as well as legally protected and/or notable species recorded within a 2km radius of the development site. The potential for the presence of legally protected and/or notable species on site has also been included, based on the habitats recorded on site and adjacent land.

Where there is no potential for a species or species group to be present within the site, they have been scoped out at this stage.

Bats

Onsite	<p>The Cornish hedges within the site provide opportunities for foraging and commuting bats, with connectivity out into the wider landscape via mature hedgerows to semi-natural habitat, including farmland, occasional narrow waterways and woodland.</p> <p>Consequently, moderate potential for navigation and foraging exists along the hedgerows.</p>
Offsite	<p>The area immediately surrounding the site is bisected with hedgerows and small watercourses, providing commuting routes for bats across the landscape. There are also numerous woodlands connected by the hedgerow network, making the surrounding area suitable for commuting, foraging and roosting bats.</p> <p>A greater diversity of bat species than what is commonly expected have been recorded within the surrounding area. All bat species are legally protected; the following bat species have been recorded within a 2km radius of the site since the year 2000: greater horseshoe (<i>Rhinolophus ferrumequinum</i>), lesser horseshoe (<i>Rhinolophus hipposideros</i>), whiskered (<i>Myotis mystacinus</i>), Daubenton's (<i>Myotis daubentoni</i>), Natterer's (<i>Myotis nattereri</i>), noctule (<i>Nyctalus noctula</i>), common pipistrelle (<i>Pipistrellus pipistrellus</i>), serotine (<i>Eptesicus serotinus</i>), barbastelle (<i>Barbastella barbastellus</i>) and brown long-eared (<i>Plecotus auritus</i>) [Groves, 2013].</p>
Legal Constraints	<p>The Cornish hedge habitat has been assessed as capable of supporting protected bat species: - legal constraints apply: legal protection under The Conservation of Habitats and Species Regulations 2010, the Wildlife and Countryside Act 1981 (as amended) and the NERC Act 2006.</p>
Important Ecological Feature (IEF)	Yes
Further Survey Work	Phase 2 survey not required.

Avoidance Measures	All Cornish hedges on site with the potential to support legally protected and/or notable bat species must be retained and mitigation measures put in place to avoid damage (see below).
Mitigation Measures	Required as follows: <ol style="list-style-type: none"> 1. Construction Exclusion Zones (3m). 2. Permanent buffers (3m). 3. Artificial Lighting Strategy.
Biodiversity Enhancement Measures	Required as follows: <ol style="list-style-type: none"> 1. Management of existing Cornish hedges for wildlife. 2. Hedgerow / Cornish hedge creation. 3. Provision of one bat tube or box to be built within the new dwelling.

European Badger (*Meles meles*)

Onsite	No signs of badgers using the site were recorded during the field survey. The grassland on site is not permanent pasture and is considered to have negligible value to foraging badgers.
Offsite	European badger has been recorded within a 2km radius of the site since the year 2000 (Groves, 2013).
Legal Constraints	No legal constraints apply as this habitat offers negligible value to badgers. However, <i>Mitigation</i> measures apply as badgers could travel through the site to suitable areas nearby.
Important Ecological Feature (IEF)	No (on site) Yes (off site)
Further Survey Work	Phase 2 survey not required.
Avoidance Measures	None required.
Mitigation Measures	Required as follows: <ol style="list-style-type: none"> 1. Covered trenching and capped pipework at night.
Biodiversity Enhancement Measures	Not required.

Common Dormouse (*Muscardinus avellanarius*)

Onsite	No signs of common dormouse (<i>Muscardinus avellanarius</i>) using the site were recorded during the field survey. The Cornish hedges present onsite are suitable habitats for foraging and commuting dormice and therefore their presence should not be discounted.
Offsite	There are mature hedgerows and woodland area within the vicinity of the site with the potential to support common dormouse. Dormice have been recorded within a 2km radius of the site since the year 2000 (Groves, 2013).
Legal Constraints	The Cornish hedge habitat has been assessed as capable of supporting common dormouse: - legal constraints apply: legal protection under The Conservation of Habitats and Species Regulations 2010, the Wildlife and Countryside Act 1981 (as amended) and the NERC Act 2006.
Important Ecological Feature (IEF)	Yes
Further Survey Work	Phase 2 survey not required (if no Cornish hedge is removed).
Avoidance Measures	All Cornish hedge habitat on site with the potential to support common dormouse must be retained and mitigation measures put in place to avoid damage (see below).
Mitigation Measures	Required as follows: <ol style="list-style-type: none"> 1. Construction Exclusion Zones (3m). 2. Permanent buffers (3m). 3. Artificial Lighting Strategy
Biodiversity Enhancement Measures	Required as follows: <ol style="list-style-type: none"> 1. Management of existing hedgerows for wildlife 2. Hedgerow creation

Eurasian Otter (*Lutra lutra*)

Onsite	No signs of Eurasian otter (<i>Lutra lutra</i>) using the site were recorded during the field survey. The habitats present on site are not suitable for supporting otters.
Offsite	A wooded river valley is located to the west of the site and provides suitable habitat for otters. An European Protected Species Licence (EPSL) for otters was granted at a site 2.6km to the south-west of the site (Dataset: www.magic.defra.gov.uk).

	Otter has not been recorded within a 2km radius of the site since the year 2000 (Groves, 2013).
Legal Constraints	No legal constraints apply as this habitat offers negligible value to otters. However, <i>Mitigation</i> measures apply as otters could travel through the site to suitable areas nearby.
Important Ecological Feature (IEF)	No (on site) Yes (off site)
Further Survey Work	Phase 2 survey not required.
Avoidance Measures	None required.
Mitigation Measures	Required as follows: 1. Covered trenching and capped pipework at night.
Biodiversity Enhancement Measures	Not required.

Other Mammals - Hedgehog

Onsite	The Cornish hedges on site have the potential to support foraging and commuting West European hedgehog (<i>Erinaceus europaeus</i>).
Offsite	Legally protected and/or notable mammal species (other than those mentioned in the preceding sections) have been recorded within a 2km radius of the site since 2000: hedgehog and harvest mouse (<i>Micromys minutus</i>) [Groves, 2013].
Legal Constraints	The Cornish hedge habitat has been assessed as capable of supporting protected mammal species: - legal constraints apply: legal protection under the Wildlife and Countryside Act 1981 (as amended) and the NERC Act 2006.
Important Ecological Feature (IEF)	Yes
Further Survey Work	Phase 2 survey not required.
Avoidance Measures	All Cornish hedge habitat on site with the potential to support legally protected and/or notable mammal species must be retained and mitigation measures put in place to avoid damage (see below).
Mitigation Measures	Required as follows: 1. Construction Exclusion Zones (3m).

	<p>2. Permanent buffers (3m).</p> <p>3. Artificial Lighting Strategy.</p> <p>4. Covered trenching and capped pipework at night.</p>
Biodiversity Enhancement Measures	<p>Required as follows:</p> <p>1. Management of existing Cornish hedges for wildlife.</p> <p>2. Cornish hedge / hedgerow creation.</p>

Birds

Onsite	<p>Habitats at this site are likely to support common and widespread birds.</p> <p>All bird species are protected whilst nesting, breeding and rearing young. The Cornish hedges on site are likely to support nesting birds. The non-permanent grassland is considered to offer negligible value to foraging or ground-nesting birds.</p> <p>If any section of Cornish hedge is to be removed, works must take place outside of bird nesting season, which runs from March to September.</p>
Offsite	Not known.
Legal Constraints	The habitat has been assessed as capable of supporting nesting birds: - legal constraints apply: legal protection under the Wildlife and Countryside Act 1981 (as amended) and the NERC Act 2006.
Important Ecological Feature (IEF)	Yes (nesting birds).
Further Survey Work	Phase 2 survey not required (if Cornish hedge is not removed).
Avoidance Measures	All Cornish hedge habitats on site with the potential to support nesting birds must be retained and mitigation measures put in place to avoid damage (see below).
Mitigation Measures	<p>Required as follows:</p> <p>1. Construction Exclusion Zones (3m).</p> <p>2. Permanent buffers (3m).</p>
Biodiversity Enhancement Measures	<p>Required as follows:</p> <p>1. Management of existing hedgerows for wildlife.</p> <p>2. Cornish hedge / hedgerow creation.</p>

Reptiles

Onsite	<p>The Cornish hedges might support commuting and hibernating reptiles including slow-worm (<i>Anguis fragilis</i>), common lizard (<i>Zootoca vivipara</i>) and grass snake (<i>Natrix natrix</i>).</p> <p>The grassland on site does not offer habitat for reptiles.</p>
Offsite	<p>Reptile species have not been recorded within a 2km radius of the site since the year 2000 (www.nbnatlas.org).</p> <p>The surrounding fields all appear to be agriculturally improved so there is low potential for any reptiles on site.</p>
Legal Constraints	<p>The Cornish hedge habitat has been assessed as capable of supporting protected mammal species: - legal constraints apply: legal protection under the Wildlife and Countryside Act 1981 (as amended) and the NERC Act 2006.</p>
Important Ecological Feature (IEF)	Yes
Further Survey Work	Phase 2 survey not required.
Avoidance Measures	All Cornish hedge habitats on site with the potential to support commuting and hibernating reptiles must be retained and mitigation measures put in place to avoid damage (see below).
Mitigation Measures	<p>Required as follows:</p> <ol style="list-style-type: none"> 1. Construction Exclusion Zones (3m). 2. Permanent buffers (3m). 3. Covered trenching and capped pipework at night. 4. Gully pot mesh ladders.
Biodiversity Enhancement	N/A

Invasive Non-native Species

Onsite	No invasive, non-native species were recorded during the survey.
Offsite	<p>The following species have been recorded within a 2km radius of the site since the year 2000: Japanese knotweed (<i>Fallopia japonica</i>) and Himalayan balsam (<i>Impatiens glandulifera</i>) [Dataset: I-Record, www.nbtatlas.org].</p>
Legal Constraints	None

Important Ecological Feature (IEF)	No
Further Survey Work	Phase 2 survey not required.
Avoidance Measures	n/a
Mitigation Measures	n/a
Biodiversity Enhancement Measures	n/a

6. Biodiversity Mitigation and Enhancement Details

The ecological mitigation measures and biodiversity enhancements required for the residential dwelling on the land north of Penpell Farm have been listed in Section 5 above, against the particular habitat, species and species group for which they are required. This section provides the specific details for each of the mitigation measures and enhancements mentioned. These are mapped in the Ecological Constraints and Opportunities Plan (ECOP) set out in Appendix J at the end of this report.

Enhancement (measures that improve the biodiversity/ecological condition) of all sites post development is a planning requirement. The law, central government planning policy and local planning policy point towards the enhancement of a site's biodiversity as part of the development process.

Ecological enhancement measures must be over and above any avoidance, mitigation and compensation measures required to neutralise the impacts of the development on wildlife. An increased need for effective Enhancement has been reinforced by recent research conducted by a United Nations-backed panel called the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) stating up to million plant and animal species face extinction. Whilst we in the UK are not directly responsible for all of this loss, we can try to protect the threatened species within the UK.

Consequently, enhancement requirements within this report should be seen as the minimum expectations and we would urge all clients to carefully consider how they are able to make positive contributions to protecting and enhancing our natural environment within their planning submissions.

The implementation of the mitigation and biodiversity enhancement measures should be overseen by an Ecological Clerk of Works or a suitably experienced ecologist.

Construction Exclusion Zones / Buffer Zones

Areas that are being retained should be protected from damage during the groundworks and construction phase of the development by erecting Heras (or similar) fencing around these features. Construction Exclusion Zones (CEZs) should therefore be set up along the eastern and southern Cornish hedge boundaries, at a minimum distance of three metres from the edge of the habitat.

Temporary fencing (Heras or similar) with appropriate signage will be erected at the appropriate distance(s) (as mentioned above). The only exception to this is at existing access points. Heras fencing is not intended to restrict the access of species to other areas of the site, therefore, mindful procedure by site workers and visitors to the site is always necessary.

No development work should be undertaken within the CEZs and no materials, machinery, chemicals etc. should be stored within these zones. No development or any associated works should be located within these Construction Exclusion Zones. Appropriate signs should be placed at regular intervals along the fencing to ensure everyone on site is aware of the CEZ and understands its relevance (for example CONSTRUCTION EXCLUSION ZONE – NO ACCESS).

Any areas proposed for planting post-development should also be fenced off where possible to prevent compaction of the soil through vehicle movements.

Permanent Buffers

Permanent buffers will be maintained along both Cornish hedges forming the eastern and southern boundaries as set out in the *ECOP*. Permanent buffers are to be at least three metres wide and comprise of an Emorsgate mixture EH1 to provide valuable habitat to invertebrates and other wildlife.

Permanent buffers should be cut in the autumn once every three years, with some areas of long grass being left where possible. Grass cuttings should be left in a pile on site, in an appropriate location, and not left where they fall. Having areas of different length grass produces a mosaic of different habitats within the site, thus benefiting invertebrates, birds and small mammals.

No artificial inputs, such as artificial pesticides and fertilisers, should be applied on site. This helps to maintain and improve the floristic diversity.

The EH1 Mixture comprises: - Wildflowers.

%	Latin name	Common name
0.5	<i>Achillea millefolium</i>	Yarrow
1.2	<i>Agrimonia eupatoria</i>	Agrimony
1.5	<i>Alliaria petiolata</i>	Garlic Mustard
0.4	<i>Arctium minus</i>	Lesser Burdock
0.5	<i>Betonica officinalis</i> - (<i>Stachys officinalis</i>)	Betony
1.5	<i>Centaurea nigra</i>	Common Knapweed
0.4	<i>Chaerophyllum temulum</i>	Rough Chervil
2	<i>Galium album</i> - (<i>Galium mollugo</i>)	Hedge Bedstraw
1	<i>Galium verum</i>	Lady's Bedstraw
0.3	<i>Geranium pyrenaicum</i>	Hedgerow Crane's-bill
0.6	<i>Hypericum perforatum</i>	Perforate St John's Wort
0.3	<i>Lathyrus sylvestris</i>	Narrow-leaved Everlasting-pea
0.8	<i>Leucanthemum vulgare</i>	Oxeye Daisy - (Moon Daisy)
0.5	<i>Origanum vulgare</i>	Wild Marjoram
0.7	<i>Plantago lanceolata</i>	Ribwort Plantain
1	<i>Primula veris</i>	Cowslip
2.5	<i>Silene dioica</i>	Red Campion
0.5	<i>Silene latifolia</i>	White Campion
2	<i>Torilis japonica</i>	Upright Hedge-parsley
0.5	<i>Verbascum thapsus</i>	Great Mullein
0.5	<i>Vicia cracca</i>	Tufted Vetch
0.8	<i>Vicia sativa</i> ssp. <i>segetalis</i>	Common Vetch

And grasses: -

%	Latin name	Common name
10	<u>Agrostis capillaris</u>	<u>Common Bent</u>
2	<u>Anthoxanthum odoratum</u>	<u>Sweet Vernal-grass (w)</u>
7	<u>Brachypodium sylvaticum</u>	<u>False Brome (w)</u>
20	<u>Cynosurus cristatus</u>	<u>Crested Dogstail</u>
1	<u>Deschampsia cespitosa</u>	<u>Tufted Hair-grass (w)</u>
28	<u>Festuca rubra</u>	<u>Slender-creeping Red-fescue</u>
12	<u>Poa nemoralis</u>	<u>Wood Meadow-grass</u>

Covered Trenching and Capped Pipework

Trenches or large excavations should be covered overnight to prevent wildlife such as badgers or hedgehogs falling in and failing to escape. If this is not possible then a strategically placed plank may provide a means of escape.

Any large bore pipes should be capped at the end of the day to reduce the potential for badgers and other wildlife entering and becoming trapped.

Artificial Lighting Strategy

No external artificial lighting will be introduced to the site during the groundworks and construction phases of the development. External artificial lighting during the operational phase will comprise lights above external doors only.

LED and/or low-pressure sodium lamps with glass glazing should be utilised instead of mercury or metal halide lamps. This type of lighting can be utilised more directionally and will reduce the range of light wavelengths emitted thus significantly reducing the levels of UV light which may attract increased levels of invertebrate bat prey items. Avoid artificial lights shining on known or potential bat roosts, their access points and their flight paths.

- Light ONLY when and where it is needed for health and safety.
- Prevent light-spill and spread: eliminate bare bulbs, upward pointing lights, keep light near to or below the horizontal. E.g. flat cut-off lanterns. Such light should be positioned to only illuminate the required areas, limiting light spill, both horizontally and vertically. Additionally, hoods, cowls, louvers and/or shields may be utilised to further direct any lighting.
- Decrease light intensity, avoid the UV spectrum: attracting insects is NOT an aim.
- When external lighting is needed for safety reasons, dynamic lighting schemes that are switched on only when needed should be considered. Dynamic lighting schemes are usually triggered via motion sensors by a pedestrian, bicyclist or cars.
- Timer switch on any proposed outdoor lighting to facilitate dark periods.

Where planting to block lighting, use temporary fencing to shield light spill until vegetation has matured.

Hedgerow / Cornish Hedge Creation

A new hedgerow or Cornish hedge is to be created on site. This is recommended to run along the western boundary to screen the barn from the new dwelling. An increase of 10% in linear

habitats is needed to satisfy Biodiversity Net Gain requirements (see *Conclusions* for more information).

The hedgerow should be created from planting native species ideally of local provenance. Suggested species include hawthorn (*Crataegus monogyna*) for its flowers and berries; hazel (*Corylus avellana*) for its nuts and attracting insects; blackthorn (*Prunus spinosa*); pedunculate oak (*Quercus robur*); crab apple (*Malus sylvestris*); holly (*Ilex aquifolium*); elder (*Sambucus nigra*); wild privet (*Ligustrum vulgare*); dogwood (*Cornus sanguinea*); guelder-rose (*Viburnum opulus*); wayfaring-tree (*Viburnum lantana*); grey willow (*Salix cinerea* agg.) and goat willow (*Salix capraea*).

- Use two-year-old pot grown shrubs planted in a double, staggered row at a rate of at least four plants per metre.
- Apply a layer mulch to a depth of 75mm around shrub base to suppress weeds.
- Spiral guards will be used to protect new shrubs from rabbits.
- Plan a monitoring programme during first year of growth. Any saplings which fail to thrive should be re-planted in order to prevent the development of gaps.
- Trim lightly during the first three years.
- Individual trees should be selected at intervals of approximately 20m to remain uncut, allowing these individuals to develop into mature trees to attract potential invertebrate prey species.
- Approximately three years following planting, an appropriate management scheme should be established to ensure that it develops into a dense hedgerow which is optimal for protected species. Refer to section below for hedgerow management advice.

Hedgerow / Cornish Hedge Management

Hedgerows should be trimmed only every three years (or less frequently if possible) and maintained at a height of at least three, and preferably four, metres. It is important not to cut all hedgerows in an area at the same time, so that some heavily fruiting hedgerows are always present. As a guide, it is suggested that cutting only 10 to 30 per cent in any one year is advisable. Gaps in any of the hedgerows should be infilled with native species. Hedgerow management for dormice is given below.

Hedgerow Management	
Good Practice, for the Benefit of Dormice and Hedgerow Biodiversity Ref: <i>The Dormouse Conservation Handbook Second Edition</i> .	
1	Except where road safety or access, preclude it, hedgerows should be trimmed only every three years (or less frequently if possible) and maintained at a height of at least three, and preferably four metres.
2	Ideally, about one third of hedgerows should be left to grow for 7 to 10 years.
3	It is important not to cut all hedgerows in an area at once, so that some heavily fruiting hedgerows are always present. As a guide, we suggest cutting only 10 to 30 per cent in any one year.

4	In some places, it may be feasible to cut only one side of the hedge, cutting the other a year or two later, thus not removing all the food sources at once and allowing some regrowth before further cutting takes place. If possible, flails should not be used to manage hedgerows.
5	Coppicing or, even better, laying should be used to manage hedgerows that become gappy or lack dense branches at their base. Fencing may be needed to prevent stock from causing damage before new growth has become established.
6	If hedgerow size needs to be reduced, it is better to avoid cutting the top and to cut one side only.
7	When creating new hedgerows, or plugging gaps in existing ones, at least five and preferably seven different shrub/tree species should be planted. The best species to plant are hawthorn (for its flowers and berries) and hazel (nuts and insects); with a diversity of other species to offer flowers insects and fruits at different times Bramble would make a valuable addition but may arrive naturally.
8	Where new roads or other developments cut across hedges, the 'loose ends' should be linked up by suitable plantings. Mixtures of hawthorn and hazel are the preferred species where early results are needed.

Bat Roosting Provision

One bat tube or box must be built into the new dwelling.

Bat tubes/boxes erected on properties offer potential bat roosts and augment the natural roosting opportunities. These tubes/boxes should be erected not less than 3m high and ideally 4m plus.

- Bat tubes must be built into the fabric of the building, ideally on the southern and western aspects, and not bolted on to the outside and are therefore only suited to structures, not trees. A choice of styles is sometimes available, and the most suitable style can be agreed with the LPA.
- Where bat-tubes are unsuited owing to the type of construction of the proposed structures, other bat boxes or specifically designed bat habitation of an equally durable condition may be substituted for bat-tubes (subject to LPA approval.)
- Where enhancement recommends bat tubes or bat boxes on structures, aspects of the Artificial Lighting Strategy must be followed to ensure artificial lighting does not shine on the access points /boxes or flight paths.



Example of a bat tube which can be built in.

Solitary Bee Provision

One solitary bee brick should be built into the new property. Solitary bee bricks can be built into buildings, walls and other structures. Each bee brick provides multiple cavities for solitary bees to lay their eggs. The bricks should ideally be built into south-facing, sunny walls, at between one and two metres above ground level and with nectar sources nearby.



Solitary bee bricks

General Good Practice for Construction Sites

All activities on site should bear in mind the potential for wildlife or the environment being harmed through the process of development from inception to end, with a proactive approach occurring for lawful protection of wildlife and the environment regarding use of materials, machines, chemicals, and human activity on site.

- ✓ Contractors must ensure that no harm can come to wildlife by maintaining the site efficiently, clearing away any material such as wire in which animals can become entangled and preventing access to toxic substances.
- ✓ Any large bore pipes should be capped at the end of the day to reduce the potential for badgers and other wildlife entering and becoming trapped.
- ✓ If there is a substantial delay before development commences, the site should be maintained in a way that would prevent wildlife colonising it and causing constraints in the future. Such management should include mowing grassland at least twice a year and preventing scrub encroachment.
- ✓ Piles of brush wood and or log piles should be carefully inspected for signs of wildlife prior to their removal. This is especially crucial during the period March – September (inclusive) as some species of bird choose such sites to construct their nests. Ideally removal of such features should be done outside of the nesting season. If this is not possible, it is recommended that these features are covered in such a way as to exclude / prevent birds and / or reptiles taking up residence. If nesting birds or reptiles are discovered, work must cease immediately, and ecological advice sought.
- ✓ Erection of signage to inform of any Health and Safety considerations during development and post development for the benefit of residents.
- ✓ If any species is discovered during any stage of the works, any vegetation, materials etc. should be replaced to re-establish a level of cover allowing the animal to move

away of its own accord. If required further advice should be sought from Ecological Surveys Ltd (Tel: 01503 240846 or 07736 458609) or Natural England.

Landscaping for the Benefit of Wildlife

Landscaping in sympathy with the needs of native wildlife is relevant to all important wildlife species. It helps to support birds by providing plant species which carry seeds, fruits, nuts, and/or support insects (nectar and pollen) upon which birds feed and supports bats by attracting insects to the garden.

The list below is not exhaustive, neither is it prescriptive, and recommendations in italics can be applied with discretion. The implementation of a combination of recommendations here fulfils the obligation of the client/agent to leave the site in an enhanced state.

- ✓ The landscape architect/or appointed person should plant a variety of flowering plants, biased towards native and near-native species. Exotics are not required; however, a selection of exotics to extend the flowering season and potentially provide resources for specialist groups now and in the future, is becoming increasingly important owing to climatic changes, and should be given serious consideration by any with a view to protecting and sustaining present and future biodiversity. Plant holistically for biodiversity value: nectar rich plants/shrubs which yield fruits /nuts of benefit to a multitude of species.
- ✓ Where grass is planted, use a grass mix other than low amenity lawn grass. Plant mixes with diverse grass species support a wealth of insects when allowed to seed and flower before being cut back.
- ✓ Provide green corridors (hedges/trees/water features/lawns or mixed diversity species and beds) with attention to other neighbouring green spaces. The garden itself, when taken as one of many within the neighbourhood, will become part of a wider green corridor.
- ✓ Select a variety of plants that will produce foods in different seasons. For winter residents as well as migrants that return early in spring, plants that hold their fruits throughout the winter ("winter-persistent" plants) are a vital food source.
- ✓ Leave rough areas of vegetation and native trees and shrubs around the vicinity of any replacement building will also maintain nesting opportunities.
- ✓ Avoid pesticide and insecticide use.
- ✓ For garden areas: improve the area of green habitat within the garden wherever feasible and where paved spaces and balconies must be used also consider:
 - Planters and raised beds
 - Courtyard trees, low level shrubs, hedges
 - Planting climbers and creepers.
- Include features such as bird tables and feeders raised up or protected at the base from squirrel or cat ascent.
- Provide shelter using low shrubs, thickets or hedges where birds can nest, perch, and escape from predators.
- Leave tree stumps, dead wood (where safe to do so) tree limbs, leaf piles and compost to encourage insects and worms for birds to feed on.
- Keep a lid on any water butts.

- Appropriate aftercare and management should ensure that these areas are maintained to give optimum benefit to wildlife.

7. Conclusions

The proposed residential development site is considered to be of low ecological value, with the only value being found in the Cornish hedge habitat.

The Extended Phase 1 Habitat Survey that was undertaken on 19/08/2021, along with the desktop survey, are considered to have collected enough information about the ecological condition of the site to have been able to adequately assess the impact of the proposed development. Further survey work is therefore not required.

Mitigation measures have been set out to avoid and reduce the effects/impacts of the development on the important ecological features and the local environment as a whole. These include Construction Exclusion Zones and permanent buffers around the Cornish hedges. Covered trenchwork and capped pipework at night is required to protect wildlife from harm. An Artificial Lighting Strategy is required to ensure no light spills on to the Cornish hedges, which are likely to be used by commuting and foraging bats. All measures should be included as a planning condition for the proposed development.

Enhancement measures for biodiversity have also been set out, including the management of Cornish hedges for wildlife and creating a new hedgerow / Cornish hedge to the west of the site, in order to screen the new property from the agricultural barn on the other side of the field. Provision of a bat tube or brick and a solitary bee brick is to be built into the new property. Guidance for landscaping for the benefit of wildlife is provided. These enhancements should result in a net ecological gain for the site and should be included as a planning condition for the proposed development.

Providing the recommendations within this report are adhered to, with the mitigation measures and enhancements agreed, there would appear to be no ecological constraints to prevent this development. The local planning authority (LPA) should ensure that the mitigation measures, together with enhancement recommendations, are either 'conditioned' where appropriate, or that full permission is withheld pending the agreement of mitigation, compensation (where necessary) and enhancement measures.

A baseline calculation has been made of the habitat value on site using the DEFRA Biodiversity Net Gain Metric 3.0. Habitat Units were calculated at 0.32 and Hedgerow Units at 0.62. Creating a new native hedgerow of at least 20 metres, or a native hedgerow with associated bank (Cornish hedge) of at least 10 metres somewhere on site, would be enough to increase the value of the linear hedgerow habitat to above the 10% gain required.

The sealed surface and building areas are not currently known. Enhancing the current arable grass ley to amenity grassland or vegetated garden, in addition to the permanent grassland buffers which are required will likely help the site meet the 10% net gain required. These are baseline results and are not conclusive.

The metric does not take into account the number of enhancements in terms of additional roost sites for bats (one) and nesting/hibernation sites for solitary bees (one), or the fact that the residential garden might well provide enhanced foraging for insect species through the growing of flowering plants and the feeding of birds.

It is the responsibility of all those involved with the proposed development works on the land north of Penpell Farm to ensure that wildlife protection and nature conservation legislation is complied with throughout the lifespan of the development, at every stage. Although no current evidence of protected species was found on site it cannot be assumed that they are not present when the development work commences. Care should therefore be taken during all stages of the development and if any protected are discovered they must not be handled; works must stop immediately, and advice sought from a licensed ecologist.

8. Map of Ecological Constraints & Opportunities (ECOP)

ECOLOGICAL CONSTRAINTS	
Site boundary	
AVOID IMPACT TO -	
Cornish hedges	—
MITIGATION REQUIREMENTS	
Apply Construction Exclusion Zone (3 metres) and create Permanent Buffer area (3 metres) internally of both Cornish hedges	- - - -
Unmappable Mitigation Requirements	
Artificial Lighting Strategy	
Covered trenching and capped pipework at night.	
OPPORTUNITY/ENHANCEMENT	
Creation of new hedgerow / Cornish hedge (recommended location, length is subject to type of hedge created)	—
Amenity grassland or vegetated garden creation (Buildings and sealed surfaces cannot be mapped)	
Unmappable Mitigation Requirements	
Solitary bee provision	
Bat roosting provision	
Cornish hedge management	
Landscaping for the benefit of wildlife	



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Appendix A. Summary of the Legislation and Policy relating to Habitats and Species

European Council Birds Directive (CEC, 1979)

The Directive provides a framework for the conservation and management of, and human interactions with, wild birds in Europe. An important part of this Directive is the identification and classification of Special Protected Areas (SPAs) to protected vulnerable bird species listed in Annex 1 of the Directive and regularly occurring migrating species.

European Habitats and Species Directive (CEC, 1992)

The main aim of the Habitats Directive is to promote the maintenance of biodiversity by requiring Member States to take measures to maintain or restore natural habitats and wild species listed on the Annexes to the Directive at a favourable conservation status, introducing robust protection for those habitats and species of European importance.

European Red Data lists (IUCN, 2000)

International Union for Conservation of Nature (IUCN) and the European Commission have been working together on an initiative to assess around 6,000 European species according to IUCN regional Red Listing Guidelines. Through this process they have produced a European Red List identifying those species which are threatened with extinction at the European level so that appropriate conservation action can be taken to improve their status.

The Wildlife and Countryside Act (WCA) 1981 (as amended)

This Act is the primary legislation that protects animals, plants and certain habitats in the UK. It is the means by which the Bern Convention and the Birds Directive and Habitats Directive are implemented in Britain. Protected birds, animals and plants are listed in Schedules 1, 5 and 8 respectively of the Wildlife and Countryside Act.

Schedule 1 Part 1 – Birds which are protected by special penalties at all times from being intentionally killed, injured, or taken and whose eggs, nests or dependent young are also protected from being disturbed.

Schedule 5 Section 9 Part 1 (killing/injuring) – Animals which are protected from being intentionally killed or injured.

Schedule 5 Section 9 Part 1 (taking) – Animals which are protected from being taken.

Schedule 5 Section 9 Part 4a – Animals which are protected from intentional damage to, destruction of, or obstruction of access to any structure or place used for shelter or protection.

Schedule 5 Section 9 Part 4b – Animals which are protected from intentional disturbance while occupying a structure or place used for shelter or protection.

Schedule 5 Section 9 Part 4c – Animals which are protected from their access to any structure or place which they use for shelter or protection being obstructed.

Schedule 6 - Animals which are protected from being killed or taken by certain methods under Section 11(1). The methods listed are: self-locking snares, bows, crossbows, explosives (other than ammunition for a firearm), or live decoys.

Schedule 8 – Plants and fungi which, subject to exceptions, are protected from: intentional picking, uprooting or destruction; selling, offering for sale, possessing or transporting for the purpose of sale; advertising for buying or selling.

Schedule 9 – Plant and animal species that are prohibited from introducing into the wild as they may cause ecological or environmental harm or where they pose a threat to the native

habitats and species. Under Schedule 9 of the Wildlife & Countryside Act 1981 (as amended) it is a criminal offence to cause any of 48 non-native plant species (6/4/2010) and (non-native animals) to spread into the wild where they cause damage to the environment/economy/health/lifestyle.

The site owner has a responsibility to:

- Prevent invasive, non-native plants on their land spreading into the wild and causing a nuisance.
- Prevent harmful weeds on their land spreading onto a neighbour's property

The owner of the site must not plant in the wild or cause certain invasive and non-native plants to grow in the wild. This can include moving contaminated soil or plant cuttings. If this occurs there is a fine or prison term for up to 2 years. The site owner is not legally obliged to remove these plants or to control them on site. However, at the point of change: **development, mulching, earth moving operations:** it is important that they are identified, and their spread controlled in the most appropriate way.

Environmental Protection Act 1990

[Environmental Protection Act 1990](#) allows for the potential classification of soil and other waste containing viable propagules of invasive non-native plant species as controlled waste. This has been applied to Japanese Knotweed with the result that waste containing this species must be disposed of in accordance with the duty of care set out in section 34 of the Act. The Environment Agency have issued guidance which will be of use in complying with the duty of care.

In addition:

- Any Schedule 9 plant material, or soil containing root or rhizome fragments, may be classified as 'controlled waste' under the Environmental Protection Act 1990 (EPA).
- In addition to a criminal prosecution under the Wildlife & Countryside Act, infringement of the EPA can result in an *unlimited fine*.
- The owner may also be held liable for costs incurred from the spread into adjacent properties and for disposal of contaminated soil off site during development, which later leads to the spread on another site.

Protection of Badgers Act 1992

Both badgers and their setts are protected, making it illegal to kill, injure or take, possess or cruelly ill-treat badgers or to interfere with a badger sett (including blocking tunnels or damaging the sett in any way).

The Hedgerow Regulations 1997

Any hedgerows classified as 'important' under the 1997 Hedgerows Regulations cannot be removed without a Hedgerow Removal Notice issued by the relevant Local Authority unless previously approved as part of a planning permission. The UK Biodiversity Action Plan (BAP) now classifies any native hedge over 20m in length as a priority habitat feature. Priority hedgerows should be those comprising 80% or more cover of any native tree/shrub species. The Local Authority is the arbiter as to classification of hedgerows.

The Countryside and Rights of Way (CRoW) Act 2000

This Act increases measures for the management and protection for Sites of Special Scientific Interest (SSSI) and strengthens wildlife enforcement legislation.

Natural Environment and Rural Communities Act 2006

The Act made amendments to the both the Wildlife and Countryside Act 1981 and the Countryside and Rights of Way (CROW) Act 2000. For example, it extended the CROW biodiversity duty to public bodies and statutory undertakers. The Act also makes provisions in respect of pesticides harmful to wildlife, the protection of birds, and in respect of invasive non-native species, and also alters enforcement powers in connection with wildlife protection, and extends time limits for prosecuting certain wildlife offences.

Section 41 of the Act requires that the Secretary of State publishes a list of species of flora and fauna considered to be of principal importance for the purpose of conserving biodiversity in England. The list is intended to be used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under section 40 of the NERC Act 2006 'to have regard' to the conservation of biodiversity in England, when carrying out their normal functions.

The UK BAP list of 1149 species, published in 2007, was used to draw up a list of 938 species, also known as the 'England Biodiversity List', comprising those species found in England which have been identified as requiring action under the UK BAP. In addition, the Hen Harrier has also been included on the list because without continued conservation action it is unlikely that the Hen Harrier population will increase from its current very low levels in England.

The list of species of principal importance was first published in 2002 by DEFRA under Section 74 of the Countryside and Rights of Way (CRoW) Act 2000, and was identical to the UK BAP list at that time. The CRoW Act Section 74 list has now been replaced by the Section 41 list.

Sixty-five (65) habitats are listed as being of principal importance, in the Secretary of State's opinion, for the purposes of conserving biodiversity. Under section 41 (England) of the NERC Act (2006) there is a need for these habitats to be taken into consideration by a public body when performing any of its functions with a view to conserving biodiversity. These habitats are the subject of National and Local Biodiversity Action Plans.

The Anti-social Behaviour, Crime and Policing Act 2014

[Anti-social Behaviour, Crime and Policing Act 2014](#) enables community protection notices to be served by local authorities or the Police against individuals who are acting unreasonably and who persistently or continually act in a way that has a detrimental effect on the quality of life of those in the locality. These powers are designed to be flexible and could be used to address specific problems caused by widespread species such as Japanese knotweed.

The Conservation of Habitats and Species Regulations 2017 (as amended)

[The Conservation of Habitats and Species Regulations 2017](#) consolidate and update the Conservation of Habitats and Species Regulations 2010, and transpose Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora ("the Habitats Directive") and elements of Directive 2009/147/EC on the conservation of wild birds ("the Birds Directive") in England, Wales, and to limited extent, Scotland and Northern Ireland.

The objective of the Habitats Directive is to protect biodiversity through the conservation of natural habitats and species of wild fauna and flora. The Directive lays down rules for the protection, management and exploitation of such habitats and species.

The Regulations place a duty on the Secretary of State to propose a list of sites which are important for either habitats or species. These sites form a network termed Natura 2000 and include Special Areas of Conservation and Special Protection Areas.

Circular 06/2005 Biodiversity and geological conservation – statutory obligations and their impact within the planning system

This circular provides administrative guidance on the application of the law relating to planning and nature conservation as it applies in England. It complements the national planning policy in the National Planning Policy Framework and the Planning Practice Guidance.

UK Post-2010 Biodiversity Framework, 2012

The 'UK Post-2010 Biodiversity Framework', published in July 2012, succeeds the UK BAP and 'Conserving Biodiversity – the UK Approach', and is the result of a change in strategic thinking.

National Planning Policy Framework, 2021

The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and how these are expected to be applied. It contains a number of policies relating to ecology including "minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures". Under NPPF, local planning authorities have an obligation to promote the preservation, restoration and recreation of priority habitats, ecological networks and the protection and recovery of priority species as identified under the Natural Environment and Rural Communities Act (2006). Local Planning Authorities will seek to produce a net gain in biodiversity, by requiring developers to design wildlife into their plans and to ensure that any unavoidable impacts are appropriately mitigated for. The NPPF 2021 version replaces the first NPPF published in March 2012 and includes minor clarifications to the revised versions published in 2018 and 2019.

The natural choice: securing the value of nature (2011) (Natural Environment White Paper)

This White Paper outlines the Governments vision for the future of landscape and ecosystem services.

Biodiversity 2020

This is a national strategy for England's wildlife and ecosystem services based on the White Paper.

Appendix B. Optimum Protected Species Survey Times

BATS	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Bat Scoping	█											
Bat Emergence	█											
Bat Activity	█											
Bat Hibernation	█											

BIRDS	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Birds Breeding	█											
Birds -Other	█											

GREAT CRESTED NEWTS	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
GCN - Habitat Assessment	█											
GCN - Presence / Absence	█											
eDNA – Survey	█											

AQUATIC ANIMALS	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Water Vole	█											
White Clawed Crayfish	█											
Otter	█											

DORMOUSE	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
	█											

REPTILE	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
	█											

BADGER	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
	█											

Phase 1 Ecological Survey	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec

Botany	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec

Tree Survey BS5837 -2012	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec

Dark Green = Approximate Optimal Survey Period  Light Green = Approximate Sub-Optimal Survey Period. 

Owing to the vagaries of the English climate and the seasonal variation between different parts of the Country, the optimal Survey period might vary by several weeks from this calendar. This should be borne in mind when determining Planning Applications

Appendix C. Assessing the Potential Value for Buildings for Roosting Bats

Survey Method of Buildings.

Where appropriate, the building exteriors and interiors are searched visually, using binoculars, for field evidence of bats, with particular attention being paid to sheltered areas such as window ledges and pipes where bat droppings might lie undisturbed from the weather, insect prey remains, urine stains, oil stains from bats repeatedly moving over a small area and polishing the surface, and the potential presence of bats either dead or alive.

Classification Criteria

It should be noted that the grading system below only reports on the situation at the time of survey; should bat activity levels change after the initial survey, or should the buildings be modified (for example if roof tiles are removed or fascia boards develop cracks), the category may need revision.

Category (Potential value)	Description
Please note: Intermediate categories (e.g. Low – Moderate value) may apply.	
No/Negligible value	Buildings with no or very few features capable of supporting roosting bats. Often buildings are of 'sound' well- sealed structure or have a single skin and no roof void. They tend to have high interior light-levels, and little or no insulation. Buildings without any roofs may also fall into this category.
Low value	Buildings of largely unsuitable construction, but with a few features of potential value to bats (e.g. gaps above windows, apparently shallow crevices). No supporting evidence (e.g. droppings / staining) found. Buildings may be surrounded by poor or sub-optimal bat foraging habitat, as is often the case in urban-centre locations.
Moderate value	Buildings usually of brick or stone construction with a number of features of obvious potential value to roosting bats e.g. loose roof / ridge tiles, gaps in brickwork, gaps under fascia boards, and/or warm sealed roof-spaces with under-felt.
High value	Buildings with a large number of features of obvious potential value to bats (as above). Bats may be suspected to roost within the building (at least at certain times of year), but no supporting evidence found.





Confirmed roost	Bats discovered roosting within the building or recorded emerging from / entering the building at dusk and / or dawn. Building found to contain conclusive evidence of occupation by bats, such as bat droppings. A confirmed record (as supplied by an established source such as the local bat group) would also apply to this category.
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Appendix D. Bat Activity and Bat Emergence Survey Information

Survey Method of Buildings.

Where appropriate, the building exteriors and interiors are searched visually, using binoculars, for field evidence of bats, with particular attention being paid to sheltered areas such as window ledges and pipes where bat droppings might lie undisturbed from the weather, insect prey remains, urine stains, oil stains from bats repeatedly moving over a small area and polishing the surface, and the potential presence of bats either dead or alive.

BCT Tree Categories 2016

-  **1*** - Tree with multiple, highly suitable features capable of supporting larger roosts.
-  **1** - Tree with definite potential, supporting fewer suitable features than Category 1* trees or capable of supporting roosts for single/low numbers of bats.
-  **2** - Tree with no obvious potential for roosting bats although due to its size and maturity the tree may support some features with limited potential to support bats.
-  **3** - Tree with no roosting potential.

Development and Planning Trigger for Bat Surveys

Bat Emergence

The Emergence Surveys are required to confirm the species, extent of use (in terms of numbers of bats), type of bat use (in terms of seasonality and functionality of use) and bat access points. These details are required to ascertain the requirement for a Natural England EPSL and to provide the information **required by Natural England should** an application prove necessary.

It is dependent upon the results of Emergence Surveys as to whether Natural England (NE) European Protected Species Licences (EPSL) will be required prior to any construction work commencing. Protected Species surveys, such as bat emergence surveys, cannot be conditioned by the LPA and must be completed prior to Planning Applications being determined. Bat Conservation Trust (BCT) guidelines recommend the level of Bat Emergence Surveys required for each circumstance.

Development and planning trigger list for bat surveys, which can be adapted to local circumstances, taken from the Association for Local Government Ecologists (ALGE) template for biodiversity and geological conservation validation checklists 2007, available from <http://alge.org.uk/publications/index.php>

(1) **Conversion, modification, demolition or removal of buildings (including hotels, schools, hospitals, churches, commercial premises and derelict buildings) which are:**

- Agricultural buildings (e.g. farmhouses, barns and outbuildings) of traditional brick or stone construction and/or with exposed wooden beams;
- Buildings with weather boarding and/or hanging tiles that are within 200m of woodland and/or water;
- Pre-1960 detached buildings and structures within 200m of woodland and/or water;
- Pre-1914 buildings within 400m of woodland and/or water;
- Pre-1914 buildings with gable ends or slate roofs, regardless of location;

<ul style="list-style-type: none"> ➤ Located within, or immediately adjacent to woodland and/or immediately adjacent to water; ➤ Dutch barns or livestock buildings with a single skin roof and board-and-gap or Yorkshire boarding if, following a preliminary roost assessment, the site appears to be particularly suited to bats.
<p>(2) Development affecting built structures:</p> <ul style="list-style-type: none"> ➤ Tunnels, mines, kilns, ice-houses, adits, military fortifications, air-raid shelters, cellars and similar underground ducts and structures; unused industrial chimneys that are unlined and brick/stone construction; ➤ Bridge structures, aqueducts and viaducts (especially over water and wet ground).
<p>(3) Floodlighting of</p> <ul style="list-style-type: none"> ➤ Churches and list buildings, green space (e.g. sports pitches) within 50m of woodland, water, field hedgerows or lines of trees with connectivity to woodland or water; ➤ Any building meeting the criteria listed in (1) above.
<p>(4) Felling, removal or lopping of:</p> <ul style="list-style-type: none"> ➤ Woodland; ➤ Field hedgerows and/or lines of trees with connectivity to woodland or water bodies; ➤ Old and veteran trees that are more than 100 years old; ➤ Mature trees with obvious holes, cracks or cavities, or that are covered with mature ivy (including large dead trees).
<p>(5) Proposals affecting water bodies:</p> <ul style="list-style-type: none"> ➤ In or within 200m of rivers, streams, canals, lakes, reed beds or other aquatic habitats.
<p>(6) Proposal located in or immediately adjacent to:</p> <ul style="list-style-type: none"> ➤ Quarries or gravel pits; ➤ Natural cliff faces and rock outcrops with crevices or caves and swallets.
<p>(7) Proposals for wind farm developments</p> <ul style="list-style-type: none"> ➤ of multiple wind turbines and single wind turbines (depending on the size and location) (NE TIN 051 – undergoing updates at the time of writing)
<p>(8) All proposals in sites where bats are known to be present¹</p> <ul style="list-style-type: none"> ➤ This may include proposed development affecting any type of buildings, structures, features or location.
<p>Notes:</p> <p>1. Where sites are of international importance to bats, they may be designated as SACs. Developers of large sites 5-10km away from such SACs may be required to undertake a HRA.</p>

BCT Emergence and Activity Guidelines

Bat Emergence Survey Requirements		
Extracted from - Table 7.3 & 7.1 BCT Recommended Minimum Survey Effort		
Low Roost Suitability	Moderate Roost Suitability	High / Confirmed roost Suitability

One Survey visit – One dusk or dawn re-entry survey	Two separate survey visits – One dusk and one dawn re-entry survey	Three separate survey visits – at least one must be a dawn re-entry and one a dusk emergence, the other can be either.
<p>Structures that have been categorized as low potential can be problematic and the number of surveys required should be judged on a case by case basis. If there is a possibility that quiet calling, late emerging species are present then a dawn survey may be more appropriate, providing weather conditions are suitable. In some cases, more than one survey may be needed, particularly where there are several buildings in this category.</p> <p>Multiple survey visits should be spread out to sample as much of the recommended survey period as possible, it is recommended that surveys are spaced at least two weeks apart, preferably more. A dawn survey immediately after a dusk one is considered only one visit.</p>		
EMERGENCE – RE-ENTRY Survey Dates		
May to August (structures) No further survey required (trees)	May to September with at least one between May and August	May to September with at least two, between May and August
<p>September surveys are both weather and location dependent. Conditions may become unsuitable in these months, particularly in more northerly latitudes, which may reduce the length of the survey season. Multiple survey visits should be spread out as much as possible; it is recommended that surveys are spaced at least two weeks apart, preferably more, unless there are specific ecological reasons for the surveys to be closer together (for example a more accurate count of a maternity colony is required but it is likely that the colony will soon disperse) if there is potential for a maternity colony then consideration must be given to detectability. A survey on 31st august followed by a mid-September survey is unlikely to pick up a maternity colony. An ecologist should use their professional judgement to design the most appropriate survey regime.</p>		

Bat Activity Survey Requirements		
Extracted from - Table 8.3. BCT Recommended Minimum Survey Effort.		
Transect/spot count/timed search surveys		
Low Habitat Value	Moderate Habitat Value	High / Confirmed Habitat Value
One Survey visit per season (Spring- April/May, summer- June/July/August, autumn- September/October) in appropriate weather conditions for bats. Further surveys may be required if these survey visits reveal higher levels of bat activity than predicted by habitat alone.	One survey visit per month (April to October) in appropriate weather conditions for bats. At least one of the surveys should comprise dusk and pre-dawn (or dusk to dawn) within one 24 hr period.	Up to two survey visits per month (April to October) in appropriate weather conditions for bats. At least one of the surveys should comprise dusk and pre-dawn (or dusk to dawn) within one 24hr period.
Automatic / static bat detector surveys		
One location per transect, data to be collected on five consecutive nights per season	Two locations per transect, data to be collected on five consecutive nights per month	Three locations per transect; data to be collected on five consecutive nights per month

(spring- April/May; summer- June/July/August; autumn- September/ October) in appropriate weather conditions for bats.	(April to October) in appropriate weather conditions for bats.	(April to October) in appropriate weather conditions for bats)
Refer to BCT guidelines document Table 8.3 for further details and dependent conditions where the survey effort is not straightforward.		

Appendix E. Wildlife Crime

<http://www.nwcu.police.uk/what-is-wildlife-crime/>

In general, wildlife crime is any action which contravenes current legislation governing the protection of the UK's wild animals and plants.

A wildlife crime may also be reported and recorded where advice has been given regarding the potential or actual presence of a protected species within a habitat with that habitat then removed/impacted causing actual disturbance/harm/death to that species. Examples in relation to this report may be seasonally pertinent but could include cutting back or removal of a hedgerow where birds and dormice are nesting; removing or doing works to trees where bats roost; cutting grass where reptiles such as slow-worms are inhabiting; filling in or blocking access to badger setts. Specific legislation should be referred to regarding the protection of any animal species or habitat.

Appendix F. Habitats Regulation Assessment (HRA)

Appropriate assessment (or 'Habitats Regulation Assessment', HRA) is one of the most powerful tools currently available to control the environmental impacts of development. Whereas sustainability appraisal is a decision-informing tool, appropriate assessment is often described as a decision-making tool because has the potential to stop development.

Appropriate assessment tests whether a plan or a project is likely to have a significant negative impact on any:

- Special Protection Area (SPA) – a European designation which protects birds
- Special Area of Conservation (SAC) – a European designation which protects habitats
- RAMSAR site – a European designation which protects wetlands.

Jointly, these are called 'European sites'. Appropriate assessment does not apply to other designations, like Sites of Special Scientific Interest (SSSI) or Areas of Outstanding Natural Beauty (AONB).

If the proposed development has the potential to impact up on any of the European sites, the LPA can request an HRA be conducted. The responsibility for conducting such an HRA lies with the LPA, but they can insist that all relevant information is provided to them by the developer.

Proximity to a site is not the defining factor, potential 'impact' is, and for large projects this could be up to 15km from the site. The closer to a protected site, the more likely it is that an HRA will be required, even for a very small site.