J & M Consultant Ecologists

Arcady, Holt Road, Cley, Norfolk

Preliminary Ecological Appraisal

Technical Report

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December 2023

Rev	Date	Details	Prepared by
0	9th December 2023		MP BSc 'hons' MCIEEM CEnv Consultant Ecologist

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SUMMARY

A Preliminary Ecological Appraisal (PEA) was undertaken at Arcady, Holt Road, Cley, Norfolk, NR25 7TU for the demolition of a building and replacement building (the 'proposed development'). This included a desk study, phase 1 habitat survey, a Preliminary Roost Assessment (PRA) of Buildings and Daytime Bat Walkover (DBW) of Trees and appraisal for other protected species.

There is a low risk that bird and bat species could be potentially impacted by the proposed development, therefore recommendations are made that includes ecological method statements and precautions to follow during the proposed development.

The only other requirement in relation to bats, is for sensitive lighting to ensure that dark, unlit corridors are maintained around and across the site, allowing bats to pass through the site unhindered by artificial light. None of the boundary trees or hedges must be lit at night due to their potential use by roosting and/or foraging bats. Any necessary lighting outside the building or parking areas may require shields or adaptations to minimise light spill into these habitats.

There are no designated sites, notable habitat types or other protected species constraints associated with the proposed development.

With the proposed landscape planting, tree mounted bat and bird boxes that have been recommended the proposed development will provide biodiversity enhancement.

In addition to satisfying the legal requirement for protected species, the proposed mitigation, comprising precautionary method statements, compensation and enhancement will satisfy the requirements under National Planning Policy Framework, the Local Plan, Section 40 of the Natural Environment and Rural Communities (NERC) Act 2006 and Environment Act 2021 that promotes the delivery of biodiversity enhancement on development sites.

If work on the Proposed Development has not commenced by May 2025, then an update of the survey is recommended.

1 INTRODUCTION

1.1 Background and Scope of Works

A Preliminary Ecological Appraisal (PEA) was undertaken at Arcady, Holt Road, Cley, Norfolk, NR25 7TU for the demolition of a building and replacement building (the 'proposed development'). This included a desk study, phase 1 habitat survey, a Preliminary Roost Assessment (PRA) of Buildings and Daytime Bat Walkover (DBW) of Trees and appraisal for other protected species.

The surveys were undertaken by an appropriately experienced ecologist with relevant bat and barn owl survey licences. Details are provided in Section 3: Methods.

1.2 Site & Development Description

The site is located at Holt Road, Cley, Norfolk, NR25 7TU in a rural village location in North Norfolk, at Ordnance Survey grid reference TG049429 (see Figures 1 and 2). It comprises a single residential property built less than 5 years ago and garden. The total size of the application site is approximately 0.3 hectares.

The proposed development comprises the demolition of the existing house and construction of a replacement dwelling within the footprint of the existing house. .

Figure 1. Site Location

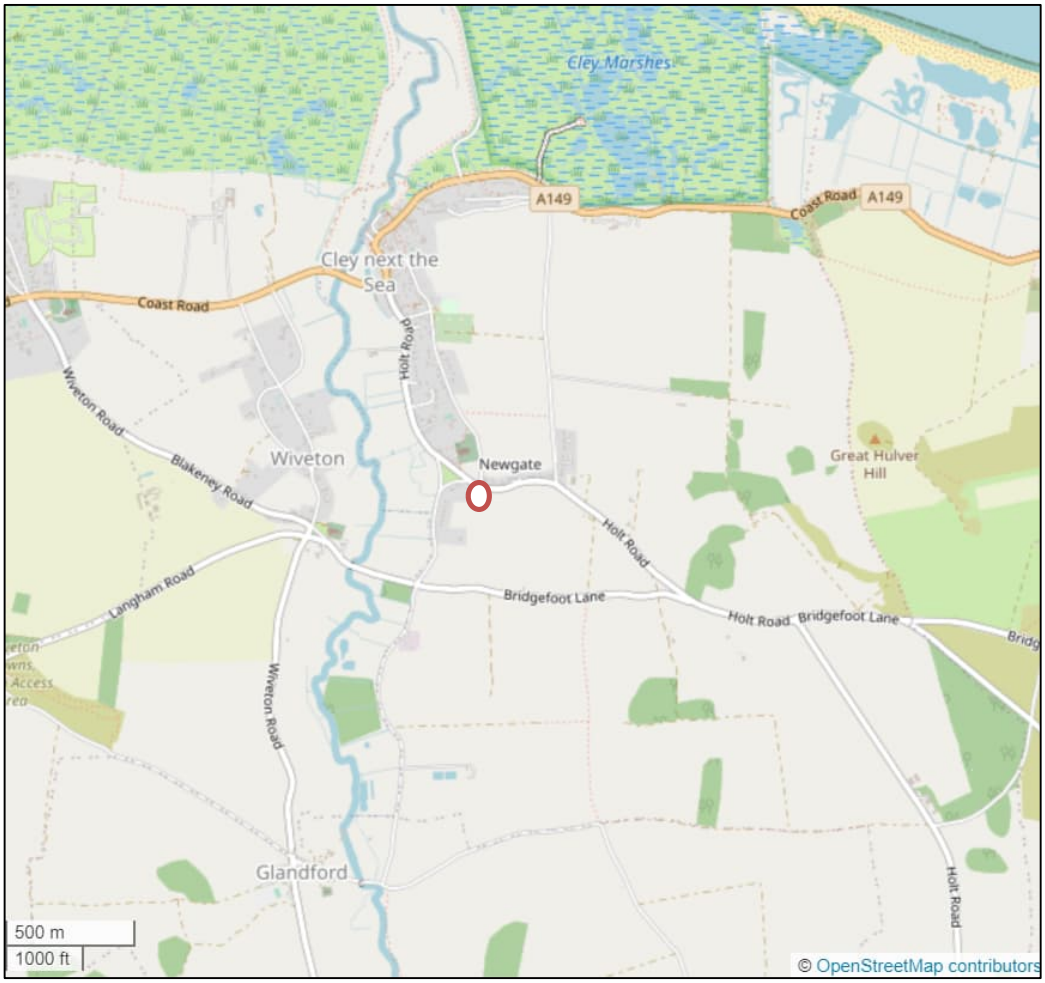
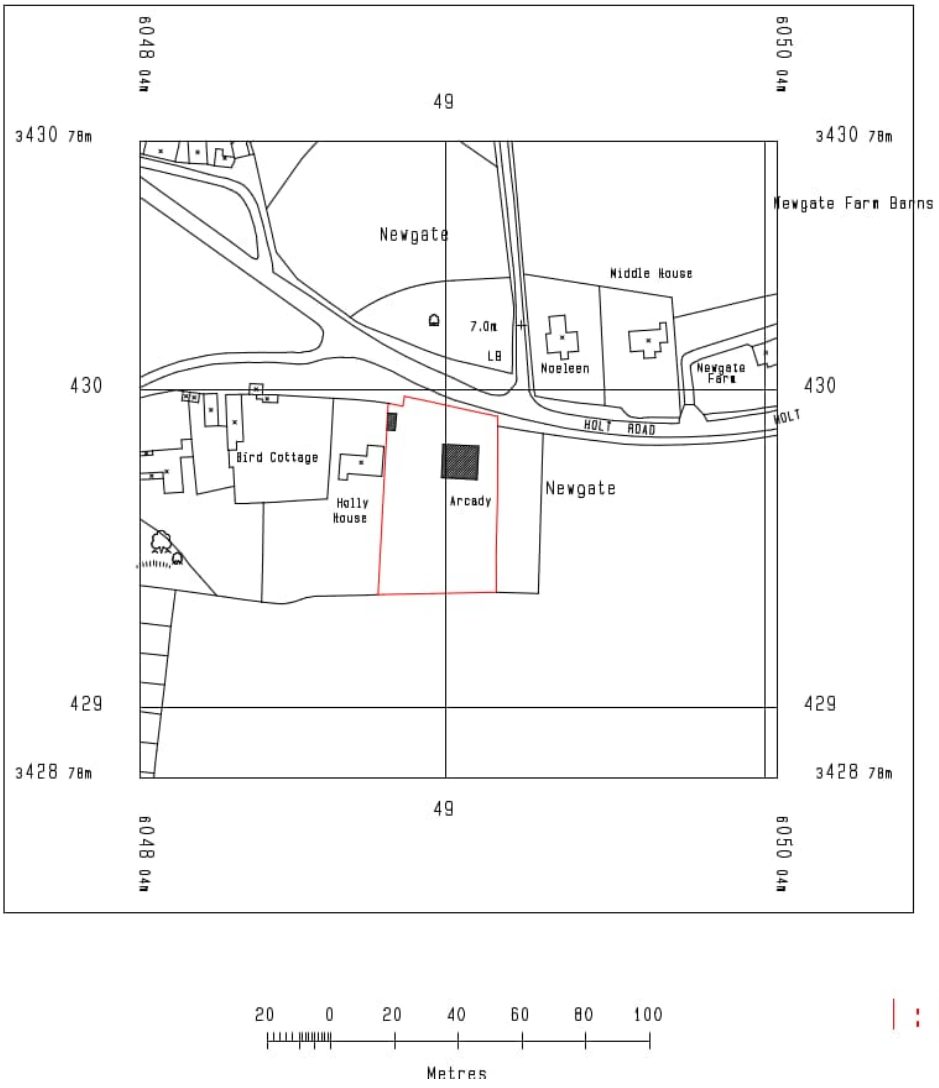


Figure 2. Site Layout



2 LEGISLATION, PLANNING POLICY & LICENSING

Legislation and planning policy are described below, with more detail provided on specific legislation relating to potential ecological receptors discussed in this report (i.e. bats, birds).

2.1 Legislation

The following biodiversity legislation is potentially relevant to the Site:

- Conservation of Habitats and Species Regulations 2017 (as amended) (the Habitat Regulations) ;
- Wildlife and Countryside Act (WCA) 1981 (as amended) ;
- Countryside and Rights of Way (CRoW) Act 2000 ;
- Natural Environment and Rural Communities (NERC) Act 2006 ;
- Environment Act 2021 ;
- The Wild Mammals (Protection) Act 1996 ;
- Protection of Badgers Act 1992 ;
- The Hedgerows Regulations 1997 ; and
- Invasive Alien Species (Enforcement and Permitting) Order 2019 .

This legislation has been considered when planning and undertaking the commissioned survey work; when identifying potential constraints to the proposed works; and when making recommendations for further survey, design options and mitigation. Compliance with legislation may require the attainment of relevant protected species licences prior to the implementation of the proposed development.

2.1.1 Bat Legislation

Section 40 of the NERC Act and updated by the Environment Act 2021 places a legal obligation on public bodies in England to have a proactive duty to consider what action the authority can properly take, consistently with the proper exercise of its functions, to further the general biodiversity objective and for particular living organisms and types of habitats which are of the greatest conservation importance (e.g. species of principal importance). Section 41 of the NERC Act lists seven bat species: Barbastelle, Bechstein's bat, Noctule (*Nyctalus noctula*), Soprano Pipistrelle (*Pipistrellus pygmaeus*), Brown Long-eared Bat (*Plecotus auritus*), Lesser and Greater Horseshoe Bats as species of principal importance for the purpose of conserving biodiversity.

All bat species and their roosts are legally protected in the UK under the Habitats Regulations, which implements the EC Directive 92/43/EEC (the Habitats Directive). In addition, barbastelle (*Barbastellus barbastellus*), lesser and greater horseshoe bats (*Rhinolophus hipposideros* and *R. ferrumequinum*) and Bechstein's bat (*Myotis bechsteinii*) are listed in Annex II of the Habitats Directive, which requires sites to be designated in member states for their protection.

The CRoW Act 2000 introduced the offence of 'reckless' disturbance of threatened species protected under the WCA.

Taken together, this legislation makes it illegal to:

a) Deliberately capture or intentionally take a bat;

b) Deliberately or intentionally kill or injure a bat;

c) *To be in possession or control of any live or dead bat or any part of, or anything derived from a bat;*

d) *Damage or destroy a breeding site or resting place of a bat;*

e) *Intentionally or recklessly obstruct access to any place that a bat uses for shelter or protection;*

f) *Intentionally or recklessly disturb a bat while it is occupying a structure or place that it uses for shelter or protection; and*

g) *Deliberately disturb bats, in particular any disturbance which is likely to (i) impair their ability to survive, breed, reproduce or to rear or nurture their young; or in the case of hibernating or migratory species, to hibernate or migrate; or (ii) affect significantly the local distribution or abundance of the species to which they belong.*

A bat roost is defined as any structure a bat uses for breeding, resting, shelter or protection. It is important to note that since bats tend to re-use the same roost sites, current legal opinion is that a bat roost is protected regardless of whether or not the bats are present at a specific point in time.

2.1.2 Bird Legislation

The WCA makes it an offence (with exception to species listed in Schedule 2) to intentionally:

- *kill, injure, or take any wild bird,*
- *take, damage or destroy the nest of any wild bird while that nest is in use or being built (also [take, damage or destroy the nest of a wild bird included in Schedule 1] under the Natural Environment and Rural Communities Act 2006), or*
- *take or destroy an egg of any wild bird.*

Special penalties are available for offences related to birds listed on Schedule 1, for which there are additional offences of disturbing these birds at their nests, or their dependent young.

2.2 Planning Policy

The National Planning Policy Framework (NPPF) states the commitment of the UK Government to 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.

It specifies the obligations that the Local Authorities and the UK Government have regarding statutory designated sites and protected species under UK and international legislation and how this it to be delivered in the planning system. Protected or notable habitats and species can be a material consideration in planning decisions and may therefore make some sites unsuitable for particular types of development, or if development is permitted, mitigation measures may be required to avoid or minimise impacts on certain habitats and species, or where impact is unavoidable, compensation may be required.

In the current Local Plan of relevant to biodiversity is the Core Strategy Policy SS4 Environment[1]. This includes a commitment that "*All development proposals will contribute to the delivery of sustainable development, ensure protection and enhancement of natural and built environmental assets and geodiversity and be located and designed so as to reduce carbon emissions and mitigate and adapt to future climate change.*

[1] https://www.north-norfolk.gov.uk/info/planning-policy/current-local-plan/core-strategy-policies/

Opportunities to improve river water quality and minimise air, land and water pollution will be taken where possible. Open spaces and areas of biodiversity interest will be protected from harm, and the restoration, enhancement, expansion and linking of these areas to create green networks will be encouraged.

New development will incorporate open space and high quality landscaping to provide attractive, beneficial environments for occupants and wildlife and contribute to a network of green spaces. Where there is no conflict with biodiversity interests, the quiet enjoyment and use of the natural environment will be encouraged and all proposals should seek to increase public access to the countryside."

Under Local Policy EN9 Biodiversity and Geology all development proposals should:

- "*protect the biodiversity value of land and buildings and minimise fragmentation of habitats;*
- *maximise opportunities for restoration, enhancement and connection of natural habitats; and*
- *incorporate beneficial biodiversity conservation features where appropriate.*"

2.3 European Protected Species Mitigation Licences

Although the law provides strict protection for bats and great crested newts, it also allows this protection to be set aside (derogated) under Regulation 55 of the Habitats and Species Regulations through the issuing of European Protected Species Mitigation Licences (EPSMLs). EPSMLs are issued for the purpose of:

- *preserving public health;*
- *preserving public safety; or*
- *for other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment.*

In accordance with the requirements of the Habitats and Species Regulations (Ref 5), a licence can only be issued where the following requirements are satisfied:

- there is no satisfactory alternative; and
- the action authorised will not be detrimental to the maintenance of the population of the species concerned at a 'favourable' conservation status in their natural range.

Favourable conservation status is defined in Article 1(i) of the Habitats Directive (Ref 1) as when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats;
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future; and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its population on a long-term basis.

In England, EPSML applications are currently determined by Natural England and take up to five working days to acknowledge receipt and then at least 30 working days to determine. Certain types of low value bat roosts in buildings can be mitigated for under a Bat Mitigation Class Licence (BMCL), and involve a simpler process with a shorter determination time.

3 METHODS

3.1 Desk Study

To provide some general background information a basic desk study search (appropriate to the size and scale of the proposed development) was undertaken.

A search was made for priority habitats on or close to the site (within 500m) and any statutory designated sites (e.g., Special Areas of Conservation (SAC) for bats, Sites of Special Scientific Interest (SSSIs))[2] and non-statutory designated sites (e.g., Country Wildlife Sites)[3] of relevance to the proposed development (within 2km). A search was made for European protected species licences within 2km of the site (e.g., Bats and Great Crested Newt (*Triturus cristatus)* EPSMLs) and records of foraging bats from the Norfolk Bat Survey (2013 to 2017[4]). The client was asked for any previous records of any protected species surveys undertaken on the site.

3.2 Phase 1 Habitat Survey

A Phase 1 Habitat survey was undertaken in accordance with the standard survey method (Joint Nature Conservation Committee, 2010). Phase 1 Habitat survey is a standard method of environmental audit. It involves categorising different habitat types and habitat features within a survey area. The information gained from the survey can be used to determine the likely ecological value of a site, and to direct any more specific survey work which may need to be carried out prior to the submission of a planning application. The standard Phase 1 Habitat survey method was "extended" to include an appraisal of the potential suitability of the habitats present to support protected and notable species of plants or animals. Field signs, habitat features with potential to support protected species and any sightings or auditory evidence were recorded when encountered, but no detailed surveys will be carried out for any particular species. A note was made of visible instances of invasive non-native plant species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), including Japanese knotweed (*Reynoutria japonica*).

The survey recorded and mapped all habitat types present within the survey area, along with any associated relevant ecological receptors observed (recorded as "Target Notes"). The survey area encompassed all safely accessible parts of the site and adjacent habitats to a maximum distance of 50 m, where access permission had been granted in advance of survey, or where this land is visible from within the site boundary or from public rights of way, or other publicly accessible areas.

3.3 Preliminary Roost Assessment (PRA) of Buildings and Daytime Bat Walkover (DBW) of Trees

The aim of the PRA of buildings and DBW of trees was to provide information on:

(a) the presence of bats, signs of bats, or their roost(s), and/or

(b) Potential Roost Features (PRFs) that were suitable for roosting bats, but for which the presence/absence of bats or their roosts could not be determined.

The survey was undertaken on 5th December 2023 by a suitably licensed ecologist in accordance with best practise guidelines for bat surveys (Collins, 2023). Full methods are provided in Tables A1 and A2 in Appendix 1. Equipment used during the surveys comprised an endoscope, ladder, LED torch and close focussing binoculars as required. Any relevant buildings were assigned a roosting suitability category as either None, Negligible, Low, Moderate and High suitability (see Table A2, Appendix 1). This is based on an assessment of PRFs that could be used by bats based on their size, shelter, protection, conditions and surrounding habitat. Where PRFs are present and cannot be

[2] Using magic.gov.uk
[3] Norfolk County Wildlife Sites on data.gov.uk
[4] https://app.bto.org/bat-vis/NorfolkBatSurvey/

visually inspected (i.e. due to height or location), a precautionary approach is used whereby a building is assessed of at least Low suitability.

Trees are classified according to the presence or likely presence of PRFs as None, FAR (Further Assessment Required) or PRF (one of more PRFs are present), (see Table A3, Appendix 1). Where impacts are likely then further, more detailed survey is required to determine roost presence/absence for trees assessed as FAR or PRF and buildings assessed as Low suitability or higher.

3.4 Appraisal for other Protected Species

An appraisal was made of relevant habitats, nesting birds and the potential for other protected species associated with the site immediate surrounding habitats (e.g. for reptiles and Badger (*Meles meles)*).

3.5 Survey Limitations

During December not all flora species would be evident, but enough information was gathered to enable an accurate assessment of these habitat types (i.e. an existing building, garden and trees) for the purposes of a Phase 1 habitat survey. Most woody species still had leaves and other identifying features present to enable accurate identification.

These limitations do not significantly affect the assessment. All areas of the site were fully accessible, with weather conditions suitable for the purpose of the surveys undertaken.

4 RESULTS

4.1 Desk Study

There are no statutory designated sites relevant to the proposed development, with the nearest sites being located 950m to the north of the site and comprise North Norfolk Coast Site of Special Scientific Interest (SSSI), Special Protection Area (SPA), Ramsar and Special Area of Conservation (SAC), and Blakeney National Nature Reserve (NNR). The North Norfolk Coast is also an Importance Bird Area (IBA). Wiveton Down SSSI is located 1.6km to the west and Glandford (Hurdle Lane) SSSI located 1.4km to the south. The proposed development is outside the SSSI impact risk zones for this type of development (comprising small scale residential development). The proposed development is 350m east of the River Glaven CWS. Coastal and Floodplain Grazing Marsh Priority Habitat is located 140m to the west.

There are no previously recorded bat roosts on the site. Nearby properties including the church have suitable features for roosting bats, but even if bat roosts are present at this distance any roosts are unlikely to be indirectly impacted by the proposed development.

There are three EPS licences for bats located within 2km of the site. The nearest EPS licence is 160m to the north-west and was granted in 2010 (EPSM2010-2603) for the destruction of a resting place and breeding site of a Soprano Pipistrelle and Natterer's Bat (*Myotis nattereri*) roosts. The next closest is located 340m to the north-west that was granted in 2012 (EPSM2012-5261) for the destruction of a resting place for brown long-eared bat (*Plecotus auritus*). The third is located 1.8km to the north-west, granted in 2019 (2019-43761-EPS-MIT) for the destruction of a resting place and breeding site of a Soprano Pipistrelle. None of these roosts are likely to be impacted by the proposed development. There are no nearby European EPSMLs great crested newts located within 500m of of the site and with no suitable ponds within 250m of the site.

Results from the Norfolk Bat Survey[5] show records of foraging bats in the area of Barbastelle, Brown Long-eared Bat, Common Pipistrelle (*Pipistrellus pipistrellus*), Soprano Pipistrelle, Nathusius' Pipistrelle (*Pipistrellus nathusii*), Natterer's Bat, Daubenton's Bat (*Myotis daubentonii*) and Serotine (*Eptesicus serotinus*). There are no sites designated for bats within 10km of the site or previous records from the site.

4.2 Phase 1 Habitats

Habitats are mapped on Figure 3. The site comprises the main residential house (Target Note 1) surrounded by lawn (amenity grassland), bare ground (gravel and paving), with landscaped garden borders, scattered mature trees and a boundary hedge. There is small building in the north-west of the Site and a pool structure to the south-east.

The boundary hedges contain native and ornamental species including common hawthorn (*Crataegus monogyna*), hazel (*Corylus avellana*), elder (*Sambucus nigra*), dog rose (*Rosa canina* agg.), sycamore (*Acer pseudoplatanus*), bramble (*Rubus fruticosa* agg.) and willow (*Salix* species). Trees including a mature ash (*Fraxinus excelsior*), beech (*Fagus sylvatica*) and horse chestnut (*Aesculus hippocastanum*). The site is surrounding by arable fields, a residential property to the west and a minor road to the north.

[5] https://app.bto.org/bat-vis/NorfolkBatSurvey/

Figure 3. Phase 1 habitat survey map

4.3 PRA of Buildings and DBW of Trees

Only the main house (Target Note 1), with some surrounding garden borders and bare ground will be impacted by the proposed. The house is of modern construction and built less than 5 years ago. There are no PRFs associated with the house. All the timber cladding is intact with no gaps. At the base of this cladding there are no cavity/gaps behind suitable for roosting. There are no mortar gaps, ventilation grills, weep holes or any integrated bat roost / bird nesting features. The building has a flat sealed roof with no loft void. There are no gaps around windows or door frames. It is assessed as of "negligible suitability" for roosting bats, as it lacks obvious habitat features (i.e. PRFs) likely to be used by roosting bats.

Based on the Daytime Bat Walkover of the trees within the site none have features suitable for roosting bats. These are classified as having a suitability of 'None' as there are either no PRFs in the trees or highly unlikely to be any. All trees will be retained and protected from disturbance.

There is potential for commuting and foraging bats to use the garden and hedgerow at night, based on the presence of nearby roosts and surrounding habitat suitable for foraging bats, particularly in nearby grazing marshes, woodland and along the River Glaven.

4.4 Appraisal for Nesting Birds and other Protected/Notable Species

Similarly for roosting bats, based on a lack of potential nesting features or access inside the building, birds are unlikely to use the building for nesting. There are adjacent trees and hedges are likely to be used by small numbers of birds (normally March to August).

There is no evidence of badger within 50m of the site, ponds suitable for great crested newt (*Triturus cristatus*) or water courses suitable for protected riparian mammals (i.e. otter *Lutra lutra* and water vole *Arvicola amphibius*). There are no other protected species or habitat considerations associated with the site and immediate surrounding habitat.

5 DISCUSSION & RECOMMENDATIONS

The building has negligible suitability for roosting bats, therefore whilst further surveys are not required there is a very low risk that bats could be present in future and there is suitable habitat for commuting and foraging bats. As such an ecological method statement and lighting recommendations are provided for bats in Section 5.2.

No actively nesting birds were recorded during the surveys (as expected during December), however there are features on site suitable for nesting birds. Therefore, as there is a low risk bird species could be impacted by the proposed development, the following recommendations are made that includes an ecological method statement to follow during the proposed development (see Section 5.3).

There are no licensing or further survey requirements. There are no designated sites, notable habitat types or other protected species constraints associated with the proposed development.

5.1 Designated Sites & Priority Habitats

For all the statutory designated sites identified, the proposed development, involving the demolition of a building and future new build, is outside the SSSI impact risk zones for this type of development and at sufficient distance from the River Glaven CWS to avoid potential impacts (350m distant and adequately buffered by fields). The proposed development would not result in direct terrestrial habitat loss to these designated sites, there would be no alteration of local hydrology, hydrogeology and water quality, no potential exposure of sensitive habitats and species to changes in air quality and generation of dust, or potential disturbance and displacement of sensitive species from these sites.

5.2 Bats

The building has negligible suitability for roosting bats and due to the potential low risk for bats to be present in the future the method statement below should be followed to ensure compliance with bat legislation. All trees are being retained and buffered and will therefore remain unaffected by the proposed development. As such there is no specific mitigation or licensing required with regards to roosting bats.

The only other requirement with regards to bats is for sensitive lighting to ensure that dark, unlit corridors are maintained around and across the site, allowing bats to pass through the site unhindered by artificial light. None of the boundary trees or hedges must be lit at night due to their potential use by foraging bats. Any necessary lighting outside the building or parking areas may require shields or adaptations to minimise light spill into these habitats (see guidance in Appendix 2).

5.2.1 Ecological Method Statement for Bats

1. Site contractors/ workers should be informed that the buildings have been assessed for bats and that whilst there are no confirmed roosts present the presence of bats in future is possible.

2. During building work, contractors must take care to check for bats particularly under the roofs, roof timbers, behind cladding and around windows prior to removal/demolition.

3. If bats or signs of bats are found in future then work must stop in that area, the feature should be replaced if safe to do so, the bat must not be handled and the ecologist should be contacted for advice.

4. If work on the building has not commenced by May 2025, then an update of the bat inspection/emergence survey is recommended.

5.3 Birds

Nesting birds were identified as having the potential to nest on site mainly in the garden shrubs/trees. As such the method statement below should be followed.

5.3.1 Ecological Method Statement for Birds

Precautions are required to ensure the legislation protecting nesting birds is adhered to. The precautionary working method is as follows:

1. It is recommended that work on the proposed development should be started outside of the main nesting bird season of March to August inclusive, however if no nesting birds are present then work can proceed during this time. Note that some species (such as wood pigeon) may nest in trees in winter.

2. If work is required to commence during the nesting bird season or if birds are suspected to be nesting outside this period, then a survey to confirm any active nest locations would be undertaken prior to work and advice from the ecologist followed.

3. In the event that active nests are present a stand-off distance of 10 metres will be set where no work would be undertaken within that zone, noting that for certain more sensitive species this stand-off distance may be extended. The stand-off distance would be maintained until the young have fledged and the nest is no longer active. This would be confirmed by the ecologist prior to re-commencing work.

5.4 Biodiversity Enhancement

In accordance with planning policy biodiversity enhancement is also encouraged. Enhancement for biodiversity should comprise the following:

- Appropriate landscape planting to benefit wildlife, this includes tree and hedgerow planting;

- Ensuring that dark, unlit corridors are maintained around and across the site, allowing bats to pass through and across the site unhindered by artificial light. Any necessary lighting on the edges of the site or safety lighting around the grassed area may require shields or adaptations to minimise light spill (see guidance in Appendix 2); and

- Positive conservation measure to enhance the site for roosting bats and nesting birds, through the provision of two bat boxes roost and two bird nest boxes installed on perimeter trees (as shown in Appendix 2).

5.5 Conclusions

There is a risk that bat and bird species could be potentially impacted by the proposed development, therefore recommendations are made that includes ecological method statements and precautions to follow during the proposed development.

The only other requirement in relation to bats, is for sensitive lighting to ensure that dark, unlit corridors are maintained around and across the site, allowing bats to pass through the site unhindered by artificial light. None of the boundary trees or hedges must be lit at night due to their potential use by roosting and/or foraging bats. Any necessary lighting outside the building or parking areas may require shields or adaptations to minimise light spill into these habitats.

There are no designated sites, notable habitat types or other protected species constraints associated with the proposed development.

With the proposed landscape planting, tree mounted bat and bird boxes that have been recommended, the proposed development will provide biodiversity enhancement.

In addition to satisfying the legal requirement for protected species, the proposed mitigation, comprising precautionary method statements, compensation and enhancement will satisfy the requirements under National Planning Policy Framework, the Local Plan, Section 40 of the Natural Environment and Rural Communities (NERC) Act 2006 and Environment Act 2021 that promotes the delivery of biodiversity enhancement on development sites.

If work on the Proposed Development has not commenced by May 2025, then an update of the walkover survey is recommended.

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Appendix 1: Method for assessing the potential suitability of features to support roosting bats and the conservation importance of roosts

Table A1. Survey method for assessing the potential suitability of buildings, structures & trees to support roosting bats

Buildings/Structures

Bats utilise many different features in buildings for places of shelter and roosting. Potential Roost Features (PRFs) that will be observed, noted and graded (in accordance with criteria in **Table A2**) during the external and internal survey of buildings includes:

External

- external features associated with each building will be visually inspected for their suitability for use by roosting bats. Equipment including close focusing binoculars and powerful spot-lamps will be used to study the walls, eaves and roofs of the buildings. Inspection mirrors and endoscopes will be used as required.
- bats are able to enter a roosting cavity through a small gaps at least 20mm wide. However, bats usually also require an area to land that is adjacent to the entrance hole and has a rough surface. Such features will be looked for during the inspection.
- features include; gaps in ridge tiles (where mortar is missing) gaps under roof tiles or slates, lead flashing around chimney stacks and around dormer windows, gaps under the fascias and soffits, weatherboarding, missing mortar from joints in stone/ brickwork, roof valleys and hips.
- special attention will be paid to the areas directly below any potential access/ egress point in an attempt to identify any accumulation of bat droppings.
- no work involving multi-sectional ladders over 5 m in height will be undertaken as part of the external survey.

Internal

- the most effective method of determining the presence of bat activity within a building is by the presence of their droppings. Bats deposit droppings in both roost and social areas, but the use of such sites by bats can change due to prevailing weather conditions or the time of year.
- the internal inspection involves surveying all surfaces window ledges, rough wall surfaces, floors, cobwebs, cupboard tops and any relatively undisturbed surface.
- areas of particular interest (but not restricted to) are the tops of gable end walls, top of the ridge beam, hip and other roof beams, mortise joints, junction of roof beams, areas around chimney breasts, between roof tiles and felting.
- other features, such as accumulations of discarded wings of moths or butterflies will also be recorded where present. Certain bat species are more likely than others to deal with prey items and leave evidence such as this, and so such features can help identify the species present. Similarly, the location of the droppings will be recorded as this can provide an indication of both the species and the type of roost that is present.

Trees

Surveys can be undertaken at any time of year but should preferably be carried out when the trees are not in full leaf, to aid the viewing of PRFs. Any constraints to surveys should always be noted. The scoping survey (PRA) to identify the existence of PRFs included checks for the presence of the following features that bats might be able to use to determine features with the potential to support bats in accordance with criteria in the bat survey guidelines.

- natural holes (e.g., knot holes) arising from naturally shed branches, or branches previously pruned back to the branch collar;
- man-made holes (e.g., cavities that have developed from flush cuts) or cavities created by branches tearing out from parent stems;
- woodpecker holes;
- cracks/splits in stems or branches (both vertical and horizontal);
- partially detached or loose, platy bark;
- cankers (caused by localized bark death) in which cavities have developed;
- other hollows or cavities, including butt rots;
- compression forks with included bark, forming potential cavities;
- crossing stems or branches with suitable space between for roosting;
- ivy stems with diameters in excess of 50 mm with suitable roosting space behind (or where a roosting space can be seen where a mat of thinner stems has left a gap between the mat and the trunk); and
- bird and bat boxes on trees; or other features that offer a place of shelter.

Table A2. Criteria used to describe the potential suitability of buildings and structures to support roosting bats

Potential Suitability	Description of Roosting Habitats
NONE	No habitat features on site likely to be used by any roosting bats at any time of the year.
NEGLIGIBLE	No obvious habitat features on site likely to be used by roosting bats; however a small element of uncertainty remains as bats can used small and apparently unsuitable features on occasion.
LOW	A structure or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation).
MODERATE	A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed). Often will have some connectivity and proximity to moderate or high quality foraging habitat.
HIGH	A structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially longer periods of time due to their size, shelter one or more species of bat. With good connectivity to high quality foraging habitat. These structures have the potential to support a roost of high conservation status.
CONFIRMED ROOST	Presence of bats or evidence of bats. Confirmation of roost status may require further Roost Classification Survey.

Table A3. Criteria used to describe the potential suitability of trees to support roosting bats

Suitability	Description
NONE	Either no PRFs in the tree or highly unlikely to be any.
FAR	Further assessment required to establish if PRFs are present in the tree.
PRF	A tree with at least one PRF present

Notes:

1. For **buildings/structures** Collins, 2023 uses the terms negligible, low, moderate, etc. to assess suitability for bats as per the levels of shown in the table above.
2. The NEGLIGIBLE or NONE category is used where a feature has been inspected and found not to contain any features of use to bats, and hence provides confirmation that a feature has been inspected or considered.
3. For **buildings/structures** PRFs assessed at LOW to HIGH Suitability further surveys are likely to be required in accordance with standard survey guidance to attempt to determine roost presence/absence. There is provision for the professional bat ecologist to decide on whether further surveys are needed for low suitability buildings.
4. For **trees** assessed as FAR or PRF further surveys are likely to be required in accordance with standard survey guidance to attempt to determine roost presence/absence where impacts are likely (see Collins, 2023).
5. **CONFIRMED ROOSTS** may require Roost Characterisation Surveys to inform planning/mitigation requirements.

The conservation importance of the roosting, foraging and commuting bats present on site is based on the rarity of individual bat species, importance of their roosts, commuting and foraging habitats and overall importance of the bat assemblages (see Tables below) based on the analysis framework in Chartered Institute for Ecological and Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment (CIEEM, 2017), and in the Bat Mitigation Guidelines (Reason & Wray, 2023).

Table A4. Bat species rarity category (Norfolk)

Rarity category	Species
Widespread	• Common pipistrelle • Soprano pipistrelle • Brown long-eared bat
Widespread in many geographies but not as abundant in all	• Daubenton's bat • Natterer's bat • Noctule • Brandt's bat • Whiskered bat
Rarer or restricted distribution	• Leisler's bat • Nathusius' pipistrelle • Serotine
Rarest Annex II species and very rare	• Barbastelle

Note this excludes Alcathoe, Bechstein's, Grey Long-eared and Horseshoe bats that are unlikely to occur on Site based on their current distribution.

Table A5. Assessing importance of roosts[1]

Rarity category (species in each category are determined by region)	Roost category						
	Feeding perches; night-roosts **Individual or very small occasional/ transitional / opportunistic roosts**	**Non-breeding day roosts** **(small numbers of species)**	**Mating sites (excluding individual trees)** **Small numbers of hibernating bats**	**Larger transitional roosts**	**Hibernation sites[4]**	**Autumn Swarming sites**	**Maternity sites[3]**
Widespread	Site	Site	Site	Site/Local	District/County [larger hibernation sites rare in the UK]	District/County (very large pipistrelle swarming sites as yet unknown in the UK)	Unlikely to exceed District importance unless colonies are atypically large; importance increased for assemblages.
Widespread in many geographies but not as abundant in all	Site	Site	Site, dependent on local distribution [for Myotis, see swarming site column]	District	District/County importance dependent on size[2] and number of species	County/Regional importance dependent on size[2] importance increased for larger sites that serve larger numbers/species	County/Regional importance on size[2] and local distribution; increased value for assemblages.
Rarer or restricted distribution	Site (very well-used night roosts may be of District importance for some species)	Site/Local/District, dependent on local distribution	Site/Local/District, dependent on local distribution	District	District/County importance on size[2] and local distribution; increased value for assemblages.	County/Regional importance on size[2] and local distribution; increased value for assemblages.	County/Regional importance on size[2] and local distribution; increased value for assemblages.
Rarest Annex II species and very rare	Site (very well-used night roosts may be of District importance for some species)	Site/Local/District, dependent on local distribution	Site/Local/District, dependent on local distribution	District	County/Regional importance on size[2] and local distribution; increased value for assemblages.	County/Regional importance on size[2] and local distribution; increased value for assemblages.	County/Regional importance on size[2] and local distribution; increased value for assemblages.

[1] Sites within or functionally-linked to SACs are of International importance for Qualifying Species. Sites that *could* be functionally-linked to SACs may or may not have that level of importance (e.g. a barbastelle maternity roost from a multi-component 'bat' SAC may be too far away to be a direct satellite of a maternity roost within the SAC, but may be part of the same population through intermediate unidentified roosts). Sites meeting SSSI guidelines are of National importance (though note that many SSSI citations do not reflect the 'bat' importance of the sites they describe).

[2] In all cases, 'size' needs to be interpreted as 'relative to typical sizes for the species'.

[3] Satellite roosts (i.e. alternative roosts found in close proximity to the main nursery colony) should be considered with the associated main colony.

[4] For tree-roosting bats that are likely to hibernate in small numbers (which means individual hibernation sites are difficult to detect and many may be missed), the importance of the roost resource (i.e. the extent of woodland which contains trees suitable for hibernation) rather than individual confirmed roosts, should be assessed.

Appendix 2: Enhancement Recommendations

A. Bat Roosts

Two 2F Schwegler Bat Box, Harlech woodstone box (or similar design as below) will be provided on mature trees to the south along the hedgerow for enhancement. They are positioned on the south, south-west and/or south-east facing aspects of the trees at least 3m above the ground. Bat boxes must not be directly lit at night by external lighting. External lighting guidance in relation to bats and other nocturnal wildlife should be followed (see Section C in this Appendix). Do not directly illuminate new bat roosts or adjacent habitats including the surrounding hedges and trees. Box details are provided below.

Source: https://www.nhbs.com/2f-schwegler-bat-box-general-purpose
https://www.birdfood.co.uk/harlech-woodstone-bat-box-black

B. Bird nesting/roosting

For enhancement the provision of two tree mounted bird boxes, with a 28mm hole, located on boundary trees on north/north-east/west facing aspects at least 3m above the ground.

https://www.birdfood.co.uk/national-trust-woodstone-28mm-nest-box-green?gad_source=1&gclid=CjwKCAiA04arBhAkEiwAuNOsInXGgtj2bDs5cuUwzEuZRljmnuttYhUWx_NHr52LuigjIFDFnc8aPRoCbtAQAvD_BwE

C. Lighting

Recommendations to help minimise the impact of artificial lighting on bats and other nocturnal wildlife are provided below (Source BCT & ILP, 2023). Retaining ecologically functional 'dark corridors' and Key Habitats for bats within schemes (in preference to seeking lighting mitigation strategies), avoids costly and time-consuming additional surveys, mitigation and post-development monitoring. There must be no illumination of any roost entrances and associated flightpaths, nor on habitats and features used by large numbers of bats, by rare species or by highly light-averse species. Dark habitat buffers and acceptable lux limits should be set with ecologist and lighting professional guidance where required. Design principles include:

- Spatial Design – configuration of roads, buildings and essentially-lit areas
- Building Design – Building scale, glazing and internal layout areas
- Lighting Design – Luminaire specification, height and controls
- Landscaping – Fencing, walls, levels and planting

Lighting design should consider the following:

a. All luminaires should lack UV elements when manufactured. Metal halide, compact fluorescent sources should not be used.

b. LED luminaires should be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability.

c. A warm white light source (2700 Kelvin or lower) should be adopted to reduce blue light component.

d. Light sources should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats.

e. Internal luminaires can be recessed (as opposed to using a pendant fitting where installed in proximity to windows to reduce glare and light spill.

f. Waymarking inground markers (low output with cowls or similar to minimise upward light spill) to delineate path edges.

g. Column heights should be carefully considered to minimise light spill and glare visibility.

h. Only luminaires with a negligible or zero Upward Light Ratio, and with good optical control, should be considered.

i. Luminaires should always be mounted horizontally, with no light output above 90° and/or no upward tilt.

j. Where appropriate, external security lighting should be set on motion-sensors and set to as short a possible a timer as the risk assessment will allow. For most general residential purposes, a 1 or 2 minute timer is likely to be appropriate.

k. The use of bollard or low-level downward-directional luminaires is strongly discouraged. This is due to a considerable range of issues, such as unacceptable glare, poor illumination efficiency, unacceptable upward light output, increased upward light scatter from surfaces and poor facial recognition which makes them unsuitable for most sites.

l. Only if all other options have been explored, accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only to where it is needed.