



Robson Ecology Ltd.

Tel: 07443 620934

Email: odette@robsonecology.co.uk



Preliminary Bat Roost Assessment and Method Statement.

for

**Hill House, Gravel Hill,
Nayland, Suffolk, CO6 4JB**

Survey Commissioned by:	Mr James Durance
Project Number:	REP23016
Report issued:	29 th March 2023
Date of survey:	13 th March 2023
Surveyor:	Odette Robson BSc (Hons) PhD MCIEEM

Project number:	Title:	Revision:	Issued:
REP23016	Preliminary Bat Roost Assessment and Method Statement of Hill House, Gravel Hill, Nayland, CO6 4JB.	Final	29 th March 2023

Disclaimer

The findings detailed in this report are based on evidence from thorough survey, where every effort has been taken to provide an accurate assessment of the site at the time of the survey. No liability can be assumed for omissions or changes after the survey has taken place.

This report was instructed by Mr James Durance and follows the brief agreed. Robson Ecology Ltd has made every effort to meet the client's brief.

Neither Robson Ecology, nor any associated company, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or any third party's use of the report. We disclaim any responsibility to the Client and others in respect of any matters outside the scope of the above. This report is confidential to the Client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own risk.

Information supplied by the Client or any other parties and used in this report is assumed to be correct and Robson Ecology accepts no responsibility for inaccuracies in the data supplied.

Where roosting bats are recorded, a Protected Species Licence may be required: Natural England (the licensing authority in England) require data from the most recent survey season. Where a bat roost is not recorded, data will be valid for a maximum of 18 months from survey date.

Reports must not be submitted to the Local Planning Authority for a planning application until outstanding invoices have been settled.

© Robson Ecology Ltd. 2023 (Copyright of this report remains with Robson Ecology Ltd: Content must not be reproduced, in whole or part, without written consent)

Summary

Site:	Hill House, Gravel Hill, Nayland, Suffolk, CO6 4JB
Grid Reference:	TL 97483 34497
Report Commissioned by:	Mr James Durance
Date of Survey:	13 th March 2023

	Impacts	Recommendations
European designated sites	Hill House lies within the Zone of Influence of European designated sites	No statutory wildlife sites within 2km. No direct or indirect impacts to any European designated sites due to small scale of proposed works (partial re-roofing of existing dwelling): A financial contribution to the Recreational disturbance Avoidance and Mitigation Strategy (RAMS) strategy will not be required due to the nature of the project (no increase in residential units).
Bats	Construction Phase Impact (roosting bats).	No evidence of bats having used the voids under the slate roofs which are scheduled to be impacted (re-roofing and/or dormer windows): Low risk of impact to bats roosting in the main roof void if precautionary working methods are not implemented. No further surveys required. Works to be carried out under a Non-Licensed Method Statement to ensure bats using the main roof are not indirectly impacted during re-roofing of the small double-pitched slate roof. All works will be done from the outside – no contractors will access the roof void. Supervision and pre-start induction talk by Project Ecologist to brief contractors on the Method Statement and legal requirements in relation to roosting bats. The first-floor slate roof must be replaced 'like-for-like', including bitumen-felt lining. Breathable roofing membranes must NOT be used in any areas accessible to bats unless confirmed as 'bat-safe' with a snagging propensity test certificate to NE requirements.
	Operational Phase Impact (commuting and foraging bats).	No flight lines will be interrupted or impacted by the proposed works. The new roof-lights will be on the ground floor only. A sensitive lighting scheme should be implemented to maintain dark corridors at the site boundaries, and to avoid light-spill towards offsite mature trees and potential commuting routes. <u>Lighting precautions required.</u>
Birds	Nesting bird potential	Negligible risk of birds nesting on the parts of the House which would be impacted by works. No further surveys or precautions required
Additional enhancement	Locating bird and bat boxes on buildings or trees will enhance the property, in line with planning objectives for positive gain for biodiversity through development	

Contents

1	Introduction	5
1.1	Background.....	5
1.2	Legislation.....	5
1.3	Aims and Objectives.....	5
1.4	Site Context	5
1.5	Proposed Works.....	6
2	Survey Methodology.....	6
2.1	Site Survey.....	6
2.2	Desk Study.....	6
3	Results.....	7
3.1	Desk Study.....	7
3.1.1	Protected Sites.....	7
3.1.2	Protected Species Licences	7
3.1.3	Local Record Centre Data Search.....	7
3.2	Survey Results from 13 th March 2023.....	8
3.3	Suitability of Hill House for Roosting Bats.....	10
3.4	Foraging and Commuting Bats.....	11
3.5	Nesting Birds.....	11
3.6	Limitations and Assumptions.....	11
3.7	Key Recommendations and Precautions.....	12
3.7.1	Precautionary Working Methods and Non-licensed Method Statement	12
3.8	Breathable membranes	13
3.9	Site Induction	13
3.9.1	Sensitive Lighting	13
4	Ecological Enhancement (Habitat Boxes).....	14
4.1	Bat Box	14
4.2	Sparrow Box/Terrace	14
5	Conclusion	15
6	References.....	16

1 Introduction

1.1 Background

Robson Ecology Ltd was commissioned to undertake a Bat Roost Assessment of Hill House, 11 Gravel Hill, Nayland, to inform a planning application and legal obligations in relation to re-roofing part of the dwelling, and installation of roof-lights into the ground floor lean-to roof.

1.2 Legislation

All UK species of bats are protected under Regulation 41 of the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 and the Wildlife and Countryside Act 1981 (as amended) which makes it an offence to deliberately or recklessly capture, injure, disturb or kill a bat; damage or destroy a breeding site or resting place used by a bat; or obstruct access to any structure or place used for shelter or protection

Bats are a priority species under Section 41 of the NERC Act (2000) which is a consideration under the National Planning Policy Framework - NPPF (MHCLG, 2021), placing responsibility on Local Planning Authorities to aim to conserve and enhance biodiversity and to encourage biodiversity in and around developments.

Seven species are *Species of Principal Importance in England* (SPIE) - formerly UK Biodiversity Action Plan Priority (BAP): Barbastelle *Barbastella barbastellus*, noctule *Nyctalus noctula*, brown long-eared *Plecotus auritus*, soprano pipistrelle *Pipistrellus pygmaeus*, greater horseshoe *Rhinolophus ferrumequinum*, lesser horseshoe *Rhinolophus hipposideros* and Bechstein's bat *Myotis bechsteinii*. Four UK species are also listed under Annex II of the Habitats Directive.

1.3 Aims and Objectives

The survey was therefore required to:

- Identify the presence, or potential presence, of any bats or birds;
- assess the potential impact of the proposals on protected species within the zone of impact;
- make recommendations for further surveys to inform the planning application and/or a protected species licence application (if required);
- detail any precautions required to protect bats and birds from impact, and/or mitigation or compensation, where necessary.

1.4 Site Context

Hill House is a detached Grade II Listed property in the village of Nayland, approximately 6km to the north of Colchester. The property is timber-framed with jettied gables to the front, rendered elevations, and mainly tiled roof (with later slate additions).

The garden to the rear of the property is laid mainly to lawn with mature trees at the boundaries, and a detached garage to the north-west; to the east and south are further properties with mature gardens; and Gravel Hill lies to the west.

The nearest water bodies are associated with the River Stour which runs approximately 160m to the south at its nearest point. The nearest significant woodland is Hicks Plantation, approximately 840m north-east, and Arger Fen, a statutory designated wildlife site, is 3.6km to the north-west. The wider landscape is predominantly agricultural, mainly arable, and grazing meadows associated with the River Stour flood plain.

1.5 Proposed Works

A Householder Planning Application has been submitted to Babergh and Mid Suffolk District Councils (reference: DC/23/00812) for the following works:

Repair, clean and replace existing Welsh slate roof (4 sections) with same or replacement tiles and install 3 Clement windows within roof above kitchen.

The application is pending and can be determined once the results of the Preliminary Roost Assessment have been considered.

2 Survey Methodology

2.1 Site Survey

The site survey was undertaken by Odette Robson BSc (Hons) PhD MCIEEM, a full member of the Chartered Institute of Ecology & Environmental Management (MCIEEM), subject to the CIEEM Professional Code of Conduct and licensed by Natural England to survey for bats (WML-CL18; Level 2).

During the survey, on 13th March 2023, the temperature was 11°C, the wind at Beaufort Scale 6, 90% cloud cover, and excellent visibility.

The survey was undertaken in accordance with *Bat Surveys for Professional Ecologists: Best Practice Guidelines* (Collins, 2016). All parts of the dwelling, and immediate surroundings were assessed externally and internally for potential bat roosting features using binoculars, high-powered torch, and a borescope inspection camera (Ridgid CA300).

Aerial photographs, available maps and survey of the area outside the immediate zone of impact (where access was available) was used to identify any bat habitat in the wider landscape which could be impacted by proposals. The likely impact of the proposed works (operational phase) to bats using the surrounding area (foraging, roosting, and/or commuting) was also assessed.

2.2 Desk Study

A 2km radius search for statutory designated sites was conducted using “MAGIC”, the Multi-Agency Geographic Information system for the Countryside. The search radius was extended to the Zone of Influence (Zoi) for European designated sites: Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar sites, where the potential risk of impact to the qualifying features (species or habitats) of these sites may extend over a wider area.

A datasearch was requested from Suffolk Biodiversity Information Service (SBIS). Records of all bat species within a 2km radius of the site were provided on 29th March 2023.

3 Results

3.1 Desk Study

3.1.1 Protected Sites

The site lies within a Site of Special Scientific Interest (SSSI) Impact Risk Zone (IRZ). Consultation with Natural England is required for residential developments of 50 or more units, and various larger development and infrastructure projects. Therefore, consultation will not be necessary for the Householder Application at Hill House.

There are no statutory designated wildlife sites within 2km, though the property does lie within the Zone of Influence of European designated sites, the nearest of which is detailed in Table 3.1 (MAGIC, 2023).

Table 3.1: European designated wildlife site closest to Hill House (Magic, 28/03/23)

Site Name	Designation	Distance from Site (approx.)	Description
Stour and Orwell Estuaries	SPA and Ramsar	10.4km E (ZoI = 13km)	<i>The Stour and Orwell Estuaries is a wetland of international importance, comprising extensive mudflats, low cliffs, saltmarsh and small areas of vegetated shingle on the lower reaches. It provides habitats for an important assemblage of wetland birds in the non-breeding season and supports internationally important numbers of wintering and passage wildfowl and waders. The site also holds several nationally scarce plants and British Red Data Book invertebrates.</i>

3.1.2 Protected Species Licences

The nearest European Protected Species (EPS) licence granted for bats is 2.4km to the north-east (EPSM2012-4276), for damage and destruction of a resting place: Common pipistrelle, soprano pipistrelle, and brown long-eared bats.

3.1.3 Local Record Centre Data Search

Suffolk Biodiversity Information Service (SBIS) provided a total of 16 records of bats within 2km of the site (SBIS, 2023), which included six species of bats. The nearest record was a pipistrelle roost approximately 100m to the east.

Records of the following species were provided by SBIS:

- Brown long-eared (five records; 2002 - 2018). Nearest record was approximately 145m south (2018).
- Common pipistrelle (four records: 2008 – 2013): Nearest known record was a roost approximately 100m to the east. (2012).
- *Myotis* spp (single record - 2018): Approximately 145m south (2018).
- Soprano pipistrelle (two records: 2018 and 2019): Nearest known record was approximately 145m south (2018).
- Nathusius's pipistrelle (2018): A single record approximately 145m south (2018).
- Serotine (two records: 2018 and 2021): Nearest record was approximately 145m south (2018)

3.2 Survey Results from 13th March 2023

Target Notes described in Table 3.2 refer to locations shown in Figure 3.1 below:

Figure 3.1 – Site context and location

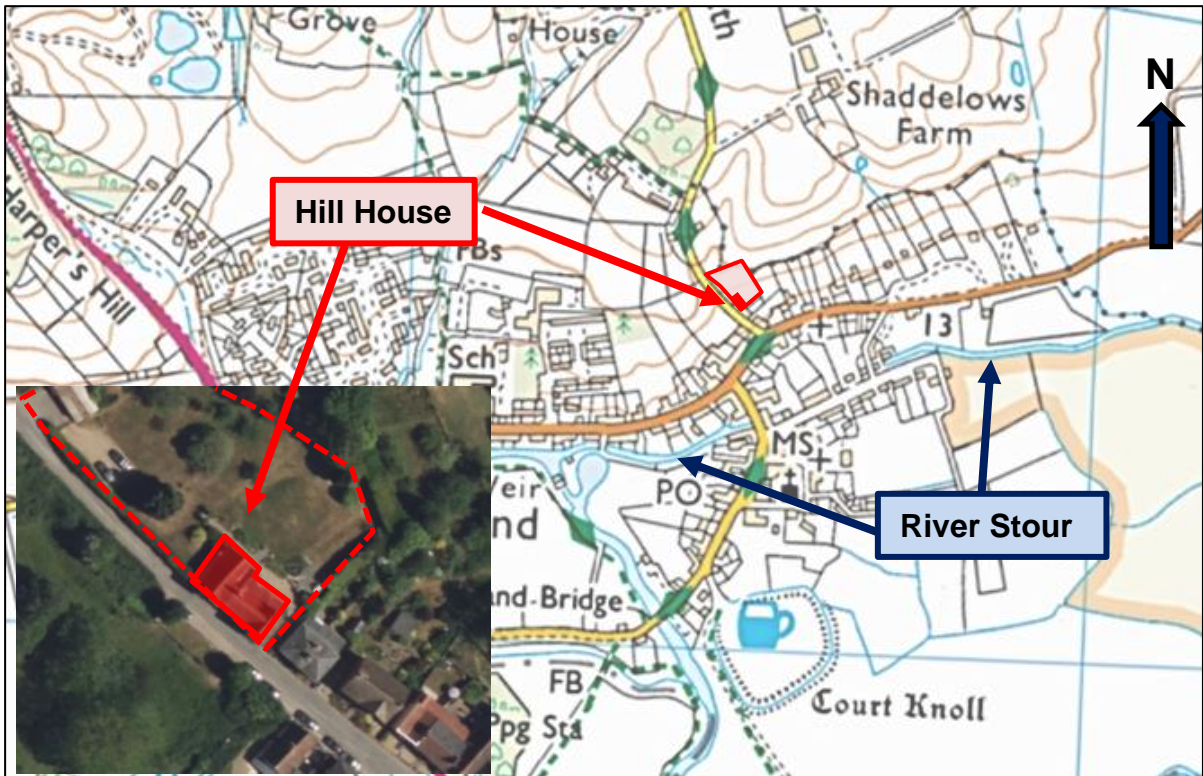


Figure 3.2: Slate roofs scheduled for replacement (A, B and C) – see descriptions in Table 3.2.

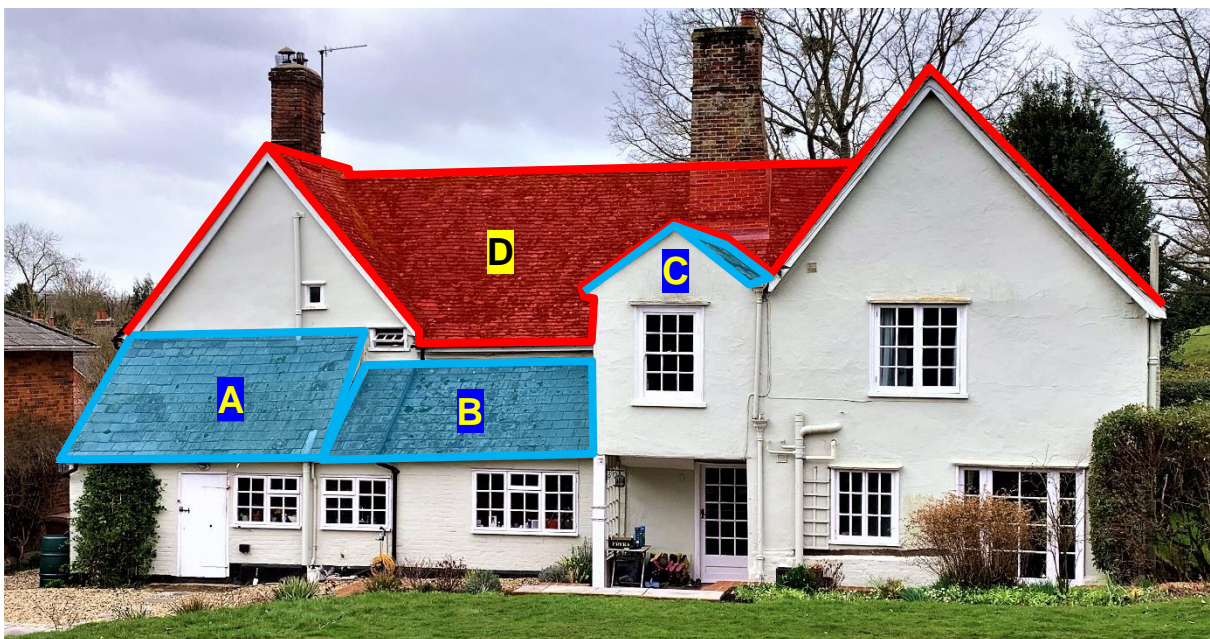




Table 3.2 - Building assessment carried out on 13th March 2023 (Photos: O. Robson, 13.03.23)

Description	Photo
<p>Main House (D): Timber-framed dwelling with rendered external walls – all intact and sealed. Complex roof, mainly peg-tiled with slate-covered additions. No notable missing tiles however, numerous minor damage and gaps under tiles which could facilitate access for bats into the roof void. Windows all well-sealed into surrounds.</p> <p>Internally, the loft had a large void (2+m height from floor to ridge) with king post roof trusses. Bitumen felt lining and lath and plaster at gables.</p> <p>Daylight showing through in places (at eaves and ridge): Lagging insulation on floor of loft, but eaves access still possible for bats/birds. Hole in bitumen felt at ridge with daylight showing.</p>	
<p>Loft (Main House - D) – Approximately 300 droppings, characteristic of brown long-eared bats, beneath the ridge beam (NW main roof section). A second significant accumulation at the SW-facing gable end (approx. 200 droppings). The accumulated droppings were likely to be several years old, and no evidence of recent (past 12 months) bat activity at these frequently used roost locations. Frequent scattered droppings were present throughout the main roof-void (approx. 100 total): Some of these were fresher (likely from past active season) - of more recent origin than the droppings in the accumulations.</p> <p>Bird nesting material (possible house sparrow) was visible at the slope of the gable end on SW-facing gable: Nests were accessed externally, with no evidence of birds entering the roof void itself.</p>	

<p>A – Slate Roofed Lean-to: Single-storey lean-to extension on north-eastern elevation (rear of the property): Slates and ridge-tiles intact and tightly sealed.</p> <p>Void: Not internally lined – slates laid directly to roof timbers. No notable gaps at eaves, or other potential access points for bats or birds.</p>	
<p>B – Slate Roofed Lean-to: Single-storey lean-to on north-eastern elevation. Narrow void (50cm height) – shallower pitch than Void A. Internally accessible from Void A (crawl access only). Lined with tarpaulin under slates. No access points for bats or birds. Lagging insulation overlapping eaves with no daylight showing. No droppings or other evidence of roosting bats.</p>	
<p>C – Slate Roof: First-floor roof over stairwell with shallow double-pitch. Slates intact and sealed, with sealed gullies at the join to the main roof tiles. Internally: Low void (<1m height) with cluttered modern roof timbers: Free flight access obstructed by collar beams. Lined with bitumen felt (intact) on one side. Lagging insulation on the floor. No bat droppings or other evidence of bats having used the void. Modern timbers with no crevice-roosting opportunities.</p>	

3.3 Suitability of Hill House for Roosting Bats

An assessment was made under the criteria detailed in current Best Practice Guidelines (Collins, 2016). There was evidence that bats have roosted in the main roof void of the property (D) in the past: It is likely that this was a well-used brown long-eared day-roost, but may not have been extensively used in more recent years – the majority of droppings were old, grey and crumbling, though some fresher droppings were present, scattered throughout below the ridge, likely cast during flight within the void.

The single-storey lean-to roof-voids (A and B) were totally separate and not connected to the main roof. These had negligible potential to support roosting bats internally or externally under slates.

The narrow roof void under the double-pitched slate roof (Void C) had no evidence of roosting bats, and very low potential to be used by bats due to lack of direct access into the void externally (well-sealed slates and gable end), and no flight access into the void from the main

roof. However, there is an opening from Void C into the main roof void – behind the chimney, so there could be a low risk of impact to bats roosting in the main void if the re-roofing of C was not carried out sensitively. Therefore, a Non-Licensed Method Statement should be implemented to reduce the residual risk of impact to negligible. This will include timing constraints, precautionary methods of working, pre-start supervision and a toolbox talk by the project ecologist, and replacement of roofing materials (bitumen felt and slates) on a like-for-like basis.

No further surveys or licences are needed to inform the planning application. To ensure compliance with wildlife legislation, a Non-Licensed Method Statement should be implemented (Section 3.7.1).

3.4 Foraging and Commuting Bats.

There is good potential for foraging and commuting bats to move through, and around, the garden at the rear of the property due to high quality habitat within the garden and adjacent properties, and ecological connectivity to optimal foraging habitat in the wider local landscape.

A sensitive lighting strategy will need to be designed if any new external lighting is proposed: Any new external lighting must be appropriately positioned to reduce light-spill and directed away from all mature trees and boundary vegetation. Further lighting precautions are detailed in Section 3.6.1. The light from the new roof lights are unlikely to impact any bats, due to being low (ground floor) and close to the house – not directed towards, or close to, key vegetated boundaries that could be used by bats.

3.5 Nesting Birds

Nesting birds and their eggs are protected under the Wildlife & Countryside Act 1981.

There was evidence of bird-nesting in the roof of the house, with externally accessing birds at the northern slope of the south-west facing gable end (eaves height), though no evidence of birds having entered the void itself. This part of the property will not be impacted by works.

There were no nesting opportunities within the slate-roofs which will be impacted, due to the very tightly sealed slates. No further surveys or constraints are required if standard due-diligence and a cautious approach is adopted by contractors.

3.6 Limitations and Assumptions

The baseline conditions reported and assessed in this document represent those identified during a single site survey, on the 13th of March 2023. A reasonable assessment of habitats can be made during a single survey; however, seasonal variations cannot be observed. The survey provides an overview of the likelihood of presence of roosting bats and birds, limited by the transient use of roosting opportunities by bats, and the short-lived nature of some signs (such as droppings). Where no evidence was found, this does not mean that bats do not use the building at some stage of the life-cycle. Further surveys are only recommended if there is a significant likelihood that bats may be present and impacted by the proposals, based on the suitability of the building, surrounding habitat, connectivity, and any direct evidence.

All internal and external parts of the property were accessible on the day of the survey.

Constraints were within normal limits and have been taken into consideration when drawing conclusions from the survey and providing recommendations.

3.7 Key Recommendations and Precautions

No further surveys or licences are required to inform the planning application or to comply with wildlife legislation. However, a *Non-Licensed Method Statement* should be implemented, so that if bats are using the main roof of the house, they would not be impacted during the roof-works. The key points are listed below:

3.7.1 Precautionary Working Methods and Non-licensed Method Statement

The following working methods must be followed to ensure that any bats using the main roof void (which will not be re-roofed, or impacted by proposals), will not be impacted during the re-roofing and installation of roof lights to the slate-roofed parts of the house.

Before works start, a Schwegler 2F bat box will be located on a mature tree in the garden of the house: This box is installed as a precaution - to facilitate any emergency re-location of bats found during works. The box will be retained, post construction, as additional ecological enhancement.

- Works must avoid the sensitive hibernation period: November to March inclusive. There is a low risk that bats could use the main house void for hibernation, and therefore, as an additional precaution, re-roofing works must be carried out when bats are active to avoid any disturbance during the sensitive hibernation period.
- All contractors working on the roof will receive a toolbox talk/induction from the Project Ecologist (licensed to handle bats) prior to starting work on the roof.
- The Project Ecologist will carry out a pre-start survey of the roof voids to ensure no bats are present.
- There will be no material changes to Void C (which adjoins the main roof void) on completion of the works: Re-roofing will be on a 'like-for-like' basis with the same (or similar) roofing materials replaced *in situ*, and no changes to timbers or other roof covering.
- Re-roofing will be carried out externally, from scaffolding, with **no internal access to the roof void**.
- Slates will be lifted by hand off the battens, and immediately turned over to check for bats clinging to the underside, before being laid aside for re-use.
- Re-roofing of Void C will be carried out with minimal noise, vibration, and disturbance. Screws and hand-tools will be used: Hammers, nails and power tools will be used only if there is no alternative (this does not apply to Voids A and B, which are not connected or close to the main roof void).
- If the design, materials or construction-methods change, or deviate from the above, the project ecologist must be consulted to confirm that the works can proceed without requiring a licence or breaching wildlife legislation.
- All work must stop immediately if bat(s) (or signs of bats) are found during unsupervised works: Project Ecologist or Natural England must be consulted for advice on how to proceed.

3.8 Breathable membranes

Only F1-Type bitumen/hessian-backed roofing felt will be used in Void C, so that there is no change to the main roof on completion of works (like-for-like replacement to ensure the roost conditions are not modified, as this would require a licence).

If Voids A and B are sealed and therefore inaccessible to bats, then breathable membranes could be used: Any gaps over 1cm could be used by bats to gain access to a crevice or void.

Most modern breathable membranes are harmful to bats. *TLX bat-safe* is currently the only known breathable membrane which has passed the snagging propensity tests and has been approved for use in bat roosts.

3.9 Site Induction

Contact details for the Project Ecologist, and a copy of this Report/Method Statement, must be displayed at all times in the site office.

All contractors will be made aware of the protection afforded to bats, appropriate standard due diligence practices, and site-specific precautions/requirements: This will be covered in a pre-start induction for all site contractors, as follows.

The induction of all site workers (including those working on parts of the project away from the roof) must include information on bats, as detailed in this report, including:

- The legally protected status of all bat species.
- Observance of the *Non-Licensed Method Statement* to comply with wildlife legislation.
- Presence of roosting bats on the site: All work must be carried out under precautionary methods.
- Re-roofing will be carried out externally (no internal access to the roof void).
- Measures that will be used to protect bats.
- Good working practices.
- How to deal with bats if found during works (do not handle bats: Only a licensed bat-worker can legally handle bats, and some bats carry rabies).
- All works to stop immediately if bats, or signs of bats, are found during works: Site Manager to contact Project Ecologist for advice on how to proceed.

A written record of this must be kept confirming that site staff have received induction relating to bats. All receiving this briefing must sign an attendance document, to confirm that they are aware of the potential presence of protected bats, the implications of disturbance, and how to deal with a situation if bats are found during works.

If there are any changes to external lighting at the property, a sensitive lighting scheme should be implemented to protect bats foraging and commuting in the local area.

3.9.1 Sensitive Lighting

Lighting at the site should be minimized to encourage bats to use the site, both during the construction works, and on completion. Guidance from the Institute of Lighting Professionals and the Bat Conservation Trust (IPL 2018; ILE 2012, BCT 2009) has been used to inform the following considerations:

- The boundary vegetation and mature trees within and surrounding the garden should be maintained as dark corridors, with no lighting directed towards these features.

- LED luminaires should be used where possible (No UV elements: Metal halide, fluorescent sources should not be used).
- A warm white spectrum (ideally <2700Kelvin) should be used to reduce the blue light component.
- Peak wavelengths higher than 550nm should be used to avoid the component of light most disturbing to bats (Stone, 2012).
- Internal luminaires can be recessed where installed in proximity to windows to reduce glare and light spill.
- Any external security lighting should be set on motion-sensors sensitive to large moving objects only, and short (<1 minute) timers.
- All external lighting should be kept to the minimal feasible level and be directed downward: Baffles, hoods or louvres can be used to reduce light spill and direct light only to where needed.
- Lighting should be appropriately directed to avoid illuminating the site boundaries (to north, west and south), adjacent trees, boundary vegetation, and any mitigation/enhancement bat boxes.
- Re-roofing works should only be undertaken during daylight hours and task lighting should not be used during the re-roofing works.
- The new kitchen roof-lights should have blinds fitted to reduce external light-spill at night.

4 Ecological Enhancement (Habitat Boxes)

These additional recommendations would enhance the value of the property for wildlife, as encouraged through the NPPF (MHCLG, 2021), and to help achieve Suffolk BAP targets.

4.1 Bat Box





The north-east or north-west elevations of the house provide the appropriate orientation for a bat box, installed as high as possible at the apex of a gable, or at the eaves. The Beaumaris Woodstone Bat Box (or similar and approved) would be suitable for positioning on an external wall of the property.

Alternatively, a tree-mounted box could be located in the garden. Bat boxes in trees should be 3m to 6m above ground level, facing south-east, south or south-west, and be sited out of reach of cats. There should be unobstructed flight access enabling entry/exit for bats, but with suitable flight-lines (trees/hedges) in close proximity. Schwegler boxes are durable and long-lasting. The access hole is at the base so that the boxes are self-cleaning and do not require any maintenance. Damage, disturbance or removal of a bat box used by roosting bats could be a breach of wildlife legislation. Boxes used by roosting bats can be checked or moved legally by an appropriately licensed individual.

4.2 Sparrow Box/Terrace

A sparrow-terrace could be best sited on a north-east facing elevation of the house or detached garage, where there is access to vegetation. At least two boxes, or a dual/triple terrace box, should be installed for this colonial-nesting species. Various designs are available: Boxes can be externally mounted on the house or garage. Alternatively, two/three boxes designed to be mounted on trees could be used in a mature garden tree.

Table 4.1: Specification of bird and bat boxes.

<p>Beaumaris Bat Box (building mounted)</p> <p>A woodstone box for crevice-dwelling bats. Can be mounted on walls/buildings.</p> 	<p>Schwegler 2F (tree-mounted)</p> <p>Multi-purpose tree-mounted bat box. Manufactured from long-lasting Woodcrete, a blend of wood, concrete and clay which will not rot, leak, crack or warp, and will last for at least 20 - 25 years.</p> 
<p>Sparrow Terrace - Schwegler 1SP (for buildings)</p> <p>This terrace provides nesting opportunities for three families. Made of wood-concrete mix, this terrace is durable, breathable and will last many decades. The terrace can be fixed on to the surface of a suitable wall or incorporated into the wall. Place the terrace two metres or more above the ground or install directly into the wall. Cleaning is advisable but not necessary. As high as possible – below eaves.</p> 	<p>Sparrow Box - Schwegler 1B (32mm hole) (for trees)</p> <p>General purpose nesting box; for house sparrows. To be located together in a group for colonial nesting species.</p> 

5 Conclusion

The proposed roof-works can proceed with negligible impact on bats, birds, or other protected species, if the precautionary *Non-Licensed Method Statement* is implemented to ensure that bats are not indirectly impacted by the proposed replacement of the slate roofs and addition of roof-light/windows.

There is scope to further enhance the property for birds and bats through incorporation of the roost/nest boxes detailed in Section 4, in line with planning objectives for positive gain for biodiversity through development.

6 References

Bat Conservation Trust: Artificial Lighting and Wildlife. Interim guidance: Recommendations to help minimize the impact of artificial lighting. June 2014.

Bat Conservation Trust. (2009). Bats and lighting in the UK- bats and the built environment series www.bats.org.uk

Collins, J. (ed) (2016) Bat Surveys for Professional Ecologists: Best Practice Guidelines (3rd edn). The Bat Conservation trust, London. ISBN – 13 978-1-872745-96-1.

Conservation of Habitats and Species Regulations 2017. HMSO, London.

ILP (2018). Institute of Lighting Professionals. Bats and artificial lighting in the UK Bats and the Built Environment series. Guidance Note 08/18.

IPE (2011) Institution of Lighting Engineers Guidance Notes for the Reduction of Obstructive Light

Mitchell-Jones, A. J. (2004). Bat mitigation guidelines.

MHCLG (2021). National Planning Policy Framework. Available to download online from the Government website <https://www.gov.uk/government/publications/national-planning-policy-framework--2>

Stone, E.L., Jones, G., Harris, S. (2012). Conserving energy at a cost to biodiversity? Impacts of LED lighting on bats. Glob. Change Biol. 18, 2458–2465.

Suffolk Biodiversity Information Service Report. 2023. Bat species data search within a 2km Radius of TL 97483 34497. Provided March 29th 2023.

UK BAP from URL <http://jncc.defra.gov.uk/page-5717>

MAGIC (accessed 28th March 2023): Designated site data downloaded from URL <http://www.magic.gov.uk/html>