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Bat Survey Report

Site Name

Old Kingsham Farm

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Client

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Author

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About the Author

This report has been prepared by Rozel Hopkins, a Consultant Ecologist at The Ecology Co-op, with 3 years' experience. She has a Level 1 bat survey licence and as a Qualifying member of the Chartered Institute for Ecology and Environmental Management (CIEEM) is bound by their code of professional conduct.

About the Reviewer

This report has been reviewed by Owen Crawshaw, who is a Senior Ecologist with 10 years' experience. He has a Level 2 bat survey licence and has prepared several European Protected Species licenses for bats. As Full member of the Chartered Institute for Ecology and Environmental Management (CIEEM), he is bound by their code of professional conduct.



Report Summary

Purpose	The Ecology Co-op was commissioned by Deirdre Donegan to undertake a Bat Scoping and Emergence survey at Old Kingsham Farm further to a proposal to extend the existing property at the northern elevation.
Context	The site currently contains a dwelling and an outbuilding (remaining unimpacted by the proposals) and associated gardens. The Ecology Co-op undertook three emergence surveys at this site in 2021 in relation to re-roofing works, which identified two transient roosts, supporting two soprano pipistrelle <i>Pipistrellus pygmaeus</i> bats under the west facing fascia board and two common pipistrelle <i>Pipistrellus pipistrellus</i> bats under a roof tile and within the gable end of the southern section of the property. The purpose of the present survey work was to provide advice to inform a planning and European Protected Species (EPS) licence application for the demolition of the existing northern extension and construction of a new extension which will spread to the east.
Key findings	The inspection of the building confirmed a bat roost through the presence of brown long-eared bat <i>Plecotus auritus</i> droppings within the main loft space and connecting void. In addition, two emergence surveys were carried out of the building and a common pipistrelle <i>Pipistrellus pipistrellus</i> bat was seen to emerge from a lifted tile on the southern section of the eastern elevation. Other bats including soprano pipistrelle <i>Pipistrellus pygmaeus</i> , serotine <i>Eptesicus serotinus</i> , long-eared bats <i>Plecotus</i> sp. and noctule <i>Nyctalus noctula</i> were detected foraging or passing through the garden of the property from time to time during all survey visits.
Interpretation	The surveys of Old Kingsham have identified one common pipistrelle solitary day roost associated with the southern section of roof tiles on the east face of the building. An occasional brown-long eared bat day roost was also detected through the presence of droppings in the loft void, likely belonging to a single individual.
Recommendations	As the proposed development involves the partial demolition of the existing northern extension and construction of a new extension, the modification and disturbance of the roost features used by bats cannot be avoided, and in the absence of mitigation, this could potentially result in harm to individual bats. Therefore, a European Protected Species (EPS) licence will be required for the development to legally proceed. As this building has been subject to a 'bat mitigation class licence' previously for re-roofing works, the proposals will need to be covered by a full EPS mitigation licence.



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1 INTRODUCTION

1.1 Background

The owners of Old Kingsham Farm intend to submit a planning application for a proposed development that involves the extension of the existing property at the north-east.

The full address for the site is Old Kingsham Farm, Milland, West Sussex, GU30 7JY (see Figure 1). The central National Grid Reference for this site is SU 83748 25079.

The site comprises a dwelling and outbuilding (the latter of which is to remain unimpacted by the proposals), surrounded by amenity lawns, a gravel drive and tennis court. Mature and semi-mature trees are located in the northern section of the site, sailing over longer grassy areas beneath. Large areas of ancient and mature deciduous woodland are located within the wider landscape with smaller agricultural fields and low-density housing interspaced.

The Ecology Co-op undertook three emergence surveys at this site in 2021. This was completed in relation to re-roofing works of the building. These bat emergence surveys were completed on 6th July, 21st July and 9th August 2021. The surveys identified two transient roosts supporting two soprano pipistrelle *Pipistrellus pygmaeus* bats under the west facing fascia board and two common pipistrelle *Pipistrellus pipistrellus* bats under a roof tile and within the gable end of the southern section of the property. It was concluded that the re-roofing works at the site could be carried out under a European Protected Species (EPS) Bat Low Impact Class Licence (BMCL) scheme. This included a licensed ecologist observing the removal of roof tiles by hand, carried out on 21st, 22nd and 23rd March 2022. Two bat boxes were attached to mature trees within the site boundary and features re-instated on the building to ensure roosts were compensated for. One common pipistrelle and one soprano pipistrelle were found during the works and were relocated to the bat boxes. A number of gaps were created during the re-roofing works across the entirety of the roof as both compensation and enhancement.

The proposed development comprises the demolition of the existing northern extension and construction of a new extension which will spread to the east (Figure 2). Some of the deliberately created features from the previous bat licence will be lost by the proposed works, but the vast majority will remain.



Figure 1. Aerial image showing the location of Old Kingsham Farm, (indicated with a red outline, with the building surveyed shown with a white arrow). Image produced courtesy of Google maps (map data ©2023 Google).

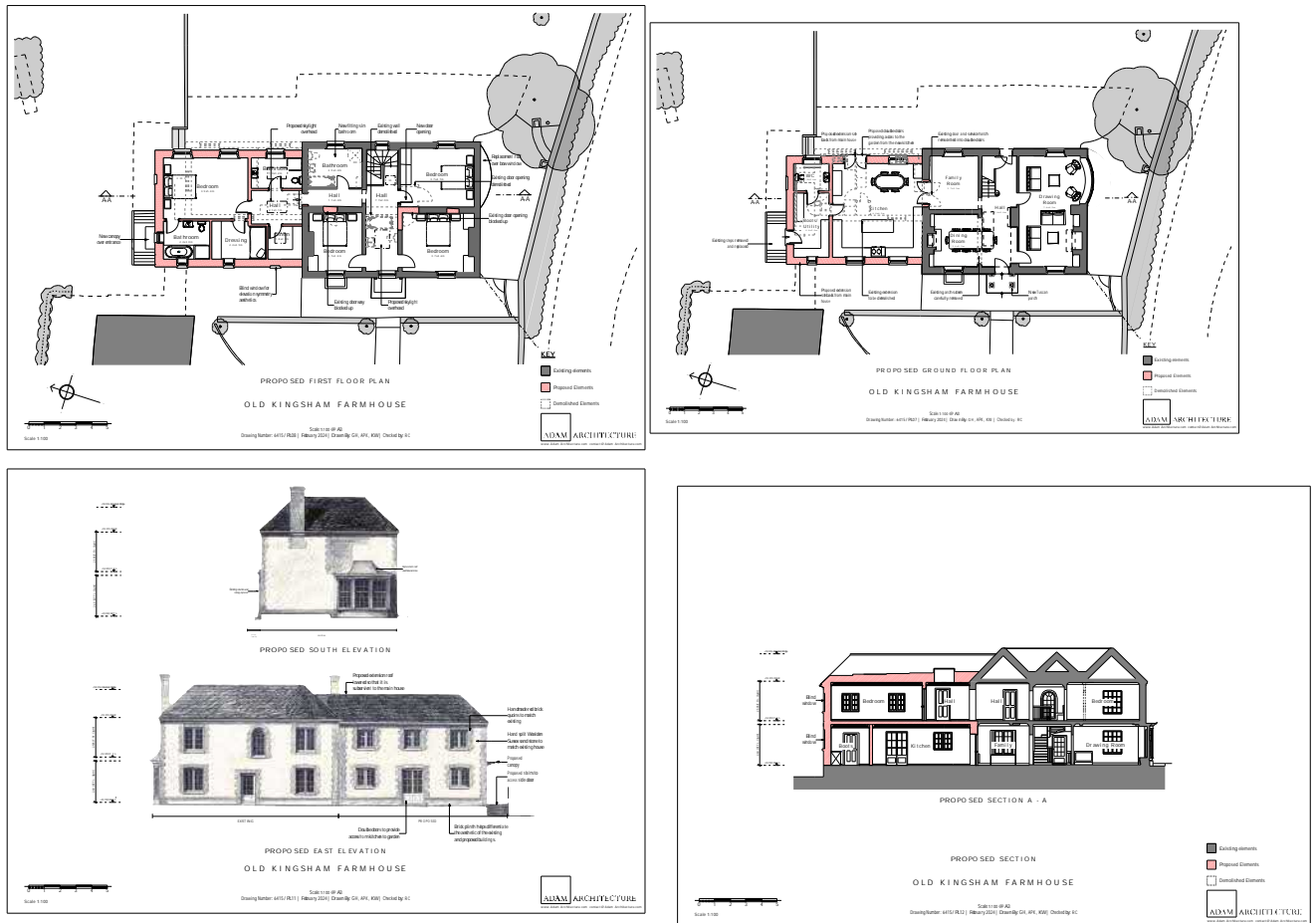


Figure 2. The proposed plans for the extension of Old Kingsham Farm. Plan courtesy of ADAM Architecture, drawing no. 6415.

1.2 Purpose of the Report

The Ecology Co-op has been commissioned to undertake a Bat Scoping Assessment and subsequent Emergence Surveys of Old Kingsham Farm carried out at the request of Deirdre Donegan. This report presents the findings of a walkover survey and building inspection for roosting bats, undertaken by Natural England Level 1 bat survey class licence holder Rozel Hopkins MSci (Hons), a Qualifying member of the Chartered Institute of Ecology and Environmental Management, on the 12th June 2023. Two subsequent bat emergence surveys were completed on 12th and 28th June 2023, also led by Rozel Hopkins.

The purpose of this survey work was to determine presence of roosting bats and prescribe further surveys where necessary and/or appropriate mitigation advice to inform the planning application for the proposed extension of the building.

2 LEGAL PROTECTION

Details of legislation and legal protection afforded to all species of British bats are given in Appendix 1.



The results of this survey will be used to determine the need for an appropriate mitigation strategy to ensure compliance with UK and EU wildlife legislation.

3 METHODOLOGY

The methodologies used for these surveys are in accordance with the bat survey guidelines produced by the Bat Conservation Trust¹. Where there has been any deviation from the guidelines due to any site-specific constraints or other circumstances, reasoning and justification has been provided.

3.1 Desk Study

A search of on-line mapping resources has been undertaken to characterise the local context of the site with respect to semi-natural habitats and linear features of value to foraging and commuting bats.

The MAGIC website resource (www.magic.gov.uk) has been used to identify the location of designated sites for nature conservation within 2km and European Protected Species (EPS) licences granted within a 1km radius of the survey site. Priority habitats and ancient woodland, upon the site and within the proposal's zone of influence, have also been identified due to their ecological value and potential to act as important foraging resources for bats.

Priority habitats and ancient woodland are classified as habitats of principal importance. Habitats of principal importance are listed in Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006², which places a duty on Local Planning Authorities to have due regard to biodiversity.

3.2 Field Survey

3.2.1 Roosting Potential

Bats can use a wide range of features for roosting purposes including loft spaces, cavity walls, loose tiles, mortice joints and cracks/gaps in a variety of built structures. They can also be found in trees with holes, splits, cracks, cavities, ivy and loose bark.

A detailed building inspection was carried out on 15th March 2023, looking for potential access points and Potential Roosting Features (PRFs) that bats could use and any evidence indicating the presence of bats using the building such as rub marks, feeding remains, staining or droppings. This included a ground-based external inspection and internal inspection of PRFs, such as enclosed loft spaces or roof voids or basements, where safe access was possible. A high-powered torch was used for the internal and external assessment.

The suitability of each feature, or group of features, to support roosting bats has been assessed as either negligible, low, moderate, or high, in accordance with best practice guidance¹ (see Table 1) Any evidence confirming the presence of bats was clearly recorded including photos and samples taken (e.g. droppings), where appropriate. Further surveys have been recommended in accordance with best practice guidance and the surveyor's professional judgement, where evidence of a bat roost or PRFs have been identified that would

¹ Collins, J.(ed.) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London.

² HM Government (2006). Natural Environment and Rural Communities Act 2006. Available online at: <https://www.legislation.gov.uk/ukpga/2006/16/section/41>.



be adversely impacted by the proposal and where precautionary mitigation alone cannot ensure that bats would not be potentially disturbed or harmed.

Table 1. Guidelines for assessing suitability of structures to support bat roosts.

Suitability	Description of roosting habitats
Negligible	A structure that does not support any features that could be used by roosting bats.
Low	A structure that has one or more potential roosting features that could support individual roosting bats opportunistically. These features however lack the space, shelter or appropriate conditions, to support larger numbers of bats (such as a maternity roost).
Moderate	A structure with one or more potential roost sites that could be used by bats due to their size, shelter and suitable conditions for roosting, but are unlikely to support a roost of high conservation significance.
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 potential for longer periods of time due to their size, shelter, protection and conditions.

3.2.2 Hibernation Potential

The structure and its associated features were assessed for its' suitability to be used by hibernating bats. The assessment was carried out in accordance with guidelines produced by BatAbility³ and the bat survey guidelines produced by the Bat Conservation Trust¹. To determine the potential for features to support hibernating bats the following aspects were considered:

- the suitability of features to support roosting bats or to allow access for roosting bats;
- the temperature and humidity conditions likely to be present within the feature during the winter period and the suitability in this respect for it to be used by bats for hibernating;
- the surrounding habitat, in terms of its potential for use by bats outside of the hibernation period for commuting and/or foraging purposes; and
- the presence of known roosts within the structure/tree, or adjacent structures/trees, or surrounding area during the active season.

The potential for use by hibernating bats for each feature, or group of features was assessed as either negligible, low, moderate, or high, in accordance with best practice. Further surveys are recommended where appropriate, considering the feasibility of a hibernation survey for certain PRFs.

3.2.3 Foraging and Commuting Potential

The habitats surrounding the site and within the wider landscape were broadly assessed for their potential to support foraging and commuting bats, and were categorised as negligible, low, moderate or high potential suitability in line with published guidance¹.

3.2.4 Emergence Surveys

Two emergence surveys were undertaken, these were completed on 12th June and 28th June 2023, using the

³ Middleton. N. (2019). Assessing Sites for Hibernation Potential. A Practical Approach, including a Proposed Method & Supporting Notes. Version' Draft/V2.2019. BatAbility.



methodology set out in the best practice guidelines prepared by the Bat Conservation Trust.

The surveys focused upon the suitable features on the northern sections of the dwelling using two surveyors positioned according to Figure 3. From these positions, surveyors could see all features potentially suitable for roosting bats that were identified during the initial bat scoping survey that are to be directly impacted by the works.

The surveyors recorded any bat activity on or around the potential roosting entry/exit features identified during the scoping survey, using full spectrum handheld bat detectors to identify species through call frequencies. The bat calls were logged and recorded as sonograms for later confirmation of species where necessary.

The following equipment was used to support this survey:

- 2 x Echometer Touch 2 Pro detectors with Apple recording devices.

- 1 x Nightfox red night vision camera paired with a surveyor viewpoint on 12th June 2023 (darkest point shown in Figure 4a)

- 1 x Canon XA20 Night vision camera paired with a surveyor viewpoint on 28th June 2023 (darkest point shown in Figure 4b)

- 1 x infra-red Flood lamps and 2 x infrared torches with focused beams.



Figure 3. An aerial image of the site, showing the positions of surveyors (red dots) and a night-vision camera (orange dot). Images produced courtesy of Google maps (map data ©2023 Google).



Figure 4a (left) & b (right). Left – Darkest point for the emergence survey on 12th June 2023, screenshotted from a Nightfox Red camera. Right – Darkest point for the emergence survey on 28th June 2023, screenshotted from a Canon AX20 camera.

3.3 Other Protected and/or Notable Species

Any birds identified, or evidence of nesting birds discovered during the site visits or emergence surveys, were recorded. Special attention was paid to notable species such as red-listed Birds of Conservation Concern and those species afforded special protection on Schedule 1 of the Wildlife and Countryside Act (1981), such as barn owl *Tyto alba*.

Whilst this survey has focussed on bats and no specific searches were made with respect to other protected/notable species, any evidence of such species that was encountered during the site visit was also recorded.

4 RESULTS

4.1 Desk Study

There are no internationally or statutory designated sites within the zone of influence (2km) of Old Kingsham Farm.

Priority deciduous woodland borders the site at the north-east corner, and ancient and semi-natural woodland is located approximately 50m east of the sites boundary (see Figure 5). Further pockets of priority and Ancient Woodland are located in all directions.



Figure 5. Ancient and semi-natural woodland/ancient replanted woodland relative to Old Kingsha Farm (outlined in red). Image produced courtesy of Magic maps (<http://www.magic.gov.uk/>, contains public sector information licensed under the Open Government Licence v3.0).

There are two EPS licences granted for mitigation projects concerning bats within 1km of the site shown on the Magic Maps website (see Figure 6). The closest of these is 850m east of the site and concerns the damage and destruction of a brown long-eared bat *Plecotus auritus*, common pipistrelle and serotine *Eptesicus serotinus* resting place, dated August 2020 (licence no. 2020-48279-EPS-MIT). There are no EPS licences granted for mitigation projects regarding any other protected species within 2km of the site.

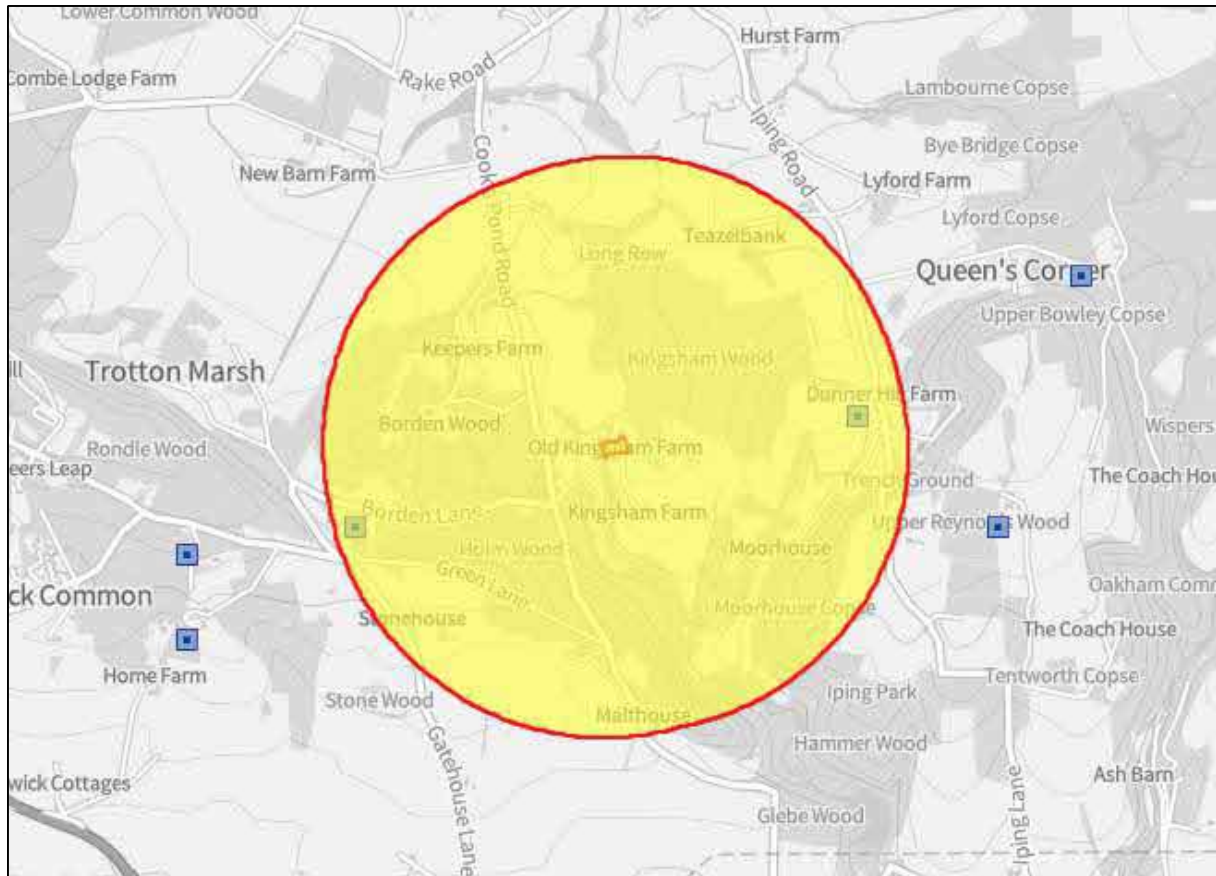


Figure 6. European Protected Species Licence within a radius of 1km of the application site (purple indicates EPS licence for bats). Images produced courtesy of Magic maps (<http://www.magic.gov.uk/>, contains public sector information licensed under the Open Government Licence v3.0).

4.2 Site Context and Surrounding Habitats

Old Kingsham Farm is located in a rural area in an area of low-density housing. It is surrounded by mixed agricultural fields and mature woodland at the north-east and west, including areas of ancient woodland. These close surrounding habitats are considered to be of high value for a range of bat species, including rarer woodland-specialist bats such as Western barbastelle *Barbastella barbastellus*.

The building is surrounded by gravel paths, patio, mown amenity lawn and ornamental lavender *Lavandula* sp. shrubs, habitats with low value for foraging and commuting bats. Mature trees are located at the site boundaries, two of which have bat boxes erected on them as compensation for the prior bat mitigation class licence of the building in 2022. A pond is located north of the site.

4.3 Building Inspection for Bats

4.3.1 Roost Potential

The building inspection confirmed a bat roost through the presence of droppings within the main loft space and connecting void. These droppings were later genetically analysed by Ecotype Genetics, confirming that this bat was a brown long-eared bat species (see Appendix 3).

This detached dwelling has stone walls and a clay-tiled roof of a complex structure. The property is in good



condition but there are a few features evident around the building that could potentially provide roosting potential and allow entry into the enclosed loft spaces in the building. These are described in Table 2 below and illustrated in the following photographs section.

Table 2. Assessment of PRFs

Building section	Description of features	Assessment of suitability
Exterior	<p>Stone construction dwelling with pitched peg tiled roof and a hipped extension at the north. The southern, main section of the building has a double hipped roof with a central courtyard and a dormer window looking into this present from the void, which has been boarded up.</p> <p>Lifted field tiles were recorded across all of the roof faces, including within the proposed zone of impact on the north-west, north and eastern elevations. No gaps are present under ridge and hip tiles, which are all well-mortared. A small number of gaps were seen at the eaves and lifted lead flashing was seen around the chimney on the northern elevation.</p>	Moderate bat roost suitability
Interior	<p>The dwelling supports a main void space with a small connecting void in the northern extension. This connecting void is mostly blocked from the main area by crossbeams and bitumen felt, but a 1m x 1m gap close to the floor provides connectivity between the two areas. The main void is in a circular shape, with the longest sections measuring approximately 11m (l) x 4m (w) and 2m (h). The connecting void measures approximately 8m (l) x 5.5m (w) x 2m (h). Neither void is in use and there were no recent signs of disturbance. Bitumen roofing felt lines the slate tiles throughout the interiors and a thin layer of rockwool insulates the floor area. The floor of connecting void is mostly boarded up and easily accessible.</p> <p>The crossbeams of the wooden supporting frame form a cut roof truss formation, which provides an open space for cavity-dwelling bats. There was little cobwebbing along the ridge of the voids. The frame does not support any cracks or crevices. Gaps are present at the eaves of both the main and connecting loft voids. Some of the gaps in the main void have been created to facilitate an internal guttering system that runs through the northern section of the courtyard hipped roof. These gaps are partially blocked by the guttering, however, and are likely not suitable for use by an emerging bat.</p> <p>Approximately 100 fresh brown long-eared bat droppings were identified in the main loft area. These were scattered around the void and no concentrated piles were identified. In the northern section of the connecting void a scattered collection of approximately 30 fresh brown long-eared bat droppings and invertebrate wings was identified under the north-western hip. The crossbeam at this hip also had evidence of rub marks above the droppings collection.</p>	Confirmed bat roost and moderate bat roost suitability

In summary, the inspection of the void identified a confirmed bat roost of a brown long-eared bat, likely a single individual, through the presence of droppings within the loft space. Scattered fresh droppings, totalling to approximately 100 were seen throughout the main void and smaller scattered area of around 30 fresh droppings and invertebrate wings were identified under the north-western hip of the northern extension. In addition, the existing northern extension, which forms the proposed zone of impact for the new building, has 'moderate' potential externally to support further bat roosts under lifted and cracked field tiles. Although the building is directly surrounded by mown lawn and paths, mature trees at the boundaries building offer shelter for bats emerging from the property and the mature woodland and waterbodies in the wider area provides close



availability of foraging resources.

There are no trees to be impacted by the proposed works and tree roosting bats would therefore not be a constraint to development.

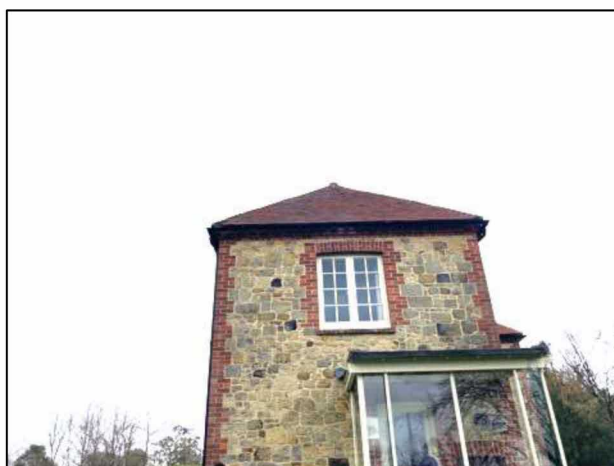
4.3.2 Hibernation Potential

The loft spaces are unlikely to maintain the constant low temperatures required for hibernating bats, due to rising heat from the living space below, however the use of these areas by hibernating bats cannot be entirely ruled out. In addition, crevices associated with the roof tiles have the potential to be used by hibernating bats. Therefore, although this is not what would be regarded as a 'classic' hibernation site there is the potential that bats could be occupying the property over the winter period (e.g. pipistrelle species in small numbers).

4.3.3 Photographs



Photograph 1a (left) & 1b (right). Left – View of the east and southern elevation of the dwelling. Right – View of the western elevation of the existing extension.



Photograph 2a (left) & 2b (right). Left – View of the northern elevation of the dwelling. Right – View of the western elevations of the dwelling.



Photograph 3a (left) & 3b (right). Views of the eastern pitch of the roof, showing lifted tiles with suitable features for roosting bats.



Photograph 4a (left) & 4b (right). Left – View of the northern elevation of the building, showing gaps around hips and the chimney. Right – View of the eastern eaves with possible access gaps into the loft voids.



Photograph 5a (left) & 5b (right). Views of the main void space, where scattered bat droppings were identified.



Photograph 6a (left) & 6b (right). Left – View of internal guttering in the loft void, which provides gaps. Right – View of the bitumen felt and crossbeams separating the main and connecting voids, and the gap present close to the floor.



Photograph 7a (left) & 7b (right). Left – Rub mark seen on the hip beams above the collection of scattered droppings in the connecting void. Right – Collection of scattered droppings in the connecting void.



Photograph 8a (left) & 8b (right). Left – Scattered droppings seen in the main loft void. Right – Zone of impact of the new extension, comprising of shortly mown amenity grass.



4.4 Bat Emergence Surveys

4.4.1 Survey Conditions

The dates, times, weather conditions, temperatures and personnel for each survey visit are presented in Table 3 below:

Table 3. Details of surveys undertaken, timings weather conditions and personnel.

Date	Survey start time/end time	Temperature (°C), weather conditions throughout survey	Surveyors
12 th June 2023	Start time: 20:48 Sunset: 21:18 End time: 22:50	Max/min temp: 20–18. 0% cloud cover and calm (BF0), dry.	Rozel Hopkins Paul Whitby
28 th June 2023	Start time: 20:52 Sunset: 21:22 End time: 23:02	Max/min temp: 22–19. 100% cloud cover and light breeze (BF2), dry except for short period of light rain between 22:26 and 22:42.	Rozel Hopkins Ben Small

4.4.2 Bat Emergence Results

The following descriptions summarise bat activity and emergence from the building for each survey visit. A detailed table of results is presented in Appendix 2.

12th June 2023

A repeat inspection of the loft voids was carried out prior to this survey, where no new evidence or roosting bats were identified.

No bat emergences were seen during the survey. High common pipistrelle activity was recorded, with soprano pipistrelle, noctule *Nyctalus noctula*, serotine and a long-eared bat *Plecotus* species also detected.

The first bat detected was a soprano pipistrelle flying north-west along the building five minutes after sunset. A common pipistrelle was then recorded emerging from the northern elevation of the outbuilding that lies adjacent to the dwelling being surveyed 17 minutes after sunset. Common pipistrelles were recorded commuting and foraging throughout the survey, with two bats seen foraging over the garden from 22:08 for 16 minutes. One serotine call was heard commuting in the distance 41 minutes after sunset and a single soprano pipistrelle was heard in the distance 6 minutes later. A noctule was recorded foraging constantly for a minute at 22:13. The first long-eared bat call was heard at 22:11, with four further calls heard at 22:31, 22:40 and 22:49.

26th June 2023

A common pipistrelle emerged from a lifted tile on the southern section of the eastern elevation two minutes prior to sunset (Figure 7). This emergence point is located outside of the zone of impact of the works.

Activity levels were similar to the previous survey, with common pipistrelle, soprano pipistrelle, serotine, long-eared bat and serotine passes recorded. The first bat recorded was a soprano pipistrelle commuting north from the adjacent outbuilding towards the pond 14 minutes before sunset, with a common pipistrelle bat following shortly after. A lull in activity then occurred for 27 minutes until a common pipistrelle was heard. The next bat identified was a long-eared bat was seen commuting west along the north elevation then south over the house and garden. Two common pipistrelles were seen shortly after, foraging around the house and garden constantly for 29 minutes, with a single bat carrying on for a further 7 minutes. During this time, a serotine and a soprano



pipistrelle were also recorded foraging over the garden and three long-eared bat passes were also heard. The last bat recorded was a soprano pipistrelle heard at 22:30.

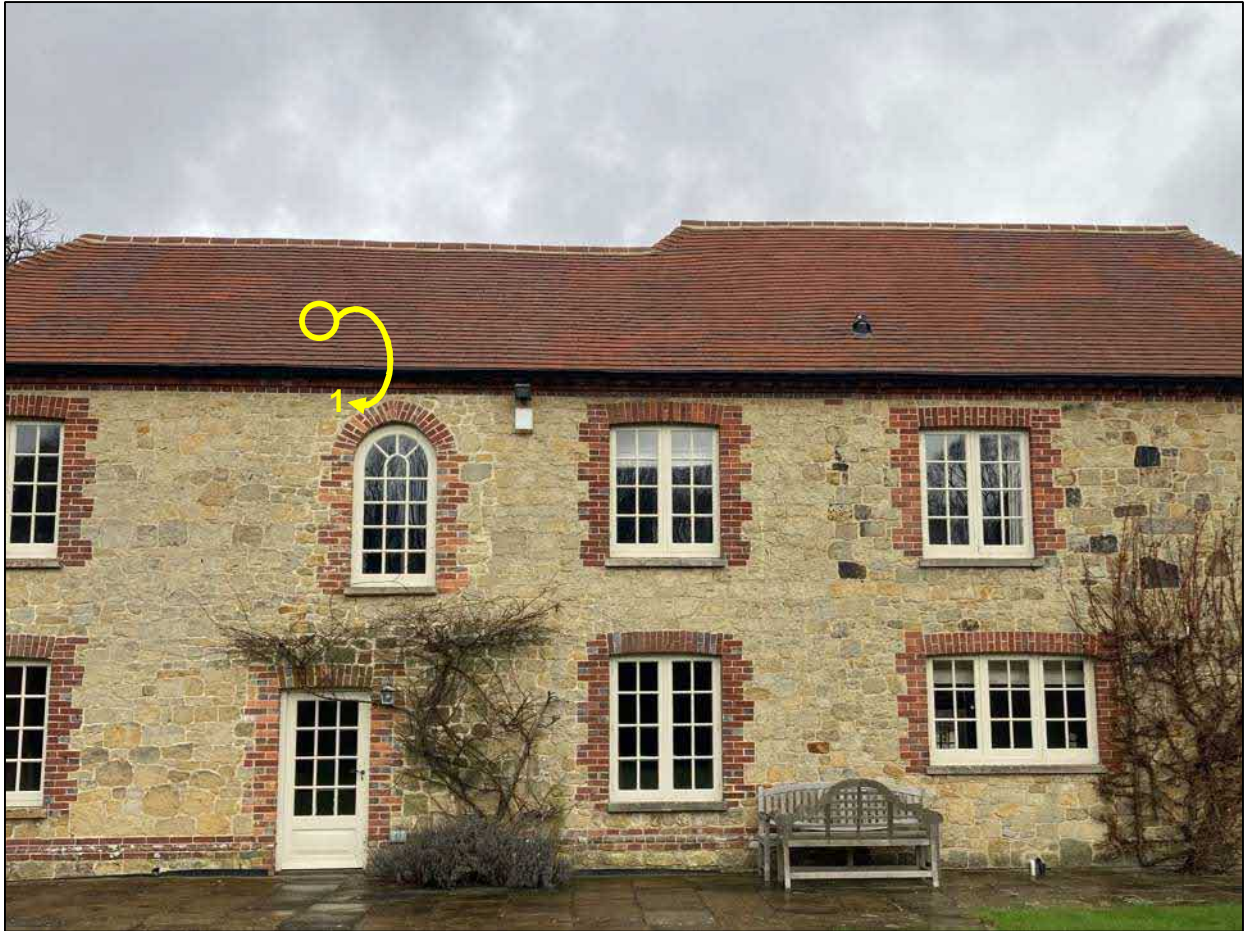


Figure 7. View of the eastern elevation of the dwelling, showing the emergence location of one common pipistrelle (yellow). This emergence occurred during the survey on 26th August 2023.

4.5 Other Protected and/or Notable Species

There is an ornamental climber located on the northern section of the eastern elevation, which in the summer may support the occasional nest of common bird species such as blackbird *Turdus merula* or wren *Troglodytes troglodytes*. There are a few access points under the eaves of the building large enough to accommodate house sparrow *Passer domesticus* and starling *Sturnus vulgaris*, which commonly nest in buildings, though no evidence of their use was found.

The proposed zone of impact is comprised of buildings, mown amenity grassland and patio. Although a pond is present 55m north of the site, the proposed zone of impact contains no terrestrial habitat suitable for great crested newts and it is therefore unlikely that this species would be found on the site at any time. As a precautionary measure, all vegetation should be maintained at a short height of below 5cm through regular strimming or mowing prior to and during construction, with cuttings removed from site to prevent suitable habitat for reptiles establishing. In the unlikely event a great crested newt is found within the development zone during construction, all works should stop, and a consultation made with Natural England to determine the requirement for an EPS licence.



A badger cub was seen under the mature trees on the northern boundary of the site prior to the first bat emergence survey on 12th June. However, the proposed zone of impact has very limited value for foraging badgers, and no evidence of foraging or digging has been identified in this area.

The zone of impact is not considered to have value for reptiles or any other protected species.

4.6 Limitations

4.6.1 Bat Scoping Assessment

An initial site assessment such as this is only able to act like a ‘snapshot’ to record any flora or fauna that is present at the time of the survey. It is therefore possible that some species may not have been present during the survey but may be evident at other times of the year. For this reason, habitats are assessed for their potential to support bats, even where no direct evidence (such as droppings) has been found.

4.6.2 Emergence Surveys

In accordance with best practice guidelines, each survey visit was undertaken during the peak period in bat activity and during good weather conditions. The results presented here are therefore considered to be an accurate representation of the general use of the property by roosting bats.

Nevertheless, bats can use roosting features intermittently throughout the year and may be present in larger or smaller numbers depending on their breeding cycle, weather conditions, and in response to disturbance. These surveys record the emergence of bats at the time of the survey visits and therefore only provide a snapshot of bat roosting activity at the site at that time. Bats may be present at other times and the results should therefore be viewed with caution.

Very light drizzle occurred on the second survey from 22:26 to 22:42, but bat activity continued during this time.

5 IMPACT ASSESSMENT AND MITIGATION RECOMMENDATIONS

5.1 Interpretation of Findings

The surveys of Old Kingsham have identified one common pipistrelle solitary day roost and one occasional brown-long eared bat day roost. These are further outlined in Table 4.

Table 4. Summary of bat roosts identified within the dwelling at Old Kingsham Farm.

Species	Location	Peak count	Roost type	Conservation significance
Common pipistrelle	Roosting under a lifted roof tile on the southern elevation	1	Solitary day roost	Low
Brown long-eared bat	Within loft void, likely utilising both the main and connecting voids	1	Occasional day roost	Low



5.2 Potential Impacts

The proposed extension of the building at the north will result in the modification of the identified brown-long eared roost. In the absence of mitigation, this could potentially result in the killing or injuring of individual bats. It will also have the potential to modify the common pipistrelle day roost at the eastern elevation which, although isn't being directly impacted by the works, may be altered through the change in microclimate caused by removing tiles to the north of this section. As the roosts to be impacted are of common bat species the impact is not considered to be significant beyond local level.

5.3 Outline Mitigation Measures

As the proposed development involves the extension of the dwelling at the north, the modification of the roost features used by bats cannot be avoided and, in the absence of mitigation, this could potentially result in harm to individual bats. Therefore, a European Protected Species (EPS) licence will be required for the development to legally proceed. As this building has been subject to a 'bat mitigation class licence' previously for re-roofing works, the proposals will need to be covered by a full EPS mitigation licence.

As part of the licence application, a mitigation method statement will need to be prepared to demonstrate that the favourable conservation status of bats will be maintained through the life of the project. The possible measures that would be required to safeguard bats and achieve this are outlined below:

Timing

The works impacting upon the internal loft voids, including removing roof tiles, should be undertaken in the period between mid-March and the end of April or September and the end of October to avoid the peak bat activity and hibernation periods. This timing will reduce the likelihood of bats being present in the loft void at the time of works occurring.

Preparatory works – 'internal inspection'

A thorough internal inspection of the loft void will be carried out by a licensed bat ecologist or accredited agent immediately prior to works commencing. This will identify if any bats are roosting within either the main or connecting loft voids. Any bats found should be gently captured and placed into a bat box that has been secured to an impacted area of the site in advance. If no bats are identified during the inspection, then the gap in the bitumen between the main and connecting loft voids will be blocked up with tarpaulin or bitumen felt to reduce the likelihood of the main, unimpacted loft void becoming draughty or internally lit during works and therefore unsuitable for roosting bats. In the connecting loft void, the subsequent 'soft strip' of the roof tiles above the loft will change the microclimate resulting in the bats leaving of their own accord, where they may be present internally but have not been found.

Preparatory works – 'soft strip'

All roof tiles to be removed to facilitate the extension should be carefully hand stripped one by one from the walls under the direct supervision of a licensed bat ecologist. Any bats found shall be gently captured and placed into bat boxes that have been secured to trees surrounding the site in advance.



Replacement roost site

Suitable bat boxes will need to be installed either on unaffected areas of the house or on mature/semi-mature trees on the site prior to the commencement of the works. It is recommended that one Improved Cavity Bat Box, suitable for cavity-dwelling species, be installed for this purpose. Other suitable boxes for cavity roosting species are also commercially available. This box will be used to house any bats encountered during works and will be retained in perpetuity. It must be orientated south or east facing at a minimum height of 3.5m from the ground and away from sources of artificial lighting.



Figure 8. Improved Cavity Box. Image courtesy of NHBS.

Artificial lighting

The use of artificial lighting inappropriately can result in significant disturbance to bats. The detailed design should include a lighting scheme that minimises these impacts by following the Bat Conservation Trust's guidance on lighting, reproduced in Appendix 4 of this report. This must include the avoidance of any artificial lighting being directed upon new bat box.

5.4 Other Protected and/or Notable Species Conclusions

As the building has the potential to support nesting birds it will be essential for any development to consider the nesting bird season and works should be timed outside of the nesting bird season (avoiding 1st March to 31st August), unless features are first searched by a suitably qualified ecologist and no active nests are found. If an active nest is identified, a minimum exclusion zone for all works within a 5m radius of the nest must be established to protect it from disturbance until the young have fledged.

No badger setts were identified on or near the proposed zone of impact during the assessment, however a badger was seen at the north boundary on one of the emergence surveys. No further surveys are recommended, but the following measures should be adhered to prevent harm to badgers during construction:



all food or waste food must be stored securely overnight;
tools and hazardous materials must be stored securely; and
deep excavations must either be covered overnight or a ramp placed in them to provide a means of escape

If any evidence of digging is identified within the proposed zone of impact, further surveys may need to take place before the works can occur.

5.5. *Conclusions*

The proposed development will impact on small numbers of common and widespread bat species and in the absence of mitigation is not considered significant to bat conservation beyond local level. The proposed mitigation measures outlined above will ensure that individual bats will not be harmed during the construction, and that alternative roosting opportunities are provided after completion. The applicants are confident that the three tests under Regulation 53 (2) (e) can be satisfied, and an EPS licence can be obtained. As such, the planning authority can be satisfied that securing this mitigation and EPS licence under reserved matters will ensure that its duty to comply with the Conservation of Habitats and Species Regulations (2017) as amended, will have been fully met.

Should you need any further advice on the information provided above, please do not hesitate to contact The Ecology Co-op.



APPENDIX 1 – LEGISLATION AND POLICY

All species of British bat are fully protected under the Wildlife and Countryside Act 1981 as amended through inclusion in Schedule V. All bat species in the UK are also included in Schedule II of the Habitats Regulations 2010 which transpose Annex II of the Council Directive 92/43/EEC 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora (“EC Habitats Directive”) which defines European protected species of animals.

Bat species are afforded further protection by the Natural Environment and Rural Communities Act 2006.

Under the above legislation it is an offence to:

- kill, injure or take an individual;
- possess any part of an individual either alive or dead;
- intentionally or recklessly damage, destroy or obstruct access to any place or structure used by these species for shelter, rest, protection or breeding;
- intentionally or recklessly disturb these species whilst using any place of shelter or protection; or
- deliberate disturbance in such a way as to be likely to impair their ability to:
 - survive, to breed or reproduce, or to rear or nurture their young; or
 - in the case of animals of a hibernating or migratory species, to hibernate or migrate; or
 - to affect significantly the local distribution or abundance of the species to which they belong;
- keep (possess), transport, sell or exchange, or offer for sale or exchange, any live or dead bat, or any part of, or anything derived from a bat.

It is also an offence to set and use articles capable of catching, injuring or killing bats (for example a trap or poison), or knowingly cause or permit such an action. In the case all species of British bat there is also protection under Schedule 6 of The Wildlife and Countryside Act 1981 (as amended) relating specifically to trapping and direct pursuit of these species.

The Habitats Directive and Habitats Regulations provide for the derogation from these prohibitions for specific reasons provided certain conditions are met. An EPS licensing regime allows operations that would otherwise be unlawful acts to be carried out lawfully. In England, Natural England is the licensing Authority and, in order to grant a license, ensures that three statutory conditions (sometimes referred to as the ‘three derogation tests’) are met:

a licence can be granted for the purposes of “preserving public health or 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” (Regulation 53 (2) (e));

a licence can only be granted if “there are no satisfactory alternatives” to the proposed action;

a licence shall not be granted unless 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.

A bat roost is defined as “any structure or place, which any wild bat uses for shelter or protection.” Bats tend to re-use the same roosts; therefore, legal opinion is guided by recent case law precedents, that a roost is protected whether or not the bats are present at the time. This can include all summer roosts, used for breeding, resting or sheltering and all winter roosts used for hibernating.



APPENDIX 2 – EMERGENCE SURVEY RESULTS

Table 5. Results of bat emergence survey visit 1: 12/06/2023. CP=common pipistrelle; SP=soprano pipistrelle; SERO=serotine, LE=long-eared bat Plecotus sp. Number in parenthesis refers to number of bats above one individual.

Time	Species	Bat heard/seen	Activity	Location/direction
21:23	SP	H/S	Commuting	Flying north-west from building
21:35	CP	H/S	Emergence	Emergence from northern elevation of adjacent outbuilding – not building in scope of works
21:39	CP	H/S	Commuting and social calls	Commuting north-east along west and northern elevations
21:55	CP	H/S	Foraging	Three passes through garden at north
21:59	SERO	H	Commuting	Distant
22:01	CP	H/S	Commuting	Along northern elevations
22:04	CP	H/S	Foraging	Over garden briefly
22:05	SP	H	Commuting	Distant
22:06	CP	H	Commuting	Distant
22:08	CP (2)	H/S	Foraging	One constantly over garden for 16 minutes with second intermittent
22:11	LE	H	Commuting	Brief call
22:13	NOC	H	Foraging	Constant for 1 minute
22:32	LE	H	Commuting	Two calls heard close by
22:41	CP	H/S	Foraging	Commuting north-west from northern elevation intermittently
22:40	LE	H	Commuting	Distant
22:49	LE	H	Commuting	

Table 6. Results of emergence survey visit 2: 26/06/2023. CP=common pipistrelle; SP=soprano pipistrelle; SERO=serotine, LE=long-eared bat Plecotus sp.


Time	Species	Bat seen/heard	Activity	Location/direction
21:08	SP	H/S	Commuting	North from adjacent outbuilding towards pond
21:08	CP	H/S	Commuting	North from adjacent outbuilding towards pond
21:20	CP	H/S	Emergence	Emerging from southern section of tiles on eastern elevation
21:35	CP	H	Commuting	
21:56	LE	H/S	Commuting	West from north-east of the garden along northern elevation then south over the house and garden
21:57	SERO	H	Commuting	
21:59	CP (2)	H/S	Foraging	Around house and garden for 29 minutes, with single bat carrying on for 7 more minutes
22:05	SER	H/S	Commuting	West from north-east of the garden along the northern elevation
22:07	SP	H/S	Commuting	North over the garden
22:14	LE	H/S	Commuting	Commuting along the western elevation of the northern extension



22:16	LE	H	Commuting	
22:26	LE	H	Commuting	Two passes heard
22:28	SERO	H	Commuting	
22:30	SP	H	Commuting	



APPENDIX 3 – BAT DROPPING GENETIC ANALYSIS RESULTS



Sample ID: EG-1089-4

Sample information:

Sample type: Faecal	Species group: Bats
Suspected species: long-eared	Site Location: Milland
Comments: Old Kingsham Farm, P4262, Void 1	

Laboratory information:

DNA Extraction Code: EG-2023-0824	Identification method: qPCR
Analysis Procedure Notes:	
Laboratory Comments: None	

Species Identified:

Species 1: Plecotus auritus (Brown long-eared bat)	qPCR Ct Value: 16
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Ecotype Genetics Limited, Sussex Innovation Centre, Science Park Square, Falmer, Brighton, BN1 9SB

Figure 9. Results of the genetic analysis of bat droppings in the main void by Ecotype Genetics.

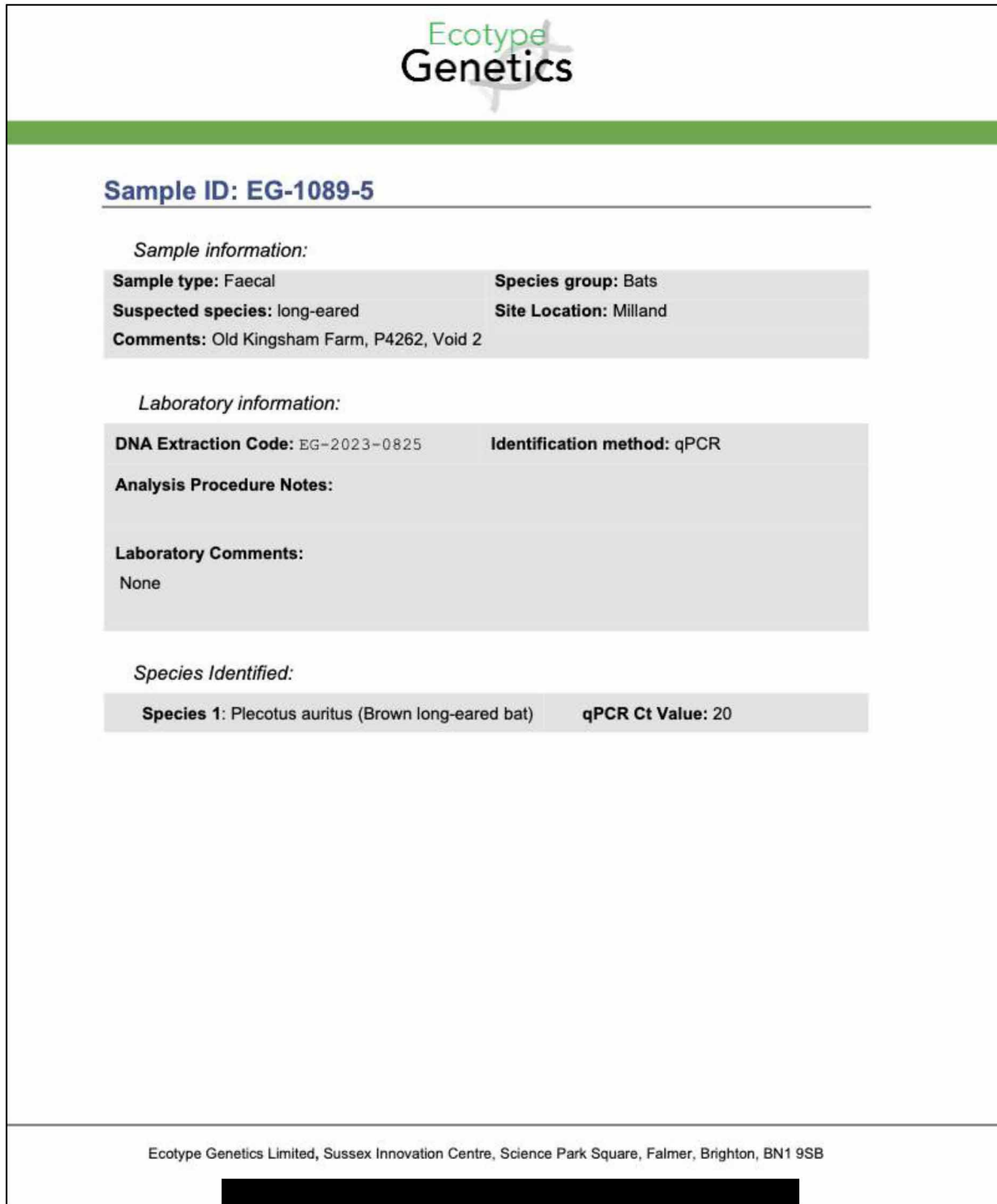


Figure 10. Results of the genetic analysis of bat droppings in the connecting void by Ecotype Genetics.



APPENDIX 4 – REDUCING IMPACTS OF ARTIFICIAL LIGHT

Bright external lighting can have a detrimental impact upon foraging and commuting bat flight paths, but more importantly can also cause bats to remain in their roosts for longer. Artificial lighting can also cause significant impacts to other nocturnal species, most notably moths and other nocturnal insects. It can also result in disruption of the circadian rhythms of birds, reducing their fitness.

Guidelines issued by the Bat Conservation Trust⁴ should be referred to when designing the lighting scheme. Note that lighting designs in very sensitive areas should be created with consultation from an ecologist and using up-to-date bat activity data where possible. The guidance contains techniques that can be used on all sites, whether a small domestic project or larger mixed-use, commercial or infrastructure development. This includes the following measures:

Avoid lighting key habitats and features altogether

There is no legal duty requiring any place to be lit. British Standards and other policy documents allow for deviation from their own guidance where there are significant ecological/environmental reasons for doing so. It is acknowledged that in certain situations lighting is critical in maintaining safety, such as some industrial sites with 24-hour operation; however, in the public realm, while lighting can increase the perception of safety and security, measurable benefits can be subjective. Consequently, lighting design should be flexible and be able to fully consider the presence of protected species.

Apply mitigation methods to reduce lighting to agreed limits in other sensitive locations – lighting design considerations

Where bat habitats and features are considered to be of lower importance or sensitivity to illumination, the need to provide lighting may outweigh the needs of bats. Consequently, a balance between a reduced lighting level appropriate to the ecological importance of each feature and species, and the lighting objectives for that area will need to be achieved. The following are techniques which have been successfully used on projects and are often used in combination for best results:

- dark buffers, illuminance limits and zonation;

- sensitive site configuration, whereby the location, orientation and height of newly built structures and hard standing can have a considerable impact on light spill;

- consideration of the design of the light and fittings, whereby the spread of light is minimised ensuring that only the task area is lit. Flat cut-off lanterns or accessories should be used to shield or direct light to where it is required. Consideration should be given to the height of lighting columns. It should be noted that a lower mounting height is not always better. A lower mounting height can create more light-spill or require more columns. Column height should be carefully considered to balance task and mitigation measures. Consider no lighting solutions where possible such as white lining, good signage, and LED cat's eyes. For example, light only high-risk stretches of roads, such as crossings and junctions, allowing headlights to provide any necessary illumination at other times;

- screening, whereby light spill can be successfully screened through soft landscaping and the installation of walls, fences and bunding;

- glazing treatments, whereby glazing should be restricted or redesigned wherever the ecologist and lighting professional determine there is a likely significant effect upon key bat habitat and features;

- creation of alternative valuable bat habitat on site, whereby additional or alternative bat flightpaths, commuting habitat or foraging habitat could result in appropriate compensation for any such habitat being lost

⁴ Bat Conservation Trust and Institute for Lighting Professionals (2018) Guidance note 8. Bats and Artificial Lighting. <https://www.theilp.org.uk/documents/guidance-note-8-bats-and-artificial-lighting/>



to the development;

dimming and part-night lighting. Depending on the pattern of bat activity across the key features identified on site it may be appropriate for an element of on-site lighting to be controlled either diurnally, seasonally or according to human activity. A control management system can be used to dim (typically to 25% or less) or turn off groups of lights when not in use.

Demonstrate compliance with illuminance limits and buffers

Design and pre-planning phase; it may be necessary to demonstrate that the proposed lighting will comply with any agreed light-limitation or screening measures set as a result of your ecologist's recommendations and evaluation. This is especially likely to be requested if planning permission is required.

Baseline and post-completion light monitoring surveys; baseline, pre-development lighting surveys may be useful where existing on or off-site lighting is suspected to be acting on key habitats and features and so may prevent the agreed or modelled illuminance limits being achieved.

Post-construction/operational phase compliance-checking; as a condition of planning, post-completion lighting surveys by a suitably qualified person should be undertaken and a report produced for the local planning authority to confirm compliance. Any form of non-compliance must be clearly reported, and remedial measures outlined. Ongoing monitoring may be necessary, especially for systems with automated lighting/dimming or physical screening solutions.

Lighting Fixture Specifications

The Bat Conservation Trust recommends the following specifications for lighting on developments to prevent disturbance:

- Lighting spectra: peak wavelength >550nm
- Colour temperature: <2700K (warm)
- Reduction in light intensity
- Minimal UV emitted
- Upward light ratio of 0% and good optical control

Further reading:

Buglife (2011) A review of the impact of artificial light on invertebrates.

Royal Commission on Environmental Pollution (2009) Artificial light in the environment. HMSO, London. Available at: <https://www.gov.uk/government/publications/artificial-light-in-the-environment>

Rich, C., Longcore, T., Eds. (2005) Ecological Consequences of Artificial Night Lighting. Island Press. ISBN 9781559631297.

CPRE (2014) Shedding Light: A survey of local authority approaches to lighting in England. Available at: <http://www.cpre.org.uk/resources/countryside/dark-skies/item/3608-shedding-light>

Planning Practice Guidance guidance (2014) When is light pollution relevant to planning? Available at: <https://www.gov.uk/guidance/light-pollution>

Institution of Lighting Professionals (2021) Guidance Notes for the Reduction of Obtrusive Light GN01:2011.



Available at: <https://www.theilp.org.uk/resources/free-resources/>

Voigt, C.C., Azam, C., Dekker, J., Ferguson, J., Fritze, M., Gazaryan, S., Hölker, F., Jones, G., Leader, N., Lewanzik, D. and Limpens, H., 2018. *Guidelines for consideration of bats in lighting projects*. Unep/Eurobats.

Available at:

https://cdn.bats.org.uk/uploads/pdf/Resources/EUROBATSGuidelines8_lightpollution.pdf?v=1542109376