



Client – Nicole Mellor

Site – Plas Fron Lodge

Reference – 20240064

Location – Cross Lanes, Wrexham

Central Grid Reference – SJ 37862 46252

Date – 1st August 2024

Bat Survey

Author: Steven Whitcher, MCIEEM

Revision: 1

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Disclaimer

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In line with Chartered Institute of Environmental and Ecological Management (CIEEM) recommendations the findings of this survey are deemed valid for 18 months from the date of the survey.

1. Summary

Purpose	Planning permission is being sought for the demolition of an existing single storey extension at Plas Fron Lodge and the construction of a new two-storey extension on the property. A Preliminary Roost Assessment, eDNA analysis and a bat activity survey were commissioned to support the application for planning permission.
Results	Cofnod returned a single bat record and occasional records of bird species within the 500m search area, none relating to the building covered by this survey. The building was assessed to provide a moderate potential to support roosting bats due to voids around the eaves of the main building and gaps behind the fascia on the single storey extension. The surveys confirmed the presence of three bat roosts around the building, supporting two species of bat. The roosts were assessed to comprise a day roost of whiskered bats in the roof void and two day roosts of common pipistrelle behind the fascia board on the single storey extension. The land around the building was assessed to provide a moderate value foraging and commuting habitat for bats and relatively high levels of foraging were identified around the building, including up to five species of bat. The building was identified to provide nesting opportunities for a range of bird species with bird droppings on the brickwork around the eaves implying that birds have previously nested in the building.
Mitigation Strategy	No works will commence on the roof void or exterior of the building prior to a Natural Resources Wales licence being obtained and personnel being briefed on the working methods. Prior to the works commencing two bat boxes will be installed on a tree or pole in the garden of the property. The main structural works will be carried out between September and April, to avoid the presence of bats in the roosts in the building. Prior to works commencing on the exterior of the building soft strips and inspections will be carried out by the named ecologist with any bats encountered being translocated to the bat boxes erected on the site. During the works the new roof void will be created in a manner that will provide additional space for roosting bats, with a new access point created in the gable end of the building. Two bat bricks will also be installed in the walls of the building. Lighting around the building will be retained at a low level with any new lighting comprising low lux permanent lighting fitted under cover, or with a shroud, or security lighting on short timers. A sparrow terrace will be included in the walls of the building during the works to provide additional nesting opportunities within the building.

2. Introduction

2.1. Purpose

2.1.1. Planning permission is being sought for the demolition of an existing single storey extension at Plas Fron Lodge and the construction of a new two-storey extension on the property.

2.1.2. A Preliminary Roost Assessment (PRA), eDNA analysis and a bat activity survey were commissioned to support the application for planning permission.

2.2. Site Description and Location

2.2.1. The site comprises Plas Fron Lodge, a detached private residence to the southeast of Wrexham.



Figure 1: Showing the location of the building covered by this survey.

2.2.2. The building comprises a two-storey main building with a single storey extension on the southwest elevation and a lean to on the northwest elevation.

2.2.3. The walls of the building comprise solid brick walls with wooden windows and doors. The eaves of the building are open around the main building with a wooden fascia board present on two elevations of the single storey extension and nothing on the third elevation.

2.2.4. The roof of the building comprises a slate covered pitched roof over the two storey areas of the building, a sloping corrugated metal roof over the extension and a sloping part slate and part corrugated metal roof over the lean to. Two brick chimney stacks are present on the main roof of the building.



Figure 2: The southeast elevation of the building.



Figure 3: The northeast elevation of the building.



Figure 4: The roof void within the building.

2.2.5. Internally the main building has a single loft space that extends throughout the entire roof void. The extension comprises a single room that is open to the inside of the roof with no separated roof void.

2.2.6. The land immediately surrounding the building comprises the gardens associated with Plas Fron Lodge to the south and west and a parking area associated with the building to the east. To the north the land comprises a large arable field.

2.2.7. The wider surrounding area comprises open arable and grazing land with occasional mature trees and areas of woodland. The River Dee is located 750m to the east of the site and the town of Wrexham is located 6km to the northwest.



Figure 5: Showing the site in context with the wider surrounding area.

2.3. Proposals

2.3.1. The proposals are to demolish an existing single storey extension to the rear of the property and to construct a two-storey extension on a larger footprint. The extension will tie into the existing roof void on the southwest elevation of the building.

2.3.2. The plans in Appendix I of this report show the proposed elevations of the building.

3. Methodology

3.1. Desk Study

3.1.1. A desk study to identify existing records of designated sites, bats and birds within 500m of the survey area was carried out with Cofnod.

3.1.2. The MAGIC website was searched for records of statutory designated sites within 2km of the survey area.

3.2. Preliminary Roost Assessment

3.2.1. A field survey of the site was undertaken by Steven Whitcher (MCIEEM) on the 15th February 2024. The Preliminary Roost Assessment (PRA) was carried out in accordance with the Bat Conservation Trust Good Practice Guidelines, 4th edition (2023) and was also advised by BTHK Bat Roosts in Trees - A Guide to Identification and Assessment for Tree-Care and Ecology Professionals (2018) and BRHK Bat Roosts in Rock – A Guide to Identification and Assessment for Climbers, Cavers & Ecology Professionals (2021).

3.2.2. The weather at the time of the survey was cloudy but mild with a light breeze (BWS-1) and a temperature of 12°C.

3.2.3. During the survey all buildings, structures and trees were searched for bat roosting potential or evidence of existing roosts, including:

- Checking buildings, structure and trees for cracks, voids or other Potential Roost Features (PRF).
- Looking for signs of staining or worn areas indicating a roost entrance.
- Searching for droppings, foraging remains such as wings or other field signs.

3.2.4. The inspection included a visual inspection using a bright torch (1 million candle power), ladders and also an inspection with binoculars, a pole camera and an endoscope, where applicable.

3.2.5. The habitat around the site was also assessed for its suitability to support foraging and commuting bats by looking at the value of the surrounding habitat and the connectivity of the site to the wider area.

3.3. eDNA Survey

3.3.1. Bat droppings were collected from the roof void of the building during the PRA and sent for analysis by SureScreen Scientifics.

3.4. Bat Activity Survey

3.4.1. A single bat activity survey was carried out to classify the bat roosts present in the building.

3.4.2. The survey was carried out by a single surveyor supported by Night Vision Aids (NVA) sufficient to fully cover the areas of potential around the building. The surveyor was equipped

with an Anabat Walkabout bat detector and recorded all bat movements throughout the survey.

3.4.3. The NVA comprised Canon XA10 cameras with infrared illuminators, which recorded all activity throughout the survey. An Anabat Express was placed with each camera and recorded throughout the survey.

3.4.4. In line with current guidance the surveys extended from 15 minutes before sunset until 1 hour 30 minutes after.

3.4.5. The surveyors present during the surveys are outlined in Tables 1 and 2 below.

Table 1: Surveyors for the 25th July 2024 survey

Bat Activity Survey, 25th July 2024	
<i>Surveyor</i>	<i>Licenced or Agent</i>
Steven Whitcher	Licenced

3.4.6. During the activity surveys notable bat foraging and commuting was recorded.

3.4. Limitations/Constraints

3.4.1. This PRA was carried out as a daytime survey and therefore does not provide accurate information on bat emergence or entry or on foraging and commuting activity in the surrounding area.

3.4.2. The surveys included a daytime inspection of the building, eDNA analysis of bat droppings and a single bat activity survey. This was considered sufficient to classify the bat roosts present in the building.

4. Results and Interpretation

4.1. Desk Study

4.1.1. Cofnod did not return any existing records of designated sites within the 500m search area.

4.1.2. The closest statutory site identified on the MAGIC website comprises Afon Dyfrdwy Site of Special Scientific Interest (SSSI) and Special Area of Conservation (SAC), which is located 750m to the east.

4.1.3. Cofnod returned a single bat record within the 500m search area. The record relates to the presence of common pipistrelle (*Pipistrellus pipistrellus*) 450m to the northwest.

4.1.4. Cofnod returned occasional records of bird species within the 500m search area, although no records specific to the building covered by this survey. The closest record refers to the presence of barn owl (*Tyto alba*) at Plas Fron, which is located 120m to the southwest.

4.2. Preliminary Roost Assessment

4.2.1. The walls of the building were generally found to be in a good condition with no visible cracks or voids and the windows and doors intact and sealed into the brickwork.

4.2.2. The eaves around the main building were found to be open providing opportunities for bats and birds to access the walls tops on all sides of the building. No bat field signs were identified although occasional areas of bird droppings were visible around the eaves of the main building, implying previous nesting activity.



Figure 6: Voids at the gable end of the building. Figure 7: Bird droppings around voids in the eaves of the building.

4.2.3. The fascia boards on the extension displayed occasional voids, particularly on the southwest elevation of the building. A single bat dropping was identified underneath gaps in the fascia board in two locations on the southwest elevation of the extension.

4.2.4. The bat droppings were individual droppings present on the brickwork with no signs of additional bat droppings on the floor below. An accurate species identification could not be carried out and the samples were too small to collect for eDNA analysis, although the droppings were indicative of pipistrelle species (*Pipistrellus sp.*).



Figure 8: Showing the location of droppings identified under the fascia board.

4.2.5. The roof of the building was found to be in a generally good condition with tight fitting slates and the ridge tiles in place and relatively well sealed. The leadwork around the chimney stacks was in good condition with no obvious voids.



Figure 9: The roof and leadwork to the southwest.



Figure 10: The tight-fitting slates and ridge tiles.

4.2.6. No other bat field signs were visible around the exterior of the building at the time of the survey.

4.2.7. The roof void of the building was found to display purlin and rafter timbers and an internal lining of partial bitumen felt and partial Breathable Roofing Membrane (BRM).

4.2.8. Several hundred bat droppings, fresh and old, were identified scattered throughout the roof void with occasional concentrations under the ridge and on the gable end on the northwest elevation of the building, including droppings on the brickwork and the loft floor below. No bats were visible in the roof void at the time of the survey.



Figure 11 Bat droppings on the loft floor.



Figure 12: Bat droppings on the gable end wall.

4.2.9. Overall, the building was assessed to provide a moderate potential to support roosting bats due to voids around the eaves of the main building and gaps behind the fascia on the single storey extension. The presence of bat droppings in two areas of the building confirms the presence of at least two bat roosts in the building.

4.2.10. The land around the building was assessed to provide a moderate value foraging and commuting habitat for bats with close connections to areas of woodland to the south of the building. A through assessment of the foraging and commuting activity around the site was not carried out during the survey.

4.2.11. The building provides nesting opportunities for various bird species. No active nest sites were identified during the survey although the presence of bird droppings on the brickwork around the eaves implies that birds have previously nested in the building.

4.2.12. House sparrows (*Passer domesticus*) were identified around the building at the time of the survey.

4.3. eDNA Survey

4.3.1. During the PRA bat droppings were collected from the roof void of the property and sent to SureScreen Scientifics for analysis.

4.3.2. The results of the eDNA analysis confirm the species of bat roosting in the roof void to be whiskered bat (*Myotis mystacinus*).

4.3.3. Figure 13 includes an extract from the SureScreen Scientifics eDNA report with the full report included in Appendix III of this report.

Lab ID	Site Name	OS Reference	Sample Type	Species Name	Match(%)
83037	Plas Fron Lodge - 0014	SJ 37862 46252	Bat Dropping	Whiskered bat (<i>Myotis mystacinus</i>)	98.47
Genetic Sequence ATTATATCGGAGGCTTTGGGATTGACTAGTGCCCCCTGATGATTGGCGCTCCTGATATATCCTTCCCCGGATAAAT AATATAAGTTTCTGACTACTTCCCCATCTTTCTTATTACTACTGGCCTCGTCTATAGTTGAAGCAGGGGCGAGAA CTGGTTGAACAGTTTATCCCCCTAGCAGGAAATCTTGCATCATGCGAGGAGAGA					

Figure 13: Extract from the SureScreen Scientifics eDNA report.

4.4. Bat Activity Survey – 25th July 2024

Table 2: Times and weather conditions for the survey.

Sunset	21:17	Start Time	21:02	Finish Time	22:47
Weather, Start					
Temperature	18°C	Wind Speed (BWS)	1	Cloud Cover	0%
Description	Fine and clear with a light breeze.				
Weather, End					
Temperature	18°C	Wind Speed (BWS)	1	Cloud Cover	10%
Description	Remaining fine and clear.				

4.4.1. The plan in Appendix II of this report shows the surveyor locations and bat activity recorded during the survey and Appendix III shows the NVA coverage during the survey.

4.4.2. Prior to the survey commencing an internal inspection of the building was carried out and a single bat, identified to be a whiskered/brandts bat, was identified within the roof void of the building.

4.4.3. During the survey three bats were identified to emerge from the building. The emergence locations are shown in Figure 14.



Figure 14: Showing the emergence locations identified during the survey, including references.

4.4.4. At 21:23 a bat, identified from echolocation calls at the time of emergence to be a common pipistrelle emerged from behind the fascia board to the south of the single storey extension of the building (R1) and flew off site to the southeast.

4.4.5. At 21:45 a bat, identified from echolocation calls at the time of emergence to also be a common pipistrelle, emerged from behind the fascia board to the north of the single storey extension of the building (R2) and flew off site to the south.

4.4.6. At 21:49 a bat emerged from the eaves on the northern gable end of the building (R3) and flew to the west. The bat was not recorded at the time of emergence but was considered likely to be the whiskered bat identified in the roof void prior to the survey.

4.4.7. No other bats were identified to emerge from the building during survey although a generally high level of bat activity was identified throughout the survey. The activity included common pipistrelle and soprano pipistrelle (*Pipistrellus pygmaeus*) foraging over the gardens of the property and along the lane to the west, noctules (*Nyctalus noctula*) passing high over the site and occasional myotis species (*Myotis sp.*), considered likely to be whiskered bats, and brown long eared bats (*Plecotus auritus*) occasionally foraging or commuting past the site.

4.5. Interpretation

4.5.1. The surveys identified the building to provide a moderate potential to support roosting bats and subsequently confirmed the presence of three bat roosts around the building, supporting two bat species.

4.5.2. Bat droppings present under the fascia board on the single storey extension of the building implied the presence of bat roosts in this area, with the droppings considered likely to be pipistrelle species droppings. The activity surveys confirmed the presence of common pipistrelle roosting behind the fascia board in two places, to the south of the fascia (R1) and to the north of the fascia (R2).

4.5.3. The low numbers of bat droppings and presence of a single bat emerging from both locations indicates that both roosts comprise common pipistrelle day roosts.



Figure 15: Showing the emergence locations identified during the survey, including references.

4.5.4. Bat droppings present throughout the roof void were confirmed to comprise whiskered bat droppings through eDNA analysis. This was further supported by the presence of a single bat, identified to be a whiskered bat, in the roof void prior to the bat activity survey. The bat

droppings in the roof void also indicated a likely roost access around the northwest gable end of the building, with a single bat identified to emerge from this location (R3) during the activity survey.

4.5.5. The bat droppings in the roof void included occasional concentrations and a general scattering throughout the space, which implied the presence of a regularly used roost, but were considered unlikely to be sufficient to comprise a maternity roost. This was further confirmed by the presence of a single bat in the roost during the activity survey. Therefore, the roost was considered to be well-used day or transitional roost of whiskered bats with the access point around the northwest gable end.

4.5.6. The single storey extension will be demolished during the works and therefore the common pipistrelle day roosts will be destroyed during the works.

4.5.7. The proposed works will retain the existing roof void in its current form and will leave the northwest gable end unaffected. Therefore, the works will not have an impact on the whiskered bat day roost through the loss of the roost, although the works will cause the modification of the roost.

4.5.8. The land around the building was assessed to provide a moderate value foraging and commuting habitat due to the close connections to areas of woodland around the building.

4.5.9. Foraging activity was confirmed to be relatively high around the building with five species identified foraging or commuting around the site during the survey although the highest levels of activity were due to pipistrelle species foraging over the gardens and adjacent field.

4.5.10. The proposed works are confined to the building and will not cause the loss of areas of vegetation in the surrounding area. Therefore, if a sensitive lighting scheme is implemented during all phases of the works the impact on foraging and commuting bats is likely to be negligible.

4.5.11. The building provides opportunities for nesting birds with house sparrows present around the building during the survey and old droppings, implying previous nesting activity. Therefore, if the proposed works are carried out during the nesting season, which extends from March to September each year, the works may have a direct impact on nesting birds if they are present in the areas of the building impacted by the works.

4.5.12. Nests present in other areas of the building are unlikely to be directly disturbed by the proposed works, although there will be an increase in disturbance around the building during the works.

5. Mitigation Strategy

5.1. The following mitigation strategy outlines working methods that will be implemented during the proposed works to extend the property.

5.2. No works will commence on the roof void or exterior of the building prior to a Natural Resources Wales (NRW) licence being obtained and all personnel working on the site being briefed on the working methods outlined in the licence.

5.3. Mitigation

5.3.1. Prior to the works commencing on site two bat boxes will be erected on a tree or pole within the garden of the property. The bat boxes will comprise 'Vivaro Pro – large multi chamber woodstone bat boxes' (Figure 16) or equivalent.



Figure 16: Vivaro Pro – large multi chamber bat box

5.3.2. The bat boxes will be mounted together and will be placed at least 3.5-4m in height facing southeast, south or southwest. Figure 17 shows the approximate location the bat boxes will be mounted.



Figure 17: Showing the approximate location for the bat boxes.

5.3.3. The bat boxes will provide additional roosting opportunities for bats throughout, and following, the works. The boxes will also provide a translocation site for any bats encountered during the works.

5.3.4. The bat boxes will remain in situ for a minimum of five years. Should the boxes be removed, or moved, this will only be carried out following suitable survey effort, in line with current best practice.

5.3.5. Following the erection of the bat boxes the works on the building will commence, with all structural works completed between September and April, to avoid the presence of bats in the building. The initial works will also avoid periods of sustained cold weather, with overnight temperatures below 5°C, to avoid the likelihood of torpid bats being encountered.

5.3.6. Prior to the works commencing on the demolition of the single storey extension a soft strip of the fascia board will be carried out under direct supervision of the named ecologist. Any bats encountered will be immediately moved to the bat boxes erected on the site.

5.3.7. Once the named ecologist is satisfied that no bats remain in the single storey extension the go ahead will be given for the demolition to be completed.

5.3.8. Prior to the works commencing on the new roof structure, which will join into the existing roof void of the building, the named ecologist will carry out a thorough inspection of the roof void to identify any bats present.

5.3.9. If bats are encountered in a location that allow the bat to be safely taken the bat will be immediately translocated to the bat boxes erected on site. If the bat/bats are in a location that does not allow safe collection the works will be postponed and further checks will be carried out until the bat/bats have been identified to have left the roost or have moved to a location suitable for translocation.

5.3.10. Once the named ecologist is satisfied that no bats remain in the roof void the go ahead will be given for the construction of the new roof structure.

5.3.11. The new roof structure will be created in a manner that mirrors the existing structure. With an open design of timbers, such as the purlin and rafter timbers present in the current roof void, and a bituminous lining felt present under the roof slates.

5.3.12. A new access point will be created into the roof void within the gable end of the new extension. The access point will comprise a narrow void retained at apex of the gable end, allowing bats to crawl through the eaves of the building into the roof void.

5.3.13. To mitigate the loss of the common pipistrelle day roosts two bat bricks, 'Habibat 003' (Figure 18) or equivalent, will be installed in the southwest elevation of the new extension. The approximate location of the bat bricks is shown in Figure 20.



Figure 18: Habibat 003

5.4. Enhancements and Compensation

5.4.1. The works on the building will commence outside the nesting season, which extends from March to September.

5.4.2. The works will not impact on the majority of the building, which will retain the nesting potential provided.

5.4.3. To provide additional nesting opportunities in the new extension a single sparrow terrace will be integrated into the brickwork.

5.4.4. The sparrow terrace will comprise a 'Habibat Sparrow Terrace' or equivalent, installed under the eaves on the northern elevation of the building, as shown approximately in Figure 21.



Figure 19: Habibat Sparrow Terrace



Figure 20: Approximate bat brick locations.



Figure 21: Approximately sparrow terrace location.

5.5. Timing

5.5.1. All of the main structural works on the building will be completed between September and April, to avoid times when bats are present in the building. This will include the construction of the external walls, roof and roof coverings and the installation of the internal ceilings to the first floor and any insulation and services within the roof void.

5.5.2. Once the main structural works have been completed there will be no further restrictions on the timing of the internal works.

5.6. Lighting

5.6.1. Lighting around the exterior of the existing building will remain unchanged.

5.6.2. Any new lighting installed on the extension will comprise security lights with PIR sensors set on short timers. Any permanent lighting, such as around the new entrance, will be low lux level lights installed under porches, or fitted with shrouds, to ensure that there is minimal light spill around the building and no light spill upwards, towards the bat roosts.

6. References

BTHK (2018). Bat Roosts in Trees – A Guide to Identification and Assessment for Tree-Care and Ecology Professionals. Exeter: Pelagic Publishing.

BRHK (2021). Bat Roosts in Rock – A Guide to Identification and Assessment for Climbers, Cavers & Ecology Professionals. Pelagic Publishing, Exeter.

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CIEEM (2017) Guidelines on Ecological Report Writing. Chartered Institute of Ecology and Environmental Management, Winchester.

Legislation and Policy.

Conservation of Habitats and Species Regulations 2017. Available at <http://www.legislation.gov.uk/uksi/2017/1012/contents/made> (Accessed 20th March 2023).

Countryside Rights of Way Act 2000. Available at <http://www.legislation.gov.uk/ukpga/2000/37/contents> (Accessed 20th March 2023).

The Habitats Directive. Available at http://www.ec.europa.eu/environment/nature/legislation/habitatsdirective/index_en.htm (Accessed 20th March 2023).

National Planning Policy Framework (2021). Available at <http://www.gov.uk/guidance/national-planning-policy-framework> (Accessed 20th March 2023).

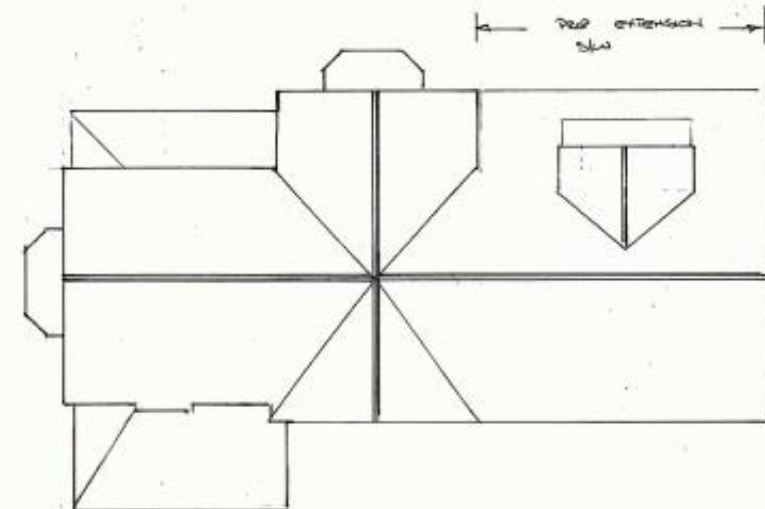
Natural Environment and Rural Communities (NERC) Act 2006. Available at <http://www.legislation.gov.uk/ukpga/2006/16/contents> (Accessed 20th March 2023).

The Wildlife and Countryside Act 1981. Available at <http://www.legislation.gov.uk/ukpga/1981/69> (Accessed 20th March 2023).

Appendix I: Development Plans



BRICKWORK TO MATCH EXIST
STONE CILLS TO S.E. ELEVATION
TO MATCH EXIST
SLATE ROOF
DORMER GABLE + CHIMNEY IN LEAD
PORCH RENDERS ROUGH CAST + PAINT FIN
THREE H.W. LONGER PAINT FIN



PROPOSED ELEVATIONS + ROOF

RAS FROM LODGE
CROSS LINES LL13 OTR

SCALE 1:100

Appendix II: Survey Results

Plas Fron Lodge
25th July 2024

Surveyor location

S1

NVA locations

NVA1

NVA2

NVA3

Roost locations

Bat Activity



Appendix III: **Night Vision Aid Coverage Images**

The images below show the Night Vision Aid coverage during each survey.

25th July 2024

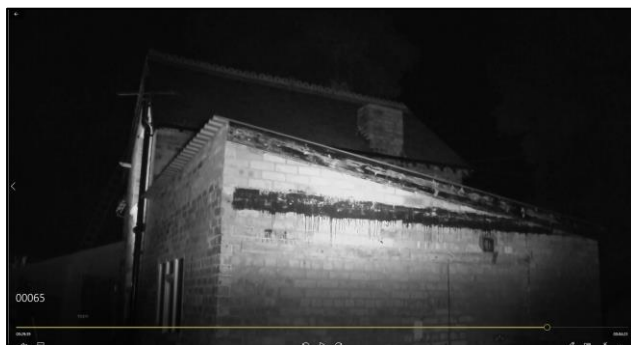
NVA 1 at the start and the end of the survey.



NVA 2 at the start and the end of the survey.



NVA 3 at the start and the end of the survey.



Appendix IV: Planning Policy and Species Legislation Summary

1. Planning Policy

1.1. The National Planning Policy Framework (NPPF) sets out the governments planning policies and how they should be applied. Section 15 of the policies refers to ‘Conserving and enhancement the natural environment’. This outlines how local authorities should deal with biodiversity when considering planning applications.

1.2. NPPF paragraph 180 States:

When determining planning applications, local planning authorities should apply the following principles:

- a) If significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*
- b) Development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special interest, and any broader impacts on the national network of Sites of Special Scientific Interest;*
- c) Development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and*
- d) Development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.*

2. Legislation Summary

Species	Legislation	Offences include
Bats	Conservation of Habitats and Species Regulations 2017 (as amended)	○ Deliberately kill, injure or capture a bat; ○ Deliberately disturb bats; ○ Damage or destroy a breeding site or resting place of a bat.
	Wildlife and Countryside Act 1981	○ Obstruct access to any structure or place which any bat uses for shelter or protection; or ○ Disturb any bat while occupying a structure or place which it uses for that purpose.
Birds	Wildlife and Countryside Act 1981	○ Intentionally kill, injure, or take any wild bird; ○ Intentionally take, damage or destroy a nest of any such bird whilst it is in use or being built; or ○ Intentionally take or destroy an egg of any such bird.

Local authorities therefore have a duty to consider protected species as a material consideration when assessing planning applications. The ODPM Government Circular 06/2005 states: ‘*It is essential that the presence or otherwise of protected species, and the extent that they may be affected by the proposed development, is established before the planning permission is granted, otherwise all relevant material considerations may not have been addressed in making the decision.*’

Appendix V: **eDNA Analysis Report**

Folio No: 82-2024
Purchase Order: 20240014
Contact: Switch Ecology
Issue Date: 23.02.2024

Biological Report

Technical Report



SureScreen Scientifics

Folio No: 82-2024
Purchase Order: 20240014
Contact: Switch Ecology
Issue Date: 23.02.2024



Biological Sample Analysis

Summary

Most biological materials (tissue, feces, hair, blood, etc.) contain small amounts of DNA from the organism of which it originated. Using molecular methods such as PCR (polymerase chain reaction) and DNA sequencing, SureScreen Scientifics are able to analyze an unknown sample to determine which species the sample originates from our methods are optimized for the detection of species including bats (over 92% of bat species worldwide can be identified including all 18 UK bat species), mammals; bees, wasps & hornets; birds; fish; plants (from roots, leaves, stem and even dried wood) and many more species.

Results

Lab ID	Site Name	OS Reference	Sample Type	Species Name	Match(%)
83037	Plas Fron Lodge - 0014	SJ 37862 46252	Bat Dropping	Whiskered bat (Myotis mystacinus)	98.47
Genetic Sequence ATTATATCGGAGGCTTTGGGATTGACTAGTGCCCTGATGATTGGCGCTCCTGATATATCCTTCCCCGGATAAAT AATATAAGTTTCTGACTACTTCCCCATCTTTCTTATTACTACTGGCCTCGTCTATAGTTGAAGCAGGGGCAGGAA CTGGTTGAACAGTTTATCCCCCTAGCAGGAAATCTTGCATCATGCGAGGAGAGA					

Matters affecting result: none
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Methodology

Once samples have arrived in the laboratory, the DNA is isolated using a commercial DNA extraction kit. Using PCR, DNA (if present within the sample) is amplified using universal molecular markers designed to amplify a short fragment of the DNA of the target species group (i.e. mammal, fish, arthropod, reptile, plant etc.). If amplification is successful, the resulting DNA sequence is revealed using a process known as Sanger Sequencing in order to obtain the genetic sequence of the mitochondrial gene within the sample. The sequence results are aligned against a library of known reference sequences using bioinformatics software, which enables us to determine which species the DNA sequence from the sample matches with, informing the species identity and sequence similarity (match %).

If the initial analysis is unsuccessful, the entire process is repeated up to two additional times with a fresh reserve sample (if available) in order to obtain a species identification. If no DNA is detected after three attempts, then we can be confident that any further analysis of the sample will likely also fail to result in species identification.

Interpretation of Results

Sample Type:	The sample you send to us can come from a variety of sources. Fecal, dropping, urine, hair, blood, carcass (skin, flesh, bone), gamete, plant matter or unknown biological material all contain DNA that we can test for in order to identify the species of origin.
Genetic Sequence:	The unique DNA sequence obtained from the sample.
Match (%):	How closely matched the DNA sequence from your sample is to the sequences within our reference database. This can be interpreted as a score of result accuracy, with the maximum score of 100% indicating an exact match of the sample to the indicated species' reference sequence. Lower scores (80-99%) indicate some variation between the sample and reference sequence, likely due to natural variation between individual genetic sequences and/or systematic variations generated through the sequencing process. Scores below 80% similarity should be interpreted with care and can indicate part degraded or part contaminated samples.
Inconclusive Result:	Degraded sample: DNA is degraded and we are unable to determine species identification due to degradation of sample DNA. This can happen either before sample collection (old samples, exposure to UV etc.) or after sample collection if stored for long periods before analysis or not handled correctly. Inhibited/contaminated sample: We are unable to determine species identity due to contamination or the suspected presence of large quantities of PCR inhibitors. Contamination sources can originate from other species which could have come into contact with the samples, or human contamination during sample collection.
Alternative Result:	Sometimes, for targets such as bat dropping analysis, other mammalian species such as rodents are detected. We find this to be a common occurrence as some bat droppings can be similar in appearance to rodent droppings. Although sometimes unexpected, repeat analyses in these cases would likely return the same results.