BAT SURVEY REPORT

PROPERTY SPHERE LIMITED

LAND ADJACENT TO LAKE LANE
BARNHAM, BOGNOR REGIS,
WEST SUSSEX

13TH DECEMBER 2024

REF: 23054

CT Ecology Limited (Registered Office), 2 Hillside Crescent, Angmering, West Sussex, BN16 4AA
[redacted]
Registered in England and Wales No.: 10836632

CT Ecology

CONTENTS **PAGE NO**

Revision	Date	Author	Reviewer
	13/12/2024	Carly Teague BSc (Hons) MSc MCIEEM	Jack Kellett BSc (Hons) MCIEEM

EXECUTIVE SUMMARY

CT Ecology Ltd. was commissioned to undertake a series of bat surveys in order to ascertain the presence and distribution of this species group throughout land adjacent to Lake Lane in Barnham, West Sussex. A series of bat activity surveys together with static monitoring surveys were undertaken. The bat assessment follows on from recommendations made in the Preliminary Ecological Appraisal (PEA) which identified potentially suitable habitat for foraging and commuting bat species within the site. The assessments were required in order to enable suitable mitigation to be devised. The site measures approximately 0.4 hectares (ha).

The main findings of the surveys are as follows:

- The site is in a semi-rural location within the northern extent of Barnham and comprised horse grazed fields together with areas of boundary scrub, tall ruderal vegetation and scattered trees. The site is bounded to the north by a commercial plant nursery with residential properties and associated gardens bounding the site in all other directions. In the wider surrounds, commercial plant nurseries and agricultural fields dominate the landscape together with residential properties.
- A total of 10 different bat species were recorded across all surveys. Species present within the site included common pipistrelle (*Pipistrellus pipistrellus*); soprano pipistrelle (*Pipistrellus pygmaeus*); Nathusius's pipistrelle (*Pipistrellus nathusii*); serotine (*Eptesicus serotinus*); noctule (*Nyctalus noctula*); lesser noctule (*Nyctalus leisleri*); Myotis species (*Myotis* sp.); Daubenton's bat (*Myotis daubentonii*); barbastelle (*Barbastella barbastellus*); and long-eared species (*Plecotus sp.*).
- The night-time bat walkover (NBW) surveys and static monitoring surveys recorded a moderate level of bat activity, with highest levels of activity associated with the northern site boundary. Overall, the majority of activity was associated with the boundary tree lines with common pipistrelle being the most frequently recorded species.
- The static monitoring surveys also recorded a moderate level of bat activity throughout the monitoring period, with highest number of bat passes recorded in May. Highest levels of activity were from soprano pipistrelle, common pipistrelle and myotis species.
- A significant number of social calls by pipistrelle species and noctule were recorded during the static monitoring surveys from mid-summer to September, indicating that the site potentially forms part of a core sustenance zone for these species.
- No roosts are suspected to be present within the site and an absence of high conservation status roosts such as maternity roosts in close proximity to the site have been confirmed based on the survey data.

- A small number of passes were recorded by barbastelle throughout the static monitoring surveys, with passes recorded every month during the monitoring period. The site is therefore likely to form part of the foraging range for this species with individuals at the site potentially forming part of the population associated with Singleton and Cocking Tunnels Special Area of Conservation, located approximately 13km to the north-west.
- Overall there was a low level of activity in proximity to the stables during the emergence survey. No bats emerged from the building and therefore the likely absence of bat roosts has been confirmed and this building can be removed without any constraints posed by bats.
- The site is assessed as being of value for bats at a local level based on the current survey data. The highest level of activity was associated with the tree lines bounding the northern and eastern site boundaries.
- Proposals will result in the removal of grassland, scrub and potentially a small number of trees although the site boundaries will be retained together with grassland and scrub buffer areas within the northern and eastern site extents. Based on the current proposals, the important foraging and commuting lines around the site will be retained.
- In the absence of mitigation, direct and indirect impacts will result from the works. These are associated with increased lighting and habitat loss during both the construction and operational phases of the development which have the potential to impact negatively on bats through losses to foraging habitat and severance of commuting and foraging routes.
- Mitigation is required to ensure that there is no net increase in light levels on retained boundary features or on newly created linear features in order to retain connectivity for bats. Ensuring that site boundaries are not directly illuminated will enable bats to continue foraging through the site between adjacent habitats.
- The proposed landscaping scheme should incorporate a range of biodiverse planting, including a mix of night-flowering species in order to provide enhanced foraging opportunities for the range of bat species utilising the site.
- Providing mitigation in respect to lighting and landscaping is implemented throughout the construction and operational phases, the effects of the proposed works on bats are **not likely to be significant** in the long-term
- Details regarding mitigation and site enhancement measures are provided in Section 5 of the report.

1. INTRODUCTION

Background

1.1 CT Ecology Limited was commissioned by Property Sphere Limited to undertake bat surveys throughout land adjacent to Lake Lane in Barnham, West Sussex.

1.2 This report provides an assessment of the status of bats at the site, providing information on their presence and distribution. Potential impacts of the proposed works are identified and measures to mitigate the effects of the development on this species group is discussed, where applicable.

1.3 The purpose of the static bat monitoring survey was:

- to provide details regarding bat activity over a block of time each month throughout the survey period;
- to identify any key commuting and foraging routes across the site;
- to evaluate the nature conservation value or the site and adjacent areas in relation to bats;
- to recommend suitable mitigation; and
- to provide recommendations for site enhancement.

1.4 The report has been compiled in accordance with current guidelines in place at the time of undertaking the surveys and compiling this document (British Standard 42020:2013 Biodiversity. Code of Practice for Planning and Development, 2013; CIEEM, 2013 & 2016; Collins et al, 2023; and Mitchell-Jones & McLeish. 2004).

Development Proposals

1.5 Proposals are to construct seven new residential dwellings with associated parking and landscaping. Boundary features, including trees, will be largely retained as part of the proposals.

Site Description

1.6 The application site measures approximately 0.4ha and is within a semi-rural location within the northern extent of Barnham in the Arun District of West Sussex at National Grid Reference SU969 047. The site comprised horse grazed fields with areas of bare ground and semi-improved grassland dominating the site. A single building was present in the south-east extent together with areas of boundary scrub, tall ruderal vegetation and scattered trees. A stream extended part way along the eastern site boundary.

1.7 The site is bounded to the north by a commercial plant nursery with residential properties and associated gardens bounding the site in all other directions. Access was via an access track, shared with residential properties, extending to Lake Lane to the south. A railway line (the south coast main line) is located beyond Lake Lane, approximately 360m to the south.

1.8 In the wider surrounds, commercial nurseries and agricultural fields dominate the landscape together with residential properties. The centre of Bognor Regis is approximately 6km to the south-west and the A27 is approximately 2km to the north.

2. METHODOLOGY

Desk Study

2.1 A data search was commissioned as part of the initial PEA and the results of this are provided in the associated PEA report (CT Ecology 2023). A desktop study in relation to statutory and non-statutory designated sites for which bats are a qualifying feature or where suitable bat habitat is supported have been detailed within this report.

Surveyors

2.2 All surveys were carried out by suitably experienced ecologists. The bat activity surveys were led by Carly Teague and Aidan Bird. Carly has over 16 years' experience as an ecological consultant and has both assisted and led on numerous bat surveys including ground level tree assessments, building inspections and emergence/activity surveys and compiled PSML's. Carly has also assisted with overseeing the implementation of mitigation measures in accordance with PSML's. Aidan Bird has over nine years' experience of carrying out commercial bat surveys and has extensive experience of undertaking bat surveys. Aidan also assists with roost visit as a volunteer with the Surrey and Sussex Bat Groups.

2.3 Ecological assistance was provided by experienced field surveyors.

Night-Time Bat Walkover (NBW) Surveys

2.4 A series of NBW surveys were carried out between May and September 2024. The site was previously identified as providing moderate potential for foraging bats and the recommended methodology for the activity surveys is taken from current guidelines.

2.5 Two surveyors were used to assess the site for general foraging and commuting activity. Echo Meter Touch 2 Pro's and Anabat Scout detectors were used for the surveys.

2.6 Both surveyors walked a set route around the site with stopping points along the route. The survey began 15 minutes prior to sunset and finished approximately two hours after sunset depending on levels of bat activity.

2.7 Post-survey analysis of all recordings was carried out by an experienced ecologist using appropriate software for the bat detectors. The night-time bat walkover routes and associated results are displayed in Figure 1 in Appendix A and Appendix B respectively.

2.8 All surveys followed current, standard protocols and accepted standards at the time of the surveys (Mitchell-Jones and McLeish, 2004; Collins, 2023).

Automated Static Detector Surveys

2.9 Automated static bat detector surveys were undertaken in order to augment the night-time bat walkover surveys.

2.10 A single automated static detector was used, located within the central extent of the site. The location is shown on Figure 1 in Appendix A.

2.11 An Anabat Express bat detector was used and set at a sensitivity setting of 10. The detector was deployed for a minimum of five consecutive days over seven monitoring blocks. The monitoring survey dates are listed below:

- 20th April 2024 - 30th April 2024;
- 14th May 2024 - 24th May 2024;
- 20th June 2024 – 30th June 2024;
- 19th July 2024 - 29th July 2024;
- 21st August 2024 – 31st August 2024;
- 13th September – 24th September 2024; and
- 24th October 2024 – 29th October 2024.

2.12 The detectors were set to record every night throughout each monitoring period (66 nights in total).

Static Detector Surveys-Post-Survey Data Handling

2.13 A quantitative assessment of bat activity within the study area was made. The recorded data was downloaded and analysed using AnalookW bat call analysis software. Each file containing a bat call was considered to represent a "bat pass" and all species utilising the site were recorded. Although not synonymous with actual numbers of bats, this information provides an indication of the relative abundance of bat species across a study area. The data analysis was undertaken by Aidan Bird and Carly Teague.

Bat Emergence and Activity Survey

2.14 A single bat emergence and activity survey was undertaken on the stable unit in July 2024. No on-site roost records were returned by the data search and although the PEA scoped out any potential for use of this building by bats, due to an anecdotal record of a barbastelle roost within the stables being shared by a local resident, a single emergence survey was undertaken in order to ascertain use of this building by roosting bats. The local bat group were contacted regarding the possibility of a record not disclosed by the data search however no information could be obtained and therefore undertaking an emergence survey was considered appropriate in this situation.

2.15 The surveys were carried out in accordance with current best practice (Collins, 2023) and began 20 minutes prior to sunset and finished 1.5 hours after sunset. An appropriate number of surveyors were positioned to view all potential roosting features. Echo Meter Touch 2 Pro's and Anabat Scout detectors were used for the survey.

2.16 Night vision aids (NVA) were positioned with each surveyor, with additional NVA positioned as appropriate to ensure full coverage of the building. Unattended additional NVA's were in sight of a surveyor at all times, ensuring equipment was functioning throughout the survey. Surveyors live-viewed the NVA footage once low light conditions were reached. Video footage was also reviewed post-survey using appropriate software as necessary. The survey map can be found in Appendix A (Figure 2).

Caveat

<u>NBW Surveys/Static Detector Surveys</u>

2.17 Bat activity levels can vary at sites throughout the year however undertaking surveys throughout the optimum active period for bats together with a series of static monitoring surveys will provide an accurate representation of typical bat activity at the site. The weather conditions during the surveys were considered suitable. The number of static monitoring surveys, four of which were undertaken within the peak activity period for bats will serve to provide a robust data set for the site.

3. RESULTS

Desk Study

3.1 The site is in a semi-rural location, within the northern extent of Barnham. Land-use in the immediate vicinity comprises residential properties with associated gardens together with commercial plant nurseries.

3.2 There are no on-site ponds. A stream extended along a section of the eastern site boundary. A series of three large lakes associated with the adjacent plant nursey are located approximately 35m north, 95m north-east and 150m north east respectively. A series of streams are located to the north and north-west of the site, the closest part of which is approximately 10m to the north of the site; joining the stream along the eastern site boundary. Approximately 20 woodland blocks are present within 2km of the site, the closest of which is approximately 460m to the west.

Statutory Designated Sites

3.3 The site is not subject to any statutory designations. There is one statutory designated site within a 2km radius; South Downs National Park is located approximately 1.7km to the north-east at its closest point. The National Park is designated for its landscape value, with its network of farmland, ancient woodland and lowland heaths, scattered farmsteads and sandstone outcrops, providing a network of continuous habitats suitable for a range of bat species.

3.4 Singleton and Cocking Tunnels Special Area of Conservation are approximately 13km to the north-west. Barbastelle and Bechstein's bat (*Myotis bechsteinii*) are both Annex II qualifying species for this SAC.

Non-Statutory Designated Sites

3.5 The site is not subject to any non-statutory designations. Binsted Wood Complex is located approximately 1.8km to the north-east, supporting a mixture of ancient woodland together with species-rich pasture which provide a diverse mix of optimal bat foraging and commuting together with potential roosting opportunities within the woodland.

Night-Time Bat Walkover Surveys

Survey 1: 11th May 2024

3.6 Sunset was at 20:38hrs and the temperature at the start of the survey was 18.9°C, falling to 14.2°C at the end of the survey. The sky was relatively clear with a gentle breeze and no precipitation.

3.7 The surveyors walked a set route around the site, stopping at pre-determined points for 5-minute intervals.

3.8 Overall a moderate level of bat activity was recorded by eight species, with the highest level of activity from common pipistrelle. Species recorded include common pipistrelle; soprano pipistrelle; Nathusius's pipistrelle; serotine; noctule; lesser noctule; Myotis species; and long-eared species. Activity was concentrated along the northern boundary tree line. A summary of bat passes is provided in the table below.

Table 3.1: May NBW Summary data

	Total Recordings								
	PIPPIP	PIPPYG	PIPNAT	NYCNOC	NYCLEI	EPTSER	Myotis sp.	Plecotus sp.	Total
Combined	34	19	2	2	2	3	3	2	67
% Total	50.75%	28.36%	2.99%	2.99%	2.99%	4.48%	4.48%	2.99%	

Survey 2: 13th July 2024

3.9 Sunset was at 21:13hrs and the temperature at the start of the survey was 17.2°C, falling to 13.1°C at the end of the survey. The sky was slightly overcast with no breeze and no precipitation.

3.10 The surveyors walked the same route, stopping at pre-determined points for 5-minute intervals.

3.11 Overall a low level of bat activity was recorded when compared to the May survey. A total of eight species were recorded, albeit in lower numbers and activity was again concentrated along the northern boundary tree line. Common pipistrelle was the most frequently recorded species during the survey.

Table 3.2: July NBW Summary data

	Total Recordings								
	PIPPIP	PIPPYG	PIPNAT	NYCNOC	NYCLEI	EPTSER	Myotis sp.	Plecotus sp.	Total
Combined	34	19	2	2	2	3	3	2	67
% Total	50.75%	28.36%	2.99%	2.99%	2.99%	4.48%	4.48%	2.99%	

Survey 3: 13th September 2024

3.12 Sunset was at 19:18hrs. The temperature at the start of the survey was 15.2°C, falling to 13.5°C at the end of the survey. The sky was clear with a gentle breeze and no precipitation.

3.13 The surveyors walked the same route, stopping at pre-determined points for 5-minute intervals.

3.14 Overall a very low level of activity was recorded during the survey. A total of five species were detected, with the highest number of passes from common pipistrelle. The majority of passes were associated with bats commuting along the northern boundary tree line.

Table 3.3: September NBW Summary data

Total Recordings						
	PIPPIP	PIPPYG	NYCNOC	Myotis sp.	Plecotus sp.	Total
Combined	10	3	4	1	1	19
% Total	52.63%	15.79%	21.05%	5.26%	5.26%	

Static Monitoring Surveys

3.15 Sunset was between 16:32hrs and 20:04hrs between the April and October static monitoring surveys and the night time temperature throughout the surveys varied with a few nights in April and May dropping to below 10°C. The nights were generally calm in relation to wind levels with clear to moderate cloud cover.

3.16 The surveys recorded a total of at least five bat species recorded during the monitoring period, with common pipistrelle, soprano pipistrelle, Nathusius's pipistrelle, brown long-eared and myotis species recorded within or immediately adjacent to the site.

3.17 For all species, at least one pass was within the timeframe for a potential local roost within proximity to the site, although these are not considered likely to be within the site itself based on the time of the passes. An absence of high conservation status roosts such as maternity roosts within the site have been confirmed based on the survey data and the data does not suggest any directly local significant roosts of maternity colonies in close proximity to the site.

3.18 A significant number of social calls by pipistrelle species and noctule were recorded from mid-summer to September, indicating that the site potentially forms part of a core sustenance zone for these species.

3.19 Overall, the highest levels of activity were from foraging soprano pipistrelle, common pipistrelle, and myotis species, with highest overall number of passes recorded in May 2024.

Table 3.4: Summary of Bat Passes (April 2024-October 2024)

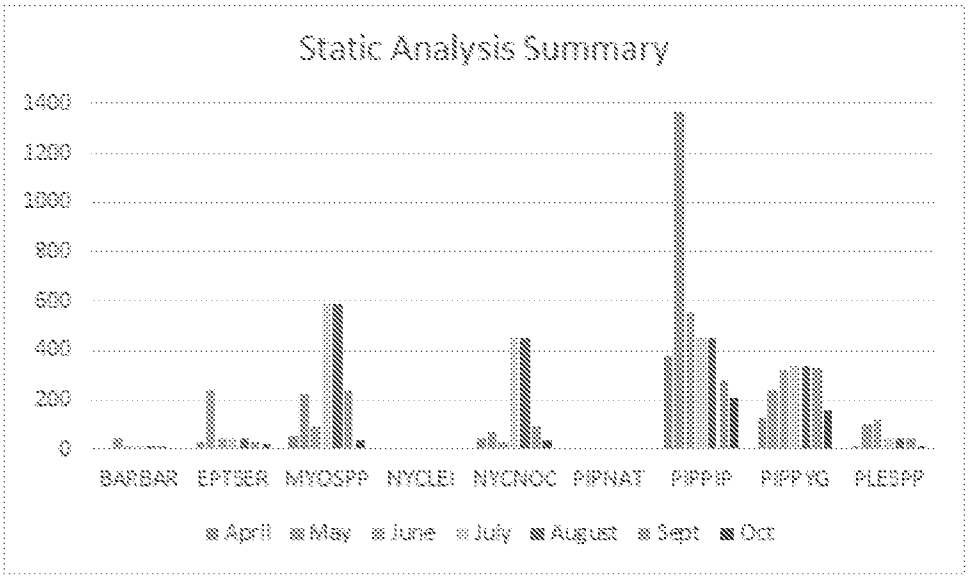

Table 3.5: Summary of Results by Species (April 2024-October 2024)

Species	Number of Passes						
	Apr	May	Jun	Jul	Aug	Sep	Oct
Barbastelle (BARBAR)	9	43	15	11	11	15	3
Serotine (EPTSER)	30	240	48	48	48	28	26
Myotis sp. (MYOSPP)	57	224	92	590	590	244	42
Lesser Noctule (NYCLEI)	10	8	3	4	4	3	1
Noctule (NYCNOC)	45	69	27	450	450	99	37
Nathusius's pipistrelle (PIPNAT)	7	2	0	1	1	0	0
Common pipistrelle (PIPPIP)	377	1369	553	452	452	284	206
Soprano pipistrelle (PIPPYG)	127	242	322	335	335	331	162
Long-eared sp. (PLESPP)	16	104	119	48	48	44	11

Bat Emergence and Activity Survey

13th July 2024

3.20 The survey began at 20:55 and ended at 22:45, sunset was at 21:13. The weather conditions were suitable with no precipitation, no wind, and the temperature fell from 17.2 °C to 13.1°C.

3.21 Commuting and foraging activity by three bat species was recorded, including common pipistrelle; soprano pipistrelle; and noctule. Overall there was a low level of activity in proximity to the stables during the survey. No bats emerged from the building.

3.22 The first recorded bat activity was by noctule at 21:21hrs, foraging from the north, flying along the eastern boundary tree line and foraging briefly over the stables. A small number of faint passes by noctule, common pipistrelle and soprano pipistrelle commuting in the wider site were recorded between 21:35hrs and 21:54hrs. Three common pipistrelles were recorded foraging together near to the stables at21:57hrs. The last pass was from a common pipistrelle commuting in the wider site at 22:19hrs.This pass was brief and faint.

View of the NVA's at the end of the survey.

4. EVALUATION AND IMPACTS

Evaluation

Bats

4.1 Bats receive protection under The Conservation of Habitats and Species Regulations 2017. Under current legislation it is an offence to deliberately kill, injure or capture this species or damage or disturb a breeding site or resting place (a roost).

Site

4.2 The development area supports semi-natural habitats including grassland, boundary tree lines, scrub and a drainage channel which provides connectivity for this species between grassland, woodland and interconnected hedgerows and tree lines to the north, east and west.

4.3 Overall, a moderate level of bat activity was recorded at the site during the course of the bat surveys undertaken throughout 2024. A total of 10 different bat species were recorded across all surveys, including common pipistrelle; soprano pipistrelle; Nathusius's pipistrelle; serotine; noctule; lesser noctule; Myotis species; Daubenton's bat; barbastelle; and long-eared species.

4.4 The highest level of activity was associated with tree lines and scrub along the northern and eastern site boundaries, although bats were recorded all around the site margins at different times during the surveys. Soprano pipistrelle, common pipistrelle, and myotis species were the most frequently recorded species at the site.

4.5 No bats emerged from the stables during the emergence survey. This building was previously assessed as providing negligible potential for roosting bats due to an absence of any suitable features, however the emergence survey was undertaken as precaution in light of an anecdotal record from a local resident of a bat roost within the stable unit. No roost records were returned from the site as part of the data search and no roosts were suspected to be associated with the building during the NBW surveys. Following the bat surveys, the building is still considered to provide negligible potential for roosting bats.

4.6 A small number of passes were recorded by barbastelle throughout the static monitoring surveys, with passes recorded every month during the monitoring period. The site is therefore likely to form part of the foraging range for this species with individuals present within the site potentially forming part of the population associated with Singleton and Cocking Tunnels SAC.

4.7 For all species recorded during the static monitoring, at least one pass is within the timeframe for a potential local roost within proximity to the site, although these are not considered likely to be within the site itself based on the time of the passes. An absence of high conservation status roosts such as maternity roosts within the site have been confirmed based on the survey data and the data does not suggest any directly local significant roosts of maternity colonies in close proximity to the site.

4.8 A significant number of social calls by pipistrelle species and noctule were recorded from mid-summer to September, indicating that the site potentially forms part of the core sustenance zone for these species with the tree lines forming important corridors for movement for bats between the wider landscape.

4.9 Based on the results of the surveys, the on-site boundary features provide a supporting function as a foraging and commuting resource for moderate numbers of bats passing between habitats to the north, east and west. No bat roosts will be impacted by the proposed works. Based on the results of the survey and size of the site, overall the site is assessed as being of value for foraging and commuting bats **at a local level**.

Impact Assessment

Bats

4.10 Limited bat foraging and commuting activity was associated with the central grassland fields during the surveys with the majority of activity associated with linear boundary features, particularly associated with the northern and eastern site extents.

4.11 Proposals will result in the removal of grassland, scrub and potentially a small number of trees although the site boundaries will be retained together with a grassland and scrub buffer area within the northern and eastern site extents. Based on the current proposals, the important foraging and commuting lines around the site will be retained. No bat roosts will be impacted by the proposed works.

4.12 Based on the results of the assessment, unmitigated, the **construction** and **operational phases** of the works will result in a **permanent minor negative impact** upon **small** numbers of individual foraging and commuting bats, **significant at a local scale.**

4.13 Impacts resulting from the works will be in relation to direct and indirect impacts associated with;

- Reduction/losses in semi-natural habitats throughout the site during both the construction and operational phases of the development. This has the potential to impact negatively on bats foraging through the site; and

- increased lighting during both the construction and operational phases of the development. This has the potential to impact negatively on bats to some degree through habitat loss and/or severance of commuting and foraging routes.

4.14 Mitigation is therefore required in order to minimise impacts on bats.

4.15 All boundary trees must be retained where possible, particularly those within the northern and eastern site extents. To compensate for losses to central grassland and scrub areas, planting must be carried out to further enhance the site boundaries and create additional linear features throughout the site, using a combination of tree and shrub species, in order to mitigate against any impacts caused by the habitat loss to bats passing through the site. Additional planting should also serve to augment the northern and eastern site boundaries. Based on the current proposals, the important foraging and commuting lines around the site will be retained. A new attenuation pond to be located within the north of the site will also serve to provide additional foraging opportunities for this species within the site, with meadow management for retained grassland areas providing a valuable foraging resource in the long-term.

4.16 A sensitive lighting scheme must be implemented in order to safeguard bats, particularly for the light-adverse species using the boundary tree lines, including barbastelle. The lighting scheme must ensure that there is no net increase in light levels on retained boundary features and on any newly created linear features within the site as a result of the works. Ensuring that site boundaries, specifically the northern and eastern boundaries are not directly illuminated will also ensure connectivity for bats between habitats to the north and east, including grassland and woodland. Access roads must also be subject to a sensitive lighting strategy so all retained and newly created hedges are not subject to any light spill as a result of the development.

4.17 A range of biodiverse planting should be incorporated into the post development landscaping, including a mix of night-flowering species in order to provide enhanced foraging opportunities for a range of bat species.

4.18 Providing mitigation in respect to planting and lighting is implemented throughout the construction and operational phases to retain and enhance bat flight lines, the effects of the proposed works on bats are **not significant** in the long-term and are considered unlikely to have any significant negative impact on the availability of bat foraging and commuting habitat in the locality.

4.19 Enhancing boundary features through additional planting and creating wildflower grassland areas, a new pond and new linear features as part of the re-development will serve to enhance the site for the range of bat species currently supported at the site and will encourage on-going use of the site by this species group in the long-term.

5. SUMMARY AND RECOMMENDATIONS

Summary

5.1 This section summarises the data gathered during the surveys and the likely impacts on bats and supporting habitats that are present on the site, as described in previous sections of this report.

5.2 The following key ecological elements have been identified:

- The NBW surveys and static monitoring surveys recorded a moderate level of bat activity overall, with highest levels of activity associated with the linear features (trees and scrub) within the north and east of the site.
- A total of 10 different bat species were recorded across all surveys; including common pipistrelle; soprano pipistrelle; Nathusius's pipistrelle; serotine; noctule; lesser noctule; Myotis species; Daubenton's bat; barbastelle; and long-eared species,
- During the NBW surveys, the majority of activity was associated with the boundary tree lines with common pipistrelle being the most frequently recorded species.
- The static monitoring surveys recorded the highest number of bat passes in May. A significant number of social calls by pipistrelles and noctules were recorded from mid-summer through to September, indicating that roosts are close by for these species. Highest levels of activity during the static monitoring were associated with soprano pipistrelle, common pipistrelle and myotis species.
- No roosts are suspected to be present within the site and an absence of high conservation status roosts such as maternity roosts in close proximity to the site have been confirmed based on the survey data.
- A significant number of social calls by pipistrelle species and noctule were recorded from mid-summer to September, indicating that the site potentially forms part of the core sustenance zone for these species.
- A small number of passes were recorded by barbastelle throughout the static monitoring surveys, with passes recorded every month during the monitoring period. The site is therefore likely to form part of the foraging range for this species, with individuals at the site potentially forming part of the population associated with Singleton and Cocking Tunnels SAC in the wider landscape.
- Overall there was a low level of activity in proximity to the stables during the emergence survey. No bats emerged from the building and therefore the likely absence of bat roosts has been confirmed and this building can be removed without any constraints posed by bats.

- Based on the results of the surveys and size of the site, overall the site is assessed as being of value for foraging and commuting bats **at a local level**.
- The site provides an important corridor for bats foraging to and from habitats to the north, east and west.
- Proposals will result in the removal of grassland, scrub and potentially a small number of trees although the site boundaries will be retained together with grassland and scrub buffer areas within the northern and eastern site extents. Based on the current proposals, the important foraging and commuting lines around the site will be retained.
- In the absence of mitigation, direct and indirect impacts will result from the works. These are associated with increased lighting and habitat loss during both the construction and operational phases of the development which have the potential to impact negatively on bats through losses to foraging habitat and severance of commuting and foraging routes.
- Mitigation is required to ensure that there is no net increase in light levels on retained boundary features or on newly created linear features in order to retain connectivity for bats. Ensuring that site boundaries are not directly illuminated will enable bats to continue foraging through the site between adjacent habitats.
- The proposed landscaping scheme should incorporate a range of biodiverse planting, including a mix of night-flowering species in order to provide enhanced foraging opportunities for the range of bat species utilising the site.
- Providing mitigation in respect to lighting and landscaping is implemented throughout the construction and operational phases, the effects of the proposed works on bats are **not likely to be significant** in the long-term.

Recommendations

Bats: Lighting

5.3 Different species of bat have been found to react differently to night-time lighting however research has found that generally, all species of bats are sensitive to artificial lighting and that excessive lighting can delay bats from emerging, thus shortening the time available for foraging, as well as causing individuals to move away from suitable foraging grounds or roost sites, to alternative dark areas (Jones, 2000). Bats can also become isolated from their foraging grounds if the linear features they use for commuting are suddenly illuminated, creating a light barrier (Fure, 2006).

5.4 Currently the site remains dark at night. New development provides the opportunity to enhance the site's value for foraging bats and to minimise indirect impacts from lighting associated with the new development. This can be achieved by following accepted best practice (Institute of Ecology and Environmental Management 2006, Institute of Lighting Engineers 2009, Bat Conservation Trust, 2014):

- The level of artificial lighting including security lighting should be kept to a minimum, with light spill controlled so boundary habitats, linear habitats, including any newly created hedgerows as well as retained grassland areas and the new attenuation pond are not directly illuminated;
- recent LED technology should be utilised where possible. LED lights do not emit UV radiation, towards which insects are attracted, drawing them away from bat foraging areas in the surrounding landscape;
- all lights should be directed at a low angle with minimal light spillage wherever possible. The use of low-level lighting columns along new access roads, footpaths and new driveways/parking areas should be implemented or the use of integrated hoods or cowls could help to minimise light spill on adjacent boundary features and retained trees particularly within the north and east of the site; and
- the site boundaries should be kept dark, preferably at bat emergence (0-1 hour after sunset) and during peak bat activity periods (e.g., 1.5 hours after sunset and 1.5 hours before sunrise). Therefore, where possible, if lighting is required this should be installed with the light directed down into the entrance/access//driveway areas wherever possible and lighting should be controlled through the use of PIR and/or timers.

5.5 The above features should be included within a lighting strategy, compiled as part of the proposed development in consultation with the project ecologist.

Bat Roost Provision

5.6 In order to provide a net gain in bat roosting provision as a result of the works it is recommended that a series of bat boxes are installed on new buildings and suitable retained trees around the site as part of the re-development. The boxes should be sited at a height of at least 4m and under the eaves where possible, if located on a building. These should be sited a sufficient distance away from any adjacent road in order to minimise impacts of lighting on the boxes. The following boxes are recommended although potentially suitable alternatives are available on the market:

- Greenwoods single crevice bat box x 5 boxes – suitable for crevice dwelling bats including pipistrelles; and
- Greenwoods small hollow bat box x 5 boxes – suitable for cavity roosting bats including long-eared bats and noctules.

Site Enhancement

5.7 In addition to details provided above, recommendations made in Section 5 of the PEA report (CT Ecology 2023) should also be implemented at the site in order to achieve a net gain in biodiversity as a result of the works.

6. REFERENCES

- Bat Conservation Trust and Institution of Lighting Professionals (2023). *Guidance Note 08/23. Bats and Artificial Lighting at Night*. Warwickshire: ILP
- British Standards Institute (2013). 24040:2013. *Biodiversity-Code of Practice for Planning and Development.* Standards Policy & Strategy Committee. Milton Keynes: BSI.
- CIEEM – Chartered Institute of Ecology and Environmental Management (2006). *Bats and Lighting*. Winchester: CIEEM.
- CIEEM – Chartered Institute of Ecology and Environmental Management (2016). *Guidelines for Ecological Impact Assessment in the UK and Ireland – Terrestrial, Freshwater and Coastal.* Winchester: CIEEM [On-line]. Available from http://www.cieem.net/data/files/Publications/EcIA_Guidelines_Terrestrial_Freshwater_and_Coastal_Jan_2016.pdf [Accessed on 14/03/2024].
- Collins, J. (ed.) (2023). *Bat Surveys for Professional Ecologists: Good Practice Guidelines.* 4th edn. The Bat Conservation Trust, London
- CT Ecology Ltd (2023). *Preliminary Ecological Appraisal for Land adjacent to Lake Lane, West Sussex*. Unpublished report for Property Sphere. East Sussex: CT Ecology Ltd.
- Fure, A. (2006) *Bats and lighting*. The London Naturalist, No. 85.
- Hill, D. Fasham, M. Tucker, G. Shewry, M. Shaw, P (2005). *Handbook of Biodiversity Methods – Survey, Evaluation and Monitoring*. Cambridge: Cambridge University Press.
- Jones, J. (2000). *Impact of Lighting on Bats.* Bat Conservation Trust. [on-line]. Available from http://www.bats.org.uk/downloads/Helpline/lighting.pdf [Accessed on 14/11/2024].
- Mitchell-Jones, T. & McLeish, A.P (2004). *The Bat Workers' Manual* (3rd Ed). Joint Nature Conservation Committee, Peterborough, UK.

Appendix A
Bat Survey Maps

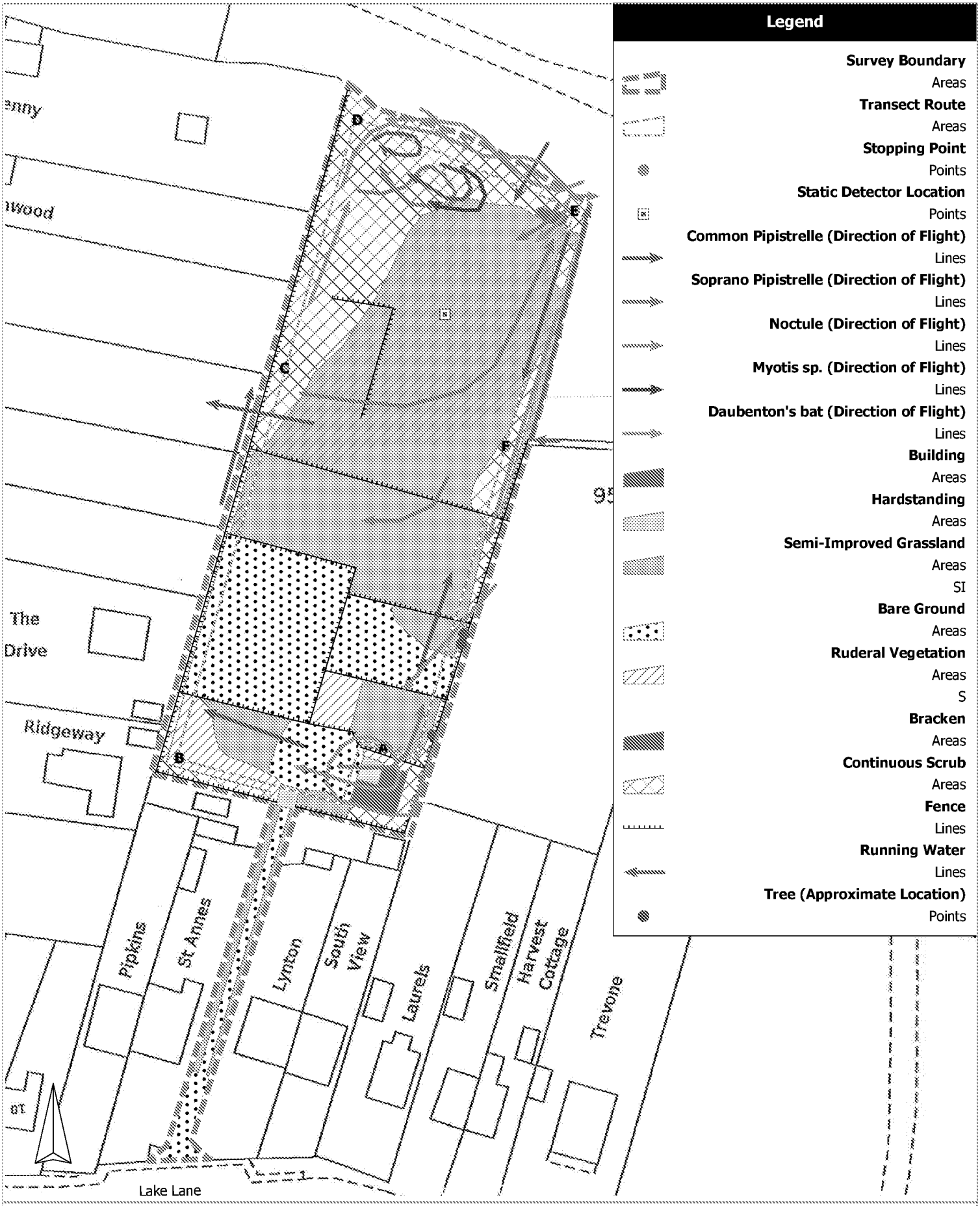

Figure 1: Land Adjacent to Lake Lane NBW & Static Monitoring Survey Map

Drawn by: CT
Date: 13/12/2024
Scale: 1:1250

CT Ecology

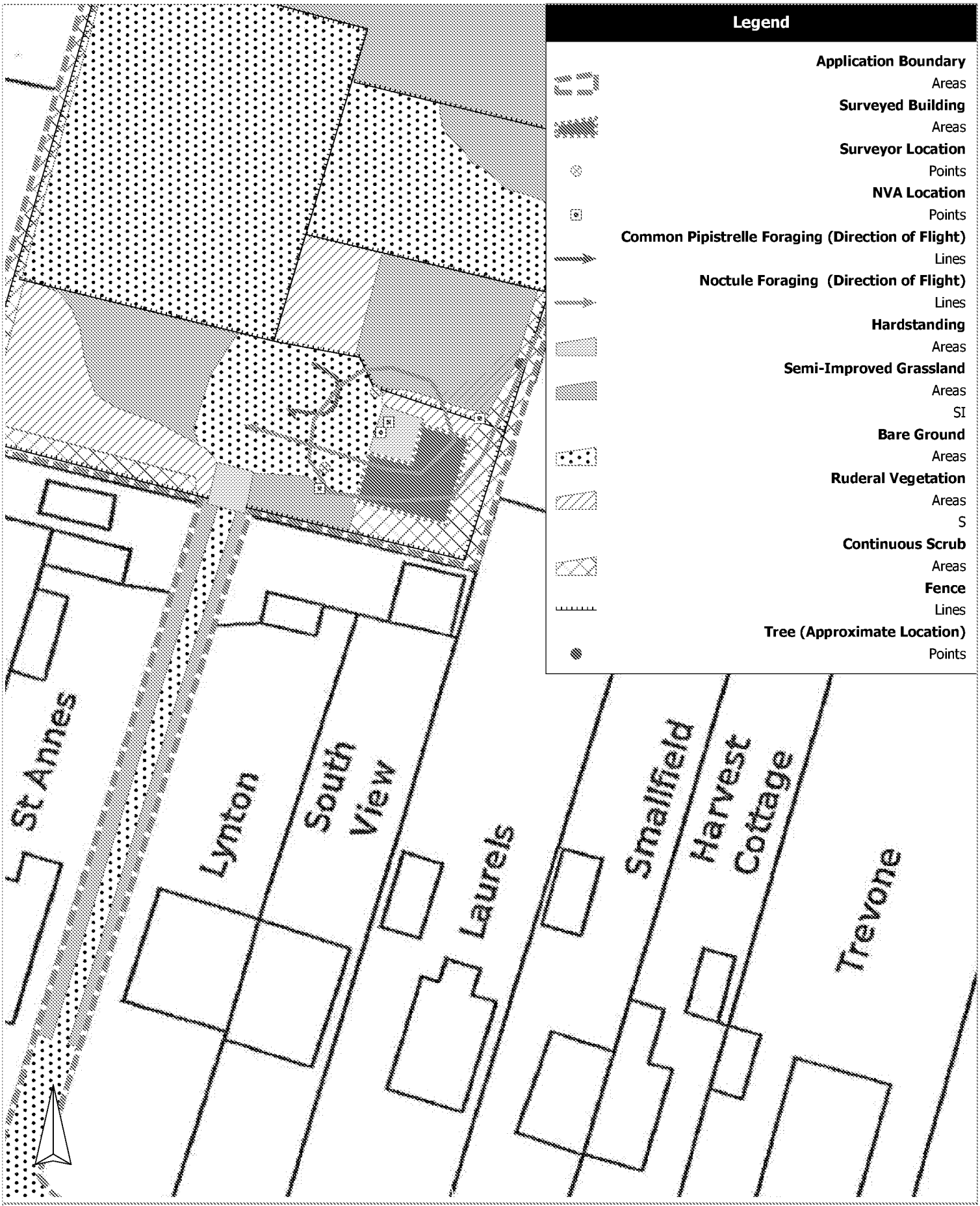

Figure 2: Land Adjacent to Lake Lane Bat Emergence and Activity Survey Map

Drawn by: CT
Date: 13/12/2024
Scale: 1:1250

CT Ecology

Appendix B
Night-Time Bat Walkover Survey Data

NBW Results: 11th May 2024

Scott

Time	Species	Stopping Point	Notes
20:56	*Pipistrellus pipistrellus*	E1	Point E to F
21:11	*Pipistrellus pipistrellus*	B	
21:15	*Pipistrellus pipistrellus*	C1	Point F to C
21:18	*Pipistrellus pipistrellus*	C1	
21:20	*Pipistrellus pipistrellus*	D1	
21:22	*Pipistrellus pipistrellus*	D2	Circling Point D
21:25	*Pipistrellus pygmaeus*	E2	Flying E to F - 3 Passes
21:28	*Myotis daubentonii*	E3	4 Passes
21:32	*Pipistrellus pygmaeus*	F1	2 Bats
21:35	*Pipistrellus pygmaeus*	A1	Point B to A
21:45	*Pipistrellus pygmaeus*	C1	
21:48	*Pipistrellus pipistrellus*	C1	
21:51	*Pipistrellus pipistrellus*	D	
21:53	*Pipistrellus pipistrellus*	D	Multiple Bats
21:57	*Pipistrellus nathusii*	E	
22:00	*Pipistrellus pipistrellus*	F	Multiple Calls
22:08	*Pipistrellus pipistrellus*	F	
22:13	*Pipistrellus pipistrellus*	B	
22:15	*Pipistrellus nathusii*	C	
22:19	*Eptesicus serotinus*	C	
22:21	*Pipistrellus pipistrellus*	D	
22:30	*Pipistrellus pipistrellus*	F	
22:31	*Nyctalus leisleri*	F	
22:33	*Pipistrellus pipistrellus*	F	

Aidan

Time	Species	Stopping Point	Notes
20:54	*Nyctalus noctula*	A	
20:58	*Pipistrellus sp.*		
21:03	*Pipistrellus pipistrellus*	X	Seen flying away from property at point X
21:05	*Pipistrellus pygmaeus*	D	Clockwise around field at 2m elv.
21:06	*Pipistrellus pipistrellus*	D	From S then foraging along treeline
21:11	*Pipistrellus pipistrellus* & *Pipistrellus pygmaeus*	E	
21:12	*Pipistrellus pipistrellus*	E	Foraging South to North Along Eastern Treeline
21:15	*Pipistrellus pipistrellus*	F	from over East treeline to West
21:19	*Pipistrellus pipistrellus*	F	
21:24	*Pipistrellus pygmaeus*	A	
21:26	*Pipistrellus pygmaeus*	B	
21:28	*Pipistrellus pipistrellus*	B	
21:30	*Pipistrellus pipistrellus*	B	
21:33	*Pipistrellus pipistrellus*	C	
21:35	*Plecotus sp.*	D	
21:36	*Pipistrellus pygmaeus*	D	
21:36	*Myotis daubentonii*	D	1-2m Elevation
21:38	*Pipistrellus pipistrellus* & *Pipistrellus pygmaeus* & *Myotis sp*	D	All 3 individuals seen foraging around field perimeter
21:40	*Pipistrellus pygmaeus*	E	Foraging on North Boundary
21:40	*Plecotus sp.*	E	
21:41	*Pipistrellus pygmaeus*	E	With Social calls
21:44	*Pipistrellus pipistrellus* & *Pipistrellus pygmaeus*	E	
21:45	*Pipistrellus pygmaeus*	F	
21:46	*Pipistrellus pipistrellus* & *Pipistrellus pygmaeus*	F	With Social Calls
21:55	*Pipistrellus pipistrellus*	B	
22:02	*Pipistrellus pipistrellus*	C	
22:04	*Pipistrellus pipistrellus*	C	
22:12	*Pipistrellus pipistrellus*	E	
22:15	*Pipistrellus pipistrellus*	F	
22:16	*Pipistrellus pygmaeus*	C	
22:17	*Pipistrellus pipistrellus* & *Pipistrellus pygmaeus*	E	
22:19	*Eptesicus serotinus* & *Pipistrellus pygmaeus*	E	
22:21	*Pipistrellus pipistrellus*	A	
22:30	*Nyctalus leisleri*	C	

NBW Results: 13th July 2024

Activity Surveyor			
Time	Species	Stopping Point	Notes
21:10	*Pipistrellus pipistrellus*	E	
21:21	*Nyctalus noctula*	A	Circling Barn
21:34	*Nyctalus noctula*	C	C-D
21:34	*Pipistrellus pipistrellus*	C	Circling
21:36	*Nyctalus noctula*	D	Flying over point E
21:39	*Nyctalus noctula*	D	
21:39	*Pipistrellus pipistrellus*	D	
21:40	*Pipistrellus pipistrellus*	E	Flying to F
21:45	*Nyctalus noctula*	F	Flying to point A
21:46	*Pipistrellus pipistrellus*	F	
21:47	*Eptesicus serotinus*	F	Flying to point E
21:53	*Pipistrellus pipistrellus*	A	A-B
22:07	*Pipistrellus pipistrellus*	D	
22:18	*Pipistrellus pipistrellus*	F	

NBW Results: 13th September 2024

Scott			
Time	Species	Stopping Point	Notes
19:32	*Nyctalus noctula*	E	E-A
19:35	*Nyctalus noctula*	F	Around D & E Foraging
19:56	*Nyctalus noctula*	C	
20:00	*Pipistrellus pipistrellus*	E	
20:06	*Pipistrellus pygmaeus*	F	
20:11	*Pipistrellus pipistrellus*	F	
20:23	*Pipistrellus pipistrellus*	B	
20:32	*Plecotus spp.*	C	
20:35	*Pipistrellus pipistrellus* & *Pipistrellus pygmaeus*	D	
20:41	*Pipistrellus pipistrellus*	E	
20:43	*Pipistrellus pipistrellus*	F	

Aidan			
Time	Species	Stopping Point	Notes
19:47	*Pipistrellus pipistrellus*	D	
19:49	*Pipistrellus pygmaeus*	D	
19:52	*Pipistrellus pygmaeus*	E	
20:03	*Nyctalus noctula*	A	
20:04	*Pipistrellus pipistrellus*	A	
20:27	*Pipistrellus pipistrellus*	D	
20:37	*Pipistrellus pipistrellus*	E	
20:44	*Myotis spp.*	A	

Appendix C
Legislation

LEGISLATIVE FRAMEWORK

This section contains information pertaining to the legislation and planning policy applicable in Britain. This information is not applicable to Northern Ireland, the Republic of Ireland the Isle of Man or the Channel Islands. Information contained in the following appendix is provided for guidance only.

Species

The objective of the EC Habitats Directive[1] is to conserve plants and animals which are considered to be rare across Europe. The Directive is transposed into UK law by The Conservation of Habitats and Species Regulations 2017 (as amended) (formerly The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) and The Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2007 (as amended).

The Wildlife and Countryside Act 1981 (as amended) implements the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and also implements the obligations set out for species protection from the Council Directive 2009/147/EC (formerly 79/409/EEC) on the Conservation of Wild Birds (EC Birds Directive) in Great Britain.

Various amendments have been made since the Wildlife & Countryside Act came into force in 1981. Further details pertaining to alterations of the Act can be found on the following website: www.opsi.gov.uk. Key amendments have been made through the Countryside and Rights of Way (CRoW) Act (2000) and Nature Conservation (Scotland) Act 2004.

There are a number of other legislative Acts affording protection to species and habitats. These include

- Countryside and Rights of Way (CRoW) Act 2000
- Deer Act 1991
- Natural Environment & Rural Communities (NERC) Act 2006
- Protection of Badgers Act 1992
- Wild Mammals (Protection) Act 1996

Bats

Bats are protected under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended). This act protects individuals from:

- intentional or reckless disturbance (at any level);

[1] Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora.

- intentional or reckless obstruction of access to any place of shelter or protection; and
- selling, offering or exposing for sale, possession or transporting for purpose of sale

In addition, all species of bat are fully protected under The Conservation of Habitats and Species Regulations 2017 (as amended) through their inclusion on Schedule 2. Regulation 41 prohibits:

- deliberate killing, injuring or capturing of Schedule 2 species (all bats);
- deliberate disturbance of bat species as to impair their ability:
- (i) to survive, breed, or reproduce, or to rear or nurture young; and
- (ii) to hibernate or migrate.
- deliberate disturbance of bat species as to affect significantly the local distribution or abundance of the species;
- damage or destruction of a breeding site or resting place; and
- keeping, transporting, selling, exchanging or offering for sale whether live or dead or of any part thereof.

A Protected Species Mitigation Licence (PSML) issued by Natural England will be required for works liable to affect a bat roost or for operations likely to result in a level of disturbance which might impair their ability to undertake activities listed above. A licence is required to allow derogation from the relevant legislation but also to enable appropriate mitigation measures to be put in place and monitored.