REPORT CONCERNING APPLICATION FOR DEROGATION AT ANNES GROVE HOUSE AND GARDENS REGARDING THE PRESENCE OF BATS IN THE VICINITY OF PROPOSED WORKS

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Summary

Annes Grove House and Gardens is situated in Castletownroche, Co. Cork and represents one of the more outstanding gardens of its type remaining in Ireland. The Annes Grove House and Gardens consists of 190 acres, encompassing the Demesne, gardens, parkland, 18th century house and outbuildings. The Annes Grove House and Gardens came under the management of the OPW in December 2015 after it was donated by the Grove Annesley family and an ambitious programme of restoration of the gardens began.

With a view to conserving and enhancing the facilities present, the Office of Public Works have been granted planning permission from Cork Co. Council (planning register reference 23/06104) for development at Annes Grove House & Gardens. The project involves the development of new visitor amenities by refurbishing the existing protected structures and providing new infrastructure including the following.

a) Access and Parking:- upgrade and local widening of existing driveway; local widening of main road at front entrance; new car park and access road; new accessible pathways.
b) Existing buildings:- conservation, repair and upgrade of main house, lodge and outbuildings including demolition of modern extensions and construction of new extensions; change of use for buildings, with retention of residential use for gate lodge and gardener's cottage.
c) New buildings:- new service buildings in the Kennel Yard; new staff amenity and maintenance buildings including yard to northwest of walled garden.
d) Services:- New waste water treatment plant; new water main and fire water storage tank; new rainwater harvesting tanks; new soakaways; new ESB main and substation; below ground ducts for new site services.

Annes Grove House and Gardens is located in a very sensitive ecological setting, in particular with regards to bats occurring.

One of the primary ecological constraints pertaining to the development of the site is to ensure that there are no significant negative impacts on the local bat population. This is a key OPW objective in this project as well as recognising that all Irish species of bat are listed in Annex IV of the Habitats Directive and must be strictly protected at all times[1].

[1]Mullen E, Marnell F and Nelson B (2021). Strict protection of animal species – Guidance for Public Authorities on the Application of Articles 12 and 16 of the EU Habitats Directive to development/works undertaken by, or on behalf of a Public Body. NPWS

Regarding examples of development with potential impacts on bats, the National Guidelines[2] indicate that the following types of work are likely to require a derogation licence

- Conversion of barns or other buildings known to be used by bats;
- Restoration of ruined or derelict buildings;
- Maintenance and preservation of heritage buildings;
- Significant alterations to roof voids known to be used by bats.

The current works (planning permission has been granted for a 10-year period) contains elements of all these works.

In summary, the main concentration of bat activity at Annes Grove is in the upper floors/loft at the Barn and South Stables Block with only small numbers of bats present in some other buildings. The area used by bats in the upper floor/loft spaces of the Barn and South Stables Block will be retained as a safe haven for bats and to provide for expansion of the colonies. Some other buildings are used at times by small numbers of bats. The proposed management plan will keep some of these buildings available for bat use while excluding the small number bats from others **(some of these exclusion works were undertaken in compliance with DER-BAT-2024-144)** – leaving them to migrate into the ample space that will be available to them - in order to facilitate the development.

With the exception of the Barn/South Stables block, the vast majority of buildings on the site have been found to be utilised only irregularly by a small number of individuals of a variety of species of bat. **Correctly timed, works on these buildings**, primarily aimed at the exclusion of bats to facilitate future restoration works while avoiding any impacts on bats, **will not result in any significant impact on the local bat population given appropriate mitigation measures.**

The Barn and South Stables block development has the potential to impact on roosting bats. These buildings host a mixed-roost maternity roost of regional significance (largely Soprano Pipistrelle, Whiskered Bat and Brown Long-eared Bat). The refurbishment of this derelict building provides an opportunity to incorporate the existing substantial roost into the final structure and indeed enhance the space to allow the expansion of the colony. The development design accommodates the retention and safeguarding of the bat colony. The roost will be integrated physically, and from a managerial point of view, with the colony of bats potentially becoming part of the attraction for members of the public visiting Annes Grove. The Barn and South Stables block is utilised by numerous species on a year-round basis and the timing of any works will be crucial. The planning permission sought has been granted over

[2] Marnell, F., Kelleher, C. & Mullen, E. (2022) Bat mitigation guidelines for Ireland v2. Irish Wildlife Manuals, No. 134. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland

a period of 10 years, and the work to the Barn and South Stables block will be undertaken in a phased manner, with the first phase involving the separation in space of roosts (upper floor/loft) and the area in which members of the public will be present (ground floor). The primary principle will be to avoid any negative impact on the roosting habitat and immediate *environs*.

Currently, although roosting in the upper floor/loft space, bats are free to move between upper and lower floors of the Barn and South stables building. **The upper and lower floors of the barn building will be separated with acoustic and fire-rated materials, protecting the roost from predator ingress while providing a safe light-sensing environment, flying space for those species requiring it,** and for juveniles learning to fly. In addition, a false ceiling with void above (in excess of 2.1 m in height from the roof apex), will be put in place to protect an area into which bats have recently expanded, excluding it from the rest of the double-height space in the barn. A partition will be erected separating the space from the lower floor of the barn space. The existing stairway to the room on the top floor of the barn will be removed, replacing it with a smaller loft-ladder and lockable hatch to permit inspection of the space as required my maintenance and cleaning of the space (outside of the maternity season) for health and safety reasons. In this manner, the bats will be restricted to the upper level of the Barn and roof void in that section. **The South Stable building requires reroofing. The reroofing will be utilised as an opportunity to enhance conditions occurring for the formation of maternity roosts**. Initially, the upper/loft and ground floor will be separated, such that bats are excluded from the ground floor while having unimpeded access to the upper-floor/loft.
In addition to providing enhanced environmental conditions for roosting, the upper floor will be predator proofed from access by, for example, domestic cats.

As **there will be no interference with the Barn roost itself**, which exists in the void between insulation and roof slates, there will be no impact on microclimate, and all partition surfaces will be insulated with rockwool (or other material as instructed by NPWS), any noise or temperature fluctuations associated with use of the downstairs portion of the Barn will be mitigated against.

The roost ingress and egress points will be unaltered, with no impacts on this aspect of the roost. A light monitoring exercise undertaken in June 2024 will be utilised as a baseline to ensure that current light conditions persist at the roost entrances, and this will be retained through the minimisation of use of artificial light in accordance with guidelines[3].

3 Bat Conservation Trust & Institute of Lighting Professionals (2018) Bats and Artificial Lighting in the UK. Guidance Note 08/18 Institute of Lighting Professionals

Although there will be some disturbance to the South Stable roost during re-roofing, this will be minimalised through undertaking re-roofing during the appropriate time of year to avoid impacts on the roosting bats. The existing entrance/exit of the South Stable roost will be retained, albeit some structural works may be required to preserve it.

Critical to the prevention of any impacts of the proposed barn-conversion on the bat roost present is:

- Timing of the works;
- Maintaining the size and suitability of the roost space;
- Maintaining current light levels at the roost entrances; and
- Implementing mitigation measures including monitoring

It is concluded that the works permitted by this licence, through the mitigation measures prescribed, and guided by NPWS directions, will ensure the maintenance and enhancement of conditions existing within the main Barn and South Stable Roost, while also providing for expansion opportunities of the colony into the adjacent Dove cote block of buildings and the reroofed South Stables. A Licence (DER-2023-66) utilising similar methodology to separate spatially bats and people in a historic building (Emo Court, Co. Laois) while integrating an existing roost and enhancing existing conditions has successfully excluded bats from the basement level of the building, while maintaining the occupation of a roost within the basement, with monitoring on-going. The exclusion of bats from a number of buildings was successfully undertaken in 2024 in compliance with DER-BAT-2024-144. These structure will be monitored during the summer period in 2025 in order to determine the long-term success of measures (given winter storms, etc.)

It must be noted that the OPW at Annes Grove House and Gardens are committed to protecting the significant bat roosts occurring within the Estate and will comply with any necessary conditions imposed by NPWS in relation to a Derogation Licence.

This document comprises a report to be submitted with the application for a derogation licence concerning the works as regards:

- Explanation as to how the application qualifies under Regulation 54 (2) (a-e) of the Birds and Natural Habitats Directive for a derogation licence.
- Explanation as to why the derogation licence sought is the only available option for works and no suitable alternative exists as per Articles 16(1) of the Habitats Directive.
- Evidence provided that actions permitted by a derogation licence will not be detrimental to the maintenance of the populations of the species to which the Habitats Directive relates at a

favourable conservation status in their natural range as is required under Section 54(2) of the EU Habitats Directive.

Contents

1 Explanation as to how the application qualifies under Regulation 54 (2) (a-e) of the European Communities (Birds and Natural Habitats Regulations) of 2011 (as amended).

The purpose of this derogation application falls under Regulation 54 (2) (c) of the European Communities (Birds and Natural Habitats) Regulations of 2011 (as amended) - i.e., "*In the interests of public health and public safety, or for other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment*". The proposed works are a component of ongoing repair, restoration and maintenance works at Annes Grove House and Gardens – see information below.

The historic estate of Annes Grove House and Gardens near Castletownroche, Co. Cork was donated to the State by the Annesley family in December 2015. The grounds underwent a first phase of extensive restoration works and the gardens were opened to the public in 2022. Associated with Annesgrove House, are a number out buildings including Barn, Stables, Coach-Houses and a Milking Parlour/Dairy, in various states of disrepair. Howley Hayes Cooney were appointed by the OPW to oversee the conservation and restoration of the main house and ancillary buildings in the farmyard. These conservation and restoration works are required in order to preserve the historic fabric of the estate, which has fallen into disrepair and will contribute to a world-class visitor experience at Annes Grove to rival the very best existing sites throughout Ireland. Without the aforementioned conservation and repair works, the buildings will deteriorate further. Several of the buildings with Annes Grove House and Gardens currently support significant numbers of roosting bats and the wider estate provides optimal foraging conditions. The continued use of Annes Grove House and Gardens, for both humans and bats, requires ongoing repair, maintenance and restoration and entails significant investmant. As such a derogation to undertake the stated works is being applied for under 54(2) (c) of the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) "*…In the interests of public health and public safety, or for other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment…*".

The location of the primary buildings associated with Annes Grove House and Gardens as referenced herein is illustrated in Figure 1, Figure 2, Figure 3, Figure 4, Figure 5 and Figure 6. Owing to the nature and age of the habitats present, adjacent to woodland habitat and ecological corridor provided by the Awbeg River, the habitats present provide optimal habitat for a range of bat species, and a significant multi-species maternity roost is located within the Barn/South Stables Block.

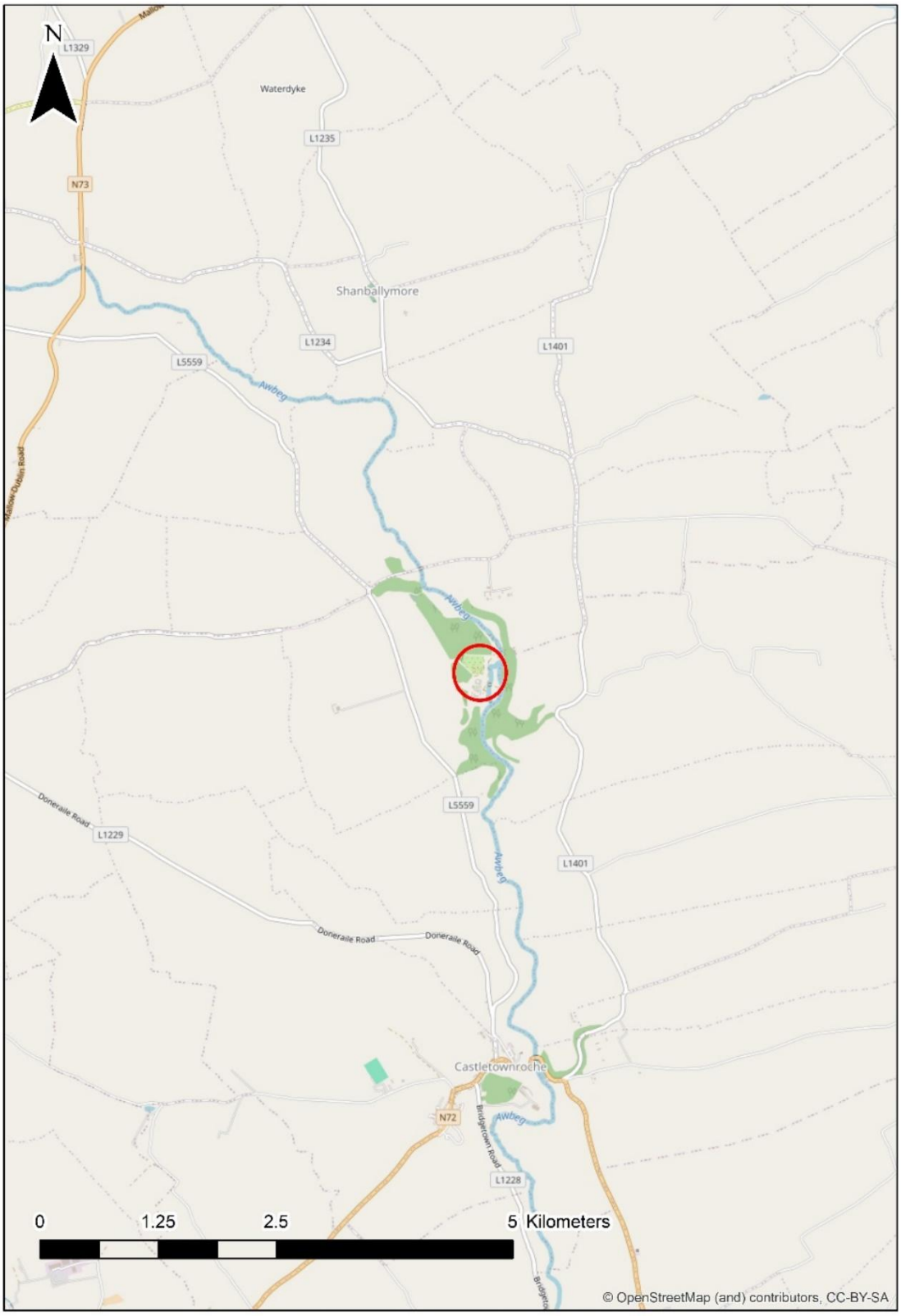

Figure 1: Approximate location of buildings associated with Annes Grove House and Gardens (1:50,000)

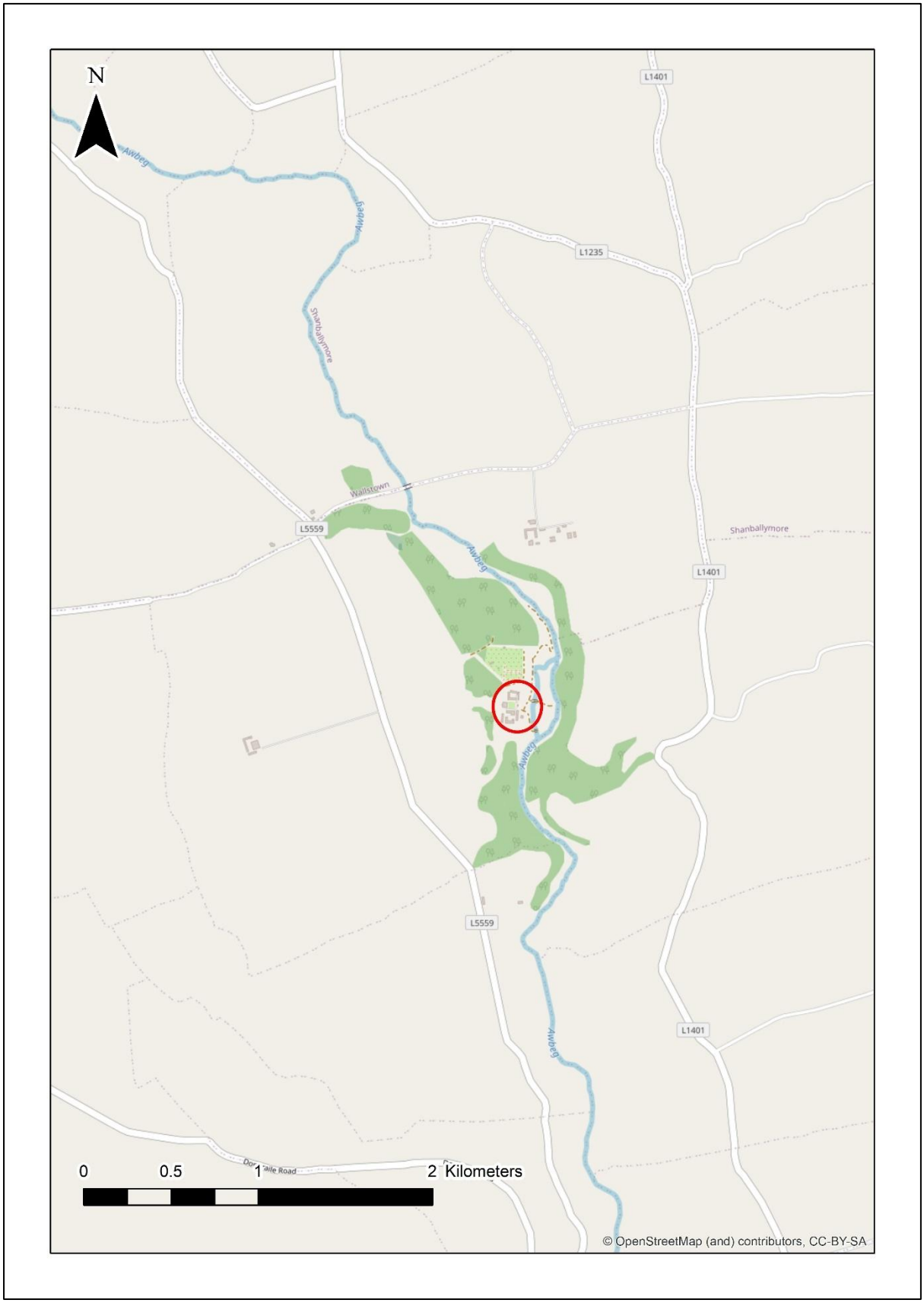

Figure 2: Approximate location of buildings associated with Annes Grove House and Gardens (1:25,000)

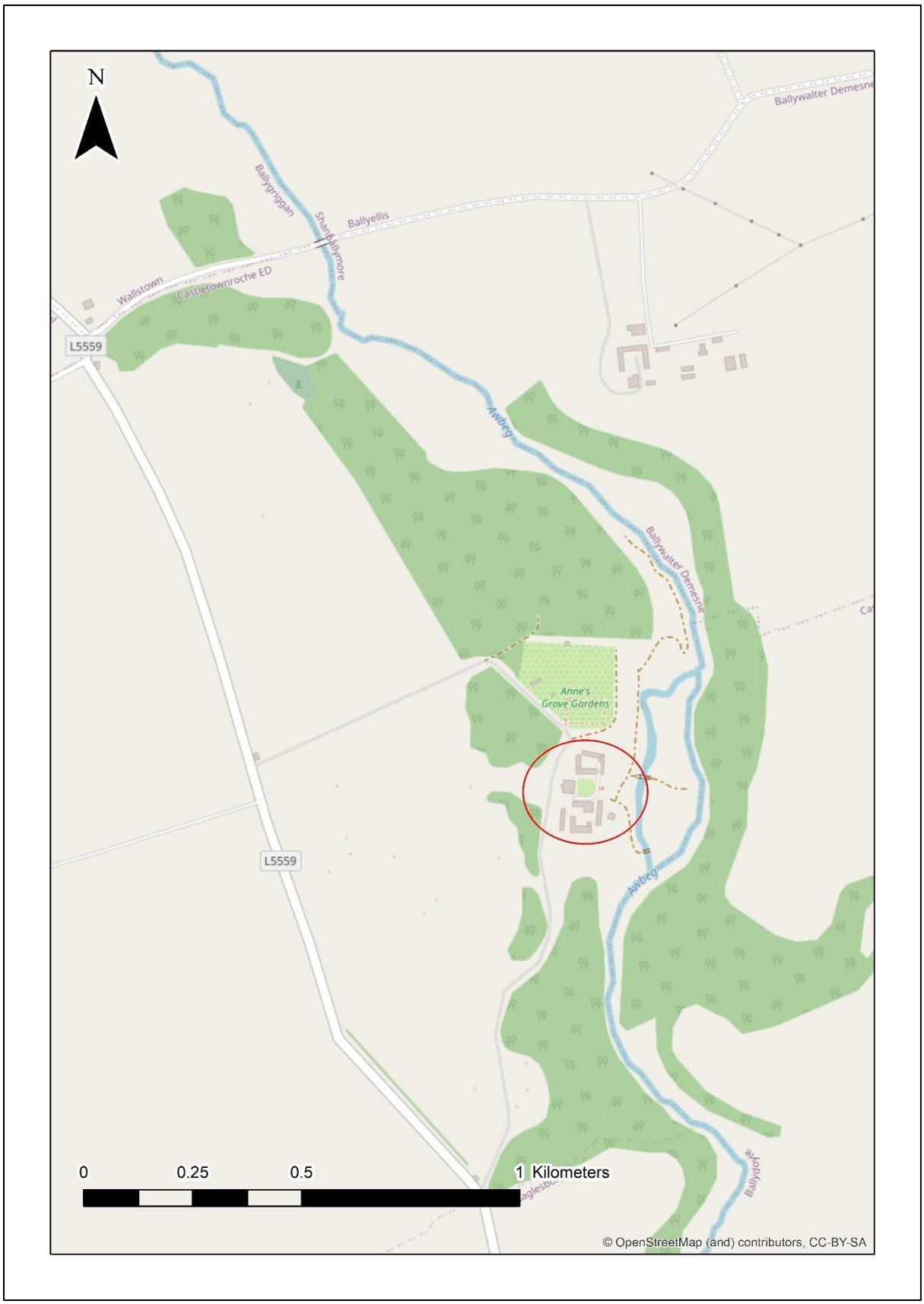

Figure 3: Approximate location of buildings associated with Annes Grove House and Gardens (1:10,000)

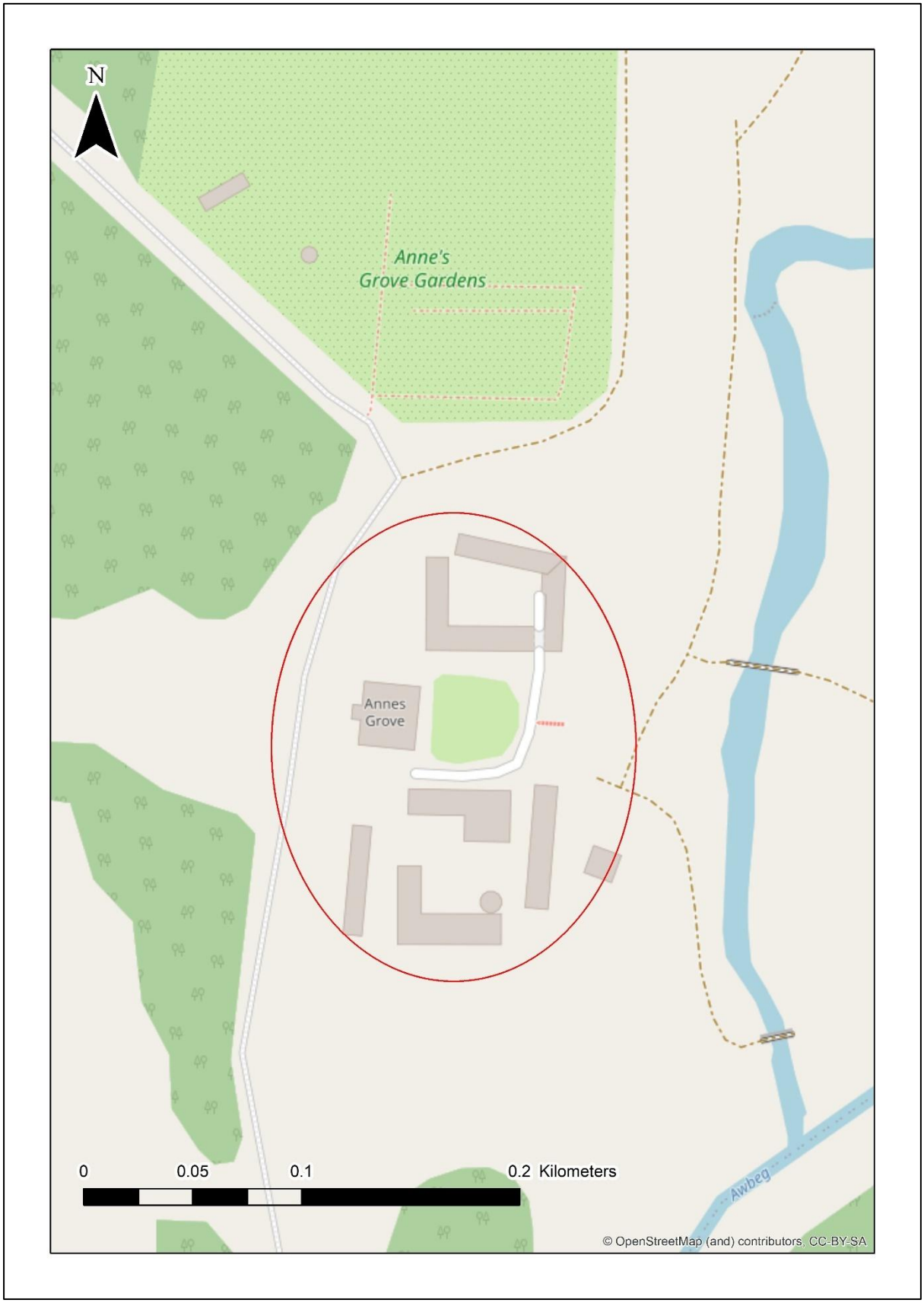

Figure 4: Approximate location of buildings associated with Annes Grove House and Gardens (1:2,000)

Figure 5: Approximate location of buildings relative to surrounding habitats and the Blackwater River (Cork/Waterford) SAC (1:2,000)

Figure 6: Excerpt from Architect's Drawings indicating building locations relative to Main House

2 Explanation as to why the derogation licence sought is the only available option for works and no suitable alternative exists as per Regulation 54 of the European Communities (Birds and Natural Habitats) Regulations of 2011 (as amended)

The restoration and conservation works are vital to the preservation of the historic structures present. Many of the buildings are in an advanced state of disrepair and without works will over time disintegrate, resulting not only in the loss of the historic fabric of the structures, but also rendering the habitats unsuitable for use by bats, in particular as maternity roosts.

Figure 7: Aerial photograph of the roof of the milking parlour building, which urgently requires repair/re-roofing

The primary goal of the works for which this derogation is being applied is:

- The continued exclusion of bats from buildings not currently in use as significant roosts (where no activity, or low levels of activity indicative of irregular use by a small number of individuals have been detected). A good deal of this exclusion works was undertaken in compliance with DER-BAT-2024-144;
- The safeguarding and enhancement of the existing maternity roosts present within the barn and south stables by integrating its retention into restoration/conservation plans to ensure no negative impact on the roosting bats, through a spatial separation of the space utilised by bats from the remainder of the building; and
- Predator-proofing (ground predators such as domestic cats) of both the Barn roost (through the replacement of an existing open staircase with an access hatch and lockable door) and the South Stable roost (through separation of ground floor and upper floor/loft to prevent access for ground-based predators such as domestic cats (which have in 2024 been recorded within the grounds of Annes Grove House and Gardens for the first time). The works to be undertaken are outlined in the following sections.

2.1 Exclusion works to structures not used, or only irregularly used by small numbers of bats to prevent future impacts on bats associated with conservation/restoration works

The planning permission granted covers a period of 10 years. During the space of a decade, unforeseen circumstances could delay any conservation/restoration works to the structures in question. In order to prevent any future significant impacts on bat species associated with any restoration of the buildings, it is proposed to exclude bats from buildings for which there is currently evidence of no use, or limited use. Bats were excluded from several building blocks in compliance with DER-BAT-2024-144 and a returns form and accompanying report were submitted with regard to these works. The works are necessary in order to prevent deterioration in the existing historic fabric of the buildings, to enable the reinstatement of lost historical fabric and features and to permit the financial feasibility of the property. The works are essential to the preservation of the entirety of Annes Grove House and Gardens into the future. The maintenance/upkeep of a property such as Annes Grove House and Gardens requires significant investment, and the degree of the touristic appeal of the historic buildings and gardens contribute to this investment. In the absence of investment in such maintenance/upkeep works, the buildings will fall rapidly into a state of disrepair.

Those buildings identified in Figure 8 by red arrows, represent an insignificant resource relative to other building blocks present (a large populations of bats utilises the Barn/South Stable block, which is referred to in the following section). The required works are the only available option as regards the prevention of further deterioration in the existing historic fabric and to enable the reinstatement of lost historical fabric and features, which are a valuable component of the Built (and Natural) Heritage of Ireland. The buildings identified in Figure 8 by blue arrows (Calf House, Dove cote block) are to retained as is. The proposed works are aimed at excluding bats from the existing buildings, thereby minimising any future disturbance of bats, while permitting the necessary repair of the fabric of the buildings, allowing the space to be appreciated by future generations. Please note that the exclusion works to some of the buildings were already undertaken incompliance with DER-BAT-2024-144.

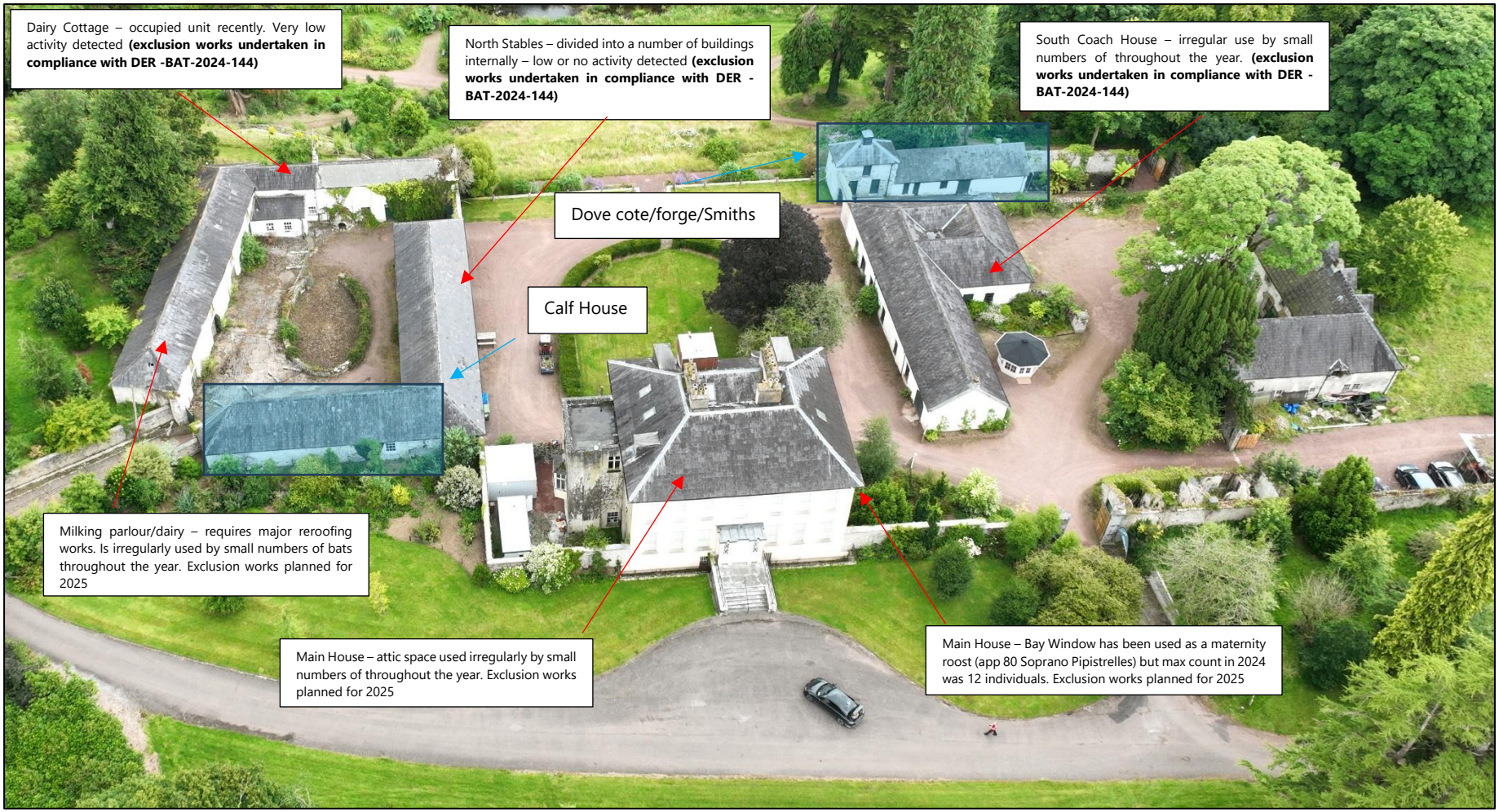

Figure 8: Buildings of limited significance, from which it is proposed to exclude bats (including buildings where exclusion works were undertaken in compliance with DER-BAT-2024-144

2.2 Works to integrate existing bat roosts into conservation/restoration works

The vast majority of buildings present are utilised irregularly by a small number of individuals of a variety of species of bat. Correctly timed, works on these buildings, primarily aimed at the exclusion of bats to facilitate future restoration works while avoiding any impacts on bats, will not result in any significant impact on the local bat population given appropriate mitigation measures.

One of the components of the restoration/conservation works, however, relates to a building block referred to as the Barn and South Stables block. During surveys of these buildings in June and July 2023/2024, the buildings were observed to host a mixed-roost (at minimum Soprano Pipistrelle, Whiskered Bat and Brown Long-eared Bat) maternity roost of regional significance. The refurbishment of this derelict building (see Figure 9) provides an opportunity to safeguard the roost for bat by incorporating the existing roosts into the final structure and indeed enhance the space present to allow the expansion of the colony.

An aerial image, illustrating the location of the Barn and South Stable is present in Figure 10.

Figure 9: A selection of images of the Barn and South Stable buildings

Figure 10: Aerial image indicating location of South Stables and Barn buildings relative to other buildings

It is proposed to integrate the roost physically, and also from a managerial point of view, in to the conservation/restoration works with potential for the colony of bats to become an attraction for members of the public visiting Annes Grove, The Barn and South Stables block is utilised by numerous species on a year-round basis and the timing of any works will be crucial. The planning permission covers a period of 10 years, and the work to the Barn and South Stables block will be undertaken in a phased manner, with the first phase involving the separation in space of the roost and the area in which members of the public will later be present.

The guiding principle will be to avoid any interference with the roosting habitat and immediate *environs* at all. The primary bat roost within the Barn Block is between the insulation and slated roof of the building as indicated in Figure 11 and Figure 12.

Figure 11: Upstairs room in Barn (which will be retained as is, apart from predator-proofing and segregating space from the lower level of the barn), with colony of bats occurring behind insulation

Figure 12: The primary bat colony has expanded into the space indicated in orange in 2024, with the colony occupying the same space occurring in an upstairs room on the opposite site of the gable wall

Currently, the bats are free to travel between upper and lower floors, but do not roost on the lower floor. It is proposed to:

- Separate the upper and lower floors with acoustic and fire-rated materials, protecting the roost from predator ingress while providing flying space for those species requiring it, and for juveniles learning to fly;
- Install a suitable fire and acoustic-rated partition and false ceiling with void (of greater than 2.1m) above the false ceiling below the area illustrated in Figure 12 – this is to prevent any impacts on an area into which bats have recently expanded (the 2024 population has approximately doubled relative to 2023). A fire and acoustic-rated partition will be erected separating the space from the lower floor of the barn space. This partition will delineate that area utilised by bats and the area that will be utilised by people;
- It is intended to remove an existing stairway to the room on the top floor of the barn (and segregate the space with suitable acoustic/fire-rated material), replacing it with a smaller stairs/ladder through a lockable hatch, in order to permit maintenance/inspection/cleaning of the space below the roost outside of the maternity season for health and safety reasons. In this manner, the bats will be provided with a dedicated space in the upper level of the Barn and roof void in that section.
- It is proposed to insert several small (approximately 0.5m x 0.5m) holes (guided by the fabric of the structure, with location agreed with NPWS prior to any opening) between and within the South Stable and Barn Block to allow free movement of bats between the upper floors of the Barn and Stable Block, as bats will be excluded from the ground floor.

It is important to note that an element of plasticity is required with regard to the proposed measures owing to the historic nature of the buildings and building materials (stone walls) concerned. All works, however, will be undertaken under the strict guidance of NPWS.

Any works to the Barn will be undertaken outside of the period May – September. This roof space is utilised as primarily as a maternity roost and is not suitable for use as a hibernation roost owing to the large temperature fluctuations in such a habitat (directly beneath roof slates). As there will be no interference with the roost itself, which exists in the void between insulation and roof slates, there will be no impact on microclimate, and all partition surfaces will be insulated with rockwool, ensuring against any future noise or temperature fluctuations associated with use of the downstairs portion of the Barn will be mitigated against

The roost ingress and egress points will be unaltered, with no impacts on this aspect of the roost. A light monitoring exercise undertaken in June 2024 will be utilised as a baseline to ensure that the current lighting environment at the roost entrance will be retained through the minimisation of use of artificial light in accordance with guidelines.

Critical to the prevention of any impacts of the works in the barn on the bat roost present are:

- Timing of the works;
- Maintaining/enhancing the size and suitability of the roost space;
- Maintaining current light levels at the roost entrances; and
- Implementing mitigation measures including monitoring.

A much smaller maternity roost exists in the upper floor/loft of the South Stables, with bats roosting in various locations, including behind roofing felt, within small crevices and between roof timbers. The South Stable Block is also utilised by a small number of individuals of a variety of species as a hibernation roost, with a variety of suitable crevices, etc. occurring. **The South Stable Block is currently in poor condition (see Figure 13) and needs urgent restoration works**, including re-roofing and repairs to the structural fabric of the ceiling/first floor which is rotten. Without restoration/conservation works, this building will deteriorate further. The upper and lower floors of the South Stables will be separated, such that the upper space is retained for use by bats, and connected with the upstairs space in the barn, to allow free movement between the upper floor of the barn and stable block. The lower floor of the South Stables will be isolated such that the historic fabric of the stables can be restored and predator access restricted.

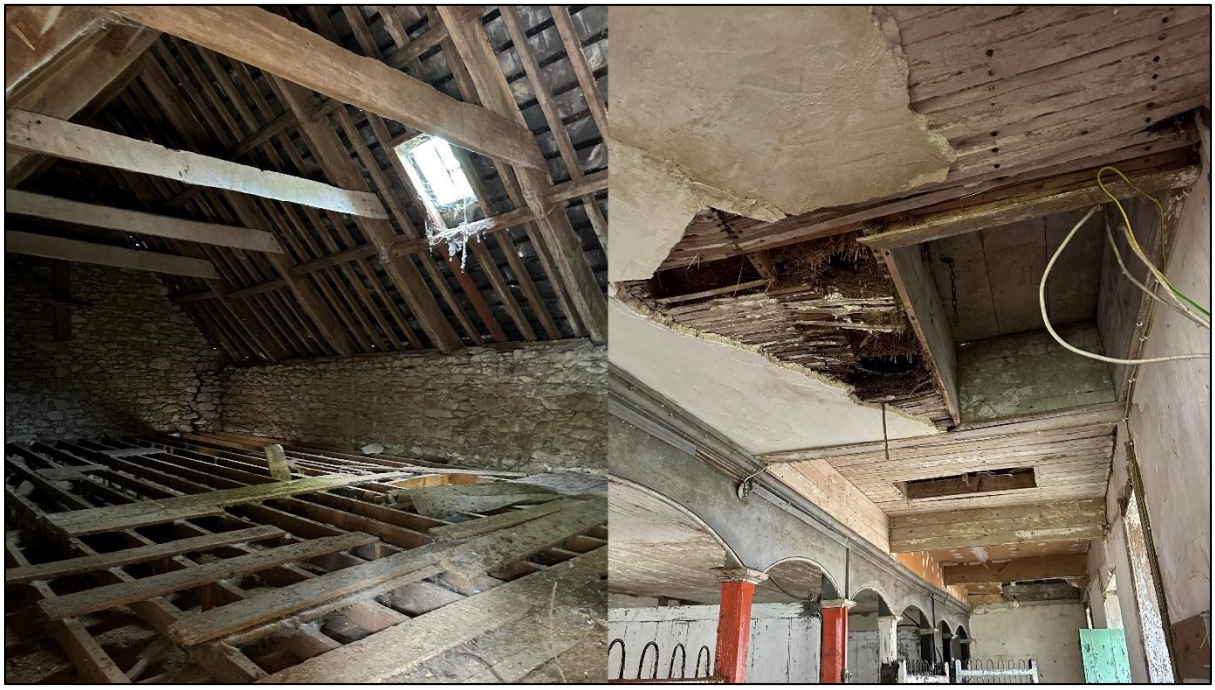

Figure 13: South Stable upper and lower floors in poor condition

The South Stables building requires re-roofing as leaks are causing damage to the structural fabric of the buildings. As it is intended that the upper floor/loft of the South Stables is to be maintained as a roost – this presents an ideal opportunity to enhance the space during reroofing by replicating the conditions present in the main Barn roost. Currently the roof has no insulation present. A roost of Brown Long-eared Bats was observed to occur behind felt on the southern aspect of the roof – the only area in which there is felt present. It is proposed that when the building is reroofed that conditions as present in the main barn roost (subject to ventilation/interstitial condensation etc.) will greatly improve the habitat present for maternity roosts, with the loft and loft entrance providing optimal conditions for juveniles learning to fly in addition to an entry/exit point to the roost. The upper/loft space will be entirely segregated from the lower floor, predator-proofing the loft space. The installation of an acoustic and fire rated surface between the upper and lower floors of the South Stables will prevent bats from entering the lower floor, while mitigating against any noise/thermal impacts associated with people on the ground floor. Measures will be put in place to separate the upper and lower floors of the South Stable to allow structural inspections, which will inform the reroofing. Separation of space, excluding bats from the lower floor of the South Stables and reroofing of the structure must take place within the window March/April and/or September – November to minimise any potential impacts on the bat roosts present. The exact nature of the exclusion works will depend on the conditions uncovered during repair works, but the goal of all works is to integrate the bat roosts occurring into the conservation/restoration works to the benefit of both the building and the bat population hosted within.

Of note, this derogation application applies to both the works to be undertaken within the Barn and South Stables block relating to spatially separating the space utilised by bats and people and the exclusion of bats from the lower floor of the barn and south stable building (see Figure 14 and Figure 15).

Figure 14: Proposed ground-floor layout (bats excluded)

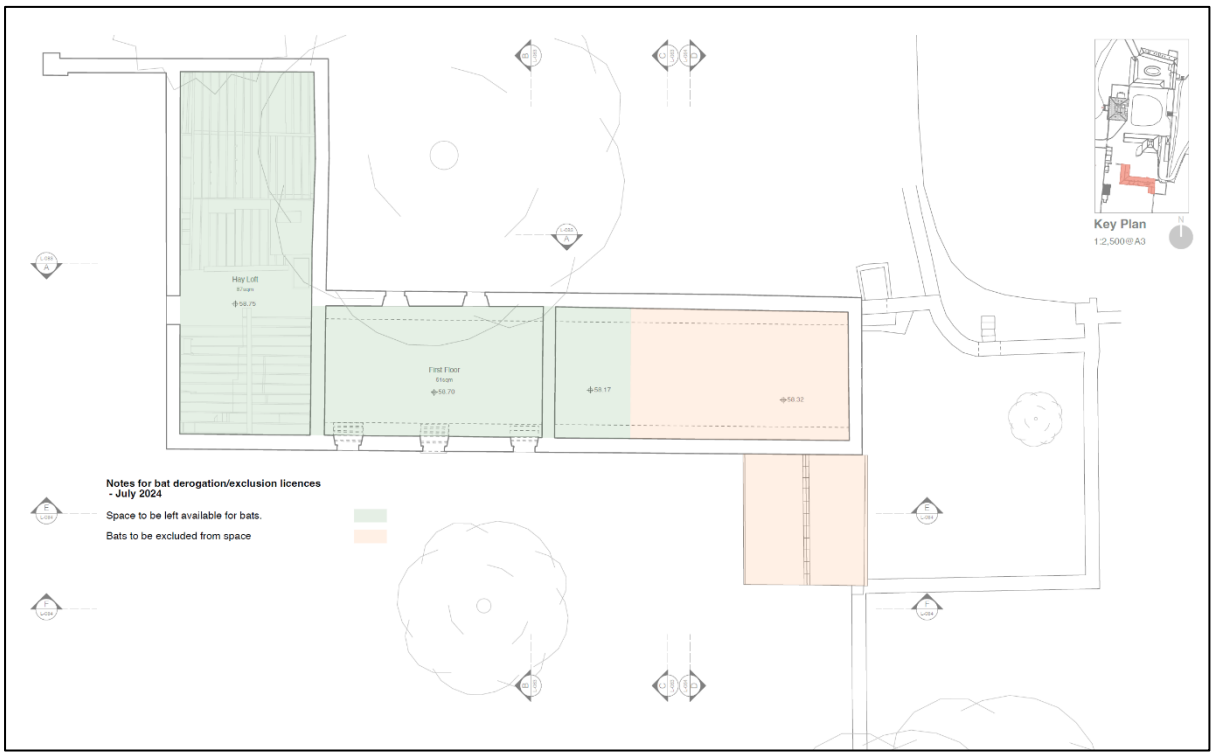

Figure 15: Proposed upper floor/loft layout, with area retained and enhanced or use by bats

2.3 Summary

With regard to the alternatives and why the derogation sought is the only available option:

1) The first alternative is the "Do Nothing" scenario. In this scenario, no conservation or restoration works are undertaken to any of the structures in which bats are present. Under this scenario, the buildings being utilised as roots would fall into a further state of disrepair and eventually would lose structural integrity and collapse. The historical structures would be lost, as would roosting habitat provided. In addition, as they currently exist, the roosting sites are very vulnerable to predation, in particular by domestic cats. In 2024, Domestic cat was recorded on site for the first time since surveys began. When domestic cats discover the location of the roosts, and the ease with which bats can be predated, this will have a drastic negative impact on the bats, likely resulting in an eventual abandonment of the roost.
2) A second alternative is to apply for a derogation to exclude the bats from all buildings occurring, including buildings that comprise significant maternity/hibernation roosts. Alternative habitat in the form of bat boxes and/or a bat-tower could be provided prior to exclusion from the current roost to provide alternate roosting sites.

Having considered these alternative:

(1) The "Do nothing" scenario is not acceptable as this would result in the loss of structures of significant historical interest through a lack of the restoration/conservation required for the upkeep and continued existence of the structures. In addition, the current accessibility of the roost to predators such as Domestic cat would indicate that the roost is not sustainable in the long-term; and

(2) The second alternative of providing alternative roosting sites would cause significant, permanent, non-reversable disturbance to the existing roosting sites, and there is no guarantee that the bats would take up residence in the alternative roosting sites provided as compensatory habitat.

The optimal solution, therefore, is to incorporate the existing significant maternity and hibernation roosts into the restoration/conservation works preserving and enhancing this habitat. The exclusion of bats from those buildings used by only a small number of bats on an irregular basis will not significantly adversely impact the local bat population owing to the abundance of alternative roosting sites available notably the ample expansion space in the South Stable and Barn block with potential further space in other undeveloped buildings which will be left available to them as well as suitable trees, which occur throughout the Annes Grove estate.

The alternative solutions having been considered, the proposed solution is the optimal solution, allowing the preservation and continued use of the buildings on site, while also maintaining and enhancing roosting habitat for the local bat population.

3 Details of any mitigation measures planned for the species affected by the derogation at the location, along with evidence that such mitigation has been successful elsewhere.

3.1 Mitigation Measures for main areas in which bats are to be excluded

The primary mitigation measure will be the timing of works, with any reroofing and exclusion works being undertaken during the windows March/April 2025 and/or September 2025 – November 2025 inclusive.

The ancillary mitigation measures planned with regard to buildings from which bats will be excluded (Main House Attic and roosting space above bay window on top floor, and Milking Parlour – **exclusion works to several building blocks have been completed under DER-BAT-2024-144)** are;

- Enhance the conditions present within the Calf House and Dove cote/Forge buildings for use as temporary/day roosting (small numbers of individuals were observed to utilise these buildings on an irregular basis), through the provision of enhanced access;
- Limit any lighting within associated with future development to motion-operated security lights, preserving the current lack of artificial illumination.

In addition, mitigation measures in the form of monitoring will be put in place to prevent any inadvertent trapping of bats within the excluded buildings:

1) Exclusion works will be undertaken in a phased manner, with potential ingress/egress points identified and blocked (the porous nature of the buildings would indicate that this must be done on the basis of a visual inspection). Where the primary entry points are gaps around doors/windows, new doors/windows will be built inside the existing structures (preserving the historic fabric of the existing building). This initial phase of exclusion works will be undertaken while leaving a large entry/exit point open. The Milking Parlor building urgently requires roof repairs and subsequent reroofing (subject to conditions following inspection) and the exclusion works will concentrate on roof repairs and exclusion from gaps associated with doors, vents, etc;
2) Prior to final exclusion works (a large entry/exit point will be maintained where such points exist – for example doors within the milking parlour) the structures will be monitored for two weeks (likely in October/November) in order to ascertain bat activity and, if present, times of ingress/egress;
3) Having established if/what levels of activity are present, the final ingress/egress point will be soft-blocked on a suitable night (mild, no heavy rain or wind forecast) after the time at which bats would be expected to exit the structures;

4) With the soft blocking in place, the structures will be monitored within Passive Acoustic Monitors for a-36-hour window to determine if any bats remain within. After 36 hours with no activity, exclusion will be considered successful;
5) If bat activity is detected within the 36-hour window, the soft blocking installed must be removed and the procedure at (2) and (3) repeated until exclusion is successful.

Exclusion works have been successfully undertaken in compliance with DER-BAT-2024-144 at a number of locations as per the return form and accompanying report submitted with regard to DER-BAT-2024-144:

- Dairy Cottage;
- North Stables; and
- South Coach House block.

During the summer period (June/July) the buildings on which exclusion works have been undertaken will be monitored through the deployment of Passive Ultrasound Monitors within the structures for a period of three weeks in order to ensure that bats remain excluded from the buildings following winter storms.

3.2 Mitigation measures for Barn and South Stable buildings

The primary mitigation measure for integrating the existing roosts into conservation/restoration plans is to ensure that the existing roosting spaces are separated from the remainder of the building without impacting upon the roost.

Key to this will be:

- Timing of the works – all works must be undertaken outside of the period May – August inclusive.
- Maintaining the size and suitability of the roost space – there will be no impact on the size and suitability of the roosting space. Through the insertion of a partition and false ceiling, a void (of in excess of 2.1m) will be maintained below the barn roost, maintaining the current microclimate between the insulation and slated roof, while providing a void beneath for juvenile to learn to fly within. Following reroofing, the South Stable building will provide greatly enhanced, optimal habitat for the formation of maternity roosts ;
- Predator-proofing the main roost in the Barn, currently accessible by a large staircase and a porous ground floor by replacing the current staircase with a ceiling-hatch and loft-type ladder, which can be closed and locked;
- Predator-proofing the South Stable loft roosting space – the loft and ground/lower floor will be segregated following re-roofing, excluding bats from the lower floor (all measures for exclusions will be put in place, 36-hour monitoring window post-exclusion etc.). The roosting spaces within the South Stable buildings will be enhanced. Where structural damage to stonework requires repair, this will be done under the guidance of an ecologist, within the appropriate time window (March/April inclusive and/or September – November). The upper floors of both the barn and south stables, currently easily accessible by predators such as

domestic cats, will be predator-proofed through removing this easy access, separating the spaces to be occupied by bats and people with acoustic and fire rated barriers;.

- The current light levels in the vicinity of the Barn and South Stables will be maintained; and
- An ongoing monitoring programme will be implemented. This monitoring must include both winter and summer surveys of the Barn and South Stable roosts.
    - Winter surveys should establish activity levels throughout the space utilising Passive Ultrasound Monitors deployed for 3 weeks during the period December – January.
    - A minimum of two emergence surveys should be undertaken, with one in late May/Early June and the second in mid-late July in order to ascertain roost numbers and species; and
    - A summer activity assessment of the roosts and *environs* should be undertaken through the (simultaneous) deployment of 20 – 30 (time-synchronised) Passive Ultrasounds Monitors in suitable habitats over a period of no less than three consecutive nights in July/August.
    - Light levels at roost entrances will be monitored for a minimum 4-week period in the June/July to ensure the maintenance of current light levels.

3.3 General Mitigation Measures to be employed

The following general mitigation measures must be employed:

(1) Should any bats be discovered in the course of works that will be impacted upon, the works will cease and a suitable ecologist and NPWS will be contacted for instructions on how to proceed;
(2) All works requiring treatment of wood in the vicinity of bat roost locations must be undertaken with timber-treatment products suitable for use at or near bat roosts (information as indicated by Bat Conservation Ireland available from https://www.gov.uk/guidance/bat-roosts-use-of-chemical-pest-control-products-and-timber-treatments-in-or-near-them)
(3) All works will be undertaken during daylight hours only;
(4) Current lighting conditions must be maintained. No artificial lighting should be utilised in the vicinity of roost entrances if it will impact on the light levels at the roost entrance/exit – this could impact on light sensing behaviour. Existing sources of external light to the Upper Floors of the Barn and South Stables loft must also be maintained for the purpose of light sensing within the space;
(5) External works in the vicinity of the Barn/South Stable block must be subject to assessment by an ecologist to ensure that there will be no impacts associated with noise, vibration, etc. All such works must be undertaken outside of the period May – September and should be informed by ongoing monitoring;
(6) All conditions of any Derogation Licence must be complied with;
(7) Works will be completed within the timeframe as indicated by any Derogation Licence; and
(8) Biannual reports of winter and summer monitoring must be submitted to NPWS.

4 Evidence that actions permitted by a derogation licence will not be detrimental to the maintenance of the populations of the species to which the Habitats Directive relates at a favourable conservation status in their natural range as is required under Section 54(2) of the European Communities (Birds and Natural Habitats) Regulations.

Forest, Environmental Research and Services were commissioned to investigate the hibernation activity of bats in the primary buildings occurring in Annes Grove in February 2022.

4.1 2022 Winter Bat Roost Assessment of Buildings present

One of the primary aims of this survey was the assessment of the main buildings present for use by wintering bats. The results of this survey were considered key to identifying any potential constraints as regards development of these buildings. There were indications of bats, including droppings in virtually all buildings examined (apart from the Diary Cottage). The Gate Lodge was not examined internally but was considered to have potential for roosting bats (subsequent monitoring of the internal spaces and attic indicates that there is no current bat activity with the Gate Lodge structure).

4.1.1 Methods

In order to comprehensively assess the usage of buildings by bats as a winter roost, Static Ultrasound Monitoring Units were placed in strategic locations within building blocks. The ultrasound units utilised were Pettersson D500X ultrasound recording units. The triggering system allows this device to start recording as a sound is detected. The D500X detects the full spectrum of ultrasound and records in real time, providing much more detailed data than either frequency division or time expansion detectors. The D500X units were pre-programed to record all bat-passes occurring between 30 minutes before sunset and 30 minutes after sunrise. The recording settings utilised were:

- Input Gain – 45;
- Trigger Level – 30; and
- Interval - 5

Eight such units were deployed during the period 15/02/22 – 25/02/22 allowing 10 nights of recording at each location to be undertaken. The locations of the primary buildings in which Pettersson units were deployed are illustrated in Figure 16. In addition to these buildings, a Pettersson D500x Unit was deployed adjacent to the Gate Lodge.

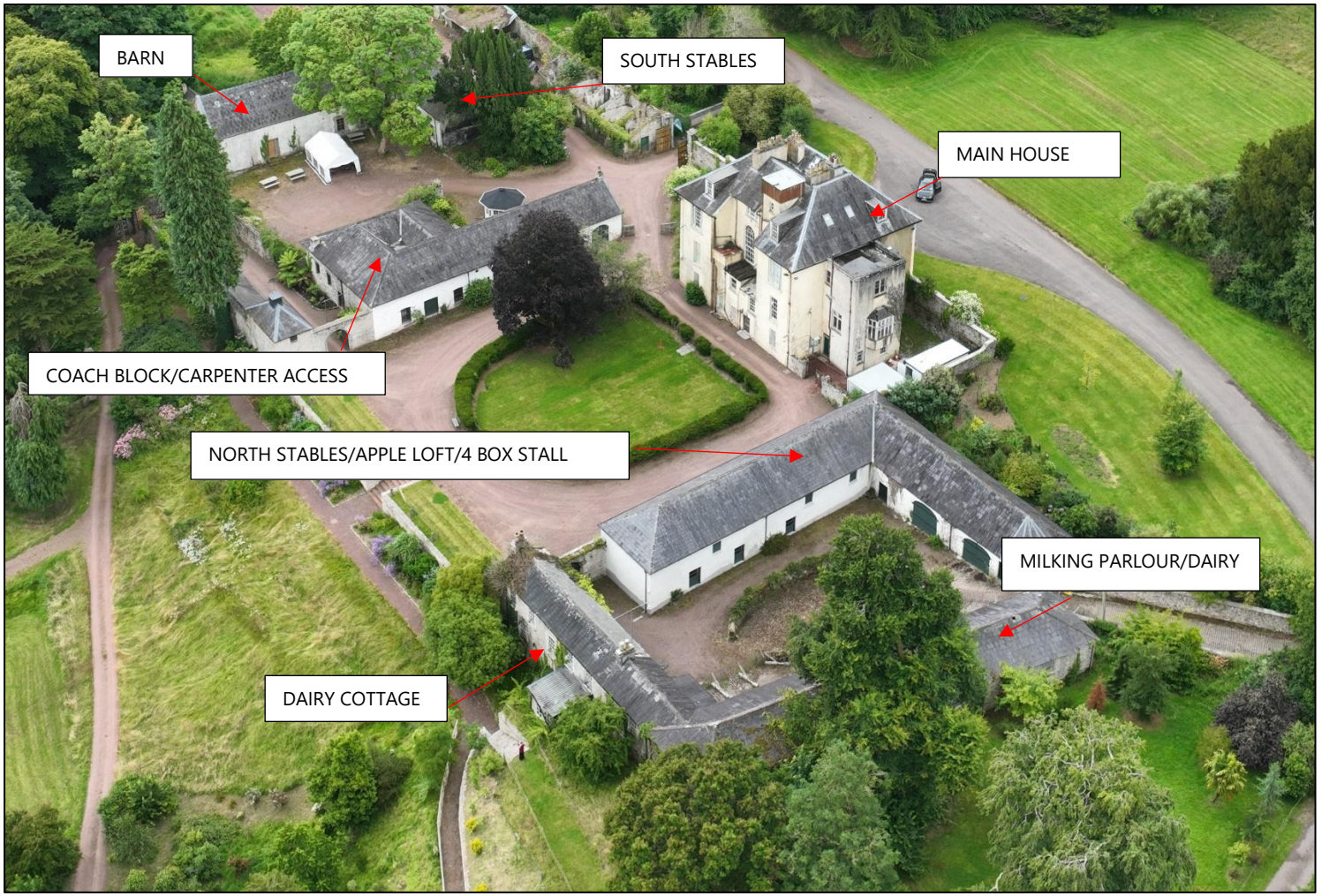

Figure 16: Aerial image indicating location of deployed D500x Units (an additional unit was deployed outside of the Gate Lodge)

Figure 17: Gate Lodge

4.1.2 Findings of winter 2022 surveys

There were Pettersson D500x units deployed at eight locations. The name of the location and indication of bat activity are illustrated below:

- In Calf House - Activity detected (*Myotis* – almost certainly Natterer's Bat)
- Adjacent Gate Lodge – Activity detected (Common Pipistrelle, Soprano Pipistrelle, Natterer's Bat and Brown Long-eared Bat)
- In South Stables - Activity detected (*Myotis* – likely Natterer's Bat and likely Brown Long-eared Bat)
- In Barn - Activity detected – (*Myotis* - almost certainly Natterer's Bat and likely Brown Long-eared Bat)
- In Coach Block/Carpenter's Access - Activity detected (*Myotis* - almost certainly Natterer's Bat and likely Brown Long-eared Bat)
- Main House upper floor/attic space- Activity detected (*Myotis* - almost certainly Natterer's Bat)
- In Milking Parlour/Dairy House - No activity detected
- In Dairy Cottage- Activity detected (*Myotis* – almost certainly Natterer's Bat and Soprano Pipistrelle).

While identified as *Myotis*, the bats listed as *Myotis* were almost certainly Natterer's Bat. Echoes and attenuation of frequencies (especially in the upper floor/attic of the Main House) prevented identification with certainty, but given the habitats present in combination with the analysis of the sonogram and oscillogram, the species identified as *Myotis* was highly likely to be Natterer's Bat (see Figure 18).

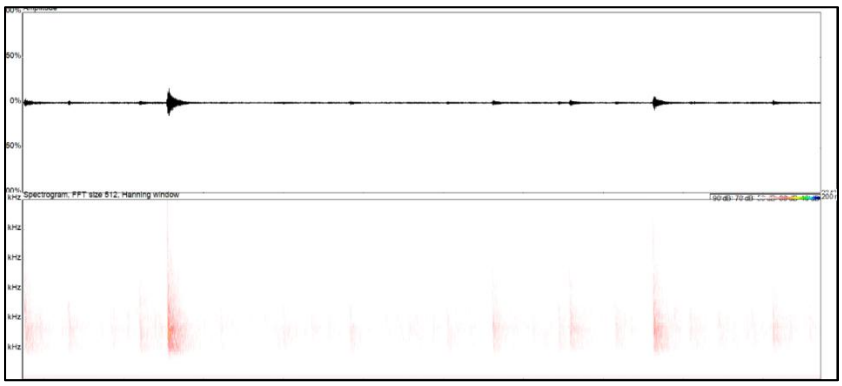

Figure 18: Oscillogram and sonogram recorded within the Dairy identified as *Myotis* (Natterer's Bat)

The findings of the initial winter 2022 surveys indicated that some bat activity must be assumed in suitable buildings to which bats have access.

4.2 Summer Bat Roost Assessment and Assessment of bat activity throughout the Annes Grove House and Gardens

The primary aims of these surveys were:

- The assessment of suitable maternity roosting sites (confined to structures); and
- The assessment of the entirety of Annes Grove House and Gardens identifying bat activity throughout the Demesne and identify potential roosting sites such as trees. The results of these surveys were considered key to identifying any potential constraints as regards development of these buildings.

4.2.1 Methods

In order to comprehensively assess the usage of buildings by bats as a maternity roost, Static Ultrasound Monitoring Units were placed in strategic locations. The ultrasound units utilised were Pettersson D500X ultrasound recording units. The triggering system allows this device to start recording as a sound is detected. The D500X detects the full spectrum of ultrasound and records in real time, providing much more detailed data than either frequency division or time expansion detectors. The D500X units were pre-programed to record all bat-passes occurring between 30 minutes before sunset and 30 minutes after sunrise. The recording settings utilised were:

- Input Gain – 45;
- Trigger Level – 30; and
- Interval - 5

Twenty units were deployed during the period 12/06/23 and 20/06/23 in order to assess bat activity at each location (identified in results section).

On the night of the 12th/morning of the 13th of June 2023, an emergence/dawn survey was conducted to identify major roosts within the primary buildings. In addition to three ecologists (Dr Patrick Moran, Dr Emma Reeves and Ciarán Byrne) equipped with Anabat Walkabout (X 3), Pettersson D1000x (X1) and hand-held thermal imaging monocular (X3) - infrared cameras (X8) and further thermal imaging cameras (X2) were deployed in order to ensure complete coverage of the buildings. One of the thermal imaging video cameras was deployed facing the area of the house previously indicated to be a potential roost (Figure 19) The second was mounted on a tripod and was moved as required. The emergence survey commenced at approximately 21:15 and ended at 00:15. The dawn survey commenced at approximately 03:20 and ended at 05:20. Conditions were optimal throughout the surveys with no rain and little or no wind. Dawn and emergence surveys of the primary buildings were repeated on the night of the 16th/morning of the 17th of July 2023.

Figure 19: FLIR Scion positioned to record activity

On the night of the 26th/morning of the 27th of June, an assessment of the bat activity in suitable habitats throughout the entire Annes Grove House and Gardens was undertaken utilising 30 Pettersson D500x units deployed overnight in addition to an emergence/dawn survey. While the 30 Pettersson units were static, two ecologists traversed the area of Annes Grove House and Gardens by bicycle, while a third was based in the vicinity of the buildings and river. Ecologists were equipped with Anabat Walkabout and hand-held thermal imaging monocular, the primary objective being the identification of any potential roosting sites other than buildings. Thermal imaging cameras (X2) were deployed at the two main roost entrances (barn and stable block). The emergence survey commenced at approximately 21:00 and ended at 00:15. The dawn survey commenced at approximately 03:15 and ended at 06:00.

Surveys were repeated on the nights of the 16th/24th of July 2023.

The primary aims of these surveys were:

- The assessment of suitable maternity roosting sites (confined to structures); and
- The assessment of the entirety of Annes Grove House and Gardens identifying bat activity throughout the Demesne and identify potential roosting sites such as trees. The results of these surveys were considered key to identifying any potential constraints as regards development of these buildings.

4.2.2 Findings of summer 2023 surveys

It is important to note that at no time during 2023 surveys was there any sightings of domestic cat (please note surveys of the estate in 2024 indicate that the site is within the territory of at least one cat, which triggered a trail camera on several occasions). The absence of a large population of domestic cats almost certainly permits the proliferation of the bat roosts present, as the bats would be easy prey for cats. All efforts should be made to maintain the Annes Grove House and Gardens as cat-free as possible.

On the 12th and 13th of June 2023 a bat roost potential survey of the entire Annes Grove House and Gardens was undertaken by Dr Patrick Moran, Dr Emma Reeves and Ciarán Byrne. It must be considered that given the extent of bat activity, any mature or ivy-covered tree within the Annes Grove House and Gardens has the potential to serve as a temporary roosting site and any tree works must be cognisant of the potential impact on bats. Before any felling of mature or ivy-covered trees within suitability as a bat roost, a bat survey should be undertaken in line with best practice. If bats are found to be roosting, an application for a Derogation Licence must be sought and licence granted prior to works. An active (wild) bee-hive was located in a Beech tree (outside of the application area) and a photograph is presented in Figure 20. There were bat indications (historical or current) at most building locations examined in one form or another. It must be considered that suitable buildings with access have high potential to be utilised as a bat roost (of some form).

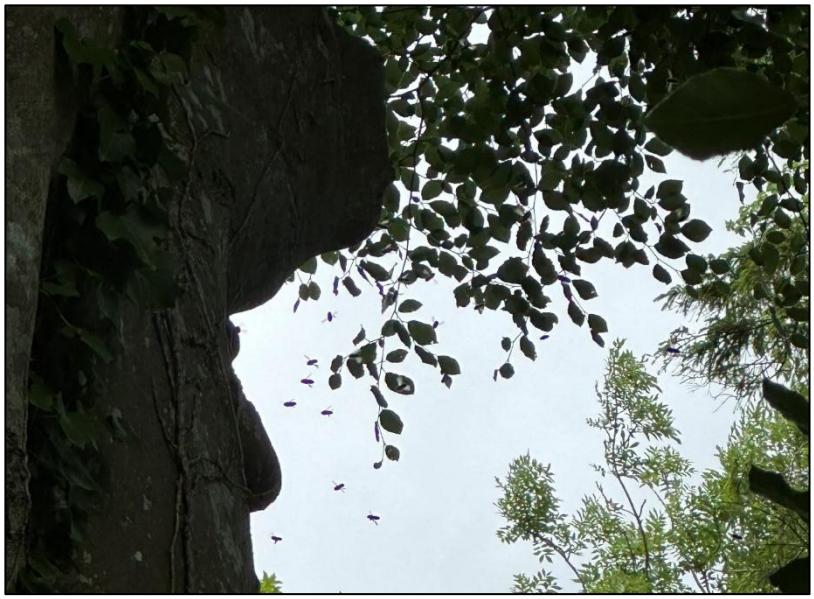

Figure 20: Active bee hive

There were Pettersson D500x units deployed at twenty locations in/around buildings where evidence of bat occupation was prevalent. The name of the location and indication of bat activity are illustrated below:

- Five units were located in the attic (4) and top floor (1 unit in main corridor) of the main house. The units recorded throughout the survey period and there was no evidence of any usage of the main house attic or top floor by any species of bat. This space is utilised as a winter roost. Of note there is a maternity roost of a minimum of 80 bats, primarily Soprano Pipistrelle located under the lead flashing of the bay window as indicated in Figure 22.
- One unit was placed in the Apple Loft above the North Stables. This unit recorded no activity. No activity was observed during the emergence/dawn survey.
- One unit was placed in the Dairy Hay Loft above the Milking Parlour. Activity at this location indicated a small mixed species day/temporary roost of primarily Whiskered Bat, with individual Common and Soprano Pipistrelle also. No activity was observed during the emergence/dawn survey.
- One unit was located in the attic of the front Gate Lodge. There was no activity recorded on this unit, although there were old bat droppings present.
- One unit was located on the second floor of the walled garden bothy (which will not be impacted upon nut was investigated as a potential roosting site). This unit recorded three passes of Brown Long-eared Bat, all on the night of the 16th of June indicating that the building is used infrequently as a temporary roost by at least this species.
- One unit was located at the entrance to a "Cave" opening in Hydrangea rock as it was considered possible this was utilised as a roost. Leisler's Bat accounted for the majority of the bat passes, with some Common and Soprano Pipistrelle. Timing and activity indicated that there is no roost at hydrangea rock.
- One unit was placed within the Gardener's Cottage/Dairy House. Although there was some evidence of bat presence in the form of occasional, isolated droppings, no bat activity was recorded. No activity was observed during the emergence/dawn survey.
- In the South Stable Block there was extensive evidence of bats in the form of large accumulation of droppings and the bats could be heard moving between the roof slates and insulation. Four units were placed throughout the South Stable Block. There is a very significant mixed maternity roost throughout the block of Whiskered Bat, Brown Long-eared Bat and Soprano Pipistrelle, with numerous Leisler's Bat and Common Pipistrelle present also.
- One unit was placed within the Blacksmith's Building/Forge, with evidence for bat occupation in the form of fresh droppings on the exterior or the main door and windows. Results indicate that the space is utilised as a temporary/day roost by a small number of individuals of Soprano Pipistrelle, Brown Long-eared Bat and Whiskered Bat. An individual Soprano Pipistrelle was observed emerging from a gap at the top of the door during the emergence survey.
- One unit was placed in the Four-box Stall, within the north stables building. Although there was some evidence of usage by bats in the form of dispersed droppings, no activity was detected during the survey period. No activity was observed during the emergence/dawn survey.
- One unit was placed near the roof access hatch in the carpenter's room in the south coach house building. There was evidence of a degree of use of the entire space by bats. The units recorded small numbers of Brown Long-eared Bat, Soprano Pipistrelle and Whiskered Bat passes on irregular nights indicating that the space is utilised as a temporary/day roost by at minimum these species. No activity was observed during the emergence/dawn survey.
- One unit was placed in the Dovecot. Despite a significant accumulation of droppings, there were only limited bat passes of Whiskered Bat and Soprano Pipistrelle indicating that the Dovecot is

irregularly utilised as a temporary/day roost by these species at minimum. No activity was observed during the emergence/dawn survey.

- One unit was placed within the summer house (within the walled garden – there will be no works undertaken here) where a significant pile of droppings was present. A minimum of seven Soprano Pipistrelle were observed to be roosting behind the felt and wooden cladding (on the outside of) the building and there was ample evidence of bats in the form of droppings. The bat passes recorded on the unit inside mostly "muffled" social calls with a small number of faint echolocation calls, all of Soprano Pipistrelle. Results indicate that the exterior of the building is utilised as a temporary/day roost by a small number of Soprano Pipistrelle. Other species may also be present on occasion. The droppings inside may be a result of a window/door being left open.

The results of the June bat roost potential and emergence/dawn survey indicated that the entire Barn/South Stable Block is a significant multi-species maternity roost. Further surveys were undertaken in July to elucidate numbers and ingress/egress points. The June survey also indicated a Soprano Pipistrelle roost under the flashing of the bay window. Further surveys were undertaken in July to elucidate numbers.

Figure 21: Evidence for a multi-species roost of bats was abundant throughout the barn block in the form of large amounts of droppings

A count undertaken on the night of the 16th of July 2023 indicated that the barn/stable block is utilised as a maternity roost with 471 bats emerging from the southern aspect of the block and a further 103 emerging from the barn loft entrance (Soprano Pipistrelle (53), Whiskered Bat (21) and Brown Long-eared Bat (27). The exact proportions of the 471 bats is estimated from a Pettersson D500x and Pettersson D1000x at the location owing to the rapidity with which bats emerged. These approximations are:

- Soprano Pipistrelle (354)
- Whiskered Bat (117)

It is important to note that it has been demonstrated that Female Whiskered Bat are not roost-faithful, using more than one roost during the breeding season[4]. It is, therefore, possible, if not probable, that this population of Whiskered Bats may move between buildings from season to season or even within a season.

Figure 22: Photo of roost entry and thermal imagery of bat emerging from Bay Window roost

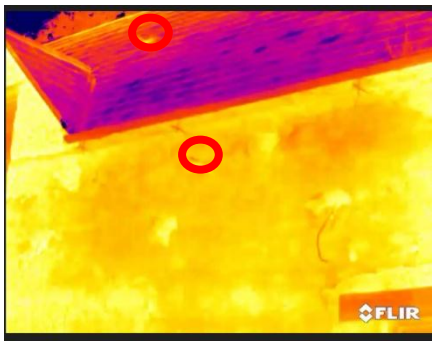

Figure 23: Bats emerging from south of barn block

[4] Buckley D, Lundy M, Boston E, Scott D, Gager Y, Prodöhl P, Marnell F, Montgomery I and Teeling E (2013). The spatial ecology of the whiskered bat (Myotis mystacinus) at the western extreme of its range provides evidence of regional adaptation. *Mammalian Biology*, **78**, pp 198 - 204

Figure 24:Southern aspect of barn block – ingress/egress points porous

Figure 25: South Stable loft entrance through which bats emerge and enter the roost

Figure 26: Brown Long-eared bat preparing to emerge from roost through South Stable loft entrance

Many of the buildings present either host temporary/day roosts or have done in the recent past. The high volume of invertebrates present was evident on the night of the emergence/dawn survey with hundreds of bats emerging from multiple areas of the Barn/South Stable Block. This block of buildings is of regional importance for the local bat population given the location of the habitat proximate to the Awbeg.

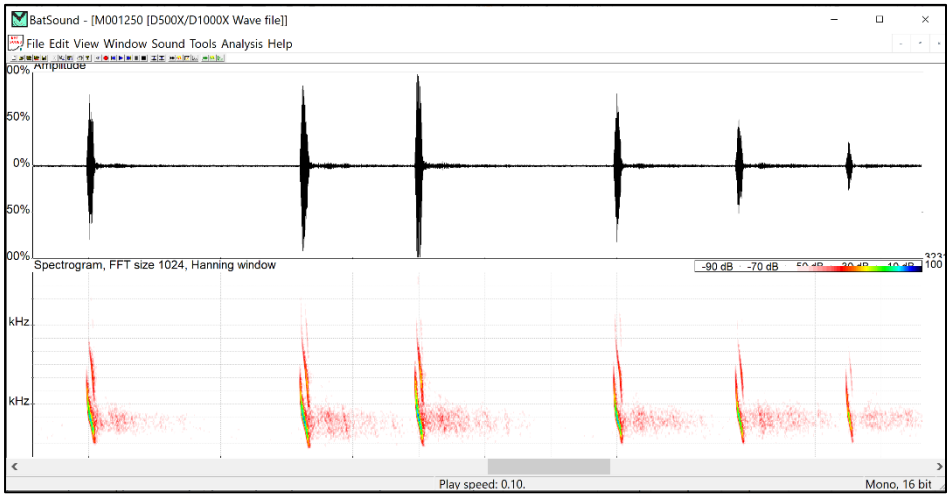

Figure 27: Sonogram and Oscillogram of Brown Long-eared Bat emerging from loft entrance

Assessment of Annes Grove House and Gardens-wide bat activity

On the night/morning of the 27th and 28th of June 2023 an assessment of the activity of bats throughout the entirety of Annes Grove House and Gardens was undertaken by Dr Patrick Moran, Dr Emma Reeves and Ciarán Byrne. In addition to an emergence and dawn survey during which two surveyors cycled the site and one remained close to the building block, 30 Pettersson Units were deployed around the Annes Grove House and Gardens to assess the bat activity occurring within different habitats. There were detected a minimum of seven species of bat throughout the Annes Grove House and Gardens (Common Pipistrelle, Soprano Pipistrelle, Leisler's Bat, Brown Long-eared Bat, Natterer's Bat, Whiskered Bat and Daubenton's Bat), with the greatest diversity occurring in the vicinity of the buildings and the River and associated habitat. A map indicating the location of D500x monitors and proportional (number of species) diversity is illustrated in Figure 28. There was only one unit where no activity was recorded.

Results from the transect survey throughout the estate (Figure 29) reflect the findings of the simultaneous Passive Ultrasound Monitor survey, with almost all activity observed away from the main buildings being Common Pipistrelle, Soprano Pipistrelle or Leisler's Bat (146 records of 151).

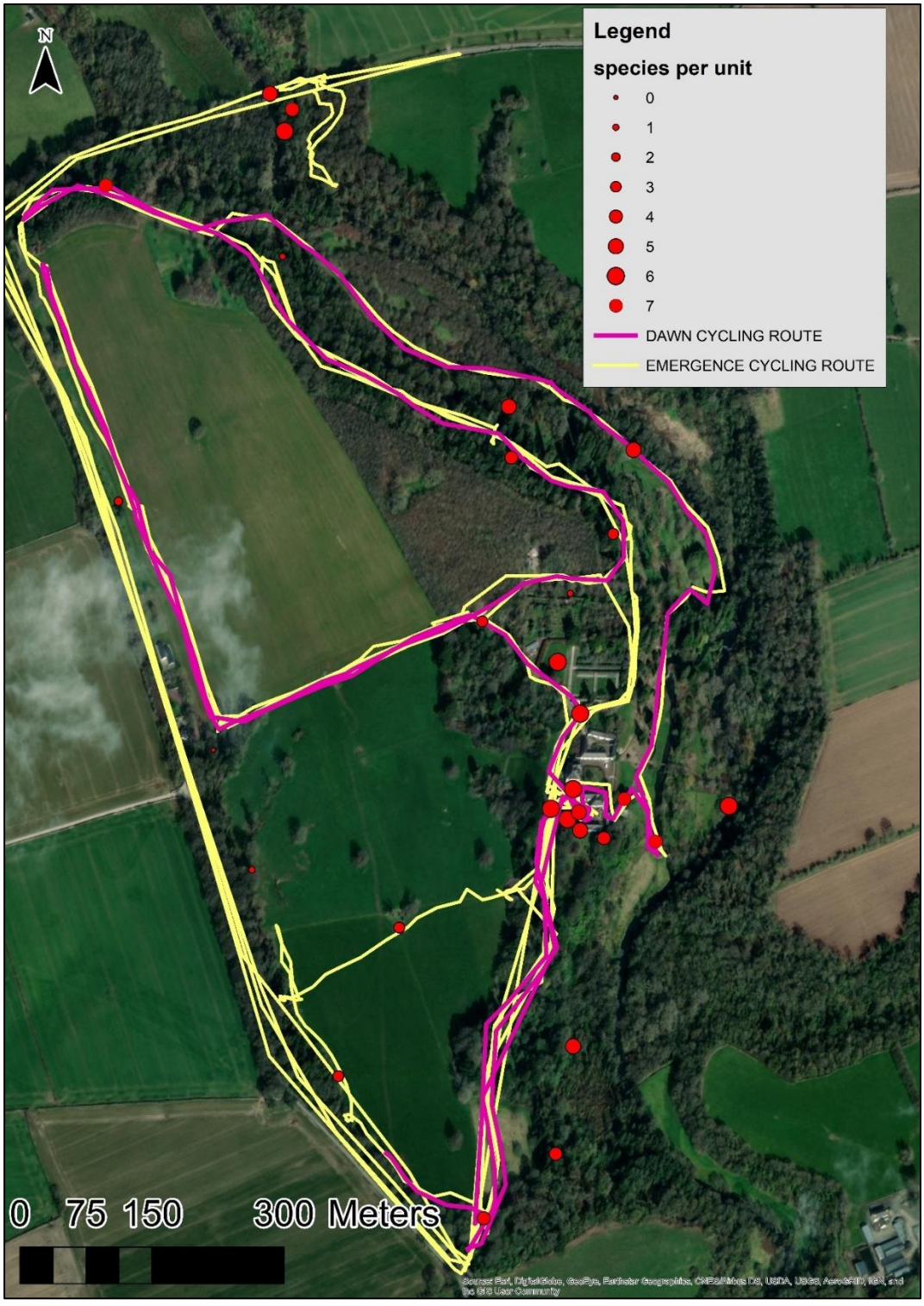

Figure 28: Map indicating bat species diversity throughout the Annes Grove House and Gardens and cycling routes

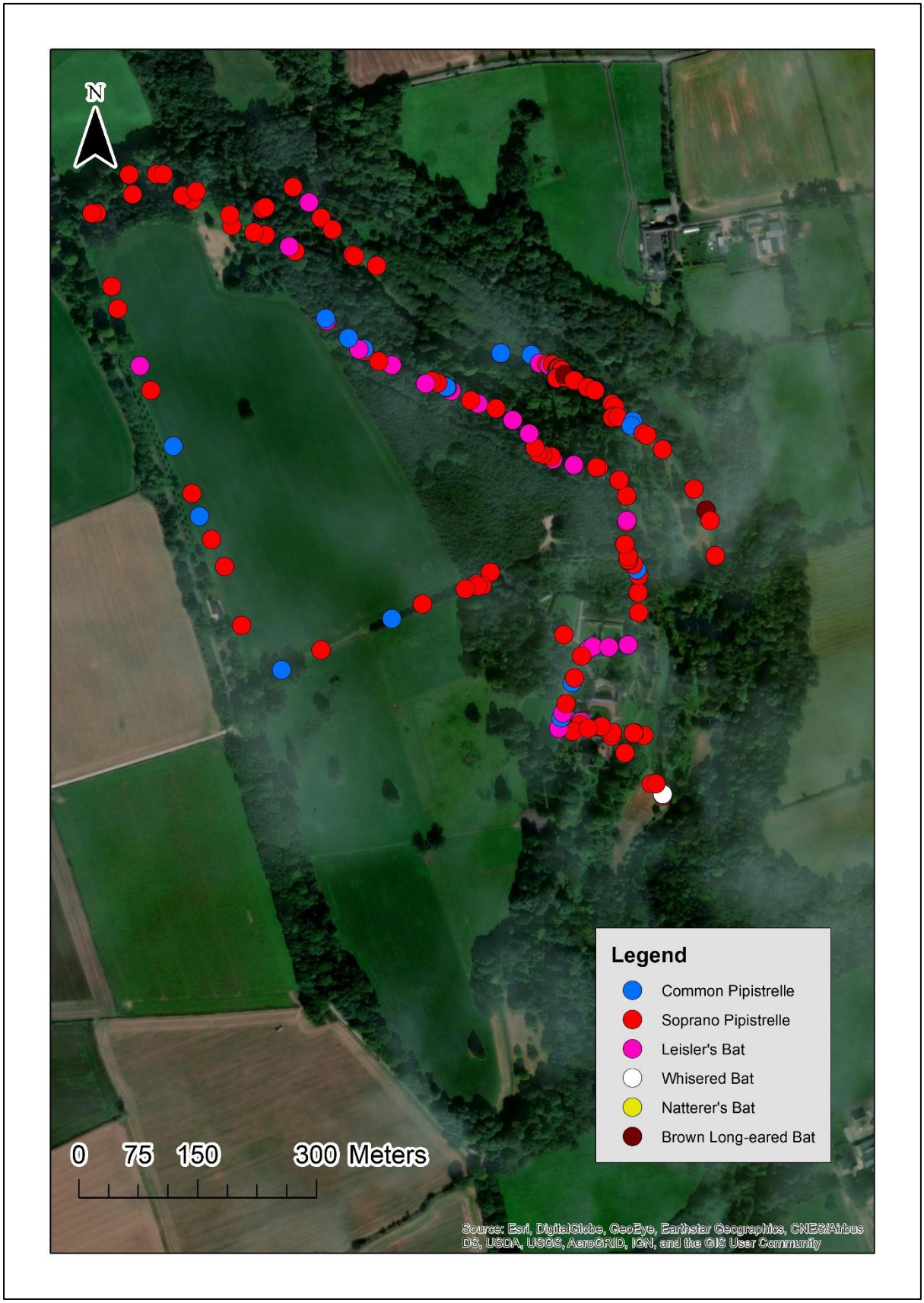

Figure 29: Results from Anabat 1 transect during emergence/dawn survey

In addition to the 30 D500X units deployed on the night/morning of the 27th/28th, three ecologists were present within the survey area. Dr Emma Reeves and Ciarán Byrne cycled throughout the Annes Grove House and Gardens with Anabat Walkabout units mounted on the bikes and a hand-held thermal camera (FLIR SCION). During these surveys (both emergence and dawn windows) virtually all bat passes recorded were of Soprano Pipistrelle and Leisler's Bat, with the occurrence of additional species limited largely to the Riverside and vicinity of the outbuildings. There were no indications of any bat roosts within trees along the route. The results of the "transect" surveys corroborate the findings of the D500x units, with activity of all species decreasing with distance from the river and main buildings. Unit 11, located in wooded habitat adjacent to south of the current house of Patrick Annesley recorded throughout the survey period, but recorded no bat passes. The units deployed in the vicinity of the primary buildings and river recorded a large degree of activity, with all seven species recorded to a greater or lesser extent.

This survey was repeated in July with similar results.

4.3 September emergence survey

In order to assess the primary buildings present in relation to mating swarm activity. An emergence survey was undertaken. A dawn survey was not undertaken as the nights in September are of long duration and the usefulness of dawn surveys is very limited.

4.3.1 Methodology

On the night of the 20th of September 2023 an emergence survey was undertaken in the vicinity of the primary buildings within Annes Grove by Dr Patrick Moran, Dr Emma Reeves and Ciarán Byrne, equipped with Anabat Walkabout (X 3), Pettersson D1000x (X1) and hand-held thermal imaging monocular (X3).

In addition, 20 Passive Ultrasound Monitors (Pettersson D500x units) were deployed overnight to assess activity throughout the night. The vast majority of activity observed during the emergence survey was in the vicinity of the Barn and South Stable block, and was largely comprised of Soprano Pipistrelle, with a much lesser degree of activity of Whiskered Bat and Brown Long-eared Bat.

4.3.2 Results

The location of Passive Ultrasound Monitors and activity detected is presented below:

Location	Activity detected	Species	Comment
Main house attic RHS	NONE		
Main house attic LHS	NONE		
Main house top floor corridor	NONE		
Main house attic external space RHS	YES	SOPRANO PIPISTRELLE	activity indicates individual
Main house attic external space LHS	YES	COMMON PIPISTRELLE, SOPRANO PIPISTRELLE, BROWN LONG-EARED	activity indicates 1 - 2 individuals of each species
Barn upstairs	YES	LEISLER'S BAT, COMMON PIPISTRELLE, SOPRANO PIPISTRELLE. WHISKERED BAT, BROWN LONG-EARED BAT	activity indicates multiples of each species present
Barn downstairs	YES	LEISLER'S BAT, COMMON PIPISTRELLE, SOPRANO PIPISTRELLE. NATTERER'S BAT. WHISKERED BAT, BROWN LONG-EARED BAT	activity indicates multiples of each species present
Stables ground LHS	YES	LEISLER'S BAT, COMMON PIPISTRELLE, SOPRANO PIPISTRELLE. NATTERER'S BAT. WHISKERED BAT, BROWN LONG-EARED BAT	activity indicates multiples of each species present
Stables ground RHS	YES	LEISLER'S BAT, COMMON PIPISTRELLE, SOPRANO PIPISTRELLE. NATTERER'S BAT. WHISKERED BAT, BROWN LONG-EARED BAT	activity indicates multiples of each species present
Stables loft	YES	WHISKERED BAT, BROWN-LONG-EARED BAT	lower levels of activity compared with ground floor
Carpenter's access coach block	YES	SOPRANO PIPISTRELLE, BROWN LONG-EARED BAT	activity indicates 1 - 2 individuals of each species
Blacksmith's	YES	SOPRANO PIPISTRELLE, BROWN LONG-EARED BAT	activity indicates 1 - 2 individuals of each species
Opposite Blacksmith's	YES	SOPRANO PIPISTRELLE, WHISKERED BAT, BROWN LONG-EARED BAT	activity indicates 1 - 2 individuals of each species
Dovecote	YES	SOPRANO PIPISTRELLE, WHISKERED BAT	activity indicates 1 - 2 individuals of each species
Apple loft	NONE		

Location	Activity detected	Species	Comment
4 box stall	YES	BROWN LONG-EARED BAT	activity indicates an individual present
Dairy cottage	YES	BROWN LONG-EARED BAT	activity indicates an individual present
Milking parlour/dairy	YES	COMMON PIPISTRELLE, SOPRANO PIPISTRELLE, BROWN LONG-EARED	activity indicates 1 - 2 individuals of each species
Milking parlour loft/dairy loft	YES	COMMON PIPISTRELLE. WHISKERED BAT, BROWN LONG-EARED BAT	activity indicates 1 - 2 individuals of each species
Calf House	YES	SOPRANO PIPISTRELLE, WHISKERED BAT, BROWN LONG-EARED BAT	activity indicates 1 - 2 individuals of each species

While there was a degree of activity detected in most buildings, the main concentration of Bat activity was in the *environs* of the Barn and South Stable Block, with activity in other buildings indicative of only an individual or small numbers of bats present.

4.4 Winter surveys 2023/2024

In order to assess use of habitat as a winter roost during the 2023/24 season, 20 Passive Ultrasound Monitors were deployed at key locations during the period 15/12/23 – 22/01/24, powered by 12amphr external batteries. Any activity during the period was deemed to be evidence of a roost in the vicinity of the monitors. The results of the 2023/24 winter monitoring are presented below.

LOCATION	ACTIVITY	SPECIES ROOSTING
CARPENTERS ROOM ROOF ACCESS	NO	
MAIN HOUSE IN ROOF THROUGH HATCH SOUTH SIDE	YES	WHISKERED BAT
4 BOX STALL	NO	
MAIN HOUSE TOP FLOOR IN CORRIDOR	NO	
MAIN HOUSE ATTIC - AT END THROUGH HATCH AT END OF HALL LHS	NO	
MAIN HOUSE ATTIC - AT END THROUGH HATCH AT END OF HALL RHS	YES	WHISKERED BAT
UPPER FLOOR DOVECOT	YES	SOPRANO PIPISTRELLE, WHISKERED BAT, BROWN LONG-EARED BAT
IN BARN CINEMA ROOM	YES	SOPRANO PIPISTRELLE, WHISKERED BAT
IN DAIRY HAYLOFT	YES	SOPRANO PIPISTRELLE, NATTERER'S BAT
SOUTH STABLE LOWER OTHER END	YES	WHISKERED BAT, NATTERER'S BAT

LOCATION	ACTIVITY	SPECIES ROOSTING
BLACKSMITHS	YES	WHISKERED BAT, BROWN LONG-EARED BAT
CORRIDOR BETWEEN CINEMA ROOM AND BARN	NO	
SOUTH STABLE LOWER HAGGARD END	YES	BROWN LONG-EARED BAT
GATELODGE LOFT	NO	
SOUTH STABLE UPPER LOFT AT HATCH	NO	
BARN STAIRS	YES	SOPRANO PIPISTRELLE, NATTERERER'S BAT
IN ROOF THROUGH HATCH NORTH SIDE	NO	
DAIRY COTTAGE	NO	
APPLE LOFT	NO	
IN BARN UPSTAIRS ROOM BY ROOST ON TABLE	YES	SOPRANO PIPISTRELLE

While the presence of some level of activity was detected in many structures, the levels of bat faeces indicated that the primary roosting locations are in the Barn and South Stables. Samples of bat faeces were collected in January 2024 and sent to "Ecotype Genetics" in the UK for analysis. Analysis of samples taken from the Barn and South Stable building confirmed presence of, at minimum:

- Soprano Pipistrelle
- Whiskered Bat
- Natterer's Bat; and
- Brown Long-eared Bat

4.5 Summer surveys 2024

4.5.1 Preliminary count main roost

On the night/morning of May 20th, 2024, an emergence and dawn survey of the primary roost in the Barn roof space was undertaken by Dr Emma Reeves and Senan Clynch. The initial count indicated the presence of 526 bats, primarily Soprano Pipistrelle.

4.5.2 June emergence/dawn survey

On the night of the 12th/morning of the 13th of June 2024, an emergence and dawn survey of the primary roosts and also the "Dairy Block" was undertaken my Dr Patrick Moran, Dr Emma Reeves, Ciarán Byrne and Senan Clynch, utilising Anabat Walkabout (X 3), Pettersson D1000x (X1), Echometer EM3+ and hand-held thermal imaging monocular (FLIR Scion X4). The emergence survey commenced at 21:25 under optimal conditions (17C, sunny light breeze) and finished at 23:30. The dawn survey commenced at 03:40 (11C with some intermittent light drizzle, no wind) and finished at 05:20. In addition, 12 Passive Ultrasound Monitors were deployed in key areas as indicated in the next section.

Of note, no activity was observed at the Bay Window Roost, which had been host to a significant population of Soprano Pipistrelle in 2023 (approximately 80 individuals)

Utilising thermal imagery, a roost of 13 Brown Long-eared Bats was identified within the loft of the South Stables behind an area of felt (Figure 30)

Figure 30: Location of Brown Long-eared Roost behind felt

The count at the main roost was 616, with the majority Soprano Pipistrelle and approximately 150 Whiskered Bat. There were two primary entry-points identified by Thermal imagery – these are indicated in Figure 31.

Figure 31: Primary ingress and egress points observed in June Emergence/Dawn survey

No significant activity was observed during the emergence or dawn surveys in the vicinity of the Dairy Block of buildings (Milking Parlour and loft space, Dairy Cottage, North Stables or Calf House), the Main House or the South Coach House.

4.5.3 June 24th Emergence Count

An emergence count was undertaken on the night of the 24th of June under optimal conditions from approximately 21:20 -23:40. The primary purpose of the count was to identify potential changes in activity levels observed during the June 12th/13th survey and to undertake an emergence survey in the vicinity of the Milking Parlour. The Bay Window Roost was observed to be utilised by only five individuals (all Soprano Pipistrelle). No activity in the vicinity of the Milking Parlour was observed indicating the presence of a roost.

4.5.4 June Passive Ultrasound Monitor Survey

During the period 12/06/24 – 28/06/24, Passive Ultrasound Monitors (12 Pettersson D500x units) were deployed in key areas. Primary areas of activity were in the Barn/South Stables. The location and activity is indicated below

LOCATION	ACTIVITY	SPECIES	Comment
BARN UPSTAIRS	YES	LEISLER'S BAT, COMMON PIPISTRELLE, SOPRANO PIPISTRELLE, WHISKERED BAT, BROWN LONG-EARED BAT, NATTERER'S BAT	activity levels indicate maternity roost activity of Soprano Pipistrelle, Whiskered Bat and Brown Long-eared Bat
BARN CINEMA ROOM	YES	LEISLER'S BAT, COMMON PIPISTRELLE, SOPRANO PIPISTRELLE, WHISKERED BAT, BROWN LONG-EARED BAT, NATTERER'S BAT	activity levels indicate maternity roost activity of Soprano Pipistrelle, Whiskered Bat and Brown Long-eared Bat
STABLE UPSTAIRS	YES	LEISLER'S BAT, COMMON PIPISTRELLE, SOPRANO PIPISTRELLE, WHISKERED BAT, BROWN LONG-EARED BAT, NATTERER'S BAT	activity levels indicate maternity roost activity of Soprano Pipistrelle, Whiskered Bat and Brown Long-eared Bat
STABLES DOWNSTAIRS	YES	LEISLER'S BAT, COMMON PIPISTRELLE, SOPRANO PIPISTRELLE, WHISKERED BAT, BROWN LONG-EARED BAT, NATTERER'S BAT	activity levels indicate maternity roost activity of Soprano Pipistrelle, Whiskered Bat and Brown Long-eared Bat
CARPENTERS ATTIC	YES	SOPRANO PIPISTRELLE, WHISKERED BAT , BROWN LONG-EARED BAT	activity levels indicate 1 - 2 individuals of each species utilising space irregularly
DOVECOT	YES	LEISLER'S BAT (46), SOPRANO PIPISTRELLE, WHISKERED BAT, BROWN LONG EARED BAT	activity levels indicate 1 - 2 individuals of each species utilising space irregularly
BLACKSMITHS	YES	SOPRANO PIPISTRELLE , WHISKERED BAT, BROWN LONG-EARED BAT	activity levels indicate 1 - 2 individuals of each species utilising space on a regular basis
FOURBOX STALL	NO	NO ACTIVITY	
APPLE LOFT	NO	NO ACTIVITY	
DAIRY LOFT	YES	WHISKERED BAT (21 PASSES), COMMON PIPISTRELLE (3 PASSES)	activity levels indicate 1 - 2 individuals of each space utilising space irregularly
MAIN HOUSE ATTIC LHS	NO	NO ACTIVITY	

MAIN HOUSE ATTIC RHS	NO	NO ACTIVITY	

4.5.5 July Emergence and Dawn Surveys

On the night of the 22nd of July 2024, an emergence survey of the primary roosts and also the "Dairy Block" was undertaken my Dr Patrick Moran, Dr Emma Reeves, Ciarán Byrne and Senan Clynch, utilising Anabat Walkabout (X 3), Pettersson D1000x (X1), Echometer EM3+ and hand-held thermal imaging monocular (FLIR Scion X4). The emergence survey commenced at 21:20 and finished at 23:20, with optimal conditions throughout. The emergence survey commenced at 21:20 and finished at 23:20, with optimal conditions throughout.

- The count at the primary roost was 827, with approximately (estimated from D500x unit deployed at roost entrance owing to degree of activity) 592 Soprano Pipistrelle and 235 Whiskered Bat.
- At the stable loft, 84 Soprano Pipistrelle were observed emerging, in addition to 17 Brown Long-eared Bat.
- At the Bay Window Roost, 12 Soprano Pipistrelle were observed exiting the roost.
- Within the "Dairy Block", one Soprano Pipistrelle and one Brown Long-eared Bat were recorded exiting the milking parlour during the emergence survey, and one Brown Long-eared Bat was observed returning during the dawn survey. One Soprano Pipistrelle was observed emerging from the Calf House during the emergence survey.

On the morning of the 23rd of July, all surveyors concentrated on the "Dairy Block". The dawn survey commenced at 04:20 under optimal conditions and finished at 05:40. A Brown Long-eared Bat was observed entering the Milking Parlour Loft at 04:35. Although there was a small degree of Leisler's Bat and Soprano Pipistrelle activity, no roosting behaviour was observed. An individual Whiskered Bat was observed passing over the buildings flying south.

In addition, 13 Passive Ultrasound Monitors were deployed overnight in key areas as indicated overleaf overnight to assess bat activity levels throughout the night.

LOCATION	SPECIES	COMMENT
BARN UPSTAIRS ON TABLE	SOPRANO PIPISTRELLE, COMMON PIPISTRELLE, LEISLER'S BAT, WHISKERED BAT, NATTERER'S BAT	almost all activity was of Whiskered Bat
BARN DOWNSTAIRS CINEMA ROOM	SOPRANO PIPISTRELLE, COMMON PIPISTRELLE, LEISLER'S BAT, WHISKERED BAT, BROWN LONG-EARED BAT	almost all activity was of Whiskered Bat
STABLE UPSTAIRS	SOPRANO PIPISTRELLE, COMMON PIPISTRELLE, LEISLER'S BAT, WHISKERED BAT, NATTERER'S BAT, BROWN LONG-EARED BAT	Vast bulk of activity Soprano Pipistrelle and Brown Long-eared Bat
STABLE DOWNSTAIRS	SOPRANO PIPISTRELLE, COMMON PIPISTRELLE, WHISKERED BAT, BROWN LONG-EARED BAT	Vast bulk of activity Soprano Pipistrelle
CARPENTERS ROOM ATTIC	SOPRANO PIPISTRELLE	activity indicates an individual
DOVECOT	WHISKERED BAT, BROWN LONG-EARED BAT	activity indicates 1 - 2 individuals of each species
BLACKSMITHS	SOPRANO PIPISTRELLE, WHISKERED BAT, BROWN LONG-EARED BAT	activity indicates individuals of Soprano Pipistrelle and Whiskered Bat, Brown Long-eared bat indicating presence of several individuals over the night
FOUR BOX STALL	EMPTY	
APPLE LOFT	EMPTY	
DAIRY HAY LOFT	BROWN LONG EARED	activity indicates an individual
ATTIC LHS	EMPTY	
ATTIC RHS	WHISKERED BAT	activity indicates an individual

OUTSIDE MAIN ROOST	SOPRANO PIPISTRELLE, COMMON PIPISTRELLE, LEISLER'S BAT, WHISKERED BAT, NATTERER'S BAT, BROWN LONG-EARED BAT	almost all activity Soprano Pipistrelle and Whiskered Bat exiting/entering roost

4.6 Winter surveys 2024/2025

In order to assess use of, primarily the Barn and South Stables block as a winter roost during the 2024/25 season, Passive Ultrasound Monitors were deployed at key locations during the period 09/12/24 – 13/01/25. Five unit were placed within the Barn/Stable block, powered by 24 amphr external batteries. Any activity during the period was deemed to be evidence of a roost in the vicinity of the monitors. Monitors were still recording on retrieval. In addition to these monitors, an additional eight units, powered by 12 amphr batteries were deployed at key locations during the same period (the batteries powering the units within the upper floor of the Dovecote and Forge RHS were depleted by the end of the 1st week of January, other units remained powered throughout the survey). The results of the 2024/25 winter monitoring are presented below

LOCATION	ACTIVITY	SPECIES ROOSTING
STABLE UPSTAIRS	YES	SOPRANO PIPISTRELLE, WHISKERED BAT, BROWN LONG-EARED BAT
STABLE DOWNSTAIRS	YES	BROWN LONG-EARED BAT
BARN UPSTAIRS ROOM	YES	WHISKERED BAT
BARN DOWNSTAIRS CORRIDOR	NO	
BARN DOWNSTAIRS CINEMA ROOM	YES	SOPRANO PIPISTRELLE, NATTERER'S BAT, BROWN LONG-EARED BAT
UPPER FLOOR DOVECOT	YES	SOPRANO PIPISTRELLE.WHISKERD BAT
EARTH CLOSET	YES	NO
FORGE LHS	YES	BROWN LONG-EARED
FORGE RHS	YES	BROWN LONG=EARED
BESIDE FORGE	YES	BROWN LONG=EARED
CATTLE HOUSE 1	NO	
CATTLE HOUSE 2	NO	
CATTLE HOUSE 3	NO	

4.7 Results of micro climate survey within roosts

4.7.1 Winter conditions in barn and south stable

During the period 15/12/23 – 22/01/24, ELUSB2 temperature and relative humidity loggers were utilised to monitor the micro-climate within the barn and south stable. One unit was placed in the barn down stairs (cinema room), a second unit was place within the upstairs room of the barn, and a third unit was placed in the South Stables. The results are presented in Figure 32, Figure 33 and Figure 34. The temperature drops in all three spaces over the winter, but with changes more marked in the south stable building, where there is no insulation, and the roof is in poor condition.

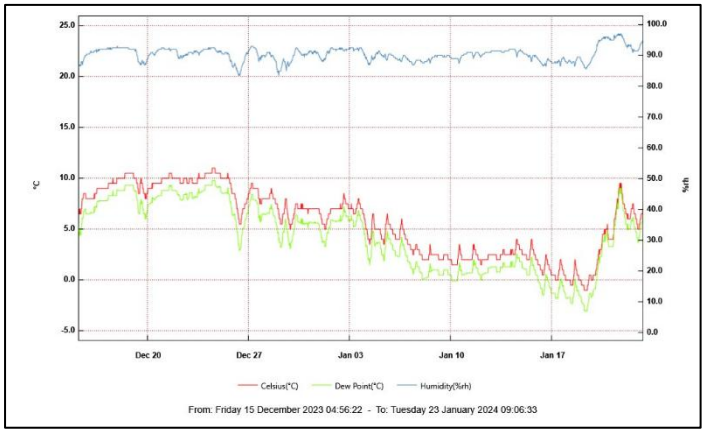

Figure 32: Temp and RH as recorded in the downstairs space of the barn (15/12 - 22/01)

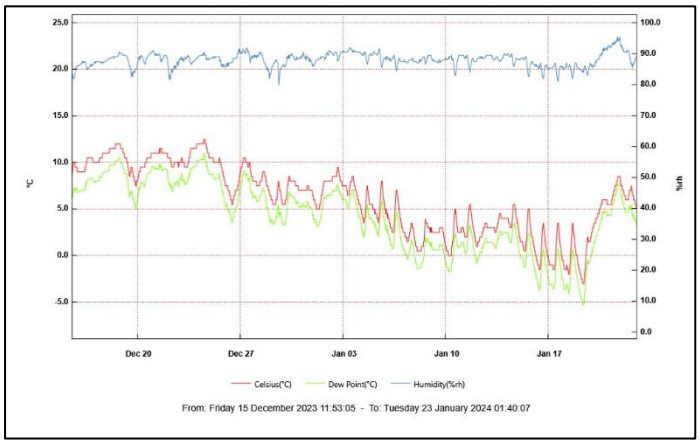

Figure 33: Temp and RH as recorded in the upstairs room of the barn (15/12 - 22/01)

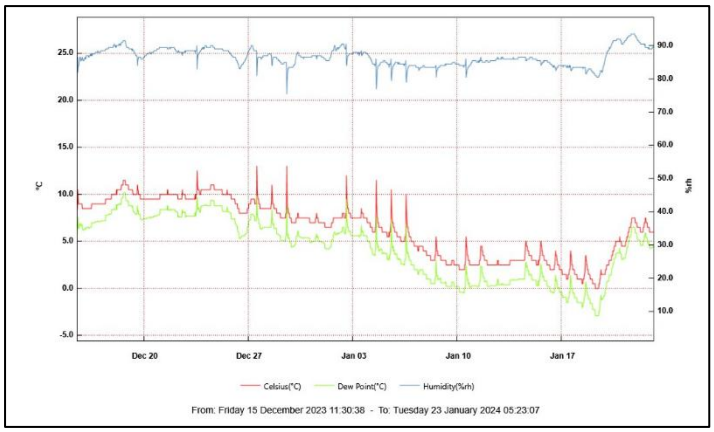

Figure 34: Temp and RH as recorded in the south stables (15/12 - 22/01)

4.7.2 Summer micro climate in barn and stable roosts

4.7.2.1 Barn building

During the period 12/06/24 – 22/06/24, ELUSB2 temperature and relative humidity loggers were utilised to monitor the micro-climate within the barn roost. Two units were placed in the space between the insulation and the roof of the barn immediately adjacent to the bat roost, with one on the Southern aspect of the roof and a second on the northern aspect. The loggers were placed into pre-existing gaps and had no impact with regard to disturbing the roost. The results are presented in Figure 35 and Figure 36. There was a wide variety of temperature fluctuation on the southern aspect, with temperatures as high as approximately 30˚C and as low as approximately 11˚C experienced. The temperatures on the northern aspect showed less variability and less extremes as might be expected. The bats have the opportunity to move from south to north facing aspect as temperatures dictate.

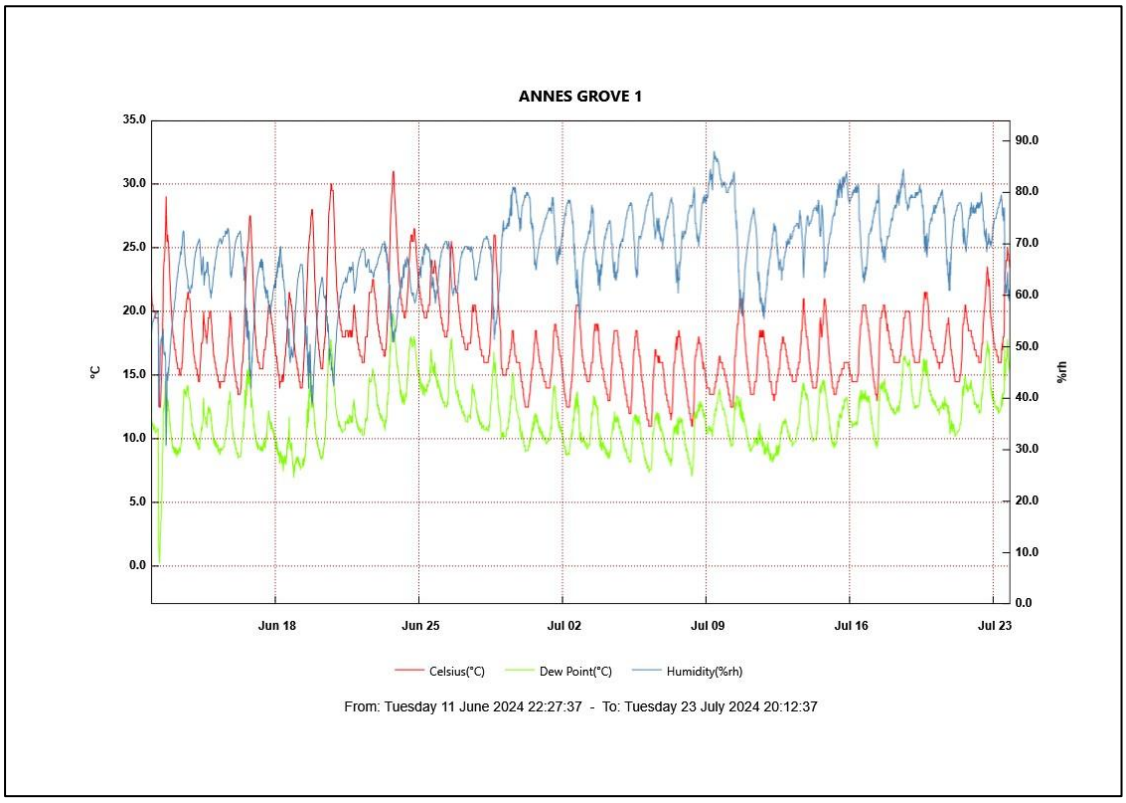

Figure 35: RH and temp as recorded on south facing aspect of barn roof (the first and last peaks are owing to travel to and from site)

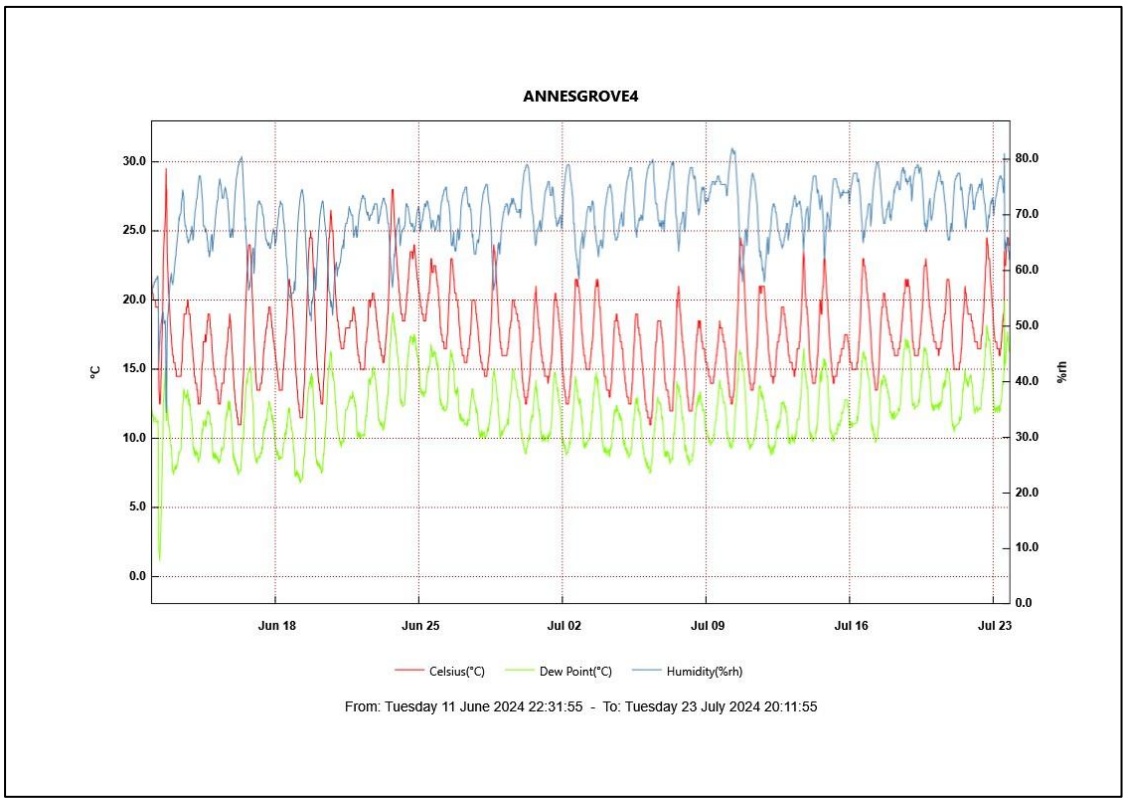

Figure 36: RH and temp as recorded on north facing aspect of barn roof (the first and last peaks are owing to travel to and from site)

4.7.3 South Stables

In order to assess the Relative Humidity and temperature occurring in the loft space of the South Stables, during the period 12/06/24 – 22/06/24, ELUSB2 temperature and relative humidity loggers were utilised to monitor the micro-climate within the loft space. Two units were placed in the space between the junction of the walls and the roof of the structure, with one on the eastern aspect of the roof and a second on the western aspect. The position of the loggers had no impact with regard to disturbing the roost. The results of these loggers are illustrated in Figure 37 and Figure 38. While there was a wide variety of temperature fluctuation, temperatures were noticeably lower than in the Barn roost. The lower temperature and lower availability of roosting spaces such as that provided by the insulated barn roof is a limiting factor as regards the maternity roosting potential of the South Stables as they currently exist.

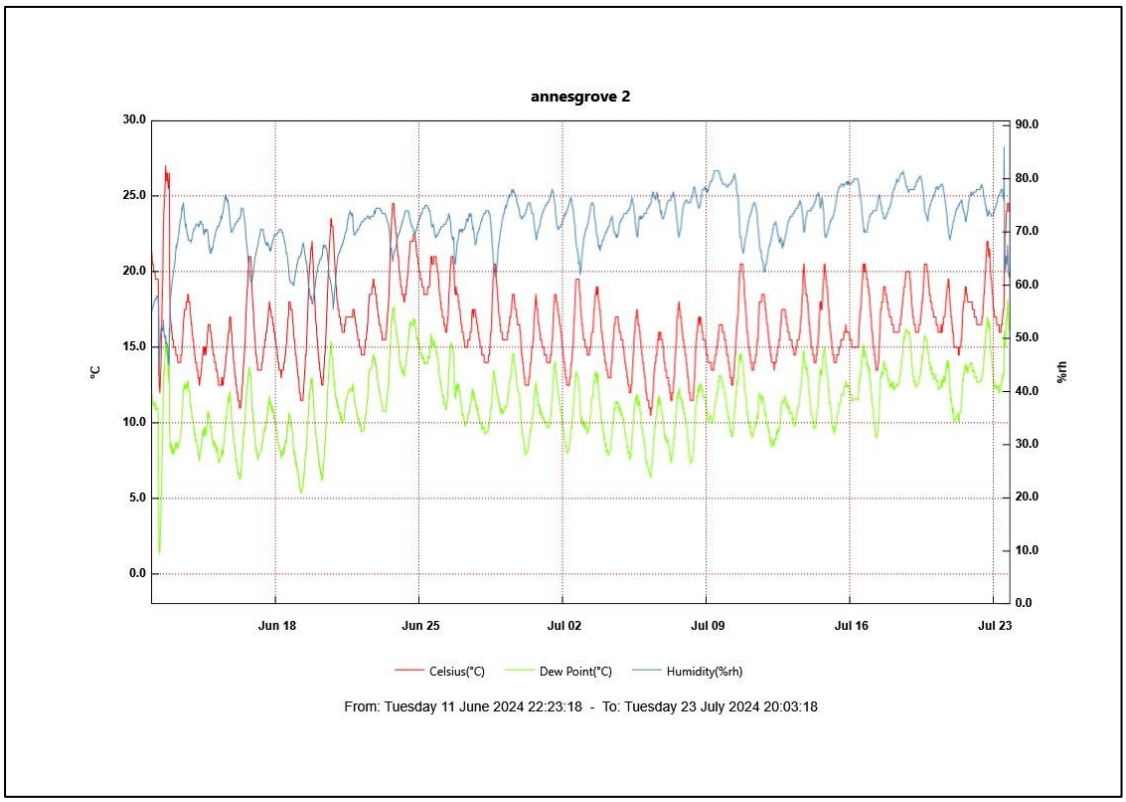

Figure 37: RH and temp as recorded on eastern facing aspect of south stable roof (the first and last peaks are owing to travel to and from site)

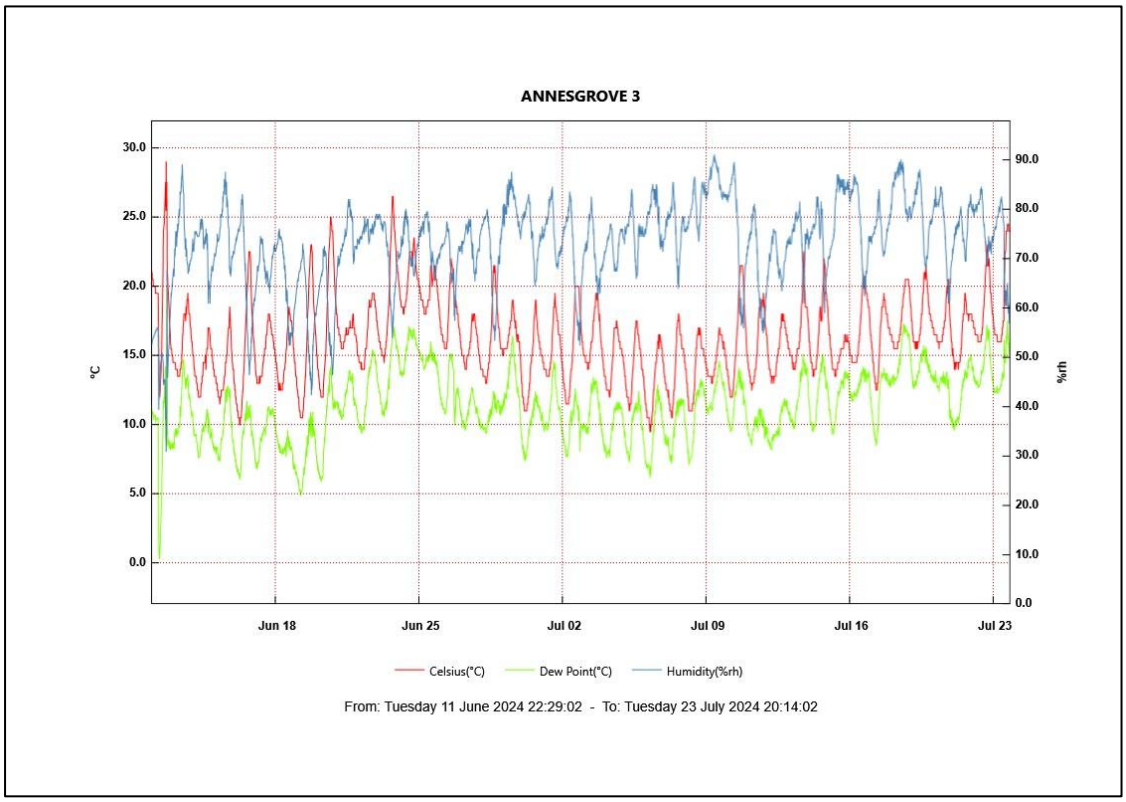

Figure 38: RH and temp as recorded on western facing aspect of south stable roof (the first and last peaks are owing to travel to and from site)

4.8 Current lighting conditions

In order to assess the current light conditions, an assessment of lux levels proximate to roost exits was undertaken utilising two CA 1110 luxmeter (measures the illuminance of all light sources (LED, Fluo. etc.) up to 200,000 lux in compliance with Class C of the NF C 42-710 standard). The lux meters were located in the immediate vicinity of the main roost entrances to both the barn roost and the south stables loft roost. These lux meters recorded the variation in light levels between the 12th and 28th of June 2024 as indicated in Figure 39 and Figure 40, during the period of the shortest nights of the year. Even during the shortest nights of the year, the lux levels at the roost entrances are 0 for several hours each night, indicating the lack of any artificial illumination. These lighting conditions must be maintained at all key times in order to ensure that there is no impact of artificial illumination on bat roosting suitability.

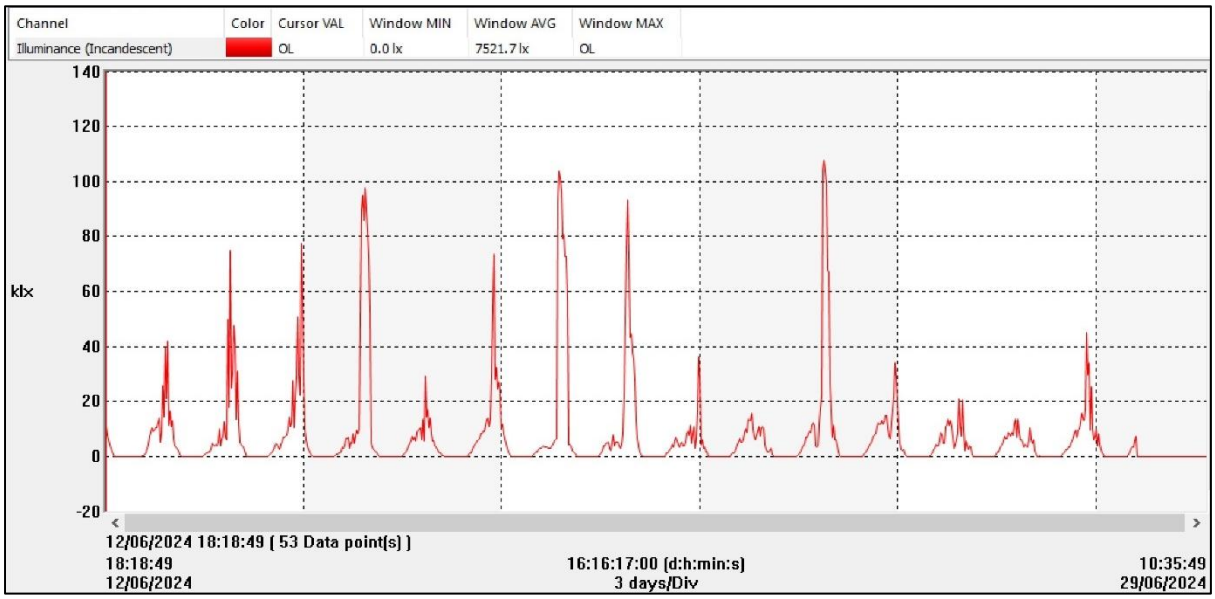

Figure 39: Light levels recorded at the barn roost entrance (on window sill of ground floor window)

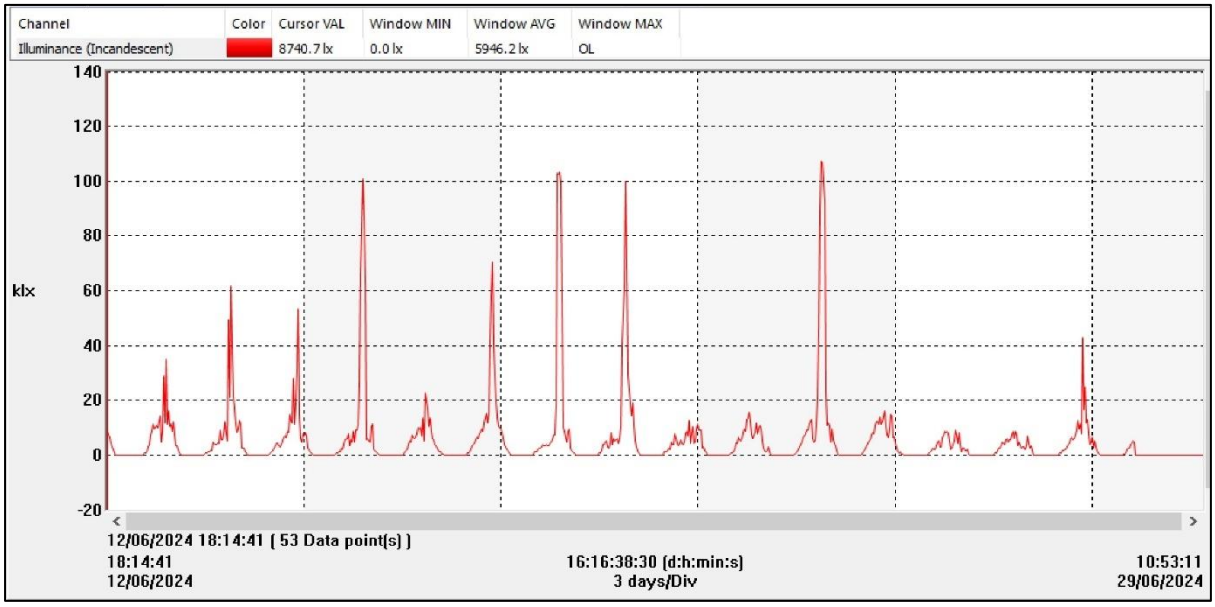

Figure 40: Light levels recorded at the south stable roost entrance (sill of loft hatch)

5 Summary of key findings

- The Barn/South Stables block hosts a regionally important mixed species maternity roost of at minimum Soprano Pipistrelle, Whiskered Bat and Brown Long-eared Bat, with small numbers of Common Pipistrelle, Natterer's Bat and Leisler's Bat also occurring. There has been a marked increase on 2023 counts, with numbers approximately doubling in 2024. The Barn/South Stables block hosts a mixed species winter roost, with Soprano Pipistrelle, Whiskered Bat, Natterer's Bat and Brown Long-eared Bat occurring. All works within the Barn/South Stable block must be undertaken in a manner sensitive to the needs of the bat roosts occurring and will maintain and enhance the conditions occurring with regards to bat activity, the goals of the conservation/restoration works to maintain and enhance the existing bat roosting areas, whilst also permitting necessary restoration/conservation works required for the continued structural integrity and preservation of the structure
- There has been a marked decline in numbers of Soprano Pipistrelle utilising the Bay Window Roost of the Main House, from 80 to a maximum count of 12. These bats may have moved roost to the Barn/South Stable block. The main house attic space is utilised by a small number of bats during both the summer and winter seasons. Proposed works to exclude bats from the Main House (including from the area above the Bay Window) to allow restoration and maintennance works will not significantly negatively impact the local bat population.
- Proposed works to exclude bats from some of the remaining buildings to allow restoration and maintennance were undertaken in compliance with DER-BAT-2024-144. These exclusion works did not negatively impact the local bat population. During winter 2024/2025 surveys bat activity was detected in several buildings indicating that there are roosting bats present (Upper Dovecote, Forge and building adjacent to the forge. It is proposed to enhance the habitat occurring within several buildings (Calf House and Dovecote) to encourage further use by the local bat population.
- While the wider estate provides optimal foraging habitat, bat numbers and species diversity are concentrated in the vicinity of the buildings and riparian corridor as set out in this report.

6 Conclusion

In conclusion, the works permitted by licence sought, through the mitigation measures prescribed, and guided by NPWS directions, will ensure the maintenance and enhancement of conditions existing within the main Barn and South Stable Roost, while also providing for expansion opportunities of the colony into the adjacent Dove cote/Forge block of buildings and the reroofed South Stables. Some exclusion works have been undertaken in compliance with DER-BAT-2024-144 and no bats were negatively impacted upon. Remaining exclusion works are planned for the 2025 season and should be undertaken during the window March/April 2025 and/or September – November (inclusive) 2025.

A Licence (DER-2023-66) utilising similar methodology to separate spatially bats and people in a historic building (Emo Court) while integrating an existing roost and enhancing existing conditions has successfully excluded bats from the basement level of the building, while maintaining the occupation of a roost within the basement, with monitoring on-going. The derogation licence applied for will not be detrimental to the maintenance of the populations of the species to which the Habitats Directive relates at a favourable conservation status in their natural range as is required under Section 54(2) of the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended).