October 2021

### Preliminary Bat Survey Report



### Cornamaddy, Athlone Co. Westmeath



Aisling Walsh M.Sc MCIEEM Trading as Ash Ecology & Environmental Ltd. Tel: 089 4991181 / Company Reg: 630819 / Office: Monine Kilfinane, Co. Limerick / Full membership of the CIEEM



### Bat Survey Report – Cornamaddy, Athlone, Co. Westmeath

### Contents

Ba	t Survey Report – Cornamaddy, Athlone, Co. Westmeath 🦷 🎌	
Сс	ontents	CEIVED.
1.	INTRODUCTION	
	1.1 Purpose of the Report	
	1.2 Competency of Assessor	
	1.3 Bat Legislation	6 🖓
	1.4 Derogation licences	7
2.	METHODOLOGY	9
	2.1 Information Sources	9
	2.2 Desk Study	10
	2.2.1 Previous Records	
	2.2.2 Species Background	
	2.2.3 Landscape Suitability	13
	2.2.4 Bat Roosts	14
	2.3 General Activity Survey	15
	2.4 Bat Potential Tree Assessment	15
	2.5 Landscape Evaluation	19
3.	RESULTS	20
	3.1 General Activity Survey	20
	3.2 Bat Potential Tree Assessment	22
	3.3 Landscape Evaluation	22
4.	RECOMMENDATIONS	22
	4.1 Tree Removal	22
	4.2 Lighting for Bats	23
	4.3 Future Roosting Opportunities	24
5.		25



Tables	
Table 1	Historical Bat Records in 10km <sup>2</sup> Grid Ref N04 (NBQC website
	www.nbdc.ie accessed 09/10/2021)
Table 2	Suitability of the study area for the bat species found in the Athlone
	area (based on the NBDC data) with Irish Red list status indicated.
Table 3	Guidelines for assessing the potential suitability of proposed
	development sites for bats, based on the presence of roost features

development sites for bats, based on the presence of roost features within the landscape, to be applied using professional judgement.

- Table 4
   Classification and Survey Requirements for Bats in Trees
- Table 5Bat Results Summary Data –September 29th 2021

### <u>Figures</u>

- Figure 1 Site Location Map
- Figure 2 Aerial Photo of Site showing existing layout and surrounding landscape
- Figure 3 Proposed Site Layout
- Figure 4 Bat Activity Map with legend

### **Appendices**

- Appendix A Plates (September 2021)
- Appendix B Bat Data (September 2021)

### 1. INTRODUCTION



### 1.1 Purpose of the Report

Ash Ecology and Environmental Ltd (AEE) was commissioned to carry out orbat survey on behalf of Enviroguide Consulting during September 2021 as part of a proposed residential development at a site located in Cornamaddy, Athlone, Co-Westmeath, (Grid Ref 53.436974, -7.906666); see Figure 1. An aerial photo with existing layout and surrounding landscape is shown as Figure 2. A proposed site layout is shown as Figure 3.



Figure 1 Site Location Map.





Figure 2 Aerial Photo of Site showing existing layout and surrounding landscape.



Figure 3 Proposed Site Layout.

### 1.2 Competency of Assessor



This report has been prepared by Ash Ecology & Environmental Ltd (AFE) whose managing director and leading ecologist is Aisling Walsh who is a full member of the Chartered Institute of Ecological & Environmental Management (CIEEM) while the company, AEE, is a Registered Practice by the CIEEM.

Aisling's qualifications include M.Sc. (Dist) in Biodiversity and Conservation (TCD) and B.Sc. (Hons) Zoology (NUIG), a diploma in Applicated Aquatic Science (GMIT) and a Certificate in Applied Biology (GMIT). Aisling has over 14 years of experience providing environmental consultancy and environmental assessment services. Aisling has written numerous Ecological Impact Assessments (EcIA), Screening for Appropriate Assessment Stage I and Stage II Natura Impact Statements, chapters for Environmental Impact Assessments/Statements (EIAR), Badger Surveys, Bat Surveys, Bird and Habitat Surveys. Academically Aisling has also spent several years working in Forestry and Biodiversity Research at TCD (BIOPLAN and FORESTBIO programmes) and as a Teaching Assistant in the Life Sciences Department of the University of Limerick.

Aisling is a licenced bat ecologist (example of recent: DER/BAT 2020 – 46 EUROPEAN, DER/BAT 2020 – 48 EUROPEAN, DER/BAT 2021 – 89) and a member of Bat Conservation Ireland. In addition she has completed several bat courses to continue her training and CPD with the most recently (May 2021) a Lantra-accredited course, developed by the Bat Conservation Trust and supported by the Arboricultural Association to access bat tree roost features. Over the past 14 years Aisling has completed 100s of bat surveys providing her with more than adequate experience in the profession.

### 1.3 Bat Legislation

In view of their sensitive status across Europe, all species of bat have been listed on Annex IV of the EC 'Habitats and Species Directive' and some, such as the lesser horseshoe bat, are given further protection and listed on Annex II of this Directive. This Directive was transposed into Irish Iaw as the European Communities (Natural Habitats) Regulations, 1997, and combined with the Wildlife Acts (1976 to 2018), ensures that individual bats and their breeding sites and resting places are fully protected. This has important implications for those who own or manage sites where bats occur.

All bat species are protected under the Wildlife Acts 1976-2018 which make it an offence to wilfully interfere with or destroy the breeding or resting place of these species; however, the Acts permit limited exemptions for certain kinds of development.

All species of bats in Ireland are listed on Schedule 5 of the 1976 Act, and are therefore subject to the provisions of Section 23, which make it an offence to:

- 1. Intentionally kill, injure or take a bat,
- 2. Possess or control any live or dead specimen or anything derived from a bat,
- 3. Wilfully interfere with any structure or place used for breeding or resting by a bat,



4. Wilfully interfere with a bat while it is occupying a structure of place which it uses for that purpose.

### 1.4 Derogation licences

In order to obtain a licence to allow the destruction of bat roosts etc., in advance of any otherwise legitimate development which may impact on the favourable conservation status of bats, Section 25 of the Habitats Regulations must be satisfied along with Regulation 54 of S.I. 477 (2011):

A derogation licence may only be granted:

- (a) Where there is no satisfactory alternative and
- (b) the derogation is not 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.

Where both conditions are satisfied, the derogation licence may only be granted where it is—

(a) in the interests of protecting wild fauna and flora and conserving natural habitats,

(b) to prevent serious damage, in particular to crops, livestock, forests, fisheries and water and other types of property,

(c) 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,

(d) for the purpose of research and education, of repopulating and reintroducing these species and for the breeding operations necessary for these purposes, including the artificial propagation of plants, or

(e) to allow, under strictly supervised conditions, on a selective basis and to a limited extent, the taking or keeping of certain specimens of the species to the extent specified therein, which are referred to in the First Schedule.

The first aim of the developer, working with professional advice, should be to entirely avoid or minimise the potential impact of a proposed development on bats and their breeding and resting places.

Current NPWS advice is that there should be no net loss in local bat population status, taking into account factors such as population size, viability and connectivity.<sup>1</sup> Hence, when it is unavoidable that a development will affect a bat population, the mitigation should aim to maintain a population of equivalent status in the area.

One of the key aims of the Habitats Directive is to encourage member states to maintain at, or restore to, favourable conservation status those species of community interest (Article 2(2)). 'Favourable conservation status' is defined in the Habitats and Species Directive (Article 1(i)). Conservation status is defined as "the

<sup>&</sup>lt;sup>1</sup> Kelleher, C. & Marnell, F. (2006) Bat Mitigation Guidelines for Ireland. Irish Wildlife Manuals, No. 25. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.



sum of the influences acting on the species concerned that may offect the long term distribution and abundance of its population within the territory. This assessed as favourable when: "population dynamics data on the species concerned indicate that it is maintaining itself on a long term basis as a viable component of its natural habitats, and the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and there is, or will probably continue to be, a sufficiently large habitat to maintain its populations on a long term basis." Note that even though there is apparent overlap between the Wildlife Acts and the Habitats Regulations, they run concurrently. No action in relation to bats that would not be permitted under the Habitats Regulations may be licensed under the Wildlife Acts.

Derogation licences granted under the Regulations include reference to the relevant provisions of the Wildlife Acts to ensure that all requirements for licensing are covered in the one document. It should also be noted that a licence only allows what is permitted within its terms and conditions; it does not legitimise all actions related to bats at a given site.<sup>2</sup>

<sup>&</sup>lt;sup>2</sup> Kelleher, C. & Marnell, F. (2006) Bat Mitigation Guidelines for Ireland. Irish Wildlife Manuals, No. 25. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.

### 2. METHODOLOGY

### 2.1 Information Sources



A desk-based review of information sources was completed. Information contained on the websites of the National Parks and Wildlife Service (NPWS)<sup>3</sup> and the National Biodiversity Data Centre (NBDC)<sup>4</sup> was reviewed.

The following publications and websites were also reviewed and consulted:

- Bat Conservation Ireland <a href="https://www.batconservationireland.org/">https://www.batconservationireland.org/</a>
- Bat Roosts in Trees: A Guide to Identification and Assessment for Tree-Care and Ecology Professionals (2018)
- Bat Conservation Trust (2018) Bats and artificial lighting in the UK Bats and the Built Environment series<sup>5</sup>
- Kelleher, C. & Marnell, F. (2006) Bat Mitigation Guidelines for Ireland. Irish Wildlife Manuals, No. 25. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.
- Mitchell-Jones, A.J, & McLeish, A.P. (eds). 2004., 3rd Edition Bat Workers' Manual, JNCC, Peterborough, ISBN 1 86107 558 8
- Bat Conservation Ireland (2012) Bats and Appropriate Assessment Guidelines, Version 1, December 2012. Bat Conservation Ireland, www.batconservationireland.org<sup>6</sup>
- Bat Conservation Trust (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines 3rd edition
- Bat Conservation Ireland (2010) Bats & Lighting Guidance Notes for: Planners, engineers, architects and developers<sup>7</sup>
- Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes (National Roads Authority, 2005).
- Guidelines for the Treatment of Bats during the Construction of National Road Schemes (National Roads Authority, 2005).
- Bats and Lighting in the UK Bats and the Built Environment Series (Institute of Lighting Professionals, September 2011
- Guidance Notes for the Reduction of Obtrusive Light GN01 (Institute of Lighting Professionals, 2011.
- Bats and Lighting Guidance Notes for Planners, Engineers, Architects and Developers (Bat Conservation Ireland);
- The Eurobats Mitigation of Lighting Document;
- Entwistle, A. et al (2001) Habitat Management for Bats A Guide for Land Managers, Land Owners and Their Advisors, Joint Nature Conservation Committee (JNCC, Great Britain)
- Grant, G., Gunnell, K. & Williams C. (2012) Landscape and urban design for bats and biodiversity Bat Conservation Trust, London.

<sup>&</sup>lt;sup>3</sup> The National Parks and Wildlife Services map viewer <u>http://webgis.npws.ie/npwsviewer/</u>

<sup>&</sup>lt;sup>4</sup> The National Biodiversity Data Centre <u>www.NBDC.ie</u>

<sup>&</sup>lt;sup>5</sup> <u>https://www.theilp.org.uk/documents/guidance-note-8-bats-and-artificial-lighting/</u>

<sup>&</sup>lt;sup>6</sup><u>https://www.batconservationireland.org/wp-content/uploads/2013/09/BCIreland-AA-Guidelines\_Version1.pdf</u>

<sup>&</sup>lt;sup>7</sup><u>https://www.batconservationireland.org/wp-</u>

content/uploads/2013/09/BCIrelandGuidelines Lighting.pdf

### 2.2 Desk Study



### 2.2.1 Previous Records

A desktop review was carried out to identify the previous records of Bat species within the Proposed Development Site and its environs. The study area occurs in 10km<sup>2</sup> Grid Square N04. The website the NBDC (<u>www.nbdc.ie</u>) was accessed of 09/10/2021 to establish any previous bat records and shown below in Table 1.

Table 1	Historical	Bat	Records	in	10km <sup>2</sup>	Grid	Square	N04	(NBDC	website
www.nbdc.ie	accessed	d 09/	10/2021)							

Species Name - Common	Species Name - Latin	Last Documented Record N04							
Brown Long-eared Bat	Plecotus auritus	03/04/2002							
Daubenton's Bat	Myotis daubentonii	29/07/2009							
Leisler's Bat	Nyctalus leisleri	29/07/2009							
Common Pipistrelle	Pipistrellus pipistrellus	21/08/2013							
Soprano Pipistrelle	Pipistrellus pygmaeus	21/08/2013							

### 2.2.2 Species Background

Ireland had ten known bat species until February 2013, when a single live greater horseshoe bat (*Rhinolophus ferrumequinum*) was found roosting in Co. Wexford<sup>8</sup>. On 8th June 2020, a single audio recording was confirmed in the Glendaough area, Co. Wicklow. It was found on two more occasions in the same area in early July 2020 (Bat Conservation Ireland, July 2020).

The ten species (excluding the greater horseshoe) are briefly described overleaf. For a more comprehensive overview see McAney, 2006.<sup>9</sup>

The dependence of Irish bat species on insect prey has left them vulnerable to habitat destruction, land drainage, agricultural intensification and increase use of pesticides. Also, their reliance on buildings as roosting sites has made them particularly vulnerable to renovation works and the use of timber chemical treatment. Buildings are highly important as roosting sites for bats and all Irish bat species use buildings for all roost types. Most significant in terms of roosts in houses are maternity roosts, but cellars and even attics may serve as hibernation sites for bats. Roosts within buildings can far exceed the numbers encountered in trees, bridges, caves or cliffs and roosts of over 1,000 bats have been recorded in buildings.<sup>10</sup>

<sup>&</sup>lt;sup>8</sup> National Biodiversity Data Centre <u>http://www.biodiversityireland.ie/new-bat-species-found-in-ireland/</u>

<sup>&</sup>lt;sup>9</sup> McAney, K. (2006) A Conservation Plan for Irish Vesper Bats. Irish Wildlife Manual No.20. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government.

<sup>&</sup>lt;sup>10</sup> NRA (2005) Guidelines for the Treatment of Bats Prior to the Construction of National Road Schemes. National Roads Authority, Dublin

### 2.2.2.1 Family Vespertilionidae:

### Common pipistrelle Pipistrellus pipistrellus

This species was only recently separated from its sibling, the soprano or brown pipistrelle P. pygmaeus<sup>11</sup>, which is detailed below. The common pipistrelle's echolocation calls peak at 45 kHz. The species forages along linear landscape features such as hedgerows and treelines as well as within woodland.

### Soprano pipistrelle Pipistrellus pygmaeus

The soprano pipistrelle's echolocation calls peak at 55 kHz, which distinguishes it readily from the common pipistrelle on detector. The pipistrelles are the smallest and most often seen of our bats, flying at head height and taking small prey such as midges and small moths. Summer roost sites are usually in buildings, but tree holes and heavy ivy are also used. Roost numbers can exceed 1,500 animals in mid-summer.

### Nathusius' pipistrelle Pipistrellus nathusii

Nathusius' pipistrelle is a recent addition to the Irish fauna and has mainly been recorded from the north-east of the island in Counties Antrim and Down<sup>12</sup> and also in Fermanagh, Longford and Cavan. It has also recently been recorded in Counties Cork and Kerry.<sup>13</sup> However, the known resident population is enhanced in the autumn months by an influx of animals from Scandinavian countries. The status of the species has not yet been determined.

### Leisler's bat Nyctalus leisleri

This species is Ireland's largest bat, with a wingspan of up to 320mm; it is also the third most common bat, preferring to roost in buildings, although it is sometimes found in trees and bat boxes. It is the earliest bat to emerge in the evening, flying fast and high with occasional steep dives to ground level, feeding on moths, caddisflies and beetles. The echolocation calls are sometimes audible to the human ear being around 15 kHz at their lowest. The audible chatter from their roost on hot summer days is sometimes an aid to location. This species is uncommon in Europe and as Ireland holds the largest national population the species is considered as Near Threatened here.

### Brown long-eared bat Plecotus auritus

This species of bat is a 'gleaner', hunting amongst the foliage of trees and shrubs, and hovering briefly to pick a moth or spider off a leaf, which it then takes to a sheltered perch to consume. They often land on the ground to capture their prey. Using its nose to emit its echolocation, the long-eared bat 'whispers' its calls so that the insects, upon which it preys, cannot hear its approach (and hence, it needs oversize ears to hear the returning echoes). As this is a whispering species, it is extremely difficult to monitor in the field as it is seldom heard on a bat detector. Furthermore, keeping within the foliage, as it does, it is easily overlooked. It prefers to roost in old buildings.

<sup>&</sup>lt;sup>11</sup> Barratt, E. M., Deauville, R., Burland, T. M., Bruford, M. W., Jones, G., Racey, P. A., & Wayne, R. K. (1997) DNA Answers the Call of Pipistrelle Bat Species. Nature 387: 138 - 139.

<sup>&</sup>lt;sup>12</sup> Richardson, P. (2000) Distribution Atlas of Bats in Britain and Ireland 1980 - 1999. The Bat Conservation Trust, London, England.

<sup>&</sup>lt;sup>13</sup> Kelleher, C. (2005) International Bat Fieldcraft Workshop, Killarney, Co. Kerry. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government.



### Natterer's bat Myotis nattereri

This species has a slow to medium flight, usually over trees but sometimes over water. It usually follows hedges and treelines to its feeding sites, consuming flies, moths, caddisflies and spiders. Known roosts are usually in old stone buildings but they have been found in trees and bat boxes. The Natterer's bat is one of our least studied species and further work is required to establish its status in Ireland.

### Daubenton's bat Myotis daubentonii

This bat species feeds close to the surface of water, either over rivers, canals, ponds, lakes or reservoirs but it can also be found foraging in woodlands. Flying at 15 kilometres per hour, it gaffs insects with its over-sized feet as they emerge from the surface of the water - feeding on caddis flies, moths, mosquitoes, midges etc. It is often found roosting beneath bridges or in tunnels and also makes use of hollows in trees.

### Whiskered bat Myotis mystacinus

This species, although widely distributed, has been rarely recorded in Ireland. It is often found in woodland, frequently near water. Flying high, near the canopy, it maintains a steady beat and sometimes glides as it hunts. It also gleans spiders from the foliage of trees. Whiskered bats prefer to roost in buildings, under slates, lead flashing or exposed beneath the ridge beam within attics. However, they also use cracks and holes in trees and sometimes bat boxes. The whiskered bat is one of our least studied species and further work is required to establish its status in Ireland.

### Brandt's bat Myotis brandtii

This species is known from five specimens found in Counties Wicklow (Mullen, 2007), Cavan, and Clare in 2003, a specimen in Kerry in 2005<sup>14</sup> and another in Tipperary in 2006.<sup>15</sup> No maternity roosts have yet been found. It is very similar to the whiskered bat and cannot be separated by the use of detectors. Its habits are similar to its sibling.

### 2.2.2.2 Family Rhinolophidae:

### Lesser horseshoe bat Rhinolophus hipposideros

This species is the only representative of the Rhinolophidae or horseshoe bat family in Ireland. It differs from our other species in both habits and looks, having a unique nose leaf with which it projects its echolocation calls. It is also quite small and, at rest, wraps its wings around its body. Lesser horseshoe bats feed close to the ground, gleaning their prey from branches and stones. It often carries its prey to a perch to consume, leaving the remains beneath as an indication of its presence.

The echolocation call of this species is of constant frequency and, on a heterodyne bat detector, sounds like a melodious warble. The species is confined to six counties along the Atlantic seaboard: Mayo, Galway, Clare, Limerick, Kerry

<sup>&</sup>lt;sup>14</sup> Kelleher, C. 2006a Nathusius pipistrelle Pipistrellus nathusii and Brandt's Bat Myotis brandtii - New Bat Species to Co. Kerry – Irish Naturalists' Journal 28: 258.

<sup>&</sup>lt;sup>15</sup> Kelleher, C. 2006b Brandt's Bat Myotis brandtii, New Bat Species to Co. Tipperary. Irish Naturalists' Journal 28: 345.



and Cork. The current Irish national population is estimated at 12,500 animals. This species is listed on Annex II of the EC Habitats Directive and 41 Special Areas of Conservation have been designated in Ireland for its protection. Where the occurs, it is often found roosting within farm buildings.

### 2.2.3 Landscape Suitability

03/17/2023 The National Biodiversity Data Centre (NBDC) maps landscape suitability bats based on Lundy et al. (2011). The maps are a visualisation of the results of the analyses based on a 'habitat suitability' index. The index ranges from 0 to 100 with 0 being least favourable and 100 most favourable for individual bat species and between 36.44 - 58.56 for the highest average range. The overall average assessment of bat habitats for the current study area is given as 41.22 (High). Table 2 gives the suitability of the study area for the bat species found in the study area (based on NBDC) along with their Irish Red List Status (from Marnell et al., 2019).16

Common name	Scientific name	Suitability index	Irish red list status
All bats	-	41.22	Least Concern
Soprano pipistrelle	Pipistrellus pygmaeus	52	Least Concern
Brown long-eared bat	Plecotus auritus	53	Least Concern
Common pipistrelle	Pipistrellus pipistrellus	58	Least Concern
Lesser-horseshoe bat	Rhinolophus hipposideros	3	Least Concern
Leisler's bat	Nyctalus leisleri	55	Least Concern
Whiskered bat	Myotis mystacinus	29	Least Concern
Daubenton's bat	Myotis daubentonii	43	Least Concern
Nathusius' pipistrelle	Pipistrellus nathusii	30	Least Concern
Natterer's bat	Myotis nattereri	48	Least Concern

Table 2 Suitability of the study area for the bat species found in the Athlone area (based on the NBDC data) with Irish Red list status indicated.

<sup>&</sup>lt;sup>16</sup> Marnell, F., Looney, D. & Lawton, C. (2019) Ireland Red List No. 12: Terrestrial Mammals. National Parks and Wildlife Service, Department of the Culture, Heritage and the Gaeltacht, Dublin, Ireland.



### 2.2.4 Bat Roosts

Bats were originally cave and tree dwelling animals but many now find buildings just as suitable for their needs. Bats are social animals and most species congregate in large colonies during summer. These colonies consist mostly of females of every reproductive class, with some juvenile males from the previous year. Male bats normally roost individually or in small groups meeting up with the females in the late autumn-early winter, when it is time to mate. In summer, bats seek warm dry buildings in which they can give birth and suckle their young. In winter, they seek out places with a constant low temperature and high humidity where they can become torpid and hibernate during adverse weather conditions. However, bats do not hibernate continuously during winter and will awake and hunt during mild nights when there are insects available, and it is energetically advantageous to forage.

### 2.2.4.1 Maternity Roosts

Maternity roosts are the most significant roosts and they are predominantly allfemale aggregations that are formed from late May onwards and remain as a relatively cohesive unit until mid to late August. Not all female bats give birth annually. These females that do bear young in a given year avail of a suitable building, tree and sometimes cave (or equivalent). The young are flightless for several weeks and hence are vulnerable to dangers such as tree felling and restoration, reinforcement or demolition of structures such as buildings and bridges.

### 2.2.4.2 Mating Roosts

Most bat species mate in autumn but pregnancy does not occur until the following spring. During this time males will take possession of a cavity in a building, tree, bridge, cave or mine and attract females to these sites to establish a harem. Male bats call both from a perch and in flight in much the same manner that male birds sing.

### 2.2.4.3 Hibernation Roosts

Bats have a high metabolic rate and in temperate countries, such as Ireland, flying insects are not available in sufficient numbers during winter to sustain bats. Therefore, bats hibernate during winter. In hibernation sites, bats are often completely inactive for several days and are extremely vulnerable to disturbance by human activities due to the time taken for them to become sufficiently active to allow escape. Hibernation may extend from November to the end of March, during which time bat activity will take place sporadically.

### 2.2.4.4 Night Roosts

These are roosts which are used as resting places for bats between foraging bouts. They also provide retreats for bats from predators or during inclement weather conditions. They also function as feeding perches and may be important for socialising.

### 2.3 General Activity Survey



A preliminary general bat activity survey was also undertaken on the 29<sup>th</sup> September 2021 from 18.45 to 21.15 (sunset was 19.13) by walking the Site field boundaries where accessible. The weather was optimal for a bat survey with temperatures on the night was 12-14°C with a gentle breeze. Rain arrived at the end of the survey. Bat activity and emergence surveys are best carried out from April to end-September in suitable weather conditions<sup>17</sup> which this survey was.

The equipment used for the bat activity survey included a Elekon Bat Logger M detector. Visual observations were taken with the aid of a powerful L.E.D. torch (AP Pros-Series 220 Lumens High Performance Spotlight).

General Site photos are contained in Appendix A.

### 2.4 Bat Potential Tree Assessment

A number of mature trees are present along existing field boundaries. The treelines were preliminarily assessed as a whole for any 'Potential Roost Features' (PRFs) listed below and, to assess whether the treelines along with scrub and hedgerows may be used as important commuting and foraging routes.

- Natural holes (e.g., knot holes) arising from naturally shed branches or branches previously pruned back to a branch collar.
- Man-made holes (e.g., cavities that have developed from flush cuts or cavities created by branches tearing out from parent stems).
- Cracks/splits in stems or braches (horizontal and vertical).
- Partially detached or loose bark plates.
- Cankers (caused by localised bark death) in which cavities have developed.
- Other hollows or cavities, including butt rots.
- Compression of forks with included bark, forming potential cavities.
- Crossing stems or branches with suitable roosting space between.
- Ivy stems with diameters in excess of 50mm with suitable roosting space behind (or where roosting space can be seen where a mat of thinner stems has left a gap between the mat and the trunk).
- Bat or bird boxes.
- Other suitable places of rest or shelter.

Certain factors such as orientation of the feature, height from the ground, the direct surroundings and its location in respect to other features may enhance or reduce the potential value.

A preliminary rating was assigned to treelines for commuting and foraging using the following the BCT guidelines with the assessment rating<sup>18</sup> and classification using Table 4.1 of the BCT guidelines (2016) - which is shown as Table 3 overleaf.

<sup>&</sup>lt;sup>17</sup> Kelleher, C. & Marnell, F. (2006) Bat Mitigation Guidelines for Ireland. Irish Wildlife Manuals, No. 25. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.

<sup>&</sup>lt;sup>18</sup> Bat Surveys for Professional Ecologists, Good Practice Guidelines (2016)



Table 3 Guidelines for assessing the potential suitability for proposed development sites for bats, based on the presence of roost features within the landscape, to be applied using professional judgement.

Suitability	Description Roosting habitats	Commuting and foraging habitats			
Negligible	Negligible habitat features on site likely to be used by roosting bats.	Negligible habitat features on site likely to be used by commuting or foraging bats.			
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions <sup>a</sup> and/or suitable surrounding habitat to be used on a	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat.			
	regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation <sup>b</sup> ). A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential. <sup>c</sup>	Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.			
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions <sup>a</sup> and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost three only – the assessment in this	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens.			
	table are made irrespective of species conservation status, which is established after presence is confirmed).	Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.			
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions <sup>a</sup> and surrounding habitat.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge.			
		High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree- lined watercourses and grazed parkland.			
		Site is close to and connected to known roosts.			

 <sup>a</sup> For example, in terms of temperature, humidity, height above ground level, light levels or levels of disturbance.
 <sup>b</sup> Evidence from the Netherlands shows mass swarming events of common pipistrelle bats in the autumn followed by mass hibernation in a diverse range of building types in urban environments (Korsten et al., 2015). This phenomenon requires some research in the UK but ecologists should be aware of the of binding types in an environments (conserved as the construction) in the prediction of the second of this species to be present during the autumn and winter in large buildings in highly urbanised environments.
<sup>c</sup> This system of categorisation aligns with BS 8596:2015 Surveying for bats in trees and woodland (BSI, 2015).



4

Classification of Tree	Description of Category and Associated Features (based on Potential Roosting Features listed above)	Likely Further Survey Work
Confirmed Roost	Evidence of roosting bats in the form of live / dead bats, droppings, urine staining, mammalian fur oil staining, etc.	A National Parks and Wildlife (NPWS) derogation licence application will be required if the tree or roost site is affected by the development or proposed arboricultural works. This will require a combination of aerial assessment by roped access bat workers (where possible, health and safety constraints allowing) and nocturnal survey during appropriate periods (e.g. nocturnal survey - May to August) to inform on the licence. Works to tree undertaken under supervision in accordance with the approved good practice method statement provided within the licence. However, where confirmed roost site(s) are not affected by works, work under a precautionary good practice method statement may be
High Potontial	A trac with one or more Potential	possible.
nign roientiai	Roosting Features that are obviously suitable for larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter protection, conditions (height above ground level, light levels, etc.) and surrounding	<ul> <li>Aenal assessment by roped access</li> <li>bat workers (if appropriate) and / or</li> <li>nocturnal survey during appropriate</li> <li>period (May to August).</li> <li>Following additional assessments,</li> <li>tree may be upgraded or</li> <li>downgraded based on findings.</li> </ul>

 Table 4
 Classification and Survey Requirements for Bats in Trees<sup>19</sup>

<sup>&</sup>lt;sup>19</sup> Bat Surveys for Professional Ecologists: Good Practice Guidelines (J., Collins (Bat Conservation Trust), 2016<sup>19</sup>).



Classification of Tree	Description of Category and Associated Features (based on Potential Roosting Features listed above)	Likely Further Survey Work / Actions
	habitat. Examples include (but are not limited to); woodpecker holes, larger cavities, hollow trunks, hazard beams, etc.	tree or roost is to be affected by proposals a licence from the NPWS will be required. After completion of survey work (and the presence of a bat roost is discounted), a precautionary working method statement may still be appropriate.
Moderate Potential	A tree with Potential Roosting Features which could support one or more potential roost sites due to their size, shelter protection, conditions (height above ground level, light levels, etc.) and surrounding habitat but unlikely to support a roost of high conservation status (i.e., larger roost, irrespective of wider conservation status). Examples include (but are not limited to); woodpecker holes, rot cavities, branch socket cavities, etc.	A combination of aerial assessment by roped access bat workers and / or nocturnal survey during appropriate period (May to August). Following additional assessments, tree may be upgraded or downgraded based on findings. After completion of survey work (and the presence of a bat roost is discounted), a precautionary working method statement may still be appropriate. If a roost site/s is confirmed a licence from the NPWS will be required.
Low Potential	A tree of sufficient size and age to contain Potential Roosting Features but with none seen from ground or features seen only very limited potential. Examples include (but are not limited to); loose/lifted bark, shallow splits exposed to elements or upward facing holes.	No further survey required but a precautionary working method statement may be appropriate.
Negligible/No potential	Negligible/no habitat features likely to be used by roosting bats	None.

### 2.5 Landscape Evaluation



Ecological survey results were evaluated to determine the significance of identified features located in the study area on an importance scale ranging from international-national-county-local (from NRA, 2009) The local scale is approximately equivalent to one 10km square but can be operationally defined to reflect the character of the area of interest. Because most sites will fall within the local scale, this is sub-divided into two categories: local importance (higher value) and local importance (lower value).





### 3.1 General Activity Survey

The results of the bat survey carried out in September 29<sup>th</sup> 2021 are summarized in Table 5 with the complete dataset of bat species identified in real time in the field using the Elekon Batlogger M detector presented in Appendix B. A map outlining the locations of the bat calls is shown as Figure 4. The presence denotes activity/passes as opposed to individual bats.

In total three species of bat were detected. A moderate rate of bat activity was recorded which was expected with the high bat landscape suitability score assigned and presence of a mature treelines throughout the site and mainly on the outer boundaries.

Species No Common	ame –	Species Name – Latin	Number of Passes	Peak Frequency (kHz)
Common Pipisti	relle	Pipistrellus pipistrellus	15	46.5
Soprano Pipistre	elle	Pipistrellus pygmaeus	12	55.5
Leisler's Bat		Nyctalus leisleri	5	26.9

### Table 5Bat Results Summary Data – 29th September 2021



Ash Ecology & Environmental Ltd – September 2021

### 3.2 Bat Potential Tree Assessment

The site contained mature trees with 'Moderate' and 'High' bat roosting potential along field boundaries, see Figure 4, as they a high cover of ivy or cracks holes and crevices. Treeline ratings were assigned visually from a distance.

Beech trees (circled in yellow on Figure 4) had Pipistrelle Bat emerge (and potentially Soprano Pipistrelle although not directly observed) from these trees during the survey (see plates in Appendix A). If these trees need to be felled then a bat derogation licence from the NPWS is required (justification required).

### 3.3 Landscape Evaluation

The landscape is considered of local importance (Higher value) for bats due to a High score for landscape suitability for bats. The treelines and hedgerows radiating out from the site provide commuting and foraging corridors to other important habitats for bats in the wider landscape and are considered to be of 'Moderate' habitat value (see Table 3).

### 4. **RECOMMENDATIONS**

### 4.1 Tree Removal

Beech trees circled in yellow on Figure 4 had bats emerge and therefore are considered to be 'confirmed roosts' (see Table 4). In that regard a Licence (see Section 1.4) from the National Parks and Wildlife services will be required should these trees need to be felled (with justification required).

The treelines along the field boundaries contained the areas with most bat activity and these trees should therefore be retained for commuting, foraging and potentially roosting bats with the design layout incorporating them where possible. To ensure continuity of hedgerows and treelines for commuting and foraging bats a gap of less than 10m should be used. Gaps over 10m may negatively impact on bat flight dynamics.

Where the occasional mature tree needs to be felled then a bat tree assessment for their individual bat roost suitability should be undertaken rating them as as 'Negligible', 'Low', 'Moderate,' 'Moderate-High' or 'High' bat roosting potential. .

- Tree-felling should be undertaken in the period late August to late October/early November. During this period bats are capable of flight and this may avoid risks associated with tree-felling.
- Felling during the winter months should be avoided as this creates the additional risk that bats may be in hibernation and thus unable to escape from a tree that is being felled. Additionally, disturbance during winter may reduce the likelihood of survival as the bats' body temperature is too low and they may have to consume too much body fat to survive.
- Tree-felling should be undertaken using heavy plant and chainsaw. There is a wide range of machinery available with the weight and stability to safely fell a tree. Normally trees are pushed over, with a need to excavate and sever roots in some cases. In order to ensure the optimum warning for any roosting bats



that may still be present, an affected tree will be pushed lightly two to three times, with a pause of approximately 30 seconds between each nudge to allow bats to become active. Any affected trees should then be pushed to the ground slowly and should remain in place for a period of at least 48 hours to allow bats/other wildlife to escape. Trees felled should NEVER be sawn op or mulched immediately in case protected wildlife is present.

- A pre-felling bat survey should be undertaken the night before felling by a Bat specialist and a derogation licence from the National Parks and Wildlife Services (NPWS) acquired if bats are observed flying out of other High Potential bat trees the night prior to felling. Depending on the number of trees to be felled, numerous surveys may be required. The surveys should be carried out at the appropriate time of year.
- Trees used for future landscaping should comprise of a high percentage of semi-mature native Irish species.

### 4.2 Lighting for Bats

Bats are nocturnal animals, adapted to low-light conditions. This means that most bat species find artificial lighting to be very disturbing. We know that some bat species will not cross lines of street lights.<sup>20</sup> Such light acts as a barrier, disrupting flight paths and restricting access to otherwise suitable habitat. In addition, lighting close to roost access points disturbs bats within a roost, delays emergence times and may result in the abandonment and loss of roosts.

With smarter lighting, rather than less lighting, it is possible to reduce the effects of light pollution. Lighting should only be erected where it is needed, illuminated during the time period it will be used, and only to levels that enhance visibility. Artificial light shining on bat roosts, their access points and the flight paths leading to and from the roost must always be avoided.

In order to preserve the commuting potential of the treelines/hedgerows and to minimise disturbance to bats utilising the site in general, the lighting and layout of the proposed development should be designed to minimise light-spill onto habitats used by the local bat population foraging or commuting. This can be achieved by ensuring that the design of lighting accords with guidelines presented in the Bat Conservation Trust & Institute of Lighting Engineers 'Bats and Lighting in the UK - Bats and Built Environment Series', the Bat Conservation Trust 'Artificial Lighting and Wildlife Interim Guidance' and the Bat Conservation Trust 'Statement on the impact and design of artificial light on bats'.

The activity within the site is mainly along the mature field boundaries (see Figure 3). These areas should not be illuminated however where lighting is unavoidable the design strategy should reduce the potential impact of lighting on bats to include the following:

• The avoidance of direct lighting of existing trees or proposed areas of habitat creation / landscape planting.

<sup>&</sup>lt;sup>20</sup> Stone, E.L., Jones, G., & Harris, S. 2009. Street lighting disturbs commuting bats.Current Biology 19:1-5



- Do not provide excessive lighting. Use only the minimum amount of light needed for safety.
- Minimise light spill. Eliminate any bare bulbs and any upward pointing light. The spread of light should be kept near to or below the horizontal. Flat cutoff lanterns are best.
- Use narrow spectrum bulbs to lower the range of species affected by lighting. Use light sources that emit minimal ultra-violet light and avoid the white and blue wavelengths of the light spectrum to avoid attracting lots of insects. Lighting regimes that attract lots of insects result in a reduction of insects in other areas like parks and gardens that bats may be using for foraging.
- Lights should peak higher than 550 nm<sup>21</sup> or use glass lantern covers to filter UV light. White LED lights do not emit UV but have still been shown to disturb slow-flying bat species.<sup>22</sup>
- Reduce the height of lighting columns. Light at a low level reduces impact. However, higher mounting heights allow lower main beam angles, which can assist in reducing glare.
- For pedestrian lighting, use low level lighting that is as directional as possible and below 3 lux at ground level but preferably below 1 lux.
- Increase the spacing of lanterns.
- Use embedded lights to illuminate paths.
- Limit the times that lights are on to provide some dark periods.
- Use lighting design software and professional lighting designers to predict where light spill will occur.
- Avoid using reflective surfaces under lights.

### 4.3 Future Roosting Opportunities

### 4.3.1 Bat Boxes

Providing bat boxes can increase opportunities for roosting and they are often used as enhancement features. However, it may take a long time for bats to make use of them and in some cases they may never be used. Therefore bat boxes have limited relevance in mitigation schemes and should not be considered in this context as they are rarely able to replicate the roost conditions that will have been lost. In that regard trees recommended for removal that are considered 'High' Roosting Potential should be retained if possible and if not a series of bat boxes should be erected around the site with input from a bat ecologist after the layout is finalised.

Microclimate within a new roost is a very important factor in terms of increasing the chance of successful uptake by bats. Bat boxes should be draught-proof and made from a thermally stable material such as untreated wood, woodcrete, brick or stone. If possible, it is better to provide several internal chambers so that the bats can move around as their needs change. All boxes should have a small entry slit at the bottom (20 mm in width) with a roughened landing strip to allow the bats

<sup>&</sup>lt;sup>21</sup>Van Langevelde, F eta I. 2011. Effect of spectral composition of artificial light on the attraction of moths. Biol. Conserv. doi:10.1016/j.biocon.2011.06.004

<sup>&</sup>lt;sup>22</sup> Stone, E.L., Jones, G., & Harris, S. 2012. Conserving energy at a cost to biodiversity? Impacts of LED lighting on bats. Global Change Biology doi: 10.1111/j.1365-2486.2012.02705.x



to crawl up into the box. The entry slit should be positioned so that accumulated bat waste can drop out the box or be pushed out as bats emerge.

Although it can take bats a long time to make use of artificial roosts, roost ocation 503/17/2023 seems to be the most important factor influencing successful uptake.

### 4.3.2 Bat box positioning considerations

### Orientation

One of the most important ways to optimise internal roost microclimate is to carefully locate the new roost. In general, bats seek warm spaces to help them with rearing young. For this reason, bat boxes should be located where they will receive full/partial sunlight. In the northern hemisphere this will be a southerly orientation (facing south, south-west or south-east). However, it is helpful to install bat boxes in more than one orientation to allow for a choice of roosting conditions.

### Height

Position the bat boxes a minimum of 2m above around, although 5-7m is better to prevent disturbance from people and/or predators. Avoid placing boxes above windows, doors and climbing plants, or other features that might provide access for cats. Keeping boxes away from windows and doors also prevents bat droppings from accumulating and reduces the chances of learner fliers entering open windows or doors. Position near the eaves or gable apex of a building to minimise disturbance.

### Surrounding habitat

To increase the chances of bats roosting in a bat box, it should be placed adjacent to vegetation features such as hedges and treelines. Some bat species use these features for navigation between their roosting site and feeding grounds and to avoid flying in open and exposed areas. Bats will be more likely to discover the artificial roost if it is placed close to an existing flight path.

A series of 10+ bat boxes around the site should be erected during the operational phase, and possibly prior to this phase if derogation licence is required for tree felling (depending on licence requirements). The type recommended is the 2F Schwegler Bat Box.23

### 5. CONCLUSION

On the basis of the findings of the preliminary bat survey it is concluded that the overall impact on bats, arising from the Proposed Development, will most likely be negligible for bats if:

• Existing mature trees and treelines are retained. If occasional trees are removed then to ensure the continuity of hedgerows and treelines for

<sup>&</sup>lt;sup>23</sup> Available here: <u>https://www.nhbs.com/search?g=bat+boxes&atview=158629</u>



commuting and foraging bats a gap of less than 10m should be used. Gaps over 10m may negatively impact on bat flight dynamics.

- A soft tree felling procedure outlined in Section 4.1 should be carried out for any trees for removal.
- If the beech trees circled in yellow on Figure 4 are to be felled then this will require a Derogation Licence from the NPWS as bats were observed emerging from same.
- A bat tree assessment of any mature trees for removal should be undertaken rating them as 'Negligible', 'Low', 'Moderate,' 'Moderate-High' or 'High' bat roosting potential.
- A pre-felling tree survey of any 'Moderate' to 'High' Bat Roost Potential trees should be undertaken in September/October prior their removal to ascertain any bat usage and a bat derogation licence applied for from the National Parks and Wildlife Services (justification required). <u>Numerous</u> <u>surveys many be required given the size of the site.</u> There should also be supplementary planting of semi-mature trees (to include native Irish species) to compensate for any tree removal.
- The lighting and layout of the proposed development should be designed to minimise light-spill onto habitats used by the local bat population foraging or commuting (along existing and internal site boundaries, along the woodland fringes to the centre). The proposed layout and lighting design should ensure a bat friendly lighting design is implemented with input from a bat ecologist. Guidelines for lighting and bats should be taken into account for the lighting layout.
- Bat boxes should be erected on suitable substrates e.g. on trees during the operational phase (or prior to this if any licences are required for tree felling).
- Works should cease if bats are uncovered at any stage during works and a Derogation Licence acquired from the NPWS.

# APPENDICES

RECEIVED. 03412023

## **APPENDIX A**

RECEIVED. 031712023



Plate 1 General site photos.



Plate 2General site photos.



Plate 3 General site photos.



Plate 4General site photos.



Plate 5 Area of trees with Bat Emergence. Licence required if they are to be felled, see Figure 4.



Plate 6 Example of High Bat Potential tree onsite with crevices.



Plate 7Trees where bats were observed emerging. High Activity levels; see<br/>Figure 4. Licence required for if they are require felling.

## **APPENDIX B**

RECEIVED. 031712023

	Spacies	Calls	Mean Peak Frequency	Mean Max	Mean Min Frequency	Mean Call	Mean Call	Property and	latitude	Longitudo
29/09/2021	Text	[#]	[kHz]	Frequency [kHz]	[kHz]	Length [ms]	Distance [ms]		[WGS84]	[WGS84]
	Common									
19:23:10	Pipistrelle	4	47.4	54.2	47	6	100	14	53.43664	-7.91005
	Soprano									
19:25:34	Pipisrelle		54./	56.3	53.8	3.3	246	14	58,43664	-7.91004
10.24.12	Leisiers	1	28.2	28.4	24.2	4.2	170	14	53 1347	7 90401
17.20.12			20.2	20.4	20.2	0.2	1/7	14	33.4362	-7.90601
19:35:29	Bat	2	27.2	28.4	26.2	6.2	179	14	53.43492	7,90938
	Common									<b>~</b> ;;
19:35:59	Pipistrelle	1	43.6	44.5	43.6	7.2	0	14	53.43496	-7.90965
	Leisler's									
19:37:53	Bat	1	28.2	28.4	26.2	6.2	179	14	53.43542	-7.91019
10.00.01	Common		10.0	110	40 5		000			7.01000
19:38:21	Pipistrelle		43.9	44.8	43.5	5	399	14	53.43559	-7.91029
19.39.27	Pinistrelle	2	45.8	62.2	45.2	5	95	14	53 4358	-7 9105
17.07.27	Leisler's			02.2	-0.2	Ŭ	/0	17	00.4000	/./100
19:41:52	Bat	2	27.2	28.4	26.2	6.2	179	14	53.43595	-7.91057
	Soprano									
19:43:58	Pipisrelle	1	53.4	56.4	53.1	3.3	0	14	53.43642	-7.91077
	Soprano						0.50			
19:44:3/	Pipisrelle	4	54.1	58.3	53.9	3.5	353	4	53.43642	-7.91069
19.50.30	Pipistrelle	1	16.2	50 1	15 1	7.8	214	14	53 13616	-7 91025
17.00.00	Common		40.2			7.0	217	17	00.40040	7.71020
19:51:19	Pipistrelle	2	46.6	49.2	45.8	2.8	738	14	53.43655	-7.90996
	Leisler's									
19:53:55	Bat	1	27.5	28.7	25.3	5.9	0	14	53.43671	-7.9103
	Common									
19:55:35	Pipistrelle	1	47.8	52.5	47.4	3	90	14	53.43669	-7.91018
10.52.01	Common	17	AZ 1	40		E	02	1 /	53 12201	701105
17.30.21	Sorpano	17	40.1	00	43.7	5	73	14	55.45004	-7.711ZJ
19:58:47	Pipistrelle	1	52.8	55.5	52.8	3.3	0	14	53.4369	-7.9113

	<b>6 1</b>		Mean Peak		Mean Min				La Placa la	l a conflorad a
29/09/2021	Species Text	Calls [#]	Frequency [kHz]	Mean Max Frequency [kHz]	Frequency [kHz]	Mean Call Length [ms]	Mean Call Distance [ms]	ure tot	Latitude [WGS84]	Longitude [WGS84]
	Sorpano									
20:05:26	Pipistrelle	13	53.7	67.5	53.5	5	80	13	53.43719	-7.91141
	Common								0.	
20:07:47	Pipistrelle	22	44.8	62	44.5	4	90	13	63.4372	-7.91141
	Common								57	
20:11:47	Pipistrelle	17	46.7	65.1	46.5	5	90	13	53.43737	-7.91189
	Common									
20:22:25	Pipistrelle	3	45.6	50.4	45.1	8./	135	13	53.43/25	∋7.91208
00.00.40	Common	11		50.4	44.0		00	10	52 42704	7.01000
20:23:42	Pipistrelle		46./	58.4	46.3	4	90	13	53.43724	-7.91222
20.20.50	Pipistrollo	10	14.9	44.8	14 5	5	90	13	53 13701	7 91205
20.27.30	Sorpano	17	40.0	04.0	40.5	5	70	15	55.45724	-7.71203
20.34.58	Pinistrelle	28	52.3	69 1	52 1	5	84	13	53 43822	-7 91264
20.04.00	Sorpano	20	02.0	07.1	02.1	Ŭ	04	10	00.40022	7.71204
20:36:23	Pipistrelle	1	54.3	58	54	3.9	0	13	53.43823	-7.91266
	Common									
20:45:04	Pipistrelle	11	46.4	55.4	45.8	5	145	13	53.43834	-7.91233
	Sorpano									
20:48:19	Pipistrelle	18	51.1	66	50.8	5	85	13	53.43841	-7.91231
	Common									
20:50:55	Pipistrelle	19	44	58.5	43.6	6	95	13	53.43728	-7.91214
00.54.04	Sorpano	47	50.1	(5.1	51 (	,	00	10	50 40007	7.010/0
20:56:34	Pipistrelle	4/	52.1	65.1	51.6	6	80	13	53.4382/	-7.91263
01.00.40	Sorpano	10	EA /	(4.2	54.2	,	90	10	E2 12017	7 0 1 0 1 7
21.00.42	Sorpapa	10	54.6	64.2	54.5	0	80	12	33.4304/	-/.7121/
21.10.38	Pinistrelle	34	50.2	۸5 <i>۸</i>	19 R	7	85	10	53 13696	-7 90557
21.10.00	Sorpano	54	50.2	05.4	47.0	/	00	12	00.40070	-7.70007
21:13:12	Pipistrelle	44	54.9	69	54.6	5	80	12	53.43695	-7.9056