Planning and Environmental Consultants

Bat Report

Residential Development, Athenry, Co. Galway

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Planning and Environmental Consultants

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1. INTRODUCTION

1.1.1 MKO was commissioned to undertake a bat survey with regards to a now obsolete residential development at Main Road, Prospect, Athenry, Co. Galway. The project proposal was refused by the Board on the 1st August 2024. A new proposition is being prepared for planning. The site layout will remain the same with the addition of the new pedestrian/cycle pathway on a already existing track. This Bat Report was prepared using the site layout from the first initial proposal lodged in September 2023 (PL07.318116/2360759). Bat surveys are considered valid up to 3 years under certain conditions (CIEEM 2019, Lifespan of ecological reports). Bat surveys were carried out according to the good practices guidelines, no major constraints were encountered during the surveys, the results are still relevant to the site layout and the nature of the site has not changed since the original surveys therefore, the results of this report are still considered valid (Collins, 2023). Furthermore, pre-commencement surveys will be carried out once the bat derogation licence is obtained and the nature of any eventual roosts and the presence of bats on site will be re-evaluated before works commence.

The main objective of the surveys was to gather information on roosting, commuting, and foraging bats using the site and to identify any important features for bats. MKO undertook two dusk activity surveys within the site of the proposed development (Grid Reference: M 49587 27380). Two full spectrum bat detectors, Song Meter SM4 (Wildlife Acoustics, Maynard, MA, USA), were also deployed for two weeks to record bat activity at two fixed locations.

The bat survey and assessment were informed by a desk study and with reference to the following guidelines:

- *Bat Surveys for Professional Ecologists – Good Practice Guidelines (3rd edn.) (Collins, 2016)*
- *Bat Roosts in Trees (Andrews, 2018)*
- *Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes (NRA, 2006a)*
- *Guidelines for the Treatment of Bats during the Construction of National Road Schemes (NRA, 2006b)*
- *British Bat Calls: A Guide to Species Identification (Russ, 2012)*
- *Bat Mitigation Guidelines for Ireland. Irish Wildlife Manuals, No. 134. (Marnell, Kelleher & Mullen, 2022)*
- *Guidance Note 08/18: Bats and Artificial Lighting in the UK (ILP, 2018)*

1.2 Policy and Legislation

All Irish bats are protected under European legislation, namely the Habitats Directive (92/43/EEC). All Irish species are listed under Annex IV of the Directive, requiring strict protection for individuals, their breeding sites and resting places. The lesser horseshoe bat (*Rhinolophus hipposideros)* is further listed under Annex II of the Directive, requiring the designation of conservation areas for the species. Under this Directive, Ireland is obliged to maintain the favourable conservation status of Annex-listed species. This Directive has been transposed into Irish law through the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011).

In addition, Irish species are further protected by national legislation (Wildlife Acts 1976-2022). Under this legislation, it is an offence to intentionally disturb, injure or kill a bat or disturb its roost. Any work at a roost site must be carried out with the agreement of the National Parks and Wildlife Service (NPWS) and a derogation licence must be granted before works commence.

1.3 Statement of Authority

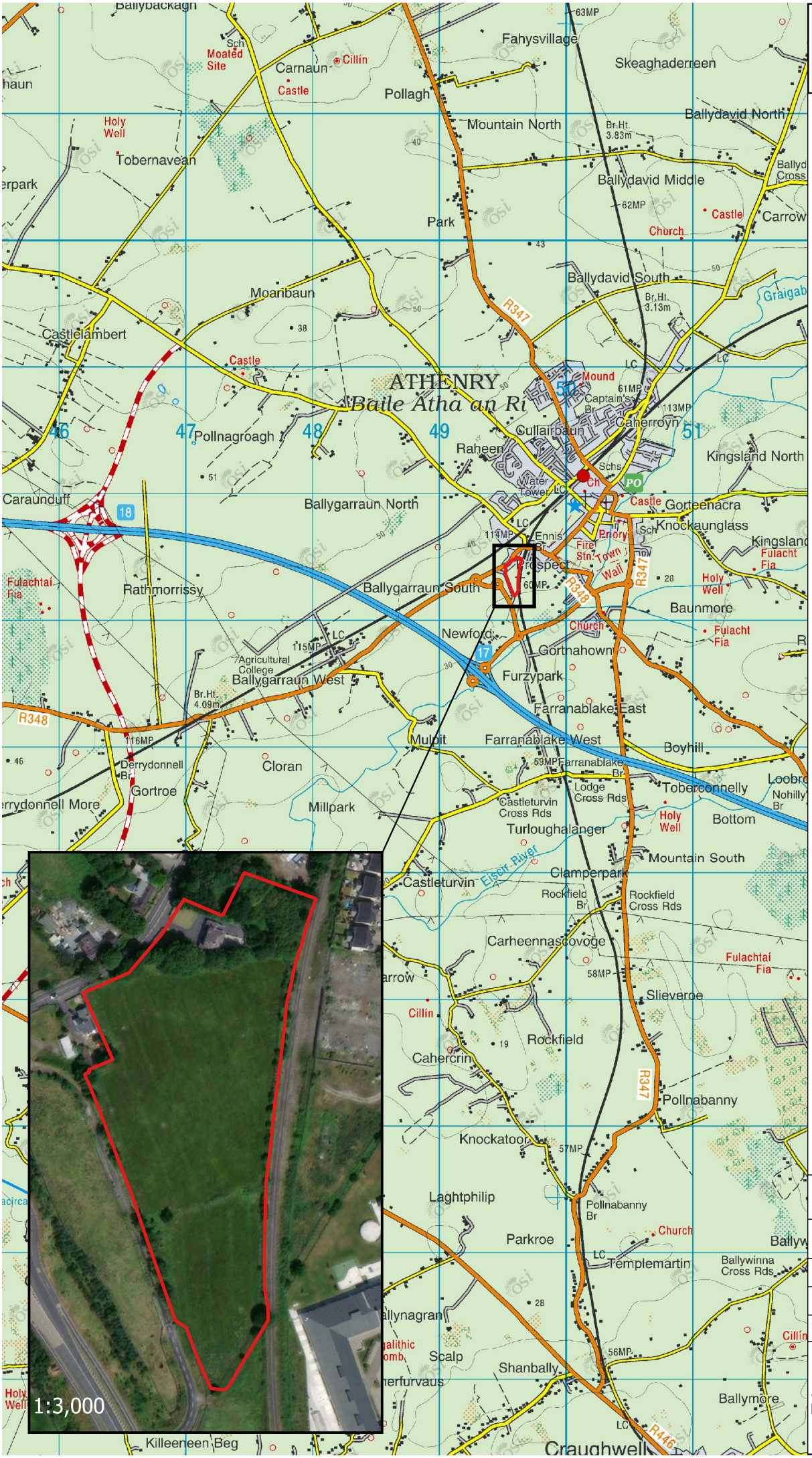
The bat surveys were undertaken by MKO ecologists Neil Campbell (B.Sc., M.Sc.), Laura Gránicz (B.Sc., M.Sc.), Kate Greaney (B.Sc., M.Sc.) and Nathan Finn (B.Sc., M.Sc.). Bat sonogram analysis was carried out by Nora Szijarto (B.Sc., M.Sc.), Nathan Finn and Kate Greaney. This report was prepared by Neil Campbell and Laura Gránicz, with impact assessment and recommendations provided by Sara Fissolo (B.Sc.), Project Ecologist. The report was reviewed by Aoife Joyce (BSc., MSc.,), Project Director. All staff have relevant academic qualifications to complete the surveys and assessments at this level and are part of a dedicated bat unit within the wider Ecology team at MKO.

2. CHARACTERISTICS OF PROPOSED DEVELOPMENT

The proposed development site is in an agricultural field located south of Athenry town, Co. Galway. The site is bordered by the regional road R347 to the north, an unnamed local road to the west and a trainline to the east (Grid Reference: M 49587 27380). A site location map is presented in Figure 2-1.

The proposed development will consist of the following:

- *Construction of 72 no. residential units, comprising;*
  - i. *30 no. houses (8 no. two storey two bed residential dwellings, 19 no. two storey three bed residential dwellings, 2 no. three bed courtyard houses, 1 no. four bed courtyard house)*
  - ii. *42 no. apartments units – (including 22 no. two beds and 20 no. one bed apartment units) set out in 9 no. two-storey blocks.*
- *Creation of new vehicular and pedestrian access from/to the existing Prospect Road;*
- *Provision of a new footpath on the existing Prospect Road;*
- *Demolition of a two-storey residential dwelling (221 sqm);*
- *Provision of storm water attenuation measures;*
- *Provision of information board and buffer area around Recorded Monument (GA084-111);*
- *Provision of communal open space, private open space, site landscaping and boundary treatment, car parking, bicycle parking, bin stores, pedestrian, cycle and vehicular links throughout the development; and all associated development works.*


ATHENRY
Baile Átha an Rí
Fahysvillage
Skeaghaderreen
Ballydavid North
Ballydavid Middle
Ballydavid South
Mountain North
Pollagh
Carnaun
Tobernavean
Park
Moanbaun
Castlelambert
Pollnagroagh
Raheen
Cullairbaun
Caherroyn
Kingsland North
Gorteenacra
Knockaunglass
Caraunduff
Ballygarraun North
Ballygarraun South
Rathmorrissy
Prospect
Newford
Gortnahown
Furzypark
Ballygarraun West
Farranablake East
Farranablake West
Mulpit
Boyhill
Baunmore
Cloran
Millpark
Gortroe
Derrydonnell
Toberconnelly
Bottom
Turloughalanger
Castleturvin
Clamperpark
Mountain South
Carheennascovoge
Slieveroe
Rockfield
Cahercrin
Pollnabanny
Knockatoor
Laghtphilip
Parkroe
Remplemartin
Scalp
Shanbally
Ballymore
Killeeneen Beg
Craughwell
R347
R348
R446
1:3,000
Map Legend
Site Boundary
Microsoft product screen shots reprinted with permission from Microsoft Corporation
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Drawing Title
Site Location
Project Title
Residential Development Athenry
Drawn By
DC
Checked By
SF
Project No.
221028
Drawing No.
Fig. 2-1
Scale
1:40,000
Date
29/06/2023
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3. METHODS

3.1 Desktop Study

A desktop review of published material was undertaken to inform all subsequent field studies and assessments. The aim of the desktop review was to identify the presence of species of interest within the proposed site and surrounding region.

The following list describes the sources of data consulted:

- *Review of online web-mappers: National Parks and Wildlife Service (NPWS) mapping.*
- *Review of NPWS Article 17 Report.*
- *Review of the publicly available National Biodiversity Data Centre web-mapper.*
- *Review of specially requested records from the NPWS Rare and Protected Species Database for the hectads which overlap with the study area.*

3.1.1 National Bat Database of Ireland

The National Bat Database of Ireland holds records of bat observations received and maintained by Bat Conservation Ireland. These records include results of national monitoring schemes, roost records as well as ad-hoc observations. The database was searched on 22/06/2023 for bat presence and roost records within 10km of the proposed development site.

In addition, information on species' range and distribution, available in the 2019 Article 17 Reports (NPWS, 2019), was reviewed in relation to the location of the development. The NPWS monitors the conservation status of European protected habitats and species and reports their findings to the European Commission every 6 years in the form of an Article 17 Report. The most recent report for the Republic of Ireland was submitted in 2019.

3.1.2 Designated Sites

The potential for the proposed development to impact on sites that are designated for bats was considered within the Appropriate Assessment and Ecological Impact Assessment produced for the proposed development site by Openfield Ecological Services.

Special Areas of Conservation (SACs) are designated under EU Habitats Directive. The potential for effects on European Sites is fully considered in the AA Screening Report that accompanies this report. The European Sites that are within the Zone of Likely Impact, with bats identified as Qualifying Interests, are listed in the Appropriate Assessment Screening Report (AASR) and are not repeated in this document.

Natural Heritage Areas (NHAs) are designated under the Wildlife (Amendment) Act 2000 and their management and protection is provided for by this legislation and planning policy. The potential for effects on these designated sites is fully considered in the EcIA.

Proposed Natural Heritage Areas (pNHAs) were designated on a non-statutory basis in 1995 but have not since been statutorily proposed or designated. However, the potential for effects on these designated sites is fully considered in the EcIA.

3.2 Field Surveys

3.2.1 Ecological Appraisal (Bats)

A walkover survey of the Study Area was initially carried out during daylight hours on the 4th April 2023. Follow-up visits were completed on the 6th and 22nd June 2023. The landscape features on the site were visually assessed for potential use as bat roosting habitats and commuting/foraging habitats using a protocol set out in BCT *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edn.) (Collins, 2016). Table 4.1 of the 2016 BCT Guidelines identifies a grading protocol for assessing structures, trees and commuting/foraging habitat for bats. The protocol is divided into four Suitability Categories: *High, Moderate, Low* and *Negligible*.

3.2.1.1 Roost Assessment

A search for roosts was undertaken within the boundary of the proposed development. The aim was to determine the presence of roosting bats and the need for further survey work or mitigation. The site was visited on multiple occasions in April and June 2023. All structures and trees found within the proposed development site were assessed for their potential to support roosting bats. Any potential roost sites were subject to a roost assessment. This comprised a detailed inspection of the exterior and interior (if accessible) to look for evidence of bat use, including live and dead specimens, droppings, feeding remains, urine splashes, fur oil staining and noises.

Trees within the site were also assessed from ground level, with the aid of binoculars. Any potential tree roosts were examined for the presence of rot holes, hazard beams, cracks and splits, partially detached bark, knot holes, gaps between overlapping branches and any other potential roost features (i.e., PRFs) identified by Andrews (2018).

3.2.2 Dusk Activity Surveys

Two dusk surveys were carried out in June 2023 (Table 3-1). The aim of the surveys was to identify if there were bats roosting at the proposed site, what bat species were present and to gather any information on bat foraging and commuting behaviour. The activity surveys included walked transects across the extent of the proposed site during the dusk surveys. Figure 3-1 shows the route travelled during the manual surveys.

The dusk surveys commenced 15 minutes before sunset and were completed for 2 hours after sunset. Conditions were suitable for all bat surveys completed at the site (Table 3-1).

Table 3-1 Bat Activity Survey Effort

Date	Surveyor	Type	Sunrise/Sunset	Weather
6th June 2023	Neil Campbell, Laura Gránicz	Dusk	21:58	17-19°C, Dry, Calm, Cloud cover approx. 5%
22nd June 2023	Kate Greaney, Nathan Finn	Dusk	22:08	16-20°C, Dry, Calm, Cloud cover 100%

3.2.3 Static Detector Surveys

Full spectrum bat detectors, Song Meter SM4 (Wildlife Acoustics, Maynard, MA, USA), were deployed during static surveys to record bat activity at two fixed locations over a 2-week period in 2023. The two locations of static detectors were selected to represent the range of habitats present within the site, including favourable bat habitats. The survey was designed to utilise the static detectors to monitor bat

activity within the site at potential activity hotspots. Two full spectrum bat detectors, Song Meter SM4 detectors were deployed on site on the 6th June 2023. The detectors were collected on the 22nd June 2023. Static detector locations can be found in Figure 3-1.

Settings used were those recommended by the manufacturer for bats, with minor adjustments in gain settings and band pass filters to reduce background noise when recording. Detectors were set to record from 30 minutes before sunset until 30 minutes after sunrise. The Song Meter automatically adjusts sunset and sunrise times using the Solar Calculation Method when provided with GPS coordinates.

3.2.3.1 Analysis of Detector Results

Echolocation signal characteristics (including signal shape, peak frequency of maximum energy, signal slope, pulse duration, start frequency, end frequency, pulse bandwidth, inter-pulse interval and power spectra) were compared to published signal characteristics for local bat species (Russ, 1999). Myotis species (potentially *M. daubentonii, M. mystacinus, M. nattereri*) were considered as a single group, due to the difficulty in distinguishing them based on echolocation parameters alone (Russ, 1999). The echolocation of *P. pygmaeus* and *P. pipistrellus* are distinguished by having distinct frequencies (peak frequency of maximum energy in search flight) of ~55 kHz and ~46 kHz respectively (Jones & van Parijs, 1993).

Plate 3-1 below shows a typical sonogram of echolocation pulses for Common pipistrelle recorded with a SM4BAT bioacoustic static bat recording device. The recorded file is illustrated using Wildlife Acoustics Kaleidoscope software.

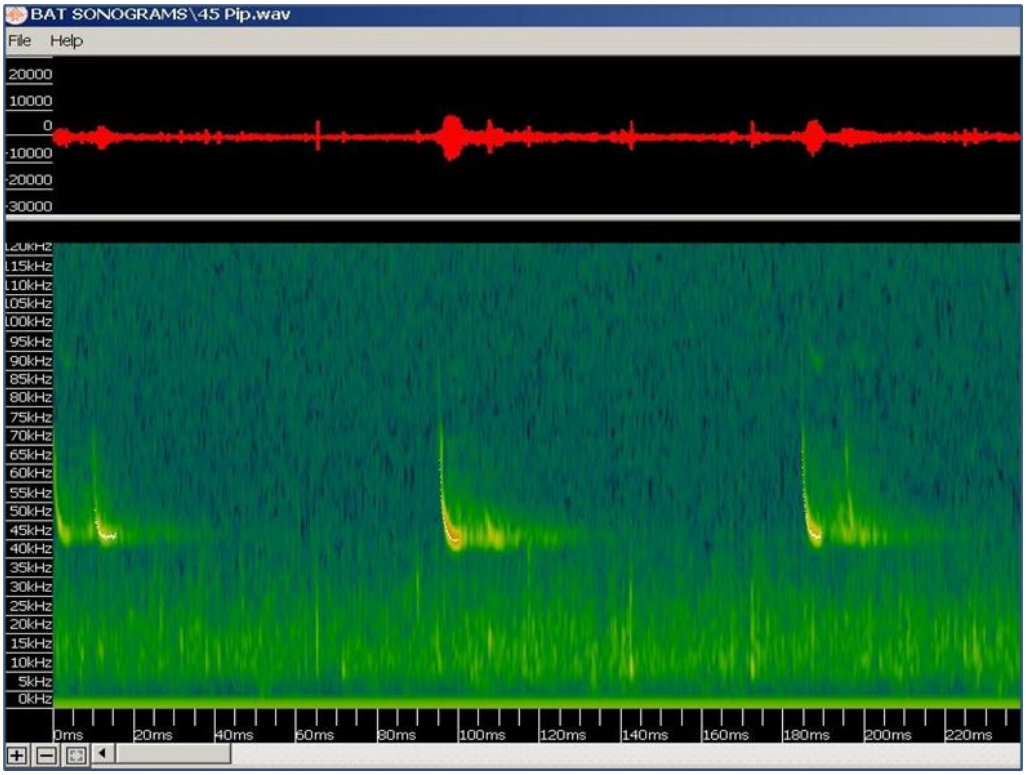

Plate 3-1 Sonogram of Echolocation Pulses of Common pipistrelle (Peak Frequency 45kHz)

Individual bats of the same species cannot be distinguished by their echolocation alone. Thus, 'bat passes' was used as a measure of activity (Collins, 2016). For the purposes of this survey, a bat pass was defined as a recording of an individual species/species group's echolocation containing at least two echolocation pulses and of maximum 15 seconds length.

Map Legend

- Site Boundary
- Detector Locations
- Inspected Buildings

Inspected Trees

- Low
- Moderate

Manual Surveys

- Transect Route 22.06.2023
- Transect Route 06.06.2023

N

Drawing Title
Survey Effort

Project Title
Residential Development Athenry

Drawn By	Checked By
DC	SF
Project No.	Drawing No.
221028	Fig. 3-1
Scale	Date
1:1,200	29/06/2023

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Survey Limitations

Survey design and effort was created in accordance with the most current best practice guidelines for surveying bats (Collins, 2016).

June is within the optimal survey period for bat activity surveys (Collins, 2016). Weather conditions were suitable for carrying out all surveys.

No limitations in the scope, scale or context of the assessment have been identified. Overall, a comprehensive assessment has been achieved.

4. RESULTS

4.1 Desktop Study

4.1.1 National Bat Database of Ireland

National Biodiversity Data Centre

A review of the National Bat Database of Ireland was made on the 22nd of June 2023 yielded results of bats within a 10km radius of the proposed development site. The search yielded seven bat species within 10km. Table 4-1 lists the bat species recorded within the hectads which pertains to the current study area (M41, M42, M51, M52, and M53).

Table 4-4-1 NBDC Bat Records

Hectad	Species	Date	Database	Status
M41	Brown Long-eared Bat (*Plecotus auritus*)	24/04/2006	National Bat Database of Ireland	Annex IV
M41	Daubenton's Bat (*Myotis daubentonii*)	20/08/2014	National Bat Database of Ireland	Annex IV
M41	Lesser Horseshoe Bat (*Rhinolophus hipposideros*)	26/01/2015	National Lesser Horseshoe Bat Database	Annex II & IV
M41	Lesser Noctule (*Nyctalus leisleri*)	09/09/2009	National Bat Database of Ireland	Annex IV
M41	Natterer's Bat (*Myotis nattereri*)	24/04/2006	National Bat Database of Ireland	Annex IV
M41	Common pipistrelle (*Pipistrellus pipistrellus*)	09/09/2009	National Bat Database of Ireland	Annex IV
M41	Soprano Pipistrelle (*Pipistrellus pygmaeus*)	09/09/2009	National Bat Database of Ireland	Annex IV
M42	*Lesser Horseshoe Bat (Rhinolophus hipposideros)*	07/03/2006	National Bat Database of Ireland	Annex II & IV
M42	*Brown Long-eared Bat (Plecotus auritus)*	16/08/2014	National Bat Database of Ireland	Annex IV
M42	Common pipistrelle *(Pipistrellus pipistrellus)*	05/06/2012	National Bat Database of Ireland	Annex IV
M42	Soprano pipistrelle *(Pipistrellus pygmaeus)*	05/06/2012	National Bat Database of Ireland	Annex IV
M42	Leisler's bat *(Nyctalus leisleri)*	05/06/2012	National Bat Database of Ireland	Annex IV
M42	Daubenton's Bat *(Myotis daubentonii)*	18/08/2014	National Bat Database of Ireland	Annex IV
M42	Natterer's Bat *(Myotis Nattereri*)	07/03/2006	National Bat Database of Ireland	Annex IV
M43	Brown Long-eared Bat (*Plecotus auritus*)	25/06/2009	National Bat Database of Ireland	Annex IV
M43	Daubenton's Bat (*Myotis daubentonii*)	25/06/2009	National Bat Database of Ireland	Annex IV
M43	Lesser Noctule (*Nyctalus leisleri*)	25/06/2009	National Bat Database of Ireland	Annex IV
M43	Natterer's Bat (*Myotis nattereri*)	04/06/2009	National Bat Database of Ireland	Annex IV

M43	Common pipistrelle (*Pipistrellus pipistrellus*)	04/06/2009	National Bat Database of Ireland	Annex IV
M43	Soprano Pipistrelle (*Pipistrellus pygmaeus*)	25/06/2009	National Bat Database of Ireland	Annex IV
M52	Daubenton's Bat (*Myotis daubentonii*)	09/08/2011	National Bat Database of Ireland	Annex IV
M52	Natterer's Bat (*Myotis nattereri*)	26/05/2008	National Bat Database of Ireland	Annex IV
M52	Common pipistrelle (*Pipistrellus pipistrellus*)	26/05/2008	National Bat Database of Ireland	Annex IV
M52	Soprano Pipistrelle (*Pipistrellus pygmaeus*)	17/04/2009	National Bat Database of Ireland	Annex IV
M53	Daubenton's Bat (*Myotis daubentonii*)	05/10/2009	National Bat Database of Ireland	Annex IV
M53	Natterer's Bat (*Myotis nattereri*)	29/09/2006	National Bat Database of Ireland	Annex IV
M53	Common pipistrelle (*Pipistrellus pipistrellus*)	05/10/2009	National Bat Database of Ireland	Annex IV
M53	Soprano Pipistrelle (*Pipistrellus pygmaeus*)	05/10/2009	National Bat Database of Ireland	Annex IV

4.1.2 Bat Species Range

The potential for negative impacts is likely to increase where there are high risk species at the edge of their range (NatureScot, 2021). Therefore, range maps presented in the 2019 Article 17 Reports (NWPS, 2019) were reviewed in relation to the location of the proposed development.

The proposed development site is located on the edge of the current known range for Lesser horseshoe bat and Nathusius' pipistrelle, and within range for all other species, as mapped in the Article 17 reporting.

4.1.3 Designated Sites

The following Designated Sites have been identified as having Lesser horseshoe bat as a Qualifying Interest within 15km of the proposed development.

Lough Corrib SAC (000297)

The SAC site boundary is located 8.6km from the proposed development. The Lesser horseshoe bat roost for which the SAC has been designated (roost id. 217 in NPWS database) is located approximately 48km to the north-west of the site of proposed development. This is significantly outside the foraging range (2.5km) of Lesser Horseshoe bat (NPWS, 2013). There is no potential for significant effect on the Lesser horseshoe bat population or the QI habitats either in the form of disturbance, loss or deterioration of habitat quality.

Lough Fingall Complex SAC (000606)

The SAC site boundary is located 13.1km from the proposed development. The Lesser horseshoe bat roost for which the SAC has been designated (roost id. 244 in NPWS database) is located approximately 16.4km to the south-west of the site of proposed development. This is significantly outside the foraging range (2.5km) of Lesser horseshoe bat (NPWS, 2013). There is no potential for significant effect on the Lesser horseshoe bat population or the QI habitats either in the form of disturbance, loss or deterioration of habitat quality for which the SAC has been designated.

4.1.4 Conclusion of Desktop Study

The desktop study has provided information about the existing bat activity in grid squares M41, M42, M43, M52, and M53 within which the proposed development is located.

Bat records within 2.5km and 10km of the proposed development revealed that the wider area has been studied for bats and that a number of bat roost for a variety of species have been recorded. This suggests that the area offers potential for foraging and commuting bat species.

4.2 Bat Habitat Appraisal

An initial walkover survey, assessing bat habitat suitability, was conducted on the 4th of April 2023. Habitats recorded at the site were assessed for their suitability to support roosting, foraging and commuting bats. Additional visits to the site were conducted on the 6th and 22nd of June 2023. A full description of the ecological baseline is presented and mapped within the Ecological Impact Assessment (EcIA) accompanying the planning application. Habitats within the site are summarised in Table 4-2.

Table 4-2 Habitats as per EcIA

Habitat	Fossit Code
Dry Meadows and Grassy Verges	GS2
Stone Walls	BL1
Treeline	WL2
Earth Banks	BL2
Buildings and Artificial Surfaces	BL3
Immature Woodland	WS2

The proposed development site primarily consists of open grassland, with patchy linear features and scrub located along field boundaries. A small area of mixed woodland is located north of the site, surrounding an inhabited dwelling. An earth bank is located along the eastern boundary next to an adjacent railway line.

With regard to foraging and commuting bats, areas of open grassland were considered of *Low* suitability, i.e., habitat that could be used by small numbers of commuting or foraging bats (Collins, 2016). Treelines around the site provide good connectivity to the surrounding landscape. As such, they were assessed as having *Moderate* suitability i.e., 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 (Collins, 2016). *High* suitability was also assigned to the small woodland located to the north of the proposed development site.

Plate 4-1 Proposed development site – Open grassland

Plate 4-2 Mixed woodland

4.2.1 Roost Assessment

A daytime walkover survey and inspection of the site was initially conducted on the 4th April 2023. The grading protocol described by Collins (2016) was used: structures with *High* roosting potential present 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 and surrounding habitat; structures with *Moderate* roosting potential could be used by bats due to their size, shelter, protection, conditions and surrounding habitat, but are unlikely to support a roost of high conservation status; structures with *Low* potential present one or more potential roost sites that could be used by an individual bat opportunistically.

Follow-up assessments were conducted on the 6th and 22nd of June 2023. Following the search for roosts, two structures were identified within the site boundary, and a third structure just north of the site was also inspected.

The site was also checked for potential tree roosts. Trees within the site consisted of a mixture of immature and semi mature sycamore, ash and hawthorn trees, as well as cypress species, most of which found within tree lines. A small section of mixed woodland was recorded north of the site. Five trees within the proposed development site were identified as having potential roost features (PRF's), as detailed in section 4.2.1.4 below. As such, the proposed development site was considered to have *Moderate* suitability for roosting bats.

4.2.1.1 Dwelling House

The dwelling house (IG Ref.: M 49935 27807) was a two-storey building (Plate 4-3), with brick walls and a separate attic space with access from the loft. The roof was a tile roof, and in the attic both underfelt lining and loft insulation were present (Plate 4-4). There was no natural or artificial lighting within the attic. An open water tank was present within the attic (Plate 4-5). The house was inhabited and in use at the time of surveying with artificial light spill from the interior of the structure to the outside. There was also an exterior motion sensor light to the east of the building. From the outside, a number of potential bat access points were identified, along the eave soffit (Plate 4-6) and under the gutters on the east side of the building.

During the interior inspection, the attic space, the loft room and the corridors were inspected in detail. In the attic a small number of old droppings were found, and a highly decomposed bat was recovered

from the open water tank (Plate 4-8). No identification of the carcass was possible due to its state of decomposition.

As such, the house was assigned *Moderate* roosting potential. The building is proposed for demolition as part of the proposed development.

Plate 4-3 Dwelling House

Plate 4-4 Attic with underfelt lining and loft insulation

Plate 4-5 Uncovered water tank within *the attic*

Plate 4-6 Possible bat access point at the soffit, next to a pipe

Plate 4-7 Bat dropping found in the attic

Plate 4-8 Decomposed bat found within *the* water tank

4.2.1.2 Derelict Building

A derelict structure (IG Ref.: M 49596 27491) was identified within the broadleaved forest adjacent to the proposed development site, surrounded by dense vegetation (Plate 4-9). It was an ivy-covered block building, with a slated roof. An outbuilding with partial access was also located near the structure (Plate 4-10). Only an exterior inspection of the derelict building was possible due to the lack of safe entry

options. During the exterior inspection, no evidence of bat use was found, however several potential bat access points were identified, under the eaves and through a broken window.

The building is located outside the site boundary and will not be affected by the proposed development.

Plate 4-9 Derelict building surrounded by dense vegetation

Plate 4-10 Half open outbuilding

4.2.1.3 Shed Ruin

A shed ruin with ivy coverage within the western boundary of the survey area was inspected (IG Ref.: M 49566 27275, Plates 4-11 and 4-12). It contained wall segments, which were covered with ivy. The ruin is bright, but due to the ivy coverage, can be suitable only for individual bats periodically. It was assigned *Low* potential. All the wall segments have been inspected, but no bat signs were found.

Plate 4-11 Shed ruin, middle section

Plate 4-12 Shed ruin, south section

4.2.1.4 Tree Surveys

The trees located in the proposed development area were inspected as part of the assessment. No evidence of roosting bats was found; however, some of the trees inspected presented features suitable for roosting bats and are described below in Table 4-3. All other trees on site presented *Negligible* roosting potential.

Table 4-3 Tree inspection results

#	Species	Potential	Notes	Location, Irish Grid Reference	Plate
1	Ash *Fraxinus excelsior*	Moderate	Broken limbs, ivy cover	M 49555 27445	4-13
2	*Sycamore Acer sp.*	Moderate	Knot holes	M 49548 27443	4-14
3	Sycamore *Acer sp.*	Low	Broken limbs	M 49559 27451	n/a
4	Ash *Fraxinus excelsior*	Moderate	Broken limbs, knot holes, pruning cuts, ivy cover	M 49582 27449	4-15, 4-16
5	Ash & Hawthorn *Fraxinus excelsior* and *Crataegus monogyna*	Moderate	Veteran hawthorn tree	M 49630 27235	4-17

Plate 4-13 Fraxinus excelsior with Moderate potential

Plate 4-14 Acer sp. with Moderate potential

Plate 4-15 Fraxinus excelsior *with moderate-high potential*

Plate 4-16 PRF found on Fraxinus excelsior

Plate 4-17 Fraxinus excelsior and Crataegus monogyna

4.2.2 Dusk Activity Surveys

Two dusk activity surveys were carried out within the proposed development site. The surveys included emergence surveys of potential roosting features identified as well as walked transect of the proposed development site.

Numerous foraging and commuting bats were recorded during the dusk bat activity surveys. In total, 609 bat passes were recorded across both surveys. Activity was dominated by Soprano pipistrelle (*Pipistrellus pygmaeus*) n=302. This was closely followed by Common pipistrelle (*Pipistrellus pipistrellus*) n=285. In addition, very small numbers of Leisler's bat (*Nyctalus leisleri*) n=15, *Myotis spp.* n=4 and Brown long-eared bats (*Plecotus auritus*) n=3 were also recorded during the manual surveys.

Plate 4-18 shows total bat species composition and Table 4-4 presents the results per survey.

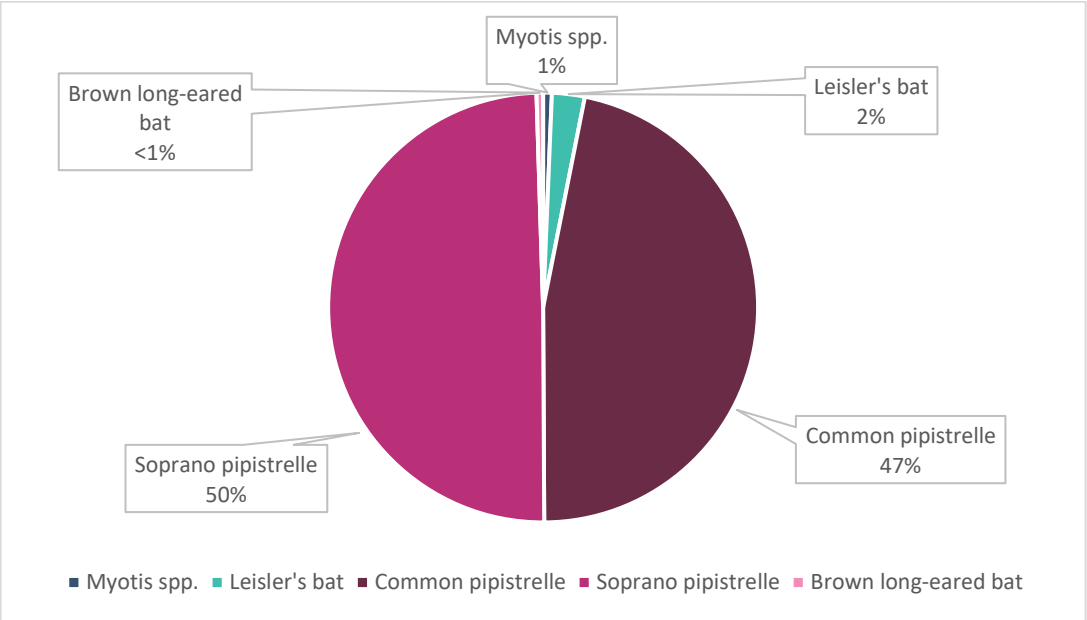

Plate 4-18 Dusk Manual Activity Surveys – Species Composition

The first activity survey focused on the two-storey dwelling. No bats were observed emerging from the structure. Most activity was noted coming from the woodland area located north of the dwelling, with bats foraging around the dwelling's yard before commuting away from the site. More species diversity was recorded during this survey, as *Myotis* species were recorded commuting within the north-western section of the yard.

Higher activity levels were recorded during the second bat activity survey. The emergence survey focused on the trees located south of the house, which are proposed to be felled as part of the proposed development. Bats were again observed coming into the site from the north, however none were confirmed emerging from any of the PRFs identified. A small number of bats were suspected of emerging from the treeline area, but exact roosting locations were not identified. The recording times and activity patterns are indicative of roosting nearby.

Table 4-4 Dusk Activity Surveys – Results by Survey

Species	Dusk 6th June 2023	Dusk 22nd June 2023	Total
Common pipistrelle	84	201	**285**
Soprano pipistrelle	77	225	**302**
Leisler's bat	2	13	**15**
Myotis spp.	4	-	**4**
Brown long-eared bat	2	1	**3**
Grand Total	**169**	**440**	**609**

Regular activity was recorded during the transect surveys carried out throughout the site, with most activity recorded being concentrated to the north. Bat activity was recorded along linear features, but it was also noted that both pipistrelle species and Leisler's bats recorded were commuting through the middle of the open grassland. Results of the dusk surveys are presented in Figures 4-1 and 4-2.

Map Legend

- Site Boundary
- Detector Locations
- Transect Route

Bat Species

- Myotis spp.
- Leisler's bat
- Common pipistrelle
- Soprano pipistrelle
- Brown long-eared bat

N

Drawing Title	Manual Survey Results 06.06.2023
Project Title	Residential Development Athenry
Drawn By: DC	Checked By: SF
Project No.: 221028	Drawing No.: Fig. 4-1
Scale: 1:1,200	Date: 29/06/2023

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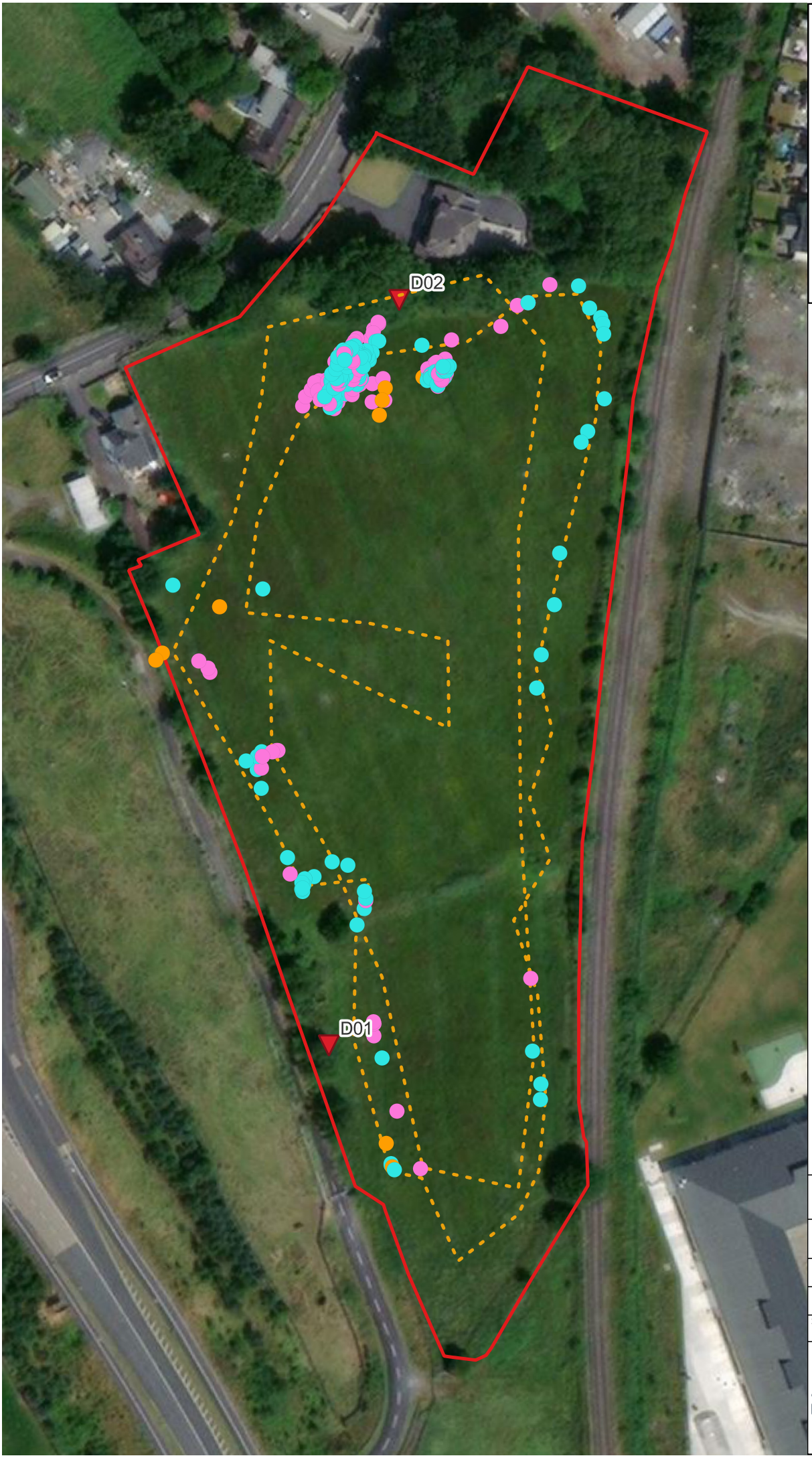

Map Legend

- Site Boundary
- Detector Locations
- Transect Route

Bat Species

- Leisler's bat
- Common pipistrelle
- Soprano pipistrelle
- Brown long-eared bat

N

Drawing Title	Manual Survey Results 22.06.2023
Project Title	Residential Development Athenry
Drawn By: DC	Checked By: SF
Project No.: 221028	Drawing No.: Fig. 4-2
Scale: 1:1,200	Date: 29/06/2023

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4.2.3 Static Detector Survey Results

Two static detectors were deployed on the site for two-weeks in June 2023. The detectors allowed a specific look into species composition, commuting and foraging activities within the site. Detector D01 was located under an ash tree along the treeline located south of the existing inhabited house. Detector D02 was located to the south of the proposed development site along an agricultural field line in the vicinity of the shed ruin and scattered trees.

All recordings were later analysed using bat call analysis software Kaleidoscope Pro v.5.4.9 (Wildlife Acoustics, MA, USA). Bat species were identified using established call parameters, to create site-specific custom classifiers. All identified calls were also manually verified. In total, 11,365 bat passes were recorded.

Analysis of the detector recordings positively identified five bats to species, with the *Myotis* genus also present. The vast majority of bat passes recorded included pipistrelle species which are widespread in Ireland: Soprano pipistrelle (*Pipistrellus pygmaeus*, n=4,400) and Common pipistrelle (*Pipistrellus pipistrellus*, n= 4,097). Leisler's bat (*Nyctalus leisleri*, n=2,831) were also recorded in high numbers. Finally, brown long-eared bats (*Plecotus auritus,* n=27), *Myotis* spp. (n=8) and Nathusius' pipistrelles (*Pipistrellus nathusii,* n=2), were recorded less frequently. The species composition recorded is shown in Plate 4-20.

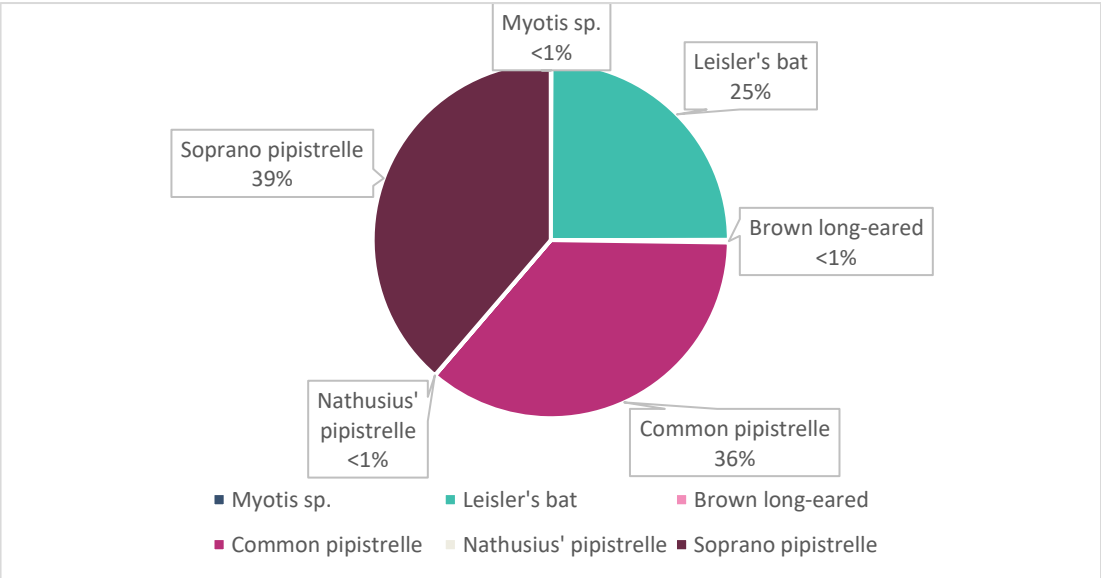

Plate 4-19 Species Composition – Static Detectors

Plate 4-21 shows total bat passes per detector. Species activity was similar across the two detectors for all species recorded, with the exception of Leisler's bats, as almost 80% of this species' passes were recorded by detector D02, which was located in a largely open pasture habitat. Analysis of pass timings shows no potential for nearby roosting for Leisler's, with no passes being recorded during this species' early emergence times, and most activity recorded as occasional passes throughout the night.

Brown long-eared bats were primarily recorded at D01 (n=23), while six *Myotis* spp. passes were recorded at D02. As for Leisler's bats, activity for these species was exclusively recorded outside of emergence windows. A single Nathusius' pipistrelle pass was recorded at each detector on different nights.

Pipistrelle activity was similar between the two detectors deployed within the proposed development site. Activity at both detectors was recorded primarily within an hour after sunset and prior to sunrise, however more pipistrelle activity was recorded throughout the night at D02 than at D01. Activity times are indicative of a small roost present in the vicinity of detector D01, with passes being recorded earlier

at this location. While activity within known emergence windows was recorded for both pipistrelle species, Soprano pipistrelle activity was more regularly recorded within emergence times and in higher numbers. Foraging activity was recorded by both detectors.

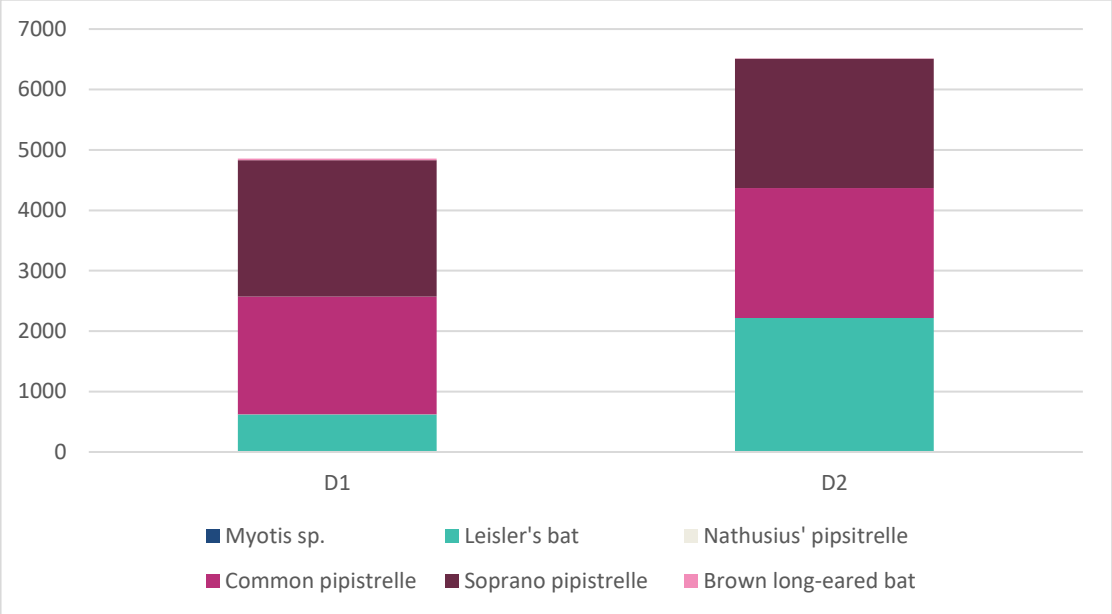

Plate 4-20 Total Bat Passes Per Detector

Analysis of the detector recordings also highlighted the total bat passes per night. Species composition per night is shown in Plate 4-22. Activity composition varied throughout the deployment, with Leisler's bats activity occurring irregularly. The lowest activity was recorded on June 16th, where only 12 Soprano pipistrelle passes were recorded, mostly at detector D02. Where low activity was recorded on a night, this was concentrated within the hours immediately after sunset or before sunrise.

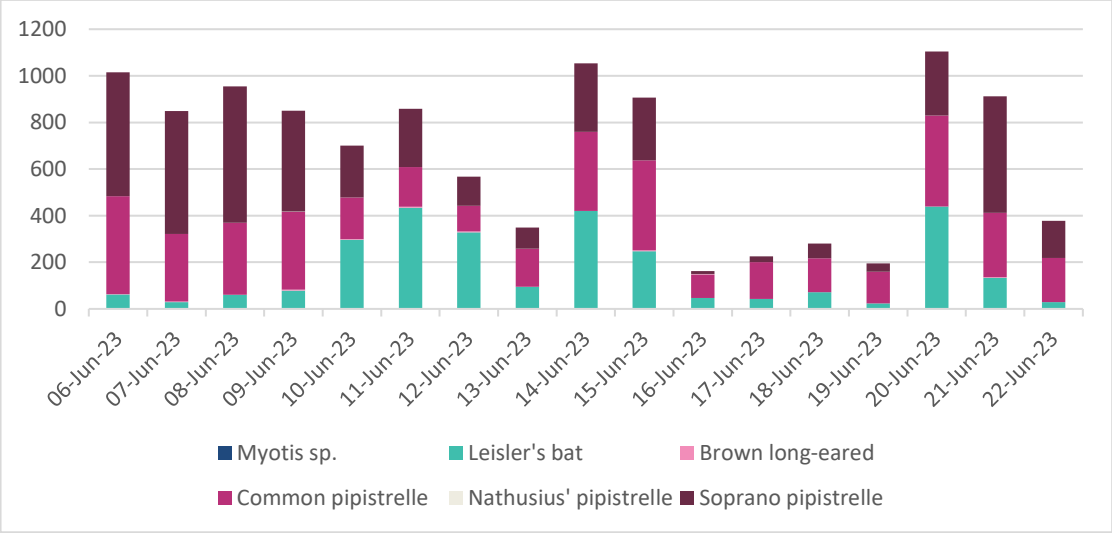

Plate 4-21 Total Bat Passes per Night

4.3 Importance of Bat Population Recorded at the Site

Ecological evaluation within this section follows a methodology that is set out in Chapter three of the '*Guidelines for Assessment of Ecological Impacts of National Roads Schemes'* (NRA, 2009).

All bat species in Ireland are protected under the Bonn Convention (1992), Bern Convention (1982) and the EU Habitats Directive (92/43/EEC). Additionally, in Ireland bat species are afforded further protection under the Birds and Natural Habitats Regulations (2011) and the Wildlife Acts 1976-2022.

Bats as an Ecological Receptor have been assigned *Local Importance (Higher value)* on the basis that the habitats within the proposed development site are utilized by a regularly occurring bat population of *Local Importance.*

Roosting activity by a small number of pipistrelle bats has been identified within the proposed development site, within an inhabited two-storey dwelling and within trees surrounding the site boundary.

No roosting site of high ecological significance or of *National Importance* (i.e. site greater than 100 individuals) was recorded within the site.

5. ASSESSMENT OF LIKELY EFFECTS

5.1 Loss of Roosting Habitat

Evidence of roosting bats and potential roosting features were identified within the proposed development site during the daytime inspections and dusk activity surveys carried out in June 2023. A potential for significant impact on bat roosting habitat has been identified.

Table 5-1 Assessment of Potential Impacts on Roosting Bats

Description of Effect	The demolition of the dwelling has the potential to result in direct loss of roosting habitat and the potential for bat mortality. Evidence of a small number of roosting bats in the form of small amounts of droppings and a single carcass was identified within the occupied building. No evidence of significant roosting activity was identified within the site and it is likely that the occupied structure was used opportunistically by bats. No evidence of roosting bats was identified in trees within the site; however, a number of trees were identified as having roosting potential for bats. A total of 33 trees will be removed. All five trees identified as having *Low* or *Moderate* roosting potential during the inspection surveys will be removed as part of the proposed development.
Characterisation of unmitigated effect	The loss of bat roosts and/or individual bats that may be present at the time of demolition, felling and construction, would represent a permanent negative effect. Given that no evidence of significant roosting activity was recorded within the structures or trees, and only small amounts of evidence of roosting bats was recorded in the dwelling, it is unlikely that the magnitude of this effect would be anything other than slight.
Assessment of Significance prior to mitigation	This has the potential to have a long-term slight effect on a receptor of Local Importance (Higher Value).
Mitigation	• On a highly precautionary basis, as evidence of small numbers of roosting bats were identified within the proposed development site, a derogation licence will be obtained from NPWS prior to the demolition of the dwelling, the ruin shed and the felling of trees, where felling is unavoidable. • A pre-construction survey will also be undertaken by a qualified ecologist prior to demolition, to ensure there are no roosting bats within the dwelling being demolished. If bats are found to be roosting within the building, demolition works will be undertaken outside the bat maternity season (i.e. May to August). • The proposed development works can also provide new roosting opportunities for bats. Bat boxes will be erected within the site following best practice guidelines (Marnell, Kelleher and Mullen, 2022; NRA 2006). A minimum of three bat boxes are recommended for installation prior to any works commencing. Two Schwegler 1FF and one 2FN woodcrete bat boxes are recommended. 2FN bat boxes are equipped with a floor and can be used for the relocation of bats by a licenced ecologist if any are found during the demolition and felling processes. Bat boxes will have a southerly orientation and be positioned at least 2m from the ground, away from artificial lighting.
Residual Effect following Mitigation	With the implementation of the prescribed mitigation measures, no significant residual effects are predicted.

5.2 Loss of Foraging and Commuting Habitat

Table 5-2 Assessment of Potential Impacts on Commuting/Foraging Bats

Description of Effect	A total of 58 trees were recorded in the arborist report accompanying this application. The proposed development will require the removal of 33 individual trees, 1 treeline and 1 tree group (Drawing no: D1-TCP) mainly located in the north of the site. The treeline to be removed includes 6 Leyland cypress trees and the Tree Group 1 consists of young willow trees. The Leyland cypress treeline was identified as providing high quality foraging and commuting opportunities for bats. Regular commuting and foraging activity was recorded in this area during the surveys. The remaining linear features present within the proposed development site will be retained as they are located along field boundaries.
Characterisation of unmitigated effect	The loss of linear habitat features would constitute a medium-term slight effect on commuting and foraging bats. While the trees individually are of limited biodiversity value, collectively they contribute to ecological and habitat connectivity throughout the site and with the wider area. The magnitude of this impact is Slight at the local scale given the small number affected.
Assessment of Significance prior to mitigation	This is a Slight effect on a receptor of Local Importance (Higher Value). The loss of trees within the site is not significant at a county, national or international scale.
Mitigation	A landscape plan has been prepared for the development by Griffin Landscape Architects. The plan includes areas of open amenity grassland and mixed native woodland planting surrounding residential areas. It is proposed to plant 210 no. predominantly native trees within the site. The existing linear features along field boundaries will be bolstered and a large area of the site will be retained and landscaped as amenity grassland surrounded by scattered trees. An area of natural woodland will be re-planted in the southernmost section of the site. Native and semi-mature trees will be planted in the southern woodland to provide suitable foraging habitat immediately after construction. Overall, there will be no net loss in suitable commuting and foraging habitat features for bats.
Residual Effect following Mitigation	With the implementation of the prescribed mitigation measures, no significant residual effects are predicted.

5.3 Disturbance

Table 5-3 Assessment of Potential Impacts from Disturbance on Bats

Description of Effect	Construction and operation of the proposed development will result in increased human activity, noise and lighting within the proposed site. Therefore, the potential for disturbance to bats requires consideration. The proposed development site consists primarily of agricultural grassland and is surrounded by similar habitats with low levels of residential development.

Characterisation of unmitigated effect	In the absence of appropriate design, the proposed development has the potential to disturb bats by illumination of commuting, foraging and potential roosting areas. This is assessed as a long-term Significant effect.
Assessment of Significance prior to mitigation	This is assessed as a long-term Significant effect on a receptor of *Local Importance (Higher Value).*
Mitigation	Where lighting is unavoidable during construction, low-intensity lighting and motion sensors will be used to limit illumination. Exterior lighting, during construction, will be designed to minimize light spillage, thus reducing the effect on areas outside the proposed development, and consequently on bats i.e., Lighting will be directed away from mature trees/treelines around the periphery of the site boundary to minimize disturbance to bats. Directional accessories will be used to direct light away from these features, e.g., through the use of light shields (Stone, 2013). The luminaries will be of the type that prevent upward spillage of light and minimize horizontal spillage away from the intended lands. A lighting plan for the operational phase of the proposed development has been designed by McElligott Consulting Engineers with consideration of the following guidelines: Bat Conservation Trust (Guidance Note 08/18 Bats and Artificial Lighting in the UK (BCT, 2018), *Bat Conservation Ireland (Bats and Lighting: Guidance Notes for Planners, Engineers, Architects and Developers, BCI, 2010).* The lighting plan will include the following: • Lighting has been directed away from important habitats, particularly treelines and hedgerow that may be used by bats and other species. • Horizontal illuminance will be maintained below 1LUX along linear features across the site. No lighting will be installed within the amenity area to the east of the site. No lighting will be present in the newly planted woodland to the south of the site. • Lamps will have limited backward light properties to reduce backward light spill. Lamps will also be specified with 0 Degree tilt (where possible) to ensure limited unwanted light spill. • Column height of luminaires will be equal or below 6m in height in the residential area to minimise light spill. • Lamps will have a lamp flux/colour of White LED (3000K) light source – less attractive to insects, and a good light source to enable directional luminaires. • Directional lighting accessories in the form of baffles will be installed to help reduce light spill to nearby housing and habitat features. • A controlled lighting regime will be implemented, where lights are dimmed during hours of lower human activity. Residential development designed in accordance with ISEN 13210-2:2105 Class P4. Approach road designed in accordance with ISEN 13210-2:2105 Class P3.
Residual Effect following Mitigation	With the implementation of the prescribed mitigation measures, no significant residual effects are predicted.

6. CONCLUSION

Five bat species and the *Myotis* genus were recorded across the proposed development site. Evidence of opportunistic roosting by small numbers of bats was recorded during daytime inspections. No evidence of active roosting bats was identified during the dusk emergence surveys and there was no evidence of significant roosting (i.e. maternity roosts) within the site. Foraging and commuting was recorded throughout but was primarily associated with the woodland areas located to the north of the proposed development site.

Mitigation and recommendations to protect bats and their resting places have been provided in accordance with best practice guidance, including the necessity for further surveying to re-assess the baseline prior to construction works.

This report provides a comprehensive assessment of the potential for impact on bat populations within the site boundary as a result of a proposed residential development. The surveys and assessment provided in this report are in accordance with the relevant industry guidance. Following consideration of the residual effects (post mitigation) it is noted that the proposed development will not result in any significant effects on bats.

Provided that the proposed development is constructed and operated in accordance with the design, best practice and mitigation that is described within this report; no significant impacts on local bat populations is anticipated at any geographic scale.

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