



BAT DEROGATION LICENCE APPLICATION – WILDLANDS MOYCULLEN

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Subject	Wildlands Moycullen - Derogation License
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Introduction

MKO was commissioned to complete a comprehensive assessment of the potential effects on bats at Wildlands, Moycullen, Co. Galway (IG Ref: M 22287 31571) in response to Item 2 of a Further Information Request issued by Galway County Council, dated 25th of April 2024. This is stated below:

“2. (a) It is noted that the proposal is located in a woodland area that may host bats, which are protected under Objective NHB 9 of the Galway County Development Plan 2022- 2028. Having regard to Policy Objective NHB 9 of the Galway County Development Plan 2022- 2028 to protect bats and bat habitats, the applicant is requested to carry out a bat survey on site, to identify whether any bats or their roosts are present on site or whether and/or not bats utilise the site for foraging or commuting. This shall be carried out by a suitably qualified person, a LICENSED bat specialist with ecological expertise to determine whether or not bats and their roosts are present on site and to assess the potential impact of the development on bats, such as their feeding habitat, and in accordance with best practice and relevant legislation.

(b) Following on from the above the applicant shall be requested to update the submitted NIS accordingly.”

MKO employs a dedicated bat unit within its Ecology team, experienced in scoping, carrying out, and reporting on bat surveys, as well as producing impact assessments in relation to bats. MKO ecologists have relevant academic qualifications, licences and are qualified in undertaking surveys to the levels required. The daytime inspection was carried out by licenced Bat Ecologist Aoife Joyce (BSc., MSc.) (DER-BAT-2025-117). The dusk emergence survey was carried out by licenced Bat Ecologists Ryan Connors (BSc., MSc.) (DER-BAT-2025-119) and David Culleton (BSc. MSc.) assisted by seasonal bat ecologists Charlie Meehan (BA., MSc.) and Frederic Mosley (BA.,MSc.)



This briefing note includes a brief description of the proposed conservation repair works; the survey works that have been undertaken by MKO and the proposed mitigation that is designed to ensure that there will be no adverse effects on protected fauna.

The bat surveys conducted in 2025 included an internal and external inspection of the two structures identified on the 4th June 2024. No evidence of roosting bats was found in either of the buildings during the daytime inspection.

Two dusk emergence surveys on the 11th July 2024 and 6th August 2024 and focused on the wooden shed (Plate 1) and the standalone weather shelter (Plate 2) with two surveyors and two night vision aids (thermal cameras) used. Four Soprano pipistrelles were observed emerging from the buildings (3no. from the wooden shed and 1no. from the weather shelter).

The proposed works have been carefully designed to minimise the potential for impacts on bats, their commuting corridors, or other ecological receptors.

Background

Proposed Activity

The proposed works involve the construction of 15 additional holiday cabins within the Wildlands site, providing a total gross floor space of 2,178.20 sqm. Associated ancillary services and infrastructure will also be provided to support the development.

The works will require site preparation including limited vegetation clearance, groundworks, and service installation, followed by the phased construction of the cabin structures.

Location

The site of the proposed works area is Wildlands Adventure Park located close to Moycullen village, Co. Galway (IG Ref: M 22287 31571).

Ownership

The adventure and accommodation park is in the ownership of the Bohan Family.

Reason for Activity

Wildlands Adventure Centre, located in Moycullen, Co. Galway, is an established recreational and tourism destination providing a wide range of outdoor adventure activities and visitor facilities. The current proposal comprises the construction of 15 additional holiday cabins, ancillary to the existing centre. These will be connected to the existing wastewater and surface water infrastructure on site, ensuring continuity of service and compliance with environmental standards.

The development has been designed to integrate within the existing woodland setting, with the retention of large mature trees and the majority of the woodland habitat. Tree removal is restricted to selective removal of semi-mature and immature trees, with a total of c. 928 m² of vegetation and 1,339 m² of ash dieback-affected woodland identified for clearance in line with arboricultural advice.

The aim of the proposed works is:

- To enhance the range and quality of visitor accommodation at Wildlands, supporting the continued development of the facility as a premier tourism and recreational destination in the west of Ireland.



- To promote sustainable rural tourism and economic growth, in line with national, regional, and local planning policy, by providing accommodation that allows longer visitor stays and increased local spend.
- To ensure the development proceeds in a manner that safeguards ecological value, including the retention of key woodland features, the implementation of habitat enhancement measures (native species planting, installation of bat boxes), and the careful management of lighting and landscaping to protect commuting and foraging corridors for bats.
- To address the identified need for additional visitor accommodation on lands zoned for tourism use under the Galway County Development Plan 2022–2028, thereby aligning with the zoning objective “To facilitate the development and improvement of tourism facilities.”

Planning History

The Wildlands Adventure Centre and its adjoining lands have been the subject of a series of planning applications submitted to Galway County Council over the past decade. These reflect the ongoing development and expansion of the facility as a recreational and tourism destination. The relevant planning history is summarised below:

- **23/449** – Permission granted to FDT Outdoors for the construction of a new Outback Shop and Take-out Food Outlet, together with all ancillary services.
- **21/2278** – Permission refused to Delphi Outdoors Ltd. for a single-storey building (129.5 m²) providing changing rooms, showers, toilets, accessible facilities, external lockers, and hand washing station, with all associated site works.
- **19/1510** – Permission sought by Delphi Outdoors Ltd. for 11 glamping cabins and 15 additional parking spaces. Also sought retention of 4 glamping cabins replacing previously permitted yurts (Refs. 16/1097 & 18/1445). Recommended refusal by Galway County Council but subsequently granted by An Bord Pleanála (Ref. ABP-306847-20).
- **19/855** – Permission granted to Delphi Outdoors Ltd. for 3 no. signage elements relating to permitted development (Ref. 16/1097), including a freestanding entrance sign, and two wall-mounted signs on the main sports building.
- **18/1445** – Permission granted for alterations to previously approved development (Ref. 16/1097), including additional floorspace, elevational changes, relocation of toilet/washroom facilities, outdoor play area, and camper sites, along with revised parking layouts and site works. Retention of alterations to internal access road and repositioning of main building footprint also permitted (322.7 m²).
- **16/1097** – Permission granted for the main adventure centre development, comprising a 2,473.6 m² two-storey building with ancillary works: activity tower with zip lines, woodland tracking courses, outdoor activities, camper sites, glamping yurts, foul sewer connection, new access road to N59, and associated parking. Application accompanied by a Natura Impact Statement.

Adjoining Site to the South (Galway County Council)

- **23/188** – Permission granted to Delphi Outdoors Ltd. for retention of a 186 m² storage shed, replacing a previously damaged shed.
- **22/1173** – Permission refused to Delphi Outdoors Ltd. for retention of a farm storage shed at the same location.
- **18/1074** – Permission granted to Faye Bohan & Philip O'Neill for extension and modification works to a dwelling, including septic tank and percolation area (251.3 m²).



- **17/624** – Permission refused to Faye Bohan & Philip O'Neill for a larger extension and modifications to an existing dwelling (495.6 m²). Appeal to An Bord Pleanála (PL 07.249421) upheld refusal.

Proposed Works

The proposed development involves the construction of 15 additional holiday cabins within the existing Wildlands site at Moycullen, Co. Galway. This will provide a combined gross floor space of approximately 2,178.2 m², supported by associated site infrastructure and ancillary services.

The works will also include the demolition of two small ancillary structures: a wooden shed with adjoining weather shelter, and a standalone weather shelter adjacent to the archery range. Emergence surveys have confirmed the presence of small soprano pipistrelle roosts within these structures. Their removal is therefore subject to derogation licence and associated mitigation measures.

The works will be delivered in the following stages:

- **Site Preparation** – selective clearance of vegetation (including c. 928 m² of scrub/immature trees and 1,339 m² of ash dieback-affected woodland), retention of large mature trees, and protection measures for woodland habitats identified for conservation. Demolition of the shed and weather shelters will take place under ecological supervision and in line with licence conditions, with compensatory roost provision (bat boxes) already installed within the site.
- **Groundworks and Services** – excavation, foundations, and installation of foul water, surface water, and utility services. Wastewater will connect to the existing on-site foul sewer network, which is linked to the public sewer. Roof and surface water will be diverted to the existing soak pits on the Wildlands site.
- **Cabin Construction** – phased erection of timber-framed holiday cabins, incorporating sustainable construction methods where possible, and designed to integrate with the woodland landscape.
- **Landscaping and Habitat Enhancement** – delivery of a planting scheme comprising approximately 1,095 m² of native woodland and hedgerow to enhance bat commuting and foraging corridors. Installation of bat boxes will compensate for the loss of low-value roost structures, with lighting design implemented to avoid disturbance of retained habitats.

All works will be carried out in accordance with the planning permission, arboricultural recommendations, and ecological mitigation measures. Construction will be managed to minimise disturbance, with ecological supervision during key phases of vegetation clearance and pre-commencement bat surveys undertaken as required under licence.

Ecological surveys and site assessment

Existing Information

National Biodiversity Data Centre

A review of the National Bat Database of Ireland on the 13th August 2024 yielded results of bats within a 10km hectad of the proposed works. The search yielded 8 bat species within 10km. Table 1 lists the bat species recorded within the hectad which pertains to the proposed works site (M23).

A review of the NBDC bat landscape map provided a habitat suitability index of 35.67 (orange). This indicates that the proposed development area has low-moderate habitat suitability for bat species.



Table 1 NBDC Bat Records

Hectad	Species	Date	Database	Status
M23	<i>Brown Long-eared Bat (Plecotus auritus)</i>	26/05/2018	National Bat Database of Ireland	Annex IV
M23	<i>Pipistrelle (Pipistrellus pipistrellus sensu lato)</i>	27/08/2018	National Bat Database of Ireland	Annex IV
M23	<i>Soprano pipistrelle (Pipistrellus pygmaeus)</i>	27/08/2018	National Bat Database of Ireland	Annex IV
M23	<i>Lesser Horseshoe Bat (Rhinolophus hipposideros)</i>	18/01/2019	National Bat Database of Ireland	Annex II Annex IV
M23	<i>Leisler's Bat (Nyctalus leisleri)</i>	06/06/2018	National Bat Database of Ireland	Annex IV
M23	<i>Natterer's Bat (Myotis nattereri)</i>	18/01/2019	National Bat Database of Ireland	Annex IV
M23	<i>Whiskered Bat (Myotis mystacinus)</i>		National Bat Database of Ireland	Annex IV
M23	<i>Daubenton's Bat (Myotis daubentonii)</i>	30/05/2018	National Bat Database of Ireland	Annex IV

Designated Sites

Within Ireland, the Lesser horseshoe bat is the only bat species requiring the designation of Special Areas of Conservation (SACs). The site is situated outside the current known range for this species; however, there are two SACs designated for its protection within 10km of the proposed development. Despite the close proximity of the Lough Corrib SAC to the proposed development site, the lesser horseshoe bat roost for which the SAC is designated is located more than 26km away, as mapped in Map 11 of the Site-Specific Conservation Objectives. Therefore, the proposed development is significantly outside the 2.5km key foraging range for this species. There is no potential for effects on the designated roosts or the mapped foraging grounds for lesser horseshoe bat at either of the identified SACs as a result of the proposed development. Details of SACs in within 10km of the site are detailed in Table 2.

Natural Heritage Areas (NHAs) and proposed Natural Heritage Areas (pNHAs) may be designated for any bat species. A search of NHAs and pNHAs within a 10 km radius of the site found one site designated for the conservation of bats. Killarainy Lodge pNHA is situated 1.3km from the proposed development site. It is a nursery roost for Natterer's bat (*Myotis nattereri*). Approximately 70 bats use the roof at the gable end of a stone building. A potential for effect on Killarainy Lodge, Moycullen pNHA was identified. The proposed development is considered to be within the Core Sustainance Zone (CSZ) of the site and is therefore considered further in this assessment in Section 4.1.1 and 4.1.2 of Appendix 1 – Baseline Bat Report.

Table 2 European and Nationally designated sites for conservation of bats

Designated Site	Distance to Site	Species	Roost Type
Lough Corrib SAC	40m	<i>Lesser Horseshoe Bat (Rhinolophus hipposideros)</i>	Summer
Killarainy Lodge, Moycullen pNHA	1.3km	<i>Natterer's Bat (Myotis Nattereri)</i>	Nursery
Ross Lake and Woods SAC	4.6km	<i>Lesser Horseshoe Bat (Rhinolophus hipposideros)</i>	Maternity



Status of species in local/regional area

Table 3 Irish Bat Species Conservation Status and Threats (NPWS, 2019). Pressures and Threats are ranked from medium importance (M) to high importance (H) in the 2019 Article 17 report.

Bat Species	Conservation Status	Principal Threats
Common pipistrelle <i>Pipistrellus pipistrellus</i>	Favourable	A05 Removal of small landscape features for agricultural land parcel consolidation (M)
Soprano pipistrelle <i>Pipistrellus pygmaeus</i>	Favourable	A14 Livestock farming (without grazing) [impact of anti-helminthic dosing on dung fauna] (M)
Nathusius' pipistrelle <i>Pipistrellus nathusii</i>	Unknown	B09 Clear—cutting, removal of all trees (M)
Leisler's bat <i>Nyctalus leisleri</i>	Favourable	F01 Conversion from other land uses to housing, settlement or recreational areas (M)
Daubenton's bat <i>Myotis daubentonii</i>	Favourable	F02 Construction or modification (e.g. of housing and settlements) in existing urban or recreational areas (M)
Natterer's bat <i>Myotis nattereri</i>	Favourable	F24 Residential or recreational activities and structures generating noise, light, heat or other forms of pollution (M)
Whiskered bat <i>Myotis mystacinus</i>	Favourable	H08 Other human intrusions and disturbance not mentioned above (Dumping, accidental and deliberate disturbance of bat roosts (e.g. caving) (M)
Brown long-eared bat <i>Plecotus auritus</i>	Favourable	L06 Interspecific relations (competition, predation, parasitism, pathogens) (M)
		M08 Flooding (natural processes)
		D01 Wind, wave and tidal power, including infrastructure (M)

Survey Objective(s)

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. The surveys were designed to determine the nature, scale, and locations of potential bat activity in the cottage and to assess the need for further surveys or recommendations to safeguard bats.

Description of Survey Area

The proposed development site is located within Wildlands Adventure Park, situated on an eastern facing slope at the southern end of Moycullen village, Co. Galway (IG Ref: M 22287 31571). Public access is available from the Clifden Road, with the Moycullen bypass situated a short distance from the site's eastern boundary.

The proposed development area consists of made-up ground, recently infilled with waste rubblestone material. An existing children's electric car track is located on a portion of the site, while the remainder features a small number of mature trees alongside a significant amount of regenerative scrub growth, including young trees and saplings. The proposed development area is fully contained within the existing Wildlands Adventure Park. Its boundaries are defined by a stream to the west and an internal access road to the east. The primary land use in the area is recreation.

Survey Methodology

A daytime bat habitat appraisal and preliminary roost assessment was conducted on the 4th June 2024 followed by two dusk emergence surveys on the 11th July 2024 and 6th August 2024 by two MKO bat ecologists. Full access to the site of the proposed works was provided. The inspection included a thorough examination of all accessible internal spaces, as well as an external inspection from ground level. Equipment used included torches, an endoscope, a thermal camera, and binoculars to search for evidence of bat activity such as live or dead bats, droppings, feeding remains, urine staining, fur oil marks, or vocalisations, as well as potential access points.



During the dusk emergence surveys, night vision aids (NVAs), including one thermal imaging camera and two full-spectrum bat detectors, were used to support visual observations. The survey commenced 15 minutes before sunset and concluded 2 hours after sunset.

Manual activity surveys also comprised a night walkover at dusk. The night walkover surveys took place on the 4th of June 2024. Walkover surveys were aimed at assessing the use of linear features and other habitats by bats. The walked transect followed the artificial tracks and trails present within the park. The survey effort is summarised in Table 4 and Figure 2-1 below.

Table 4 Bat Activity survey effort

Date	Surveyors	Type	Sunset	Weather
04/06/2024	Ryan Connors & David Culleton	Nighttime Bat Walkover	21:57	11-10°C Dry, Calm, Moon not visible 10-50% Cloud cover
11/07/2024	Ryan Connors & Charlie Meehan	Roost Emergence	22:00	15°C, Dry, Calm, Moon not visible 95% Cloud cover
06/08/2024	Ryan Connors & Frederick Mosley	Roost Emergence	21:21	15-16°C, Dry – Light rain, Calm 30-70% Cloud cover

Three full spectrum SM4 bat detectors (Wildlife Acoustics, Maynard, MA, USA), were deployed during static surveys to record bat activity over a one-week period across four separate months. The detectors were initially deployed on May 27th and remained active until June 4th, 2024, for a duration of eight nights. They were deployed for another eight-night period from June 20th to June 28th, followed by a third deployment from July 11th to July 19th. The final deployment occurred from August 2nd to August 9th. The three static detector locations were selected to represent the range of habitats present within the proposed development, including favourable bat habitats.

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. Static detector locations are presented in Table 5.

Table 5 Static Detector Locations

Detector ID	IG Reference	Habitat
D01	M 22242 31608	Buildings and artificial surfaces, oak-ash-hazel woodland, drainage ditches
D02	M 22275 31550	Buildings and artificial surfaces, oak-ash-hazel woodland, drainage ditches
D03	M 22347 31522	Buildings and artificial surfaces, oak-ash-hazel woodland, drainage ditches





Map Legend

- Site boundary
- Static Detector Locations
- Dusk Emergenence Surveys
 - Shed and adjoining weather shelter 11th July 2024
 - Standalone weather shelter 8th August 2024
- Surveyor Locations
 - Surveyor Location
 - Thermal Location
 - Surveyor Location
 - Thermal Location

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Drawing Title	
Survey Effort	
Project Title	
Wildlands, Moycullen	
Drawn By	Checked By
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Project No.	Drawing No.
240533-a	Figure 2-1
Scale	Date
1:1,000	2024-11-20



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Survey Results

During the internal inspection of the wooden shed and adjoining weather shelter (IG Ref: M 22249 31616) and the standalone weather shelter (IG Ref: M 22307 31548) adjacent to the archery range on 4th June 2024, no evidence of active roosting (e.g. live or dead bats, staining, or accumulations of droppings) was recorded within the interior of either structure and no attic space exists within the structure.

A dusk emergence survey was carried out on the 11th of July 2024 at the wooden shed and adjoining weather shelter located (Plate 1) in the north of the proposed development site. During the survey, 2no. soprano pipistrelles were observed emerging from underneath the felt lining in the weather shelter (Plate 3), while one was observed emerging from beneath the metal trim on the north-west aspect of the shed (Plate 4), as confirmed by the thermal footage. Consistent foraging and commuting activity were recorded throughout the survey, particularly among common and soprano pipistrelles. Leisler's bat was recorded less frequently, along with a single lesser horseshoe bat pass.

A dusk emergence was also conducted on the weather shelter (Plate 2) adjacent to the archery range in the south of the proposed development site on the 6th of August 2024. One soprano pipistrelle was observed emerging from the metal trim on the northern aspect of the structure. Soprano pipistrelle again dominated the commuting and foraging activity with common pipistrelle, Leisler's bat, *Myotis* spp. and lesser horseshoe bat also recorded.

The dusk emergence surveys are summarised in tables 6 and 7 below:

Table 6 Manual activity surveys at PRFs.

PRF	IG Ref.	Date	Survey Type	Results
Wooden Shed & Weather Shelter	M 22250 31612	11 th July 2024	Dusk Emergence	3no. emerging soprano pipistrelles
Weather Shelter	M 22306 31546	6 th August 2024	Dusk Emergence	1no. emerging soprano pipistrelle

Table 7 Bat passes recorded during the two dusk emergence surveys.

Dusk Survey	Soprano pipistrelle	Common pipistrelle	Leisler's bat	<i>Myotis</i> spp.	Lesser horseshoe bat
11 th July 2024	271	14	15	0	1
6 th August 2024	166	5	20	2	3

The nighttime bat walkover survey that took place on the 4th of June 2024 was dominated by soprano pipistrelles, with most of the activity appearing to come from the mature woodland located to the west of the proposed development. Common pipistrelles and Leisler's bat were also recorded to a lesser extent, and a single lesser horseshoe bat was recorded in the south of the site at 23:20. A total of 202 bat passes were recorded during the survey (Table 8).

Table 8 Nighttime walkover survey results

Date	Km	Common pipistrelle	Soprano pipistrelle	Leisler's bat	Lesser horseshoe bat	Total
4 th June 2024	3.3	28	170	3	1	202





Plate 1: North-eastern aspect of wooden shed and adjoining weather shelter



Plate 2: North-eastern aspect of standalone weather shelter.



Plate 0 Felt lining and timber framing within weather shelter



Plate 4 Lifting trim on wooden shed

Three SM4 static detectors were deployed on the site at four different intervals (May - August) for a period of at least seven nights. The three detectors were deployed for a total of 31 nights. These detectors allowed a specified look into species composition, commuting and foraging activities within the proposed development site. Detector locations were chosen to represent areas of likely bat activity.

D01 was situated within an area of semi-mature ash trees affected by ash dieback within TG5, located to the northwest of the proposed development site. It was situated approximately 10 meters west of the soprano pipistrelle roost (IG Ref: M 22250 31612). D02 was placed in the west of the site within TG4, which primarily consists of native silver birch with occasional ash and goat willow. This detector was approximately 30 meters west of the other soprano pipistrelle roost at IG Ref: M 22306 31546; D03 was located to the south of the proposed development site, within TG3, an area also composed of semi-mature ash affected by dieback. The locations of all static detectors are illustrated in Figure 2-1.

In total 28,331 bat passes were recorded. Analysis of the detector recordings positively identified six bats to species level with *Myotis* genus also present. Soprano pipistrelle (*Pipistrellus pygmaeus*) made up the vast majority of the activity recorded within the site (n=25,426), followed by *Myotis* spp. (n=1,034). Using Kaleidoscope Pro's Auto ID feature, 282 *Myotis* passes were identified to species level. Of these, 85% (n=240) were classified as whiskered bats (*Myotis mystacinus*), 8.5% (n=24) as Natterer's bats (*Myotis nattereri*), and 6.5% (n=18) as Daubenton's bats (*Myotis daubentonii*).

Other species recorded included common pipistrelles (*Pipistrellus pipistrellus*) (n=842) and Leisler's bats (*Nyctalus leisleri*) (n=744), with brown long-eared bats (*Plecotus auritus*) (n=249) and Nathusius' pipistrelles (*Pipistrellus nathusii*) (n=10) recorded less frequently. Twenty-six instances of lesser horseshoe bats (*Rhinolophus hipposideros*) were also detected. The proposed development is located within the current known range for this



species. Plate 5 shows total bat species composition recorded at the proposed development site. The total bat passes per detector are summarised in Table 9.

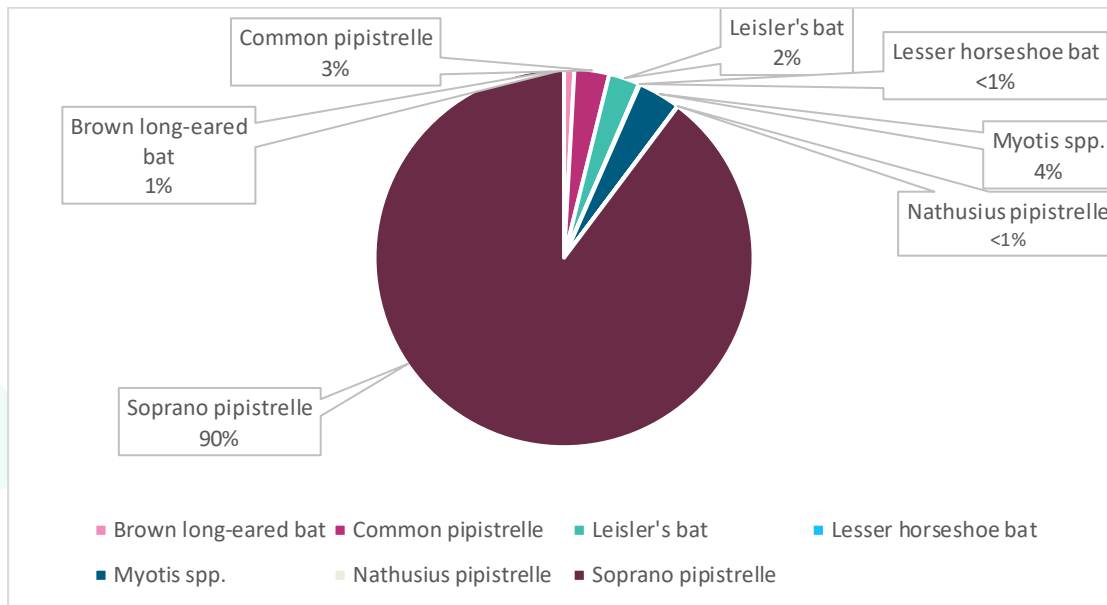


Plate 5 Total bat species composition

Table 9 Static detector results, total bat passes.

Detector	Brown long-eared bat	Common pipistrelle	Leisler's bat	Lesser horseshoe bat	Myotis spp.	Nathusius pipistrelle	Soprano pipistrelle	Total
D01	133	304	360	3	248	5	8,681	9,734
D02	48	308	141	9	441	2	9,668	10,617
D03	68	230	243	14	345	3	7,077	7,980



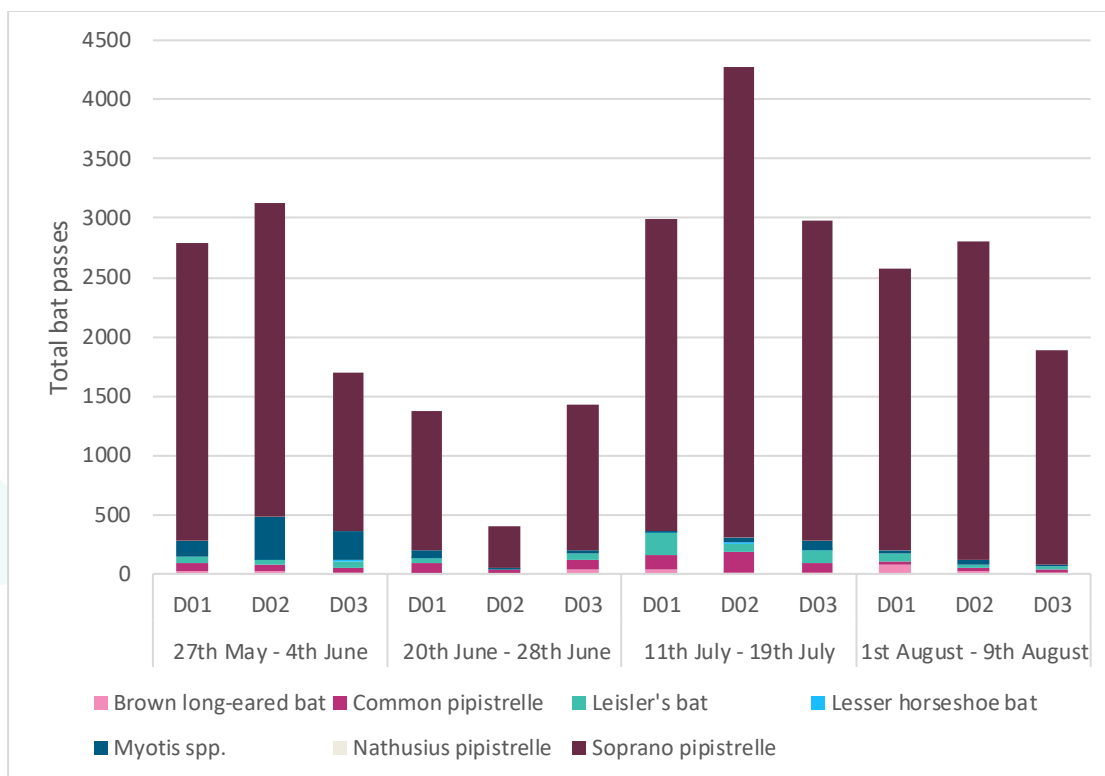


Plate 6 Total bat passes per detector across 32 nights.

Species composition was generally similar across all detectors, with soprano pipistrelles being the most frequently recorded species at all locations, particularly at D02 (n=9,668) and D01 (n=8,681). Common pipistrelles were recorded most often at D01 (n=304) and D02 (n=308), with fewer passes at D03 (n=230). Myotis spp. were most frequently detected at D02 (n=441) and D03 (n=345), while lesser horseshoe bats were observed in low numbers across all detector locations, with the highest occurrence at D03 (n=14). Table 10 shows the locations, dates and times of each individual lesser horseshoe bat pass. Leisler's bats were recorded more often at D01 (n=360), while brown long-eared bats were most common at D01 (n=133). Nathusius' pipistrelle was rare (n=10), with only a few detections across all locations.

Table 10 Lesser horseshoe bat (*Rhinolophus hipposideros*) passes recorded by static detectors

Detector Location	Recording Date	Recording Time
D02	31/05/2024	00:45:02
D03	31/05/2024	23:46:49
D03	01/06/2024	01:38:20
D03	03/06/2024	00:39:07
D01	24/06/2024	23:55:16
D01	25/06/2024	01:00:18
D03	11/07/2024	23:13:57
D02	11/07/2024	23:18:28
D03	12/07/2024	01:43:11
D03	12/07/2024	01:44:40
D03	12/07/2024	01:45:22
D01	12/07/2024	01:54:10
D02	12/07/2024	04:08:15
D02	13/07/2024	01:04:40
D02	13/07/2024	02:21:52



D03	13/07/2024	02:22:25
D03	13/07/2024	03:46:40
D02	15/07/2024	03:38:58
D02	16/07/2024	02:09:12
D03	17/07/2024	01:19:36
D03	17/07/2024	01:24:30
D03	17/07/2024	02:43:27
D02	17/07/2024	02:49:18
D03	17/07/2024	04:16:51
D03	17/07/2024	04:21:13
D02	19/07/2024	04:03:51

Analysis of the detector recordings revealed bat passes per hour (bpph) over the four survey periods (see Table 11 & Plate 7). Soprano pipistrelles were consistently the most frequently recorded species at all detectors, with the highest activity observed at D02 in July (67.10 bpph). Common pipistrelles showed moderate activity, peaking at D02 in July (3.11) and D01 in May (1.22). *Myotis spp.* were most active in May, particularly at D02 (6.07 bpph), but activity decreased significantly in subsequent months. Leisler's bats exhibited variable activity, with a peak at D01 in July (3.15). Lesser horseshoe bats and Nathusius' pipistrelles were rarely detected, showing very low pass rates. In summary, soprano pipistrelles dominated the static detector survey results, with noticeable seasonal fluctuations among the other species.



Table 11 Seasonal bat passes per hour (bp/h) at each of the detector locations.

	Detector	Brown long-eared bat	Common pipistrelle	Leisler's bat	Lesser horseshoe bat	<i>Myotis spp.</i>	Nathusius' pipistrelle	Soprano pipistrelle
May	D01	0.30	1.22	0.95	0.00	2.32	0.02	42.41
	D02	0.34	0.93	0.74	0.02	6.07	0.02	44.79
	D03	0.08	0.81	0.96	0.05	4.09	0.03	22.63
June	D01	0.02	1.51	0.78	0.03	1.05	0.00	19.79
	D02	0.00	0.68	0.02	0.00	0.15	0.00	6.04
	D03	0.59	1.42	0.96	0.00	0.34	0.00	20.79
July	D01	0.61	2.01	3.15	0.02	0.41	0.00	44.49
	D02	0.14	3.11	1.12	0.14	0.68	0.02	67.10
	D03	0.20	1.40	1.66	0.19	1.18	0.02	45.69
August	D01	1.32	0.41	1.22	0.00	0.42	0.07	40.16
	D02	0.34	0.49	0.51	0.00	0.56	0.00	45.60
	D03	0.27	0.25	0.52	0.00	0.22	0.00	30.60

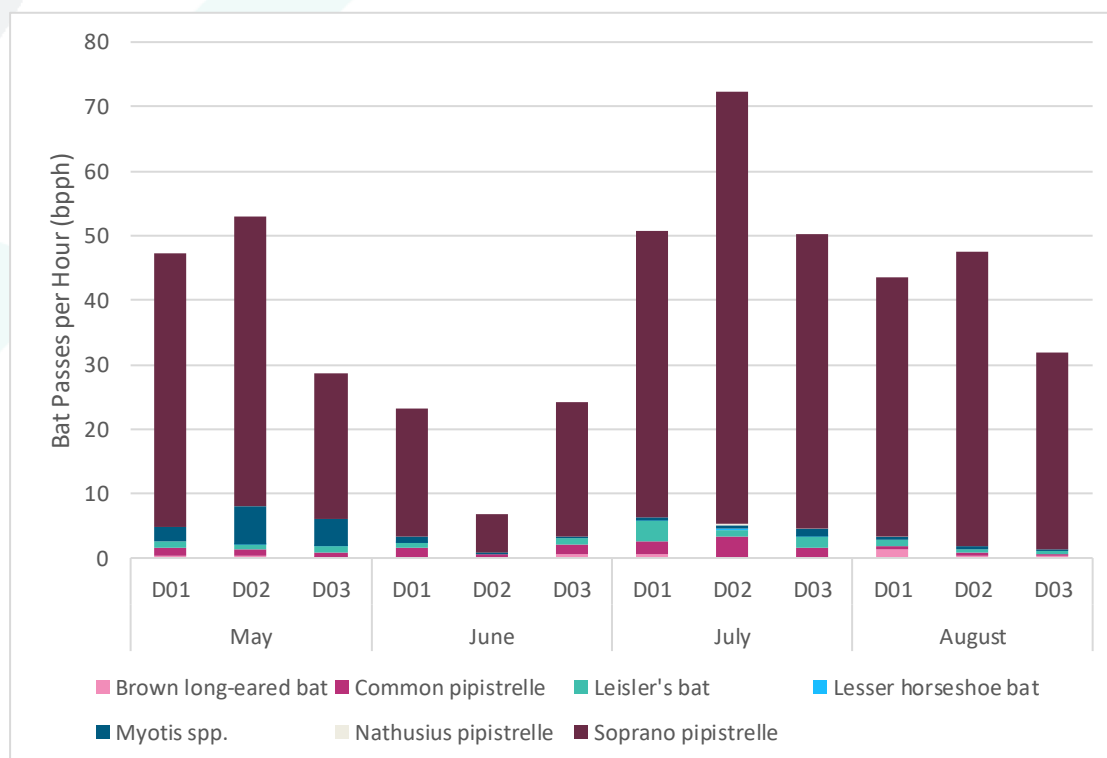


Plate 7 Seasonal bat passes per hour at each detector location.



Population size and class assessment

Two small soprano pipistrelle roosts were identified within the proposed development site. The structures in which these roosts are contained were assessed as having *Low* suitability to host roosting bats during the bat habitat appraisal i.e. A structure with one or more potential roost sites that could be used by individual bats opportunistically, but do not provide the appropriate conditions to be used on a regular basis or by larger numbers of bats (Collins, 2023). Soprano pipistrelles are widespread in Ireland and small roosts like the ones identified are not considered to be significant beyond a local level (Reason and Wray, 2023). No evidence of a maternity roost or larger aggregation was identified, and no other bat species were recorded emerging from the structure.

In line with current guidance, and based on the low number of bats recorded, the common species involved, and the lack of breeding activity, the roost is not considered to be of ecological significance (NRA, 2006). The soprano pipistrelle, which was the only species recorded roosting, is currently assessed as having a *favourable conservation status* in Ireland (NPWS, 2019, See Table 3 above). Nonetheless, as a legally protected roost, it must be fully accounted for in the planning and scheduling of any proposed works.

Evidence to support the Derogation Tests

The NPWS document, *Guidance on the Strict Protection of Certain Animal and Plant Species under the Habitats Directive in Ireland* - National Parks and Wildlife Service Guidance Series 1 (2021), was reviewed before undertaking this derogation application.

Article 16 of the Habitats Directive sets out three pre-conditions, all of which must be met before a derogation from the requirements of Article 12 or Article 13 of the Directive can be granted. These preconditions are also set out in Regulation 54 of the Regulations.

The preconditions are:

1. A reason(s) listed in Regulation 54 (a)-(e) applies
2. No satisfactory alternatives exist
3. Derogation would not be detrimental to the maintenance of a population(s) at a favourable conservation status.

It is believed that the pre-conditions for granting a derogation licence have been met, as follows:

Test 1 – Reasons for Seeking Derogation.

Regulation 54(2) (a)–(e) states that a derogation licence may be granted for any of the reasons listed (a) to (e). We are of the opinion that the following reasons apply:

(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.

The weather shelter and storage structures support a small number of roosting bats (3no. and 1no. Soprano pipistrelles, respectively) and are located within the boundary of the proposed 15-cabin recreational development, requiring removal to facilitate the development. The project aims to enhance local tourism and recreational offerings, providing significant social and economic benefits. A licence is requested to demolish the small wooden shed, adjoining weather shelter, and standalone weather shelter, which will result in the removal of the identified roosting resource, allowing the development to proceed while ensuring appropriate mitigation measures are implemented.

Test 2 – There is no Satisfactory Alternative



There are no satisfactory alternatives to the demolition of the wooden shed and adjoining weather shelter, and the standalone weather shelter to facilitate the construction of the 15-cabin recreational development. Retaining these structures is not feasible as they are located within the core development area, which is essential for an efficient layout and cabin access.

Do nothing scenario: If the development were to not go ahead, the structures would remain in place and likely continue to be used as a low suitability roosts. These sheds were constructed as temporary structures and were not designed for prolonged use, which diminishes their value as long-term roosting sites. The retention of these structures would prevent the proposed development from proceeding, hindering the social and economic benefits outlined in Test 1.

Structure retention: Retaining the existing structures onsite would prevent the proposed development from proceeding. The proposed development comprises the provision of additional visitor accommodation at the Wildlands, Moycullen, Co. Galway (GCC Ref: 24/74). This accommodation will facilitate the provision of extended and enhanced facilities at Wildlands which would accord in general terms with national, regional and local planning policy as summarised below.

- The National Planning Framework (NPF) Project Ireland 2040 which is the overarching planning policy document in Ireland supports tourism development and promotion. There is an emphasis on tourism development in the NPF especially in the rural. The NPF is comprised of a number of National Policy Objectives (NPO) and there are a few that supports tourism development. These NPO's discuss '*Facilitate tourism development*' (NPO 22) and '*maintaining and protecting the natural landscape and built heritage which are vital to rural tourism*' (NPO 23).
- The Regional Spatial and Economic Strategy 2020-2032 (RSES) for the Northern and Western Regional Assembly (NWRA) is the regional planning policy document to which this development is subject to. This document supports the promotion and development of tourism in the west and in county Galway. Chapter 4 provides a number of Regional Policy Objectives (RPO) that discuss supporting tourism, tourism benefits, improvements to attractions, enhancing access to tourist assets and expansion in accommodation and facilities.
- Our Rural Future: Rural Development Policy 2021 – 2025 provides the framework to achieve the vision of transforming the quality of life and opportunity for people living in rural areas. This policy document supports the promotion of tourism development in rural Ireland and there are a number of policy measures within this document that relate to tourism. Policy Measure 36 relates to recreational tourism '*Invest in greenways, blueways, walking trails and other outdoor recreation infrastructure to support the growth in outdoor recreational tourism.*'
- Chapter 8 of the Galway County Development Plan 2022-2028 identifies the main tourism priorities that are pertinent to the county. There are a high number of tourism Policy Objectives within Chapter 8 that are of importance to this development and supporting and promoting tourism development. TI 2 Visitor Accommodation states '*Encourage and facilitate visitor accommodation facilities at appropriate locations within the county where there is a justifiable requirement for such facilities. These proposals are required to comply with environmental considerations and the relevant DM Standards.*'
- Within the GCDP the subject site is zoned 'T' Tourism. This zoning type is described as '*To facilitate the development and improvement of tourism facilities that exist in some of the SGTs. Encourage new tourism development and investment where appropriate*' and has a zoning objective of '*To promote and encourage cultural, historic and tourism potential for each of the SGTs*'. The following are a few examples of what is permitted on Tourism zoned lands: B&B, Hotel, Hostel, Guesthouse, Short term holiday accommodation and recreational building.



Chosen Option: The site does not provide high-quality roosting habitat due to the semi-mature nature of many of the existing trees and the presence of a mini-jeep track at its centre. The project has been designed to minimize impacts on bat habitats by retaining and enhancing key commuting and foraging areas. The original plan of 19no. cabins was first reduced to 18no. and then to 15no. to protect these habitats, demonstrating a commitment to preserving ecological value.

The landscape and lighting plans were developed in collaboration with project ecologists to prevent the potential for significant effects on wildlife and mitigate unavoidable impacts. Treelines and woodland areas recommended for retention by the arborist have largely been preserved to maintain commuting corridors for bats. A total of 928m² of vegetation is planned for removal, along with 1,339m² of ash dieback-affected woodland, which the arborist has recommended for removal. To compensate for these losses and enhance habitat quality, a replanting scheme has been designed to improve commuting and foraging opportunities for bats. This includes the planting of approximately 1,095m² of native species within the Wildlands landholding. The loss of small roosts will be addressed through the installation of bat boxes. Additionally, lighting has been limited and directed away from suitable bat habitats wherever possible.

The proposed landscaping scheme sensitively responds to the site's environmental and ecological constraints. Options to mitigate impacts on biodiversity beyond the do-nothing scenario have been thoroughly explored and implemented where feasible, in line with safety, lighting, and residential development standards.

Test 3 – Favourable Conservation Status

Annex IV species must be maintained at Favourable Conservation Status or restored to favourable status if this is not the case at present. The net result of granting a derogation licence must be neutral or positive for the species in question.

Surveys conducted between May and August 2024 identified a small number of Soprano pipistrelles (3no. and 1no.) within the aforementioned structures. These findings suggest that the structures are used opportunistically by a small number of bats which are common and widespread in Ireland. The structures do not contain a significant roost i.e. maternity. A pre-commencement survey will be carried out, to identify any potential changes in the baseline since the surveys were completed. This will include the inspection of all structures proposed for demolition. Demolition works will commence at an appropriate time of year, as agreed with a suitably licenced ecologist. Implementation of the recommended mitigation within this letter will ensure that there will be no negative impacts to potential roosting bats when works will be undertaken. Alternative roosting locations will be provided which gives roosting opportunity to other bats species also. No significant impacts are anticipated on the local population of Soprano pipistrelle or their favourable conservation status.

Monitoring the Impacts of the Derogations

The following measures will be undertaken to ensure that any sensitive fauna which may be located within the structure are adequately protected during the proposed works.

- *As bats were observed emerging from the structures, a bat derogation licence will be obtained from NPWS for their demolition.*
- *As 4no. Soprano pipistrelle bats were identified emerging from the two structures (3no. and 1no. individual(s)) during the dusk emergence surveys carried out, a pre-commencement survey is recommended to ensure there are no roosting bats present in the buildings prior to any works. The requirement for a pre-commencement survey does not represent a lacuna in the survey assessment but is fully in line with industry best practice. The function of this survey will be to assess any changes in baseline environment since the time of undertaking the survey in July and August 2024.*
- *Demolition works are proposed to take place outside the main bat activity season (April-September).*



- *Any potential felling of trees with suitable roosting features (further details outlined in accompanying bat report) will be carried out with the assumption that bats may be present:*
 - *Trees with suitable potential roost features proposed for felling will be checked by a suitably qualified ecologist at the time of felling.*
 - *Any tree felling will be undertaken at an appropriate time of year, as deemed by the project ecologist.*
- *As part of the proposed works, new purpose-built roosting locations have been provided within the site (Plates 8-10). Two bat boxes have been mounted on wooden posts in suitable locations, with a third box installed on a mature tree retained as part of the development. Boxes have been positioned with a southerly orientation at a minimum height of 3m, away from artificial lighting, and adjacent to retained vegetation features such as treelines and hedgerows to ensure proximity to existing flight paths while avoiding wide open spaces (Collins, 2023).*
- *The lighting plan for the operational phase of the proposed works, has been designed with consideration of the following guidelines: Bat Conservation Ireland guidelines; Bat Conservation Ireland (Bats and Lighting: Guidance Notes for Planners, Engineers, Architects and Developers, BCI, 2010) and the Bat Conservation Trust (Guidance Note 08/23 Bats and Artificial Lighting at Night (ILP, 2023), to minimise light spillage, thus reducing any potential disturbance to bats. The proposed light fitting/scheme has been designed to help mitigate the effect of the artificial lighting on the local bat populations by incorporating:*
 - *Bollards shall have a lamp flux/colour of Warm White LED light source ($\leq 2700K$).*
 - *Light sources should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats (Stone, 2012)*
 - *Lighting to be used only where necessary (must be justifiable) in line with Dark Sky Ireland recommendations.*
 - *A lighting control regime will be designed to limit light spill during peak bat activity including reduced illuminance during hours of lower human activity or turned off after hours/motion sensed.*
- *Landscaping that is favourable to bats has been designed to prioritize the retention and enhancement of linear features, such as hedgerows and treelines, as well as existing woodland habitats. To protect these important bat foraging and commuting routes, artificial lighting directed towards these features will either be avoided entirely or minimized to prevent light spill. As detailed in the accompanying arborist report, large portions of the proposed development area are composed of semi-mature ash trees infected with ash dieback disease. A ground-level assessment of these trees was carried out and only one of the affected trees contain a PRF. This tree will be included in the pre-commencement survey outlined above.*
- *Tree felling will predominantly take place in these infected areas, with a focus on preserving the more ecologically valuable sections as identified by the arborist.*

The surveys and recommendations provided in this report are in accordance with the relevant industry guidance. Provided that the works are carried out in accordance with the measures outlined within this report, no impacts on bats are anticipated at any geographic scale.





Plate 8 Bat box installed on wooden post within Wildlands site (Box 1)



Plate 9 Bat box installed on wooden post within Wildlands site (Box 2)



Plate 10 Bat box installed on retained tree within Wildlands site (Box 3)





APPENDIX 1

***Baseline Bat Report -
Wildlands, Moycullen***

Baseline Bat Report

Wildlands, Moycullen





DOCUMENT DETAILS

Client: **Delphi Outdoors Ltd.**

Project Title: **Wildlands, Moycullen**

Project Number: **240533-a**

Document Title: **Baseline Bat Report**

Document File Name: **240533a - Wildlands - Baseline Bat Report F - 2024.11.19**

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1. INTRODUCTION

1.1 Purpose of this Report

MKO was commissioned to complete a comprehensive assessment of the potential effects on bats at Wildlands, Moycullen, Co. Galway (IG Ref: M 22287 31571) in response to Item 2 of a Further Information Request issued by Galway County Council, dated 25th of April 2024. This is stated below:

“2. (a) It is noted that the proposal is located in a woodland area that may host bats, which are protected under Objective NHB 9 of the Galway County Development Plan 2022- 2028. Having regard to Policy Objective NHB 9 of the Galway County Development Plan 2022- 2028 to protect bats and bat habitats, the applicant is requested to carry out a bat survey on site, to identify whether any bats or their roosts are present on site or whether and/or not bats utilise the site for foraging or commuting. This shall be carried out by a suitably qualified person, a LICENSED bat specialist with ecological expertise to determine whether or not bats and their roosts are present on site and to assess the potential impact of the development on bats, such as their feeding habitat, and in accordance with best practice and relevant legislation.

(b) Following on from the above the applicant shall be requested to update the submitted NIS accordingly.”

This report provides details of the bat surveys undertaken, including survey design, methods and results, and recommendation to safeguard bats. The report presents the ecological baseline recorded within the proposed development site in relation to bats. Surveys were carried out from May through to August 2024. Surveys included a suitability appraisal and inspection of the habitats and potential roosting features present on site. Manual activity surveys and roost surveys were carried out, as well as ground-level static detectors surveys. Three static detectors were deployed around the site for 31 nights across the survey period.

The main objective of the surveys was to assess the site for its suitability for foraging and commuting bats, as well as assess and inspect any structures for potential roosts, including maternity roosts. The bat surveys were designed to establish the nature, scale and locations of potential bat activity within the site.

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

- *Bat Survey Guidelines: Traditional Farm Buildings Scheme. The Heritage Council, Áras na hOidhreachta, Church Lane, Kilkenny (Aughney, T., Kelleher, C. & Mullen, D., 2008)).*
- *‘Bat Workers’ Manual’ (3rd edn). JNCC, Peterborough (Mitchell-Jones, A.J. & McLeish, A.P. (eds) 2004).*
- *The Lesser Horseshoe Bat Conservation Handbook, Vincent Wildlife Trust (Schofield, HW., 2008).*
- *Bat Surveys for Professional Ecologists – Good Practice Guidelines (4th edn.) (Collins, 2023)*
- *Bat Roosts in Trees (Andrews, 2018)*
- *Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes (NRA, 2006a)*
- *CIEEM (2013) Competencies for Species Surveys: Bats. Chartered Institute of Ecology and Environmental Management, Winchester.*
- *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 – V2. Irish Wildlife Manuals, No. 134. (Marnell, Kelleher & Mullen 2022)*
- *UK Bat Mitigation Guidelines, (Reason, P. F. and Wray, S. 2023)*

- *Guidance Note 08/23: Bats and Artificial Lighting at Night (ILP, 2023)*
- *Lesser Horseshoe Bat Species Action Plan 2022-2026 (NPWS & VWT, 2022)*

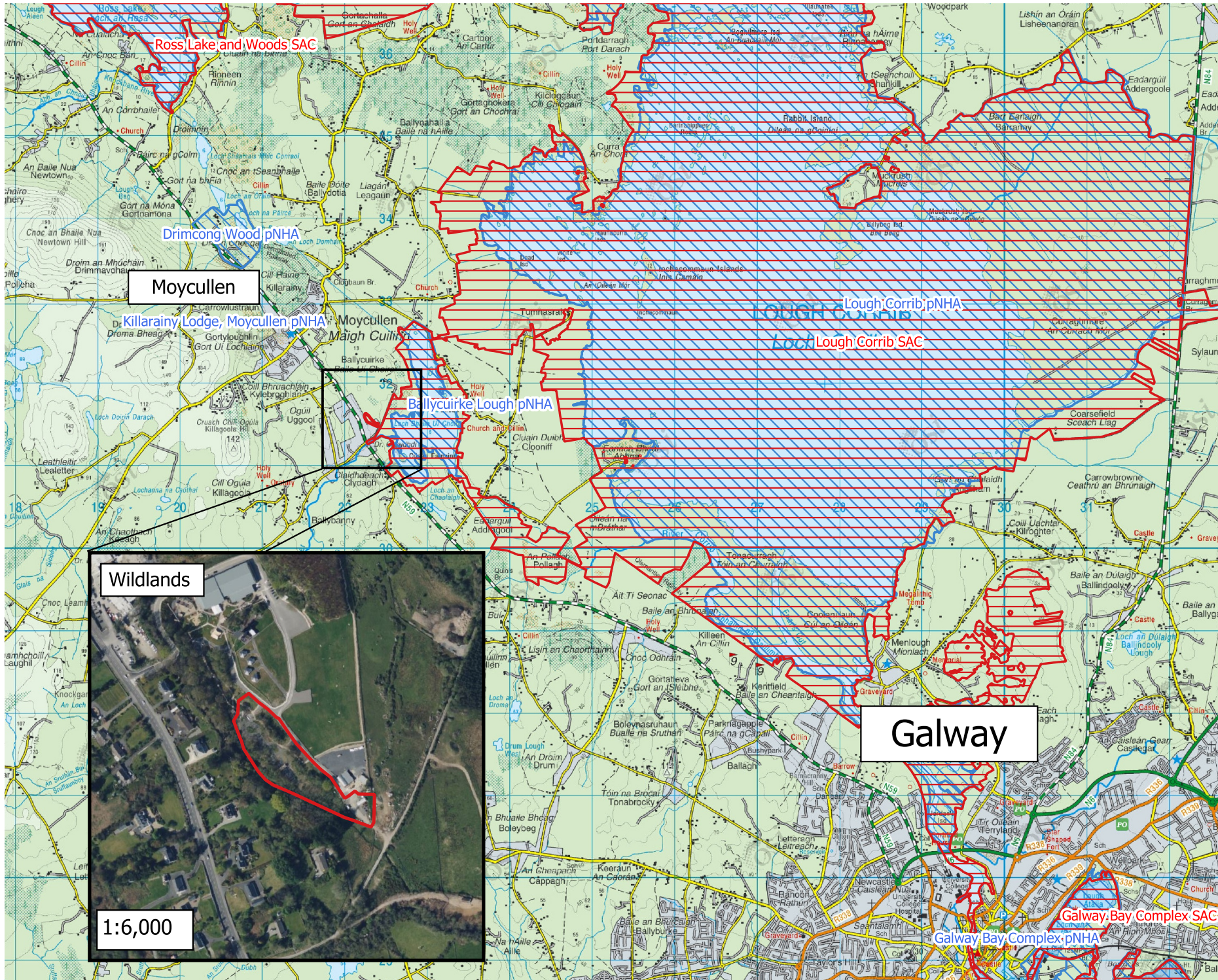
1.2

Site Description

The proposed development site is located within Wildlands Adventure Park, situated on an eastern facing slope at the southern end of Moycullen village, Co. Galway (IG Ref: M 22287 31571). Public access is available from the Clifden Road, with the Moycullen bypass situated a short distance from the site's eastern boundary.

The proposed development area consists of made-up ground, recently infilled with waste rubblestone material. An existing children's electric car track is located on a portion of the site, while the remainder features a small number of mature trees alongside a significant amount of regenerative scrub growth, including young trees and saplings. The proposed development area is fully contained within the existing Wildlands Adventure Park. Its boundaries are defined by a stream to the west and an internal access road to the east.

The primary land use in the area is recreation. A location map of the proposed development site is provided in Figure 1-1.



Map Legend

— Site boundary

Designated Sites

- pNHA
- SAC

Site Location

Project Title

Wildlands, Moycullen

Drawn By	RC	Checked By	SF
Project No.	240533-a	Drawing No.	Figure 1-1
Scale	1:60,000	Date	2024-11-20

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1.3

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, as amended). 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.

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. Table 1-1 summarises the current conservation status of Irish bat species and identified threats to Irish bat populations.

Table 1-1 Irish Bat Species Conservation Status and Threats (NPWS, 2019)

Bat Species	Conservation Status	Principal Threats
Common pipistrelle <i>Pipistrellus pipistrellus</i>	Favourable	A05 Removal of small landscape features for agricultural land parcel consolidation (M) A14 Livestock farming (without grazing) [impact of anti-helminthic dosing on dung fauna] (M) B09 Clear--cutting, removal of all trees (M) F01 Conversion from other land uses to housing, settlement or recreational areas (M) F02 Construction or modification (e.g. of housing and settlements) in existing urban or recreational areas (M) F24 Residential or recreational activities and structures generating noise, light, heat or other forms of pollution (M) H08 Other human intrusions and disturbance not mentioned above (Dumping, accidental and deliberate disturbance of bat roosts (e.g. caving) (M) L06 Interspecific relations (competition, predation, parasitism, pathogens) (M) M08 Flooding (natural processes) D01 Wind, wave and tidal power, including infrastructure (M)
Soprano pipistrelle <i>Pipistrellus pygmaeus</i>	Favourable	
Nathusius' pipistrelle <i>Pipistrellus nathusii</i>	Unknown	
Leisler's bat <i>Nyctalus leisleri</i>	Favourable	
Daubenton's bat <i>Myotis daubentoni</i>	Favourable	
Natterer's bat <i>Myotis nattereri</i>	Favourable	
Whiskered bat <i>Myotis mystacinus</i>	Favourable	
Brown long-eared bat <i>Plecotus auritus</i>	Favourable	
Lesser horseshoe bat <i>Rhinolophus hipposideros</i>	Inadequate	

1.4

Bat Roosting Behaviour

Bats use a variety of natural and manmade structures as roosting or resting places. The type of roost and its level of use is determined by its function in the bat life cycle. Table 1-1 provides a summary of different types of bat roosts.

Table 1-2 Bat Roost Types and Definitions

Roost Type	Definition
Day	Where individuals or small groups of male's rest/shelter in the day but are rarely found by night in summer.
Night	Where bats rest/shelter at night but are rarely found in the day.
Feeding	Where individuals rest/feed during the night but are rarely found during the day.
Transitional	Used by a few individuals for short periods of time prior to or following hibernation.
Swarming	Where large numbers gather in late summer to autumn. Important mating sites.
Mating	Where mating takes place in late summer to winter.
Maternity	Where females give birth and raise their young.
Hibernation	Where bats are found during winter (constant cool temperature and high humidity).
Satellite	An alternative roost found in close proximity to the main nursery colony.

There are currently no clear guidelines to determine the significance of a bat roost. All the largest roosts of LHB in Ireland are of international importance and it is anticipated that all large Leisler's bat roosts (>100) would also have international significance (NRA, 2006). Table 1-2 provides some criteria for determining the significance of different building roosts, as determined by the Bat Expert Panel of the Heritage Council in 2003 (NRA, 2006).

Table 1-3 Level of Importance of Various Roosts

Species	Indicator	Significance
Lesser horseshoe bat	Special Area of Conservation	Very significant
	If present	Significant
Whiskered bat	>10	Very significant
	If present	Significant
Natterer's bat	>10	Very significant
	If present	Significant
Daubenton's bat	Maternity roost	Significant
Leisler's bat	Maternity roost	Significant
Common pipistrelle	Maternity roost	Significant
Soprano pipistrelle	Maternity roost	Significant
Brown long-eared bat	Maternity roost	Significant

The likelihood of detecting active roosts is determined by the timing of the roost survey. In general;

- April surveys may detect transitional roosts used by bats following hibernation and prior to summer roosting.

- May-August surveys may detect maternity colonies and male/non-breeding female summer roosts.
- August surveys are best to determine maximum counts of adult and juvenile bats.
- August – October surveys may detect swarming and mating bats.
- September and October surveys may detect transitional roosts used by bats following the dispersal of maternity colonies and prior to hibernation.
- Day, night, feeding and satellite roosts may be found anytime between April and October.
- November – March surveys may detect hibernacula.

1.5

Statement of Authority

MKO employs a dedicated bat unit within its Ecology team, experienced in scoping, carrying out, and reporting on bat surveys, as well as producing impact assessments in relation to bats. MKO ecologists have relevant academic qualifications and are qualified in undertaking surveys to the levels required. MKO's Ecology team holds a bat derogation licence from NPWS. The licence is intended for professionals carrying out surveys with the potential to disturb roosting bats (i.e. roost inspections). Graduate and seasonal ecologist staff are included under the licence under condition of being accompanied by more experienced colleagues.

Survey scoping was prepared by Aoife Joyce (B.Sc., M.Sc.). The daytime walkover survey and inspections were carried out by Ryan Connors (B.Sc., M.Sc.). Manual activity surveys were carried out by Ryan Connors, David Culleton (B.Sc., M.Sc.), Charlie Meehan (B.A., M.Sc.) and Frederick Mosley (B.A., M.Sc.). Data manual ID were carried out by Ryan Connors and Frederick Mosley. This report was also prepared by Ryan, was reviewed and approved by Aoife Joyce. Staff's roles and relevant training are presented in Table 1-5 below.

Table 1-4 Project team qualifications and training.

Staff	Role	Qualifications and Training
Aoife Joyce (B.Sc., M.Sc.)	Project Director	B.Sc. (Hons) Environmental Science, University of Galway, Ireland. M.Sc. (Hons) Agribioscience, University of Galway, Ireland. Advanced Bat Survey Techniques – Trapping, biometrics, handling (BCI), Bat Impacts and Mitigation (CIEEM), Bat Tree Roost Identification and Endoscope Training (BCI), Bats in Heritage Structures (BCI), Bats and Lighting (BCI), Kaleidoscope Pro Analysis (Wildlife Acoustics).
Ryan Connors (B.Sc., M.Sc.)	Bat Ecologist	B.Sc. (Hons) Zoology, University College Galway, Ireland. M.Sc. (Hons) Conservation Behaviour, Atlantic Technological University, Galway, Ireland. Surveying Trees for Bats (BRTS), Structure & Tree Inspection (Internal), Manual Transect Survey (Internal), Bat Habitat Appraisal (Internal), Emergence and Re-Entry Surveys (Internal), Kaleidoscope Pro Analysis (Internal), Winter Tree Identification (Internal), Wintering Bird Surveying (Internal).
David Culleton (B.Sc., M.Sc.)	Bat Ecologist	B.Sc. (Hons) Zoology, University College Cork, Ireland. M.Sc. (Hons) Conservation Behaviour, Atlantic Technological University, Galway, Ireland. Bat Detector and Survey Training (BCI), Kaleidoscope Pro Analysis (Wildlife Acoustics), Endoscope Training (Internal), Structure & Tree Inspection (Internal), Manual Transect Survey (Internal), Bat Habitat Appraisal (Internal), Emergence and Re-Entry Surveys (Internal).

Frederick Mosley (B.A., M.Sc.)	Seasonal Bat Ecologist	B.A. (Hons) Biological and Biomedical Science Mod. Zoology, Trinity College, Dublin (2022) M.Sc. Marine Biology, University College Cork (2023) Kaleidoscope Pro Analysis (Wildlife Acoustics), Endoscope Training (Internal), Structure and Tree Inspection (Internal), Manual Transect Survey (Internal), Bat Habitat Appraisal (Internal), Emergence and Re-Entry Surveys (Internal)
Charlie Meehan (B.A., M.Sc)	Seasonal Bat Ecologist	B.A. History and Classical Studies, National University of Ireland, Galway M.Sc., Sustainable Environments, National University of Ireland, Galway Kaleidoscope Pro Analysis (Wildlife Acoustics), Endoscope Training (Internal), Structure and Tree Inspection (Internal), Manual Transect Survey (Internal), Bat Habitat Appraisal (Internal), Emergence and Re-Entry Surveys (Internal)

2. METHODOLOGY

2.1 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 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.*
- *Draft Galway County Development Plan 2022-2028*
- *BCI Database*
- *Review of NPWS Lesser Horseshoe Bat national dataset*

2.1.1 Bat Species' Range

EU member states are obliged to monitor the conservation status of natural habitats and species listed in the Annexes of the Habitats Directive. Under Article 17, they are required to report to the European Commission every six years. In April 2019, Ireland submitted the third assessment of conservation status for Annex-listed habitats and species, including all species of bats (NPWS, 2019).

The 2019 Article 17 Reports were reviewed for information on bat species' range and distribution in relation to the location of the proposed development.

2.1.2 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 for bat presence and roost records within a 10km radius of the proposed site, as well as general landscape suitability for bats.

2.1.3 Designated Sites

Special Areas of Conservation (SACs) are designated under the EU Habitats Directive. The European Sites that are within the Zone of Likely Impact, with bats identified as Qualifying Interests, are listed in Section 3.1.3 below. The potential for the proposed development to impact on sites that are designated for nature conservation is considered in separate Ecological Impact Assessment (EcIA) and Appropriate Assessment Screening (AASR) reports.

Natural Heritage Areas (NHAs) are designated under the Wildlife (Amendment) Act 2000 and their management and protection is provided by this legislation and planning policy. Proposed Natural Heritage Areas (pNHAs) were designated on a non-statutory basis in 1995 but have not since been statutorily proposed or designated. Any identified NHAs and pNHAs designated for the protection of bats are presented in Section 3.1.3 and potential for impacts was fully considered.

2.1.4 Habitat and Landscape

2.1.4.1 Ordnance Survey Mapping

Ordnance survey maps (OSI 1:5,000 and 1: 50,000) and aerial imagery (ortho-based maps) were reviewed to identify any habitats and features likely to be used by bats. Maps and images of the site and general landscape were examined for suitable foraging, commuting or roosting habitats including woodlands and forestry, hedgerows, tree lines and watercourses.

2.1.4.2 Geological Survey Ireland

The Geological Survey Ireland (GSI) online mapping tool and University of Bristol Spelaeological Society (UBSS) Cave Database for the Republic of Ireland were consulted for any indication of natural subterranean bat sites, such as caves, within 10km of the proposed site (BCI, 2012) (last searched on the 24th October 2024). Furthermore, the archaeological database of national monuments was reviewed for any evidence of manmade underground structures, e.g. souterrains, that may be used by bats (last searched on the 24th October 2024).

2.1.4.3 National Monuments

The archaeological database of national monuments was reviewed for any evidence of manmade underground structures, e.g. souterrains, that may be used by bats (last searched on the 8th August 2024).

2.2 Field Study

2.2.1 Bat Habitat Appraisal

An initial walkover survey of the proposed development site was carried out during daylight hours on the 4th June 2024. 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* (4th edn.) (Collins, 2023). The aim of the survey was to identify suitable bat habitats within the proposed development site.

Table 4.1 of the 2023 BCT Guidelines identifies a grading protocol for assessing structures, as well as commuting/foraging habitat for bats, which is summarised in Table 2-1. The protocol is divided into five Suitability Categories: *High, Moderate, Low, Negligible and None*. Table 4.2 of the 2023 BCT Guidelines identifies a grading protocol to assess trees, which is divided into three Suitability Categories: NONE (No suitability), FAR (Further Assessment Required), and PRF (Potential Roosting Feature present). This initial tree grading protocol can inform a preliminary roost assessment (PRA) to determine the available tree-roosting resource within the proposed development site, depending on whether a PRF could accommodate a small number of bats (PRF-I) or a larger roost, including maternity roosts (PRF-M). More information on PRAs is provided below.

Table 2-1 BCT protocol for bat habitat appraisals (Collins, 2023)

Assessment	Rationale
High	Structure 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, and surrounding habitat. Continuous, high-quality, well-connected habitats, connected to known roosts.

Moderate	A structure used by bats due to their size, shelter, protection, conditions and surrounding habitat, but are unlikely to support a roost of high conservation status, and suitable, connected habitats.
Low	Structures with one or more potential roost sites that could be used by an individual bat opportunistically, and suitable but isolated habitats that could be used by a small number of bats.
Negligible	No obvious features present, but a level of uncertainty remains.
None	No habitat features likely to be used by roosting, foraging or commuting bats.

2.2.1.1 Preliminary Roost Assessment

A search for roosts was undertaken within the boundary of the proposed development site by licenced ecologist Ryan Connors to identify any potential roost features (PRFs). The aim of the survey was to determine the presence of roosting bats, potential access points, roosting locations and the need for further survey work or mitigation.

The site was visited in May, June, July and August of 2024. All structures identified within the proposed development were assessed for their potential to support roosting bats. The exterior of each structure was inspected first from ground level and included all accessible, walls, eaves, supporting timber frames and felt lining. Inspections were carried out with the aid of torches, a ladder, an endoscope, and a thermal camera, and searched for evidence of bat use, including live and dead specimens, droppings, feeding remains, urine splashes, fur oil staining and noises, as well as potential access points into the structure.

The proposed development site contains a large number of trees spread within woodland and treeline habitats. Roosting suitability was assessed in clusters and at feature level, using the tree groups outlined in the accompanying arborist report. Areas were marked in accordance to BCT Guidance (Collins, 2023) during the initial walkover surveys to inform need for further surveys and assessment.

Trees present within the proposed development footprint were examined from ground level for the presence of rot holes, hazard beams, cracks and splits, partially detached bark, knot holes, gaps between overlapping branches and any other PRFs identified by Andrews (2018). Notes were initially compiled on any trees marked as PRF, including location and species.

Two structures, seven tree groups and seven individual trees were assessed and are described in Section 3.2.1 below

2.3 Bat Activity Surveys

2.3.1 Manual Surveys

Manual activity surveys included roost surveys of any feature identified as a potential roost, as well as night-time bat walkovers (NBW). For each of the surveys, surveyors were equipped with active full spectrum bat detectors, Batlogger M (Elekon AG, Lucerne, Switzerland). Where possible, species identification was made in the field and any other relevant information was also noted, e.g., numbers, behaviour, features used, etc. All bat echolocation was recorded for subsequent analysis to confirm species identifications, as detailed in Section 2.4. The survey effort is summarised in Table 2-2 and presented in Figure 2-1.

Table 2-2 Bat Activity survey effort

Date	Surveyors	Type	Sunset	Weather
04/06/2024	Ryan Connors & David Culleton	Nighttime Bat Walkover	21:57	11-10°C Dry, Calm, Moon not visible 10-50% Cloud cover
11/07/2024	Ryan Connors & Charlie Meehan	Roost Emergence	22:00	15°C, Dry, Calm, Moon not visible 95% Cloud cover
06/08/2024	Ryan Connors & Frederick Mosley	Roost Emergence	21:21	15-16°C, Dry – Light rain, Calm 30-70% Cloud cover

2.3.1.1 Roost Emergence Surveys

Any structure identified during the bat habitat appraisal as having potential to host roosting bats was subject to presence/absence surveys in the form of emergence surveys. Rationale for survey effort was based on guidelines proposed by Collins in Tables 7.1 and 7.2 (Collins, 2023). Two structures were identified within the site and were subject to roost surveys following the initial roost assessment.

Surveyors were positioned on opposite sides of the target structure with a focus on potential access point and roosting features identified during the daylight walkover surveys. The purpose was to identify any bat species, numbers, access points and roosting locations within each the PRF structures. Night vision aids (NVAs), in the form of a thermal camera aided the survey effort, as detailed in Section 2.3.1.2.

Surveys were carried out in favourable weather conditions (Table 2-2). Roost emergence surveys commenced at least 15 minutes before sunset and concluded 2 hours after sunset.

2.3.1.1.1 Night Vision Aids

The use of NVAs is now considered standard best practice for bat activity surveys. MKO employs thermal camera equipment. The thermal camera (InfiRay Eye II V2.0), mounted on a tripod, was used during roost surveys to identify potential roosting hotspots and monitor emergence activity. The camera was fully monitored by a surveyor, who was equipped with a bat detector to record bat echolocation calls.

Footage from NVAs was saved and reviewed in office in full, with any instances of emergence marked for future use. Footage from NVAs was saved and reviewed in the office in full, with any instances of emergence marked for future use. The locations of the NVAs are presented in Figure 2-1.

2.3.1.2 Night-time Bat Walkover

Manual activity surveys also comprised a night-time bat walkover at dusk, which was carried out on the 4th June, 2024. The aim of this survey was to observe bat species using the site and visually assess bat behaviour and important features used by bats within the site.

The walkover was carried out by two surveyors, recording bats in real time. It commenced 15 minutes before sunset and concluded 2 hours after sunset. Surveyors were equipped with one active full spectrum bat detector, the Batlogger M bat detector (Elekon AG, Lucerne, Switzerland). The walkover route was prepared with reference to the proposed layout, desktop and daytime walkover survey results, as well as any health and safety considerations and access limitations. As such, it generally followed existing roads and tracks within the site. The nighttime walkover route is shown in Figure 3-2.

2.3.2 Static Detectors Surveys

Three full spectrum SM4 bat detectors (Wildlife Acoustics, Maynard, MA, USA), were deployed during static surveys to record bat activity over a one-week period across four separate months. The detectors were initially deployed on May 27th and remained active until June 4th, 2024, for a duration of eight nights. They were deployed for another eight-night period from June 20th to June 28th, followed by a third deployment from July 11th to July 19th. The final deployment occurred from August 2nd to August 9th. The three static detector locations were selected to represent the range of habitats present within the proposed development, including favourable bat habitats.

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. Static detector locations are shown in Figure 2-1 and presented in Table 2-3.

Table 2-3 Static Detector Location

Detector ID	IG Reference	Habitat
D01	M 22242 31608	Buildings and artificial surfaces, oak-ash-hazel woodland, drainage ditches
D02	M 22275 31550	Buildings and artificial surfaces, oak-ash-hazel woodland, drainage ditches
D03	M 22347 31522	Buildings and artificial surfaces, oak-ash-hazel woodland, drainage ditches

2.4 Bat Call Analysis

All recordings were later analysed using bat call analysis software Kaleidoscope Pro v.5.4.8 (Wildlife Acoustics, MA, USA). The aim of this was to identify, to a species or genus level, what bats were present at the proposed development site. Bat species were identified using established call parameters, to create site-specific custom classifiers. All identified calls were also manually verified.

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 Daubenton's bat (*M. daubentonii*), Whiskered bat (*M. mystacinus*), Natterer's bat (*M. nattereri*)) were considered as a single group, due to the difficulty in distinguishing them based on echolocation parameters alone (Russ, 1999). The results identified by Kaleidoscope Pro's Auto ID software were used to get an idea of potential usage of the site by this genus, with acknowledgement of the likely limitations of the software.

The echolocation of Soprano pipistrelle (*P. pygmaeus*) and Common pipistrelle (*P. pipistrellus*) are distinguished by having distinct (peak frequency of maximum energy in search flight) peak frequencies of ~55 kHz and ~46 kHz respectively (Jones & van Parijs, 1993). Some overlapping is possible between these species: where no certainty could be achieved, calls were identified to genus level.

Individual bats of the same species cannot be distinguished by their echolocation alone. Thus, 'bat passes' was used as a measure of activity (Collins, 2023). 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 15s duration. All bat passes recorded in the course of this study follow these criteria, allowing comparison. Due to the volume of bat activity data recorded, where multiple bat passes were recorded within the same registration, rarer or harder to record species were identified. Underreporting of common species is possible using this method, and is accounted for within the assessment.

Echolocation calls by brown long-eared bats (*Plecotus auritus*) are intrinsically quiet and hard to record by static equipment. All data collected, including Noise files and Auto ID files are checked to ensure all calls for this species have been captured. However, a level of underrepresentation is expected for this species and is accounted for in the assessment of activity levels.

Echolocation by Lesser horseshoe bats (*Rhinolophus hipposideros*) is directional and can be missed by detectors, particularly manual detectors. MKO employs omni-directional microphones to limit under-recording for the species.



Map Legend

- Site boundary
- Static Detector Locations
- Dusk Emergenence Surveys
 - Shed and adjoining weather shelter 11th July 2024
 - Standalone weather shelter 8th August 2024
- Surveyor Locations
 - Surveyor Location
 - Thermal Location
 - Surveyor Location
 - Thermal Location

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Drawing Title	
Survey Effort	
Project Title	
Wildlands, Moycullen	
Drawn By	Checked By
RC	SF
Project No.	Drawing No.
240533-a	Figure 2-1
Scale	Date
1:1,000	2024-11-20



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3.

RESULTS

3.1

Desktop Study

3.1.1

Galway County Development Plan 2022-2028

NHB 9 Protection of Bats and Bats Habitats

Seek to protect bats and their roosts, their feeding areas, flight paths and commuting routes. Ensure that development proposals in areas which are potentially important for bats, including areas of woodland, linear features such as hedgerows, stonewalls, watercourses and associated riparian vegetation which may provide migratory/foraging uses shall be subject to suitable assessment for potential impacts on bats. This will include an assessment of the cumulative loss of habitat or the impact on bat populations and activity in the area and may include a specific bat survey. Assessments shall be carried out by a suitably qualified professional and where development is likely to result in significant adverse effects on bat populations or activity in the area, development will be prohibited or require mitigation and/or compensatory measures, as appropriate. The impact of lighting on bats and their roosts and the lighting up of objects of cultural heritage must be adequately assessed in relation to new developments and the upgrading of existing lighting systems.

3.1.2

National Biodiversity Data Centre

A review of the National Bat Database of Ireland on the 13th August 2024, yielded results of bats within a 10km hectad of the proposed development. The search yielded 8 bat species within 10km. Table 3-1 lists the bat species recorded within the hectad which pertains to the proposed development site (M23).

A review of the NBDC bat landscape map provided a habitat suitability index of 35.67 (orange). This indicates that the proposed development area has moderate habitat suitability for bat species.

Table 3-1 NBDC Bat Records

Hectad	Species	Date	Database	Status
M23	<i>Brown Long-eared Bat (Plecotus auritus)</i>	26/05/2018	National Bat Database of Ireland	Annex IV
M23	<i>Pipistrelle (Pipistrellus pipistrellus sensu lato)</i>	27/08/2018	National Bat Database of Ireland	Annex IV
M23	<i>Soprano pipistrelle (Pipistrellus pygmaeus)</i>	27/08/2018	National Bat Database of Ireland	Annex IV
M23	<i>Lesser Horseshoe Bat (Rhinolophus hipposideros)</i>	18/01/2019	National Bat Database of Ireland	Annex II Annex IV
M23	<i>Leisler's Bat (Nyctalus leisleri)</i>	06/06/2018	National Bat Database of Ireland	Annex IV
M23	<i>Natterer's Bat (Myotis nattereri)</i>	18/01/2019	National Bat Database of Ireland	Annex IV
M23	<i>Whiskered Bat (Myotis mystacinus)</i>		National Bat Database of Ireland	Annex IV

M23	<i>Daubenton's Bat (Myotis daubentonii)</i>	30/05/2018	National Bat Database of Ireland	Annex IV
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3.1.3 Designated Sites

Within Ireland, the lesser horseshoe bat is the only bat species requiring the designation of Special Areas of Conservation (SACs). The site is situated within the current known range for this species and there are two SACs designated for its protection within 10km of the proposed development. Despite the close proximity of the Lough Corrib SAC to the proposed development site, the lesser horseshoe bat roost for which the SAC is designated is located more than 26km away, as mapped in Map 11 of the Site-Specific Conservation Objectives. Therefore, the proposed development is significantly outside the 2.5km key foraging range for this species. There is no potential for effects on the designated roosts or the mapped foraging grounds for lesser horseshoe bat at either of the identified SACs as a result of the proposed development.

Natural Heritage Areas (NHAs) and proposed Natural Heritage Areas (pNHAs) may be designated for any bat species. A search of NHAs and pNHAs within a 10 km radius of the site found one site designated for the conservation of bats. Killarainy Lodge pNHA is situated 1.3km from the proposed development site. It is a nursery roost for Natterer's bat (*Myotis nattereri*). Approximately 70 bats use the roof at the gable end of a stone building. A potential for effect on Killarainy Lodge, Moycullen pNHA was identified. The proposed development is considered to be within the Core Sustainance Zone (CSZ) of the site and is therefore considered further in this assessment in Section 4.1.1 and 4.1.2.

Table 3-2 European and Nationally designated sites for conservation of bats

Designated Site	Distance to Site	Species	Roost Type
Lough Corrib SAC	40m	<i>Lesser Horseshoe Bat (Rhinolophus hipposideros)</i>	Summer
Killarainy Lodge, Moycullen pNHA	1.3km	<i>Natterer's Bat (Myotis Nattereri)</i>	Nursery
Ross Lake and Woods SAC	4.6km	<i>Lesser Horseshoe Bat (Rhinolophus hipposideros)</i>	Maternity

3.1.4 Habitat and Landscape

A review of mapping and photographs provided insight into the habitats and landscape features present at the proposed development site. In summary, the primary land use within the proposed site is recreational areas, while the remainder of the site supports marginal woodland habitats.

A review of the GSI online mapper did not indicate the possible presence of any subterranean sites within the proposed development site and a search of the National Monuments Database did not reveal the presence of any manmade subterranean sites within the proposed development site.

A search of the UBSS Cave Database for the Republic of Ireland found no caves within the proposed development site and two caves within 10 km of the proposed development.

Table 3-3 UBSS Cave Database Results within 10km

Cave Name	Description	IG Ref	Distance from Site Boundary
Terryland/Cooley's Cave	10m passage to collapse chamber	M 29500 26400	8.8km
Rhinolophus Retreat	34m long rift passage with evidence of bats and human activity	M 18500 39400	8.6km

No national monuments are reported within the proposed development.

3.2 Bat Habitat Appraisal

A bat walkover and inspection survey were conducted on the 4th June 2024. During this survey, habitats within the proposed development site were assessed for their suitability for bats to roost, forage and commute. Connectivity with the wider landscape was also considered to determine habitat suitability.

With regard to foraging and commuting bats, the proposed development site is considered of *High* suitability due to the high habitat diversity and presence of semi-natural woodland, watercourses and treelines throughout. Built and open areas, such as artificial tracks and trails are considered of *Low* suitability; however, they are usually surrounded by linear habitats and do not limit connectivity within the proposed development.

With regard to roosting bats, the existing treelines and woodland areas include a modest number of mature deciduous trees, namely sessile oak with a larger number of semi-mature trees, predominantly made up of ash, hazel and goat willow. The mature oak trees present suitable roosting spaces for bats, in varying capacity. Particular attention was given to trees proposed for felling; these were subjected to a thorough roost inspection, which is detailed below. Overall, the suitability of the trees within the proposed development site for hosting roosting bats ranges from None to PRF-I.

Details of the assessment of existing man-made structures for their suitability to host roosting bats are presented below. Trees within the proposed development footprint are also assessed in more detail.

3.2.1 Preliminary Roost Assessment

3.2.1.1 PRF Structures

Two structures were identified and inspected as part of the roost assessment effort, a wooden shed with an adjoining rain shelter, and a solitary rain shelter adjacent to an archery range in the south of the site. All structures were also the subject of roost emergence surveys. Details of the emergence surveys are presented in Section 3.3.1.

Wooden Shed and Weather Shelter

The shed and adjoining weather shelter, located at the north of the proposed development (IG Ref: M 22249 31616), are constructed of wood with a corrugated metal roof and aluminium trim (Plate 3-1). The weather shelter has a timber frame with a felt lining on the underside of the roof, making it accessible to bats (Plate 3-2). The metal trim around the roof's perimeter is lifting in places (Plate 3-3), also offering roosting potential for bats. However, no evidence of roosting bats was found within the structure during the habitat appraisal, and it was assigned a *Low* roosting potential. The shed was subjected to a dusk emergence survey on the 11th of July 2024, as detailed in Section 3.3.1 below.



Plate 3-1 Wooden shed and weather shelter north-eastern aspect



Plate 3-2 Felt lining and timber framing within weather shelter



Plate 3-3 Lifting trim on wooden shed

Weather Shelter adjacent to Archery Range

The other weather shelter adjacent to the archery range in the south of the proposed development site (IG Ref: M 22307 31548) is of similar construction to that of the one described above (Plate 3-4). It features a wooden exterior, corrugated metal roofing, timber framing, and felt underlining on the interior (Plate 3-5). Like the other shelter, it has metal trim around the roof perimeter, which is lifting in some areas. No evidence of roosting bats was found during the daytime inspection, and it was also assigned a *Low* roosting potential. A dusk emergence survey was carried out on the weather shelter on the 6th of August 2024.



Plate 3-4 North-East aspect of weather shelter



Plate 3-5 Timber framing and felt underlining

3.2.1.2 Ground-Level Tree Assessment

The proposed development site is characterized by a network of various tree groups, each of which has been labelled according to the arborist's report. These labels were also used during the ground-level tree assessment, which evaluated seven distinct tree groups and seven individual trees. The proposed development site features a relatively small number of mature trees, alongside a larger population of semi-mature trees, many of which have emerged in a recently infilled area.

The tree population on the site is predominantly composed of ash, with significant representations of goat willow and hazel, as well as smaller clusters of silver birch. Notably, three mature oak trees are present on the site, all of which are designated to be retained as part of the proposed development.

The surveyed tree groups displayed varying degrees of suitability for hosting roosting bats. Tree groups TG2, TG3, and TG5 consist almost entirely of juvenile and semi-mature ash trees that have naturally regenerated on the infilled land. However, these trees are now infected with ash dieback disease, which, coupled with their size and the absence of suitable roost features as identified by Andrews (2018), renders them largely unsuitable for bat roosting. Despite this, each of these tree groups contains one tree with a potential roost feature (PRF).

Additionally, two groups of native hazel trees (TG1 and TG6) are situated alongside the existing access road to the east. Within TG6, only a single tree was identified with a wound that could potentially serve as a bat roost (PRF-I). TG4, which is primarily composed of silver birch with some ash and goat willow, is located along the stream on the western boundary. Within this group, only one goat willow tree was found to have a PRF. TG7, located at the northern boundary of the site, consists of a mixed group of goat willow, rowan, and wild cherry trees. In this group, one goat willow tree was noted to have a transverse snap, which could provide a roosting opportunity for bats.

The findings from the ground-level tree assessment are detailed in Table 3-4, with accompanying images presented in Plates 3-6 to 3-19. The location context of the identified tree groups and trees containing PRFs are illustrated in Figure 3-1.

Table 3-4 Tree inspection results

Tree Group (TG) / Tree (T)	Species	Potential	Notes	Plate
TG2, TG3 & TG5	Native ash	None – PRF-I	Areas of semi-mature native ash affected by ash dieback, single PRF-I tree present.	3-6 – 3-8
TG1 & TG6	Hazel	None – PRF-I	Native Hazel trees that hug the existing access road. One PRF-I tree present.	3-9
TG4	Silver birch with occasional ash and goat willow	None – PRF-I	Semi-mature group with only one goat willow tree offering PRF-I.	3-10 – 3-11
TG7	Goat willow, rowan & wild cherry	None – PRF-I	Mixed group with mostly negligible trees with the exception of a goat willow tree containing a large wound.	3-12 3-13
T18	Pedunculate oak	PRF-I	Mature tree with ivy cover and fissured bark. To be retained	3-14
T23	Sessile oak	PRF-I	Mature tree with a transverse snap present on one of the branches. To be retained.	3-15
T20	Sessile oak	PRF-M	Mature, ivy-covered tree with several wounds and transverse snags offering roosting potential. To be retained.	3-16
T21	Silver birch	None	Semi-mature, lacks the features associated with roosting bats. To be retained	3-17
T19	Goat willow	None	Mature tree with some ivy cover but otherwise no potential roosting features. To be retained.	3-18
T24	Goat willow	Low	Semi-mature tree, no features suitable for roosting bats.	3-19



Plate 3-6 Ash dieback affected ash trees within TG5.



Plate 3-7 Ash dieback affected ash trees within TG2.



Plate 3-8 Ash dieback affected ash trees within TG3.



Plate 3-9 TG1 & TG6 dominated by hazel.



Plate 3-10 TG4 dominated by native silver birch, with occasional ash and goat willow – Southern segment.



Plate 3-11 Northern segment of TG4.



Plate 3-12 TG7 comprises a mixed group containing goat willow, rowan and wild cherry.



Plate 3-13 Southern aspect of TG7.

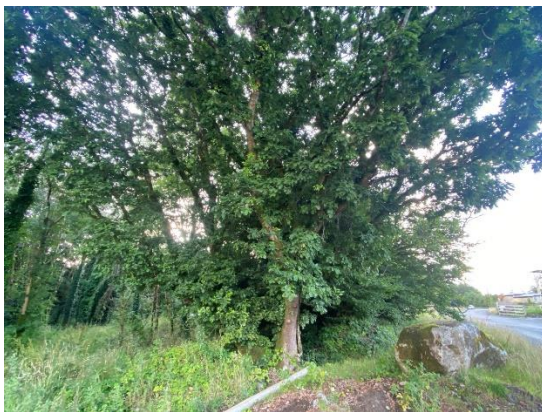


Plate 3-14 T18 Oak tree to be retained

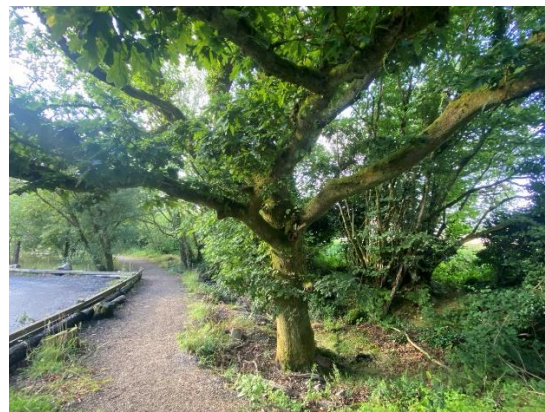


Plate 3-15 T23 Oak tree to be retained



Plate 3-16 T20 Oak tree to be retained



Plate 3-17 T21 Birch tree to be retained



Plate 3-18 T19 Goat Willow tree to be retained.



Plate 3-19 T24 Goat willow tree designated for removal.



Map Legend

- Site boundary
- Trees/Tree Groups Proposed for Removal

Ground Level Tree Assessment

- PRF

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Drawing Title

Ground Level Tree Assessment

Project Title

Wildlands, Moycullen

Drawn By	RC	Checked By	SF
Project No.	240533-a	Drawing No.	Figure 3-1
Scale	1:1,000	Date	2024-11-20

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3.3 Bat Activity Surveys

3.3.1 Manual Surveys

3.3.1.1 Dusk Emergence Surveys

Two structures with roosting potential were identified within the proposed development site. Table 4-1 summarises the survey effort in relation to dusk emergence surveys carried out to identify and classify potential roosts. Individual surveys are described below.

Table 3-5 Manual activity surveys at PRFs.

PRF	IG Ref.	Date	Survey Type	Results
Wooden Shed & Weather Shelter	M 22250 31612	11 th July 2024	Dusk Emergence	3no. emerging soprano pipistrelles
Weather Shelter	M 22306 31546	6 th August 2024	Dusk Emergence	1no. emerging soprano pipistrelle

Wooden shed and adjoining weather shelter

A dusk emergence survey was carried out on the 11th of July 2024 at the wooden shed and adjoining weather shelter located in the north of the proposed development site. During the survey, 2no. soprano pipistrelles were observed emerging from underneath the felt lining in the weather shelter, while one was observed emerging from beneath the metal trim on the north-west aspect of the shed, as confirmed by the thermal footage. Consistent foraging and commuting activity were recorded throughout the survey, particularly among common and soprano pipistrelles. Leisler's bat was recorded less frequently, along with a single lesser horseshoe bat pass.

Weather shelter

A dusk emergence was also conducted on the weather shelter adjacent to the archery range in the south of the proposed development site on the 6th of August 2024. One soprano pipistrelle was observed emerging from the metal trim on the northern aspect of the structure. Soprano pipistrelle again dominated the commuting and foraging activity with common pipistrelle, Leisler's bat, *Myotis spp.* and lesser horseshoe bat also recorded.

Table 3-6 Bat passes recorded during the two dusk emergence surveys.

Dusk Survey	Soprano pipistrelle	Common pipistrelle	Leisler's bat	<i>Myotis spp.</i>	Lesser horseshoe bat
11 th July 2024	271	14	15	0	1
6 th August 2024	166	5	20	2	3

3.3.1.3 Nighttime Bat Walkover Survey

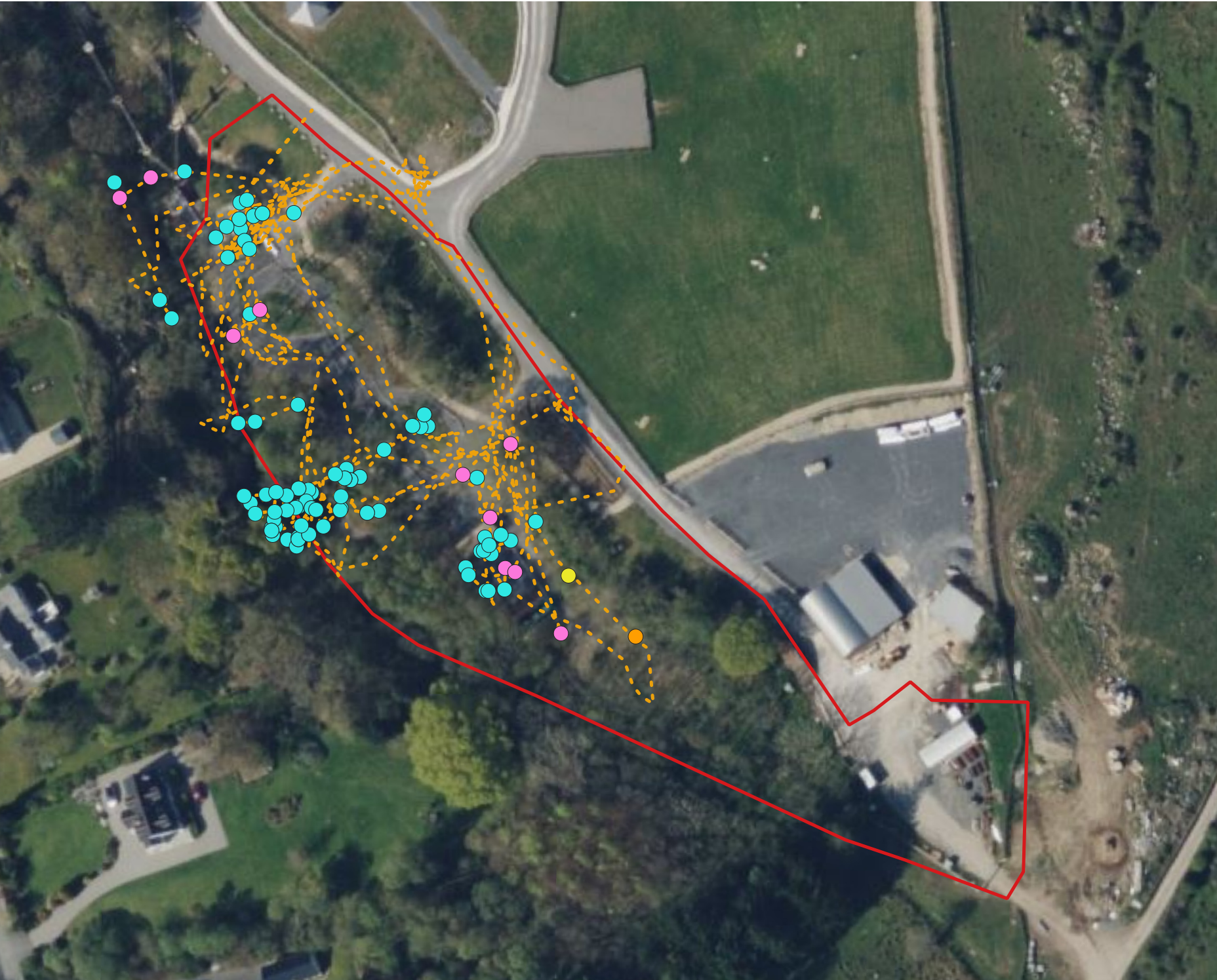
Manual activity surveys also comprised a night walkover at dusk. The night walkover surveys took place on the 4th of June 2024. A total of 202 bat passes were recorded during the survey (Table 3-7).

Table 3-7 Nighttime walkover survey results

Date	Km	Common pipistrelle	Soprano pipistrelle	Leisler's bat	Lesser horseshoe bat	Total
4 th June 2024	3.3	28	170	3	1	202

Walkover surveys were aimed at assessing the use of linear features and other habitats by bats. The walked transect followed the artificial tracks and trails present within the park. Bat activity was dominated by soprano pipistrelles, with most of the activity appearing to come from the mature woodland located to the west of the proposed development. Common pipistrelles and Leisler's bat were also recorded to a lesser extent and a single lesser horseshoe bat was recorded in the south of the site at 23:20.

Figure 3-2 presents the walkover route and spatial distribution of bat activity across the nighttime walkover survey.



Map Legend

- Site boundary
- Night-time Bat Walkover Route 4th June 2024
- Night-time Walkover Manual Results
 - Leisler's bat
 - Common pipistrelle
 - Soprano pipistrelle
 - Lesser horseshoe bat

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Drawing Title

Nighttime Bat Walkover Results

Project Title

Wildlands, Moycullen

Drawn By

RC

Checked By

SF

Project No.

240533-a

Drawing No.

Figure 3-2

Scale

1:1,000

Date

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3.3.2 Static Detectors Surveys

Three SM4 static detectors were deployed on the site at four different intervals (May - August) for a period of at least seven nights. The three detectors were deployed for a total of 31 nights. These detectors allowed a specified look into species composition, commuting and foraging activities within the proposed development site. Detector locations were chosen to represent areas of likely bat activity.

D01 was situated within an area of semi-mature ash trees affected by ash dieback within TG5, located to the northwest of the proposed development site. It was situated approximately 10 meters west of the soprano pipistrelle roost (IG Ref: M 22250 31612). D02 was placed in the west of the site within TG4, which primarily consists of native silver birch with occasional ash and goat willow. This detector was approximately 30 meters west of the other soprano pipistrelle roost at IG Ref: M 22306 31546; D03 was located to the south of the proposed development site, within TG3, an area also composed of semi-mature ash affected by dieback. The locations of all static detectors are illustrated in Figure 2-1.

In total 28,331 bat passes were recorded. Analysis of the detector recordings positively identified six bats to species level with *Myotis* genus also present. Soprano pipistrelle (*Pipistrellus pygmaeus*) made up the vast majority of the activity recorded within the site (n=25,426), followed by *Myotis* spp. (n=1,034). Using Kaleidoscope Pro's Auto ID feature, 282 *Myotis* passes were identified to species level. Of these, 85% (n=240) were classified as whiskered bats (*Myotis mystacinus*), 8.5% (n=24) as Natterer's bats (*Myotis nattereri*), and 6.5% (n=18) as Daubenton's bats (*Myotis daubentonii*).

Other species recorded included common pipistrelles (*Pipistrellus pipistrellus*) (n=842) and Leisler's bats (*Nyctalus leisleri*) (n=744), with brown long-eared bats (*Plecotus auritus*) (n=249) and Nathusius' pipistrelles (*Pipistrellus nathusii*) (n=10) recorded less frequently. Twenty-six instances of lesser horseshoe bats (*Rhinolophus hipposideros*) were also detected. The proposed development is located within the current known range for this species. Plate 3-20 shows total bat species composition recorded at the proposed development site.

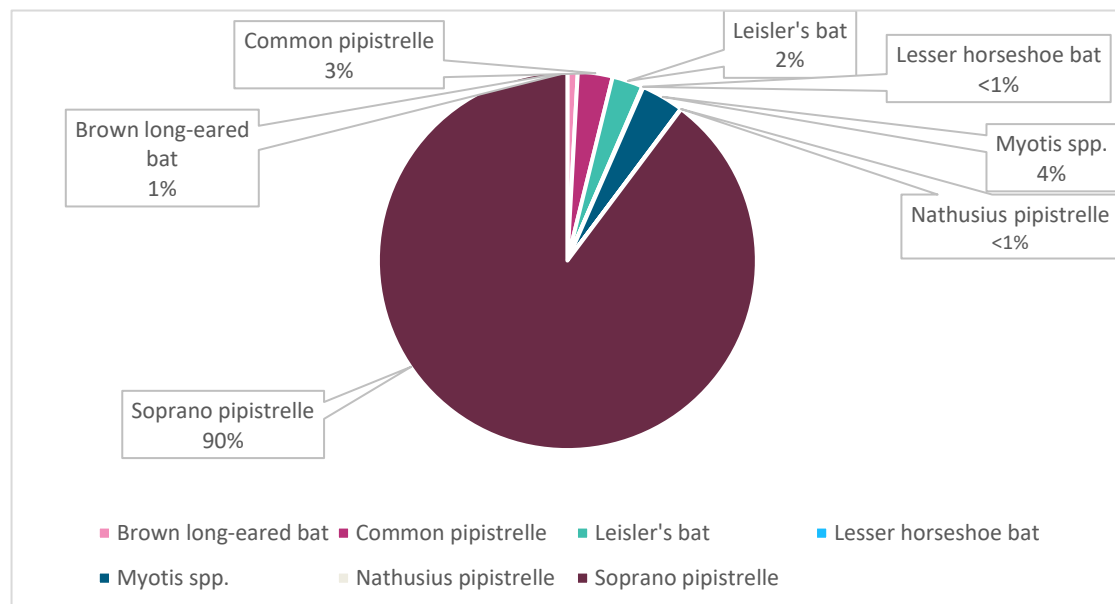


Plate 3-20 Total bat species composition

Plate 3-21 shows total bat passes per detector, which are summarised in Table 3-8.

Table 3-8 Static detector results, total bat passes.

Detector	Brown long-eared bat	Common pipistrelle	Leisler's bat	Lesser horseshoe bat	Myotis spp.	Nathusius pipistrelle	Soprano pipistrelle	Total
D01	133	304	360	3	248	5	8,681	9,734
D02	48	308	141	9	441	2	9,668	10,617
D03	68	230	243	14	345	3	7,077	7,980

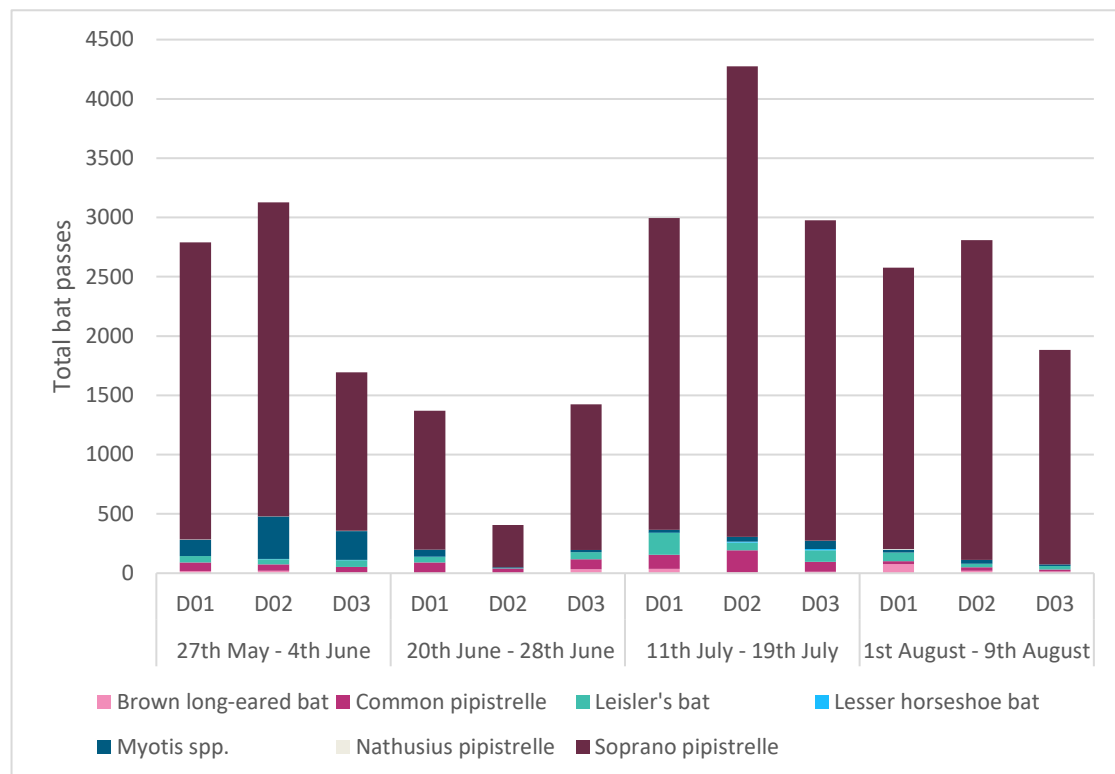


Plate 3-21 Total bat passes per detector across 32 nights.

Species composition was generally similar across all detectors, with soprano pipistrelles being the most frequently recorded species at all locations, particularly at D02 (n=9,668) and D01 (n=8,681). Common pipistrelles were recorded most often at D01 (n=304) and D02 (n=308), with fewer passes at D03 (n=230). Myotis spp. were most frequently detected at D02 (n=441) and D03 (n=345), while lesser horseshoe bats were observed in low numbers across all detector locations, with the highest occurrence at D03 (n=14). Table 3-9 shows the locations, dates and times of each individual lesser horseshoe bat pass. Leisler's bats were recorded more often at D01 (n=360), while brown long-eared bats were most common at D01 (n=133). Nathusius' pipistrelle was rare (n=10), with only a few detections across all locations.

Table 3-9 Lesser horseshoe bat (*Rhinolophus hipposideros*) passes recorded by static detectors

Detector Location	Recording Date	Recording Time
D02	31/05/2024	00:45:02
D03	31/05/2024	23:46:49
D03	01/06/2024	01:38:20
D03	03/06/2024	00:39:07
D01	24/06/2024	23:55:16
D01	25/06/2024	01:00:18
D03	11/07/2024	23:13:57
D02	11/07/2024	23:18:28
D03	12/07/2024	01:43:11
D03	12/07/2024	01:44:40
D03	12/07/2024	01:45:22
D01	12/07/2024	01:54:10
D02	12/07/2024	04:08:15
D02	13/07/2024	01:04:40
D02	13/07/2024	02:21:52
D03	13/07/2024	02:22:25
D03	13/07/2024	03:46:40
D02	15/07/2024	03:38:58
D02	16/07/2024	02:09:12
D03	17/07/2024	01:19:36
D03	17/07/2024	01:24:30
D03	17/07/2024	02:43:27
D02	17/07/2024	02:49:18
D03	17/07/2024	04:16:51
D03	17/07/2024	04:21:13
D02	19/07/2024	04:03:51

Analysis of the detector recordings revealed bat passes per hour (bp/h) over the four survey periods (see Table 3-10 & Plate 3-22). Soprano pipistrelles were consistently the most frequently recorded species at all detectors, with the highest activity observed at D02 in July (67.10 bp/h). Common pipistrelles showed moderate activity, peaking at D02 in July (3.11) and D01 in May (1.22). *Myotis spp.* were most active in May, particularly at D02 (6.07 bp/h), but activity decreased significantly in subsequent months. Leisler's bats exhibited variable activity, with a peak at D01 in July (3.15). Lesser horseshoe bats and Nathusius' pipistrelles were rarely detected, showing very low pass rates. In summary, soprano pipistrelles dominated the static detector survey results, with noticeable seasonal fluctuations among the other species.

Table 3-10 Seasonal bat passes per hour (bp/h) at each of the detector locations.

	Detector	Brown long-eared bat	Common pipistrelle	Leisler's bat	Lesser horseshoe bat	<i>Myotis spp.</i>	Nathusius' pipistrelle	Soprano pipistrelle
May	D01	0.30	1.22	0.95	0.00	2.32	0.02	42.41
	D02	0.34	0.93	0.74	0.02	6.07	0.02	44.79
	D03	0.08	0.81	0.96	0.05	4.09	0.03	22.63
June	D01	0.02	1.51	0.78	0.03	1.05	0.00	19.79
	D02	0.00	0.68	0.02	0.00	0.15	0.00	6.04
	D03	0.59	1.42	0.96	0.00	0.34	0.00	20.79
July	D01	0.61	2.01	3.15	0.02	0.41	0.00	44.49
	D02	0.14	3.11	1.12	0.14	0.68	0.02	67.10
	D03	0.20	1.40	1.66	0.19	1.18	0.02	45.69
August	D01	1.32	0.41	1.22	0.00	0.42	0.07	40.16
	D02	0.34	0.49	0.51	0.00	0.56	0.00	45.60
	D03	0.27	0.25	0.52	0.00	0.22	0.00	30.60

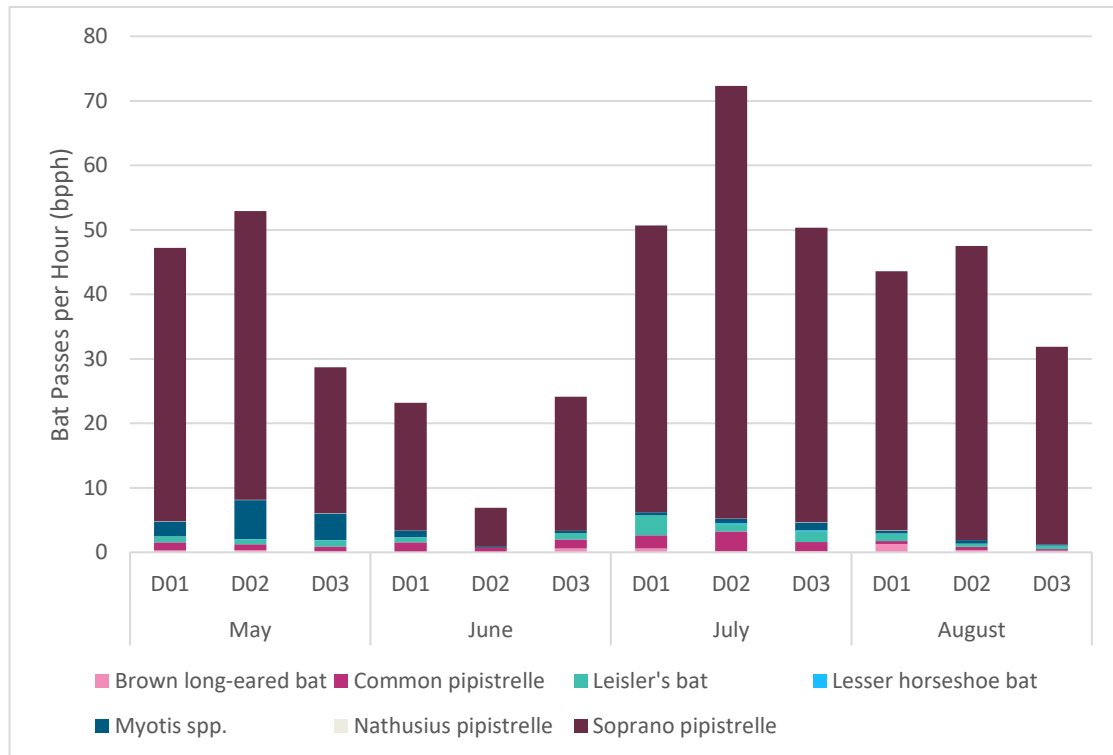


Plate 3-22 Seasonal bat passes per hour at each detector location.

4.

DATA EVALUATION

4.1.1

Discussion and Interpretation

The habitat of the proposed development site consists of made-up ground, recently infilled with waste rubblestone material. An existing children's electric car track is located on a portion of the site, while the remainder features a small number of mature trees alongside a significant amount of regenerative scrub growth, including young trees and saplings. The western side of the proposed development is bordered by an area of mature broadleaf woodland. Linear features within the site include treelines and linear scrub surrounding the car track. These features provide high quality foraging habitat for bat populations.

The proposed development site is located within the known range of all nine species of Irish bats. Bats were recorded using the site during every day of the static deployment, and during each manual survey. Soprano pipistrelle activity was dominant across the site with *Myotis spp.*, Leisler's bat and common pipistrelle also showing notable activity.

During the nighttime bat walkover survey undertaken on the 4th of June, bats were observed foraging throughout the site with the majority of activity concentrated in the west and northwest areas of the proposed development. Several of the observed bats appeared to access the site from the mature broadleaf woodland located to the west. These results align with the static surveys, where detectors D01 and D02, located in the northwest and west of the site, recorded the highest levels of bat activity.

Overall, bat activity across the proposed development site was moderate, with the majority of observations involving synanthropic bat species. Exceptions included *Myotis spp.*, as well as small numbers of brown long-eared bats and lesser horseshoe bats. Similar habitats to the west of the proposed development provide additional foraging opportunities for these bat populations. The proposed development is located 1.3 km from a proposed Natural Heritage Area (pNHA) designated for a nursery roost of Natterer's bats (*Myotis nattereri*). Assuming the colony remains active within the pNHA, it is probable that bats from this roost utilise the proposed development site for commuting and foraging. However, data from Kaleidoscope Pro's Auto ID feature (Section 2.3.2) indicate low numbers of likely Natterer's bats at the proposed development site, suggesting it is not a core foraging area for this population.

Two small soprano pipistrelle roosts were identified within the proposed development site. The structures in which these roosts are contained were assessed as having *Low* suitability to host roosting bats during the bat habitat appraisal i.e. A structure with one or more potential roost sites that could be used by individual bats opportunistically, but do not provide the appropriate conditions to be used on a regular basis or by larger numbers of bats (Collins, 2023). Soprano pipistrelles are widespread in Ireland and small roosts like the ones identified are not considered to be significant beyond a local level (Reason and Wray, 2023).

During the static detector surveys, 26 lesser horseshoe bat passes were recorded, with all instances occurring at least 60 minutes after sunset, suggesting that these bats are unlikely to be roosting within the proposed development area, but rather commuting through the site. This interpretation is in line with the results of the nighttime bat walkover survey, during which a single individual lesser horseshoe bat was observed flying through the site.

4.1.2

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 (as amended). Bats as an Ecological Receptor have been assigned **Local Importance (Higher value)** on the basis that there is a resident or regularly occurring population of an Annex IV species listed on the EU Habitats Directive. The lesser horseshoe bat population recorded commuting through the site was also assigned **Local Importance (Higher value)** due to its protected status under Annex II and IV of the EU Habitats Directive. The small numbers of lesser horseshoe bats recorded at the site, and the lack of direct link to designated populations limit its ecological importance to the local level. Natterer's bat are assumed to be part of the small *Myotis* population recorded using the site. This has been assigned **National Importance** due to the proposed developments proximity to Killarney Lodge pNHA (1.3 km), which is home to a nursery roost of approximately 70 individuals.

Although two small soprano pipistrelle roosts were identified, the proposed development does not have the potential to support a roosting site of ecological significance. No roosting site of National Importance (i.e. site greater than 100 individuals) was recorded within the site. It is likely that the structures are used opportunistically by individual bats with possible day/night/feeding/satellite roosts present. The development area also presents some roosting suitability within a small number of trees.

4.1.3 Survey limitations

A comprehensive suite of bat surveys was undertaken at the proposed development site. The surveys undertaken in accordance with BCT Guidance, provide the information necessary to allow a complete, comprehensive and robust assessment of the potential impacts of the proposed development on bats receptors.

Access limitations can relate to static deployments and roost inspections:

- No significant access issues were encountered with the site during static deployments, as the detectors were deployment where intended.
- Access was gained throughout the site and within all structures identified.

Survey limitations can relate to deployment coverage, data storage, equipment failure or deployment-related incidents:

- Good survey coverage of the site has been achieved, with 3 detectors being deployed across the site covering the range of habitats present at the site.
- MKO employs data storage redundancy methods to ensure no data is lost from the field to final analysis - no data was lost.
- SD card corruption or fill-up can prevent data from being collected during deployments – no issues with data on-site data storage were encountered.
- Bat detector's microphones are checked before every season to ensure they have good sensitivity for data collection, and detectors' software updates are installed as soon as they become available - no issues related to equipment were encountered during the surveys.
- Incidents during deployments, such as tampering or livestock interference, can prevent data from being collected effectively - no incidents were reported during the surveys.

Activity assessment limitations can relate to data analysis procedures and a lack of standardised and Ireland-based assessment methods:

- MKO's data analysis methods include manually checking of 100% of bat passes identified by Auto ID Software, as well as noise and no ID files. Where multiple species, or multiple individuals of the same species, are identified within the same call, only one is reported, prioritising hard to detect species. This is due to the large volumes of data collected. While this

method is likely to introduce a bias, it is not believed to affect the overall conclusions of the assessment, as only commonly recorded species might be underreported.

- No activity threshold currently exists for Irish bat species to objectively assess bat activity within a certain habitat, and no standardised assessment method has been proposed across the country. Ecobat software recommended by existing guidelines was not available for use at the time of the assessment, as under maintenance. MKO experience surveying habitats similar to those present within the site aided with the assessment.

No significant limitations in the scope, scale or context of the assessment have been identified.

5.

CONCLUSION & RECOMMENDATIONS

The following conclusions were drawn following the completion of the surveys described above. Further discussion on potential impacts on bats can be found in the EcIA.

- **Bat Species Recorded:** Six bat species, along with *Myotis* spp., were recorded commuting and foraging across the proposed development site. These included soprano pipistrelle, common pipistrelle, Leisler's bat, brown long-eared bat, Nathusius' pipistrelle, and lesser horseshoe bat.
- **Habitat Quality:** The existing landscape within Wildlands provides high-quality habitats for commuting and foraging bats.
- **Building Surveys:** Two buildings within the site were assessed as having potential to support bat roosts. While potential roosting features were identified, no evidence of bats, such as droppings or feeding remains, was found. However, available access points suggest these structures may be used opportunistically by a small number of bats.
- **Roosts Identified:** Two small active soprano pipistrelle roosts were recorded during the surveys. No large permanent or maternity roosts were identified.
- **Potential Impacts:** No significant impacts on commuting or foraging habitat are anticipated for any bat species, including the Natterer's bat (*Myotis nattereri*), for which the Killarney Lodge pNHA (1.3 km from the proposed development) is designated.

The following measures have been considered to limit potential impacts on bats:

- As bats were observed emerging from two structures, a bat derogation licence will be obtained from the NPWS for their demolition and compensation measures will be put in place to maintain the roost resource within the site.
- Demolition works are proposed to take place outside the main bat activity season (April-September).
- On a precautionary basis, as 4no. soprano pipistrelle bats were identified emerging from the two structures (3no. and 1no. individual(s)) during the dusk emergence surveys carried out, a pre-commencement survey is recommended to ensure there are no roosting bats present in the buildings prior to any works. The requirement for a pre-commencement survey does not represent a lacuna in the survey assessment but is fully in line with industry best practice. The function of this survey will be to assess any changes in baseline environment since the time of undertaking the survey in July and August 2024 and ensure that no bats are harmed during demolition works.
- No tree roosts were identified during the surveys carried out. Any potential felling of trees with suitable roosting features will be carried out with the assumption that bats may be present:
 - Trees with suitable potential roost features proposed for felling will be checked by a suitably qualified ecologist at the time of felling.
 - Any tree felling will be undertaken at an appropriate time of year, as deemed by the project ecologist.
- Compensation for the loss of structures and trees with potential roosting features will be implemented on a like-for-like basis, through the provision of bat boxes. The trees within the proposed development site are semi-mature and slender, making them less suitable for bat boxes. Therefore, two bat boxes will be mounted on metal poles within the site to offer additional roosting opportunities. Additionally, a third 2FN Woodcrete bat box will be placed in the mature woodland adjacent to the site, which is being retained and will remain undisturbed by the proposed development. Bat boxes should have a southerly orientation and be positioned at least 2m from the ground (ideally 3m), away from artificial lighting. They will be placed adjacent to retained vegetation features such as treelines and hedgerows to ensure they are close to existing flight paths and can avoid wide open spaces (Collins, 2023). The exact model and location of the bat boxes will be determined by a qualified ecologist.

- The lighting plan for the operational phase of the proposed development, has been designed with consideration of the following guidelines: Bat Conservation Ireland guidelines; Bat Conservation Ireland (Bats and Lighting: Guidance Notes for Planners, Engineers, Architects and Developers, BCI, 2010) and the Bat Conservation Trust (Guidance Note 08/23 Bats and Artificial Lighting at Night (ILP, 2023), to minimise light spillage, thus reducing any potential disturbance to bats. The proposed light fitting/scheme has been designed to help mitigate the effect of the artificial lighting on the local bat populations by incorporating:
 - Bollards shall have a lamp flux/colour of Warm White LED light source ($\leq 2700\text{K}$).
 - Light sources should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats (Stone, 2012)
 - Lighting to be used only where necessary (must be justifiable) in line with Dark Sky Ireland recommendations.
 - A lighting control regime will be designed to limit light spill during peak bat activity including reduced illuminance during hours of lower human activity or turned off after hours/motion sensed.
- The landscape plan incorporates specific measures to support bat populations by prioritising the retention and enhancement of linear features such as hedgerows, treelines, and existing woodland habitats. Connectivity across the west, centre, and east of the proposed development is maintained through the strategic retention and replanting scheme described in the EcIA, enabling bats to continue commuting and foraging throughout the site. To further protect these foraging and commuting routes, the lighting plan specifies that artificial lighting directed at these areas will either be avoided or minimized to prevent light spill.

The surveys undertaken provide a good understanding of the use of the structures and surrounding habitats by bats and this report provides an overview with regard to the likely challenges faced and constraints associated with the proposed development.

BIBLIOGRAPHY

Abbott, I., Aughney, T., Langton, S. and Roche, N. (2015) BATLAS 2020 Pilot Project Report. Bat Conservation Ireland, Virginia, Cavan.

Andrews, H. (2013) Bat Tree Habitat Key. AEcol, Bridgewater.

Aughney, T. (2008) An investigation of the impact of development projects on bat populations: Comparing pre- and post-development bat faunas. Irish Bat Monitoring Programme. Bat Conservation Ireland, Virginia, Cavan.

Aughney, T., Langton, S. and Roche, N. (2011) Brown long-eared bat roost monitoring scheme for the Republic of Ireland: synthesis report 2007-2010. Irish Wildlife Manuals, No.56. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

Aughney, T., Langton, S. and Roche, N. (2012) All Ireland Daubenton's Bat Waterway Monitoring Scheme 2006-2011. Irish Wildlife Manuals, No. 61. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Ireland.

Barataud, M. and Tupinier, Y. Écologie acoustique des chiroptères d'Europe: identification des espèces, étude de leurs habitats et comportements de chasse. Biotope, 2012.

BCI (2012b) Bats and Appropriate Assessment Guidelines, Version 1, December 2012. Bat Conservation Ireland, Virginia, Co. Cavan Berthinussen, A., Richardson. O.C. and Altringham, J.D. (2014) Bat Conservation: Global evidence for the effects of interventions. Exeter: Pelagic Publishing.

Carden, R., Aughney T., Kelleher C. and Roche, N. (2010) Irish Bat Monitoring Schemes. BATLAS Republic of Ireland Report for 2008-2009.

Collins, J. (ed.) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edn). The Bat Conservation Trust, London.

DAFM (2019). Felling & Reforestation Standards (v.Oct2019). Department of Agriculture, Food & the Marine. See Forest Service Circular 14 / 2019, www.agriculture.gov.ie/forests-service/grants-and-premium-schemes/2014-2020/schemecirculars/2019circulars/.

Hill D., Fasham, M., Tucker P., Shewry, M. and Shaw, P (eds) (2005) Handbook of Biodiversity Methods: Survey, Evaluation and Monitoring, 433-449. Cambridge University Press, Cambridge.

Hundt L. (2012) Bat Surveys: Good Practice Guidelines, 2nd edition. Bat Conservation Trust ISBN-13: 9781872745985.

ILP (2023) Guidance Note 08/23: Bats and Artificial Lighting at Night.

Kunz, T.H. and Parsons, S. (2009). Ecological and Behavioral Methods for the Study of Bats, 2nd Edition. The Johns Hopkins University Press, USA.

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

Mitchell-Jones, A. J. and McLeish, A. P. (2004). The Bat Worker's Manual, 3rd Edition. JNCC, Peterborough.

- Mitchell-Jones, A.J. (2004). Bat Mitigation Guidelines. English Nature.
- Montgomery, W. I., Provan, J., McCabe, A. M., and Yalden, D. W. (2014). Origin of British and Irish mammals: disparate post-glacial colonisation and species introductions. *Quaternary Science Reviews*, 98, 144-165.
- NRA (2006a) Best practice guidelines for the conservation of bats in the planning of national road schemes. National Roads Authority, Dublin, Ireland.
- NRA (2006b) Guidelines for the treatment of bats during the construction of national road schemes. National Roads Authority, Dublin, Ireland.
- Reason, P.F. and Wray, S. (2023). UK mitigation Guidelines, CIEEM
- Regini, K. (2000) Guidelines for ecological evaluation and impact assessment, In Practice: Bulletin of the Institute of Ecology and Environmental Management, 29, 1-7.
- Roche, N., T. Aughney, F. Marnell, and M. Lundy (2014). Irish Bats in the 21st Century. Bat Conservation Ireland, Virginia, Co. Cavan, Ireland.
- Roche, N., Aughney T. & Langton S. (2015) Lesser Horseshoe bat: population trends and status of its roosting resource. Irish Wildlife Manuals, No 85. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Ireland.
- Russ, J. (2012). British bat calls: a guide to species identification. Pelagic publishing.
- Schofield H. (2008). The Lesser Horseshoe Bat: Conservation Handbook. The Vincent Wildlife Trust, Ledbury, UK.
- Wray, S., Wells, D., Long, E. and Mitchell-Jones, T. December (2010). Valuing Bats in Ecological Impact Assessment, CIEEM In-Practice.

