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MULTIDISCIPLINARY CONSULTING ENGINEERS

D805: HILLCREST ROAD IMPROVEMENT SCHEME

BAT SURVEY REPORT

For

Dún Laoghaire-Rathdown County Council

5 June 2024

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1 INTRODUCTION

1.1 BACKGROUND

This Bat Survey Report has been prepared by O'Connor Sutton Cronin & Associates Ltd. (OCSC) at the request of their client, Dún Laoghaire-Rathdown County Council. The study area for assessment comprises Hillcrest Road, Sandyford, Co. Dublin. It is proposed to provide improvement along Hillcrest Road between Lamb's Cross and the Kilgobbin Road Junction (approximately 660m of road). The scheme ties into existing junction improvements at both ends. The improvement includes the provision of footpaths and cycle tracks on both sides of the widened carriageway. This requires land acquisition to the south of the current road, as the current roadway is extremely narrow. The work also include upgrades to public lighting, surface water drainage, road marking and signage and associated works. The site location is shown in Figure 1.1. The regulatory authority for the site is Dún Laoghaire-Rathdown County Council.

The site and its surroundings are set in a primarily residential area with some nearby commercial/retail, public amenity, and educational land uses as well as undeveloped lands and forestry. To the north and east of the study area are residential neighbourhoods, open space used for public amenities, and road infrastructure associated with the M50 motorway. To the south are residential neighbourhoods and undeveloped lands. To the west and southwest of the site are Sandyford Community Centre, St. Mary's National School, several shops, residences, and a pitch-and-put course. To the northwest are primarily undeveloped open space and forestry with the National Sport and Science Centre further to the northwest. Refer to Figure 1.1.

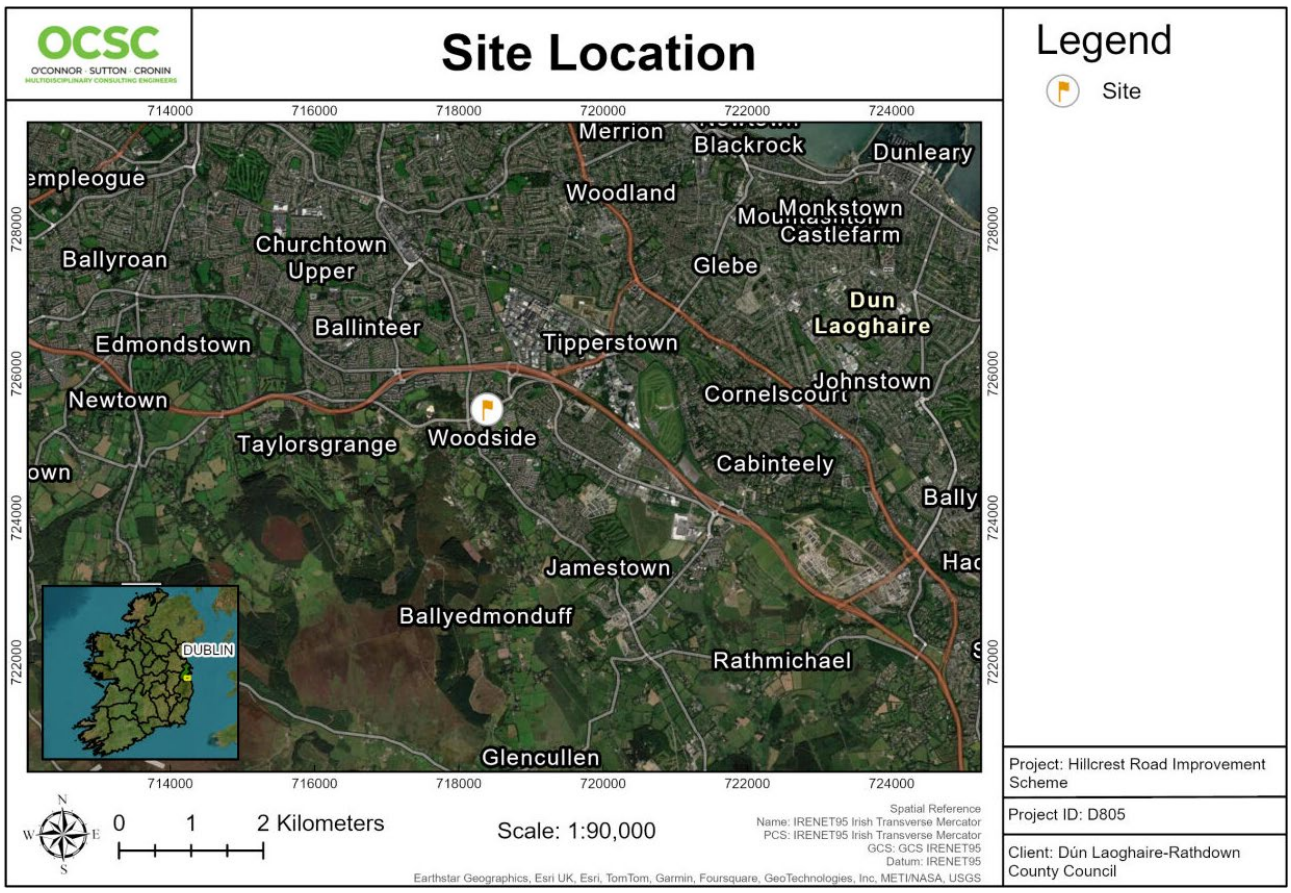

Figure 1.1: Site location (Source: OCSC, 2024)

1.2 RELEVANT LEGISLATION & BAT SPECIES STATUS IN IRELAND

All Irish bat species are protected under the Wildlife Act (1976) and Wildlife Amendment Acts (2000 and 2010). Also, the EC Directive on The Conservation of Natural Habitats and of Wild Fauna and Flora (Habitats Directive 1992) seeks to protect rare species, including bats, and their habitats and requires that appropriate monitoring of populations be undertaken. All Irish bats are listed in Annex IV of the Habitats Directive, and the lesser horseshoe bat (*Rhinolophus hipposideros)* is further listed under Annex II. Across Europe, they are further protected under the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1982), which, in relation to bats, exists to conserve all species and their habitats.

The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention 1979, enacted 1983) was instigated to protect migrant species across all European boundaries. The Irish government has ratified both of these conventions. Also, under existing legislation, the destruction, alteration, or evacuation of a known bat roost is a notifiable action, and a derogation licence has to be obtained from the National Parks and Wildlife Service before works can commence. Any works interfering with bats and especially their roosts, may only be carried out under a licence to derogate from Regulation 23 of the Habitats Regulations 1997 and Regulation 54 of the European Communities (Birds and Natural Habitats) Regulations 2011 (which transposed the EU Habitats Directive into Irish law). The details with regard to appropriate assessments, the strict

parameters within which derogation licences may be issued, and the procedures by which and the order in relation to the planning and development regulations such licences should be obtained, are set out in Circular Letter NPWS 2/07 "Guidance on Compliance with Regulation 23 of the Habitats Regulations 1997 - strict protection of certain species/applications for derogation licences" issued on behalf of the Minister of the Environment, Heritage and Local Government on the 16th of May 2007.

Nine of the species found in Ireland are considered resident, and two are considered vagrant. Eight of the resident bat species and one of the vagrant bat species are vesper bats, which are characterised by having a tragus (cartilaginous structure inside the pinna of the ear). Vesper bats are distributed throughout the island. Nathusius' pipistrelle (*Pipistrellus nathusii*) is a recent addition to Ireland while the Brandt's bat has only been recorded once to date. The Brandt's bat is the only record confirmed by DNA testing; no other bat records have been genetically confirmed. The ninth resident species and the second vagrant species, the lesser horseshoe bat (*Rhinolophus hipposideros*) and the greater horseshoe bat (*Rhinolophus ferrumequinum*), respectively, belong to the Family *Rhinolophidea* and have a complex nose leaf structure on the face, distinguishing them from the vesper bats. The lesser horseshoe bat's current distribution is confined to the western seaboard counties of Mayo, Galway, Clare, Limerick, Kerry, and Cork. The greater horseshoe bat was only recorded for the first time in February 2013 in County Wexford.

The Irish bat species and their corresponding protection status are presented in Table 1.1.

Table 1.1: Status of the Irish bat fauna (Terrestrial Mammals Red List for Ireland, 2019)

Species: Common Name	Irish Status	European Status	Global Status
Resident Bat Species			
Daubenton's bat (*Myotis daubentonii*)	Least concern	Least concern	Least concern
Whiskered bat (*Myotis mystacinus*)	Least concern	Least concern	Least concern
Natterer's bat (*Myotis nattereri*)	Least concern	Least concern	Least concern
Leisler's bat (*Nyctalus leisleri*)	Least concern	Least concern	Least concern
Nathusius' pipistrelle (*Pipistrellus nathusii*)	Least concern	Least concern	Least concern
Common pipistrelle (*Pipistrellus pipistrellus*)	Least concern	Least concern	Least concern
Soprano pipistrelle (*Pipistrellus pygmaeus*)	Least concern	Least concern	Least concern
Brown long-eared bat (*Plecotus auritus*)	Least concern	Least concern	Least concern
Lesser horseshoe bat (*Rhinolophus hipposideros*)	Least concern	Near threatened	Least concern

1.2.1 BAT SURVEY AIMS

The aims of the study were to determine the following:

- If bat roosting is occurring or is likely to occur in the zone of influence of the proposed works.
- The diversity and relative abundance of bats present in the environs of the study area.

The purpose of this report is to assess and evaluate the importance of the existing habitat for bats. Where appropriate, avoidance or mitigation measures will be suggested.

1.3 RELEVANT GUIDANCE DOCUMENTS

This report draws on guidelines already available in Europe and utilises the following documents:

- National Roads Authority (2006) Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes
- Collins, J. (Editor) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edition). Bat Conservation Trust, London.
- McAney, K. (2006) A conservation plan for Irish vesper bats, Irish Wildlife Manual No. 20 National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.
- 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.
- The status of EU protected habitats and species in Ireland: Conservation status in Ireland of habitats and species listed in the European Council Directive on the Conservation of Habitats, Flora, and Fauna 92/43/EEC. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government.

Impacts on bats can arise from activities that may result in:

- Physical disturbance of bat roosts e.g., destruction or renovation of buildings
- Noise disturbance e.g., increased human presence, use of machinery, etc.
- Lighting disturbance.
- Loss of roosts e.g., destruction or renovation of buildings.
- Modifications of commuting or foraging habitats.
- Severance or fragmentation of commuting routes.
- Loss of foraging habitats.

It is recognised that any development will have an impact on the receiving environment, but the significance of the impact will depend on the value of the ecological features that would be affected. Such ecological features will be those that are considered to be important and potentially affected by the proposed development. The guidelines consulted recommend that the potential impacts of a proposed development on bats are assessed as early as possible in the design stage to determine any areas of conflict.

1.4 EVIDENCE OF TECHNICAL COMPETENCE AND EXPERIENCE

The fieldwork and report were completed by Luis Iemma, BSc, MSc, PhD, CEcol, MCIEEM, Associate Ecologist; reviewed by Glenda Barry, BSc, MSc, PGeo, EurGeol, Associate Consultant; and approved by Eleanor Burke, BSc, MSc, DAS, MIEnvSc, CSci, OCSC Director (Environmental).

1.5 LIMITATIONS

This Bat Survey Report has been prepared for the sole use of Dún Laoghaire-Rathdown County Council ("the Client"). No other warranty, expressed or implied, is made as to the professional advice included in this report or any other services provided by OCSC.

This assessment is based on a site visit as well as a review of available historical information, environmental records, consultations, relevant guidance information, and reports from third parties. All information received has been taken in good faith as being true and representative.

This report has been prepared in line with best industry standards. The methodology adopted and the sources of information used by OCSC in providing its services are outlined in this Report. The assessment was undertaken and described by OCSC in May 2024 and is based on the information available during that period. The scope of this report and the services are accordingly factually limited by these circumstances.

OCSC disclaim any undertaking or obligation to advise any person of any change in any matter affecting the Report which may come or be brought to OCSC's attention after the date of the Report.

The conclusions presented in this report represent OCSC's best professional judgement based on a review of the relevant information available at the time of writing. The opinions and conclusions presented are valid only to the extent that the information provided was accurate and complete.

2 METHODOLOGY

2.1 DESKTOP REVIEW

A desktop review of relevant publicly available data was undertaken on the National Biodiversity Data Centre (NBDC) and National Parks & Wildlife Service (NPWS) websites. The NBDC database was reviewed for relevant data, specifically i) existing species records for the 2km square in which the study site is located (O12X) and ii) an indication of the relative importance of the wider landscape in which the study site is located, based on Model of Bat Landscapes for Ireland (Lundy et al., 2011). In the latter, the index ranges from 0 to 100, with 0 being least favourable and 100 most favourable for bats.

2.2 VISUAL ROOST SURVEY

Daytime visual assessments were carried out by Luis Iemma, BSc, MSc, PhD, CEcol, MCIEEM, Associate Ecologist and Consultant Ecologist Eoin Toomey, BSc, to identify any bat roosting potential which may exist within the zone of influence of the proposed works. The site location is shown in Figure 2.1.

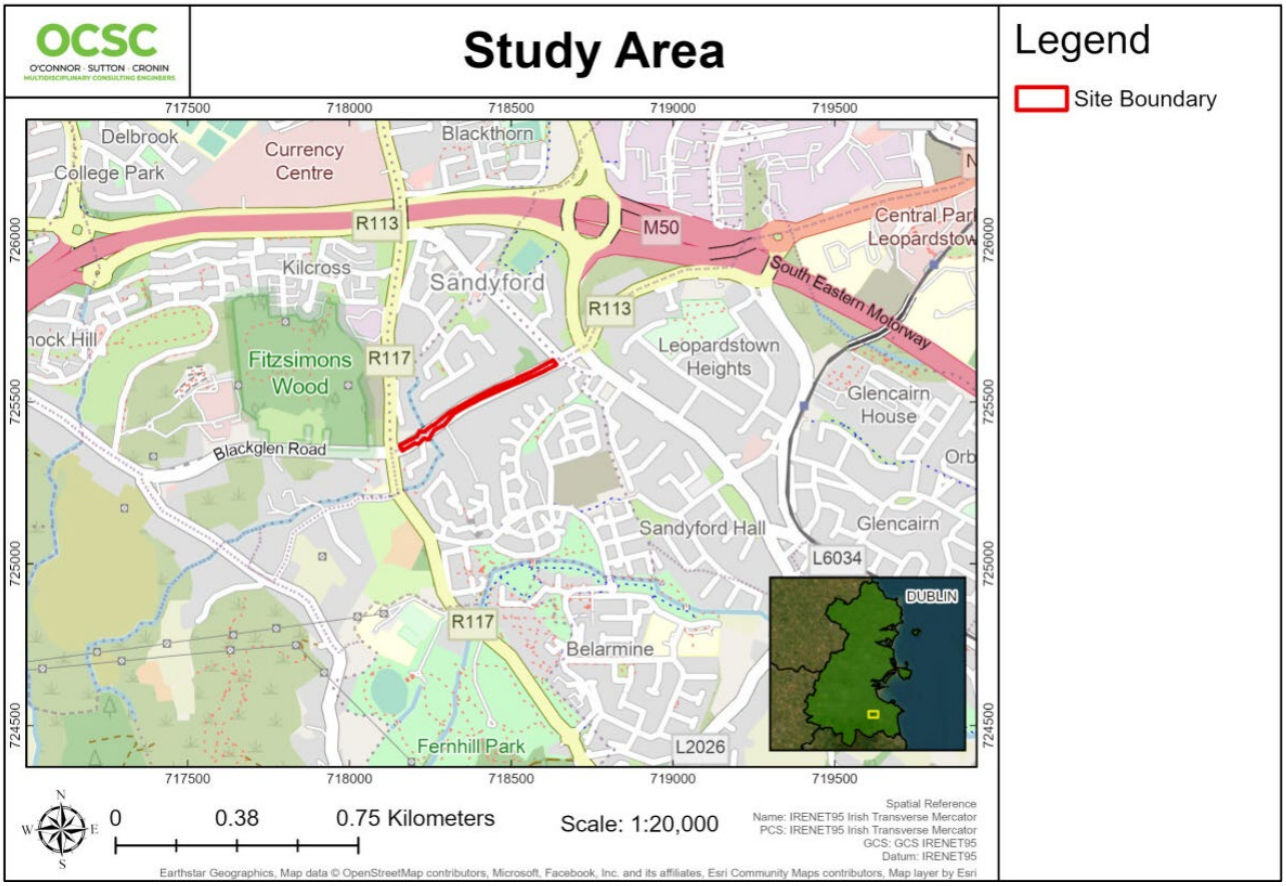

Figure 2.1: Study Area (Source: Source, 2024)

The assessment was carried out on the 9th, 10th, and 11th of May of 2024 and followed guidance set out in Collins (2016). The survey was non-destructive. Relevant Potential Roost Features (PRFs) were visually

inspected to identify any evidence of bat roosting. Signs of bat use include bat droppings, feeding remains, potential bat access points identified by characteristic staining and scratches, noise made by bats, etc. PRFs are described according to the scheme outlined in Table 2.1, below.

Table 2.1: Scheme for describing the potential suitability of features for bats.

SUITABILITY	ROOSTING HABITATS
Negligible	Negligible habitat features on site likely to be used by roosting bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions, and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats, i.e. unlikely to be suitable for maternity or hibernation. A tree of sufficient size and age to contain potential roost features but with none seen from the ground or features seen with only very limited roosting potential.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions, and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).
High	A structure or tree with one or 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.

2.3 BAT ACTIVITY SURVEY

Dusk and dawn surveys were carried out on two consecutive days. The first dusk survey occurred on the 9th of May 2024 and the subsequent dawn survey on the 10th of May 2024. The second dusk survey occurred on the 10th of May 2024 and the subsequent dawn survey on the 11th of May 2024. The sunset and sunrise times are listed in Table 2.2.

Table 2.2: Weather data for the survey dates.

Days	Sunrise	Sunset	Temperature	Wind speed	Cloud cover
9th of May 2024	5:34	21:09	11 to 19ºC	F1	1/8 oktas
10th of May 2024	5:33	21:10	9 to 21ºC	F0	2/8 oktas
11th of May 2024	5:31	21:12	6 to 21ºC	F1	1/8 oktas

The surveys followed Collins (2016) and aimed to characterise bat activity in the area and to identify any bat access or egress. On the 9th of May 2024, the dusk survey commenced at 20:59 and continued until 23:10. On the 10th of May 2024, the dawn survey started at 4:03 and continued to 5:45. On the 10th of May 2024, the dusk survey commenced at 21:00 and continued until 23:10. On the 11th of May 2024, the dawn survey started at 4:00 and continued to 5:45.

The surveys were carried out during suitable weather conditions. Visibility was good for all surveys, and no precipitation occurred. Recordings were made on handheld Echo Touch Meter 2 PRO full spectrum recorder.

2.3.1 DATA ANALYSIS

Bat activity sonograms were analysed using Wildlife Acoustics Bat Scan 9 and Kaleidoscope Lite, and identifications were manually verified by Luis Iemma, BSc, MSc, PhD, CEcol, MCIEEM, Associate Ecologist.

2.4 EVALUATION AND IMPACT ASSESSMENT

Evaluation of ecological features follows the NRA (now TII) publication 'Guidelines for Assessment of Ecological Impacts of National Roads Schemes' (2009). Impact assessment follows the 'Guidelines on The Information to be Contained in Environmental Impact Assessment Reports' published by the EPA (2017). Reporting follows the Chartered Institute of Ecology and Environmental Management (2018) 'Guidelines for Ecological Impact Assessment in the UK and Ireland - Terrestrial, Freshwater, Coastal and Marine'.

2.5 SURVEY LIMITATIONS

The survey occurred in May and within the window for bat surveys (see Figure 2.2). Full access to the area was available. A survey at height was not carried out and the survey was non-destructive. The survey occurred in suitable weather conditions at a time when bat activity was occurring elsewhere. Seasonality of the emergence survey is not considered to be a limiting factor in this instance.

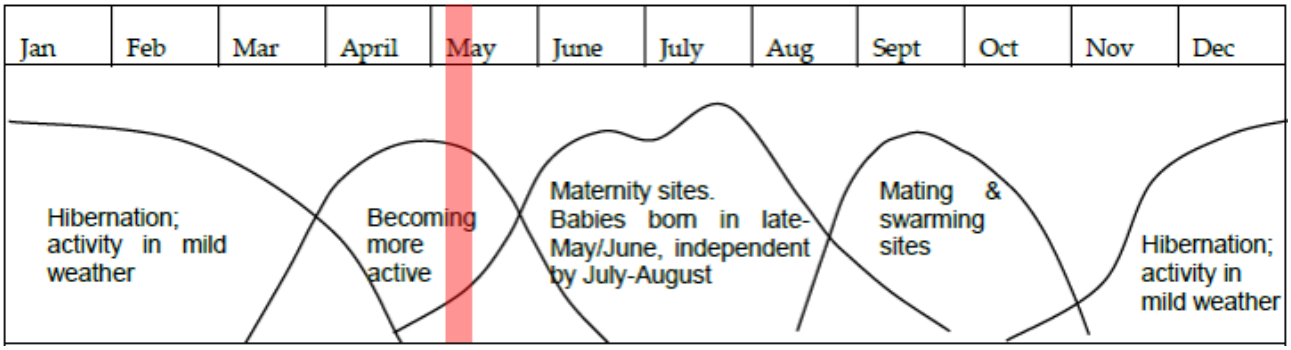

Figure 2.2: The bat year. Although there are species-specific differences, the bat year can be divided into the two major phases of breeding and hibernation, with other activities interspersed (Marnell, F., Kelleher, C. & Mullen, E. (2022))

3 RESULTS

The subject site stretches from the R117 (Enniskerry Road) along Hillcrest Road as far east as the Kilgobbin Road. The proposal is for a road improvement scheme along Hillcrest Road. The study site has moderate landscape connectivity for most Irish bat species (which tend to follow landscape features in flight) as there are some linear landscape features such as treelines, hedgerows, and a body of water within the area. However, the proposed works area occurs in a suburban environment with high levels of artificial light and noise pollution.

3.1 DESKTOP SURVEY

The NBDC holds thirteen records of bat presence from within the 2km square (O12X) in which the proposed site is located. These include:

- Two records of the Brown Long-eared Bat (*Plecotus auritus*)
- Five records of the Common Pipistrelle (*Pipistrellus pipistrellus sensu stricto*)
- Three records of the Soprano Pipistrelle (*Pipistrellus pygmaeus*)
- Three records of the Lesser Noctule (*Nyctalus leisleri*)

The overall bat suitability index value (17.44) according to 'Model of Bat Landscapes for Ireland' (Lundy et at. 2011) suggests the landscape in which the proposed site is located is of low/moderate suitability for bats in general. Species specific scores are provided in Table 3.1 and Figures 3.1 to 3.10.

Table 3.1: Suitability of the study area for the bat species according to 'Model of Bat Landscapes for Ireland' (Lundy et al. 2011).

SPECIES		SUITABILITY INDEX
ALL BATS		17.44
Soprano Pipistrelle	*Pipistrellus pygmaeus*	30
Brown Long-eared Bat	*Plecotus auritus*	23
Common Pipistrelle	*Pipistrellus pipistrellus*	32
Lesser Horseshoe Bat	*Rhinolophus hipposideros*	0
Leisler's Bat	*Nyctalus leisleri*	34
Whiskered Bat	*Myotis mystacinus*	14
Daubenton's Bat	*Myotis daubentonii*	3
Nathusius's Bat	*Pipistrellus nathusii*	10
Natterer's Bat	*Myotis nattereri*	11

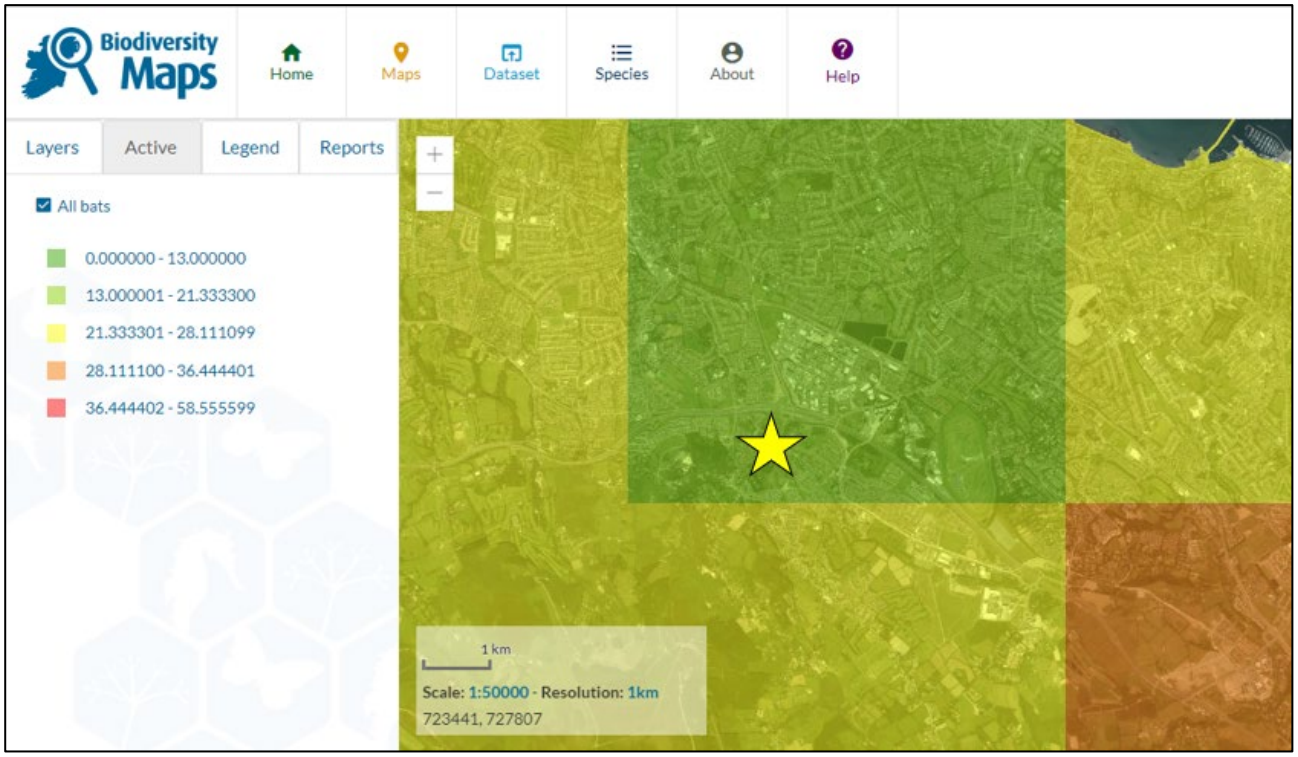

Figure 3.1: Suitability index for all bats in the site and surrounding areas; site location is shown by the yellow star (Source: NBDC, 2024)

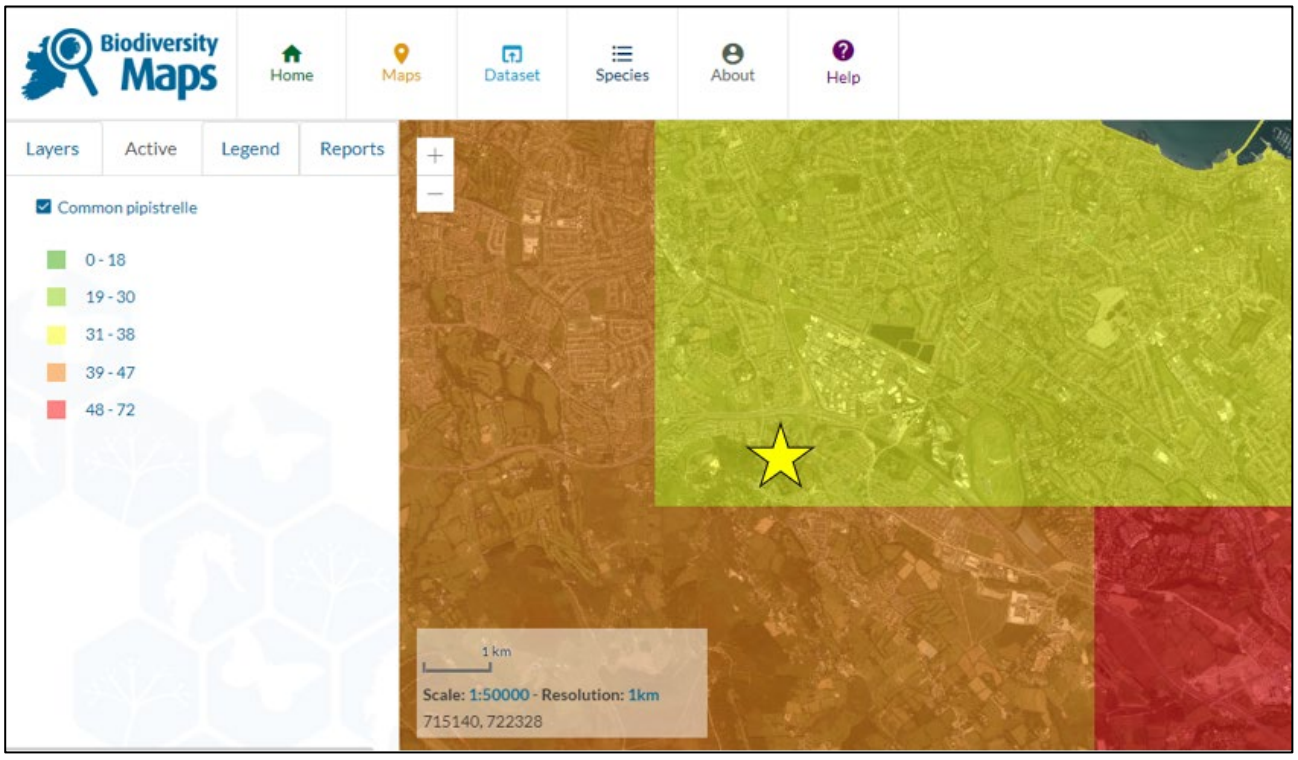

Figure 3.2: Suitability index for Common Pipistrelle in the site and surrounding areas; site location is shown by the yellow star (Source: NBDC, 2024)

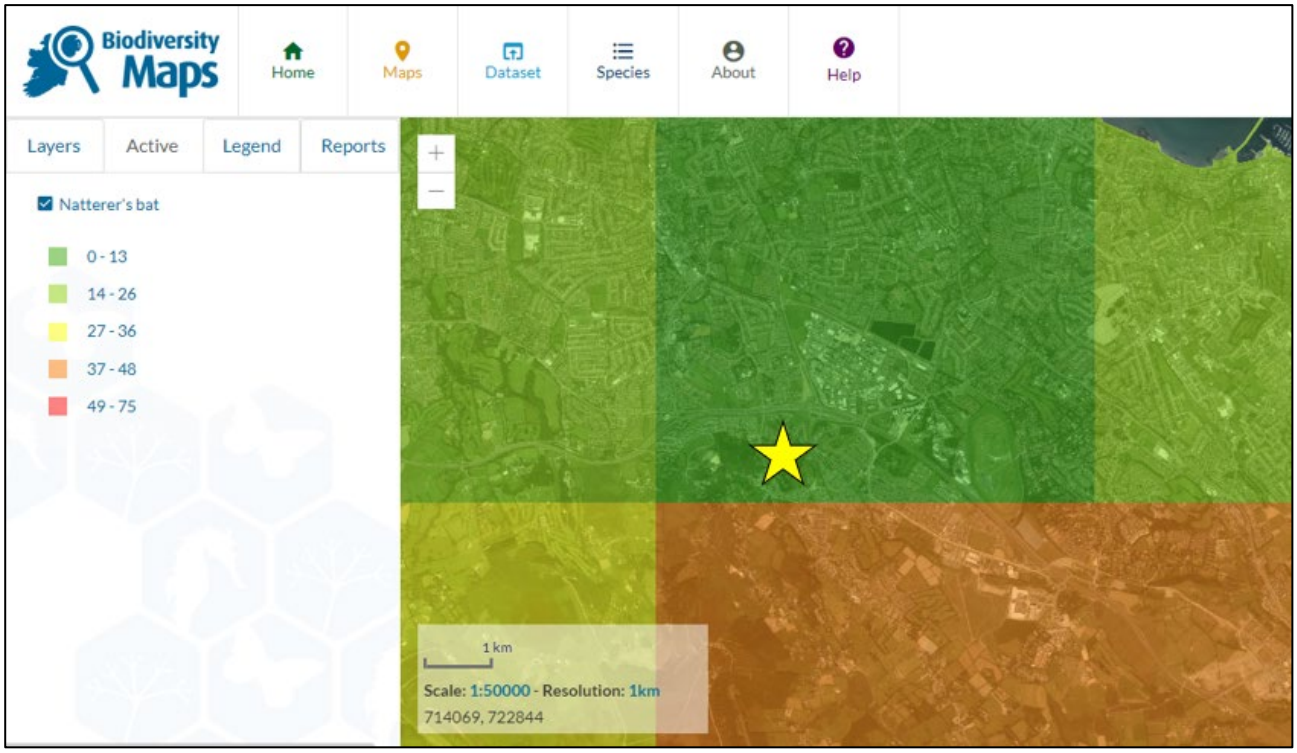

Figure 3.3: Suitability index for Natterer's bat in the site and surrounding areas; site location is shown by the yellow star (Source: NBDC, 2024)

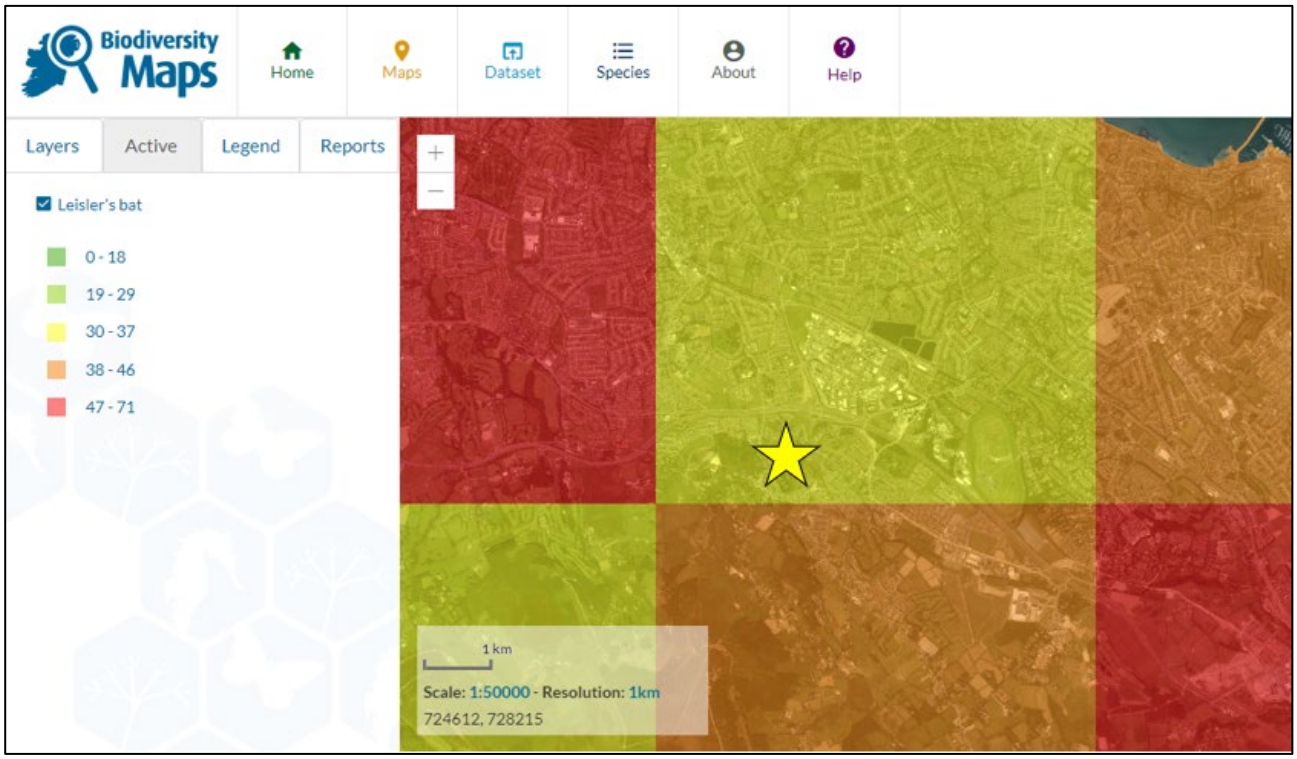

Figure 3.4: Suitability index for Lesser Noctule in the site and surrounding areas; site location is shown by the yellow star (Source: NBDC, 2024)

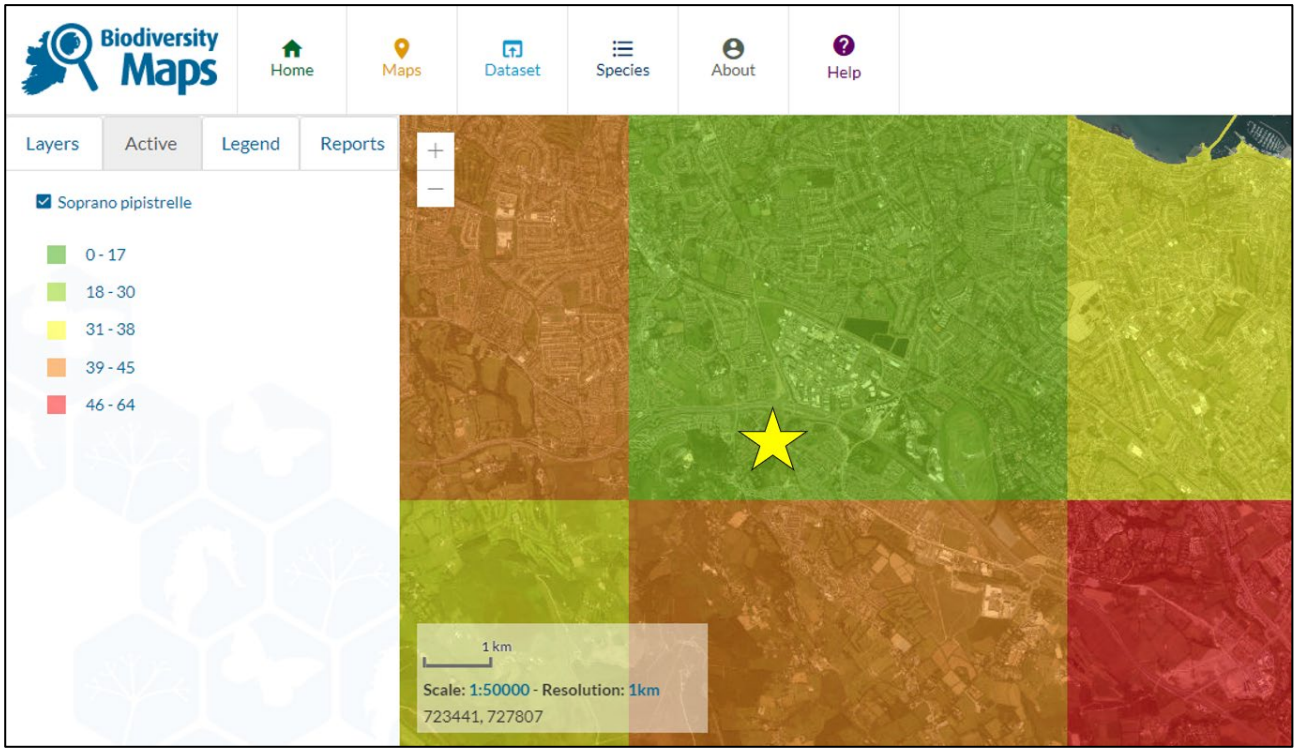

Figure 3.5: Suitability index for Soprano Pipistrelle in the site and surrounding areas; site location is shown by the yellow star (Source: NBDC, 2024)

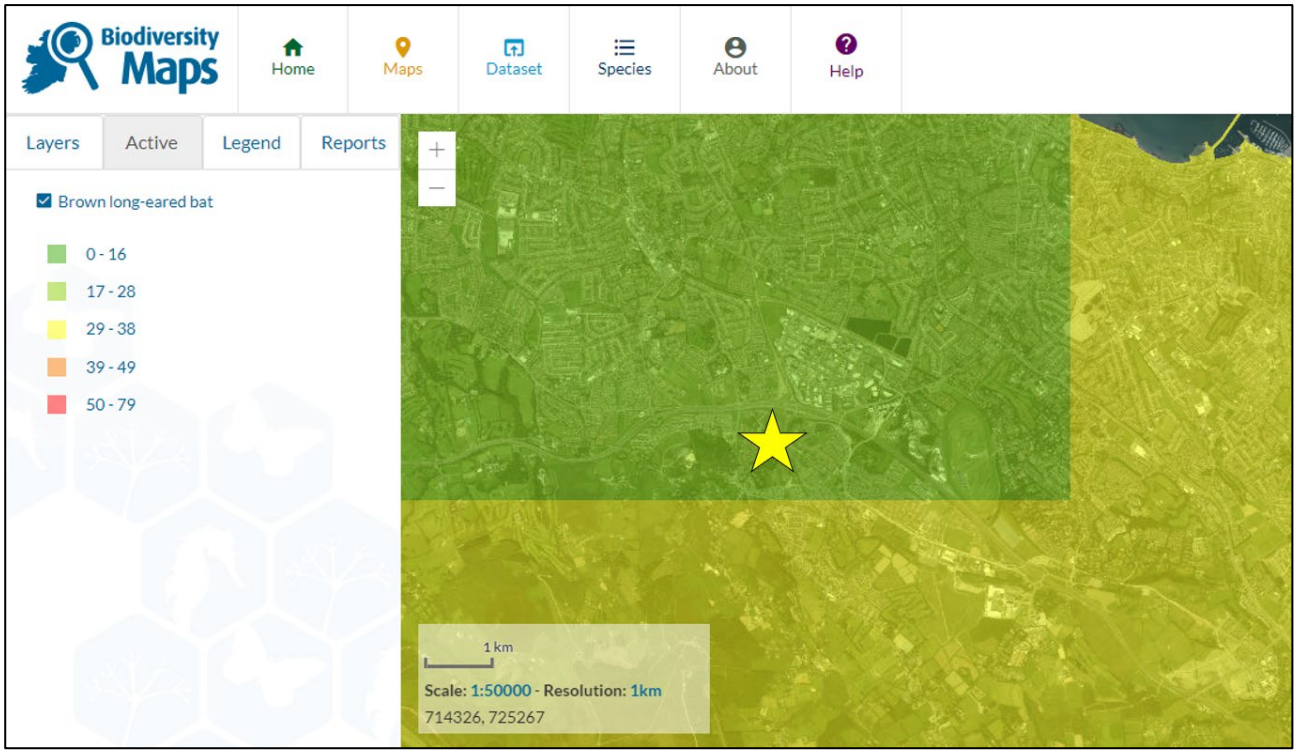

Figure 3.6: Suitability index for Brown Long-Eared bat in the site and surrounding areas; site location is shown by the yellow star (Source: NBDC, 2024)

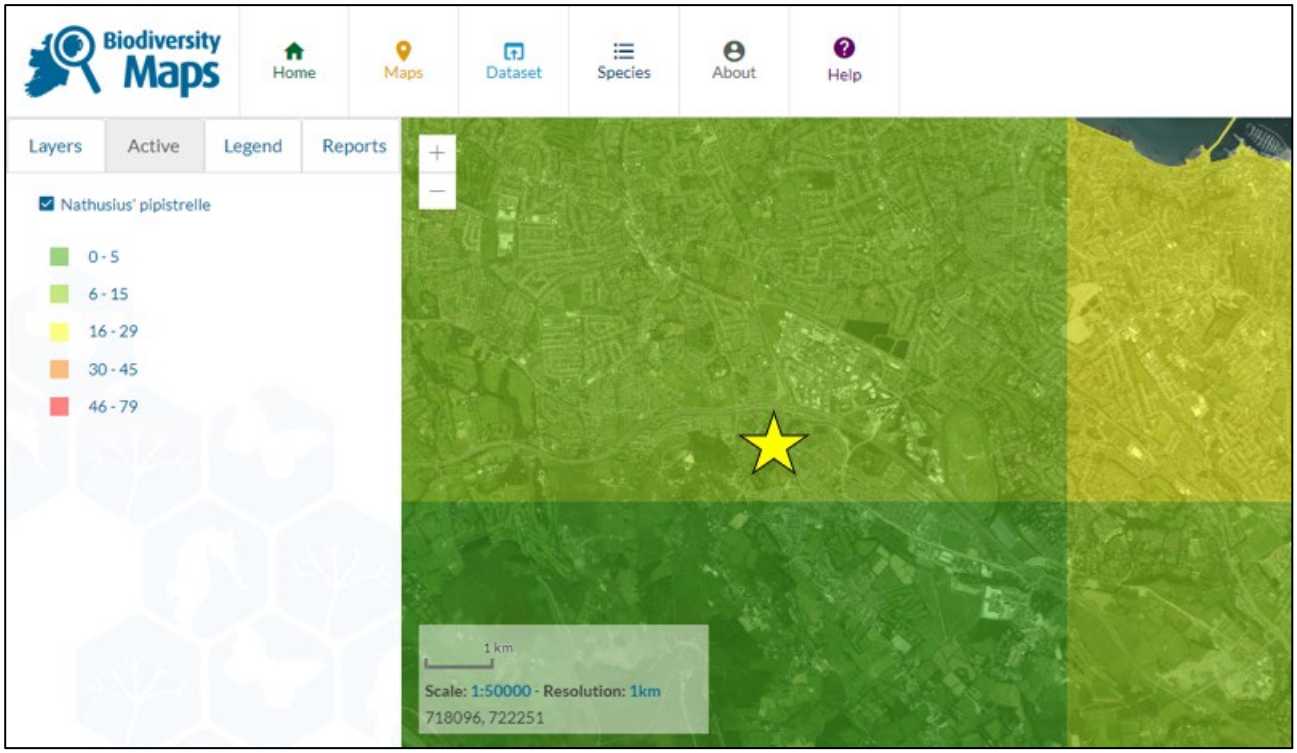

Figure 3.7: Suitability index for Nathusius's Pipistrelle in the site and surrounding areas; site location is shown by the yellow star (Source: NBDC, 2024)

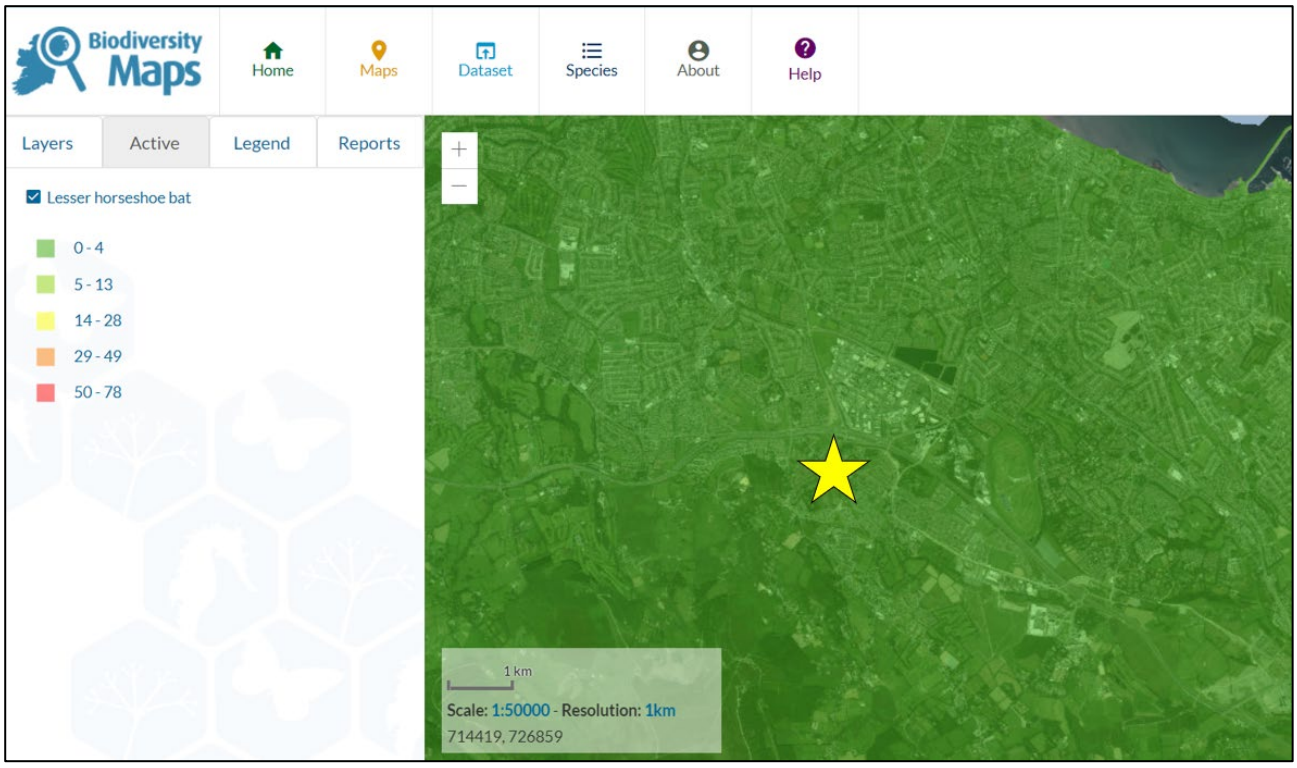

Figure 3.8: Suitability index for Lesser Horseshoe bat in the site and surrounding areas; site location is shown by the yellow star (Source: NBDC, 2024)

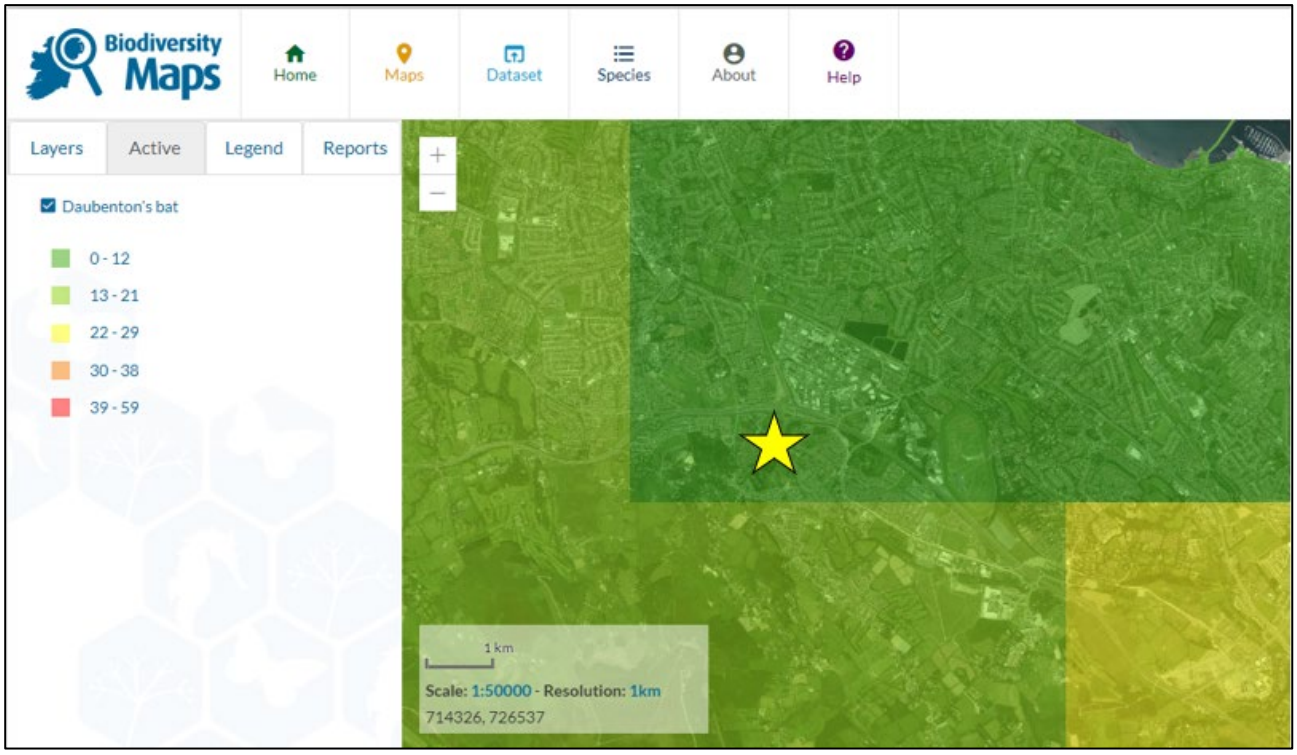

Figure 3.9: Suitability index for Daubenton's bat in the site and surrounding areas; site location is shown by the yellow star (Source: NBDC, 2024)

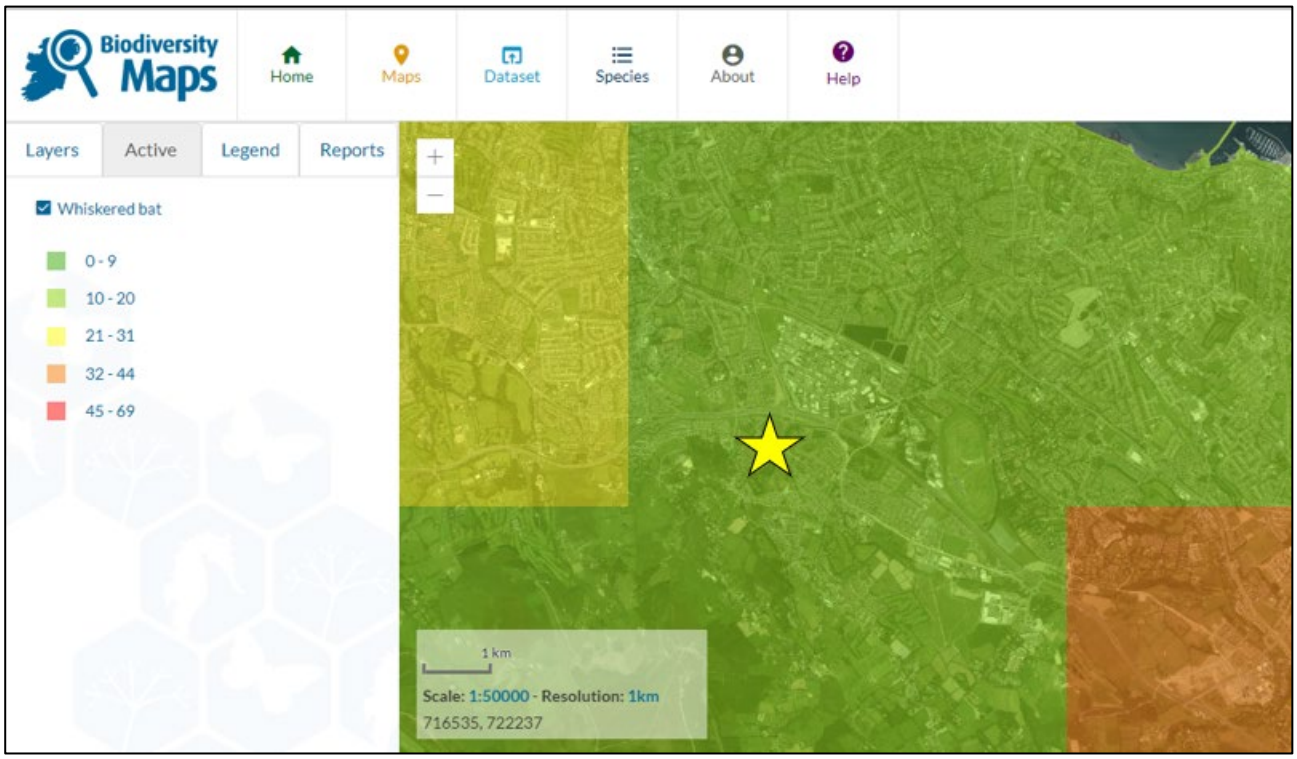

Figure 3.10: Suitability index for Whiskered bat in the site and surrounding areas; site location is shown by the yellow star (Source: NBDC, 2024)

3.2 VISUAL ROOST SURVEY

A daytime visual inspection was carried on the 9th of May 2024 during suitable weather conditions (Table 2.2). Visibility was good, and no precipitation occurred during the survey.

The inspection was carried out with the aim of identifying bat roosts by either the presence of bats or the presence of signs of past bat roosting. A detailed visual survey was carried out by inspecting the hedgerows, trees, and stone walls within and adjacent to the site area. The inspection was carried out from ground level to identifying any access/egress points and with the use of an endoscope and a thermal camera to investigate any openings in the structure. The survey was non-destructive.

Bats were not confirmed to be roosting at the study site, and no evidence of current or historic roosting was found. The general integrity of the stone walls is good with a few gaps and crevices. No droppings, urine stains, or other signs of bat activity were found within the proposed work area.

Based upon the results of the visual roost survey, and considering the local context of the target area, the study site is considered to be of 'Low' likelihood to support roosting bats.

Potential roosting opportunities are present in the surroundings treelines and hedgerows as is often the case in suburban areas.

3.3 BAT ACTIVITY SURVEY

No evidence of bat roosting was observed during the emergence (dusk) and dawn surveys carried out on the 9th, 10th, and 11th of May 2024, despite a somewhat moderate level of bat activity recorded during the surveys (208 occurrences). The 208 bat records are not representative of actual bat numbers on site but due to the detection of individual bats multiple times while doing the transects. Of the nine species resident in Ireland, three species of bats were encountered during the surveys: the Common pipistrelle (*Pipistrellus pipistrellus*), the Soprano pipistrelle (*Pipistrellus pygmaeus*), and the Lesser noctule (*Nyctalus leisleri*). These species are common and widespread in Ireland.

A number of walking transects were completed during the dusk and dawn surveys. The results of data analysis from these transects are included in Tables 3.2 and 3.3. The results of all bat encounters are presented below in Figure 3.11. Figures 3.12 and 3.13 indicate the encounters with individual species of bats (showing an expanded view of clusters), and Figures 3.15 and 3.16 the areas where the bat clusters were found. The representation of each species sonogram is shown in Figures 3.16 to 3.18. The maps used below are from Google Earth, and mapping is facilitated by the Echo Meter Touch 2 PRO App. supplied by Wildlife Acoustics.

Table 3.2: Results of the analysis of data from the first dusk and dawn surveys on 9th and 10th of May 2024.

DAY	TIME	LATITUDE	LONGITUDE	AUTO ID
09/05	20:57:42	53.2653036	-6.2286457	Lesser Noctule (*Nyctalus leisleri*)
09/05	21:02:23	53.2654857	-6.2277785	Lesser Noctule (*Nyctalus leisleri*)
09/05	21:13:06	53.2663983	-6.226145	Lesser Noctule (*Nyctalus leisleri*)
09/05	21:15:00	53.2663983	-6.226145	Lesser Noctule (*Nyctalus leisleri*)
09/05	21:15:15	53.2664385	-6.2260858	Lesser Noctule (*Nyctalus leisleri*)
09/05	21:23:41	53.2669947	-6.2241211	Common pipistrelle (*Pipistrellus pipistrellus*)
09/05	21:23:56	53.266995	-6.22412	Common pipistrelle (*Pipistrellus pipistrellus*)
09/05	21:24:23	53.2669957	-6.2241234	Soprano pipistrelle (*Pipistrellus pygmaeus*)
09/05	21:25:04	53.2670276	-6.2240691	Lesser Noctule (*Nyctalus leisleri*)
09/05	21:25:19	53.2670267	-6.2240667	Lesser Noctule (*Nyctalus leisleri*)
09/05	21:26:43	53.2670348	-6.2240314	Common pipistrelle (*Pipistrellus pipistrellus*)
09/05	21:29:32	53.2671682	-6.2234339	Common pipistrelle (*Pipistrellus pipistrellus*)
09/05	21:32:09	53.2673483	-6.222705	Common pipistrelle (*Pipistrellus pipistrellus*)
09/05	21:35:26	53.2675123	-6.2223043	Lesser Noctule (*Nyctalus leisleri*)
09/05	21:35:41	53.267518	-6.2222404	Common pipistrelle (*Pipistrellus pipistrellus*)
09/05	21:36:22	53.26752	-6.2222333	Lesser Noctule (*Nyctalus leisleri*)
09/05	21:36:37	53.26752	-6.2222333	Lesser Noctule (*Nyctalus leisleri*)
09/05	21:36:52	53.26752	-6.2222333	Lesser Noctule (*Nyctalus leisleri*)
09/05	21:37:08	53.26752	-6.2222333	Lesser Noctule (*Nyctalus leisleri*)
09/05	21:37:23	53.26752	-6.2222333	Lesser Noctule (*Nyctalus leisleri*)
09/05	21:37:39	53.26752	-6.2222333	Lesser Noctule (*Nyctalus leisleri*)
09/05	21:37:54	53.26752	-6.2222333	Lesser Noctule (*Nyctalus leisleri*)
09/05	21:38:09	53.26752	-6.2222333	Lesser Noctule (*Nyctalus leisleri*)
09/05	21:38:41	53.26752	-6.2222333	Lesser Noctule (*Nyctalus leisleri*)
09/05	21:43:34	53.26749	-6.2221733	Common pipistrelle (*Pipistrellus pipistrellus*)
09/05	21:46:06	53.267984	-6.2201832	Lesser Noctule (*Nyctalus leisleri*)
09/05	21:47:11	53.2670922	-6.2234769	Lesser Noctule (*Nyctalus leisleri*)
09/05	21:48:48	53.2670295	-6.2239788	Common pipistrelle (*Pipistrellus pipistrellus*)
09/05	21:48:57	53.2670219	-6.2239963	Lesser Noctule (*Nyctalus leisleri*)
09/05	21:52:11	53.2669017	-6.2245048	Soprano pipistrelle (*Pipistrellus pygmaeus*)
09/05	21:54:55	53.2667732	-6.2249169	Lesser Noctule (*Nyctalus leisleri*)
09/05	21:55:25	53.2667587	-6.2249393	Common pipistrelle (*Pipistrellus pipistrellus*)
09/05	21:56:02	53.2666718	-6.2252432	Lesser Noctule (*Nyctalus leisleri*)
09/05	21:56:43	53.2666312	-6.2252905	Lesser Noctule (*Nyctalus leisleri*)
09/05	21:57:04	53.2666364	-6.225274	Lesser Noctule (*Nyctalus leisleri*)
09/05	21:57:20	53.2666483	-6.2253118	Lesser Noctule (*Nyctalus leisleri*)
09/05	21:57:39	53.2666435	-6.2253266	Lesser Noctule (*Nyctalus leisleri*)
09/05	21:57:54	53.2666167	-6.2254066	Lesser Noctule (*Nyctalus leisleri*)
09/05	21:58:26	53.2666162	-6.2254164	Lesser Noctule (*Nyctalus leisleri*)
09/05	21:58:35	53.2666053	-6.2254176	Lesser Noctule (*Nyctalus leisleri*)
09/05	21:58:51	53.2666051	-6.2254167	Lesser Noctule (*Nyctalus leisleri*)
09/05	21:58:59	53.2666051	-6.2254167	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:01:17	53.26659	-6.2255433	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:01:32	53.2665901	-6.225543	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:02:07	53.2665901	-6.2255368	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:02:29	53.2665919	-6.2255273	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:03:18	53.266585	-6.2255099	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:03:42	53.2666377	-6.2253775	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:03:56	53.2665883	-6.2254332	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:04:11	53.2665667	-6.2254467	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:04:28	53.2665667	-6.2254465	Lesser Noctule (*Nyctalus leisleri*)

DAY	TIME	LATITUDE	LONGITUDE	AUTO ID
09/05	22:04:58	53.2665637	-6.2254535	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:05:14	53.2665633	-6.225453	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:13:58	53.2657728	-6.227333	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:14:14	53.2657729	-6.2273346	Common pipistrelle (*Pipistrellus pipistrellus*)
09/05	22:14:47	53.2657536	-6.2273404	Soprano pipistrelle (*Pipistrellus pygmaeus*)
09/05	22:15:18	53.2655283	-6.2273415	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:16:05	53.2657015	-6.2271871	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:17:35	53.2652866	-6.2291293	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:19:33	53.2653679	-6.2290127	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:20:06	53.2652525	-6.2289879	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:20:22	53.2652447	-6.2291048	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:23:54	53.2652766	-6.2285851	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:25:09	53.2654208	-6.2283869	Common pipistrelle (*Pipistrellus pipistrellus*)
09/05	22:26:35	53.265585	-6.22793	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:28:38	53.2656493	-6.2278879	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:29:00	53.2655578	-6.2280326	Soprano pipistrelle (*Pipistrellus pygmaeus*)
09/05	22:35:25	53.2659961	-6.2272032	Common pipistrelle (*Pipistrellus pipistrellus*)
09/05	22:42:31	53.2668795	-6.2245539	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:42:47	53.2669459	-6.2243693	Common pipistrelle (*Pipistrellus pipistrellus*)
09/05	22:43:02	53.2669518	-6.224342	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:43:34	53.266955	-6.224275	Common pipistrelle (*Pipistrellus pipistrellus*)
09/05	22:43:52	53.266955	-6.224275	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:44:24	53.2670072	-6.2240202	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:44:40	53.2670054	-6.2239834	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:44:56	53.2670014	-6.2239803	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:45:07	53.267	-6.2239683	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:45:22	53.267052	-6.2238245	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:45:29	53.2670578	-6.2238181	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:45:52	53.2671036	-6.2236164	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:46:31	53.2671124	-6.2235462	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:46:47	53.2671182	-6.2235354	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:46:54	53.2671189	-6.2235315	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:47:02	53.2671184	-6.2235298	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:47:56	53.2671152	-6.223507	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:48:11	53.2671166	-6.2235077	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:48:23	53.2671136	-6.2235118	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:48:29	53.267115	-6.2235067	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:48:46	53.267115	-6.2235067	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:49:02	53.267115	-6.2235067	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:49:25	53.267115	-6.2235067	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:50:12	53.267115	-6.2235067	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:50:28	53.267115	-6.2235067	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:50:51	53.2671935	-6.223221	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:52:17	53.2675236	-6.2221129	Soprano pipistrelle (*Pipistrellus pygmaeus*)
09/05	22:53:05	53.2676762	-6.2217608	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:58:22	53.2675967	-6.2219578	Common pipistrelle (*Pipistrellus pipistrellus*)
09/05	22:58:54	53.2674815	-6.2223335	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:59:20	53.2673563	-6.2226686	Lesser Noctule (*Nyctalus leisleri*)
09/05	22:59:28	53.2673161	-6.222742	Lesser Noctule (*Nyctalus leisleri*)
09/05	23:00:00	53.2672894	-6.223	Lesser Noctule (*Nyctalus leisleri*)
09/05	23:00:15	53.2672141	-6.2232125	Lesser Noctule (*Nyctalus leisleri*)
09/05	23:00:43	53.2670988	-6.2236067	Lesser Noctule (*Nyctalus leisleri*)

DAY	TIME	LATITUDE	LONGITUDE	AUTO ID
09/05	23:00:59	53.2670354	-6.2238275	Lesser Noctule (*Nyctalus leisleri*)
09/05	23:01:07	53.2670283	-6.2239271	Lesser Noctule (*Nyctalus leisleri*)
09/05	23:01:23	53.2669965	-6.2241508	Soprano pipistrelle (*Pipistrellus pygmaeus*)
09/05	23:02:41	53.266725	-6.2251733	Lesser Noctule (*Nyctalus leisleri*)
09/05	23:02:59	53.2666635	-6.2254108	Common pipistrelle (*Pipistrellus pipistrellus*)
09/05	23:03:15	53.2666407	-6.225479	Lesser Noctule (*Nyctalus leisleri*)
09/05	23:04:37	53.266614	-6.2254835	Common pipistrelle (*Pipistrellus pipistrellus*)
09/05	23:04:52	53.2665994	-6.2254901	Common pipistrelle (*Pipistrellus pipistrellus*)
09/05	23:05:23	53.2665844	-6.2254842	Soprano pipistrelle (*Pipistrellus pygmaeus*)
09/05	23:05:53	53.2665833	-6.2254783	Common pipistrelle (*Pipistrellus pipistrellus*)
09/05	23:06:48	53.26661	-6.2254619	Common pipistrelle (*Pipistrellus pipistrellus*)
09/05	23:08:19	53.2663312	-6.226332	Common pipistrelle (*Pipistrellus pipistrellus*)
10/05	04:00:56	53.2656265	-6.2276507	Lesser Noctule (*Nyctalus leisleri*)
10/05	04:01:28	53.26562	-6.2276667	Lesser Noctule (*Nyctalus leisleri*)
10/05	04:03:52	53.265845	-6.2272867	Lesser Noctule (*Nyctalus leisleri*)
10/05	04:04:12	53.265845	-6.2272867	Lesser Noctule (*Nyctalus leisleri*)
10/05	04:04:41	53.2659669	-6.2272353	Lesser Noctule (*Nyctalus leisleri*)
10/05	04:05:19	53.2661314	-6.2268684	Lesser Noctule (*Nyctalus leisleri*)
10/05	04:34:22	53.2654718	-6.2279403	Lesser Noctule (*Nyctalus leisleri*)
10/05	04:34:40	53.265603	-6.227694	Lesser Noctule (*Nyctalus leisleri*)
10/05	04:35:13	53.2652223	-6.2292398	Lesser Noctule (*Nyctalus leisleri*)
10/05	04:36:39	53.26578	-6.2274083	Lesser Noctule (*Nyctalus leisleri*)
10/05	04:42:20	53.2665806	-6.2256745	Lesser Noctule (*Nyctalus leisleri*)
10/05	04:42:45	53.2666016	-6.2254807	Lesser Noctule (*Nyctalus leisleri*)
10/05	04:48:36	53.267115	-6.2237764	Common pipistrelle (*Pipistrellus pipistrellus*)
10/05	04:49:10	53.2671148	-6.2237773	Lesser Noctule (*Nyctalus leisleri*)
10/05	04:50:12	53.2671838	-6.2234288	Lesser Noctule (*Nyctalus leisleri*)
10/05	04:52:01	53.2672433	-6.2228416	Soprano pipistrelle (*Pipistrellus pygmaeus*)
10/05	04:52:06	53.2672433	-6.2228417	Soprano pipistrelle (*Pipistrellus pygmaeus*)
10/05	04:52:19	53.2672433	-6.2228417	Soprano pipistrelle (*Pipistrellus pygmaeus*)
10/05	04:52:25	53.2672433	-6.2228417	Soprano pipistrelle (*Pipistrellus pygmaeus*)
10/05	04:53:16	53.2672646	-6.2228266	Common pipistrelle (*Pipistrellus pipistrellus*)
10/05	04:53:26	53.2672646	-6.2228266	Common pipistrelle (*Pipistrellus pipistrellus*)
10/05	04:53:31	53.2672646	-6.2228303	Common pipistrelle (*Pipistrellus pipistrellus*)
10/05	05:09:19	53.26559	-6.2277317	Lesser Noctule (*Nyctalus leisleri*)
10/05	05:09:50	53.2655857	-6.227806	Lesser Noctule (*Nyctalus leisleri*)
10/05	05:10:29	53.2652482	-6.2289283	Soprano pipistrelle (*Pipistrellus pygmaeus*)
10/05	05:17:38	53.2667617	-6.22497	Lesser Noctule (*Nyctalus leisleri*)
10/05	05:28:41	53.2672017	-6.2232583	Lesser Noctule (*Nyctalus leisleri*)

Table 3.3: Results of the analysis of data from the second dusk and dawn surveys on 10th and 11th of May 2024.

DAY	TIME	LATITUDE	LONGITUDE	AUTO ID
10/05	21:09:31	53.2669829	-6.2241704	Common pipistrelle (*Pipistrellus pipistrellus*)
10/05	21:13:25	53.2670688	-6.2242684	Common pipistrelle (*Pipistrellus pipistrellus*)
10/05	21:22:53	53.2670799	-6.2239405	Soprano pipistrelle (*Pipistrellus pygmaeus*)
10/05	21:28:26	53.2671647	-6.2229425	Lesser Noctule (*Nyctalus leisleri*)
10/05	21:43:49	53.2659255	-6.227126	Common pipistrelle (*Pipistrellus pipistrellus*)
10/05	21:48:24	53.2670303	-6.223659	Common pipistrelle (*Pipistrellus pipistrellus*)
10/05	21:49:04	53.2670388	-6.2235359	Lesser Noctule (*Nyctalus leisleri*)
10/05	21:52:59	53.2675973	-6.2217157	Common pipistrelle (*Pipistrellus pipistrellus*)

DAY	TIME	LATITUDE	LONGITUDE	AUTO ID
10/05	21:57:03	53.2668396	-6.2245852	Lesser Noctule (*Nyctalus leisleri*)
10/05	21:59:23	53.2663241	-6.2261423	Common pipistrelle (*Pipistrellus pipistrellus*)
10/05	22:02:36	53.2658182	-6.2274222	Common pipistrelle (*Pipistrellus pipistrellus*)
10/05	22:03:46	53.26557	-6.2283054	Lesser Noctule (*Nyctalus leisleri*)
10/05	22:11:16	53.2666568	-6.2251408	Lesser Noctule (*Nyctalus leisleri*)
10/05	22:11:23	53.2666881	-6.2250702	Lesser Noctule (*Nyctalus leisleri*)
10/05	22:12:50	53.2670017	-6.2237455	Lesser Noctule (*Nyctalus leisleri*)
10/05	22:14:46	53.267449	-6.2221739	Lesser Noctule (*Nyctalus leisleri*)
10/05	22:18:09	53.2673	-6.2222773	Lesser Noctule (*Nyctalus leisleri*)
10/05	22:18:52	53.2671567	-6.2228817	Lesser Noctule (*Nyctalus leisleri*)
10/05	22:19:07	53.2671469	-6.2228822	Lesser Noctule (*Nyctalus leisleri*)
10/05	22:19:33	53.2671467	-6.2228783	Lesser Noctule (*Nyctalus leisleri*)
10/05	22:19:48	53.2672017	-6.2229363	Lesser Noctule (*Nyctalus leisleri*)
10/05	22:20:14	53.2671884	-6.2230238	Lesser Noctule (*Nyctalus leisleri*)
10/05	22:20:42	53.2671655	-6.2231597	Lesser Noctule (*Nyctalus leisleri*)
10/05	22:20:50	53.267165	-6.2231617	Lesser Noctule (*Nyctalus leisleri*)
10/05	22:21:43	53.267175	-6.2231401	Lesser Noctule (*Nyctalus leisleri*)
10/05	22:21:53	53.2671749	-6.2231401	Lesser Noctule (*Nyctalus leisleri*)
10/05	22:22:06	53.267175	-6.22314	Soprano pipistrelle (*Pipistrellus pygmaeus*)
10/05	22:23:29	53.2674447	-6.2241581	Soprano pipistrelle (*Pipistrellus pygmaeus*)
10/05	22:24:31	53.267022	-6.2239723	Common pipistrelle (*Pipistrellus pipistrellus*)
10/05	22:24:47	53.2671867	-6.22347	Common pipistrelle (*Pipistrellus pipistrellus*)
10/05	22:24:56	53.2670699	-6.2242264	Common pipistrelle (*Pipistrellus pipistrellus*)
10/05	22:25:02	53.2670699	-6.2242264	Common pipistrelle (*Pipistrellus pipistrellus*)
10/05	22:25:16	53.2669308	-6.2241714	Common pipistrelle (*Pipistrellus pipistrellus*)
10/05	22:41:05	53.2672038	-6.2229825	Soprano pipistrelle (*Pipistrellus pygmaeus*)
10/05	22:44:44	53.2673509	-6.2224438	Lesser Noctule (*Nyctalus leisleri*)
10/05	22:45:19	53.2673633	-6.2224627	Lesser Noctule (*Nyctalus leisleri*)
10/05	22:57:04	53.2654567	-6.2278733	Lesser Noctule (*Nyctalus leisleri*)
11/05	04:04:12	53.2668619	-6.2246163	Common pipistrelle (*Pipistrellus pipistrellus*)
11/05	04:11:56	53.2676206	-6.2214377	Lesser Noctule (*Nyctalus leisleri*)
11/05	04:21:34	53.2654525	-6.2285135	Lesser Noctule (*Nyctalus leisleri*)
11/05	04:41:51	53.2657249	-6.2279925	Lesser Noctule (*Nyctalus leisleri*)
11/05	04:42:37	53.2658154	-6.2275232	Lesser Noctule (*Nyctalus leisleri*)
11/05	04:47:47	53.26702	-6.22336	Lesser Noctule (*Nyctalus leisleri*)
11/05	04:48:06	53.26702	-6.22336	Common pipistrelle (*Pipistrellus pipistrellus*)
11/05	04:48:23	53.2679939	-6.2202923	Common pipistrelle (*Pipistrellus pipistrellus*)
11/05	04:49:38	53.2673326	-6.2228496	Lesser Noctule (*Nyctalus leisleri*)
11/05	04:55:52	53.2667995	-6.2252375	Lesser Noctule (*Nyctalus leisleri*)
11/05	04:57:46	53.2663635	-6.2263659	Common pipistrelle (*Pipistrellus pipistrellus*)
11/05	04:59:10	53.2656353	-6.2281618	Lesser Noctule (*Nyctalus leisleri*)
11/05	05:00:41	53.2653108	-6.2285352	Lesser Noctule (*Nyctalus leisleri*)
11/05	05:09:54	53.2670423	-6.2240926	Lesser Noctule (*Nyctalus leisleri*)
11/05	05:10:27	53.2670315	-6.2237985	Lesser Noctule (*Nyctalus leisleri*)
11/05	05:13:34	53.267365	-6.2217489	Lesser Noctule (*Nyctalus leisleri*)
11/05	05:19:49	53.2668913	-6.2245249	Lesser Noctule (*Nyctalus leisleri*)
11/05	05:19:58	53.2668101	-6.2246215	Lesser Noctule (*Nyctalus leisleri*)
11/05	05:26:25	53.2654346	-6.2288695	Lesser Noctule (*Nyctalus leisleri*)
11/05	05:27:50	53.2654612	-6.2291663	Lesser Noctule (*Nyctalus leisleri*)
11/05	05:28:04	53.2655417	-6.2277819	Lesser Noctule (*Nyctalus leisleri*)
11/05	05:28:30	53.2655417	-6.2277817	Lesser Noctule (*Nyctalus leisleri*)
11/05	05:29:30	53.2654681	-6.2286267	Lesser Noctule (*Nyctalus leisleri*)

DAY	TIME	LATITUDE	LONGITUDE	AUTO ID
11/05	05:29:47	53.2654007	-6.2287634	Lesser Noctule (*Nyctalus leisleri*)
11/05	05:30:12	53.2653384	-6.229112	Lesser Noctule (*Nyctalus leisleri*)
11/05	05:31:40	53.2653098	-6.2291294	Lesser Noctule (*Nyctalus leisleri*)

Figure 3.11: All bat encounters on site (Google Earth 2024)

Figure 3.12: Lesser noctule encounters on site (Google Earth 2024).

Figure 3.13: Pipistrelle species encounters on site (Google Earth 2024).

Figure 3.14: Area where the Lesser noctule cluster was recorded (Google Earth 2024).

Figure 3.15: Area where the Common pipistrelle cluster was recorded (Google Earth 2024).

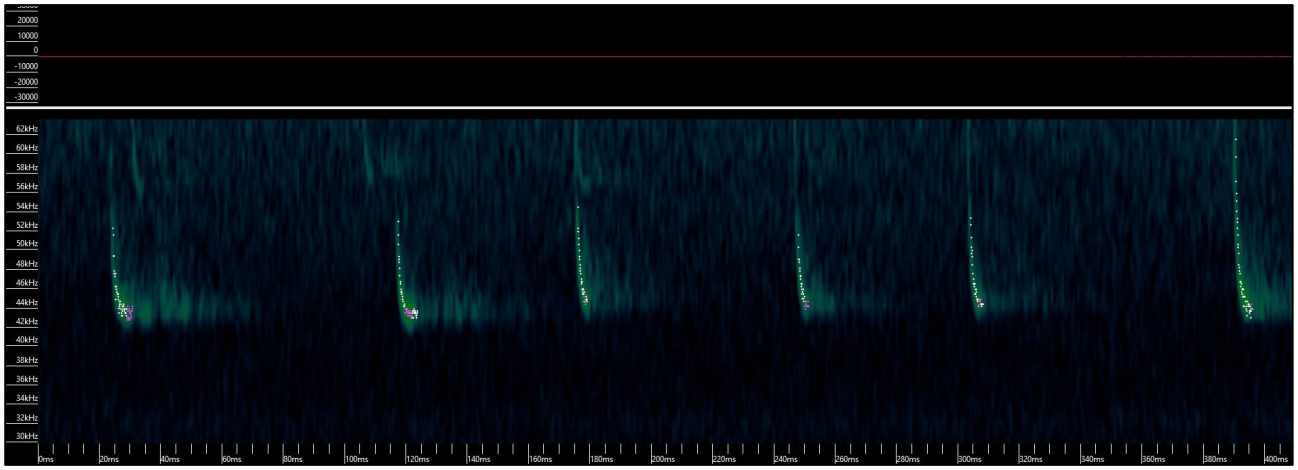

Figure 3.16: Common pipistrelle sonogram (Echo Meter Touch PRO 2).

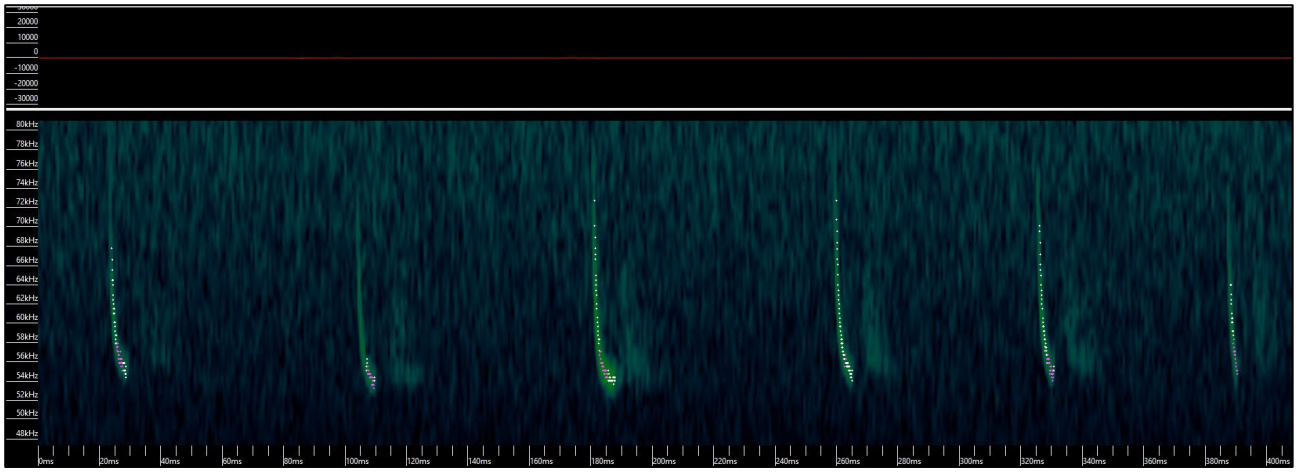

Figure 3.17: Soprano pipistrelle sonogram (Echo Meter Touch PRO 2).

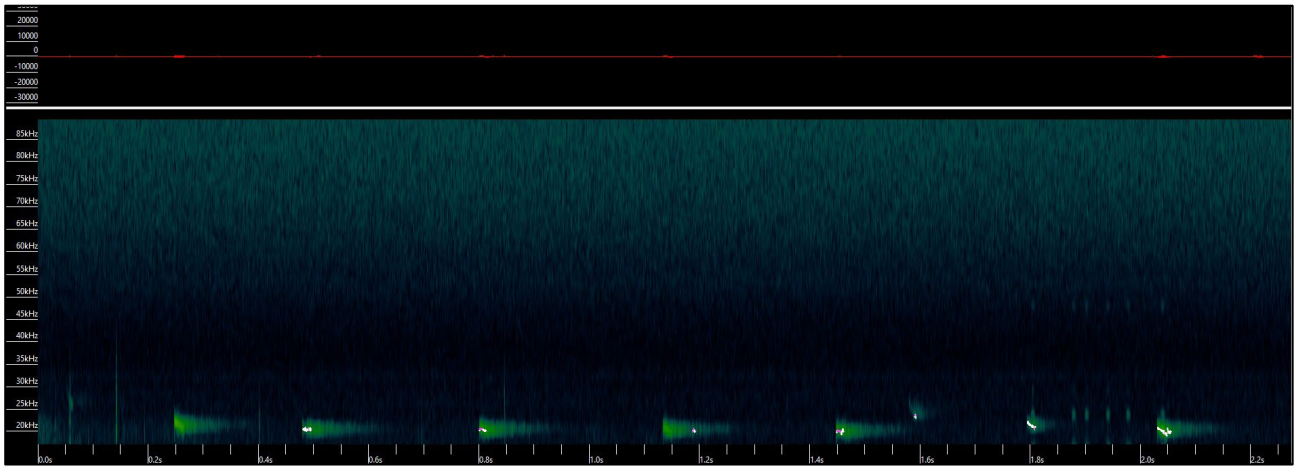

Figure 3.18: Lesser noctule sonogram (Echo Meter Touch PRO 2).

4 IMPACT ASSESSMENT AND MITIGATION

The following bat species have been recorded during this bat survey: Common pipistrelle, Soprano pipistrelle, and Lesser noctule. This represents three of the nine residence bat species known to Ireland.

All bat species recorded during this Bat Survey are Annex IV species under the EU Habitats Directive, and all have a Favourable Status in Ireland.

Bats may use trees with heavy ivy growth as occasional roosts. Many such trees were present on the site and in the surrounding area. Bats may use mature trees with tree holes, etc. as roosting sites all year around. No holes or crevices suitable for roosts were observed on the site.

The bats were mainly seen foraging in the area rather than roosting. Two clusters of bats were found on site. The first one was near the northeastern end of the site where there are many mature trees (Figure 3.15). The second one was in the midsection of the road where there are many mature conifer trees. The bats were flying very close to the trees and hedgerows, foraging on clusters of insects (mainly mosquitoes).

Although no roosting bats were identified, due to the fact that works will involve the felling and removal of some hedges and trees, there is potential for impacts on bat foraging and commuting areas.

The impact assessment and mitigation has been undertaken in relation to the three species recorded within the proposed development area.

The main impacts of the proposed development on bat fauna are summarised as follows:

- The habitats occurring within the proposed development area are not diverse. The loss of areas within the site will have a negligible or minor impact on bats.
- Loss or fragmentation of foraging habitats may diminish the available insect prey species and reduce feeding area for bats in some locations. This is considered as a Low Negative Impact due to the limited number of trees and hedgerows that are marked for felling or removal.

4.1 MITIGATION MEASURES

The following mitigation measures are recommended to reduce the potential impact of the proposed development on local bat populations:

- If 12 months have elapsed from the time of this survey until the commencement of works, the trees and hedgerows that are planned for removal should be reassessed to check for signs of bat presence, such as roosts, guano (bat droppings), or visible bats as well as cavities, crevices, and loose bark, which are potential roosting spots. Tree removal should be undertaken outside of the bat maternity season, which typically occurs from spring to early fall. During this period, bats give birth and raise their young, making them especially vulnerable.

- If tree removal is necessary, consider replanting native trees or providing suitable habitat elsewhere to compensate for the loss.
- In the event that bats are found on the proposed development site during enabling or construction works, works will immediately cease in that area and the local NPWS conservation ranger will be contacted. The bats should be removed by hand by a suitably qualified surveyor.
- Hillcrest Road has high levels of lighting, especially near the crossings. In general, artificial light creates a barrier for commuting bats. If any external additional lighting is required, it must be sensitive to the presence of bats commuting in the area. Directional lighting (i.e. lighting which is focused on work areas and not nearby countryside) shall be used.
- A toolbox talk should be provided to construction staff setting out the actions to take in the event bats are discovered during works. In that event, works will stop immediately, and the advice of an Ecologist will be sought.
- An experienced Ecologist should be on site during site clearance to provide ecological advice on how to avoid and/or minimize ecological impacts.

4.2 ENHANCEMENT

In addition to measures to avoid impacts, there is opportunity for ecological enhancement for bats as part of the proposed development. Given lack of roosting opportunities available to local bat populations at present, bat boxes in a variety of designs suitable for bats with differing roosting habits should be installed on mature trees surrounding the site.

Bat boxes should be installed facing south, southeast, or southwest and at heights no less than 4m above ground level. Suitably experienced ecologists must oversee the installation of the boxes. All personnel should wear gloves to reduce transmission of human pheromones, which may reduce or delay uptake of boxes by bats. These boxes must be away from any felling or trimming to ensure that they are not accidentally damaged or removed. Bat boxes must be clear of scrub and away from ivy encroachment as well as lighting and traffic.

Bat boxes are available commercially from a variety of suitable outlets (e.g., NHBS website **http://www.nhbs.com**).

5 SURVEY CONCLUSIONS

This report provides information on the bat usage along Hillcrest Road and in the surrounding area. Three bat species were recorded during the bat surveys: Common pipistrelle, Soprano pipistrelle, and Lesser noctule. A moderate level of bat activity of Common pipistrelle, Soprano pipistrelle, and Lesser noctule was recorded (208 records) on the site.

Based on the bat evidence collected by this report, it is deemed that the bat populations recorded within the survey area are of Local Importance. In the absence of mitigation, the proposed development will likely have a low Negative Impact on local bat populations.

A number of mitigation measures have been recommended and should be implemented during the construction work. Enhancement measures should also be incorporated into the design of the proposed development. Strict adherence to these will reduce the overall impact to a negligible level of impact.

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7 VERIFICATION

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