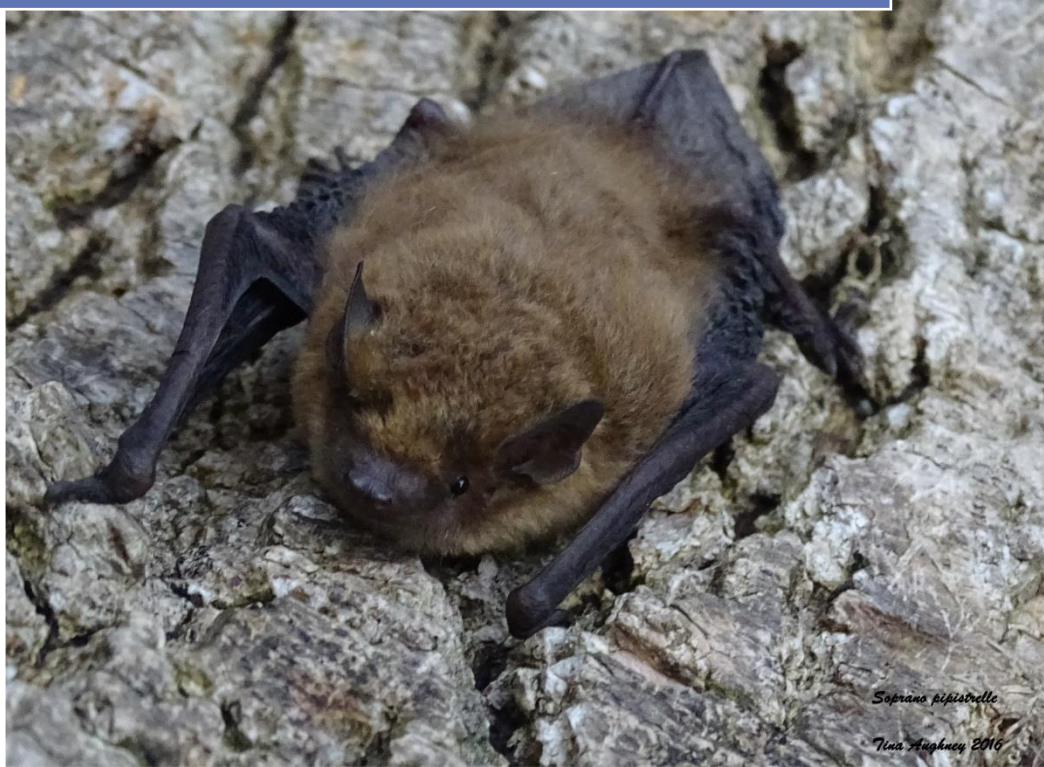


2021

Bat Assessment prepared for Planning Application



*Soprano pipistrelle*

*Tina Aughney 2016*

Dr Tina Aughney  
Bat Eco Services

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NPWS licence C13/2020 (Licence to handle bats, expires 31<sup>st</sup> December 2022)

NPWS licence 08/2020 (Licence to photograph/film bats, expires 31<sup>st</sup> December 2022)

NPWS licence DER/BAT 2019-138 on expiry (Survey licence, expires 29<sup>th</sup> March 2022).

**Client:** Cairn Homes Properties Limited.

**Project Name & Location:** Cooldown Commons Phase 3, Citywest, Co. Dublin.

### Report Revision History

Date of Issue	Draft Number	Issued To (process of issuing)
12 <sup>th</sup> November 2020	Draft 1	By email to MCG Planning
30 <sup>th</sup> November 2020	Draft 2	Loaded to BOX
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9 <sup>th</sup> June 2021	Final - new application type	By email to MCG Planning
14 <sup>th</sup> June 2021	Final - new application type	By email to MCG Planning

### Purpose

This document has been prepared as a Report for Cairn Homes Properties Limited. Only the most up to-date report should be consulted. All previous drafts/reports are deemed redundant in relation to the named site.

Bat Eco Service accepts no responsibility or liability for any use that is made of this document other than by the client for the purposes for which it was originally commissioned and prepared.

### Carbon Footprint Policy

It is the policy of Bat Eco Services to provide documentation digitally in order to reduce carbon footprint. Printing of reports etc. is avoided, where possible.

### Bat Record Submission Policy

It is the policy of Bat Eco Services to submit all bat records to Bat Conservation Ireland database one year post-surveying. This is to ensure that a high level bat database is available for future desktop reviews. This action will be automatically undertaken unless otherwise requested, where there is genuine justification.

## Executive Summary

**Project Name & Location:** Cooldown Commons Phase 3, Citywest, Co. Dublin.

**Proposed work:** Mixed-use development.

### Executive Summary

The following is a brief summary of the survey results and the bat survey duties completed. Three species of bat was recorded commuting and foraging through the proposed development area. Surveying was completed in 2018 and 2020.

### Bat Survey Results – Brief Summary of Results (within survey area)

Bat Species	Roosts	Foraging	Commuting
Common pipistrelle <i>Pipistrellus pipistrellus</i>		√	√
Soprano pipistrelle <i>Pipistrellus pygmaeus</i>		√	√
Nathusius' pipistrelle <i>Pipistrellus nathusii</i>			
Leisler's bat <i>Nyctalus leisleri</i>		√	√
Brown long-eared bat <i>Plecotus auritus</i>			
Daubenton's bat <i>Myotis daubentonii</i>			
Natterer's bat <i>Myotis nattereri</i>			
Whiskered bat <i>Myotis mystacinus</i>			
Lesser horseshoe bat <i>Rhinolophus hipposideros</i>			

This data was collated through a combination of the bat survey duties undertaken below:

### Bat Survey Duties Completed (indicated by red)

Tree PBR Survey	<input checked="" type="checkbox"/>	Daytime Building Inspection	<input type="checkbox"/>
Static Detector Survey	<input checked="" type="checkbox"/>	Daytime Bridge Inspection	<input type="checkbox"/>
Dusk Bat Survey	<input checked="" type="checkbox"/>	Dawn Bat Survey	<input checked="" type="checkbox"/>
Walking Transect	<input checked="" type="checkbox"/>	Driving Transect	<input type="checkbox"/>
Trapping / Mist Netting	<input type="checkbox"/>	IR Camcorder filming	<input type="checkbox"/>
Endoscope Inspection	<input type="checkbox"/>	Other	<input type="checkbox"/>

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## 1. Introduction

Bat Eco Services was commissioned by Cairn Homes Properties Limited to complete a bat assessment of the proposed planning application on a site located at Cooldown Commons Phase 3, Citywest, Co. Dublin.

### 1.1 Relevant Legislation & Bat Species Status in Ireland

A small number of these animal and plant species are protected under Irish legislation (Nelson, *et al.*, 2019). The principal Irish legislation is the Wildlife Act 1976. Amendments to the Wildlife Act and its Statutory Instruments have enacted and amended protection of individual species, notably in order to comply with EU legislation or other international agreements. The Birds and Habitats Directives are the primary EU legislation resulting in the legal protection of species in Ireland. The Acts and Statutory Instruments which list species within the broad taxonomic groupings are referred to in the relevant sections.

#### 1.1.1 Irish Legislation

The Wildlife Act 1976 (Number 39 of 1976) was amended on four occasions up to 2019, the principal being the Wildlife (Amendment) Act 2000 (Number 38 of 2000). The Flora (Protection) Order lists the plant species protected by Section 21 of the Wildlife Acts. The regulations that give rise to the protection of animal species under the Wildlife Acts are detailed in the relevant sections. See [www.npws.ie/legislation](http://www.npws.ie/legislation) for further information.

The codes used for national legislation are as follows:

- WA = Wildlife Act, 1976, Wildlife (Amendment) Act, 2000 and other relevant amendments
- FPO = Flora (Protection) Order, 2015 (S.I. No. 356 of 2015)

#### 1.1.2 EU Legislation

The primary legislation transposing the Nature Directives (Birds and Habitats Directives) into Irish law is the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011), as amended.

The codes used for the EU Nature Directives and Habitats Directives (Council Directive 92/43/EEC) are:

- Annex II Animal and plant species listed in Annex II
- Annex IV Animal and plant species listed in Annex IV
- Annex V Animal and plant species listed in Annex V

The main aim of the Habitats Directive is the conservation of biodiversity by requiring Member States to take measures to maintain or restore natural habitats and wild species listed on the Annexes to the Directive at a favourable conservation status. These annexes list habitats (Annex I) and species (Annexes II, IV and V) which are considered threatened in the EU territory. The listed habitats and species represent a considerable proportion of biodiversity in Ireland and the Directive itself is one of the most important pieces of legislation governing the conservation of biodiversity in Europe.

Under Article 11 of the Directive, each member state is obliged to undertake surveillance of the conservation status of the natural habitats and species in the Annexes and under Article 17, to report to the European Commission every six years on their status and on the implementation of the measures taken under the Directive. In April 2019, Ireland submitted the third assessment of conservation status for 59 habitats and 60 species. There are three volumes with the third listing details of the species assessed ([www.npws.ie](http://www.npws.ie) – for publications).

### 1.1.3 IUCN Red Lists

The International Union for the Conservation of Nature (IUCN) coordinates the Red Listing process at the global level, defining the categories so that they are standardised across all taxa. Red Lists are also produced at regional, national and subnational levels using the same IUCN categories (IUCN 2012, 2019). Since 2009, Red Lists have been produced for the island of Ireland by the National Parks and Wildlife Service (NPWS) and the Northern Ireland Environment Agency (NIEA) using these IUCN categories. To date, 13 Red Lists have been completed. The Red Lists are an assessment of the risk of extinction of each species and not just an assessment of their rarity. Threatened species are those species categorised as Critically Endangered, Endangered or Vulnerable (IUCN, 2019) – also commonly referred to as ‘Red Listed’.

### 1.1.4 Irish Red List - Mammals

Red Lists in Ireland refer to the whole island, i.e. including Northern Ireland, and so follow the guidelines for regional assessments (IUCN, 2012, 2019). The abbreviations used are as follows:.

- RE Regionally Extinct
- CR Critically Endangered
- EN Endangered
- VU Vulnerable
- NT Near Threatened
- DD Data Deficient
- LC Least Concern
- NA Not Assessed
- NE Not Evaluated

There are 27 terrestrial mammals species in Ireland, which includes the nine resident bat species listed. The terrestrial mammal, according to Marnell *et al.*, 2019, list for Ireland consists of all terrestrial species native to Ireland or naturalised in Ireland before 1500. The IUCN Red List categories and criteria are used to assess that status of wildlife. This was recently completed for the terrestrial mammals of Ireland. Apart from the two following two mammal species (grey wolf *Canis lupus* (regionally extinct) and black rat *Rattus rattus* (Vulnerable)), the remaining 25 species were assessed as least concern in the most recent IUCN Red List publication by NPWS (Marnell *et al.*, 2019).

### 1.1.5 Irish Bat Species

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 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 regards 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 16<sup>th</sup> of May 2007.

There are eleven recorded bat species in Ireland, nine of which are considered resident. Eight resident bat species and one of the vagrant bat species are vesper bats and all vespertilionid bats have 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 while the Brandt's bat has only been recorded once to-date (only record confirmed by DNA testing, all other records has not been genetically confirmed). The ninth resident species is the lesser horseshoe bat *Rhinolophus hipposideros*, which belongs to the Rhinolophidea and has a complex nose leaf structure on the face, distinguishing it from the vesper bats. This species' current distribution is confined to the western seaboard counties of Mayo, Galway, Clare, Limerick, Kerry and Cork. The eleventh bat species, the greater horseshoe bat, was only recorded for the first time in February 2013 in County Wexford and is therefore considered to be a vagrant species.

A total of 41 SACs have been designated for the Annex II species lesser horseshoe bat (1303), of which nine have also been selected for the Annex I habitat 'Caves not open to the public' (8310).

Irish bat species list (please see main body of text for more information in individual bat species) is presented in Table 1. The current status of the known bat species occurring in Ireland is given in the Table 1 below.

**Table 1: Status of the Irish bat fauna (Marnell *et al.*, 2019).**

Species: Common Name	Irish Status	European Status	Global Status
<b>Resident Bat Species ^</b>			
<b>Daubenton's bat <i>Myotis daubentonii</i></b>	Least Concern	Least Concern	Least Concern
<b>Whiskered bat <i>Myotis mystacinus</i></b>	Least Concern	Least Concern	Least Concern
<b>Natterer's bat <i>Myotis nattereri</i></b>	Least Concern	Least Concern	Least Concern
<b>Leisler's bat <i>Nyctalus leisleri</i></b>	Least Concern	Least Concern	Least Concern
<b>Nathusius' pipistrelle <i>Pipistrellus nathusii</i></b>	Least Concern	Least Concern	Least Concern
<b>Common pipistrelle <i>Pipistrellus pipistrellus</i></b>	Least Concern	Least Concern	Least Concern
<b>Soprano pipistrelle <i>Pipistrellus pygmaeus</i></b>	Least Concern	Least Concern	Least Concern
<b>Brown long-eared bat <i>Plecotus auritus</i></b>	Least Concern	Least Concern	Least Concern



Lesser horseshoe bat <i>Rhinolophus hipposideros</i>	Least Concern	Least Concern	Least Concern
<b>Possible Vagrants ^</b>			
Brandt's bat <i>Myotis brandtii</i>	Data deficient	Least Concern	Least Concern
Greater horseshoe bat <i>Rhinolophus ferrumequinum</i>	Data deficient	Near threatened	Near threatened

^ Roche *et al.*, 2014

## 1.2 Relevant Guidance Documents

This report will draw on guidelines already available in Europe and will use 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 (3<sup>rd</sup> 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.
- Kelleher, C. & Marnell, F. (2006) Bat Mitigation Guidelines for Ireland. Irish Wildlife Manuals, No. 25. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.
- 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.

Based on the information collected during the desktop studies and bat surveys, the bat ecologist assigns, where possible, an ecological value to each bat species recorded based on its conservation status at different geographical scales (Table 2). For example, a site may be of national ecological value for a given species if it supports a significant proportion (e.g. 5%) of the total national population of that species.

**Table 2: The six-level ecological valuation scheme used in the CIEM Guidelines (2016) Ecological Value**

Ecological Value	Geographical Scale of Importance
<b>International</b>	International or European scale
<b>National</b>	The Republic of Ireland or the island of Ireland scale (depending on the bat species)
<b>Regional</b>	Province scale: Leinster
<b>County</b>	County scale: Dublin
<b>Local</b>	Proposed development and immediate surroundings

<b>Negligible</b>	None, the feature is common and widespread
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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. increase 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 conflicts.

## 1.3 Project Description

### 1.3.1 Site Location

The proposed planning application is for a site located on Cooldown Commons Phase 3, Citywest, Co. Dublin. A larger area was surveyed in 2018 compared to the survey area in 2020.



Figure 1: Location and layout of the proposed development site (red line is an approximate outline of the proposed development site) (Source: MCG Planning).

### 1.3.2 Proposed Project

The proposed development will consist of the construction of 421 no. residential units within 9 no. blocks ranging in height from 1 – 13 storeys, retail/commercial/office units, residential amenity space, and open spaces along with all associated site development works and services provisions to facilitate the development including parking, bin storage, substations, landscaping and all services. A full description is provided in the statutory notices and in Chapter 3 of the EIAR.

### 1.3.3 General Bat Survey Aims

The general aims of a bat survey are as follows:

- Collect robust data following good practice guidelines to allow an assessment of the potential impacts of the proposed project on local bat populations, both on and off-site (where possible);
- Facilitate the design of mitigation, enhancement and monitoring strategies for local bat populations recorded;
- Provide baseline information with which the results of post-construction monitoring surveys can be compared to, where appropriate;
- Provide information to enable NPWS and planning authorities to reach robust decisions with definitive required outcomes;
- Assist clients in meeting their statutory obligations;
- Facilitate the conservation of local bat populations.

**Surveys are comprised of many different types and may differ from site to site depending on the goals of the survey. The following is a brief description of main types of surveys that can be completed. The surveys deemed suitable for a particular project is determined on a case-by-case basis.**

- Emergence (dusk) surveys: surveying of buildings or structures to determine whether such building/structure is a bat roost. Undertaken from 10 minutes prior to sunset to 90 minutes after sunset.
- Walking transect: bat surveys completed on-foot where the surveyor(s) walk the survey site from 30 minutes after sunset. Often this survey is completed post an emergence survey and therefore may be undertaken for a different period of time after sunset.
- Driving transect: bat survey completed in a car and undertaken according to a strict survey protocol. Surveying is completed from 40 minutes after sunset till the end of the planned survey route. This is only undertaken for large survey area with a well-defined public road structure. Routes are planned and mapped prior to surveying.
- Dawn surveys: surveying of buildings or structures to determine whether such building/structure is a bat roost. Undertaken from 90 minutes prior to sunrise to 10 minutes after sunrise.
- Static surveys: placement of automated recording devices within the survey area. The units are set up during the daylight hours and left in place to record during the hours of darkness.
- Additional surveys required may include trapping / netting of bats. But this type of surveying is only undertaken where specific information is required (e.g. to determine if a roost is a maternity colony).



## 2. Bat Survey Methodology

The following information provides some general non-specific information on the different components of a bat survey as well as specific information on what was completed as part of the bat survey methodology for this proposed development. This is background information to provide context to survey results presented in Section 3.

### 2.1 Daytime Inspections

One purpose of daytime inspections is to determine the potential of bat roosts within the survey area. Due to the transient nature of bats and their seasonal life cycle, there are a number of different types of bat roosts. Where possible, one of the objectives of the surveys is to be able to identify the types of roosts present, if any. However, the determination of the type of roost present depends on the timing of the survey and the number of bat surveys completed. Consequently, the definition of roost types, in this report, will be based on the following:

**Table 3: Bat Roost Types (Collins 2016).**

Roost Type	Definition	Time of Survey
<b>Day Roost</b>	A place where individual bats or small groups of males, rest or shelter in the daytime but are rarely found by night in the summer.	Anytime of the year
<b>Night Roost</b>	A place where bats rest or shelter in the night but are rarely found in the day. May be used by a single bat on occasion or it could be used regularly by the whole colony.	Anytime of the year
<b>Feeding Roost</b>	A place where individual bats or a few bats rest or feed during the night but are rarely present by day.	Anytime of the year
<b>Transitional Roost</b>	A place used by a few individuals or occasionally small groups for generally short periods of time on waking from hibernation or in the period prior to hibernation.	Outside the main maternity and hibernation periods.
<b>Swarming Site</b>	Where large numbers of males and females gather. Appear to be important mating sites.	Late summer and autumn
<b>Mating Site</b>	Where mating takes place.	Late summer and autumn
<b>Maternity Site</b>	Where female bats give birth and raise their young to independence.	Summer months
<b>Hibernation Site</b>	Where bats are found, either individually or in groups in the winter months. They have a constant cool temperature and humidity.	Winter months in cold weather conditions
<b>Satellite Roost</b>	An alternative roost found in close proximity to the main nursery colony and is used by a few individuals throughout the breeding season.	Summer months

### 2.1.1 Building & Structure Inspection

There are no buildings within the proposed survey area.

### 2.1.2 Tree Potential Bat Roost (PBRs) Inspection

Trees that may provide a roosting space for bats were examined using the Bat Tree Habitat Key (BTHK, 2018) and the classification system adapted from Collins (2016). The Potential Roost Features (PRFs) listed in the BTHK are used to determine the PBR value of trees. Trees identified as Potential Bat Roosts (PBRs) were inspected during the daytime, where possible, for evidence of bat usage. Evidence of bat usage is in the form of actual bats (visible or audible), bat droppings, urine staining, grease marks (oily secretions from glands present on stonework), bat pupae and claw marks.

A Phase 1 inspection was undertaken on the 19/7/2020 in order to make a list of trees within the proposed development site that may be suitable as roosting sites for bats. Inspections were undertaken visually with the aid of a strong torch beam (LED Lenser P14.2) during the daytime searching for PRFs.

**Table 4: Tree Bat Roost Category Classification System (adapted from Collins, 2016).**

<b>Tree Category</b>	<b>Description</b>
<b>1 High</b>	Trees with multiple, highly suitable features (Potential Roosting Features = PRFs) capable of supporting larger roosts
<b>2 Moderate</b>	Trees with definite bat potential but supporting features (PRFs) suitable for use by individual bats;
<b>3 Low</b>	Trees have no obvious potential although the tree is of a size and age that elevated surveys may result in cracks or crevices being found or the tree supports some features (PRFs) which may have limited potential to support bats;
<b>4 Negligible</b>	Trees have no potential.

### 2.1.3 Bat Habitat & Commuting Routes Mapping

The survey site was assessed during daytime on 19/7/2020 where a walkabout survey was completed to document potential bat foraging habitat and potential bat commuting routes. Aerial photographs were also examined to assist this step. Bat habitats and commuting routes were also identified in the wider landscape to determine landscape connectivity for local bat populations through the examination of aerial photographs.

## 2.2 Night-time Bat Detector Surveys

The following bat surveys were completed and methodology for these are described below.

2018

Dusk Survey (walking transect) – 14/8/2018 (Weather conditions: patchy cloud cover, 18oC, dry and light breeze);

- Surveyor 1: walked the proposed development site and general environs of Fortunestown Lane, Citywest, Co. Dublin.

Dawn Survey (walking transect) – 15/8/2018 (Weather conditions: full cloud cover, 13oC, drizzle and calm);

- Surveyor 1: walked the proposed development site and general environs of Fortunestown Lane, Citywest, Co. Dublin.

2020

Dusk Survey (walking transect) – 19/7/2020 (Weather conditions: clear skies, 14oC, dry and light breeze);

- Surveyor 2: walked the proposed development site and general environs of Fortunestown Lane, Citywest, Co. Dublin.

### 2.2.1 Dusk & Dawn Bat Surveys, Walking Transects

Dusk emergence surveys were completed from 10 minutes before sunset to 110 minutes post sunset. The surveyors position themselves adjacent to the trees to be surveyed to determine if bats were roosting within. This was followed by a walking transect - a predetermined route was walked, noting the time, location and bat species encountered. The geo-referenced calls were mapped using Google Earth with a KLM file produced for mapping purposes. Validation of bat records was completed by the principal bat surveyor prior to mapping. Dawn bat survey was undertaken 90 minutes prior to sunrise and 10 minutes post sunrise. Due to the small area to be surveyed, the proposed development area was repeatedly walked during the survey period.

Surveys were completed during mild and dry weather conditions with air temperature of 8°C or greater. All bat encounters were noted during surveys.

The following equipment was used:

Surveyor 1: (Principal surveyor): Anabat Walkabout / Wildlife Acoustics EchoMeter Touch 2 Pro and Pettersson D200 Heterodyne Bat Detectors

Surveyor 2: Wildlife Acoustics Echo Meter Touch2 Pro (Android) connected to Samsung Galaxy Tab S3 and Petersson D200 Heterodyne Bat Detector.



### 2.2.2 Passive Static Bat Detector Survey

A Passive Static Bat Surveys involves leaving a static bat detector unit (with ultrasonic microphone) in a specific location and set to record for a specified period of time (i.e. a bat detector is left in the field, there is no observer present and bats which pass near enough to the monitoring unit are recorded and their calls are stored for analysis post surveying). The bat detector is effectively used as a bat activity data logger. This results in a far greater sampling effort over a shorter period of time. Bat detectors with ultrasonic microphones are used as the ultrasonic calls produced by bats cannot be heard by human hearing.

The microphone of the unit was position horizontally to reduce potential damage from rain. Full Spectrum Units use Real Time recording as a technique to record bat echolocation calls and using specific software, the recorded calls are identified. It is these sonograms (2-d sound pictures) that are digitally stored on the SD card) and downloaded for analysis. These results are depicted on a graph showing the number of bat passes per species per night. Each bat pass does not correlate to an individual bat but is representative of bat activity levels. Some species such as the pipistrelles will continuously fly around a habitat and therefore it is likely that a series of bat passes within a similar time frame is one individual bat. On the other hand, Leisler’s bats tend to travel through an area quickly and therefore an individual sequence or bat pass is more likely to be indicative of individual bats not unless the individual is foraging above a tree canopy.

The recordings were analysed using Wildlife Acoustics Kaleidoscope Pro. Each sound file was noted as a bat pass to indicate level of bat activity for each species recorded. This is either expressed as the number of bat passes per hour or per survey night. The following static units were deployed during this static bat detector survey in 2018 and 2020.

**Table 5: Static Bat Detectors deployed during Static Bat Detector Surveys.**

Static Unit Code	Bat Detector Type	Recording Function	Microphone
<b>SM2 Bat+ Units 2 &amp; 4 2018</b>	Wildlife Acoustics SongMeter 4 Bat FS	Passive Full Spectrum	SMM-U2, 4m cable
<b>BatLogger A+ Units A &amp; B 2018</b>	Elekon Bat Logger A+	Passive Full Spectrum	FG Knowles microphone, 2m cable
<b>SM Mini Bat Units 1 &amp; 2 2020</b>	Wildlife Acoustics SongMeter Mini Bat FS	Passive Full Spectrum	SMM-U2

The statics were located on trees at the following locations:



Figure 2: Location of static unit deployment within proposed development site on Fortunestown Lane, Citywest, Co. Dublin.

2018

- |                     |                          |
|---------------------|--------------------------|
| BatLogger A+ Unit A | Green CIRCLE (Figure 2)  |
| BatLogger A+ Unit B | Orange CIRCLE (Figure 2) |
| SM2 BAT+ Unit 4     | Blue CIRCLE (Figure 2)   |
| SM2 BAT+ Unit 2     | Red CIRCLE (Figure 2)    |

2020

- |                      |                        |
|----------------------|------------------------|
| SongMeter Mini Bat 2 | Red Square (Figure 2)  |
| SongMeter Mini Bat 3 | Blue Square (Figure 2) |

## 2.3 Desktop Review

### 2.3.1 Bat Conservation Ireland Database

A 1km radius of the Irish grid Reference O051273 was requested from Bat Conservation Ireland.

## 2.4 Survey Constraints & Survey Summary

The following is a summary of the surveying completed for this project:

**Table 6: Survey Summary.**

<b>Category</b>	<b>Discussion</b>
<b>Timing of surveys</b>	All surveys were completed during the maternity season. Therefore there is no constraints in relation to timing.
<b>Weather conditions</b>	Good weather conditions were noted during all surveys completed. Therefore there are no constraints in relation to weather conditions.
<b>Survey effort</b>	<b>2018 Bat Survey</b>
<b>Total Hours of surveys:</b> TOTAL = 6 hours	Dusk Survey & Walking Transect 14/8/2018 Dawn Survey & Walking Transect 15/8/2018 Static Surveillance – 4 static units, 1 night
<b>Total hours of static surveillance</b> TOTAL = 112 hours	<b>2020 Bat Survey</b> Dusk Survey & Walking Transect 19/7/2020 Static Surveillance – 2 static units, 5 nights
<b>Equipment</b>	All in good working order
<b>Access</b>	Limited access in 2020 due to on-going developments.

It is therefore deemed that the survey work completed is adequate in order to complete the aims of the bat survey.



## 3. Bat Survey Results

### 3.1 Daytime Inspections

#### 3.1.1 Building & Structure Inspection

There are no buildings within the proposed development site.

#### 3.1.2 Tree Potential Bat Roost (PBRs) Inspection

There are no trees considered to have a Potential Bat Roost value within the proposed development area.

#### 3.1.3 Bat Habitat & Commuting Routes Mapping

The proposed development sites is located within an area of a large degree of development. There are no mature treelines and few hedgerows and a large degree of street lighting. All of these reduces its suitability for local bat populations.

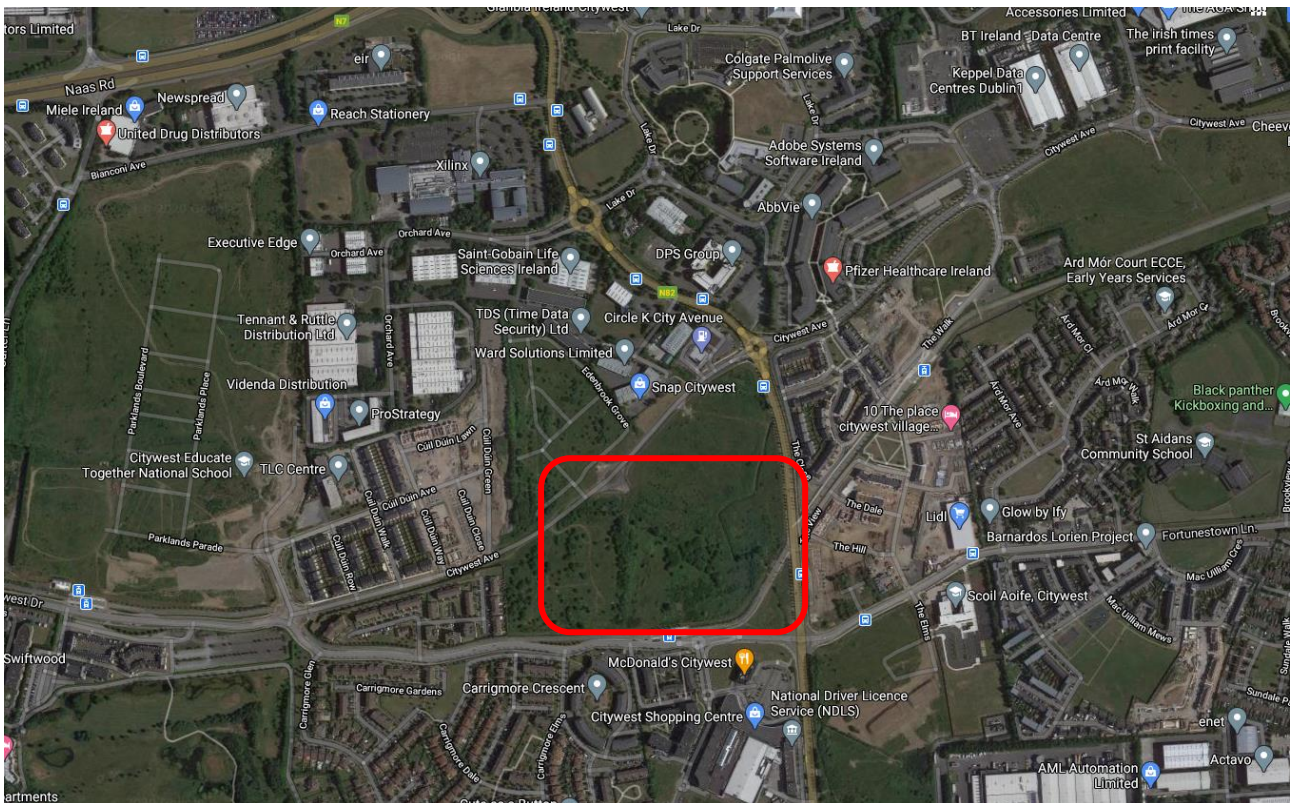


Figure 3: Aerial map of the proposed development site within the wider landscape (approximate area within red line) (source: Google Maps).

### 3.2 Night-time Bat Detector Surveys

Three dusk surveys, which included a walking transect element, were completed altogether. The results of these are presented below.

#### 3.2.1 Dusk Bat Survey 19/7/2020

One surveyor completed a dusk survey (walking transect) of the proposed development site. Only two species of bat was encountered: Common pipistrelle (1 pass) and Leisler's bat (6 passes).

#### 3.2.2 Dusk Bat Survey 14/8/2018

One surveyor completed a dusk survey (walking transect) of the proposed development site. Only one species of bat was encountered: Leisler's bat (2 passes).

#### 3.2.3 Dawn Bat Survey 15/8/2018

One surveyor completed a dusk survey (walking transect) of the proposed development site. No bats were recorded during the dawn bat survey. The bat encounter results for all three surveys are present on the following aerial photograph and this represents a low level of bat activity.



Figure 4: Aerial map of the proposed development site (source: Google Maps) Results: Orange = Leisler's bats; Red = Common pipistrelle.



### 3.2.4 Passive Static Bat Detector Survey

Static units were deployed in 2018 and 2020. These units were principally deployed to determine the level of bat activity along principal commuting routes and foraging habitats within the proposed development site. The results of this static surveillance is presented below. No bats were recorded on two units. Four bat species were recorded in 2018: common pipistrelle, soprano pipistrelle, Leisler's bats and *Myotis* species. In 2020, only three species of bat was recorded: common pipistrelle, soprano pipistrelle and Leisler's bats. Please see Appendix 1 for a breakdown of survey results for the 2020 surveillance.

**Table 7: Results of Static Bat Detectors deployed during Static Bat Detector Surveys 2018 & 2020.**

Static Code	Survey Period	Bat Species – no. of bat passes
<b>SM2 Unit 2</b>	14/8/2018 to 15/8/2018 (1 night)	CP – 4 passes Leis – 1 pass
<b>SM2 Unit 4</b>	14/8/2018 to 15/8/2018 (1 night)	No bats recorded
<b>BL Unit A</b>	14/8/2018 to 15/8/2018 (1 night)	CP – 8 passes SP – 1 pass Leis – 21 passes
<b>BL Unit B</b>	14/8/2018 to 15/8/2018 (1 night)	CP – 27 passes SP – 251 passes <i>Myotis</i> spp. – 9 passes
<b>SM Mini 1</b>	16/7/2020 to 20/7/2020 (5 nights)	No bats recorded
<b>SM Mini 2</b>	16/7/2020 to 20/7/2020 (5 nights)	Total number of bat passes of the 5 nights surveillance: CP – 5 passes SP – 4 passes Leis – 15 passes

Note: SP = Soprano pipistrelle, CP = Common pipistrelle, Leis = Leisler's bat.

As a general guide, activity level is determined as follows: Low = <10 bat passes/hr; Medium = >10 - <50 bat passes/hr; High = >50 bat passes/hr). The static units recorded for approximately 8 hours per night. Therefore the activity levels for each bat species is present in Table 7 and can be determined as follows:

- Common pipistrelle: Low in 2018 and 2020
- Soprano pipistrelle: Medium in 2018 at BL Unit B, Low for all other statics in 2018, Low in 2020
- Leisler's bat: Low in 2018 and 2020
- *Myotis* spp.: Low in 2018 and 2020

**NOTE:** The behaviour of bats during commuting and foraging greatly influences the level of bat passes recorded on static units. The number of bat passes do not equate to the number of bats flying past the static unit. Pipistrellus species tended to foraging as they commute and therefore are regularly observed flying up

*and down a treeline or hedgerow before moving on in the landscape. Leisler's bats fly high in the sky and therefore can be observed flying fast through the landscape, occasionally foraging over treetops as they commute. As a consequence, Pipistrellus species bat activity tends to result in a higher number of bat passes recorded on static units compared to Leisler's bats. In relation to other bat species recorded, as they tend to be less common in the landscape compared to common pipistrelles, soprano pipistrelles and Leisler's bats, their recorded presence is notable. Exceptions to this would include Daubenton's bats on a waterway or a static located adjacent to a known bat roost.*

The static unit BL Unit B was located along a dense treeline in 2018 and as consequence, there was a higher level of bat activity recorded compared to all other units. However, since 2018, the level of bat activity has decreased due to increased development in the general vicinity of the proposed development site.

### *3.2.5 Summary of Bat Activity*

Two species of bat was recorded during the dusk and dawn surveys and this was at a low level. While four bat species were recorded on the static units in 2018, only three bat species were recorded in 2020 and at a much lower level of bat activity in 2020 compared to 2018. No roosts or potential roosts were recorded in trees located within the proposed development site.

## **3.3 Desktop Review**

### *3.3.1 Bat Conservation Ireland Database*

A 1km radius of the Irish grid Reference O051273 was received from Bat Conservation Ireland.

The results are as follows:

There are four Ad Hoc bat detector records for the following bat species:

- soprano pipistrelles, common pipistrelles and Leisler's bats.



## 4. Bat Ecological Evaluation

### 4.1 Bat Species Recorded

Three bat species were recorded in total by the array of bat surveys completed for the proposed development site with an additional bat species (*Myotis* spp) recorded adjacent to the proposed development site during the static surveillance of 2018.

Three of the bat species recorded were common pipistrelle, Leisler's bat and soprano pipistrelle and these are the three most common bat species in Ireland. The level of bat activity for these three species was at a low level within the proposed development area for surveys completed in 2018 and 2020. One static unit located adjacent to the site in 2018 (where the *Myotis* spp. was recorded) was the only unit that had a medium level of soprano pipistrelle bat activity level.

*Myotis* spp. was recorded in low numbers along a mature treeline (static unit surveillance) adjacent to the proposed development site but this species was not encountered in 2020.

Bat activity recorded was considered to be primarily commuting bats in 2020 due to limited foraging habitat available. Overall in 2020, the level of bat activity could be considered as Low level for the proposed development site.

In relation to the bat evidence collected by this report, it is deemed, according to Table 2 (Section 1.2), that the bat populations recorded within the survey area are of negligible value.

### 4.2 Bat Foraging Habitat & Commuting Routes

The proposed development site is currently comprised of disturbed grassland with some tall vegetation. There is little connectivity within the proposed development site for commuting and foraging bat populations. Bat activity recorded was considered to be primarily commuting bats in 2020 due to limited foraging habitat available.

### 4.3 Zone of Influence – Bat Landscape Connectivity

The proposed development site is currently comprised of disturbed grassland with tall vegetation. There is little connectivity in the wider landscape for commuting and foraging bat populations.

## 5. Impact Assessment & Mitigation

Three bat species were recorded in total by the array of bat surveys completed for the proposed development site with an additional bat species (*Myotis* spp.) recorded adjacent to the proposed development site during the static surveillance of 2018. This represents four of the nine resident bat species known to Ireland.

### 5.1 Impact Assessment - Loss of bat roosts

There are no roosts or potential roosts within the proposed development site and therefore there will be no loss of roosts.

### 5.2 Impact Assessment – Foraging & Commuting Habitats

There is minimal linear habitats present within the proposed development site and therefore the proposed development site has a low value for local bat populations in relation to foraging and commuting.

### 5.3 Impact Assessment – Construction of residential development

The construction of the proposed residential development will potentially increase the degree of light (both street and residential lighting) within the area. However, the general area of Citywest is developed with a wide array of street lighting currently in place.

### 5.4 Landscape Plan

The landscape plan aims to increase linear habitats with treelines planted along the eastern boundary and an array of single trees to be planted in various areas of the proposed development site (Figure 5a). In addition, there is a proposed recreational area, Local Park and a buffer planting area along the stream (eastern boundary) and this will be linked in with planned Neighbourhood Park. As a result the landscape plan will enhance the area for local bat populations.

### 5.5 Lighting Plan

The proposed street lighting plan shows that the luminance level will range from 1.11 to 16.37 LUX (Figure 5b). The three bat species recorded in 2020 are species considered to be light tolerant. However the maximum LUX levels quoted would potentially impact on local bat populations as the bat species recorded tend to be tolerant of approximately 5 LUX levels. But due to the spacing of the luminaires, there are gaps of 3 LUX or lower in between the luminaires which will allow the three bat species recorded in 2020 to commute through the proposed development area and to utilise the planned Neighbourhood Park.



Figure 5a: Landscape Plan for proposed development site (Source: 1846\_PL\_P\_01\_RevC(1).pdf).

In relation to Section 5.7.3, the Red Circles are potential locations of Habitat Rocket Bat Boxes. See Section 5.7.3 for more details.



# Horizontal Illuminance (lux)

Grid 1



## Results

Eav	5.06
Emin	1.11
E <sub>max</sub>	16.37
E <sub>min</sub> /E <sub>max</sub>	0.07
E <sub>min</sub> /E <sub>av</sub>	0.22

Figure 5b: Street Lighting Plan for proposed development site (Source: Sabre Electrical Services Ltd.).

## 5.6 Impact Assessment – Overall

The potential impact of the proposed development is considered to be Minor due to the low level of bat activity recorded within the proposed development area.

**Table 13a: Potential impact of the proposed development on the different bat species recorded during survey work.**

Works	SP	CP	Leis
<b>Lighting of development area</b>	Minor	Minor	Minor
<b>Removal of existing vegetation</b>	Minor	Minor	Minor
<b>Operation of the development site</b>	Minor	Minor	Minor
<b>Infrastructure</b>	Minor	Minor	Minor
<b>Landscape Plan – Planting</b>	Positive	Positive	Positive

SP = soprano pipistrelle, CP = common pipistrelle, Leis = Leisler's bat.

However, the proposed Landscape Plan will have a positive impact on local bat populations. To allow bats to avail of this landscaped area, it is important that measures listed in relation to the BCT Lighting Guidelines (2018) is adhered to, where possible.

## 5.7 Mitigation Measures

The following mitigation measures are recommended to reduce the potential impact of the proposed development on local bat populations, to protect local bat populations during proposed works and to conserve local bat populations post residential development.

### 5.7.1 Lighting Plan

It is important that any proposed lighting for the proposed residential development is wildlife friendly. Nocturnal mammals are impacted by lighting. Therefore it is important that lighting installed within the proposed development site is completed with sensitivity for local wildlife while still providing the necessary lighting for human usage. It is also important that developments reduce their impact on the night sky and reduce sky glow. The “Dark Sky” principal should be followed – i.e. no upward lighting to reduce light pollution. The following principles should be followed:

- Luminaire design for any street lighting or lighting on buildings is extremely important to achieve an appropriate lighting regime. Luminaires come in a myriad of different styles, applications and specifications which a lighting professional can help to select. The following should be considered when choosing luminaires. This is taken from the most recent BCT Lighting Guidelines (BCT, 2018).
  - o All luminaires used will lack UV/IR elements to reduce impact.
  - o LED luminaires will be used due to the fact that they are highly directional, lower intensity, good colour rendition and dimming capability.
  - o A warm white spectrum (<2700 Kelvins will be used to reduce the blue light component of the LED spectrum).
  - o Luminaires will feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats.
  - o Column heights should be carefully considered to minimise light spill. The shortest column height allowed should be used where possible. Ballard lighting should be considered for pedestrian and greenway areas, if deemed necessary.

- Only luminaires with an upward light ratio of 0% and with good optical control will be used.
- Luminaires will be mounted on the horizontal, i.e. no upward tilt.
- Any external security lighting will be set on motion-sensors and short (1min) timers. The intensity of external lighting should be limited to ensure that skyglow does not occur in order to reduce light pollution.
- As a last resort, accessories such as baffles, hoods or louvres will be used to reduce light spill and direct it only to where it is needed.

### 5.7.2 *Landscape Plan*

The draft landscape plan includes the following proposals:

- Development of links to a Neighbourhood Park.
- Development of a Local Park.
- Planting of native tree and shrub plant species.
- New treelines and hedgerows along the eastern boundary of the proposed development site, particularly linking in with the Neighbourhood Park.

### 5.7.3 *Biodiversity Enhancement Measures*

It is recommended to erect two Habitat Rocket Bat Boxes within the buffer zone along the stream. This will provide roosting sites for local bat populations. These should be located in dark zones adjacent to tall vegetation proposed to be planted as part of the landscaping (Potential locations are marked with Red Circles on Figure 5a). Please see Appendix 2 for information on this alternative roost.

As a general note in relation to the Citywest area, consideration towards connecting the numerous green areas (e.g. ponds and parks etc.) with treelines and hedgerows should be undertaken as part of a biodiversity management of the whole area coupled with appropriate wildlife friendly street lighting (with connected dark zones).

### 5.7.4 *Monitoring*

Monitoring is recommended post-construction works. This monitoring should involve the following aspects:

- Monitoring of any bat mitigation measures. All mitigation measures should be checked to determine that they were successful. A full summer bat survey is recommended post-works.

If the mitigation measures recommended in this report are strictly followed the potential impact of the proposed development on local bat populations will be reduced to Negligible.

## 6. Bat Assessment Conclusions

This report provides information on the bat usage of the proposed development site. A total of three bat species were recorded within the proposed development site: common pipistrelle, Leisler's bat, soprano pipistrelle. An additional bat species was recorded on the static units in 2018 along a treeline adjacent to the proposed development site.

The proposed development site is a small area and is occasionally used a commuting route and foraging area for three species of bat. A low level of bat activity was recorded within the proposed development site. It is considered that the proposed development site is of low value for local bat populations.

The lighting plan will ensure that the guidelines recommended by BCT, 2018 will be implemented and therefore reducing the impact of the lighting plan on local bat populations.

The landscape plan aims to increase linear habitats with treelines planted along the eastern boundary and an array of single trees to planted in various areas of the proposed development site (Figure 5a). In addition, there is a proposed recreational areas, Local Park and a buffer planting areas along the stream (eastern boundary) and this will be linked in with planned Neighbourhood Park. As a result the landscape plan will enhance the area for local bat populations.

Therefore the proposed development, if all mitigation measures including the Lighting Plan, Landscape Plan are strictly adhered to, will likely have a Negligible impact on local bat populations.



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## 8. Appendices

### Appendix 1 Static Surveillance Results

Date	SP	CP	Leis
16/07/2020	0	0	0
17/07/2020	0	0	0
18/07/2020	0	0	0
19/07/2020	0	0	0
20/07/2020	0	0	0
SM4U4	<b>0</b>	<b>0</b>	<b>0</b>

Mini 1 Citywest

Date	SP	CP	Leis
16/07/2020	0	2	5
17/07/2020	0	0	0
18/07/2020	4	3	10
19/07/2020	0	0	0
20/07/2020	0	0	0
SM4U4	<b>4</b>	<b>5</b>	<b>15</b>

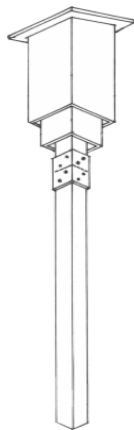
Mini 2 Citywest

### Appendix 2

#### A) Alternative Bat Roosting (Tree Mitigation)

##### Habitat Double Chambered Rocket Box

*Pole-mountable bat box to provide extensive roosting space*



(please view on [www.nhbs.com](http://www.nhbs.com))

- Rocket boxes are erected on 5m mild steel box poles set in 1m x 1m concrete (45 newton) ensuring that there is 4m of pole above ground. Rocket bat box are secured on top of this steel pole.

## 9. Species Profiles

### Leisler's bat

This bat species was recorded commuting through the proposed development site. Ireland's population is deemed of international importance and the paucity of knowledge of roosting sites, makes this species vulnerable. However, it is considered to be widespread across the island. The modelled Core Area for Leisler's bats is a relatively large area that covers much of the island of Ireland (52,820km<sup>2</sup>). The Bat Conservation Ireland Irish Landscape Model indicated that the Leisler's bat habitat preference has been difficult to define in Ireland. Habitat modelling for Ireland shows an association with riparian habitats and woodlands (Roche *et al.*, 2014). The landscape model emphasised that this is a species that cannot be defined by habitats preference at a local scale compared to other Irish bat species but that it is a landscape species and has a habitat preference at a scale of 20.5km. In addition, of all Irish bat species, Leisler's bats have the most specific roosting requirements. It tends to select roosting habitat with areas of woodland and freshwater.

Irish Status	Near Threatened
European Status	Least Concern
Global Status	Least Concern
Biographical Range	km <sup>2</sup>
Irish Population Trend	2003-2013 ↑
Estimated Irish Population Size	73,000 to 130,000 (2007-2013) Ireland is considered the world stronghold for this species
Estimate Core Area (Lundy <i>et al.</i> 2011)	52,820 km <sup>2</sup>

Taken from Roche *et al.*, 2014, Lysaght & Marnell, 2016 & NPWS, 2019

The principal concerns for Leisler's bats are poorly known in Ireland but those that are relevant for this survey area are as follows:

- Selection of maternity sites is limited to specific habitats;
- Relative to the population estimates, the number of roost sites is poorly recorded;
- Tree felling, especially during autumn and winter months; and
- Increasing urbanisation.

### Common pipistrelle

This species was the most recorded species along the proposed development site and it generally considered to be the most common bat species in Ireland. The species is widespread and is found in all provinces. The modelled Core Area for common pipistrelles is a large area that covers much of the island of Ireland (56,485km<sup>2</sup>) which covers primarily the east and south east of the area (Roche *et al.*, 2014). The Bat Conservation Ireland Irish Landscape Model indicated that the Common pipistrelle selects areas with broadleaf woodland, riparian habitats and low density urbanization (<30%) (Roche *et al.*, 2014).

Irish Status	Least Concern
European Status	Least Concern
Global Status	Least Concern
Biographical Range	km <sup>2</sup>
Irish Population Trend	2003-2013 ↑
Estimated Irish Population Size	1.2 to 2.8 million (2007-2012)
Estimate Core Area (km <sup>2</sup> ) (Lundy <i>et al.</i> 2011)	56,485

Taken from Roche *et al.*, 2014, Lysaght & Marnell, 2016 & NPWS, 2019

Principal concerns for Common pipistrelles in Ireland that are relevant for this survey area are as follows:

- Lack of knowledge of roosting requirements
- This species has complex habitat requirements in the immediate vicinity of roosts. Therefore, careful site specific planning for this species is required in order to ensure all elements are maintained.
- Renovation or demolition of derelict buildings.
- Tree felling
- Increasing urbanisation (e.g. increase in lighting)

#### Soprano pipistrelle

This species was the second most recorded species along the proposed development site and it generally considered to be the second most common bat species in Ireland. The species is widespread and is found in all provinces, with particular concentration along the western seaboard. The modelled Core Area for soprano pipistrelle is a large area that covers much of the island of Ireland (62,020km<sup>2</sup>). The Bat Conservation Ireland Irish Landscape Model indicated that the soprano pipistrelle selects areas with broadleaf woodland, riparian habitats and low density urbanisation (Roche *et al.*, 2014).

Irish Status	Least Concern
European Status	Least Concern
Global Status	Least Concern
Biographical Range	km <sup>2</sup>
Irish Population Trend	2003-2013 ↑
Estimated Irish Population Size	0.54 to 1.2 million (2007-2012)
Estimate Core Area (km <sup>2</sup> ) (Lundy <i>et al.</i> 2011)	62,020

Taken from Roche *et al.*, 2014, Lysaght & Marnell, 2016 & NPWS, 2019

Principal concerns for Soprano pipistrelles in Ireland that are relevant for this survey area are as follows:

- Lack of knowledge of roosts;
- Renovation or demolition of structures;
- Tree felling; and
- Increasing urbanisation (e.g. increase in lighting).