A Bat Assessment of The Proposed Housing Development, Kilmashogue, County Dublin and an Evaluation for Potential Impacts on the Bat Fauna

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May 2019

Introduction

Bats are a widespread element of the Irish fauna. They are known to occur from much of the rural landscape and to a lesser extent, the urban environment and here they occupy buildings and occasionally trees for short or long periods. Houses and other buildings are a vital element of the annual cycle of all Irish bat species and at no time more so than the period May to August, but many bats may also avail of buildings as hibernation sites. In sites such as the proposed development site where there are several buildings, there is the potential for roosting within any one of the buildings if appropriate conditions are met to provide safe shelter from the elements and predation. Furthermore, trees within the site proposed for development may have roost potential. Changes to a site including demolition or building repair and restoration, tree and hedgerow removal may destroy roosts, placing bats at risk during such procedures and may reduce the options available to bats as a roosting site and may also affect their feeding and commuting activity.

Bats are protected by Irish and EU law and to prevent unlawful injury or death, it is essential that a full understanding of the site is available in advance to protect the resident bats from unintentional disturbance, injury or death and to create a pathway by which a legal derogation and exemption may be designed in consultation with the National Parks and Wildlife Service of the Department of Culture, Heritage, and the Gaeltacht.

The site at Kilmashogue will undergo a change from an agricultural landscape bounded by golf course to the east, M50 to the south and open lands to the west. There will be vegetation clearance from some areas including tree felling and hedgerow removal and the construction of a large number of buildings in addition to the demolition of the existing buildings. A new road would be constructed through the site introducing traffic to the site. This will change the nature of the site (which has been previously greatly altered by the construction of the M50) by removing the agricultural lands.

This assessment will address the potential for bat roosting within the site and identify the potential for impacts upon bat feeding and commuting within the lands that form the proposed site of construction based entirely upon a visual assessment of the lands and a walkover survey to determine the potential for roost sites within the trees on site.

Surveying in May is a suitable period to look at the commencement of the breeding season when the single annual young are born and when females form the largest roost type (in the Irish context); the maternity roost. These roosts are typically in close proximity or within areas of good feeding. A bat detector assessment at this time can disclose the value of a site for feeding and how bats avail of a site in commuting to and from important sites including feeding sites and roosts.

Methodology

The proposed development site at Kilmashogue, County Dublin was examined from sunset for over 1.5 hours on 9th May 2019 and again for over one hour up to sunrise on 23rd May 2019 to assess the site for bat usage and bat activity.

The bat detector assessment that commenced prior to sunset was undertaken equipped with an Echometer 3 (EM3) full spectrum receiver with a screen displaying the ultrasonic signals received and also recording all ultrasonic signals received to a SD card for later analysis. The surveyor walked around the perimeter of all buildings and the adjoining laneway and the field to the rear of the buildings from 21.00 hours immediately prior to sunset (21.09 hours). A second detector, a Songmeter2BAT+ (SM2) was positioned outside the farm buildings within the site and remained here until surveying ceased at 23.10 hours. A driven transect within the area was undertaken to determine if bats were active on the night of survey.

The lane, field and garden were walked in its entirety. Due to low bat activity, the survey was terminated and re-scheduled for continuation on a later date to ensure a good spread across weather conditions as temperatures overnight were due to fall considerably (approaching 0^{o} Celsius.

Surveying recommenced at 04.00 hours on 23rd May 2019 and examined the bat activity within the surrounding area prior to the survey within the site. Prior to sunrise, having completed a driven transect of the surrounding roads, the buildings were examined and observed, and the field was again walked, and any bat activity noted, and any obvious direction of movement was considered to determine if roost sites are close to the site.

A SM2 was placed on the southern edge of the house to check for bat activity within the site from 04.10 hours up to sunrise.

Survey Constraints

The weather conditions in May varied, making assessment of bat activity within the site more difficult. The night of 6th May was cool (6^{o}C) and dry and descended to 0 ^{o}C by sunrise. The pre-dawn assessment on 23rd May was in good weather conditions with a temperature of 11^{o}C by sunrise at 05.11 hours.

Existing Environment

Species of bat roosting within the site

None

No bats were seen or heard to emerge from the buildings or were noted in an area close to the buildings close to sunset (at or before sunset would indicate proximity to a roost for Leisler's bat and up to 15 minutes later than this for pipistrelles).

Prior to sunrise on 23rd May, a soprano pipistrelle was noted at 04.49 hours and a second sighting was made at 04.53 hours. With sunrise at 05.11 hours, this would suggest close proximity to a roost site.

Species of bat feeding within and around the site

Common pipistrelle	*Pipistrellus pipistrellus*
Leisler's bat	*Nyctalus leisleri*
Soprano pipistrelle	*Pipistrellus pygmaeus*

Potential Impacts

Loss of cover for feeding and commuting

As bats most commonly feed along hedgerow and treelines and both trees and hedges provide shelter from wind and visibility to predators, the removal of vegetation can affect how a bat commutes through a site and feeds within the site. This may lead to a bat needing to fly over greater distances to find food and roosts.

Increased light levels within the area

Housing requires lighting for access and safety and for convenience and display and this development would see the introduction of street lighting, house lighting, garden lighting and a reduction in the dark areas wherein most bat activity occurs.

Impacts of changes to the site on resident and local bats

The reduction in cover and lighting alterations to the site will have a long-term to permanent slight negative impact on the bat population of the region. This will act cumulatively with other changes to the area associated with housing or other construction.

Proposed Mitigation

Re-examination of all buildings for bats if still in place in 2020

To ensure that bats have not entered the buildings and are not placed at risk following a delay in demolition, all buildings shall be re-checked if demolition does not complete before the end of 2019.

Planting of vegetation

Wherever there is an opportunity to provide vegetative cover, native and local plant species should be employed including typical plants such as oak (the greatest value for most wildlife), hawthorn, blackthorn, elder, gorse, bramble, in addition to other species such as dog rose with an encouragement of species such as Clematis and other species attractive to moths.

Lighting

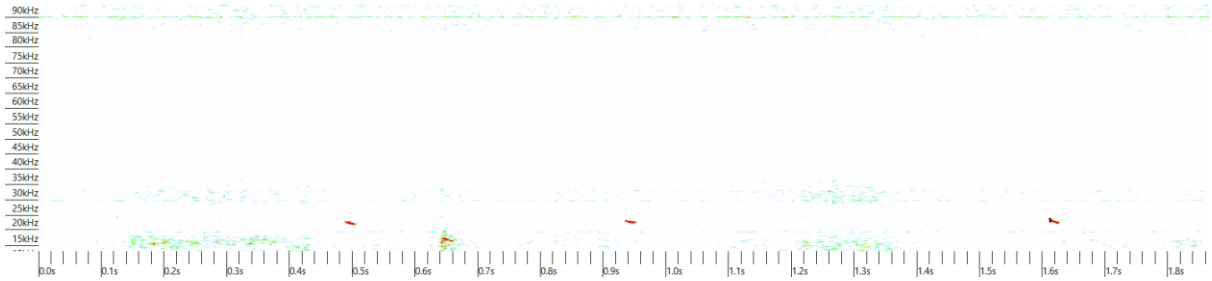
Lighting should be controlled to avoid light pollution of green areas and should be targeted to areas of human activity and for priority security areas. Motion-activated sensor lighting is preferable to reduce light pollution. None of the remaining mature trees or trees proposed for planting shall be illuminated.

- Dark corridor for movement of bats along the grounds of the site. Lighting should be directed downwards away from the treetops.
- All luminaires shall lack UV elements when manufactured and shall be LED
- A warm white spectrum (ideally <2700 Kelvin) shall be adopted to reduce blue light component
- Luminaires shall feature peak wavelengths higher than 550nm
- Tree crowns shall remain unilluminated
- Planting shall provide areas of darkness suitable for bats to feed and commute

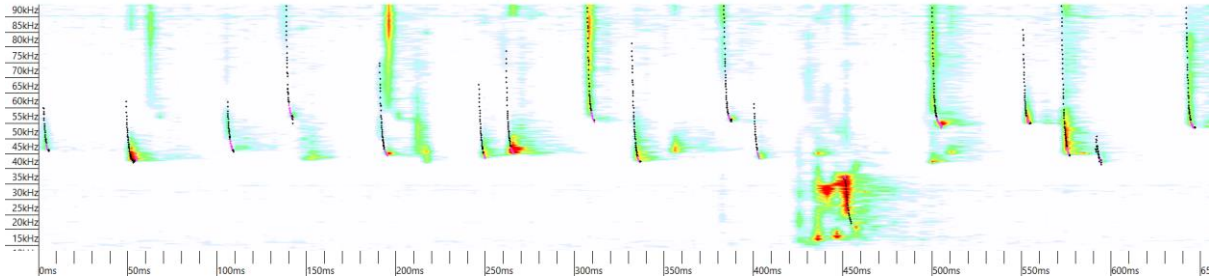
Impacts Upon Bats Following Mitigation

Given the likelihood that further development will follow this proposal, it is predicted that there will be a slight to moderate negative impact upon bats within the area of long-term to permanent duration.

There are no rare bat species within the site and low bat activity and there are no roosts lost from the proposal. Measures to limit light pollution and plant trees and shrubs sensitively will ensure some feeding can continue within and around the site but this was limited in May 2019.



Faint Leisler's bat signal at 21.42 hours recorded from within the site on 9th May 2019



Common and soprano pipistrelle with soprano pipistrelle social call along the road outside the site entrance at 23.01 hours

BCIreland data: search results 30 May 2019					
Search parameters: Roosts Transects Ad-hoc observation sites with observations of all bats within 1000m of O1463825674.					
Roosts					
Name	Grid reference	Address	Species observed		
Whitechurch Church of Ireland	O147257	Whitechurch; County Dublin	Plecotus auritus		
Ad-hoc observations					
Survey	Grid reference	Date	Species		
Dublin Bat Group surveys	O1526	18/08/1999	Nyctalus leisleri		
EIS and Road Surveys - Conor Kelleher	O1500026000	22/06/2005	Pipistrellus pipistrellus (45kHz); Pipistrellus pygmaeus		
EIS and Road Surveys - Conor Kelleher	O1500025000	22/06/2005	Pipistrellus pipistrellus (45kHz); Pipistrellus pygmaeus		
EIS surveys - Brian Keeley	O1555026200	01/06/2004	Myotis daubentonii; Myotis mystacinus; Myotis mystacinus/brandtii; Nyctalus leisleri; Pipistrellus pipistrellus (45kHz); Pipistrellus pygmaeus		
Faith Wilson	O1424	02/09/2009	Myotis nattereri; Myotis spp.; Nyctalus leisleri; Pipistrellus pipistrellus (45kHz); Pipistrellus pygmaeus; Pipistrellus spp. (45kHz/55kHz); Plecotus auritus		
Niamh Roche	O1526	28/07/1999	Nyctalus leisleri; Pipistrellus pipistrellus (45kHz); Pipistrellus pygmaeus		

Bat activity Kilmashogue May 9th, 2019 and within the site on May 23rd, 2019

Legend

Green circle	Common pipistrelle		
Blue arrow	Soprano pipistrelle travelling along perimeter hedge		
Blue circle	Soprano pipistrelle	Dark blue circle	Both Common and Soprano pipistrelle
Yellow circle	Leisler's bat	Yellow arrow	Leisler's bat travelling along perimeter hedge

Table 1: Bat data recorded om EM3 on 9th May 2019 (all outside of the site)
There was no data from the SM2 positioned within the site

DATE	TIME	AUTO ID	MANUAL ID
09/05/2019	21:42:50	NYLE	NYLE
09/05/2019	22:58:52	PIPI	PIPI PIPY
09/05/2019	22:59:22	PIPY	PIPY
09/05/2019	22:59:52	PIPY	PIPY
09/05/2019	23:00:22	PIPY	PIPY
09/05/2019	23:00:55	PIPY	PIPY
09/05/2019	23:01:25	PIPI	PIPI PIPY
09/05/2019	23:04:27	PIPI	PIPI PIPY
09/05/2019	23:04:57	PIPY	PIPI PIPY
09/05/2019	23:05:57	PIPY	PIPY
09/05/2019	23:06:27	PIPI	PIPI
09/05/2019	23:06:57	PIPI	PIPI
09/05/2019	23:07:27	PIPI	PIPI

Bat data recorded on SM2 within site prior to sunrise on 23rd May 2019

DATE	TIME	AUTO ID	MANUAL ID
23/05/2019	04:35:01	NoID	PIPI
23/05/2019	05:01:31	NYLE	NYLE

Bat data recorded on EM3 around and within site prior to sunrise on 23rd May 2019

DATE	TIME	AUTO ID	MANUAL ID
23/05/2019	03:54:49	PIPI	PIPI
23/05/2019	03:55:49	PIPY	PIPY
23/05/2019	03:56:50	PIPY	PIPY
23/05/2019	03:57:20	PIPY	PIPY
23/05/2019	03:58:50	PIPI	PIPI
23/05/2019	04:01:21	PIPY	PIPI PIPY
23/05/2019	04:04:52	PIPI	PIPI
23/05/2019	04:05:22	PIPY	PIPY NYLE
23/05/2019	04:05:52	PIPY	PIPY
23/05/2019	04:06:22	PIPI	PIPI PIPY
23/05/2019	04:06:53	PIPI	PIPI

23/05/2019	04:08:53	PIPI	PIPI
23/05/2019	04:09:23	PIPY	PIPY
23/05/2019	04:09:53	PIPY	PIPI PIPY
23/05/2019	04:49:22	PIPY	PIPY
23/05/2019	04:53:23	PIPY	PIPY
23/05/2019	04:59:25	NYLE	NYLE