

August
2023

Bat & Bird Survey Report

102025-ASH-SU-Z-0001-XX-XX

Rev 02



**Dalymount Park
Dalymount,
Phibsborough,
Dublin 7**



ASH Ecology & Environmental

Contents

1. INTRODUCTION	4
1.1 Purpose of the Report	4
1.2 Competency of Assessor	10
1.3 Bat Legislation	11
1.4 Derogation licences	11
2. METHODOLOGY	13
2.1 Information Sources	13
2.2 Desk Study	14
2.2.1 Previous Records – Bats & Protected Birds	14
2.2.2 Bat Species Background	17
2.2.3 Landscape Suitability	19
2.2.4 Bat Roosts	20
2.3 Bat Survey	21
2.4 Nesting Bird Survey	26
2.5 Landscape Evaluation	27
3. RESULTS	28
3.1 Site Overview	28
3.2 Bat Survey	28
3.3 Nesting Bird Survey	32
3.4 Landscape Evaluation	32
4. RECOMMENDATIONS	33
4.1 Buildings	33
4.2 Tree Removal	33
4.3 Lighting for Bats	33
4.4 Future Nesting & Roosting Opportunities	34
4.4.1 Bat Boxes	34
4.4.2 Bird Boxes	35
5. CONCLUSION	35

Tables

Table 1	Historical Bat Records in 10km ² Grid Ref O13 (NBDC website www.nbdc.ie accessed 15/06/2023)
Table 2	Historical Bird (protected) Records in 10km ² Grid Square 013 (NBDC website www.nbdc.ie accessed 15/06/2023)
Table 3	Suitability of the study area for the bat species found in the Dalymount area (based on the NBDC data) with Irish Red list status indicated.
Table 4	Guidelines for assessing the potential suitability of proposed development sites for bats, based on the presence of roost features within the landscape, to be applied using professional judgement.
Table 5	Classification and Survey Requirements for Bats in Trees
Table 6	Bat Results Summary Data –September 13 th 2021 & June 8 th 2023

Figures

Figure 1	Site Location Map
Figure 2	Aerial Photo of Site showing existing layout and surrounding landscape
Figure 3	Existing Site Layout
Figure 4	Proposed Site Layout
Figure 5	Demolition Plan
Figure 6	Bat Activity Map with legend – September 13 th 2021
Figure 7	Bat Activity Map with legend – June 8 th 2023

Appendices

Appendix A	Plates (September 2021 & June 2023)
Appendix B	Bat Data (September 2021 & June 2023)
Appendix C	Bat and Bird Box Suggestions

1. INTRODUCTION

1.1 Purpose of the Report

Ash Ecology and Environmental Ltd (AEE) was commissioned to carry out a bat and nesting bird survey on behalf of Dublin City Council (DCC) during September 2021, and updated during June 2023 as part of the proposed redevelopment of Dalymount Park.

The proposed development is located at Dalymount Park Football Ground, Phibsborough, Dublin 7 (Grid Ref 53.361795, -6.274870); see Figure 1. An aerial photo with existing layout and surrounding landscape is shown as Figure 2. The existing site layout (schematic) is shown as Figure 3 with the proposed layout as Figure 4.

The proposed redevelopment will include the demolition of all buildings, felling of 1 No. mature tree and the lighting pylons are to be removed, see Figure 5 for demolition plan.

The site is currently used a stadium for Bohemians Football Club. The stadium consists of a main stand (Jodi Stand), the Des Kelly Stand, North and East terraces together with a number of small out-buildings. There are 4 no. Existing flood lit pylons on site to the east and west, together with car parking and a tree to the west adjoining the Des Kelly Stand.

The site is surrounded by residential roads to the south, west and north. To the east, the site borders onto the Phibsborough Shopping Centre including an 8-storey building and a two-storey car park.

The redevelopment of Dalymount Park will consist of:

The proposed development will consist of:

- i. The demolition of the existing stadium and structures located on the site;
- ii. The development of a new c.8,066 capacity stadium with provision for c. 6,272 seats and c.1,794 standing and new modern floodlighting;
- iii. Reorientation of the pitch to a North/South Axis (105m x 68m) and installation of a new sand based grass pitch;
- iv. A basement area (640 sq.m) to facilitate competition area changing rooms and facilities;
- v. The provision of modern match-day facilities for teams and officials;
- vi. Club offices & a merchandise shop for the anchor tenants Bohemian FC;
- vii. The provision of a stadium bar/function room;
- viii. The provision of 12 car parking spaces and 25 bicycle spaces within the site;
- ix. A community facility with an area of 673sq.m over two floors to include a multi-functional community room and a community gym;
- x. The provision of a public plaza and public thoroughfare along the eastern boundary to include various shops and eateries; and
- xi. All associated plant, substation, waste storage, landscaping, boundary treatment, lighting and all ancillary site works to facilitate the proposed development.

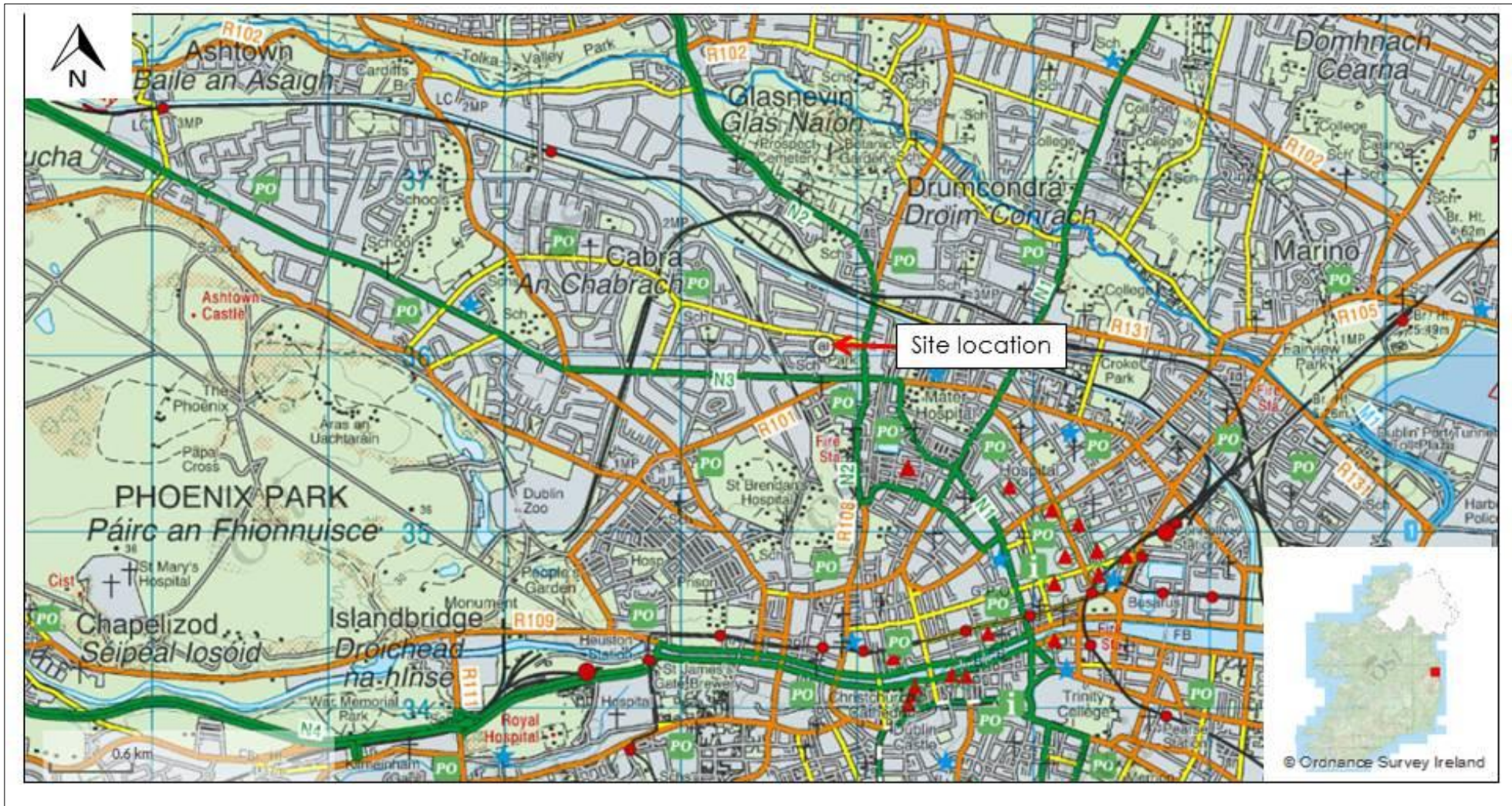


Figure 1 Site Location Map



Figure 2 Aerial Photo of Site showing existing layout and surrounding landscape



Figure 3 Existing Site Layout



Figure 4 Proposed Site Layout

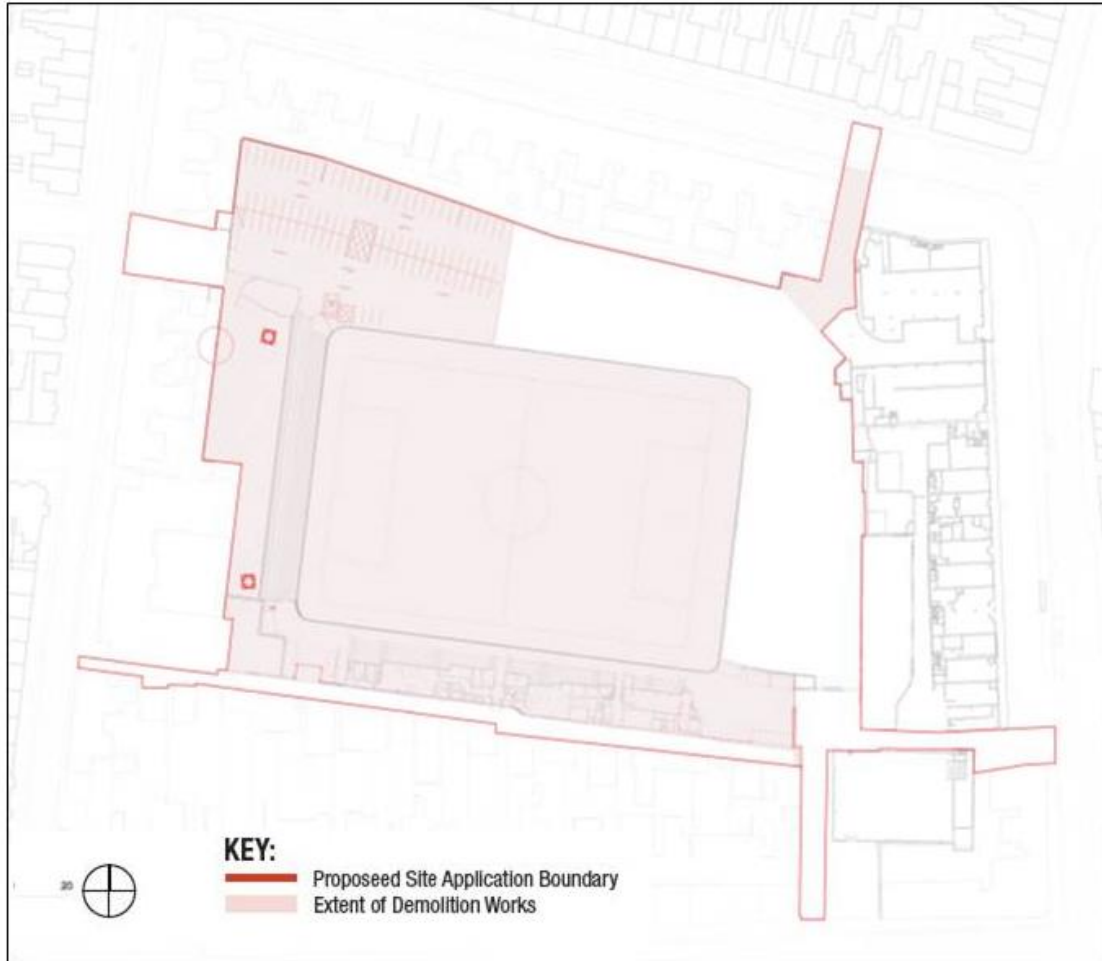


Figure 5 Demolition Plan

1.2 Competency of Assessor

This report has been prepared by Ash Ecology & Environmental Ltd (AEE) whose managing director and leading ecologist is Aisling Walsh who is a full member of the Chartered Institute of Ecological & Environmental Management (CIEEM) while the company, AEE, is a Registered Practice by the CIEEM.

Aisling's qualifications include M.Sc. (Dist) in Biodiversity and Conservation (TCD) and B.Sc. (Hons) Zoology (NUIG), a diploma in Applied Aquatic Science (GMIT) and a Certificate in Applied Biology (GMIT). Aisling has over 16 years of experience providing environmental consultancy and environmental assessment services. Aisling has written numerous Ecological Impact Assessments (EIA), Screening for Appropriate Assessment Stage I and Stage II Natura Impact Statements, chapters for Environmental Impact Assessments/Statements (EIAR), Badger Surveys, Bat Surveys, Bird and Habitat Surveys. Academically Aisling has also spent several years working in Forestry and Biodiversity Research at TCD (BIOPLAN and FORESTBIO programmes) and as a Teaching Assistant in the Life Sciences Department of the University of Limerick.

Aisling is a licenced bat ecologist (example of recent: DER/BAT 2020 – 46 EUROPEAN, DER/BAT 2020 – 48 EUROPEAN, DER/BAT 2021 – 89, DER/BAT 2022 – 12, DER/BAT 2023 – 23) and a member of Bat Conservation Ireland. In addition she has completed several bat courses to continue her training and CPD with the most recently (May 2021) a Lantra-accredited course, developed by the Bat Conservation Trust and supported by the Arboricultural Association to access bat tree roost features. Over the past 16 years Aisling has completed 100s of bat surveys providing her with more than adequate experience in the profession.

1.3 Bat Legislation

In view of their sensitive status across Europe, all species of bat have been listed on Annex IV of the EC 'Habitats and Species Directive' and some, such as the lesser horseshoe bat, are given further protection and listed on Annex II of this Directive. This Directive was transposed into Irish law as the European Communities (Natural Habitats) Regulations, 1997, and combined with the Wildlife Acts (1976 to 2018), ensures that individual bats and their breeding sites and resting places are fully protected. This has important implications for those who own or manage sites where bats occur.

All bat species are protected under the Wildlife Acts 1976-2018 which make it an offence to wilfully interfere with or destroy the breeding or resting place of these species; however, the Acts permit limited exemptions for certain kinds of development.

All species of bats in Ireland are listed on Schedule 5 of the 1976 Act, and are therefore subject to the provisions of Section 23, which make it an offence to:

1. *Intentionally kill, injure or take a bat,*
2. *Possess or control any live or dead specimen or anything derived from a bat,*
3. *Wilfully interfere with any structure or place used for breeding or resting by a bat,*
4. *Wilfully interfere with a bat while it is occupying a structure or place which it uses for that purpose.*

1.4 Derogation licences

In order to obtain a licence to allow the destruction of bat roosts etc., in advance of any otherwise legitimate development which may impact on the favourable conservation status of bats, Section 25 of the Habitats Regulations must be satisfied along with Regulation 54 of S.I. 477 (2011):

A derogation licence may only be granted:

- (a) Where there is no satisfactory alternative and
- (b) the derogation is not detrimental to the maintenance of the populations of the species to which the Habitats Directive relates at a favourable conservation status in their natural range.

Where both conditions are satisfied, the derogation licence may only be granted where it is—

- (a) in the interests of protecting wild fauna and flora and conserving natural habitats,
- (b) to prevent serious damage, in particular to crops, livestock, forests, fisheries and water and other types of property,
- (c) in the interests of public health and public safety, or for other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment,

-
- (d) for the purpose of research and education, of repopulating and reintroducing these species and for the breeding operations necessary for these purposes, including the artificial propagation of plants, or
- (e) to allow, under strictly supervised conditions, on a selective basis and to a limited extent, the taking or keeping of certain specimens of the species to the extent specified therein, which are referred to in the First Schedule.

The first aim of the developer, working with professional advice, should be to entirely avoid or minimise the potential impact of a proposed development on bats and their breeding and resting places.

Current NPWS advice is that there should be no net loss in local bat population status, taking into account factors such as population size, viability and connectivity.¹ Hence, when it is unavoidable that a development will affect a bat population, the mitigation should aim to maintain a population of equivalent status in the area.

One of the key aims of the Habitats Directive is to encourage member states to maintain at, or restore to, favourable conservation status those species of community interest (Article 2(2)). 'Favourable conservation status' is defined in the Habitats and Species Directive (Article 1(i)). Conservation status is defined as "the sum of the influences acting on the species concerned that may affect the long term distribution and abundance of its population within the territory." It is assessed as favourable when: "population dynamics data on the species concerned indicate that it is maintaining itself on a long term basis as a viable component of its natural habitats, and the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and there is, or will probably continue to be, a sufficiently large habitat to maintain its populations on a long term basis." Note that even though there is apparent overlap between the Wildlife Acts and the Habitats Regulations, they run concurrently. No action in relation to bats that would not be permitted under the Habitats Regulations may be licensed under the Wildlife Acts.

Derogation licences granted under the Regulations include reference to the relevant provisions of the Wildlife Acts to ensure that all requirements for licensing are covered in the one document. It should also be noted that a licence only allows what is permitted within its terms and conditions; it does not legitimise all actions related to bats at a given site.²

¹ 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.

² 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.

2. METHODOLOGY

2.1 Information Sources

A desk-based review of information sources was completed. Information contained on the websites of the National Parks and Wildlife Service (NPWS)³ and the National Biodiversity Data Centre (NBDC)⁴ was reviewed.

The following publications and websites were also reviewed and consulted:

- Bat Conservation Ireland <https://www.batconservationireland.org/>
- Bat Roosts in Trees: A Guide to Identification and Assessment for Tree-Care and Ecology Professionals (2018)
- Bat Conservation Trust (2018) Bats and artificial lighting in the UK Bats and the Built Environment series⁵
- 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.
- Mitchell-Jones, A.J, & McLeish, A.P. (eds). 2004., 3rd Edition Bat Workers' Manual, JNCC, Peterborough, ISBN 1 86107 558 8
- A conservation plan for Irish Vesper Bats , Irish Wildlife Manual no. 20; National Parks and Wildlife Service; Department of Environment, Heritage and Local Government.
- Bat Conservation Ireland (2012) Bats and Appropriate Assessment Guidelines, Version 1, December 2012. Bat Conservation Ireland, www.batconservationireland.org⁶
- Bat Conservation Trust (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines 3rd edition
- Bat Conservation Ireland (2010) Bats & Lighting Guidance Notes for: Planners, engineers, architects and developers⁷
- Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes (National Roads Authority, 2005).
- Guidelines for the Treatment of Bats during the Construction of National Road Schemes (National Roads Authority, 2005).
- Bats and Lighting in the UK – Bats and the Built Environment Series (Institute of Lighting Professionals, September 2011
- Guidance Notes for the Reduction of Obtrusive Light GN01 (Institute of Lighting Professionals, 2011.
- Bats and Lighting – Guidance Notes for Planners, Engineers, Architects and Developers (Bat Conservation Ireland);
- The Eurobats Mitigation of Lighting Document;
- Entwistle, A. et al (2001) Habitat Management for Bats A Guide for Land Managers, Land Owners and Their Advisors, Joint Nature Conservation Committee (JNCC, Great Britain).

³ The National Parks and Wildlife Services map viewer <http://webgis.npws.ie/npwsviewer/>

⁴ The National Biodiversity Data Centre www.NBDC.ie

⁵ <https://www.theilp.org.uk/documents/guidance-note-8-bats-and-artificial-lighting/>

⁶ https://www.batconservationireland.org/wp-content/uploads/2013/09/BCIreland-AA-Guidelines_Version1.pdf

⁷ https://www.batconservationireland.org/wp-content/uploads/2013/09/BCIrelandGuidelines_Lighting.pdf

- Grant, G., Gunnell, K. & Williams C. (2012) Landscape and urban design for bats and biodiversity Bat Conservation Trust, London.
- CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management, Winchester, UK.
- CIEEM (2020). Guidance on Ecological Survey and Assessment in the Republic of Ireland and Northern Ireland During the Covid-19 Outbreak. Version 1. Published 30 May 2020. Chartered Institute of Ecology and Environmental Management, Winchester, UK.
- British Trust for Ornithology (BTO). Nest Record Scheme Code of Conduct. BTO Website. Accessed: September 2021, at: <https://www.bto.org/our-science/projects/nest-record-scheme/taking-part/nrs-code-conduct>
- Dempsey, E. and O’Clery, M. (2012). The Pocket Guide to the Common Birds of Ireland. Gill Books, Dublin.
- Svensson, L., Mullarney, K., & Zetterstom, D. Collins Bird Guide. Smartphone Application. Produced by: NatureGuides, William Collins & Bonnier Fakta. (2020).

2.2 Desk Study

2.2.1 Previous Records – Bats & Protected Birds

A desktop review was carried out to identify the previous records of Protected Bat and Bird species within the Proposed Development Site and its environs. The study area occurs in 10km² Grid Square O13. The website the NBDC (www.nbdc.ie) was accessed on 18/09/2021 and rechecked 15/06/2023 to establish any previous bat records (8 species) and shown below in Table 1 and protected bird species in Table 2 (84 species).

Table 1 Historical Bat Records in 10km² Grid Square 013 (NBDC website www.nbdc.ie accessed 16/06/2023)

Species Name - Common	Species Name - Latin	Last Documented Record O13
Brown Long-eared Bat	<i>Plecotus auritus</i>	25/05/2020
Daubenton's Bat	<i>Myotis daubentonii</i>	25/05/2020
Leisler's Bat	<i>Nyctalus leisleri</i>	08/06/2020
Nathusius's Pipistrelle	<i>Pipistrellus nathusii</i>	25/05/2020
Natterer's Bat	<i>Myotis nattereri</i>	25/05/2020
Common Pipistrelle	<i>Pipistrellus pipistrellus</i>	03/08/2013
Soprano Pipistrelle	<i>Pipistrellus pygmaeus</i>	25/05/2020
Whiskered Bat	<i>Myotis mystacinus</i>	13/08/2007

Table 2 Historical Bird (protected) Records in 10km² Grid Square O13 (NBDC website www.nbdc.ie accessed 15/06/2023)

Species Name - Common	Species Name - Latin	Last Documented Record O13
Arctic Tern	<i>Sterna paradisaea</i>)	31/12/2011
Barn Owl	<i>Tyto alba</i>)	29/02/1984
Barn Swallow	<i>Hirundo rustica</i>)	16/07/2020
Barnacle Goose	<i>Branta leucopsis</i>)	15/02/2015
Bar-tailed Godwit	<i>Limosa lapponica</i>)	31/12/2011
Black Guillemot	<i>Cepphus grylle</i>)	05/06/2016
Black-headed Gull	<i>Larus ridibundus</i>)	21/05/2020
Black-legged Kittiwake	<i>Rissa tridactyla</i>)	10/03/2012
Black-tailed Godwit	<i>Limosa limosa</i>)	10/03/2012
Brent Goose	<i>Branta bernicla</i>)	17/02/2017
Common Coot	<i>Fulica atra</i>)	16/07/2020
Common Goldeneye	<i>Bucephala clangula</i>)	31/12/2011
Common Grasshopper Warbler	<i>Locustella naevia</i>)	31/07/1972
Common Greenshank	<i>Tringa nebularia</i>)	31/12/2011
Common Guillemot	<i>Uria aalge</i>)	09/03/2009
Common Kestrel	<i>Falco tinnunculus</i>)	15/01/2020
Common Kingfisher	<i>Alcedo atthis</i>)	15/08/2017
Common Linnet	<i>Carduelis cannabina</i>)	12/02/2020
Common Pheasant	<i>Phasianus colchicus</i>)	21/05/2020
Common Pochard	<i>Aythya ferina</i>)	31/12/2011
Common Redshank	<i>Tringa totanus</i>)	17/09/2017
Common Sandpiper	<i>Actitis hypoleucos</i>)	31/07/1991
Common Shelduck	<i>Tadorna tadorna</i>)	31/12/2011
Common Snipe	<i>Gallinago gallinago</i>)	28/01/2017
Common Starling	<i>Sturnus vulgaris</i>)	19/06/2020
Common Swift	<i>Apus apus</i>)	16/07/2020
Common Tern	<i>Sterna hirundo</i>)	18/06/2017
Common Wood Pigeon	<i>Columba palumbus</i>)	16/07/2020
Corn Crane	<i>Crex crex</i>)	31/07/1972
Dunlin	<i>Calidris alpina</i>)	31/12/2011
Eurasian Curlew	<i>Numenius arquata</i>)	04/12/2017
Eurasian Oystercatcher	<i>Haematopus ostralegus</i>)	17/09/2017
Eurasian Teal	<i>Anas crecca</i>)	26/02/2017
Eurasian Tree Sparrow	<i>Passer montanus</i>)	31/12/2011
Eurasian Wigeon	<i>Anas penelope</i>)	31/12/2011
Eurasian Woodcock	<i>Scolopax rusticola</i>)	31/12/2011
European Golden Plover	<i>Pluvialis apricaria</i>)	31/12/2011
European Shag	<i>Phalacrocorax aristotelis</i>)	24/07/1994
European Turtle Dove	<i>Streptopelia turtur</i>)	03/10/2003
Gadwall	<i>Anas strepera</i>)	31/12/2011
Great Black-backed Gull	<i>Larus marinus</i>)	19/06/2020
Great Cormorant	<i>Phalacrocorax carbo</i>)	16/07/2020
Great Crested Grebe	<i>Podiceps cristatus</i>)	31/12/2011
Great Northern Diver	<i>Gavia immer</i>)	31/12/2011
Greater Scaup	<i>Aythya marila</i>)	27/10/2017
Grey Plover	<i>Pluvialis squatarola</i>)	31/12/2011
Greylag Goose	<i>Anser anser</i>)	15/01/2020
Hen Harrier	<i>Circus cyaneus</i>)	31/12/2011
Herring Gull	<i>Larus argentatus</i>)	16/07/2020
House Martin	<i>Delichon urbicum</i>)	19/06/2020
House Sparrow	<i>Passer domesticus</i>)	15/01/2020
Kentish Plover	<i>Charadrius alexandrinus</i>)	31/12/1851

Species Name - Common	Species Name - Latin	Last Documented Record O13
Lesser Black-backed Gull	<i>Larus fuscus</i>)	24/07/2017
Lesser Whitethroat	<i>Sylvia curruca</i>)	29/02/2004
Little Egret	<i>Egretta garzetta</i>)	11/12/2017
Little Grebe	<i>Tachybaptus ruficollis</i>)	24/07/2020
Little Tern	<i>Sternula albifrons</i>)	31/07/1972
Mallard	<i>Anas platyrhynchos</i>)	19/06/2020
Manx Shearwater	<i>Puffinus puffinus</i>)	18/08/1994
Mediterranean Gull	<i>Larus melanocephalus</i>)	31/12/2011
Mew Gull	<i>Larus canus</i>)	13/09/2014
Mute Swan	<i>Cygnus olor</i>)	06/12/2017
Northern Gannet	<i>Morus bassanus</i>)	24/07/1994
Northern Lapwing	<i>Vanellus vanellus</i>)	31/12/2011
Northern Shoveler	<i>Anas clypeata</i>)	31/12/2011
Northern Wheatear	<i>Oenanthe oenanthe</i>)	18/05/2012
Peregrine Falcon	<i>Falco peregrinus</i>)	16/07/2016
Red Knot	<i>Calidris canutus</i>)	31/12/2011
Red-breasted Merganser	<i>Mergus serrator</i>)	31/12/2011
Red-footed Falcon	<i>Falco vespertinus</i>)	18/06/1976
Red-throated Diver	<i>Gavia stellata</i>)	31/12/2011
Ringed Plover	<i>Charadrius hiaticula</i>)	31/12/2011
Rock Pigeon	<i>Columba livia</i>)	16/07/2020
Sand Martin	<i>Riparia riparia</i>)	03/08/2016
Sky Lark	<i>Alauda arvensis</i>)	21/05/2020
Spotted Crake	<i>Porzana porzana</i>)	31/12/1833
Spotted Flycatcher	<i>Muscicapa striata</i>)	31/07/1991
Stock Pigeon	<i>Columba oenas</i>)	31/12/2011
Tufted Duck	<i>Aythya fuligula</i>)	19/06/2020
Twite	<i>Carduelis flavirostris</i>)	29/02/1984
Water Rail	<i>Rallus aquaticus</i>)	31/12/2011
Wood Lark	<i>Lullula arborea</i>)	31/12/1851
Whooper Swan	<i>Cygnus cygnus</i>	04/03/2020
Yellowhammer	<i>Emberiza citrinella</i>)	31/12/2011

2.2.2 Bat Species Background

Ireland had ten known bat species until February 2013, when a single live greater horseshoe bat (*Rhinolophus ferrumequinum*) was found roosting in Co. Wexford⁸. On 8th June 2020, a single audio recording was confirmed in the Glendaough area, Co. Wicklow. It was found on two more occasions in the same area in early July 2020 (Bat Conservation Ireland, July 2020).

The ten species (excluding the greater horseshoe) are briefly described overleaf. For a more comprehensive overview see McAney, 2006.⁹

The dependence of Irish bat species on insect prey has left them vulnerable to habitat destruction, land drainage, agricultural intensification and increase use of pesticides. Also, their reliance on buildings as roosting sites has made them particularly vulnerable to renovation works and the use of timber chemical treatment. Buildings are highly important as roosting sites for bats and all Irish bat species use buildings for all roost types. Most significant in terms of roosts in houses are maternity roosts, but cellars and even attics may serve as hibernation sites for bats. Roosts within buildings can far exceed the numbers encountered in trees, bridges, caves or cliffs and roosts of over 1,000 bats have been recorded in buildings.¹⁰

2.2.2.1 Family Vespertilionidae:

Common pipistrelle *Pipistrellus pipistrellus*

This species was only recently separated from its sibling, the soprano or brown pipistrelle *P. pygmaeus*¹¹, which is detailed below. The common pipistrelle's echolocation calls peak at 45 kHz. The species forages along linear landscape features such as hedgerows and treelines as well as within woodland.

Soprano pipistrelle *Pipistrellus pygmaeus*

The soprano pipistrelle's echolocation calls peak at 55 kHz, which distinguishes it readily from the common pipistrelle on detector. The pipistrelles are the smallest and most often seen of our bats, flying at head height and taking small prey such as midges and small moths. Summer roost sites are usually in buildings, but tree holes and heavy ivy are also used. Roost numbers can exceed 1,500 animals in mid-summer.

Nathusius' pipistrelle *Pipistrellus nathusii*

Nathusius' pipistrelle is a recent addition to the Irish fauna and has mainly been recorded from the north-east of the island in Counties Antrim and Down¹² and also in Fermanagh, Longford and Cavan. It has also recently been recorded in

⁸ National Biodiversity Data Centre <http://www.biodiversityireland.ie/new-bat-species-found-in-ireland/>

⁹ McAney, K. (2006) *A Conservation Plan for Irish Vesper Bats*. Irish Wildlife Manual No.20. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government.

¹⁰ NRA (2005) *Guidelines for the Treatment of Bats Prior to the Construction of National Road Schemes*. National Roads Authority, Dublin

¹¹ Barratt, E. M., Deauville, R., Burland, T. M., Bruford, M. W., Jones, G., Racey, P. A., & Wayne, R. K. (1997) *DNA Answers the Call of Pipistrelle Bat Species*. *Nature* 387: 138 - 139.

¹² Richardson, P. (2000) *Distribution Atlas of Bats in Britain and Ireland 1980 - 1999*. The Bat Conservation Trust, London, England.

Counties Cork and Kerry.¹³ However, the known resident population is enhanced in the autumn months by an influx of animals from Scandinavian countries. The status of the species has not yet been determined.

Leisler's bat *Nyctalus leisleri*

This species is Ireland's largest bat, with a wingspan of up to 320mm; it is also the third most common bat, preferring to roost in buildings, although it is sometimes found in trees and bat boxes. It is the earliest bat to emerge in the evening, flying fast and high with occasional steep dives to ground level, feeding on moths, caddisflies and beetles. The echolocation calls are sometimes audible to the human ear being around 15 kHz at their lowest. The audible chatter from their roost on hot summer days is sometimes an aid to location. This species is uncommon in Europe and as Ireland holds the largest national population the species is considered as Near Threatened here.

Brown long-eared bat *Plecotus auritus*

This species of bat is a 'gleaner', hunting amongst the foliage of trees and shrubs, and hovering briefly to pick a moth or spider off a leaf, which it then takes to a sheltered perch to consume. They often land on the ground to capture their prey. Using its nose to emit its echolocation, the long-eared bat 'whispers' its calls so that the insects, upon which it preys, cannot hear its approach (and hence, it needs oversize ears to hear the returning echoes). As this is a whispering species, it is extremely difficult to monitor in the field as it is seldom heard on a bat detector. Furthermore, keeping within the foliage, as it does, it is easily overlooked. It prefers to roost in old buildings.

Natterer's bat *Myotis nattereri*

This species has a slow to medium flight, usually over trees but sometimes over water. It usually follows hedges and treelines to its feeding sites, consuming flies, moths, caddisflies and spiders. Known roosts are usually in old stone buildings but they have been found in trees and bat boxes. The Natterer's bat is one of our least studied species and further work is required to establish its status in Ireland.

Daubenton's bat *Myotis daubentonii*

This bat species feeds close to the surface of water, either over rivers, canals, ponds, lakes or reservoirs but it can also be found foraging in woodlands. Flying at 15 kilometres per hour, it gaffs insects with its over-sized feet as they emerge from the surface of the water - feeding on caddis flies, moths, mosquitoes, midges etc. It is often found roosting beneath bridges or in tunnels and also makes use of hollows in trees.

Whiskered bat *Myotis mystacinus*

This species, although widely distributed, has been rarely recorded in Ireland. It is often found in woodland, frequently near water. Flying high, near the canopy, it maintains a steady beat and sometimes glides as it hunts. It also gleans spiders from the foliage of trees. Whiskered bats prefer to roost in buildings, under slates, lead flashing or exposed beneath the ridge beam within attics. However, they also use cracks and holes in trees and sometimes bat boxes. The whiskered bat is one of our least studied species and further work is required to establish its status in Ireland.

¹³ Kelleher, C. (2005) *International Bat Fieldcraft Workshop, Killarney, Co. Kerry*. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government.

Brandt's bat *Myotis brandtii*

This species is known from five specimens found in Counties Wicklow (Mullen, 2007), Cavan, and Clare in 2003, a specimen in Kerry in 2005¹⁴ and another in Tipperary in 2006.¹⁵ No maternity roosts have yet been found. It is very similar to the whiskered bat and cannot be separated by the use of detectors. Its habits are similar to its sibling.

2.2.2.2 Family *Rhinolophidae*:

Lesser horseshoe bat *Rhinolophus hipposideros*

This species is the only representative of the *Rhinolophidae* or horseshoe bat family in Ireland. It differs from our other species in both habits and looks, having a unique nose leaf with which it projects its echolocation calls. It is also quite small and, at rest, wraps its wings around its body. Lesser horseshoe bats feed close to the ground, gleaning their prey from branches and stones. It often carries its prey to a perch to consume, leaving the remains beneath as an indication of its presence.

The echolocation call of this species is of constant frequency and, on a heterodyne bat detector, sounds like a melodious warble. The species is confined to six counties along the Atlantic seaboard: Mayo, Galway, Clare, Limerick, Kerry and Cork. The current Irish national population is estimated at 12,500 animals. This species is listed on Annex II of the EC Habitats Directive and 41 Special Areas of Conservation have been designated in Ireland for its protection. Where it occurs, it is often found roosting within farm buildings.

2.2.3 Landscape Suitability

The National Biodiversity Data Centre (NBDC) maps landscape suitability bats based on Lundy *et al.* (2011). The maps are a visualisation of the results of the analyses based on a 'habitat suitability' index. The index ranges from 0 to 100 with 0 being least favourable and 100 most favourable for individual bat species and between 36.44 - 58.56 for the highest average range. The overall average assessment of bat habitats for the current study area is given as 18.89 (Low) with the highest average category ranging from 36.44 - 58.55. Table 3 gives the suitability of the study area for the bat species found in the study area (based on NBDC) along with their Irish Red List Status (from Marnell *et al.*, 2019).¹⁶

¹⁴ Kelleher, C. 2006a *Nathusius pipistrelle* *Pipistrellus nathusii* and Brandt's Bat *Myotis brandtii* - New Bat Species to Co. Kerry – *Irish Naturalists' Journal* 28: 258.

¹⁵ Kelleher, C. 2006b Brandt's Bat *Myotis brandtii*, New Bat Species to Co. Tipperary. *Irish Naturalists' Journal* 28: 345.

¹⁶ Marnell, F., Looney, D. & Lawton, C. (2019) Ireland Red List No. 12: Terrestrial Mammals. National Parks and Wildlife Service, Department of the Culture, Heritage and the Gaeltacht, Dublin, Ireland.

Table 3 Suitability of the study area for the bat species found in the Dalymount area (based on the NBDC data) with Irish Red list status indicated.

Common name	Scientific name	Suitability index	Irish red list status
All bats	-	18.89	Least Concern
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	29	Least Concern
Brown long-eared bat	<i>Plecotus auritus</i>	17	Least Concern
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	40	Least Concern
Lesser-horseshoe bat	<i>Rhinolophus hipposideros</i>	0	Least Concern
Leisler's bat	<i>Nyctalus leisleri</i>	33	Least Concern
Whiskered bat	<i>Myotis mystacinus</i>	11	Least Concern
Daubenton's bat	<i>Myotis daubentonii</i>	9	Least Concern
Nathusius' pipistrelle	<i>Pipistrellus nathusii</i>	16	Least Concern
Natterer's bat	<i>Myotis nattereri</i>	15	Least Concern

2.2.4 Bat Roosts

Bats were originally cave and tree dwelling animals but many now find buildings just as suitable for their needs. Bats are social animals and most species congregate in large colonies during summer. These colonies consist mostly of females of every reproductive class, with some juvenile males from the previous year. Male bats normally roost individually or in small groups meeting up with the females in the late autumn-early winter, when it is time to mate. In summer, bats seek warm dry buildings in which they can give birth and suckle their young. In winter, they seek out places with a constant low temperature and high humidity where they can become torpid and hibernate during adverse weather conditions. However, bats do not hibernate continuously during winter and will awake and hunt during mild nights when there are insects available, and it is energetically advantageous to forage.

2.2.4.1 Maternity Roosts

Maternity roosts are the most significant roosts and they are predominantly all-female aggregations that are formed from late May onwards and remain as a relatively cohesive unit until mid to late August. Not all female bats give birth annually. These females that do bear young in a given year avail of a suitable building, tree and sometimes cave (or equivalent). The young are flightless for several weeks and hence are vulnerable to dangers such as tree felling and restoration, reinforcement or demolition of structures such as buildings and bridges.

2.2.4.2 Mating Roosts

Most bat species mate in autumn but pregnancy does not occur until the following spring. During this time males will take possession of a cavity in a building, tree, bridge, cave or mine and attract females to these sites to establish a harem. Male bats call both from a perch and in flight in much the same manner that male birds sing.

2.2.4.3 Hibernation Roosts

Bats have a high metabolic rate and in temperate countries, such as Ireland, flying insects are not available in sufficient numbers during winter to sustain bats. Therefore, bats hibernate during winter. In hibernation sites, bats are often completely inactive for several days and are extremely vulnerable to disturbance by human activities due to the time taken for them to become sufficiently active to allow escape. Hibernation may extend from November to the end of March, during which time bat activity will take place sporadically.

2.2.4.4 Night Roosts

These are roosts which are used as resting places for bats between foraging bouts. They also provide retreats for bats from predators or during inclement weather conditions. They also function as feeding perches and may be important for socialising.

2.3 Bat Survey

The bat survey incorporating the elements listed above was undertaken on the evening of 13th September 2021 (10 minutes prior to sunset, 19.45) till 10 minutes after sunrise (06.57) the following morning 14th September 2021. The bat survey involved the following components:

- An Emergence/ Dusk survey - Surveying of buildings (stands) and terraces, trees and outbuildings undertaken 10 minutes prior to sunset to 90 minutes after sunset.
- Walking transect - Bat surveys completed on foot with surveyors onsite 10 minutes prior to sunset to a minimum of 110 minutes after sunset (post emergence).
- Dawn survey - Surveying of buildings (stands) and terraces, trees and outbuildings undertaken from 90 minutes prior to sunrise, to 10 minutes after sunrise.
- Static Surveys - Placement of 2 x automated recording detectors (Bag logger M detectors in strong boxes) left within the site boundaries in two distinct areas. The units were set up during daylight hours and left in place to record during the hours of darkness.
- Building and structure (terraces and stands) Assessment – Inspection of structures including stands and terraces, or likely places that provide a roosting place for bats were inspected for evidence of bat usage. All spaces that could potentially allow bats access the buildings were visually examined in detail for bats, signs of bats, or evidence of bat activity, using a torch where necessary. Cracks, crevices etc. were investigated for ingress / egress points and evidence of bat habitation, such as smearing lines, droppings, and staining.

An updated dusk emergence and activity survey was undertaken June 8th 2023 to ensure no changes since September 2021.

The weather was very optimal for a bat surveys on both occasions with temperatures on the night of September 13th 2021 of 16-17°C in calm conditions and 15-16th in calm conditions. Bat activity and emergence surveys are best

carried out from April to mid-September in suitable weather conditions¹⁷ which both these surveys were.

The equipment used for the bat surveys included 2 x Elekon Bat Logger M detectors (which doubled up as static recorders and left overnight during September 2021). Visual observations were taken with the aid of a powerful L.E.D. torch (AP Pros-Series 220 Lumens High Performance Spotlight) and binoculars.

General Site photos for both September 2021 and June 2023 are contained in Appendix A.

The BCT guidelines were used for the buildings assessment with the assessment rating¹⁸ and classification taken from Table 4.1 of the BCT guidelines (2016) which is shown as Table 4 overleaf.

¹⁷ 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.

¹⁸ *Bat Surveys for Professional Ecologists, Good Practice Guidelines (2016)*

Table 4 Guidelines for assessing the potential suitability of proposed development sites for bats, based on the presence of roost features within the landscape, to be applied using professional judgement.

Suitability	Description Roosting habitats	Commuting and foraging habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats.	Negligible habitat features on site likely to be used by commuting or foraging bats.
Low	<p>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^a 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^b).</p> <p>A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential.^c</p>	<p>Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat.</p> <p>Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.</p>
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 ^a 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).	<p>Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens.</p> <p>Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.</p>
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions ^a and surrounding habitat.	<p>Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge.</p> <p>High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland.</p> <p>Site is close to and connected to known roosts.</p>

^a For example, in terms of temperature, humidity, height above ground level, light levels or levels of disturbance.

^b Evidence from the Netherlands shows mass swarming events of common pipistrelle bats in the autumn followed by mass hibernation in a diverse range of building types in urban environments (Korsten *et al.*, 2015). This phenomenon requires some research in the UK but ecologists should be aware of the potential for larger numbers of this species to be present during the autumn and winter in large buildings in highly urbanised environments.

^c This system of categorisation aligns with BS 8596:2015 Surveying for bats in trees and woodland (BSI, 2015).

One semi-mature tree were present adjacent to the Des Kelly stand which will be felled for the redevelopment. This tree was assessed for any 'Potential Roost Features' (PRFs) listed below. The tree was still present during June 2023.

- Natural holes (e.g., knot holes) arising from naturally shed branches or branches previously pruned back to a branch collar.
- Man-made holes (e.g., cavities that have developed from flush cuts or cavities created by branches tearing out from parent stems).
- Cracks/splits in stems or braches (horizontal and vertical).
- Partially detached or loose bark plates.
- Cankers (caused by localised bark death) in which cavities have developed.
- Other hollows or cavities, including butt rots.
- Compression of forks with included bark, forming potential cavities.
- Crossing stems or branches with suitable roosting space between.
- Ivy stems with diameters in excess of 50mm with suitable roosting space behind (or where roosting space can be seen where a mat of thinner stems has left a gap between the mat and the trunk).
- Bat or bird boxes.
- Other suitable places of rest or shelter.

Certain factors such as orientation of the feature, height from the ground, the direct surroundings and its location in respect to other features may enhance or reduce the potential value. The tree was classified based upon the presence of these features. An evaluation table is shown as Table 5.

Table 5 Classification and Survey Requirements for Bats in Trees¹⁹

Classification of Tree	Description of Category and Associated Features (based on Potential Roosting Features listed above)	Likely Further Survey Work / Actions
Confirmed Roost	Evidence of roosting bats in the form of live / dead bats, droppings, urine staining, mammalian fur oil staining, etc.	A National Parks and Wildlife (NPWS) derogation licence application will be required if the tree or roost site is affected by the development or proposed arboricultural works. This will require a combination of aerial assessment by roped access bat workers (where possible, health and safety constraints allowing) and nocturnal survey during appropriate periods (e.g. nocturnal survey - May to August) to inform on the licence.

¹⁹ Bat Surveys for Professional Ecologists: Good Practice Guidelines (J., Collins (Bat Conservation Trust), 2016¹⁹).

Classification of Tree	Description of Category and Associated Features (based on Potential Roosting Features listed above)	Likely Further Survey Work / Actions
		<p>Works to tree undertaken under supervision in accordance with the approved good practice method statement provided within the licence.</p> <p>However, where confirmed roost site(s) are not affected by works, work under a precautionary good practice method statement may be possible.</p>
High Potential	<p>A tree with one or more Potential Roosting Features that are obviously suitable for larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter protection, conditions (height above ground level, light levels, etc.) and surrounding habitat. Examples include (but are not limited to); woodpecker holes, larger cavities, hollow trunks, hazard beams, etc.</p>	<p>Aerial assessment by roped access bat workers (if appropriate) and / or nocturnal survey during appropriate period (May to August).</p> <p>Following additional assessments, tree may be upgraded or downgraded based on findings.</p> <p>If roost sites are confirmed and the tree or roost is to be affected by proposals a licence from the NPWS will be required.</p> <p>After completion of survey work (and the presence of a bat roost is discounted), a precautionary working method statement may still be appropriate.</p>
Moderate Potential	<p>A tree with Potential Roosting Features which could support one or more potential roost sites due to their size, shelter protection, conditions (height above ground level, light levels, etc.) and surrounding habitat but unlikely to support a roost of high conservation status (i.e., larger roost, irrespective of wider conservation status). Examples include (but are not limited</p>	<p>A combination of aerial assessment by roped access bat workers and / or nocturnal survey during appropriate period (May to August).</p> <p>Following additional assessments, tree may be upgraded or downgraded based on findings.</p> <p>After completion of survey</p>

Classification of Tree	Description of Category and Associated Features (based on Potential Roosting Features listed above)	Likely Further Survey Work / Actions
	to); woodpecker holes, rot cavities, branch socket cavities, etc.	work (and the presence of a bat roost is discounted), a precautionary working method statement may still be appropriate. If a roost site/s is confirmed a licence from the NPWS will be required.
Low Potential	A tree of sufficient size and age to contain Potential Roosting Features but with none seen from ground or features seen only very limited potential. Examples include (but are not limited to); loose/lifted bark, shallow splits exposed to elements or upward facing holes.	No further survey required but a precautionary working method statement may be appropriate.
Negligible/No potential	Negligible/no habitat features likely to be used by roosting bats	None.

2.4 Nesting Bird Survey

The bird nesting survey was carried out September 13th 2021 and June 8th 2023 using updated CIEEM advice.²⁰ The bird nesting survey was undertaken with due consideration given to the British Trust for Ornithology (BTO) Nest Record Scheme Code of Conduct (BTO Website, 2021).

The survey was completed using:

- Nikon 8x30 binoculars (or equivalent).
- Survey methodology described in this report.
- Supplied Field Recording Data Sheets.

The methodology for the surveys is as follows:

- The surveyor carried an A4 printed satellite image of the Site to aid in orientation and note locations of any nests.
- The affected tree onsite was assessed from the ground using Binoculars for any evidence of birds nesting or utilising the tree. Due regard was given to bird possibly utilising holes as nests.

²⁰ CIEEM (2020). Guidance on Ecological Survey and Assessment in the Republic of Ireland and Northern Ireland During the Covid-19 Outbreak. Version 1. Published 30 May 2020. Chartered Institute of Ecology and Environmental Management, Winchester, UK.

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- Thorough searches were carried out of any vegetation, with efforts made to access / view all parts of the foliage either by hand or by binoculars
 - Notes were taken on foliage cover, trunk ivy-cover, and visibility into canopy.
 - Bird activity within and around the tree in question were also recorded to further inform the assessment of bird usage.
 - Any nests if found had the area noted, along with details on the structure and condition of the nest.

2.5 Landscape Evaluation

Ecological survey results were evaluated to determine the significance of identified features located in the study area on an importance scale ranging from international-national-county-local (from NRA, 2009) The local scale is approximately equivalent to one 10km square but can be operationally defined to reflect the character of the area of interest. Because most sites will fall within the local scale, this is sub-divided into two categories: local importance (higher value) and local importance (lower value).

3. RESULTS

3.1 Site Overview

The site was visited September 13th 2021 and June 8th 2023. Habitats were identified and classified according to Fossitt (2000)²¹ and Smith *et al.* (2011)²². The habitats within the study area, which will be affected, consist mainly of the existing grassland pitches (GA2), car parks and buildings (BL3). The habitats onsite were the same during the updated visit in June 2023. Plates are attached as Appendix A.

3.2 Bat Survey

The results of the bat survey carried out in September 13th 2021 and June 8th 2023 are summarized in Table 6 with the complete dataset of bat species identified in real time in the field using the Elekon Batlogger M detector presented in Appendix B. A map outlining the locations of the bat calls is shown as Figure 6 for September 2021 and Figure 7 for June 2023. The presence denotes activity/passes as opposed to individual bats.

In total just 3 No. species of bat were detected (8 species are currently documented for this O13 10km² Grid square) during the two bat surveys. A 'Low' rate of bat activity was recorded which was expected with the low bat landscape suitability score assigned and urbanised area. The most frequent bat species heard was Common Pipistrelle.

The terraces and buildings within the site were visually assessed using criteria from Table 4 and rated as 'Low'/'Negligible' (see Table 4) for bat roosting suitability given the lack of bat signs and visual emergence. The Jodi Stand also had netting on the RSJ/Girders which would discourage roosting bats preventing them having a clear flight plan.

No bat emergence was detected or observed from the buildings or stands (see Figure 4) during the surveys on September 13th 2021 or June 8th 2023. The southwest corner had the majority of bat activity. One of the two static detectors was set up in this area which may explain the higher activity to the southwest during the survey in September 2021. During June 2023 it was noted that the 2 No. bats (1 Common Pipistrelle and 1 Nathusius' Pipistrelle) flew in from the direction of St. Peter's Church (southwest of site). The 2 bat's recorded during June 2023 remained on the site feeding over the pitch for a substantial period of time before leaving the site and flying in a northwest direction. Leisler's Bat was not recorded during the June 2023 survey.

The Sycamore tree affected by the proposed redevelopment was classed as 'Negligible' for potential bat roosting potential.

²¹ Fossitt, J. (2000). *A Guide to Habitats in Ireland*. The Heritage Council, Kilkenny.

²² Smith, G.F., O'Donoghue, P., O'Hora, K. and Delaney, E. (2011) Best practice guidance for habitat survey and mapping. The Heritage Council, Kilkenny.

Table 6 Bat Results Summary Data – 13th September 2021 and June 8th 2023

Species Common	Name	– Species Name – Latin	Number of Passes	Peak Frequency (kHz)
September 13th 2021				
Common Pipistrelle		<i>Pipistrellus pipistrellus</i>	16	46.5
Leisler's Bat		<i>Nyctalus leisleri</i>	2	26.9
June 8th 2023				
Common Pipistrelle*		<i>Pipistrellus pipistrellus</i>	26	46.5
Nathusius's Pipistrelle*		<i>Pipistrellus nathusii</i>	14	40.0

* activity was from only 1 individual.



Figure 6 Bat Activity Map with Legend – September 13th 2021

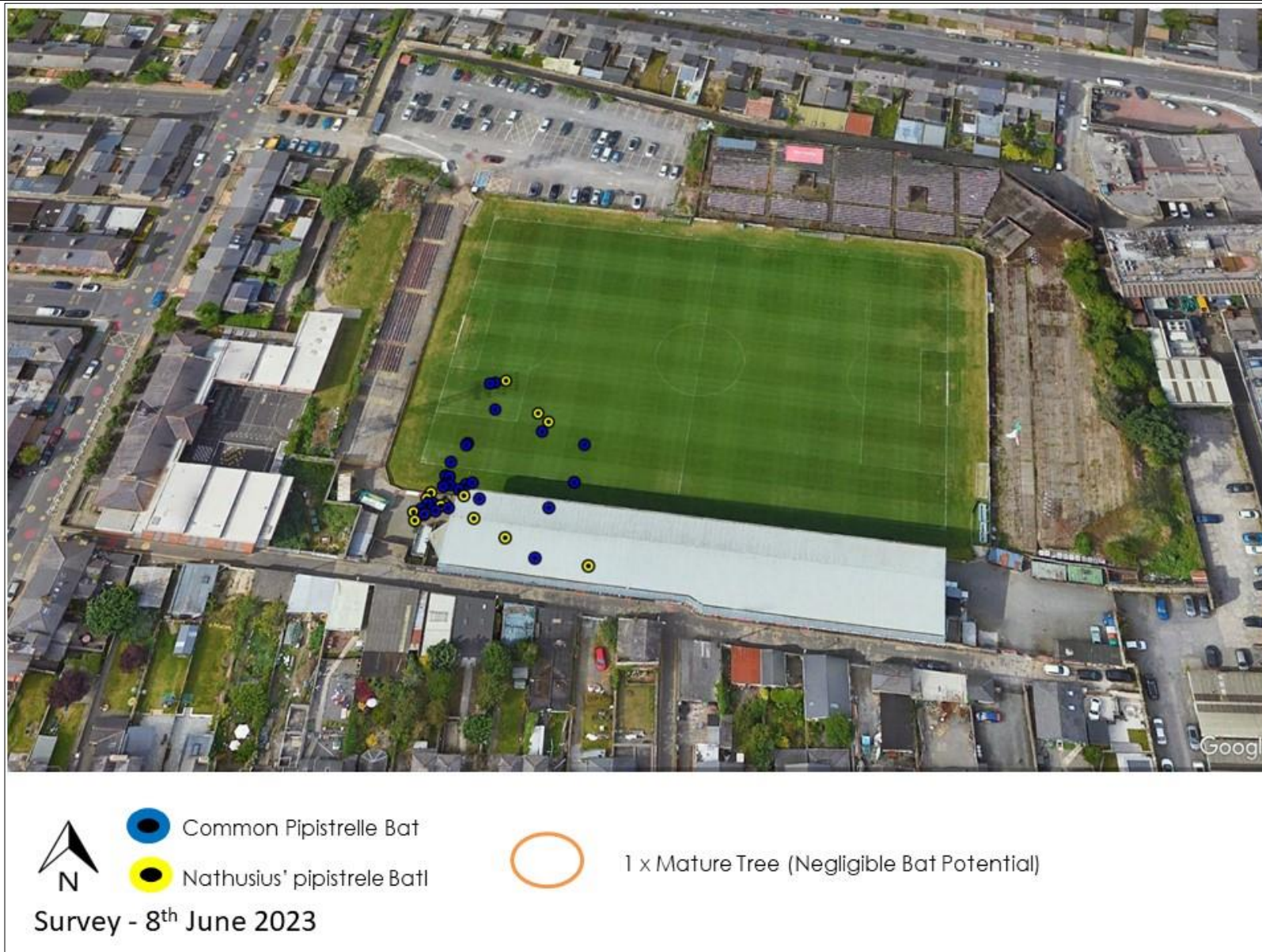


Figure 7 Bat Activity Map with Legend – June 8th 2023

3.3 Nesting Bird Survey

As expected, the survey in September 13th 2021 recorded no nesting birds using the site as it was outside the bird nesting season. There was netting across the RSJ/Girders of the Jodi Stand which prevented roosting pigeons, gulls and Barn Swallow for example. Likewise no old nests were evident in the 1 no. affected Sycamore tree on the site. Gulls (*Larus sp.*) were observed passing over the site intermittently.

The survey on June 8th 2023 was completed within the right time of year to survey for nesting birds. Once again no nesting birds, or old nests, were recorded using the site.

Birds recorded on site (flying over/stopping briefly to land on the flood lights) during September 2021 included:

- Robin (*Erithacus rubecula*) – Landed on the stand seating of the Jodi Stand
- Common Starling (*Sturnus vulgaris*) – A small flock landed on the Floodlight to the southwest on evening of September 15th 2021
- Gull species (*Larus spp.*) – Frequently passed over site and landed on the Floodlight to the southwest and northeast on the dawn survey (September 14th)
- Feral Pigeon (*Columba livia domestica*) – Occasionally passed over

Birds recorded on site (flying over/stopping briefly to land on the flood lights) during September 2021 included:

- Blackbird (*Turdus merula*) – Feeding on pitch
- Song Thrush (*Turdus philomelos*) – Feeding on pitch
- Common Starling (*Sturnus vulgaris*) – Small flock flew over during sunset
- Gull species (*Larus spp.*) – Frequently passed over site
- Magpie (*Aburaxas grossulariata*) – Landed briefly on the pitch
- Feral Pigeon (*Columba livia domestica*)

3.4 Landscape Evaluation

The landscape is considered of local importance (Lower value) for bats and nesting birds due to a Low score for landscape suitability for bats and a lack of nesting opportunities for birds e.g. trees and scrub within the site boundary.

4. RECOMMENDATIONS

4.1 Buildings

The out-buildings/sheds and terraces/stands on the site were deemed Low suitability for roosting bats and nesting birds. There was higher bat activity to the southwest of site (see Figures 5 and 6). This is most likely due to the position of a static detector during September 2023. This was also the case in June 2023 however the bats noted using the site for feeding and flying over the pitch (just two bats) were observed flying in over the wall from the southwest and not from any buildings on the site.

4.2 Tree Removal

For the felling of the Sycamore tree on the site, the following protocol should be followed:

- Tree-felling should be undertaken outside the bird nesting season i.e. no felling can take place 1st March to 31st August of a given year.
- Tree-felling should be undertaken using heavy plant and chainsaw. The affected tree should then be pushed to the ground slowly and should remain in place for a period of at least 24 hours to allow bats/other wildlife to escape. Trees felled should NEVER be sawn up or mulched immediately in case protected wildlife is present.

4.3 Lighting for Bats

Bats are nocturnal animals, adapted to low-light conditions. This means that most bat species find artificial lighting to be very disturbing. We know that some bat species will not cross lines of street lights.²³ Such light acts as a barrier, disrupting flight paths and restricting access to otherwise suitable habitat. In addition, lighting close to roost access points disturbs bats within a roost, delays emergence times and may result in the abandonment and loss of roosts.

In general with smarter lighting, rather than less lighting, it is possible to reduce the effects of light pollution. Lighting should only be erected where it is needed, illuminated during the time period it will be used, and only to levels that enhance visibility. Artificial light shining on bat roosts, their access points and the flight paths leading to and from the roost must always be avoided.

Dalymount Park is already well lit during times of operation with 4 No. existing food lights which are old technology. In fact replacement of the current lighting has the potential to have a slight positive impact for bats as the new lighting regime will take into consideration bat friendly lighting, ensuring that the design of lighting accords with guidelines presented in the Bat Conservation Trust & Institute of Lighting Engineers '*Bats and Lighting in the UK - Bats and Built Environment Series*', the Bat Conservation Trust '*Artificial Lighting and Wildlife Interim Guidance*' and the Bat Conservation Trust '*Statement on the impact and design of artificial light on bats*'.

²³ Stone, E.L., Jones, G., & Harris, S. 2009. Street lighting disturbs commuting bats. *Current Biology* 19:1-5

Specifically when it comes to Flood Lighting, the “Bat Conservation Ireland (2010) Bats & Lighting - Guidance Notes for: Planners, engineers, architects and developers, state the following which will be followed, where possible specifically:

“The use of asymmetric beam floodlights, as opposed to symmetric ones, orientated so that the glass of the luminaries is positioned parallel to the ground is recommended. This will ensure that the light is cast in a downward direction and avoids horizontal spillage of the light.”

The new type of bulbs will be more energy efficient and on timers. In addition the proposed new lighting plan will angle the flood lights inwards resulting in a significant reduction in light spillage beyond the confines of the proposed redeveloped stadium. There will therefore be less light pollution outside the confines of Dalymount Park and therefore the impacts of lighting to bats are negligible given the present levels of more inefficient lighting on site.

4.4 Future Nesting & Roosting Opportunities

4.4.1 Bat Boxes

Providing bat boxes can increase opportunities for roosting and they are often used as enhancement features. Microclimate within a new roost is a very important factor in terms of increasing the chance of successful uptake by bats. Bat boxes should be draught-proof and made from a thermally stable material such as untreated wood, woodcrete, brick or stone. If possible, it is better to provide several internal chambers so that the bats can move around as their needs change. All boxes should have a small entry slit at the bottom (20 mm in width) with a roughened landing strip to allow the bats to crawl up into the box. The entry slit should be positioned so that accumulated bat waste can drop out the box or be pushed out as bats emerge.

Although it can take bats a long time to make use of artificial roosts, roost location seems to be the most important factor influencing successful uptake. It is recommended that 4+ bat boxes are erected to the southwest of the site during operational phase using the guidance outlined below. The area chosen should not be illuminated. Examples of bat boxes are shown in Appendix C.

Orientation

One of the most important ways to optimise internal roost microclimate is to carefully locate the new roost. In general, bats seek warm spaces to help them with rearing young. For this reason, bat boxes should be located where they will receive full/partial sunlight. In the northern hemisphere this will be a southerly orientation (facing south, south-west or south-east). However, it is helpful to install bat boxes in more than one orientation to allow for a choice of roosting conditions.

Height

Position the bat boxes a minimum of 2m above ground, although 5-7m is better to prevent disturbance from people and/or predators. Avoid placing boxes above

windows and doors and climbing plants, or other features that might provide access for cats. Keeping boxes away from windows and doors also prevents bat droppings from accumulating and reduces the chances of learner fliers entering open windows or doors.

Surrounding habitat

To increase the chances of bats roosting in a bat box, it should be placed adjacent to linear commuting features such as walls. Some bat species use these features for navigation between their roosting site and feeding grounds and to avoid flying in open and exposed areas. Bats will be more likely to discover the artificial roost if it is placed close to an existing flight path. The southwest corner of the site is therefore the best area for the boxes as that was the area of most activity during both surveys (September 2021 and June 2023).

4.4.2 Bird Boxes

A series of 4+ bird boxes should be erected on suitable areas of the walls post works in an undisturbed area. Examples of bird boxes are shown in Appendix C.

Boxes for tits, sparrows or starlings should be fixed two to four metres up from the ground. Make sure that the birds have a clear flight path to the nest without any clutter directly in front of the entrance. Tilt the box forward slightly so that any driving rain will hit the roof and bounce clear. Two boxes close together may impinge on adjoining territories, by putting up different boxes, several species can be attracted. Aim to space boxes 75-100m apart.

Nest boxes are best put up during the autumn. Many birds will enter nest boxes during the autumn and winter, looking for a suitable place to roost or perhaps to feed. They often use the same boxes for nesting the following spring. Tits will not seriously investigate nesting sites until February or March.

5. CONCLUSION

On the basis of the findings of the bat and nesting bird survey during September 2021 and updated in June 2023, it is concluded that the overall impact on bats, arising from the Proposed Development, will most likely be negligible for bats if:

- A Bat friendly lighting design is incorporated into the final Lighting Design using best guidance.
- A soft tree felling procedure which is done outside the bird nesting season, is used for the tree which needs removal for the proposed redevelopment.
- Bat and Bird boxes should be erected on suitable substrates in undisturbed locations, which are not illuminated, during the operational phase.
- Works cease if bats are uncovered at any stage during works and a Derogation Licence acquired from the NPWS.

APPENDICES

APPENDIX A

Plates September 2021



Plate 1 Looking north. Existing Pitch and Terraces.



Plate 2 Jodi Stand, looking south (September 2021).



Plate 3 Looking to the southwest of site, Des Kelly Stand to the right of plate.



Plate 4 Jodi Stand, looking west. Negligible bat potential.



Plate 5 Jodi Stand at night with St Peter's Church in the background. Area of highest bat activity was in the southwest corner.



Plate 6 Area of highest bat activity was in the southwest corner above.



14 Sep 2021 06:23:25
327 An Cuarbhóthar Thuaidh
Baile Phib
Contae Bhaile Átha Cliath

Plate 7 Dawn survey with ambient weather conditions and mild (17°C) temperatures.



Plate 8 Netting on the RSJ in Jodi Stand to deter nesting birds. Would also discourage roosting bats as they would not have a clear flight path.

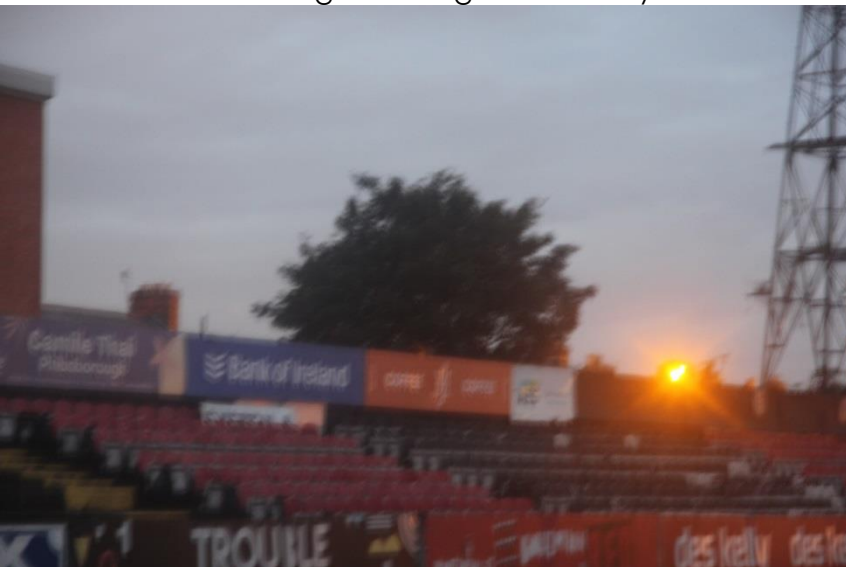


Plate 9 Sycamore tree adjacent to Des Kelly stand/terrace. Negligible bat roost potential.



Plate 10 Sycamore tree, the only affected tree by works. Low bat potential. Views of both sides.

Plates June 2023



Plate 11 The Jodi Stand in June 2023



Plate 12 The Des Kelly Stand in June 2023



Plate 13 Buildings onsite, Negligible bat roost potential.



Plate 14 The cluster of Buildings in the southwest corner where the most activity took place from a small number of bats. No bat emergence from these small structures.



Plate 15 Only tree onsite - Sycamore tree adjacent to Des Kelly stand/terrace. Negligible bat roost potential.

APPENDIX B

13/09/2021	Species Text	Calls [#]	Mean Peak Frequency [kHz]	Mean Max Frequency [kHz]	Mean Min Frequency [kHz]	Mean Call Length [ms]	Mean Call Distance [ms]	Temperature [°C]	Latitude [WGS84]	Longitude [WGS84]
19:12:57	Common Pipistrelle	3	42.8	43.4	42.5	6.6	280	17	53.36181	-6.27463
20:02:16	Common Pipistrelle	10	46.9	48	46.5	7	219	17	53.36179	-6.27464
20:13:40	Common Pipistrelle	28	43.2	53.5	42.9	6	104	17	53.36142	-6.27432
20:17:51	Common Pipistrelle	20	47.9	54.8	47.5	4	86	17	53.36151	-6.27542
20:24:04	Common Pipistrelle	30	46.8	57.8	46.3	5	90	16	53.36149	-6.27586
20:35:11	Common Pipistrelle	5	23	23.9	22.5	11.1	441	16	53.36181	-6.27463
20:40:40	Common Pipistrelle	17	44.7	53.5	44.4	5	100	16	53.36153	-6.27566
20:42:37	Leisler's Bat	1	28.7	32.3	25.6	5.2	0	16	53.36222	-6.27586
20:56:13	Common Pipistrelle	13	48.8	58.3	48.4	6	324	16	53.3618	-6.27461
23:18:21	Common Pipistrelle	2	47.4	48.8	46.5	2.3	1634	16	53.36156	-6.27571
01:21:42	Leisler's Bat	3	26.1	30	25.4	5.2	229	16	53.36131	-6.27576
05:23:54	Common Pipistrelle	43	46.2	49.2	45.4	5	95	16	53.36178	-6.27463
06:14:46	Common Pipistrelle	22	47.5	52	47	4	96	17	53.36155	-6.2757
06:21:58	Common Pipistrelle	8	47	49.2	46.6	7	100	17	53.36146	-6.27563
06:24:30	Common Pipistrelle	16	47.3	50.1	46.8	5	320	17	53.36151	-6.27562
06:27:04	Common Pipistrelle	23	45.6	48.2	45.3	7	110	17	53.36153	-6.27576
06:31:02	Common Pipistrelle	9	45.9	47.2	45.3	7	212	17	53.36161	-6.27573
06:35:58	Common Pipistrelle	111	46.5	56.6	45.9	7	90	17	53.3617	-6.27582

Timestamp	Species Text	Calls [#]	Mean Peak Frequency [kHz]	Mean Max Frequency [kHz]	Mean Min Frequency [kHz]	Mean Call Length [ms]	Mean Call Distance [ms]	Temperature [°C]	Latitude [WGS84]	Longitude [WGS84]
08/06/2023 21:52	Common Pipistrelle	46	45.3	51.9	44.6	7	100	16	53.36155	-6.27575
08/06/2023 21:53	Common Pipistrelle	3	44.5	45.6	44	6.1	551	16	53.36153	-6.27575
08/06/2023 21:53	Common Pipistrelle	2	44.7	48.3	44.2	5.9	82	16	53.36154	-6.27571
08/06/2023 21:53	Common Pipistrelle	19	45.1	47.3	44.6	7	80	16	53.36156	-6.27574
08/06/2023 21:55	Common Pipistrelle	18	45.3	47.9	44.7	7	95	16	53.36161	-6.2757
08/06/2023 21:55	Common Pipistrelle	17	46	50.5	45.2	6	100	16	53.36159	-6.27568
08/06/2023 21:55	Common Pipistrelle	12	45	48.2	44.3	7	234	16	53.36155	-6.27568
08/06/2023 21:57	Common Pipistrelle	15	45.5	48.6	44.7	6	283	16	53.36156	-6.27559
08/06/2023 21:58	Nathusius' Pipistrelle	80	41.3	49.2	40.4	7	104	16	53.36153	-6.2756
08/06/2023 21:58	Nathusius' Pipistrelle	106	41.2	49.1	40.4	7	104	16	53.36154	-6.27574
08/06/2023 21:59	Nathusius' Pipistrelle	59	41.2	46.2	40.4	7	110	16	53.36154	-6.27577
08/06/2023 22:00	Nathusius' Pipistrelle	12	41.3	43.7	40.8	7	260	16	53.36157	-6.27574
08/06/2023 22:00	Nathusius' Pipistrelle	2	41	41.6	40.4	6.6	470	16	53.36158	-6.27573
08/06/2023 22:00	Nathusius' Pipistrelle	3	41.1	42.5	40.7	5	419	16	53.36155	-6.27569
08/06/2023 22:01	Nathusius' Pipistrelle	10	41.4	45.6	40.9	5	90	16	53.36155	-6.2757
08/06/2023 22:01	Nathusius' Pipistrelle	40	41.4	47.9	40.2	7	90	16	53.36152	-6.27577
08/06/2023 22:02	Common Pipistrelle	2	46.4	48.5	45.4	5.9	569	16	53.36156	-6.27572
08/06/2023 22:02	Nathusius' Pipistrelle	13	41.1	44.7	40.6	6	90	16	53.36157	-6.27564
08/06/2023 22:02	Common Pipistrelle	70	45.6	51.7	44.9	7	100	16	53.36161	-6.27569
08/06/2023 22:03	Common Pipistrelle	3	44.7	46.3	44	7	800	15	53.36174	-6.27557
08/06/2023 22:03	Common Pipistrelle	5	44.7	45.6	44.2	7	441	15	53.3618	-6.27558
08/06/2023 22:03	Common Pipistrelle	69	46.1	54.1	45.2	7	94	15	53.3618	-6.2756
08/06/2023 22:04	Nathusius' Pipistrelle	3	41	41.8	40.7	7.6	178	15	53.36181	-6.27555
08/06/2023 22:04	Nathusius' Pipistrelle	4	40.6	41.8	40.2	7	163	15	53.36174	-6.27544
08/06/2023 22:04	Common Pipistrelle	11	44.2	46.4	43.6	6	100	15	53.3617	-6.27543
08/06/2023 22:05	Common Pipistrelle	22	45.8	51.7	45.1	5	100	15	53.36155	-6.27539
08/06/2023 22:05	Common Pipistrelle	29	46	51.3	44.8	7	170	15	53.3616	-6.27533
08/06/2023 22:05	Common Pipistrelle	99	45.9	53.2	45	7	94	15	53.36167	-6.2753
08/06/2023 22:06	Nathusius' Pipistrelle	127	42.8	51.1	41.9	7	94	15	53.36172	-6.27541

Timestamp	Species Text	Calls [#]	Mean Peak Frequency [kHz]	Mean Max Frequency [kHz]	Mean Min Frequency [kHz]	Mean Call Length [ms]	Mean Call Distance [ms]	Temperature [°C]	Latitude [WGS84]	Longitude [WGS84]
08/06/2023 22:06	Common Pipistrelle	3	45.3	47.1	44.7	7	209	15	53.36167	-6.27564
08/06/2023 22:06	Common Pipistrelle	52	45.3	50.1	44.6	7	110	15	53.36167	-6.27565
08/06/2023 22:07	Common Pipistrelle	20	46.1	50.6	45.3	7	75	15	53.36164	-6.27569
08/06/2023 22:07	Common Pipistrelle	10	46.5	49.8	45.8	7	311	15	53.36159	-6.27569
08/06/2023 22:07	Common Pipistrelle	15	45.8	49.9	45.2	7	110	15	53.36159	-6.2757
08/06/2023 22:08	Common Pipistrelle	4	46.4	47.3	45.8	5	213	15	53.36159	-6.27563
08/06/2023 22:08	Common Pipistrelle	8	46.1	48.2	45.2	7	100	15	53.3616	-6.27562
08/06/2023 22:08	Common Pipistrelle	8	45.4	47.4	44.9	6	248	15	53.36158	-6.27565
08/06/2023 22:09	Nathusius' Pipistrelle	16	41.7	50.2	41.2	7	90	15	53.36149	-6.27551
08/06/2023 22:09	Common Pipistrelle	23	45.4	50.8	44.8	7	90	15	53.36145	-6.27542
08/06/2023 22:09	Nathusius' Pipistrelle	6	41	43	40	7	191	15	53.36144	-6.27527

APPENDIX C



**Generic 1B Schwegler
Box Nest Box**



Owl Nest Box



Starling Nest Box



Swift Nest Box



Sparrow Terrace



House Martin Nest box

Available on link below with fitting instructions on website

<https://www.nhbs.com/4/bird-boxes>



**2F Schwegler Bat Box
(General Purpose)**



**PRO UK Build-in
WoodStone Bat Box**



Maternity Bat Box



**4m Pole Mounted Large
Colony Bat Box**

Available on link below with fitting instructions on website

<https://www.nhbs.com/search?q=bat+boxes>