CLARINDA PARK ECOLOGICAL WALKOVER AND BAT SURVEY

Kevin Delahunty, Ecological Consultant
9th September 2023

Table of Contents

1. Introduction

Barry Transportation intends to develop and enhance Clarinda Park in Dún Laoghaire, Co. Dublin (Grid reference: O 24630 28117) on behalf of Dún Laoghaire-Rathdown County Council. The reclamation of the carparks on both the east and western perimeter of the park is planned as part of the park enhancements including a reduction in noise pollution and traffic calming. An ecological walkover, tree roost inspection, bat emergence survey and bat activity survey were completed in the park on the 25th of August 2023.

The surveys were completed by Kevin Delahunty (bat specialist). All nine resident species of bat in the republic of Ireland are of 'Favourable' conservation status (National Parks and Wildlife Service, 2013) however, all are protected under current European and National legislation. Some of the trees within the park could potentially be impacted by the works.

This report details the findings of a desk study into previous records from the National Biodiversity Data Centre and Bat Conservation Ireland's database of bat roosts and activity records. The results of an ecological walkover, tree inspection for bat roosting potential and bat emergence and activity surveys are also detailed.

2. Methodology

An ecological walkover of the park was conducted during daylight hours. The park's habitats were recorded along with plant and tree species.

Bats utilise woodland areas, treelines and hedgerows as commuting and foraging grounds and some Irish bat species such as the Myotis species need areas of limited light to successful commute through the landscape. Therefore, developments in areas such as parklands may adversely affect bats in a number of ways such as vegetation removal for pathways which may become potential barriers of lighting or lamps that bats are unwilling to cross. Bat roosts may be disturbed or lost completely during tree removal. On top of these direct impacts, tree and hedgerow removal as well as an increase in lighting in an area can have an effect on invertebrate prey species and foraging grounds.

Therefore, it is vital to develop a full understanding of bat activity at development sites to identify any zones of conflict and minimize impacts on protected species through mitigation. Guidelines followed during onsite surveys include:

- Collins, J. (ed.) (2016) Bat Surveys for Professional Ecologists. Good Practise Guidelines (3rd edn). The Bat Conservation trust, London
- 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 guidelines recommend roosting preferences, survey types and timings and foraging habitat preferences as well as species-specific considerations. Each survey method has its own specific merit in observing and identifying bat species, their level of activity and their use of the landscape. Bat activity surveys need to be conducted during the spring and summer months, when bats are most active (Figure 1). Hibernation occurs during the winter months. Roosting sites and commuting or foraging habitats can be divided into four categories, depending on their suitability (Table 1).

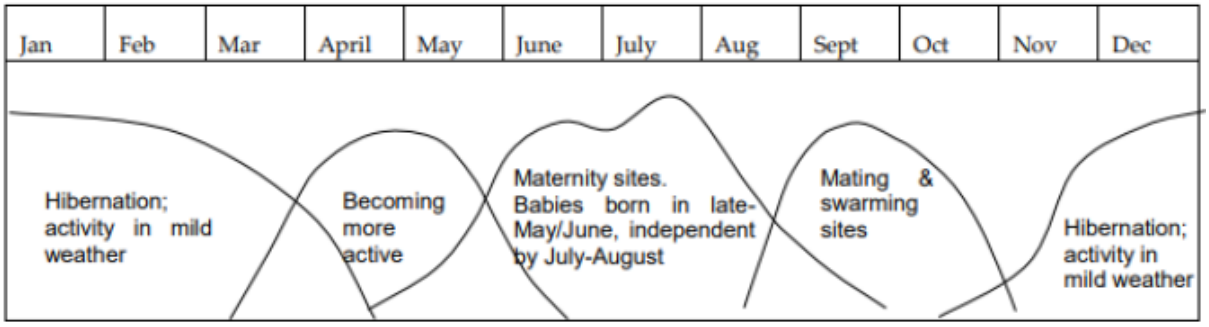

Figure 1: The bat year (NPWS Bat Mitigation Guidelines for Ireland, 2006)

Table 1: Guidelines for assessing the potential suitability of proposed project sites for bats, based on the presence of habitat features within the landscape

Suitability	Description	
	Roosting Habitats	**Commuting and Foraging Habitats**
Negligible	Habitats on site unlikely to be used by roosting bats.	Habitats on site unlikely to be used by foraging or commuting bats.
Low	A habitat or structure with one of more potential roosting sites that could be utilised by opportunistic bats. These potential roosting sites are not sufficient (space, protection, suitable surrounding habitat etc.) for a large number of bats to use on a regular basis (unsuitable for maternity or hibernation roosts).	Gappy hedgerows and treelines and other habitats that could be used by a small number of commuting or foraging bats. Habitats not very well connected to the surrounding landscape.
Moderate	A habitat or structure with one of more potential roosting sites that could be utilised by bats due to their size, shape, protection and the surrounding landscape. These roosts are unlikely to support a roost of high conservation status.	Habitat is connected to the wider landscape through continuous treelines, hedgerows and other habitats and can be used by bats for commuting and foraging (e.g.: mature hedgerows, mature treelines, woodland, water bodies such as rivers and streams).
High	A habitat or structure with one of more potential roosting sites that could be utilised by bats that is clearly suitable for use by a large number of bats on a regular basis due to their size, shape, protection and surrounding habitat.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting and foraging bats such as river valleys and streams (especially tree lined watercourses) broadleaved woodlands, hedgerows, lines of trees and woodland edge. Site is close to and connected to known roosts.

(Note: adapted from Collins 2016)

2.1 Desktop Survey

A desktop review of the area surrounding the proposed development was undertaken through the evaluation of relevant literature. Records of bat species within the vicinity of the proposed development site where investigated thorough a review of Bat Conservation Ireland's National Bat database and the National Biodiversity Data Centre's bat records and maps.

The proposed development site and surrounding areas that were deemed likely to be of interest for bats were noted from mapping before being assessed on the ground. Habitats on site were assessed for the favourability for bats including for potential roosts and for foraging areas.

2.2 Visual Tree Inspection and Bat Detector Survey

Potential bat roosting areas were assessed during daylight hours through visual inspection of the trees within the site boundary. The presence of roosts is often shown by:

- Grease staining at the entrance of roost
- Presence of bat droppings under roost entrance or streaking beneath holes, cracks or crevices where bats are roosting
- Hollow trees, or tree containing cracks, holes or cervices in the bark
- Peeling, loose bark on some tree species as well as flaking bark on some conifer species.
- Lower clutter level – with greater access to branches and tree trunks
- Connection with the surrounding landscape and connection to other roosting locations
- Droppings and uneaten remains of prey such as moth or butterfly wings.

An emergence survey was conducted at area thought most suitable for a bat roost along the southern treeline of the park. This survey took place 15 minutes before sunset and for two hours (20:17-22:17).

The emergence survey was followed by an activity transect with covered the entire perimeter of the park, along the carparks, around the tennis courts and along the paths that cut though the grassland area. The bat emergence survey and activity transect were conducted using a handheld heterodyne/frequency division 'Batbox Duet' bat detector and an Echo Meter Touch 2 bat detector and iPad for visual identification as well as audible.

2.3 Survey Constraints

There were no climatic or seasonal constraints in regard to bat survey as it was undertaken within the active bat season. The surveys were undertaken during optimal conditions. Locating and identifying tree roosts can be difficult in August when foliage is still dense making the bat signs difficult to spot.

2.4 National and international legislation relating to bats in Ireland

All Irish bats are protected under the Wildlife Act (1976) and Wildlife Amended Act (2000). The EC Directive on The Conservation of Natural Habitats and of Wild Fauna and Flora (Habitats Directive 1992) protects bats, and their habitats. All Irish bats are listed in Annex IV of the Habitats Directive with the Lesser Horseshoe Bat (*Rhinolophus hipposideros*) being further listed in Annex II. Ireland has also ratified two international conventions, which protect bats as well as other fauna. 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.

Under current Irish legislation, it is an offence to destroy or disturb a known bat roost. To do so requires a derogation licence which has to be obtained from the National Parks and Wildlife Services **before** works commence.

3. Existing Environment

The proposed development site is located at Clarinda Park in Dún Laoghaire, Co. Dublin (Grid reference: O 24630 28117). The site is surrounded by one-way roads and includes tennis courts to the north and two cars parks, one to the west and one to the east. The areas within the planning application boundary consists mainly of improved amenity grassland (GA2), artificial surfaces (BL3) with some treelines (WL2) around the perimeter of the car parks. A thicker treeline also makes up the southern edge of the park although the majority of these trees are on private land with just a single horse chestnut tree located within the site boundary. No Annex I habitats are located within the park.

3.1 Designated sites of conservation interest

The site is not contained within, or directly adjacent to, any National or European protected sites. Natural Heritage Areas (NHA) are legally protected from damage from the date on which they are formally proposed for designation under the Wildlife (Amendment) Act 2000. The Dalkey Coastal Zone and Killiney Hill NHA (Site Code: 001206) is located approximately 390 m to the north of the park. The South Dublin NHA and Special Area of Conservation (SAC) (Site Code: 000210) are located approximately 1.5 km to the north west. The South Dublin Bay and

River Tolka Special Area of Protection (SPA) (Site Code: 004024) is also located 1.5 km to the north west of the proposed development site. Rockabill to Dalkey Island SAC (Site Code: 003000) is located approximately 2.8 km to the east of the site.

3.2 Habitats

Three habitat types based on Fossitt (2000) were identified on-site, as shown in Figure 2.

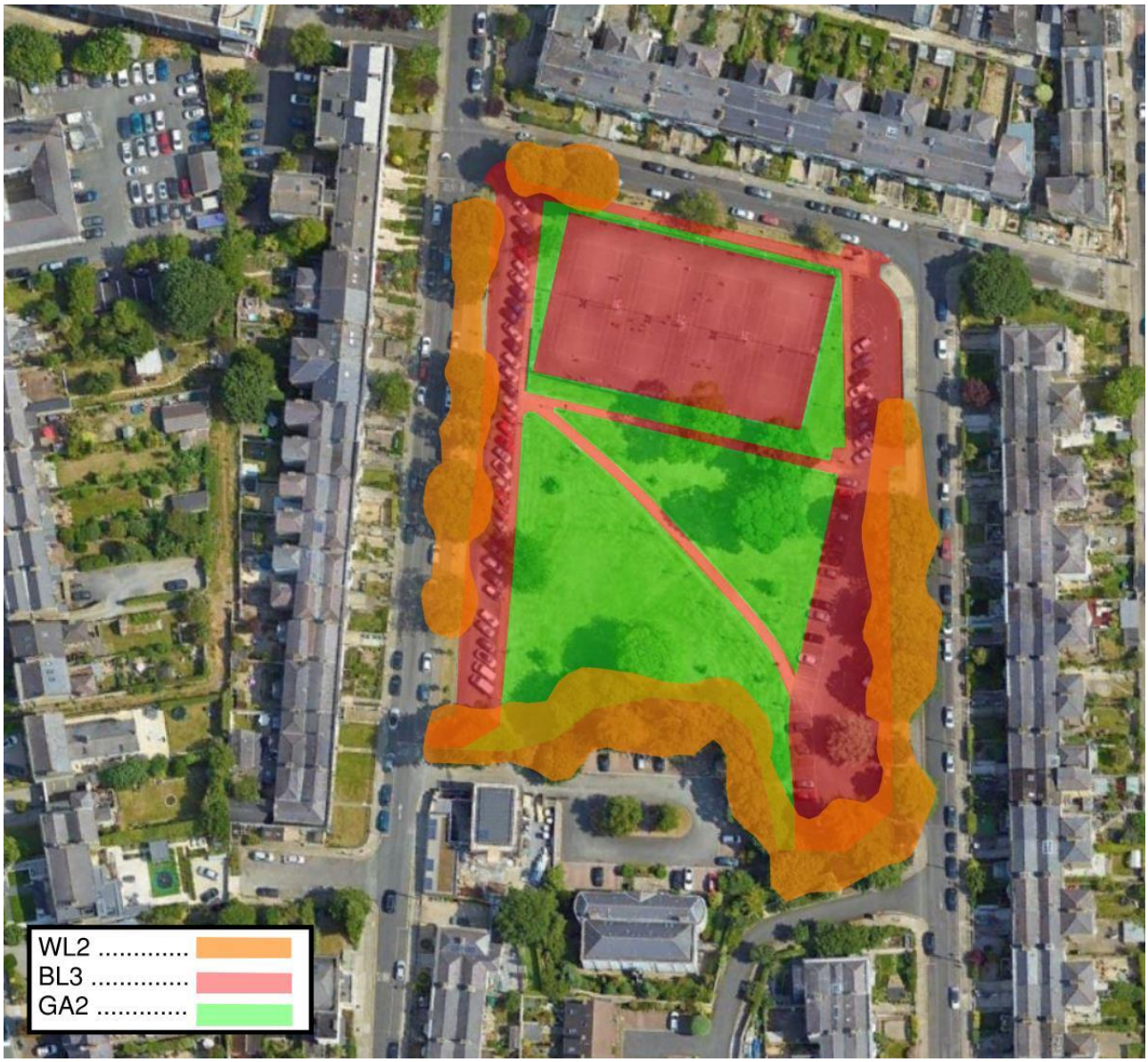

Figure 2: The different habitats found in Clarinda Park, Dún Laoghaire, Co. Dublin

These habitats were as follows:

- Improved Amenity Grassland (GA2) (Plate 1 and Plate 2)

The proposed development site is mainly composed of a grassland area and artificial surfaces. The dominant species of the grassland is perennial ryegrass (*Lolium perenne*). The grassland also contains species such as broadleaf plantain (*Plantago major*), ribwort plantain (*Plantago lanceolata*), common ragwort (*Jacobaea vulgaris*), meadow buttercup (*Ranunculus acris*) dock (*Rumex hydrolapathum*), white clover (*Trifolium repens*) and dandelion (*Taraxacum vulgaria*). The grassland is heavily utilised by humans including for sports and other recreational activities. There are some immature trees throughout the grassland, in particular sycamore (*Acer pseudoplatanus*), oak (*Quercus robur*), rowan (*Sorbus aucuparia*) and deodar cedar trees (*Cedrus deodara*) and an immature fir tree (*Abies sp.*). Cherry blossom (*Prunus sp.*) is also found in the grassland. There are two mature sycamore tree and a mature ash (*Fraxinus* excelsior) tree to the southeast of the tennis courts and one mature horse chestnut (*Aesculus hippocastanum*) tree by the treeline to the south of the park perimeter. This habitat is evaluated as being of local importance (lower value).

Plate 1: (Improved) amenity grassland from southwest corner aiming northeast.

Plate 2: (Improved) amenity grassland from west car park looking east.

- Artificial Surfaces (BL3)

Along with the grassland, artificial surfaces feature heavily in the site (Plates 3, 4, 5 and 6). The northern section of the park features four tennis courts approximately 59 m x 35 m. Two paths also cut from west to east and west to south east through the park. There is a car park on the eastern side and western side of the park. A path runs around the north, east and west of the tennis courts (Plate 7). Both car parks run the full length of the park. There is a blue atlas cedar (*Cedrus atlantica glauca*) in the southern section of the east carpark.

Plate 3: West carpark with treeline along western perimeter – looking north.

Plate 4: Tennis courts to the north of the park

Plate 5: Paths across the grassland from west looking east.

Plate 6: East carpark – looking north.

Plate 7: Path north of tennis courts with grass verge and treeline.

- Treelines (WL2)

The treelines around the perimeter of the park contain gaps between the canopy although there are some areas of closed canopy (Plate 8 and Plate 9). The southern perimeter of the site has the densest treeline primarily of mature sycamore; however, these trees are on private land behind a fenced wall (Plate 11). One mature horse chestnut tree is adjacent to this treeline and is located within the park boundary (Plate 10) – on the improved amenity grassland. The eastern perimeter has a treeline around the carpark of primarily mature sycamore with immature oak, ash and common lime (*Tilia cordata*). The treeline of the western perimeter is also composed primarily of sycamore along with ask and horse chestnut. A number of common lime trees and one cherry blossom are located in the north west corner but the northern perimeter does not have a full treeline. This habitat is evaluated as being of local importance (moderate value).

Plate 8: Treeline on western perimeter

Plate 9: Treeline on eastern perimeter

Plate 10: South treeline out of park boundary with single mature horse chestnut inside park.

Plate 11: Eastern section of the southern treeline outside of park boundary (used extensively by foraging Common Pipistrelle (*Pipistrellus pipistrellus*)

4. Results

4.1 Desk Study

Clarinda Park is located at grid reference O 24630 28117 (53.288937, -6.1316154). A review of existing invasive species records from the National Invasive Species Database collated by the National Biodiversity Data Centre showed no invasive species have been recorded within the 1 km square in which the park is located in (O2428). A review of existing bat records from the Bat Conservation Ireland database indicated that there are no known bat roosts located within, or directly adjacent to the park. There are two records of bat activity within the 1 KM square O2428 – Leisler's Bat (*Nyctalus leisleri*) and Common Pipistrelle (*Pipistrellus pipistrellus*). The database does hold a number of records of bats from the 10 km square in which the site is located (O22). These include records of bat activity and bat roosts (Table 2).

Table 2: Adjudged status of Irish bat species within the 10 km square O22 which contains Clarinda Park

Common Name	Scientific Name	10 km Radius	Known Roost	Source
Leisler's Bat	*Nyctalus leisleri*	Present	0 known	BCI Database
Soprano Pipistrelle	*Pipistrellus pygmaeus*	Present	0 known	BCI Database
Common Pipistrelle	*Pipistrellus pipistrellus*	Present	0 known	BCI Database
Nathusius' Pipistrelle	*Pipistrellus nathusii*	Potential	0 known	BCI Database
Brown Long-Eared Bat	*Plecotus auritus*	Present	1 known	BCI Database
Daubenton's Bat	*Myotis daubentonii*	Present	0 known	BCI Database
Natterer's Bat	*Myotis nattereri*	Present	0 known	BCI Database
Whiskered Bat	*Myotis mystacinus*	Potential	0 known	BCI Database
Lesser Horseshoe Bat	*Rhinolophus hipposideros*	Absent	0 known	BCI Database

4.2 Field Study

The ecological walkover of Clarinda Park found no invasive species or Annex I habitats within the proposed site boundary. A tree survey along with bat emergence and activity surveys were undertaken on 25th of August 2023.

4.2.1 Tree survey

The trees along the perimeter of the park (mainly sycamore, ash and common lime) and the five matures trees within the grassland area (sycamore, ash and horse chestnut) were assessed for their potential to support roosting bats. Some holes, crevices and cracks within the trees were noted as having some potential but no other indicators of roosting bats (such as staining or droppings) (Plate 12-15). A number of the cracks and openings into the trees has spider webbing over the entrance. Ivy cover was not prevalent on the trees around the perimeter of the park or the trees in the grassland. The cover offered by the trees along the perimeter allow them to be used as a commuting corridor for some species. However, lighting along the road and along the paths through the parks indicated that only the more common bat species, such as the Common and Soprano Pipistrelles might use the park for commuting or foraging. The treeline to the south of the park, which is located outside of the park perimeter with the exception of the horse chestnut tree, offered a darker area for potential foraging bats.

Plate 12: A hole in a sycamore tree branch – a potential entrance point for roosting bats

Plate 13: A hole in a sycamore tree branch – a potential entrance point for roosting bats

Plate 14: A hole in an ash tree trunk – a potential roosting site roosting bats

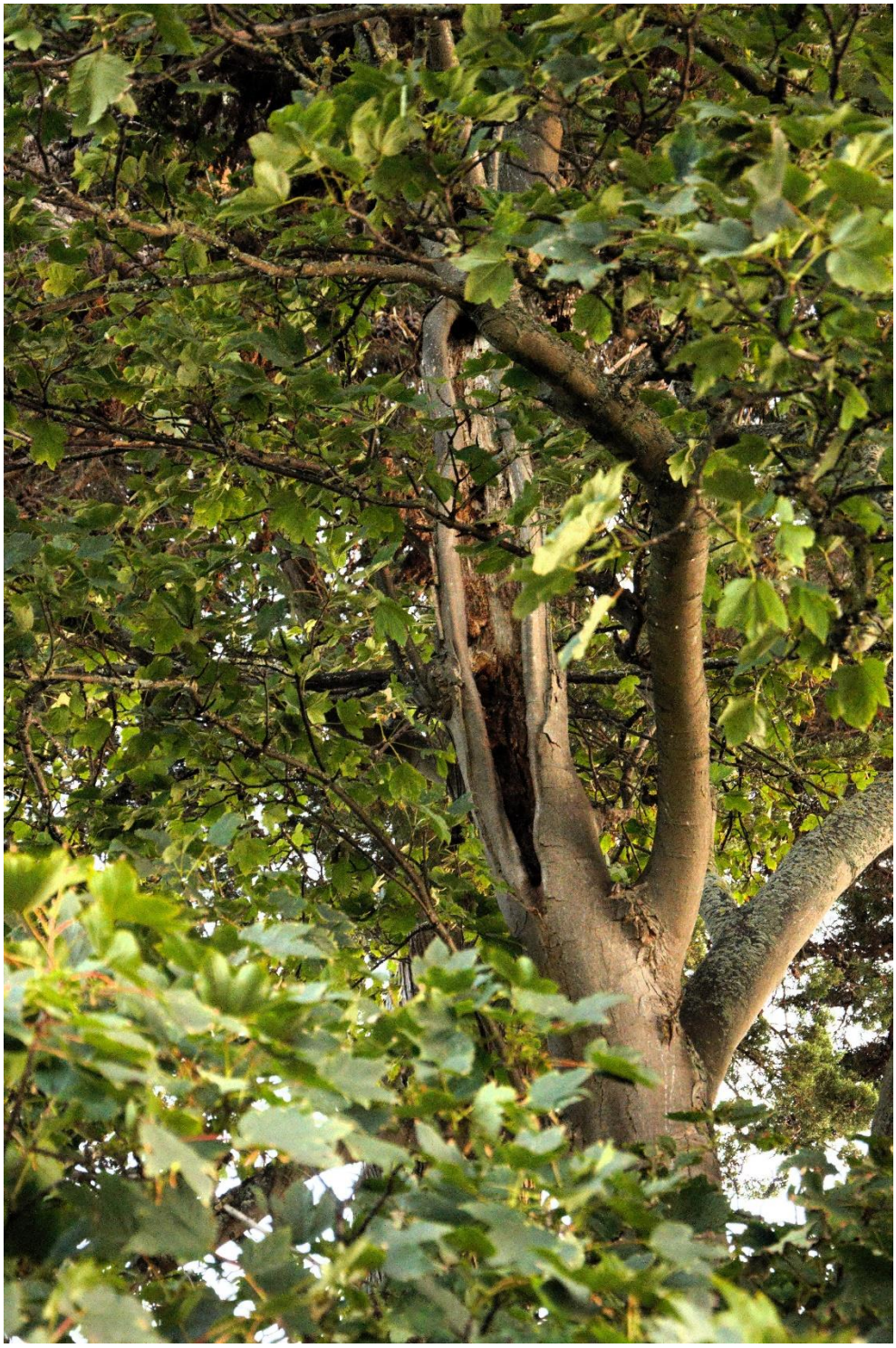

Plate 15: A crack in a sycamore tree trunk – a potential entrance point for roosting bats

4.2.2 Emergence Survey

The positioning for the emergence survey was located close to the horse chestnut tree in the southern section of the park with viewpoints of trees along the southern perimeter. The weather was ideal for bats with dry and calm conditions and a temperature of 17°C at the start of the survey (dropping to 15°C by the end of the survey). The survey was conducted between 20:17 and 22:17. The park is well lit at night – with white lights along the roads, white lamps lighting the pathways through the park, floodlights at the tennis courts and white lights on the grounds of Clarinda Park House to the south of the park.

No active roost was recorded during the survey. Two commuting and foraging species were recorded during the survey. A Leisler's Bat was first recorded at 20:39, commuting over the park. The Common Pipistrelle was recorded foraging along the treeline to the south of the park. The first bat was recorded at 21:00 and at least three bats continued to forage in this area for the rest of the survey. The bats were observed foraging along the southern treeline and moving over the grassland area to the four trees at the south eastern section of the tennis courts before moving back to the treeline again (Plate 16). A Leisler's Bat was also recorded foraging over the trees at the southern perimeter. The Pipistrelle bats did not appear to mind flying through the lamp light in the park. Pipistrelles bats often forage near street lights were flying insects have been attracted towards the light.

4.2.3 Activity Survey

The bat activity survey commenced directly after the emergence survey at 22:20 (Figure 3). Common Pipistrelle bats were recorded again foraging along the treeline to the south of the park and between this treeline and the trees at the south eastern point of the tennis courts. No other bats were recorded around the perimeter of the park, carparks or around the tennis courts.

Plate 16: Foraging area of Common Pipistrelle (noted during emergence survey and activity survey) located mainly between the treeline at the south of the park and the four mature trees at the south east corner of the tennis courts.

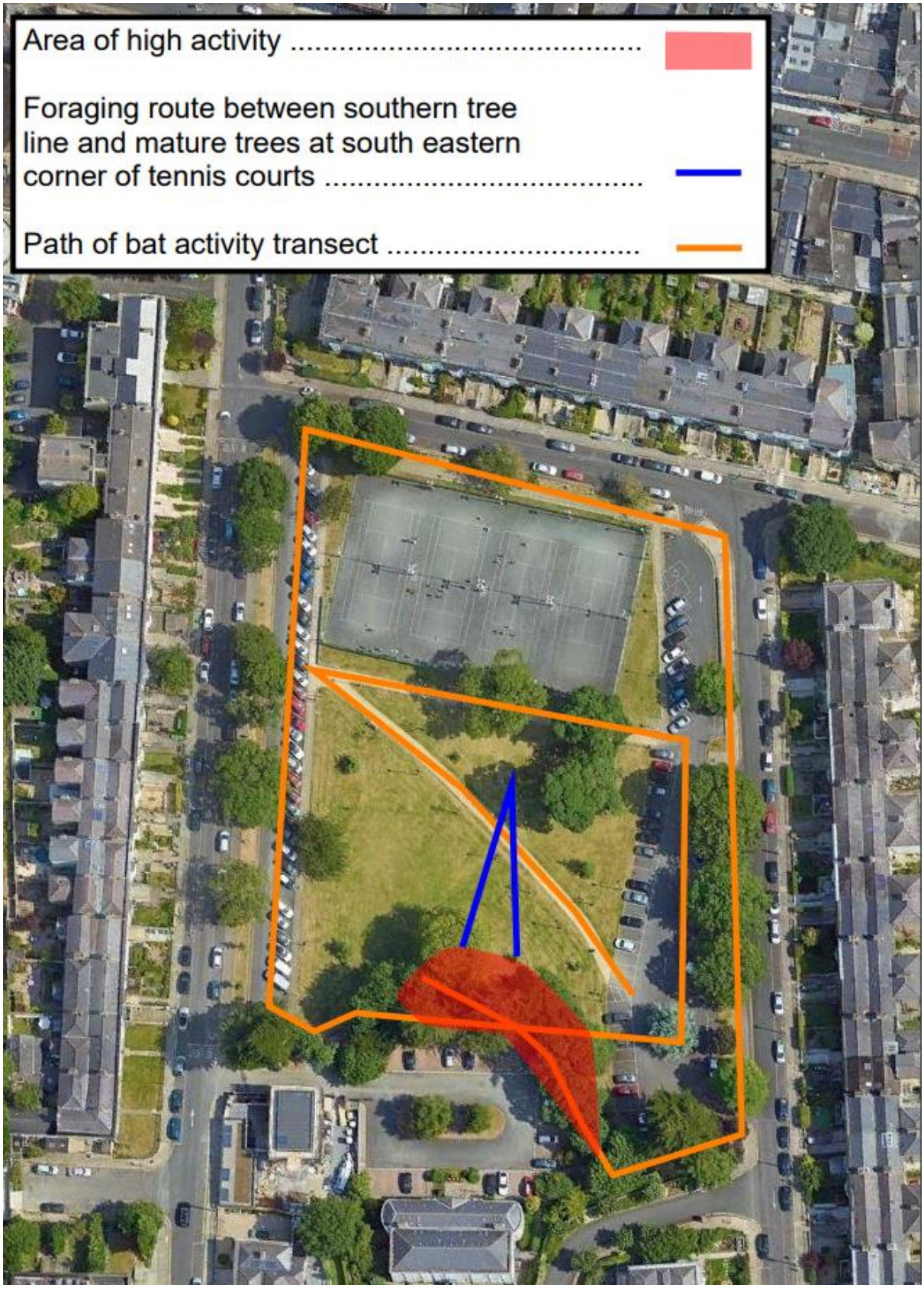

Figure 3: Bat activity transect undertaken on the 25th August 2023.

5. Description of Likely Significant Impacts

Bat species located within the proposed development site will potentially be affected during the construction phase of the project. It is unlikely that any bat roost will be significantly affected during works. It is likely that the foraging area will be impacted during the construction phase. Although no confirmed bat roost was recorded during the tree and bat survey of the park, the location is confirmed as an important foraging habitat for the bats, in particular, the Common Pipistrelle, which relies on the prey insects found along the mature treeline to the south of the park.

The proposed development to enhance Clarinda Park does not require a derogation licence from the National Parks and Wildlife Service. However, there are a number of potential impacts to foraging bats and mitigation measures are listed below.

5.1 Potential Impacts

The proposed development of Clarinda Park through removal of the car parks and enhancement of habitats for biodiversity is likely to have a positive effect on the wildlife using the location, including the bat species that use the park as a foraging area. However, there are a number of potential impacts that could affect bats during the construction phase. Tree removal will directly affect bats through a loss of commuting and foraging habitats and loss of potential tree roosts and resting places. Lighting during the construction phase and new lighting put into the park after construction has the potential to block or alter commuting and foraging routes used by bats in the park. Without appropriate mitigation measures in place this could have a significant impact on the foraging grounds of the bats using the park, in particular, the Common Pipistrelle. The fragmentation of established flight paths may permanently or temporarily alter or deter bats from using the commuting corridor and gaining access to foraging habitats (Entwistle, *et al*, 2001). Fragmentation of foraging habitats could also lead to a reduction of prey species abundance (i.e. reduced insect abundance due to loss of suitable habitat), reducing the amount of prey available for bats in an area causing them to travel further in search of food (Hallmann, *et al*, 2017).

6. Mitigation Measures

All Irish bats are listed on Annex IV of the EU Habitats Directive, with Lesser Horseshoe Bats also being listed under Annex II. Therefore, all species are protected under the Birds and

Habitats Regulations. Breeding and roosting sites are also protected under the Wildlife Acts and it is an offence under that legislation to intentionally disturb, injure or kill bats.

6.1 Retention of trees and enhancement proposals

Where possible, the mature trees within the park boundary should be left intact. They will continue to act as commuting and foraging corridors for the bat species using the park. Enhancement measures of tree planting along the perimeter of the park will reduce the gaps between the surrounding canopy. The vast majority of the foraging was recorded along the treeline to the south of the park – outside the proposed development boundary. These trees will not be impacted by the proposed works. This treeline will be enhanced by a proposed woodland area in the south of the park, which should increase biodiversity within the park, including insect prey species for the bats to feed on and nesting areas for birds. A planned pollinator area with a 'no mow' regime that transitions the woodland to the grassland will also attract in more insect prey as well as benefit other local wildlife. If any seeding of this pollinator area is planned, seed should be requested from the local biodiversity officer from Dún Laoghaire-Rathdown County Council (Anne Murray).

6.2 Timing of works, lighting and noise

In order to reduce any direct impacts on bats, works should commence and be completed during the winter months when bats are in hibernation. Any works being completed during the summer months must stop at sunset. Where lighting is essential (Health and Safety purposes only), the overspill of light will be minimised through directional lighting (i.e. aimed directly onto the works and not the wider landscape) so as to leave some unilluminated areas in which bats can still commute. This will be done through the use of cowls, lighting hoods, or louvres fitted to the rear of luminaries, and/or shields to direct light in a downwards and inwards fashion to intended areas only.

On completion of works, the newly created woodland should not be illuminated in any way and instead remain a dark habitat suitable for foraging and roosting bats.

Anthropogenic noise affects bats in a number of ways, namely; noise avoidance, a reduction of echolocation effectiveness, and/or reduced attention (Lou, *et al*, 2014). Where construction is taking place in close proximity to a commuting corridor or foraging area, works

will cease before sunset so that construction noise will be reduced to ensure normal usage of the park by bats.

7. Residual Impact

Once the outlined mitigation measures are in place, there should be no lasting negative impacts on bats or other wildlife in the area. The planned enhancements to the park for biodiversity should see an increase in wildlife including nesting birds and foraging and roosting bats.

8. Bibliography and References

Collins, J. (ed.) (2016) Bat Surveys for Professional Ecologists. Good Practise Guidelines (3rd ed.). The Bat Conservation Trust, London

Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) 1982.

Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention) 1979.

Dietz, C., & Kiefer, A. (2016). *Bats of Britain and Europe*. Bloomsbury publishing.

EC Directive on The Conservation of Natural habitats and of Wild Fauna and Flora (Habitats Directive) 1992.

Entwistle, A. C., Harris, S., Hutson, A. M., Racey, P. A., Walsh, A., Gibson, S. D., Hepburn, I. & Johnston, J (2001). Habitat management for bats: A guide for land managers, land owners and their advisors. Joint Nature Conservation Committee. Available at http://jncc.defra.gov.uk/pdf/Habitat_Management_for_bats.pdf. (Accessed: 07 September 2023)

Habitat management for bats: A guide for land managers, land owners and their advisors. Joint Nature Conservation Committee. Available at http://jncc.defra.gov.uk/pdf/Habitat_Management_for_bats.pdf. (Accessed: 27 August 2023)

Hallmann, C.A,, Sorg, M,, Jongejans, E,, Siepel, H,, Hofland, N,, Schwan, H, Stenmans W., Muller, A., Sumser, H., Horren, T., Goulson, D. & de Kroon, H. (2017). More than 75 percent decline over 27 years in total flying insect biomass in protected areas. PLoS ONE 12(10): e0185809.

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.

Lou, J., Clarin, B. M., Borissov, I. M. & Siemers, B. M. (2014) Are torpid bats immune to anthropogenic noise? The Journal of experimental Biology, 217, 1072-1078

National Biodiversity Data Centre Map viewer - https://maps.biodiversityireland.ie/Map/Terrestrial/Dataset/128 (Accessed 4 September 2023)

National Parks and Wildlife Service 2013: *The Status of EU Protected Habitats and Species in Ireland. Species Assessments, Volume 3, Version 1.0.* Unpublished report. National Parks and Wildlife Service. Department of the Arts, Heritage and the Gaeltacht, Dublin. Available at https://www.npws.ie/sites/default/files/publications/pdf/Article_17_Print_Vol_3_report_species_v1_1_0.pdf (Accessed 30 August 2023)

Russ, J. (Ed.). (2021). *Bat calls of Britain and Europe: A guide to species identification*. Pelagic Publishing Ltd.

Wildlife Act 1976 and Wildlife [Amendment] Act 2000. Government of Ireland.