



**A BAT ASSESSMENT OF THE ASTRO PARK DEVELOPMENT AT
CAROLAN PARK TALLAGHT**

Grid Ref - O 08243 25220

For Tallaght Town AFC



By Donna Mullen M.P.P.M D.E.N.V.S. P Brian Keeley BSc Hons in Zool

Maio, Tierworker, Kells Co Meath

Date June 2023

www.wildlifesurveys.net



Summary

All lighting has an impact on bats. Because of their eye structure, bats are particularly sensitive to lighting and may become blinded by strong lights. In addition, lights draw moths and insects towards them, leaving dark areas devoid of insects, and reducing food availability for bats.

The use of Astro turf will impact the bats feeding behaviour, as they will be unable to feed on insects which would be present in natural grass. Because of this loss of horizontal feeding areas, we propose to increase the vertical feeding areas, with the planning of native trees and hedgerows and the use of ivy's and climbing plants on structures within the site (clubhouse, containers, concrete shelters, etc)

There is likely be a residual impact to the bat populations from light spillage. For this reason, a compensatory native hedgerow of at least 100 meters, with native trees, will be planted around the car park. This will provide further insect availability and feeding and commuting zones.

No roosts were found on the site.

Bat species found feeding and commuting on the site.

Common pipistrelle - *pipistrellus pipistrellus*

Leisler's bat – *nyctalus Leisleri*

Soprano pipistrelle – *pipistrellus pygmaeus*

Brown long eared bat – *Plecotus Auritus*

Recommendations

(1) Bats will suffer a loss of feeding when the Astro turf is fitted. The area of rough vegetation around the hedgerows must be expanded by 1 metre along the boundaries to allow longer grass to develop. If it is not possible to expand the width by a meter in all areas, then some 2 metre, long grass areas, must be created in compensation. This will particularly benefit the brown long eared bat.

Signage may be needed to explain the bat friendly measures being undertaken to protect biodiversity as this may look 'untidy' (Nature trail signs - Fionn Keeley fionnkeeley@gmail.com)

As horizontal feeding areas will be lost, vertical feeding areas must be put in place. Ivy or climbing plants must be placed on buildings and structures. Ivy should be



native, or species from the All-Ireland Pollinator Plan may be used. [All-Ireland Pollinator Plan species list - http://www.biodiversityireland.ie/wordpress/wp-content/uploads/Pollinator-friendlyplanting-code-temporary-draft.pdf](http://www.biodiversityireland.ie/wordpress/wp-content/uploads/Pollinator-friendlyplanting-code-temporary-draft.pdf)

(2) To encourage bats to use other areas as feeding or commuting areas, a new hedgerow of at least 100 meters, with native species (and including native trees) must be developed along the boundary of the car park at the entrance to the site. The hedgerow must be allowed to become tall, as bats need a range of heights to feed within.

(3) All lighting must be switched off at 9.30 pm. The clubhouse lighting must be on a sensor timer if it is to be on after 9.30 pm. Bats generally emerge half an hour to an hour after sunset, and peak feeding occurs in this time and in the hour and a half before dawn. Restricting the time that the lights are on will ensure that bats have optimum feeding availability in the summertime, when bats are breeding and feeding their young. In wintertime, bats may be in hibernation and there are low levels of bat activity, so lighting will not be as important an issue.

(4) Lighting must not be switched on before dawn. Cowls must be fitted on all lights to direct lighting to the ground level. Small groups of coniferous trees must be planted behind each floodlight, to prevent light spillage behind the lighting.

(5) A lower colour temperature luminaire should be used to reduce the blue light component – see Guidance Notes for the Reduction of Obtrusive Light GN01 (Institute of Lighting Professionals, 2011). <https://theilp.org.uk/publication/guidance-note-8-bats-and-artificial-lighting/>

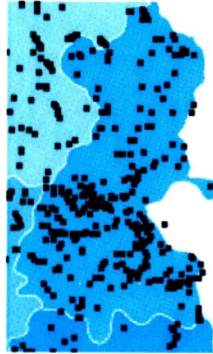
Other lighting must be in accordance with

[Bats and Lighting](#) – Guidance Notes for Planners, Engineers, Architects, and Developers (Bat Conservation Ireland, 2010).

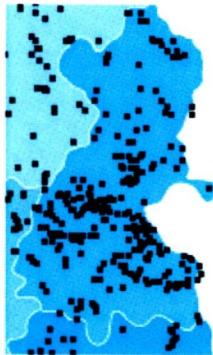
- [Bats and Lighting in the UK](#) – Bats and the Built Environment Series (Institute of Lighting Professionals, September 2018).
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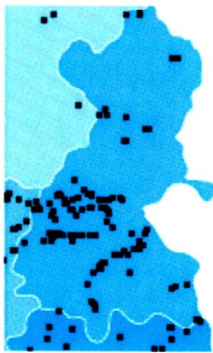
Desktop Survey of the existing environment



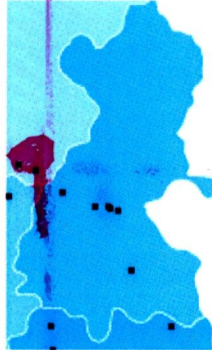
Soprano pipistrelle distribution in Dublin



Leisler's bat distribution in Dublin



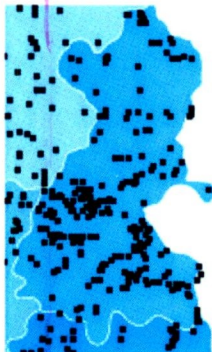
Daubenton's bat distribution in Dublin



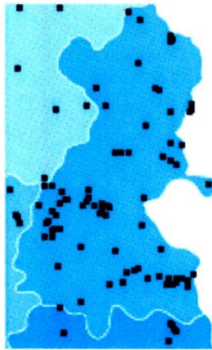
Whiskered bat distribution in Dublin



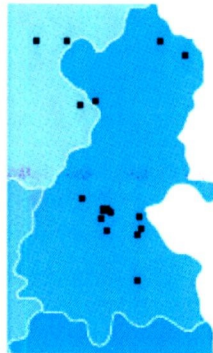
Natterers bat distribution in Dublin



Common pipistrelle distribution in Dublin



Brown long eared bat distribution in Dublin



Thanks to Bat Conservation Ireland for their data. All data from this report will be placed on their database.

All bat data from within 10km of the site is in Appendix III.

Habitat Classification (Fossitt 2000)

GA2 (Amenity grassland))

WL2 (Treelines) semi- mature and mature trees

WL1 (Hedgerow)

Date –27 June 2023

Sunrise – 5.05

Sunset –21.40

Temperature and weather conditions – 17C

Lux levels 0 Lux at 21.53, with all floodlights off.

Proposed works — See Appendix 1

Complexity of lands and ability to cover ground during surveys –All areas were accessible, including the clubhouse.



Constraints – Survey constraints

(1) Mobility of bats – Bat species are mobile and can move from roost to roost, depending on roost availability, feeding availability and weather conditions. They may move to roosts which have not been identified in this report in order to hibernate or create mating or feeding perches. A bat survey is a snapshot of bat activity over the survey time.

(2) Identification of bats- It can be difficult to differentiate myotis species. For this reason, the sound files are included within the report. Brown long eared bats are very quiet, and their presence can be overlooked in bat surveys as they may not register on bat detectors.

Methodology

Bat Survey - Equipment

Exide Lamps

Pletzl Tikka Head torch

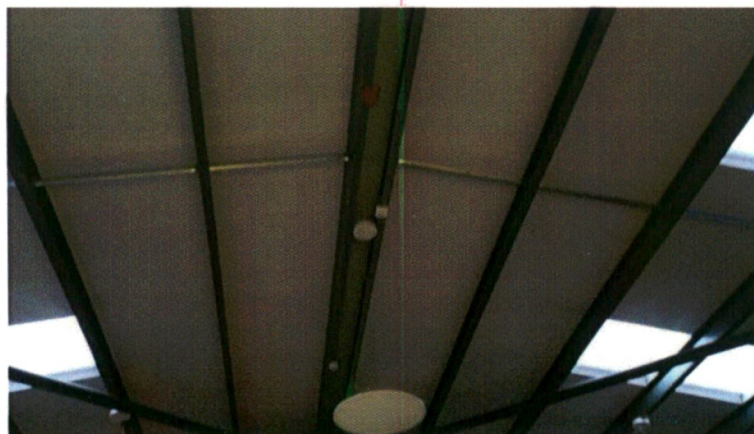
Three bat detectors, one Echo meter touch and two Anabat walkabout– handheld by 3 surveyors, with Kaleidoscope sound analysis software.

One Mini song meter, placed within the new proposed pitch area overnight.

One Thermal imager

Survey

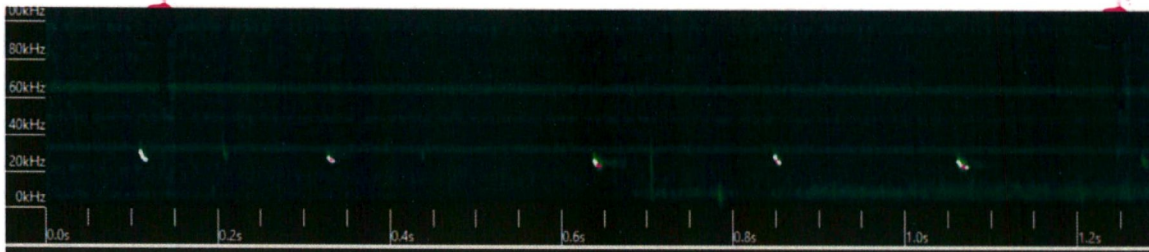
The survey commenced on 27/06/2023 at 21.30. The clubhouse building was checked internally and externally for signs of bat usage- staining, droppings, carcasses, etc. No evidence of bats was found.



Roof of clubhouse building



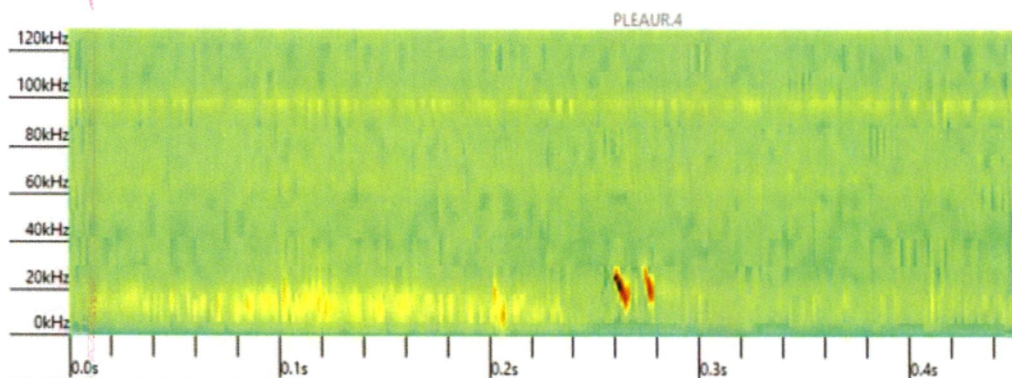
At 22.26 a Leisler's bat was seen to the east of the site near the proposed pitch feeding high in the sky until 22.30. A second Leisler's bat was recorded at the entrance to the site.



Leisler's bat

At 22.30 a soprano pipistrelle was seen feeding along the hedgerow in the southeast of the site. It fed along the hedgerow and was joined by 2 more soprano pipistrelles, which fed together for ten minutes, and were joined by a Leisler's bat.

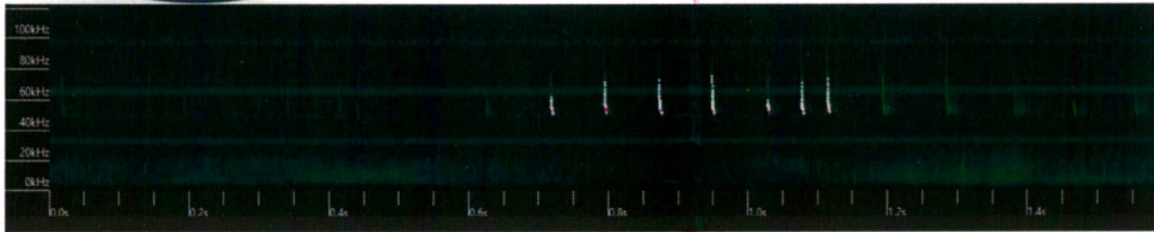
A soprano pipistrelle and Leisler's bat fed along the southern hedge at 22.40. At 22.42 a common pipistrelle moved on site from the east and began feeding along the hedgerow and grassland beside the hedgerow. Two Leisler's bats fed over the grassland to the west of the site. At 22.44 a brown long eared bat was recorded to the west of the site.



Brown long-eared bat signal at 22.44 hours

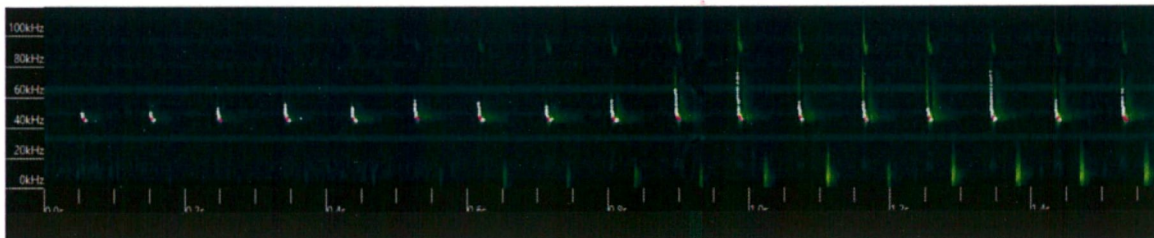
Brown long eared bat over grass

Three soprano pipistrelles were seen feeding at the southern hedgerow, moving from east to west and feeding over the trees and bushes. They were social calling at intervals and sheltering from the wind in the corners provided by the hedgerow.



Soprano pipistrelle

Two common pipistrelles were seen in the southern area of the site, and a soprano pipistrelle was seen over the eastern hedgerow. It moved along this hedgerow, towards the houses at the north of the site at 22.55, where it was joined by a Leisler's bat. At 23.02 a common pipistrelle was recorded by the clubhouse. The *Aurora borealis* was seen from 23.05 until 23.35. It had no impact on bat feeding.



Common pipistrelle signal – Note the echo from the signal bouncing off the clubhouse wall.

A common pipistrelle was also recorded along the eastern hedgerow at 23.11, moving towards the clubhouse at 23.25. A Leisler's bat was also in this area.

At 3.46 a Leisler's bat was seen near the clubhouse, moving east. At 3.57 a common pipistrelle was recorded flying along the eastern hedgerow. At 4.04 a common pipistrelle was seen flying along the eastern hedgerow, then moving towards the main gate, and back to the northeastern corner, feeding and social calling until 4.22. The Leisler's bat remained feeding until 4.27 then moved off site.

Results

The site has been well managed for biodiversity and there was a lot of feeding and commuting of common pipistrelles, soprano pipistrelles, and Leisler's bats along the hedgerows. Most feeding and commuting took place along these hedgerows and



within 15 meters of the hedgerows. The corners of the hedgerows provided shelter from the wind in the early part of the night, and these were important areas for the bats to feed in.

The areas of tall grassland and scrub beside the hedgerows should be expanded, and a new hedgerow established around the car park.

Lighting must be restricted in the summer months, with all lighting switched off at 9.30 pm to allow the bats to continue feeding along these corridors.

No roosts were found on the site.

Bat species found feeding and commuting on the site.

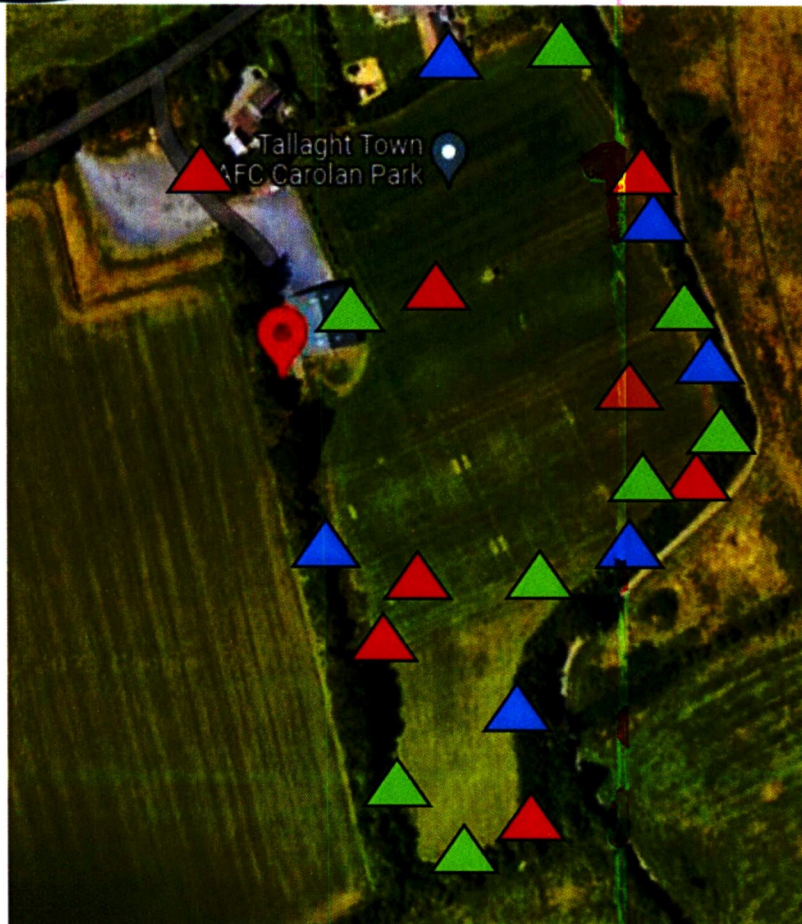
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Map of main bat activity



Red triangle – Leisler's bat

Blue triangle- Soprano pipistrelle

Green triangle – Common pipistrelle

Brown triangle – Brown long eared bat

Recommendations

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boundaries to allow longer grass to develop. If it is not possible to expand the width by a meter in all areas, then some 2 metre, long grass areas must be created in compensation . Signage may be needed to explain the bat friendly measures being undertaken to protect biodiversity as this may look 'untidy' (Nature trail signs - Fionn Keeley fionnkeeley@gmail.com)



These long grass areas must be expanded.

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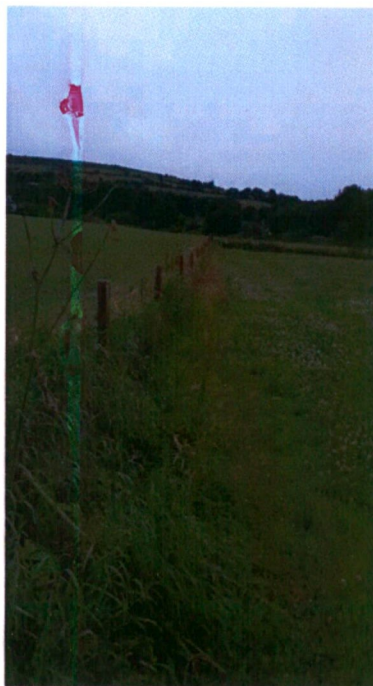


Pollinator Plan species list - <http://www.biodiversityireland.ie/wordpress/wp-content/uploads/Pollinator-friendlyplanting-code-temporary-draft.pdf>



Cover in ivy or species from the All-Ireland Pollinator Plan

(2) To encourage bats to use other areas as feeding or commuting areas, a new hedgerow of at least 100 meters, with native species (and including native trees) must be developed along the boundary of the car park at the entrance to the site. The hedgerow must be allowed to become tall, as bats need a range of heights to feed within.



Plant a new hedgerow here.

(3) All lighting must be switched off at 9.30 pm. The clubhouse lighting must be on a sensor timer if it is to be on after 9.30 pm. Bats generally emerge half an hour to an hour after sunset, and peak feeding occurs in this time and in the hour and a half before dawn. Restricting the time that the lights are on will ensure that bats have optimum feeding availability in the summertime, when bats are breeding and feeding their young. In wintertime, bats may be in hibernation and there are low levels of bat activity, so lighting will not be as important an issue.

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Bat Biology

Female bats gather in groups known as maternity roosts in summer to have their young. They generally have one baby each year, so are slow to reproduce, and disturbance of a maternity roost can be catastrophic.

In winter bats move to old stonework, trees, and caves to hibernate. They are especially vulnerable here as they are slow to awaken, and if tree felling is carried out, they can easily be killed.

Legislation

Bats are protected under the 1996 Wildlife Act, the 2000 Wildlife (Amendment) Act, Stat Ist 94 of 1997, Stat Ist 378 of 2005, The Habitats Directive, The Bonn and Bern Convention, and the Euro bats agreement.

The European Community (Natural Habitats) Regulations S.I. No 94 of 1997 states:

23(1) The minister shall take the requisite measures to establish a system of strict protection for the fauna consisting of the animal species set out in Part 1 of the First Schedule prohibiting –

a) All forms of deliberate capture or killing of specimens of those species in the wild.

1. The deterioration or destruction of breeding sites or resting places of those species.

The EU Habitats Directive

Article 12(1) of the 'Council Directive 92/43/EEC on the conservation of natural habitats and wild fauna and flora (Habitats Directive) states:



"Member States shall take the requisite measures to establish a system of strict protection for the animal species listed in Annex IV(a) and their natural range, prohibiting:

- a) all forms of deliberate capture or killing of specimens of these species in the wild.
- b) deliberate disturbance of these species, particularly during the period of breeding, rearing, hibernation, and migration.
- c) deliberate destruction or taking of eggs from the wild.
- d. deterioration or destruction of breeding sites or resting places."

The EU Habitats Directive (92/43/EEC) lists all Irish bat species in Annex IV and one Irish species, the lesser horseshoe bat (*Rhinolophus hipposideros*), in Annex II. Annex II includes animal and plant species of community interest whose conservation requires the designation of Special Areas of Conservation (SACs) because they are endangered, rare, vulnerable, or endemic. Annex IV includes various species that require strict protection. Article 11 of the Habitats Directive requires member states to monitor all species listed in the Habitats Directive and Article 17 requires States to report to the EU on the findings of monitoring schemes.

The Bern and Bonn Conventions

Ireland is also a signatory to a number of conservation agreements pertaining to bats such as the Bern and Bonn Conventions. The European Bats Agreement (EUROBATS) is an agreement under the Bonn Convention. Ireland and the UK are two of the 31 signatories. The Agreement has an Action Plan with priorities for implementation. Devising strategies for monitoring of populations of selected bat species in Europe is among the resolutions of EUROBATS.

1.3.1 The Berne Convention

Article 6 of the "Convention on the Conservation of European Wildlife and Natural Habitats" (Berne Convention) reads:

"Each Contracting Party shall take appropriate and necessary legislative and administrative measures to ensure the special protection of the wild fauna species specified in Appendix II. The following will in particular be prohibited for these species:

- a) all forms of deliberate capture and keeping and deliberate killing.
- b) the deliberate damage to or destruction of breeding or resting sites.
- c) the deliberate disturbance of wild fauna, particularly during the period of breeding, rearing and hibernation, insofar as disturbance would be significant in relation to the objectives of this Convention; ...



Appendix II lists strictly protected fauna species and this list includes "Microchiroptera, all species except Pipistrellus pipistrelles".

The EUROBATS Agreement

The 'Agreement on the Conservation of Populations of European Bats' (EUROBATS) was negotiated under the 'Convention for the Conservation of Migratory Wild Species' (Bonn Convention) and came into force in January 1994. The legal protection of bats and their habitats are given in Article III as fundamental obligations:

- "1. Each Party shall prohibit the deliberate capture, keeping or killing of bats except under permit from its competent authority.
2. Each Party shall identify those sites within its own area of jurisdiction which are important for the conservation status, including for the shelter and protection, of bats. It shall, taking into account as necessary economic and social considerations, protect such sites from damage or disturbance. In addition, each Party shall endeavour to identify and protect important feeding areas for bats from damage or disturbance."

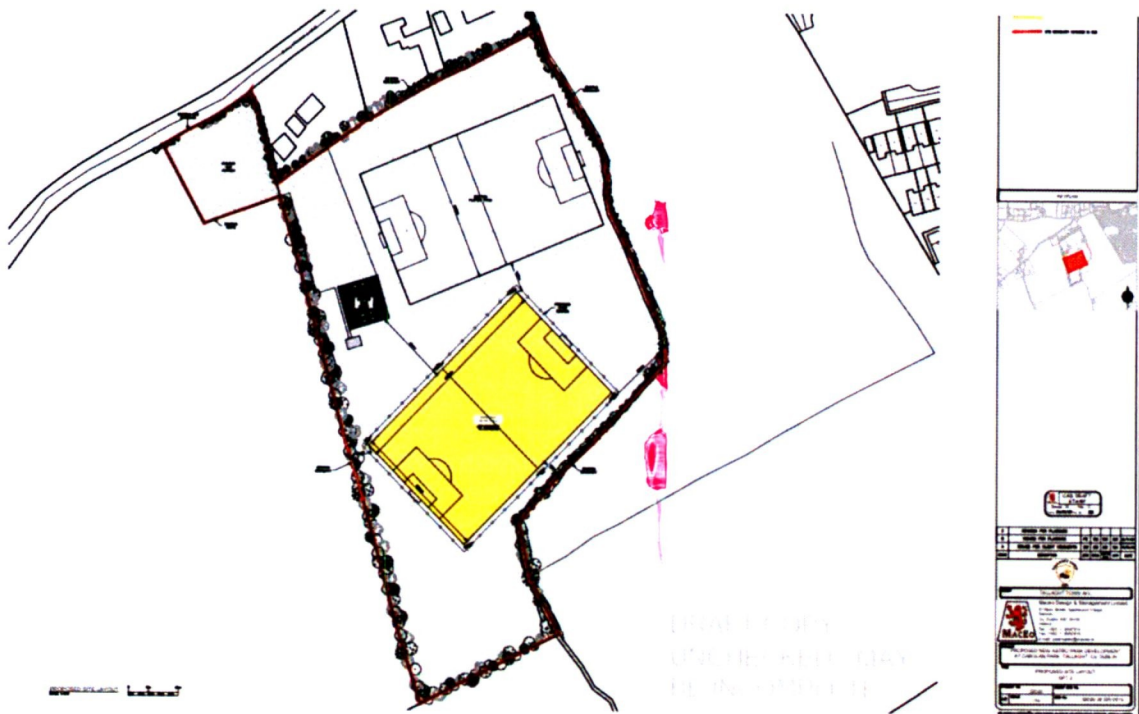
The Agreement covers all European bat species.

Contact Details: I can be contacted at 087 7454233. My email is donnamullen@wildlifesurveys.net and web site is www.wildlifesurveys.net



Appendix 1

Map of proposed development



Appendix II

Anabat Walkabout signals – Handheld – Ferdia Keeley

	A	B	C	D	E	F
1	KALEIDOSCOPE 5.6.0c					
2	Bats of Eu NYCLEI		PIPPIP	PIPPYG	NOID	
3		71	39	18	16	
4						
5						

Appendix III

Bat data from within 10km of the site – from Bat Conservation Ireland

BCIreland data: search results 29 Jun 2023	
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Search parameters: Roosts Transects with observations of all species within 10000m of O0824325220

Roosts					
Name	Grid reference	Grid ref easting	Grid ref northing	Address	Species observed
139 Stillorgan Rd	O1830	318000	230000	Belfield Dublin 4, County Dublin	Unidentified bat
2 Louvain	O1829	318000	229000	Clonskeagh, County Dublin	Nyctalus leisleri, Unidentified bat
23 Woodbrook Park	O127281	312700	228100	Templeogue, County Dublin	Nyctalus leisleri
3 Castles	O016164	301600	216400	Blessington, County Wicklow	Pipistrellus pygmaeus
33 Inchicore Rd	O1234	312000	234000	Inchicore Rd, Dublin 8, County Dublin	Unidentified bat
4 Crookshare	O0125	301000	225000	Rathcoole, County Dublin	Unidentified bat
60 Cremore	O1227	312000	227000	Templeogue, Dublin 16, County Dublin	Unidentified bat
7 Stirling Park	O1530	315000	230000	Orwell Road, Rathgar, Dublin 14	Unidentified bat
71 Forest Hill	O0226	302000	226000	Rathcoole, County Dublin	Unidentified bat
Airlie Stud Stable Block, Adamstown, Co. Dublin	O020336	302000	233600	Airlie Stud Stable Block, Adamstown, Co. Dublin	Unidentified bat
Barnacullia	O1724	317000	224000	Sandyford, Dublin 18	Unidentified bat
Boland's Mill	O1745933864	317459	233864	Grand Canal Dock, Dublin 2, County Dublin	Nyctalus leisleri, Pipistrellus pipistrellus (45kHz)
Cheeverstown house	O125285	312500	228500	Templeogue, Dublin 6W	Pipistrellus pygmaeus
Church at St. Mary's Hospital	O106347	310600	234700	Phoenix Park, Dublin 20, County Dublin	Plecotus auritus
Church of the Nativity of the Blessed Mary	O0390026700	303900	226700	Garters Lane, Saggart, Co. Dublin	Plecotus auritus
Corner Park Farm	O0029229287	300292	229287	Corner Park Farm, Peamount Road, R120, Cornerpark, Newcastle, Co. Dublin	



Esker House	0037343	3037 00	23430 0	Lucan, County Dublin	Pipistrellus spp. (45kHz/55kHz), Ple cotus auritus
Former Pathology Building	0159330	3159 00	23300 0	Former UCD Campus, at the rear of the National Concert Hall, Earlsfort Terrace, Dublin 2, County Dublin	Pipistrellus pygmaeus
Gleeson Residence Kilteel	N990217	2990 00	22170 0	Kilteel, County Kildare	Pipistrellus spp. (45kHz/55kHz)
Grange Hill	01638025 532	3163 80	22553 2	Grange Hill Deerfield Harold's Grange Road Rathfarnham Dublin	Pipistrellus pipistrellus (45kHz), Myotis nattereri
House roost, Tinode	00121519 824	3012 15	21982 4	Mark Mullen, Lamb Hill, Tinode, manor Kilbride, Co. Wicklow	Pipistrellus pygmaeus
Industrial buildings, Former Paper Mills	01745830 830	3174 58	23083 0	Clonskeagh Road, Clonskeagh, County Dublin	Pipistrellus pipistrellus (45kHz)
Kingsfurze	00835	3080 00	23500 0	Old lucan rd, Palmerstown, Dublin 20	Unidentified bat
Knockmary Hill Lodge	0104347	3104 00	23470 0	Phoenix Park, Dublin 8, County Dublin	Pipistrellus spp. (45kHz/55kHz)
Lucan Spa Hotel Roost	0024351	3024 00	23510 0	Lucan, Co. Dublin	Pipistrellus spp. (45kHz/55kHz)
Mc Kee Barracks	01335	3130 00	23500 0	Phoenix Park, Dublin 7	Myotis mystacinus
National Concert Hall	01593432 988	3159 34	23298 8	Earlsfort Terrace Dublin 2	Pipistrellus pygmaeus
Old Industrial Site	01466034 819	3146 60	23481 9	Old Industrial Site, Brunswick Street, County Dublin	Pipistrellus pipistrellus (45kHz)
Old shower block	0121345	3121 00	23450 0	Magazine Fort, Phoenix Park, County Dublin	Pipistrellus spp. (45kHz/55kHz)
Open fronted industrial unit	01745830 830	3174 58	23083 0	Former Paper Mills site, Clonskeagh Road, Clonskeagh, County Dublin	Pipistrellus pipistrellus (45kHz), Pipistrellu s pygmaeus
Private Residence, Tobermaclugg Lane, Lucan, Co. Dublin	0017244	3017 00	22440 0	Private Residence, Tobermaclugg Lane, Lucan, Co. Dublin	Nyctalus leisleri, Pipistrellus pipistrellus (45kHz)



Rathcoole House	O019268	3019 00	22680 0	Rathcoole, County Dublin	Unidentified bat
Shed at Deerkeeper's Lodge	O114343	3114 00	23430 0	Phoenix Park, County Dublin	Plecotus auritus
St John the Baptist Cloghleagh	O048164	3048 00	21640 0	Cloghleagh, Blessington, County Wicklow	Pipistrellus spp. (45kHz/55kHz), Plecotus auritus
St Marys	O1533	3150 00	23300 0	Grange Rd, Rathfarnam, Dublin 6, County Dublin	Nyctalus leisleri
St Marys	O1335	3130 00	23500 0	Phoenix Park, Dublin	Nyctalus leisleri
St Pius	O1533	3150 00	23300 0	Fortfield, Dublin	Unidentified bat
St. Finian's School Newcastle	N9997728 604	2999 77	22860 4	St. Finian's School, Newcastle, Co. Dublin	Pipistrellus spp. (45kHz/55kHz)
Stables	O0000028 000	3000 00	22800 0	Newcastle Lyons, Newcastle, Co. Dublin.	Pipistrellus spp. (45kHz/55kHz)
Tandys Lane Farmhouse, Adamstown, Co. Dublin	O025334	3025 00	23340 0	Tandys Lane farmhouse, Tandys Lane, Adamstown, Lucan, Co. DUblin.	Plecotus auritus, Unidentified bat
Tibradden Stableyard, Tibradden House, Rathfarnham, Dublin 16	O141243	3141 00	22430 0	Cloragh Yard & Tibradden Stableyard, Tibradden House, Mutton Lane, Rathfarnham, Dublin 16	Pipistrellus spp. (45kHz/55kHz)
Two storey house, Balgarra	O182248	3182 00	22480 0	Enniskerry Road, County Dublin	Pipistrellus pipistrellus (45kHz)
Two storey house, Grasslands	O182249	3182 00	22490 0	Enniskerry Road, County Dublin	Pipistrellus pipistrellus (45kHz), Plecotus auritus
Two storey house, Oakville House	N998287	2998 00	22870 0	Main Street, Newcastle, County Dublin	Unidentified bat, Pipistrellus pygmaeus
Viking Components Europe	O1533	3150 00	23300 0	Citywest Business Campus, County Dublin	Unidentified bat
Whitechurch Church of Ireland	O147257	3147 00	22570 0	Whitechurch, County Dublin	Plecotus auritus
Transects					



Name	Grid reference start	Grid ref easting start	Grid ref northing start	Species observed
12th Lock, Lucan Road Bridge Transect	O0298032236	302980	232236	Myotis daubentonii, Unidentified bat
Ballydoden Road Transect, Dublin	O1240028400	312400	228400	Myotis daubentonii, Unidentified bat
Bridge on Spring Avenue	O1361028910	313610	228910	Myotis daubentonii, Unidentified bat, Pipistrellus pygmaeus, Pipistrellus pipistrellus (45kHz)
Castle Kelly Bridge Transect	O0955421775	309554	221775	Myotis daubentonii, Unidentified bat
Castle Kelly Bridge Transect spot 1	O0955421775	309554	221775	Nyctalus leisleri, Myotis daubentonii
Castle Kelly Bridge Transect spot 10	O1013520790	310135	220790	Myotis daubentonii, Unidentified bat, Pipistrellus pygmaeus, Nyctalus leisleri, Myotis spp., Pipistrellus spp. (45kHz/55kHz)
Castle Kelly Bridge Transect spot 2	O0961921687	309619	221687	Nyctalus leisleri, Myotis daubentonii, Unidentified bat
Castle Kelly Bridge Transect spot 3	O0967321579	309673	221579	Nyctalus leisleri, Myotis daubentonii
Castle Kelly Bridge Transect spot 4	O0975421493	309754	221493	Nyctalus leisleri, Myotis daubentonii
Castle Kelly Bridge Transect spot 5	O0981421407	309814	221407	Myotis daubentonii, Unidentified bat
Castle Kelly Bridge Transect spot 6	O0990521283	309905	221283	Nyctalus leisleri, Myotis daubentonii
Castle Kelly Bridge Transect spot 7	O0998721133	309987	221133	Pipistrellus pygmaeus, Nyctalus leisleri, Myotis spp., Myotis daubentonii, Unidentified bat
Castle Kelly Bridge Transect spot 8	O1002020979	310020	220979	Nyctalus leisleri
Castle Kelly Bridge Transect spot 9	O1007320880	310073	220880	Myotis daubentonii, Pipistrellus spp. (45kHz/55kHz), Nyctalus leisleri, Unidentified bat, Pipistrellus pipistrellus (45kHz)
Castletown Estate Transect	N9920434119	299204	234119	Unidentified bat, Myotis daubentonii, Nyctalus leisleri, Pipistrellus spp. (45kHz/55kHz)



Clonskeagh Bridge Transect	O1680430 214	3168 04	23021 4	Unidentified bat, Myotis daubentonii, Pipistrellus spp. (45kHz/55kHz), Pipistrellus pipistrellus (45kHz), Pipistrellus pygmaeus
Clonskeagh Bridge Transect, Spot 1	O1680430 214	3168 04	23021 4	Myotis daubentonii, Unidentified bat, Pipistrellus pygmaeus, Pipistrellus spp. (45kHz/55kHz), Nyctalus leisleri
Clonskeagh Bridge Transect, Spot 10	O1743330 678	3174 33	23067 8	Myotis daubentonii, Pipistrellus pygmaeus, Pipistrellus spp. (45kHz/55kHz), Myotis spp., Unidentified bat
Clonskeagh Bridge Transect, Spot 2	O1683530 313	3168 35	23031 3	Myotis daubentonii, Pipistrellus pygmaeus, Pipistrellus pipistrellus (45kHz), Pipistrellus spp. (45kHz/55kHz), Nyctalus leisleri, Unidentified bat
Clonskeagh Bridge Transect, Spot 3	O1687330 400	3168 73	23040 0	Unidentified bat, Pipistrellus pygmaeus, Pipistrellus pipistrellus (45kHz), Nyctalus leisleri, Myotis spp., Myotis daubentonii
Clonskeagh Bridge Transect, Spot 4	O1690930 486	3169 09	23048 6	Unidentified bat, Nyctalus leisleri, Pipistrellus pipistrellus (45kHz), Myotis daubentonii
Clonskeagh Bridge Transect, Spot 5	O1700330 562	3170 03	23056 2	Unidentified bat, Pipistrellus spp. (45kHz/55kHz), Pipistrellus pipistrellus (45kHz), Nyctalus leisleri, Myotis daubentonii
Clonskeagh Bridge Transect, Spot 6	O1708530 566	3170 85	23056 6	Unidentified bat, Pipistrellus pygmaeus, Pipistrellus pipistrellus (45kHz), Nyctalus leisleri, Myotis spp., Myotis daubentonii
Clonskeagh Bridge Transect, Spot 7	O1715430 606	3171 54	23060 6	Pipistrellus pygmaeus, Pipistrellus pipistrellus (45kHz), Myotis daubentonii, Unidentified bat
Clonskeagh Bridge Transect, Spot 8	O1723230 658	3172 32	23065 8	Myotis daubentonii, Pipistrellus pygmaeus, Nyctalus leisleri, Pipistrellus spp. (45kHz/55kHz), Myotis spp., Unidentified bat
Clonskeagh Bridge Transect, Spot 9	O1735930 689	3173 59	23068 9	Unidentified bat, Pipistrellus pygmaeus, Nyctalus leisleri, Pipistrellus spp. (45kHz/55kHz), Myotis daubentonii
Dolphins Barn, Dublin Transect	O1368932 684	3136 89	23268 4	Unidentified bat, Myotis daubentonii
Grand Canal at Inchicore	O1085932 713	3108 59	23271 3	
Hazelhatch Bridge Transect	N9880030 700	2988 00	23070 0	Myotis daubentonii, Unidentified bat
Herbert Park (Ballsbridge) Transect	O1788032 428	3178 80	23242 8	Myotis daubentonii, Unidentified bat
Kilmainham Section	O1280033 200	3128 00	23320 0	Myotis daubentonii, Unidentified bat



(Inchicore) Transect				
Milltown Brid	O1640730 023	3164 07	23002 3	Myotis daubentonii, Unidentified bat, Pipistrellus pygmaeus, Pipistrellus pipistrellus (45kHz)
Newbridge Firhouse Transect, Spot 1	O1146127 746	3114 61	22774 6	Pipistrellus pygmaeus
Newbridge Firhouse Transect, Spot 10	O1056127 168	3105 61	22716 8	Unidentified bat, Myotis daubentonii
Newbridge Firhouse Transect, Spot 2	O1132327 735	3113 23	22773 5	Pipistrellus pygmaeus, Pipistrellus spp. (45kHz/55kHz), Myotis daubentonii
Newbridge Firhouse Transect, Spot 3	O1122227 724	3112 22	22772 4	Pipistrellus pygmaeus, Pipistrellus spp. (45kHz/55kHz), Nyctalus leisleri, Myotis spp., Pipistrellus pipistrellus (45kHz), Myotis daubentonii
Newbridge Firhouse Transect, Spot 4	O1110527 716	3111 05	22771 6	Pipistrellus pygmaeus, Myotis daubentonii
Newbridge Firhouse Transect, Spot 5	O1097027 703	3109 70	22770 3	Pipistrellus spp. (45kHz/55kHz)
Newbridge Firhouse Transect, Spot 6	O1088427 600	3108 84	22760 0	Unidentified bat, Pipistrellus spp. (45kHz/55kHz), Pipistrellus pygmaeus
Newbridge Firhouse Transect, Spot 7	O1081127 498	3108 11	22749 8	Myotis daubentonii, Unidentified bat, Pipistrellus pygmaeus, Pipistrellus spp. (45kHz/55kHz), Pipistrellus pipistrellus (45kHz), Myotis spp.
Newbridge Firhouse Transect, Spot 8	O1074227 345	3107 42	22734 5	Myotis spp.
Newbridge Firhouse Transect, Spot 9	O1065527 272	3106 55	22727 2	Myotis daubentonii, Unidentified bat, Myotis spp.
Newcastle Lyons	O0000028 000	3000 00	22800 0	Nyctalus leisleri, Pipistrellus pipistrellus (45kHz)
Oldbawn Bridge Transect	O0975026 300	3097 50	22630 0	Unidentified bat, Myotis daubentonii
Portobello Grove Rd Transect	O1568532 465	3156 85	23246 5	Unidentified bat, Myotis daubentonii
ransect	O1146127 746	3114 61	22774 6	Myotis daubentonii, Unidentified bat



Rathfarnham Rd R114 Bridge Transect	O1442429 689	3144 24	22968 9	Unidentified bat, Myotis daubentonii	
St. Lukes Hospital	O1552229 787	3155 22	22978 7	Myotis daubentonii, Unidentified bat	
Templeogue Bridge (Sth R137)	O1215228 204	3121 52	22820 4	Myotis daubentonii, Unidentified bat	
Transect 1: Ballinascorney	O0748319 548	3074 83	21954 8	Pipistrellus pygmaeus, Pipistrellus pipistrellus (45kHz)	
Transect 2: Ballinascorney	O0695819 411	3069 58	21941 1	Pipistrellus pipistrellus (45kHz), Nyctalus leisleri	
Transect 3: Ballinascorney	O0755221 306	3075 52	22130 6	Plecotus auritus, Pipistrellus pygmaeus, Myotis spp., Pipistrellus pipistrellus (45kHz), Nyctalus leisleri, Unidentified bat	
Transect 4: Ballinascorney	O0750722 060	3075 07	22206 0	Pipistrellus pipistrellus (45kHz), Myotis spp., Nyctalus leisleri, Pipistrellus spp. (45kHz/55kHz)	
War Memorial Garden Transect	O1170034 150	3117 00	23415 0	Myotis daubentonii, Unidentified bat	
Ad-hoc observations					
Survey	Grid reference	Grid ref easti ng	Grid ref northi ng	Date	Species observed

Appendix IV

Hand held Echometer touch with Kaleidoscope sound analysis software

DATE	TIME	MANUAL ID
27/06/2023	22:08:48	NYCLEI
27/06/2023	22:19:47	NYCLEI
27/06/2023	22:25:35	NYCLEI
27/06/2023	22:25:39	NYCLEI
27/06/2023	22:26:02	NYCLEI
27/06/2023	22:26:35	NYCLEI
27/06/2023	22:26:54	NYCLEI
27/06/2023	22:27:13	NYCLEI
27/06/2023	22:27:20	NYCLEI
27/06/2023	22:27:38	NYCLEI
27/06/2023	22:27:55	NYCLEI
27/06/2023	22:29:20	NYCLEI
27/06/2023	22:30:04	PIPIPI
27/06/2023	22:32:37	PIPPYG
27/06/2023	22:32:56	PIPPYG
27/06/2023	22:33:07	PIPPYG



27/06/2023	22:33:17	PIPPYG
27/06/2023	22:33:34	PIPPYG
27/06/2023	22:33:47	PIPPYG
27/06/2023	22:34:01	PIPPYG
27/06/2023	22:34:07	PIPPYG
27/06/2023	22:34:37	PIPPYG
27/06/2023	22:34:53	PIPPYG
27/06/2023	22:35:12	PIPPYG
27/06/2023	22:35:30	PIPPYG
27/06/2023	22:35:48	PIPPYG
27/06/2023	22:36:04	PIPPYG
27/06/2023	22:36:20	PIPPYG
27/06/2023	22:36:29	PIPPYG
27/06/2023	22:36:45	PIPPYG
27/06/2023	22:36:56	PIPPYG
27/06/2023	22:37:03	PIPPYG
27/06/2023	22:37:10	PIPPYG
27/06/2023	22:37:27	PIPPYG
27/06/2023	22:37:43	PIPPIP
27/06/2023	22:37:59	PIPPYG
27/06/2023	22:38:15	PIPPYG
27/06/2023	22:38:22	PIPPYG
27/06/2023	22:38:40	PIPPYG
27/06/2023	22:39:22	PIPPYG
27/06/2023	22:39:40	PIPPYG
27/06/2023	22:39:58	PIPPYG
27/06/2023	22:40:15	PIPPYG
27/06/2023	22:40:32	PIPPYG
27/06/2023	22:40:51	PIPPYG
27/06/2023	22:41:07	PIPPIP
27/06/2023	22:41:24	PIPPIP
27/06/2023	22:41:53	PIPPIP
27/06/2023	22:42:03	PIPPYG
27/06/2023	22:42:14	PIPPYG
27/06/2023	22:42:27	PIPPYG
27/06/2023	22:42:57	NYCLEI
27/06/2023	22:43:03	NYCLEI
27/06/2023	22:43:15	PIPPYG
27/06/2023	22:43:34	PIPPYG
27/06/2023	22:43:53	PIPPYG
27/06/2023	22:44:11	PIPPIP
27/06/2023	22:44:22	PIPPYG
27/06/2023	22:44:41	PIPPYG



27/06/2023	22:44:55	PIPPYG
27/06/2023	22:45:08	PIPPYG
27/06/2023	22:45:24	PIPPYG
27/06/2023	22:45:47	NYCLEI
27/06/2023	22:45:55	NYCLEI
27/06/2023	22:46:04	PIPPIP
27/06/2023	22:46:12	PIPPIP
27/06/2023	22:46:38	PIPPYG
27/06/2023	22:46:56	PIPPYG
27/06/2023	22:47:13	PIPPIP
27/06/2023	22:47:29	PIPPYG
27/06/2023	22:47:41	PIPPYG
27/06/2023	22:47:52	PIPPYG
27/06/2023	22:48:26	PIPPYG
27/06/2023	22:48:37	PIPPYG
27/06/2023	22:54:02	NYCLEI
27/06/2023	22:54:18	PIPPIP
27/06/2023	22:54:28	NYCLEI
27/06/2023	22:54:50	PIPPIP
27/06/2023	22:55:18	NYCLEI
27/06/2023	22:55:27	NYCLEI
27/06/2023	22:55:36	NYCLEI
27/06/2023	22:55:42	NYCLEI
27/06/2023	22:55:53	PIPPIP
27/06/2023	22:55:57	PIPPIP
27/06/2023	22:56:09	NYCLEI
27/06/2023	22:56:23	NYCLEI
27/06/2023	22:56:43	PIPPIP
27/06/2023	22:57:03	PIPPYG
27/06/2023	22:57:12	PIPPYG
27/06/2023	22:57:26	NYCLEI
27/06/2023	22:58:01	PIPPYG
27/06/2023	22:58:19	PIPPYG
27/06/2023	22:58:39	NYCLEI
27/06/2023	22:59:19	NYCLEI
27/06/2023	22:59:36	NYCLEI
27/06/2023	22:59:50	NYCLEI
27/06/2023	23:00:08	PIPPIP
27/06/2023	23:00:25	PIPPYG
27/06/2023	23:01:03	PIPPYG
27/06/2023	23:01:20	PIPPYG
27/06/2023	23:02:02	PIPPYG
27/06/2023	23:02:19	PIPPIP



27/06/2023	23:02:39	NYCLEI
27/06/2023	23:03:01	PIPPYG
27/06/2023	23:03:15	PIPPYG
27/06/2023	23:03:38	PIPPYG
27/06/2023	23:03:48	PIPPYG
27/06/2023	23:04:17	PIPPYG
27/06/2023	23:04:28	PIPPYG
27/06/2023	23:05:11	NYCLEI
27/06/2023	23:06:24	NYCLEI
27/06/2023	23:07:19	PIPPIP
27/06/2023	23:10:41	PIPPIP
27/06/2023	23:10:58	PIPPIP
27/06/2023	23:11:08	PIPPIP
27/06/2023	23:11:21	PIPPYG
27/06/2023	23:11:28	PIPPIP
27/06/2023	23:11:49	PIPPIP
27/06/2023	23:12:04	PIPPIP
27/06/2023	23:12:11	PIPPIP
27/06/2023	23:12:28	PIPPIP
27/06/2023	23:13:02	PIPPIP
27/06/2023	23:13:08	PIPPIP
27/06/2023	23:13:30	PIPPIP
27/06/2023	23:13:45	PIPPIP
27/06/2023	23:14:01	PIPPIP
27/06/2023	23:14:07	PIPPIP
27/06/2023	23:14:23	PIPPYG
27/06/2023	23:14:41	PIPPIP
28/06/2023	03:45:44	PIPPIP
28/06/2023	03:46:13	NYCLEI
28/06/2023	03:46:21	NYCLEI

Appendix V

Anabat Walkabout detector hand held with kaleidoscope sound analysis

Bat activity based on Anabat Walkabout recordings 27th June 2023

Bat species	Passes per hour		Grand Total
	10	11	
Leisler's bat	12	2	14
Common pipistrelle	12	6	18



Soprano pipistrelle	30	1	31
Brown long-eared bat	1		1
Grand Total	55	9	64