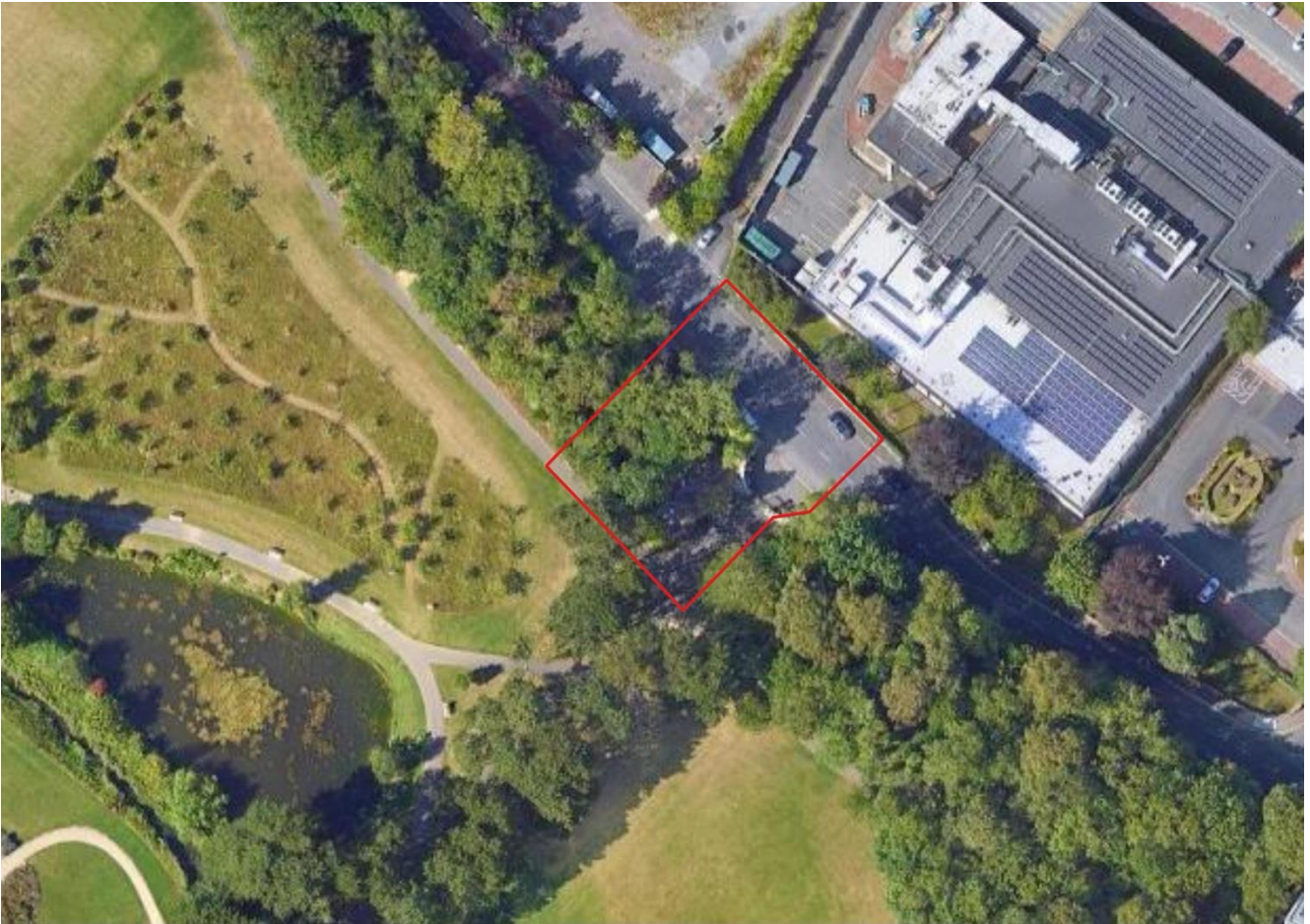


Bat Fauna Survey for a Proposed Development of Sports & Community Facilities at Cabinteely Park, Co. Dublin.



7<sup>th</sup> August 2024

**Prepared by:** Bryan Deegan (MCIEEM) of Altemar Ltd.

**On behalf of:** Dún Laoghaire–Rathdown County Council .

Altemar Ltd., 50 Templecarrig Upper, Delgany, Co. Wicklow. 00-353-1-2010713. [info@altemar.ie](mailto:info@altemar.ie)

Directors: Bryan Deegan and Sara Corcoran

Company No.427560 VAT No. 9649832U

[www.altemar.ie](http://www.altemar.ie)

## **SUMMARY**

<b>Structure:</b>	The only onsite intact structure is the gate-lodge in the centre of the site which is to be restored. A small brick ruin to the rear of the bungalow is deemed to be of low bat roosting potential. It is also proposed to build a changing pavilion of approx. 50m <sup>2</sup> .
<b>Location:</b>	Cabinteely Park, Co. Dublin.
<b>Bat species present:</b>	None Roosting. Minor foraging within the proposed site along the treeline.
<b>Proposed work:</b>	The proposed development will provide community facilities for local clubs and groups and ensure a long-term and sustainable use for the gate-lodge, a Protected Structure. The entrance will be enhanced with natural stone paving, planting and street furniture.
<b>Impact on bats:</b>	<p>The proposed development will not significantly change the local environment. However, some of the existing vegetation will be removed including several trees of low to moderate roosting potential. However, no bat roosts will be lost or impacted due to this development and the species expected to occur onsite will persist. Minor loss of foraging areas will be noted along the woodland edge. However, this is not deemed to be significant.</p> <p>The residual impact is considered to be minor adverse/not significant in the short term and minor adverse negative in the long term.</p>
<b>Survey by:</b>	Bryan Deegan
<b>Survey date:</b>	14 <sup>th</sup> May 2024.

## Receiving Environment

### Background

The proposed development will provide community facilities for local clubs and groups and ensure a long-term and sustainable use for the gate-lodge, a Protected Structure. The entrance will be enhanced with natural stone paving, planting and street furniture.

#### **Changing Pavilion:**

A new changing pavilion building (approx. 50 sq. m) is proposed to the north of the existing gate-lodge. This will include two changing rooms with team storage areas, an accessible toilet and small plant rooms. The structure will be a high-quality timber framed modular unit with robust aluminium doors, zinc seamed or fibreglass roof with skylights and external cedar cladding. It will include photo-voltaic panels on the roof and incorporate rain water harvesting.

#### **Gate-Lodge:**

The gate-lodge will be faithfully restored for community usage in accordance with conservation principles under the direction of a grade 1 conservation Architect. It will include meeting rooms, a small kitchenette and a toilet. The poorly constructed modern extension will be demolished so that the building can stand alone again in the parkland setting. The building will be approximately 75 sq. m when the extension is removed.

#### **Entrance:**

The existing entrance will be enhanced with natural stone paving, appropriate ornamental planting, seating and other street furniture. The use of sustainable urban drainage will be incorporated.

The site location, landscape, layouts and elevations are demonstrated in Figures 1-3.

### Arborist

A Tree Constraints Plan and a Tree Protection Plan have been prepared by Arborist Associates Ltd. to accompany this planning application. The tree constraints plan and tree protection plan are demonstrated in Figures 4 & 5.

### Lighting


No lighting report or drawings have been prepared in relation to this project, as the only new lights to be erected are within the proposed building. As outlined by DLR Parks *'It has no windows (with the exception of roof lights) and unlikely to ever be used past dark.'*





 Site Outline

0 50 100 150 m



Project: Cabinteely Park Sports Pavilion  
 Location: Cabinteely, Co. Dublin  
 Date: 31st July, 2024  
 Drawn By: Bryan Deegan (Altamar)

**ALTEMAR**  
 Marine & Environmental Consultancy



**Figure 1. Proposed site outline**





**Parks & Landscape Services**  
 Do not scale from this drawing. Use figured dimensions only. Check all dimensions on site before commencing work. Report any discrepancies to the E&S Officer promptly. All works to be carried out by the E&S. These drawings and designs therein are copyright of Dun Laoghaire Rathdown County Council.  
 © Dun Laoghaire Rathdown County Council

Drawing Title: Cabinteely Park Entrance - General Arrangement Plan	Drawing Number:	Revision:	Scale:	Date:	Drawn:
Senior Parks Superintendent : Ruairi O'Dulaing County Hall, Dun Laoghaire, Co. Dublin.	DRP 2314-01	REV A	1:100 @A1	JULY 2024	CR

Figure 2. Proposed landscape and site outline.

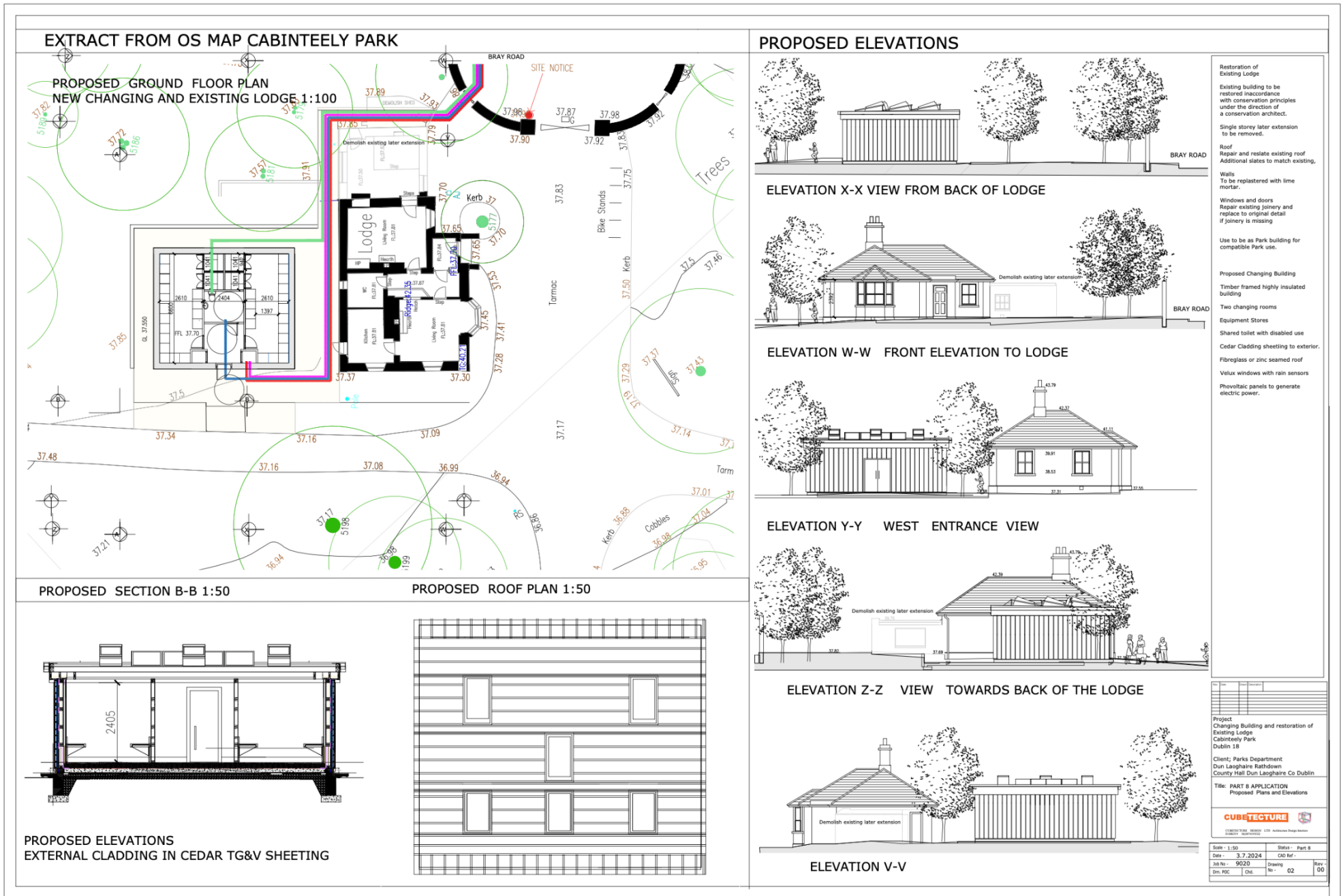


Figure 3. Proposed Site Plan and Elevations

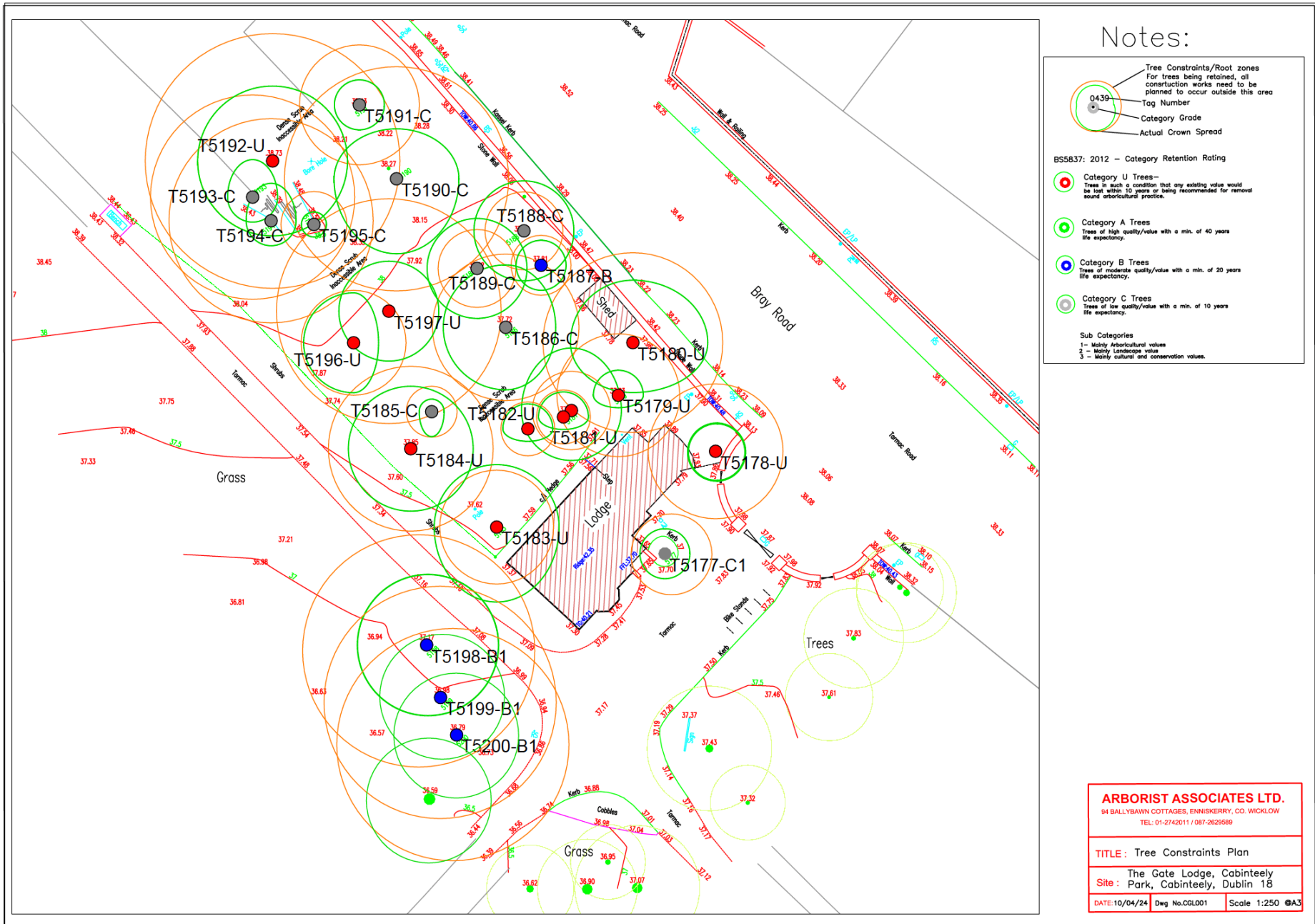
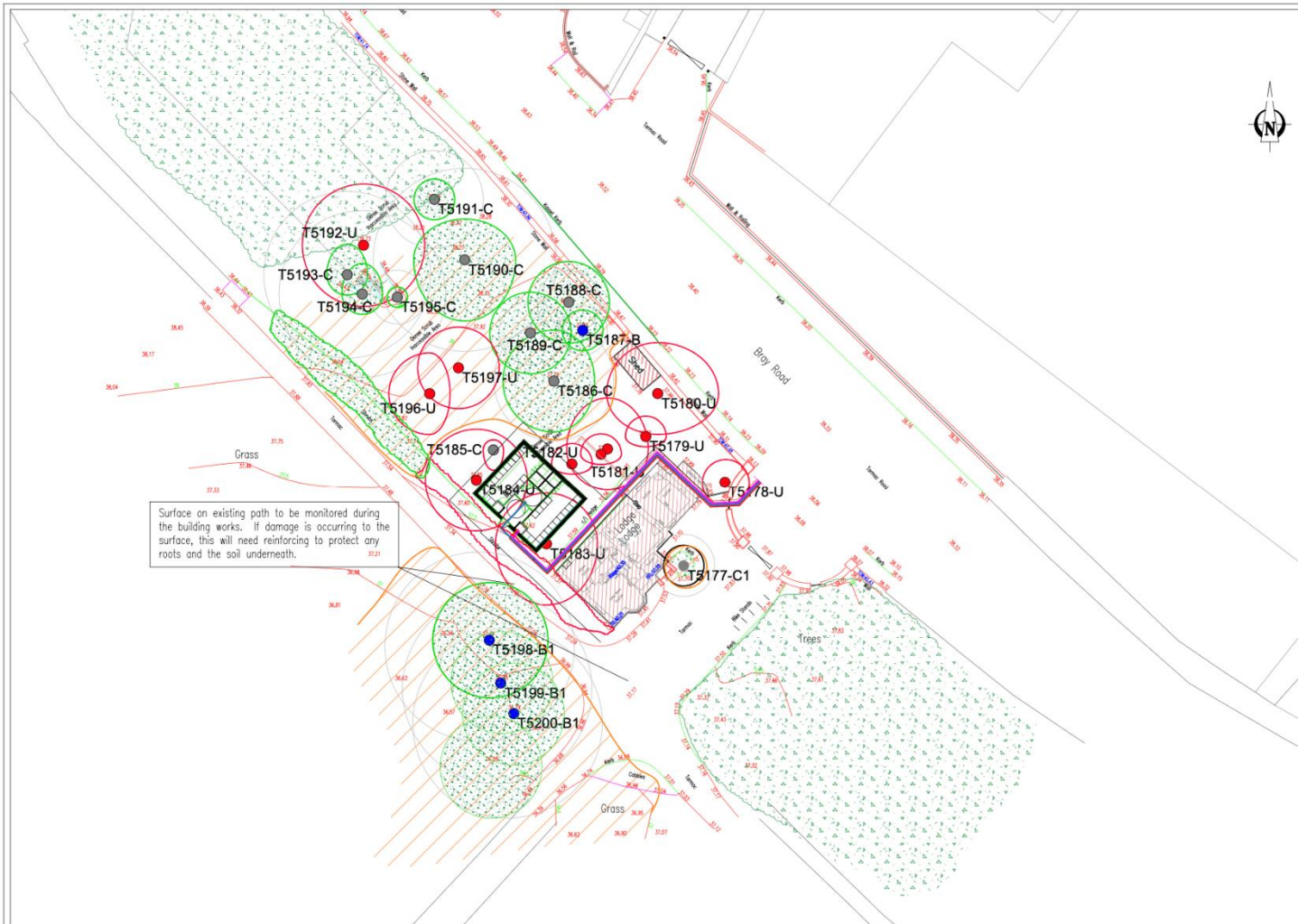


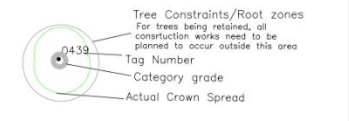
Figure 4. Tree Constraints Plan





Surface on existing path to be monitored during the building works. If damage is occurring to the surface, this will need reinforcing to protect any roots and the soil underneath.

### Notes:



BS5837: 2012 – Category Retention Rating

- **Category U Trees** – Trees in such a condition that any existing value would be lost within 10 years or being recommended for removal sound arboricultural practice.
  - **Category A Trees** – Trees of high quality/value with a min. of 40 years life expectancy.
  - **Category B Trees** – Trees of moderate quality/value with a min. of 20 years life expectancy.
  - **Category C Trees** – Trees of low quality/value with a min. of 10 years life expectancy.
- Sub Categories**
- 1 – Mainly Arboricultural values
  - 2 – Mainly Landscape value
  - 3 – Mainly cultural and conservation values.



### Schedule of events

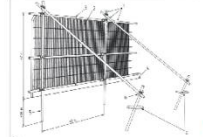
Works	Schedule
Site Meeting	Prior to any works commencing.
Tree Works – Felling & Pruning	Prior to any construction works commencing.
Tree Protection	After tree removal and pruning is complete and prior to any construction works commencing. The erection and removal of the protective fencing is to be scheduled in accordance with the phasing of the construction works.
Site Monitoring	Ongoing throughout the construction works.
Removal of Tree P rotation	Once all the main construction works are completed and in order to incorporate the area into the finished development.
Tree Review and Certification	Once all works are complete.

### Tree Protection Detail



Protective fence line to protect work exclusion zone around trees being retained.

Protective fence detail as per BS 5837: 2012.



The tree protection fencing is to be erected enclosing the root protection areas around the trees being retained as shown on this drawing and appendix C. In some areas the site fencing may be sufficient to act as the protection fencing if the site and the root zone are positioned inside and no works are envisaged within the area within the site boundary. This will need to be checked with the client before starting.

Where tree protection fencing is needed, this will need to be 2.3m high and constructed in accordance with figure 2 of BS 5837: 2012 (see detail on drawing & appendix C) using vertical and horizontal scaffold poles or similar and braced together with the vertical spaced out at a maximum of 3m centres. Once this, will need to be erected before any work is to be carried out within the work exclusion zone.

Signs are to be affixed to the fence warning people that this is a protective area and that the fencing must be maintained in good condition in accordance with the appropriate plans and drawings for this development.

Once the protective fence line is erected, then the main construction works can commence on site.

The following is a list of activities that are not allowed within the RPA or within the vicinity of the trees being retained:

- o Protect tree root systems from damage caused by runoff or spillage of material materials while mixing, placing, or storing construction materials.
- o Protect root systems from ponding, eroding, or excessive wetting caused during construction operations.
- o Do not store construction materials, debris, or excavated material inside tree protection zones. When excavating, place excavated soil on opposite side of trench away from the tree.
- o Do not permit vehicles or foot traffic within tree protection zones, prevent soil compaction over root systems.
- o Do not allow fires under or adjacent to remaining trees or other plants.
- o Do not attach ladders, beams, cables or other services to any part of the tree.
- o Do not use heavy machinery such as the graders, excavators or other equipment close to trees to avoid damage to the crown or any other parts.

During the construction works the following is required:

1. The main contractor or site manager is to brief all people working on site on the tree protection measures and the procedure if works need to be carried out within these areas.
2. Storage of Material: Store trees and soil or gravel etc to be excavated on the work drawings prior to the construction works starting. These need to be protected outside the root protection zone around the trees being retained.
3. The main contractor or site manager is to check the tree protection fencing date and any soil any repair required to ensure the integrity and secure.
4. The main contractor or site manager is to liaise with the project/Arboricultural & any other works are to be carried out close to or within the root protection area around the trees.
5. Any works to occur within the protection areas such as landscaping is to be carried out manually with the necessary allowed. All soil and trees to be landscaped within the Protection Area (RPA) of the trees to be retained are to be carried out manually and the soil levels are not to be lowered or topped up to a level above the base level. (Recommendations of appendix E of BS5837: 2012 are to be followed in filling the underlying within the RPA of the trees being retained).
6. The protective fencing around the trees is to stay in position until all the construction works are complete and are only to be removed following discussions and agreement with the project arbors.

**ARBORIST ASSOCIATES LTD.**  
94 BALLYDAWN COTTAGES, EMINSKERRY, CO. WICKLOW  
TEL: 01-2742011 / 087-262989

**TITLE:** Tree Protection Plan

**Site:** The Gate Lodge, Cabinteely Park, Cabinteely, Dublin 18

**DATE:** 10/04/24 **Dwg No.:** CL002 **Scale:** 1:200 **0A1**

Figure 5. Tree Protection Plan



## Competency of Assessor

This report has been prepared by Bryan Deegan MSc, BSc (MCIEEM). Bryan has over 30 years of experience providing ecological consultancy services in Ireland. He has extensive experience in carrying out a wide range of bat surveys including dusk emergence, dawn re-entry and static detector surveys. He also has extensive experience reducing the potential impact of projects that involve external lighting on Bats. Bryan trained with Conor Kelleher author of the Bat Mitigation Guidelines for Ireland (Kelleher and Marnell (2022)) and Bryan is currently providing bat ecology (impact assessment and enhancement) services to Dun Laoghaire Rathdown County Council primarily on the Shanganagh Park Masterplan. The desk and field surveys were carried out having regard to the guidance: Bat Surveys for Professional Ecologists – Good Practice Guidelines 3rd Edition (Collins, J. (Ed.) 2016) and Marnell, Kelleher and Mullen (2022), Bat Mitigation Guidelines for Ireland V2 (which update and replace the Bat Mitigation Guidelines for Ireland published in 2006).

## Legislative Context

*Wildlife Act 1976 (as amended by, inter alia, the Wildlife (Amendment) Act 2000).*

Bats in Ireland are protected by the Wildlife (Amendment) Act 2000. Based on this legislation it is an offence to wilfully interfere with or destroy the breeding or resting place of any species of bat. Under this legislation it is an offence to *“Intentionally kill, injure or take a bat, possess or control any live or dead specimen or anything derived from a bat, wilfully interfere with any structure or place used for breeding or resting by a bat, wilfully interfere with a bat while it is occupying a structure or place which it uses for that purpose. “*

Habitats Directive- Council Directive 92/43/EEC 1992 on the conservation of natural habitats and of wild fauna and flora has been transposed into Irish Law, including, via, *inter alia*, the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended). See Art.73 of the 2011 Regulations which revokes the 1997 Regulations.

Annex II of the Council Directive 92/43/EEC 1992 on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive) lists animal and plant species of Community interest, the conservation of which requires the designation of Special Areas of Conservation (SACs); Annex IV lists animal and plant species of Community interest in need of strict protection. All bat species in Ireland are listed on Annex IV of the Directive, while the Lesser Horseshoe Bat (*Rhinolophus hipposideros*) is protected under Annex II which related to the designation of Special Areas of Conservation for a species.

Under the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended), all bat species are listed under the First Schedule and, pursuant to, *inter alia*, Part 6 and Regulation 51, it is an offence to:

- Deliberately capture or kill a bat;
- Deliberately disturb a bat particularly during the period of breeding, hibernating or migrating;
- Damage or destroy a breeding site or resting place of a bat;
- Keep, sell, transport, exchange, offer for sale or offer for exchange any bat taken in the wild.

## Bat survey

This report presents the results of site visit by Bryan Deegan on the 14<sup>th</sup> May 2024. A bat emergent and detector survey was carried out. An internal inspection of the building was also carried out. Trees on site were examined for bat roosting potential.

## Survey methodology

As outlined in Marnell et al. 2022 *‘The presence of a large maternity roost can normally be determined on a single visit at any time of year, provided that the entire structure is accessible and that any signs of bats have not been removed by others. However, most roosts are less obvious. A visit during the summer or autumn has the advantage that bats may be seen or heard. Buildings (which for this definition exclude cellars and other underground structures) are rarely used for hibernation alone, so droppings deposited by active bats provide the best clues. Roosts of species which habitually enter roof voids are probably the easiest to detect as the droppings will normally be readily visible. Roosts of crevice-dwelling species may require careful searching and, in some situations, the opening up of otherwise inaccessible areas. If this is not possible, best judgement might have to be used and a precautionary approach adopted. Roosts used by a small number of bats, as opposed to large maternity sites, can be particularly difficult to detect and may require extensive searching backed up by bat detector surveys (including static detectors) or emergence counts.’* In relation to the factors influencing survey results the guidelines outlines the following *‘During the winter, bats will move around to find sites that present the optimum environmental*

*conditions for their age, sex and bodyweight and some species will only be found in underground sites when the weather is particularly cold. During the summer, bats may be reluctant to leave their roost during heavy rain or when the temperature is unseasonably low, so exit counts should record the conditions under which they were made. Similarly, there may be times when females with young do not emerge at all or emerge only briefly and return while other bats are still emerging thus confusing the count. Within roosts, bats will move around according to the temperature and may or may not be visible on any particular visit. Bats also react to disturbance, so a survey the day after a disturbance event, may give a misleading picture of roost usage.'*

*The survey involved the methodologies outlined in Collins (2016) which included the roost inspection methodologies i.e. external methodology outlined in section 5.2.4.1 and the internal survey outlines in section 5.2.4.2 of the guidelines. In addition, the methodologies for Presence absence surveys (Section 7) was carried out for dust emergent surveys.'*

*As outlined in Collins (2016) 'The bat active period is generally considered to be between April and October inclusive (although the season is likely to be shorter in northern latitudes). However, because bats wake up during mild conditions, bat activity can also be recorded during winter months.'*

## Survey Results

### Trees as potential bat roosts.

A ground level roost assessment was carried and used to examine the trees on site for features that could form bat roosts. Potential roosting features include heavy ivy growth, broken limbs, areas of decay, vertical or horizontal cracks, cracks in bark etc. Several of the trees on site, primarily ash, had features that would be considered to be of importance to roosting bats. This was primarily as a result of heavy ivy growth up the main trunk of the trees. As seen in the arborist report several trees will have to be removed. These include ash that have dieback. No bats were observed emerging from these trees but they are considered to be of low to moderate bat roosting potential and will have to be assessed for bats prior to felling.

### Emergent/detector surveys.

An emergent/detector surveys was carried out by Bryan Deegan on the 14<sup>th</sup> May 2024. The detector survey was undertaken within the active bat season and the transects covered the entire site multiple times during the night. Weather conditions were good with mild temperatures of greater than 10°C after sunset. Winds were light and there was no rainfall. Insects were observed in flight during both surveys.

As outlined in Collins (2016) in relation to weather conditions *'The aim should be to carry out surveys in conditions that are close to optimal (sunset temperature 10°C or above, no rain or strong wind.), particularly when only one survey is planned.... Where surveys are carried out when the temperature at sunset is below 10°C should be justified by the ecologist and the effect on bat behaviour considered.'* There were no constraints in relation to the surveys carried out. All areas of the site were accessible and weather conditions were optimal for bat assessments.

At dusk, bat detector surveys were carried out onsite using an *Echo meter touch 2 Pro* detector to determine bat activity. Bats were identified by their ultrasonic calls coupled with behavioural and flight observations.

Minor activity was noted on the treeline boundary by two soprano pipistrelle (*Pipistrellus pygmaeus*) and one common pipistrelle bats (*Pipistrellus pipistrellus sensu lato*) No bats were noted emerging from the bungalow on site. Bat activity was noted in the fields outside of the subject site boundary and included Leisler's (*Nyctalus leisleri*). No bat activity was associated with the buildings on site. Streetlighting from the main road shines directly on to the bungalow roof.





**Figure 14.** Bat foraging. Soprano Pipistrelle (*Pipistrellus pygmaeus*) (yellow), Common Pipistrelle (*Pipistrellus pipistrellus sensu lato*) (orange) and Leisler's bat (*Nyctalus leisleri*) (Blue).



## Building Inspection

The bungalow on site was examined for evidence of bats roosting. No evidence of bats utilising the building on site was noted. It should be noted that the building is in good condition with few entrances to allow bats to enter. However, two slates are dislodged on the roof that could allow bats to enter the building.



Plate 1. Missing slate on roof.



Plate 2. Interior





Plate 3. Interior

## Bat assessment findings

### Review of local bat records

The review of existing bat records (sourced from National Biodiversity Ireland Records Database) within a 2 km<sup>2</sup> grid, reference number O22H, encompassing the study area reveals that six of the nine known Irish species have been observed locally (Table 1). The National Biodiversity Data Centre's online viewer was consulted in order to determine whether there have been recorded bat sightings in the wider area. This is visually represented in Figures 6-9. The following species were noted in the wider area: *Daubenton's Bat (Myotis daubentonii)*, *Natterer's Bat (Myotis nattereri)*, *Lesser Noctule (Nyctalus leisleri)*, *Nathusius's Pipistrelle (Pipistrellus nathusii)*, *Common Pipistrelle (Pipistrellus pipistrellus sensu stricto)*, *Soprano Pipistrelle (Pipistrellus pygmaeus)* and *Brown Long-eared Bat (Plecotus auritus)* (Figures 6-9).

**Table 1:** Status of bat species within a 2km<sup>2</sup> grid encompassing the subject site (Reference no. O22H)

Species Name	Date of last record	Title of Dataset	Designation
Brown Long-eared Bat (Plecotus auritus)	06/05/2017	National Bat Database of Ireland	Protected Species: EU Habitats Directive    Protected Species: EU Habitats Directive >> Annex IV    Protected Species: Wildlife Acts
Common Pipistrelle (Pipistrellus pipistrellus sensu stricto)	06/05/2017	National Bat Database of Ireland	
Daubenton's Bat (Myotis daubentonii)	06/05/2017	National Bat Database of Ireland	Protected Species: EU Habitats Directive    Protected Species: EU Habitats Directive >> Annex IV    Protected Species: Wildlife Acts
Lesser Noctule (Nyctalus leisleri)	06/05/2017	National Bat Database of Ireland	Protected Species: EU Habitats Directive    Protected Species: EU Habitats Directive >> Annex IV    Protected Species: Wildlife Acts

Natterer's Bat ( <i>Myotis nattereri</i> )	17/09/2005	National Bat Database of Ireland	Protected Species: EU Habitats Directive    Protected Species: EU Habitats Directive >> Annex IV    Protected Species: Wildlife Acts
Soprano Pipistrelle ( <i>Pipistrellus pygmaeus</i> )	06/05/2017	National Bat Database of Ireland	Protected Species: EU Habitats Directive    Protected Species: EU Habitats Directive >> Annex IV    Protected Species: Wildlife Acts



**Figure 6.** *Daubenton's Bat (Myotis daubentonii)* (purple), *Natterer's Bat (Myotis nattereri)* (yellow), and both *Daubenton's Bat and Natterer's Bat* (orange) (Source NBDC) (Site location – red circle)





**Figure 7.** Lesser Noctule (*Nyctalus leisleri*) (purple) and Nathusius's Pipistrelle (*Pipistrellus nathusii*) (yellow) (Source NBDC) (Site location – red circle)



**Figure 8.** Common Pipistrelle (*Pipistrellus pipistrellus sensu stricto*) (purple), Soprano Pipistrelle (*Pipistrellus pygmaeus*) (yellow) and both Common Pipistrelle and Soprano Pipistrelle (orange) (Source NBDC) (Site location – red circle)





**Figure 9.** Brown Long-eared Bat (*Plecotus auritus*) (purple) (Source NBDC) (Site location – red circle)

## Evaluation of Results

The bat surveys comply with bat survey guidance documentation including Marnell et al (2022) and Collins (2016). No bats were observed emerging from trees or buildings on site. No evidence of bats roosting in buildings was noted. No bat activity was noted proximate to the brightly lit bungalow. However, common species of bats i.e. Common Pipistrelle (*Pipistrellus pipistrellus sensu lato*), soprano pipistrelles (*Pipistrellus pygmaeus*) and Leisler's (*Nyctalus leisleri*) bats were recorded in the vicinity of the subject site, and noted in the fields outside of the subject site boundary. No trees of high bat roosting potential were noted on site. However, several ash of low to moderate roosting potential (ash with dieback) were noted.

## Potential Impact of the development on Bats

The proposed project will not impact on a bat roost. Several trees of low to moderate bat roosting potential will be felled and will need to be inspected for bats prior to felling. No external lighting is proposed in the development. Mitigation measures will be required to limit light spill during construction to protect bat foraging areas. Enhancement measures are proposed due to the loss of areas of bat roosting potential.

## Mitigation Measures

As outlined in Marnell et al. (2022) "Mitigation should be proportionate. The level of mitigation required depends on the size and type of impact, and the importance of the population affected." In addition as outlined in Marnell et al. (2022) 'Mitigation for bats normally comprises the following elements:

- Avoidance of deliberate, killing, injury or disturbance – taking all reasonable steps to ensure works do not harm individuals by altering working methods or timing to avoid bats. The seasonal occupation of most roosts provides good opportunities for this
- Roost creation, restoration or enhancement – to provide appropriate replacements for roosts to be lost or damaged
- Long-term habitat management and maintenance – to ensure the population will persist
- Post-development population monitoring – to assess the success of the scheme and to inform management or remedial operations.'

As no evidence of a bat roost was noted in any of the onsite trees, no mitigation measures in regard to these animals are needed during the proposed construction works. There is also no requirement for a *National Parks and Wildlife Service* derogation licence application to allow the planned works. As a precaution, if lighting is required at any stage during construction, all lighting will be done sensitively on site in consultation with a project ecologist, with no direct lighting of woodlands or main bat foraging areas. Three bat boxes will be placed within the woodland area.

## Predicted Residual Impact of Planned Development on Bats

The proposed development will not significantly change the local environment. However, some of the existing vegetation will be removed including several trees of low to moderate roosting potential. However, no bat roosts will be lost or impacted due to this development and the species expected to occur onsite will persist. Minor loss of foraging areas will be noted along the woodland edge. However, this is not deemed to be significant.

The residual impact is considered to be minor adverse/not significant in the short term and minor adverse negative in the long term.

## References

**Collins, J. (ed.) (2016).** *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edn). The Bat Conservation Trust, London. ISBN-13 978-1-872745-96-1

**Marnell, F., Kelleher, C. & Mullen, E. (2022).** *Bat mitigation guidelines for Ireland V2. Irish Wildlife Manuals, No. 134.* National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland.

**Chartered Institute of Ecology and Environmental Management (2021).** *Bat Mitigation Guidelines: A guide to impact assessment, mitigation and compensation for developments affecting bats. Beta version.* Chartered Institute of Ecology and Environmental Management, Winchester.

**Chartered Institute of Ecology and Environmental Management (2018).** *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal, and Marine.* Chartered Institute of Ecology and Environmental Management, Winchester.

Institution of Lighting Professionals (2018). *Bats and Artificial Lighting in the UK – Bats and the Built Environment Series: Guidance Note 08/18.* Institution of Lighting Professionals and the Bat Conservation Trust.

**Department of Housing, Planning and Local Government (December, 2018).** *Urban Development and Building Heights Guidelines for Planning Authorities.*

**Bat Conservation Trust (May 2022).** *Interim Guidance Note: Use of night vision aids for bat emergence surveys and further comment on dawn surveys.* The Bat Conservation Trust, London.

**Bat Conservation Ireland 2004** on-going, *National Bat Record Database.* Virginia, Co. Cavan

**Boyd, I. and Stebbings, R.E. 1989** Population changes in brown long-eared bats (*Plecotus auritus*) in Bat Boxes at Thetford Forest. *Journal of Applied Ecology* **26**: 101 - 112

**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**

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

**Jefferies, D.J. 1972** Organochlorine insecticide residues in British bats and their significance. *Journal of Zoology*, London **166**: 245 - 263

**Kelleher, C. 2004**, Thirty years, six counties, one species – an update on the lesser horseshoe bat *Rhinolophus hipposideros* (Bechstein) in Ireland – *Irish Naturalists' Journal* **27**, No. 10, 387 – 392



**Kelleher, C. 2015** *Proposed Residential Development, Church Road, Killiney, Dublin: Bat Fauna Study*. Report prepared for Altemar Marine and Environmental Consultants

**Marnell, F., Kingston, N. and Looney, D. 2009** *Ireland Red List No. 3: Terrestrial Mammals*. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin

**Marnell, F., Kelleher, C., & Mullen, E. (2022)**, BAT MITIGATION GUIDELINES FOR IRELAND – V2 <https://www.npws.ie/sites/default/files/publications/pdf/IWM134.pdf>

**Racey, P.A. and Swift, S.M. 1986** The residual effects of remedial timber treatments on bats. *Biological Conservation* **35**: 205 – 214

**Smal, C.M. 1995** *The Badger & Habitat Survey of Ireland*. The Stationery Office, Dublin

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