Bat Survey Report
(Daytime Assessment, Emergence / Activity Survey & Static Detector Survey)

Proposed Development at St. Joseph's Boys School, Boot Road, Brideswell Commons, Condalkin, Dublin 22

Version: 5-7-22

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1. INTRODUCTION

Ecofact were commissioned to undertake a bat survey at a site at St. Joseph's Boys School, Boot Road, Brideswell Commons, Condalkin, Dublin 22. This site is located at a primary school just off the national N7 road and c. 1.7km from where this road joins the M50. There are several buildings on the site, all currently in use along with hardstand areas, amenity grassland, treelines and mature trees. A Biodiversity Assessment has also been carried out for the proposed development providing mitigation to protect and enhance biodiversity at the site (Ecofact, 2022).

The current survey is being carried out in response to a request for additional information received on the 24th of January 2022 from South Dublin County Council. The sections which refer to bats are as follows:

> *"Item 2: …. There are also concerns regarding the potential of the proposal to impact on local biodiversity and the bat population. Areas of 'new landscaping' are proposed, however, with limited detail. The Applicant is requested to submit the following information:……*
>
> *• A Bat Survey of the site undertaken by qualified and suitably experienced persons during the appropriate time of year"*

1.1 Legislation

Bats are strictly protected under both national and international law. The purpose of this legislation is to maintain and restore bat populations within their natural range. This implies that the habitats on which they rely, and the ecology of their life cycles should not be compromised by human activities. Where activities have the potential to compromise bat populations, measures are required to be put in place to avoid impacts or compensate and mitigate for those impacts. The key legislation which provides protection to bats is outlined below.

1.1.1 Wildlife Act 1976

In the Republic of Ireland, all bats and their roosts are protected under Schedule 5 of the *Wildlife Act 1976* (amended 2000 and 2010). It is unlawful to disturb either without the appropriate Licence.

1.1.2 EU Habitats Directive

In addition to domestic legislation bats are also protected under the *EC Directive on the Conservation of Natural habitats and of Wild Fauna and Flora* (Habitats Directive 1992). This Directive seeks to protect rare species, including bats, and their habitats and requires that appropriate monitoring of populations be undertaken. All bat species are protected under Annex IV of the EU Habitats Directive, while the lesser horseshoe bat (*Rhinolophus hipposideros*) is listed under Annex II. Member states are required to designate Special Areas of Conservation for all species listed under Annex II in order to protect them. The EU Habitats Directive has been transposed into Irish law with the European Communities (Birds and Natural Habitats) Regulations 2011.

1.1.3 Bern and Bonn Conventions

Ireland has also ratified two international conventions which afford protection to bats amongst other fauna. These are known as the 'Bern' and 'Bonn' Conventions. *The Convention on the Conservation of European Wildlife and Natural Habitats* (Bern Convention 1982), 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, which covers certain species of bat.

1.1.4 Derogation Licences

The destruction, alteration or evacuation of a known bat roost is a notifiable action and can only be carried out with a derogation licence from the National Parks and Wildlife Service. Any works that might interfere with bats or their roost sites can only be carried out under licence to derogate from Regulation 23 of the Habitats Regulations 1997 and Regulation 54 of the European Communities (Birds and Natural Habitats) Regulations 2011 (which transposed the EU Habitats Directive into Irish Law). Details with regards to Appropriate Assessments, procedures and parameters under which derogation licences may be obtained are outlined in Circular Letter NPWS 2/07 *'Guidance on Compliance with Regulation 23 of the Habitats Regulations 1997 – strict protection of certain species / applications for derogation licences'* issued on the 16th of May 2007 on behalf of the Minister of the Environment, Heritage and Local Government.

Figure 1 Details of Proposed Development at St. Joseph's Boys School, Boot Road, Brideswell Commons, Condalkin, Dublin 22 also showing location of Static Anabat Express Detectors used in the Bats Survey

2. METHODOLOGY

2.1 Desk Study

The bat suitability of habitat in the study area for bats was obtained from the National Biodiversity Data Centre (NBDC) database. This map provides a picture of the broad scale geographic patterns of occurrence and local roosting habitat requirements for Irish bat species. The maps are a visualization of the results of the analyses based on a 'habitat suitability' index. The index ranges from 0 to 100, with 0 being least favourable and 100 most favourable for bats (Lundy *et al* 2011). The NBDC online National Bat Database of Ireland was accessed to review bat records in the study area.

2.2 Field Survey

2.2.1 Guidance

The survey had regard to the methodology outlined in:

- *Bat Mitigation Guidelines for Ireland v2* by Marnell *et al.*, (2022)
- *Bat Tree Habitat Key (BTHK)* by Andrews, H (2018).
- *Bat Surveys for Professional Ecologists: Best Practice Guidelines 3rd Edition* by Collins (2016)
- *Guidance on the strict protection of certain animal and plant species under the Habitats Directive in Ireland* by NPWS (2021)
- *Bat Workers' Manual 3rd Edition* by JNCC (2004) and
- *British Bat Calls: A Guide to Species Identification* (Russ, 2012).

The definition of bat roost types used in this report is adapted from Collins (2016).

Table 1 Definition of bat roost types adapted from Collins (2016).

Roost Type	Definition
Day Roost	A place where individual bats, or small groups of males, rest or shelter in the day but are rarely found by night in the summer.
Night Roost	A place where bats rest or shelter in the night but are rarely found in the day. May be used by a single individual on occasion or it could be used regularly by the whole colony.
Feeding Roost	A place where individual bats or a few individuals rest or feed during the night but are rarely present by day.
Transitional/occasional Roost	Used by a few individuals or occasionally small groups for generally short periods of time on waking from hibernation or in the period prior to hibernation.
Swarming Site	Where large numbers of males and females gather during late summer to autumn. Appear to be important mating sites.
Mating Sites	Where mating takes place from late summer and can continue through winter.
Maternity Roost	Where female bats give birth and raise their young to independence.
Hibernation Roost	Where bats may be found individually or together during winter. They have a constant cool temperature and high humidity.
Satellite Roost	An alternative roost found in close proximity to the main nursery colony used by a few individual breeding females to small groups of breeding females throughout the breeding season.

2.2.2 *Daytime Inspection*

A survey of the proposed development survey site took place on the 9th of June 2022. This survey involved a daytime inspection of the subject site at St. Joseph's Boys School. The site was visited during daylight hours to assess the buildings and the habitats present on the site and their potential importance for bats. The external buildings were inspected for any evidence of bat usage such as droppings, staining or smearing lines. The presence of any potential ingress / egress points was also identified. Binoculars were used to aid in this part of the survey. The survey focused on the area to be demolished. There is no roof space in this building. The roof space in the building directly adjacent to the building to be demolished / extension area was also inspected. Any potential ingress / egress points were noted here and the area was checked for any evidence of bat usage. This can include live or dead bats, ammonia-type odour, droppings etc.

Mature trees were inspected for their potential to have bats, using visual observations to examine the trees for knotholes, dense ivy coverage, woodpecker holes, damaged limbs, lifting bark or impact shatters. Any Potential Roost Features (PRFs) were recorded. Any evidence of bat usage including live bats, either seen or heard, bat droppings, urine staining or grease smear marks etc were recorded. The rest of the site was inspected for suitable bat foraging habitat and potential commuting routes.

2.2.3 Emergence Watch / Activity Survey

The survey was undertaken on the 9th of June 2022. The survey was completed from 30 minutes before dusk to 2 hours after dusk. Two ecologists were present for the survey. The range of handheld detectors used included the BatBox 3D Heterodyne bat detector, the BatBox Duet Bat Detector (both Heterodyne and Frequency Division). Bat species using the site during the course of the survey and notes on their behaviour and flight paths were recorded.

Three Anabat Express Static Detectors were set up on site on the 9th of June 2022 and were left in place for one night. Data recorded was then analysed using the Anabat Insight software. Bat Calls were identified to species level (where possible) based on professional judgement and with reference to *British Bat Calls: A Guide to Species Identification* (Russ, 2012).

3. DESCRIPTION OF PROJECT CHARACTERISTICS

The proposal comprises the demolition of an existing one-storey building at the southern end of the proposed development site. In its place a new single storey extension will be built in this area. This will be large then then current building and will likely involve the felling of small mature trees. In the existing classrooms some ancillary works will take place and there will be new parking spaces provided in the western forecourt area.

4. RESULTS

4.1 Desk Study

The proposed development is located in Clondalkin, Dublin 22. This site is located at a primary school just off the national N7 road and c. 1.7km from where this road joins the M50. There are several buildings on the site, all currently in use along with hardstand areas, amenity grassland, treelines and mature trees.

The National Biodiversity Data Centre (NBDC) maps landscape suitability for bats based on Lundy et al., (2011). The maps are a visualisation of the results of the analyses based on a 'habitat suitability' index. The index ranges from 0 to 100, with 0 being least favourable and 100 most favourable for bats. Table 1 below gives the suitability of the study area for the bat species found in Ireland (based on NBDC) along with their Irish Red List Status (from Marnell et al., 2009). The overall assessment of bat habitats for the current study area is given as 23.67. This is considered low / moderate. However, for some species the suitability index is considered high for example Common Pipistrelle and Leisler's Bats.

Table 2 Suitability of the study area for the bat species previously recorded in the Boot Road, Brideswell Commons, Clondalkin, Dublin 22 area (based on the NBDC data). Irish Red list status also indicated (based on Marnell *et al.*, 2009).

Common name	Scientific name	Suitability index	Irish red list status
All bats	-	23.67	
Common pipistrelle	*Pipistrellus pipistrellus*	39	Least Concern
Leisler's bat	*Nyctalus leisleri*	42	Near Threatened
Natterer's bat	*Myotis nattererii*	16	Least Concern
Soprano pipistrelle	*Pipistrellus pygmaeus*	35	Least Concern
Brown long-eared bat	*Plecotus auritus*	28	Least Concern
Lesser horseshoe bat	*Rhinolophus hipposideros*	0	Least Concern
Whiskered bat	*Myotis mystacinus*	20	Least Concern
Daubenton's bat	*Myotis daubentonii*	18	Least Concern
Nathusiius's pipistrelle	*Pipistrellus nauthusii*	15	Least Concern

4.1.1 Previous Records

A search on the National Bat Database of Ireland through the National Biodiversity Data Centre was undertaken or bat records within 3km of the proposed development site. There is a record in the 2km grid square O0137 c. 100m north of the proposed development site. This is a record from 2008 of a Soprano Pipistrelle. Also, in this grid square there are records c. 1.1km east of the proposed development site. These records are from an Environmental Impact Assessment carried out by Scott Cawley in 2010. The records are of a Leisler's Bat and Soprano Pipistrelle. Approximately 560m northwest of the proposed development site there is a record of Common Pipistrelle, Soprano Pipistrelle and Daubenton's Bat all from 2008. These records are along a hedgerow. Directly northwest of here there is another record of Soprano Pipistrelle, Leisler's Bat and Common Pipistrelle all from 2011. There are several more records of these three species and to a less extent Daubenton's Bats in the wider area. There are also two records of Brown-long eared bats within 3km of the proposed development. Approximately 3km northwest there is a record of the species from 2008. Approximately 1.1km south in 2010. This record is from a woodland area adjacent to Newlands Gold Club.

A bat survey was carried out for a development c. 35m north of the proposed development. This survey found no species roosting in the buildings onsite but did record Common Pipistrelle, Soprano Pipistrelle and Leisler's Bats in the area (Brian Keeley, 2017).

4.2 Field Survey

4.2.1 Daytime Inspection

The proposed development is located in Clondalkin, Dublin 22. The site is a primary school in a large residential area. There are other schools in the area as well as a large church. There are also construction works occurring on the opposite side of Boot Road. The site consists mainly of the school buildings and hardstand area.

All buildings onsite were inspected externally. The building directly adjacent to the building to be demolished was also internally inspected as was the attic here. The building to be demolished had a flat roof and therefore no attic space. There was a building adjacent to this which did have an attic space. This area was the main focus of the current survey. There was no evidence of bat usage recorded during the external inspection of these buildings. Works were ongoing in the building directly adjacent to the one to be demolished. This building was assessed internally. The rooms here had been cleared and were being refurbished. It appeared the walls were being reinsulated. The attic was also inspected and was also being reinsulated and refurbished. The attic has been cleared and there was no evidence of bat usage recorded.

All other buildings were externally inspected. There were some ingress / egress points noted into the attic space of the western buildings. All of these points were covered in a wire mesh. The roof of all buildings was also found to be in good condition and no ingress and egress points were identified here. It is noted that some of the buildings have flat roofs and these couldn't be fully inspected from the ground. There was a tower building to the south of the site. This had several potential ingress points for bats. It was also densely covered in ivy on one site. To the northwest of the site there was a similar building. This building also had several ingress points. No external evidence of bat usage was recorded on either building.

There is a treeline along the south of the site. There is also a stand of mature trees in the northwest and southwest corners of the site. To the west of the site there is some amenity grassland. There are also some mature trees in this area. This treeline has a mix of native and non-native species, including conifers. There were some trees onsite with Potential Roost Features (PRFs). However, these were not large trees and due to the habitat were considered to have low suitability for bats.

4.2.2 Emergence Watch / Activity Survey

The activity survey commenced from 30 minutes before dusk and continued for 2 hours after dusk. Weather conditions were considered to be optimal following a warm day with dry conditions in June. Some lighting was noted onsite, with orange flood lights on the easternmost building.

The first bat was recorded at 10.32pm. This was an unidentified pipistrelle species, either a Common or Soprano Pipistrelle. This bat was recorded near the southern treeline where the proposed extension will be built. This bat was not seen emerging from the building. The bat did not stay in the area to forage and left the area quickly. At 11.23pm a Soprano Pipistrelle was recorded foraging in the southern hardstand area to the east of the large gate. Another Soprano Pipistrelle was recorded immediately after in the same area. At 11.25m a Soprano Pipistrelle was recorded flying west over the building to be demolished. Another Soprano Pipistrelle was recorded at 11.26pm following the same flight path. At 24.33 a Soprano Pipistrelle was again recorded in the same area.

Overall activity was very low. There was a lot of lighting adjacent to the site and in the wider area. As very few bats were heard early it is unlikely that there is a roost onsite or nearby. There were no bats recorded emerging from the building or any trees in the area. The site itself offers very little foraging

habitat. The best foraging / commuting habitat onsite is the southern treeline and the small stand of mature trees to the southwest of the site.

4.2.3 Static Detector Survey

Two Anabat Express passive detectors were deployed on the site in various locations to cover different areas and habitats on the site. Anabat A was located in the southwestern stand of mature trees and on front of the building to be demolished. Anabat C was located on the southern treeline to the east. These were left on the site for one whole night. The location of these Anabats is shown in Figure 1.

A full breakdown of bat records for the Anabats is provided in Table 2 below. Anabat A had a total of 96 bat passes for the one night of recordings. Anabat A had a much higher number of bat passes compared to Anabat C. Of these recordings, 48% of bat passes were Common pipistrelles and 40% were Soprano Pipistrelles. This is compared to 1% of records being Leisler's, 7% being unidentified pipistrelles.

Anabat B has the highest number of bat passes at 108. Similar to Anabat A the most common species passes were from Common pipistrelles and Soprano pipistrelles, making up 47 and 59% of the total passes respectively. All other passes recorded were unidentified pipistrelles (4%).

Anabat C had a total of 5 bat passes. If these there were 3 Common pipistrelles recorded accounting for 60% of records. There was one pass of Leisler's Bat and one of an unidentified pipistrelle both accounting for 20% of total passes each. This indicated very low activity in this area.

Overall, the Anabat results indicate that bat activity is low on the site and mainly confined to the darkest areas with the highest amount of vegetation. These are the areas where Anabat A and B were located.

Table 3 Anabat Express Records for St. Joseph's Boys National School, Boot Road, Brideswell Commons, Condalkin, Dublin 22.

	Passes					
	Anabat A		Anabat B		Anabat C	
Species	No.	%	No.	%	No.	%
Leisler's bat *Nyctalus leisleri*	1	1	-	-	1	20
Common pipistrelle *Pipistrellus pipistrellus*	48	50	51	47	3	60
Soprano pipistrelle *Pipistrellus pygmaeus*	40	42	53	59	-	-
Unidentified pipistrelle	7	7	4	4	1	20
Total	**96**	-	**108**	-	**5**	-

5. IMPACTS

5.1 Roost Habitat Loss

There would be no impacts regarding roost habitat loss arising from the proposed development. The buildings onsite were not found to contain any roosting bats. Bat activity was low and when bats were recorded it was well past emergence for those species indicating they are not roosting on the site or nearby. No evidence of bat use was noted on the site.

It is noted that works were ongoing in the building directly adjacent to the proposed extension / demolition area. There was one potential entry point into the attic space here which was covered in wire mesh. The attic has been fully cleared. This would disturb any bats that may have been there and therefore there is uncertainty regarding whether or not it was used by bats.

5.2 Foraging / Commuting Habitat Loss

It is considered that there might be some foraging / commuting habitat loss arising from the proposed development. It is assumed the trees nearest to the extension area will be felled to facilitate the demolition and extension. The Anabat results along with the observations made during the activity survey confirmed that the two dark areas to the northwest and southwest had the highest bat activity. The felling of these trees here would likely result in the loss of this habitat. However, there is no optimal foraging areas around the site. The wider area is very well lit and there was also some lighting on the site. This is not considered to be important bat habitat however given the urban setting this habitat could be important for the local bat population. Mitigation is provided to offset these minor impacts.

5.3 Disturbance

Tree felling will be required as part of the proposed development. It is considered unlikely that any roosting bats were using the trees onsite during the current survey. However, some trees has low suitability and a bat can use a tree on any night. If bats occasionally use trees onsite disturbance may arise through increased noise and human activity during construction which would disturb any bats nearby. However, the site is always busy during the day with school children and a busy road adjacent. The site is not considered to be of any significant importance to local bats, and activity levels were not considered to be high. At most the site provides suboptimal commuting habitat and some foraging habitat. Nonetheless, a small number of bats may be disturbed, and mitigation is provided. Once the extension is built it will fit in with the existing landuse and no further disturbance impacts are envisioned.

5.4 Lighting

There is lighting at the proposed development site. Street lighting exists on the adjacent road, there large white sensor lights on the building in addition to large orange lights at the rear of the buildings (east). There may be additional lighting as part of the proposed development. Lighting can affect bats in that it alters their foraging behaviours, can lead to delayed emergence times and a reduction in available habitats. Although the site was not considered to be used by bats in any significant capacity, artificial lighting may result in loss of foraging and commuting habitat. If white or LED lighting is used, this can lead to a higher risk of impacts on local bat populations. For this reason, mitigation will be proposed to reduce light spill.

6. MITIGATION

6.1 License Requirements

No evidence to indicate bat usage was found during the current survey. Therefore, no licences are required for the proposed works. The buildings on the site are not being used by bats.

The precautionary mitigation provided is that in the unlikely event that bats are found to be present in the building at any time during the course of the proposed works, work must stop immediately, and the bat helpline should be contacted (1800 405 000).

6.2 Avoidance Mitigation

During the demolition works, appropriate boundary treatments will be used to ensure mature trees to the southwest which will be retained are not damaged. Root Protection Areas will be set up around the closest trees to the site boundary. Care will be taken to ensure that machinery and vehicles do not result in any damage of tree branches or the root systems of the trees.

6.3 Lighting

Ideally lighting levels would remain the same as they currently are in the dark areas. The southwest corner of the proposed development site is currently very dark and this was the area with the highest bat activity. If lighting is proposed for the extension area on site, light spill should be minimised insofar as possible in the interest of local bat species and nocturnal fauna. LED lighting does have a greater impact on bats when compared with other lighting such as low-pressure sodium. If LEDs must be used, colours other than white may be used to lessen potential light spill impacts. Warmer colour wavelengths between 2700 and 3000 Kelvin seem to have less impacts on wildlife (Marnell *et al.*, 2022; Bat Conservation Trust & Institute of Lighting Professionals 2018). Consideration should be given to restrictions during dark hours, such as reducing light levels, or turning off lights, during late hours of the night. Motion sensor lighting could also be considered. Bat Conservation Trust & Institute of Lighting Professionals (2018) guidance may also be followed, as well as Bat Conservation Ireland's *Bats & Lighting: Guidance Notes for Planners, Engineers, Architects and Developers* (2010). Existing lighting on the site could also be improved for the interest of bats by following the above guidance also.

6.4 Landscaping & Tree Felling

Any trees to be felled will follow NRA (2006) '*Guidelines for the Treatment of Bats during Construction of National Road Schemes*'. Tree removal should take place in the period from late August to late October / early November. This should also be taken out outside the active bird season from the 1st of March to the 31st of August. During this time all bats (young and old) are capable of flight and are not yet in hibernation, therefore would be capable of escaping. Warning must be given to any tree-roosting bats prior to felling which is done by nudging the tree two to three times, with a pause of approximately 30 seconds between nudges, to warn bats that may be present and encourage them to become active and escape. The guidelines highlight that the rate of fall of cut trees should not be accelerated by the use of chain and vehicle. This would cause a heavy impact which any occupying bat would not survive. Also, as a precaution, knocked / cut trees should be left for a period of 24hrs or overnight before they are sawn up or mulched to ensure bats that could have been present have escaped. If bats are found, a derogation licence will likely then be required. This derogation licence is required under Regulation

25 of the European Communities (Natural Habitats) Regulations 1997 and will have to be obtained from the *National Parks and Wildlife* Service in advance of any works. Disturbance of a known bat roost is a notifiable action under current national and European legislation.

A separate Landscape and Planting Plan is being carried out for the proposed development. The request for additional information from South Dublin County Council stated that "*The applicant should consider retaining existing mature trees/vegetation including in the north-west corner and south-west corner and boundary of the site.*" The results from the current survey show that these areas should be retained in so much as possible. Any planting undertaken on the site should endeavour to utilise native species wherever possible. Plants chosen for landscaping should also follow the All-Ireland Pollinator Plan, which would provide suitable foraging opportunities for bat species in the area, as well as promote biodiversity (National Biodiversity Data Centre, 2021). Night-scented plants should be used wherever possible which would benefit bats in the local area.

7. CONCLUSION

Based on the evidence from the current survey this site is not being used by roosting bats. However, works inside some of the buildings have started and it unknown if these works disturbed bats. The works include refurbishing some rooms and the attic. The surveys undertaken at the site show that activity on the site is considered to be low overall. Common and Soprano Pipistrelles were the most common species recorded followed by a low number of Leisler's Bats. This indicates that there is some commuting and foraging habitat for bats on the site. The survey results indicate that the southwest and northwest corners are the most suitable areas.

Mitigation measures are outlined to avoid impacts on foraging and commuting bats. This includes tree felling outside of the active bat season, care will be taken to not damage the retained trees during the course of works. Light spill mitigation is also proposed for the operational phase. It is considered that if all mitigation is followed, there will be no adverse impacts on bats as a result of the proposed development at St. Joseph's Boys School, Boot Road, Brideswell Commons, Condalkin, Dublin 22.

REFERENCES

Bat Conservation Ireland (2010). Bats & Lighting: Guidance Notes for Planners, Engineers, Architects and Developers.
https://www.batconservationireland.org/wp-content/uploads/2013/09/BCIrelandGuidelines_Lighting.pdf

Bat Conservation Trust & Institute of Lighting Professionals (2018) Bats and Artificial Lighting in the UK. Guidance Note 08/18 Institute of Lighting Professionals, Warwickshire. https://cdn.bats.org.uk/uploads/pdf/Resources/ilp-guidance-note-8-bats-and-artificial-lighting-compressed.pdf?v=1542109349

Collins, J. (ed.) (2016) Bat Surveys for Professional Ecologists. Good Practice Guidelines. Bat Conservation Trust, London. http://www.bats.org.uk/pages/batsurveyguide.html

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. http://www.coe.int/en/web/conventions/full-list/-/conventions/treaty/104

EC Directive on The Conservation of Natural habitats and of Wild Fauna and Flora (Habitats Directive) 1992. http://www.coe.int/en/web/conventions/full-list/-/conventions/treaty/104

Ecofact (2022) Biodiversity Assessment: Bat Survey Report (Daytime Assessment, Emergence / Activity Survey & Static Detector Survey) for Proposed Development at St. Joseph's Boys School, Boot Road, Brideswell Commons, Condalkin, Dublin 22

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. https://www.npws.ie/sites/default/files/publications/pdf/IWM25.pdf

Lundy, MG, Aughney T, Montgomery WI, Roche N (2011) Landscape conservation for Irish bats & species specific roosting characteristics. Bat Conservation Ireland. http://www.batconservationireland.org/wp-content/uploads/2013/09/Landscape_Conservation_Irish_Bats.pdf

Marnell, F., Kingston, N. & Looney, D. (2009) Ireland Red List No.3: Terrestrial Mammals, National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland. https://www.npws.ie/sites/default/files/publications/pdf/RL3.pdf

Marnell, F., Kelleher, C, & Mullen, E. (2022) Bat Mitigation Guidelines for Ireland v2. *Irish Wildlife Manuals* No. 134. National Parks and Wildlife Manuals. Department of Housing, Local Government and Heritage, Ireland.
https://www.npws.ie/sites/default/files/publications/pdf/IWM134.pdf

National Biodiversity Data Centre (2021). All-Ireland Pollinator Plan 2021-2025.
https://pollinators.ie/wp-content/uploads/2021/03/All-Ireland-Pollinator-Plan-2021-2025-WEB.pdf

NRA, (2006). Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes. Dublin: National Roads Authority.

Russ, J. (2012). *British Bat Calls: A Guide to Species Identification.* Pelagic Publishing. ISBN-13:978-1907807251.

Stone, E.L., Harris, S. and Jones, G., 2015. Impact of artificial lighting on bats: A review of challenges and solutions. Mammalian Biology, 80, **3**, 213-219. https://www.researchgate.net/publication/272889669_Impacts_of_artificial_lighting_on_bats_A_review_of_challenges_and_solutions

Stone, E.L., Jones, G. and Harris, S., 2009. Street lighting disturbs commuting bats. Current Biology, 19, 1-5. https://www.ncbi.nlm.nih.gov/pubmed/19540116

PLATES

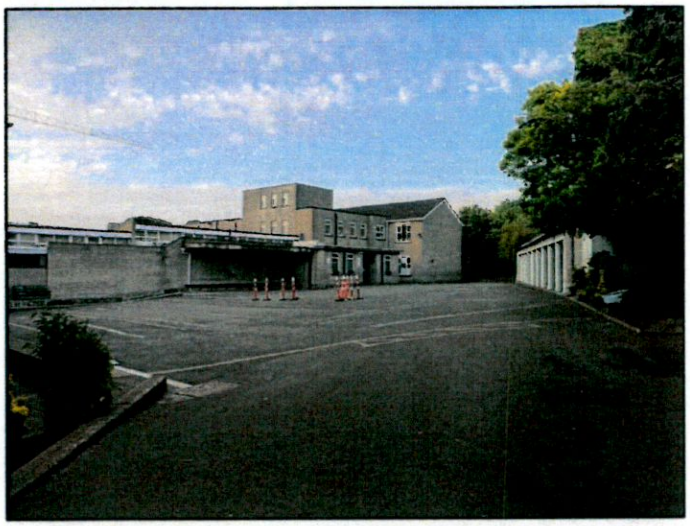

Plate 1 South of St. Joseph's Boys National School where a small numbers of Soprano Pipistrelles were recorded.

Plate 2 Building to be demolished and location of proposed extension

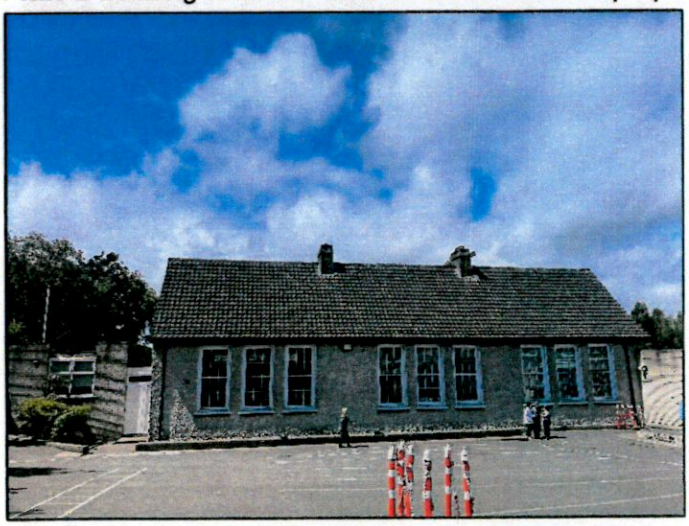

Plate 3 Building to be demolish to the left and building where works were ongoing directly adjacent to this. Only the leftmost section of this building had ongoing works.

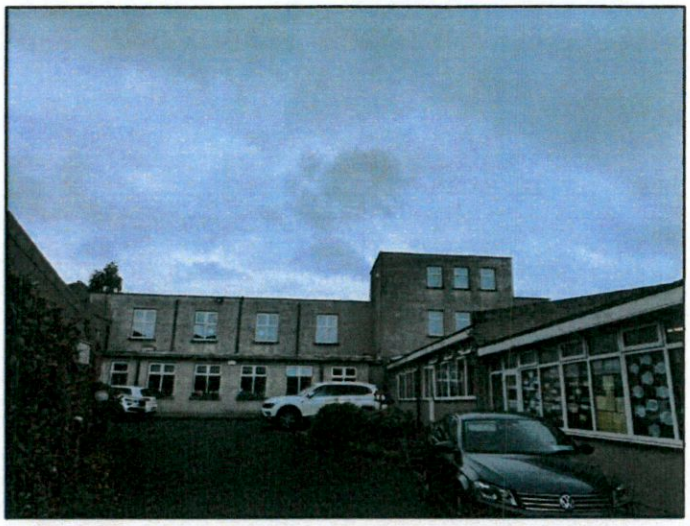

Plate 4 Northern buildings on the survey site. These building were all in use.

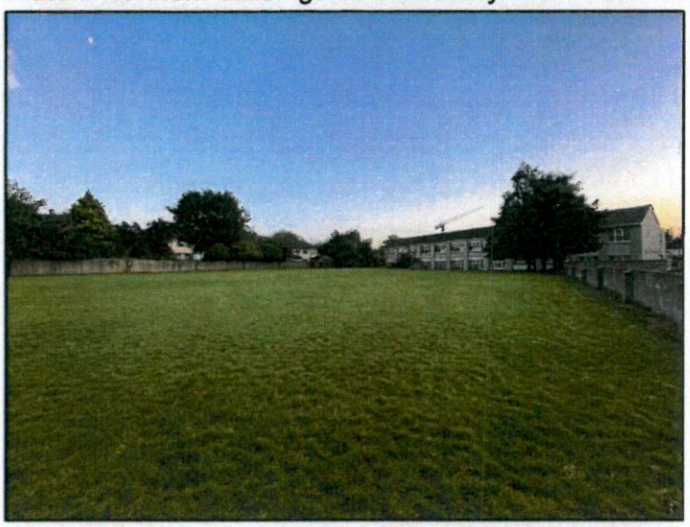

Plate 5 Eastern amenity grassland area. There were mature trees in each corner of this area.

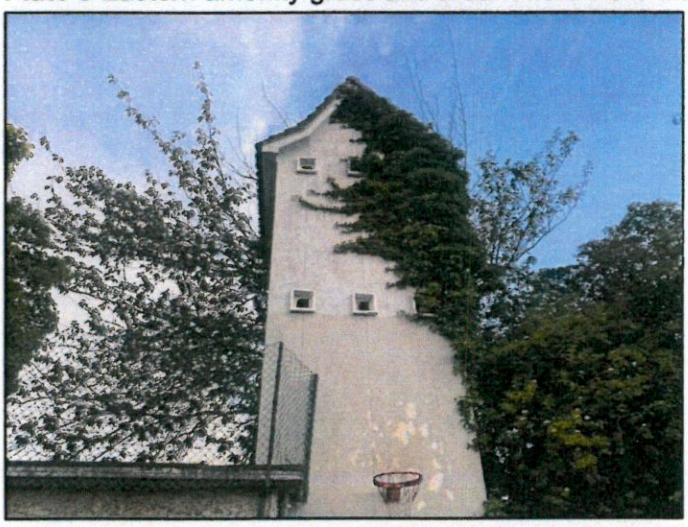

Plate 6 building along the southern treeline which was identified to have some roosting bat potential. No bats were recorded emerging during the survey and it is not currently being used as a roost.

Plate 7 Ongoing works in the building adjacent to the building to be demolished.

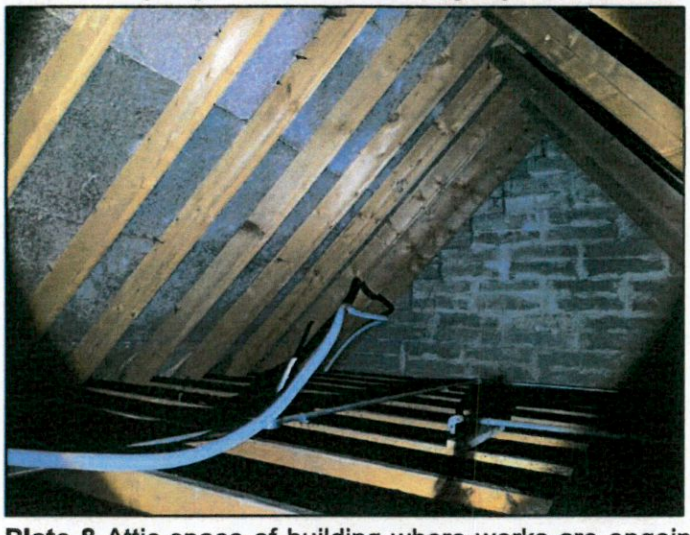

Plate 8 Attic space of building where works are ongoing. The attic has been cleared and works seemed to include refurbishing and reinsulating the area.

Plate 9 Anabat Express statis detector set up on the southern treeline.

Plate 10 An ecologist using a handheld detector to record and identify any bats in the area.

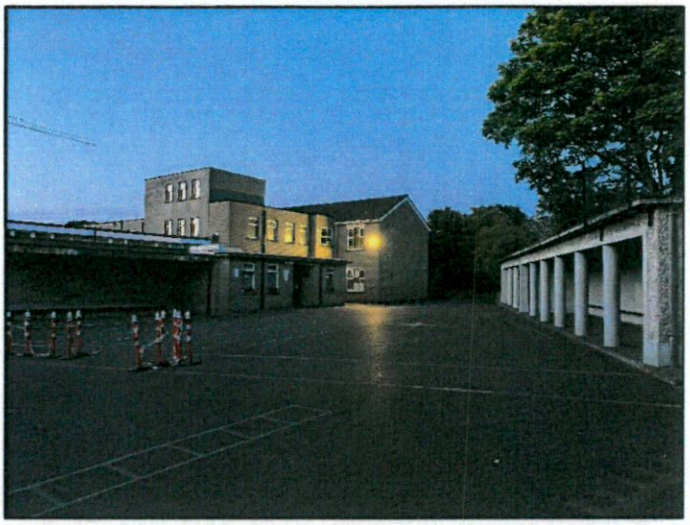

Plate 11 Lighting on the proposed development site. Where lighting was highest bat activity as lower.

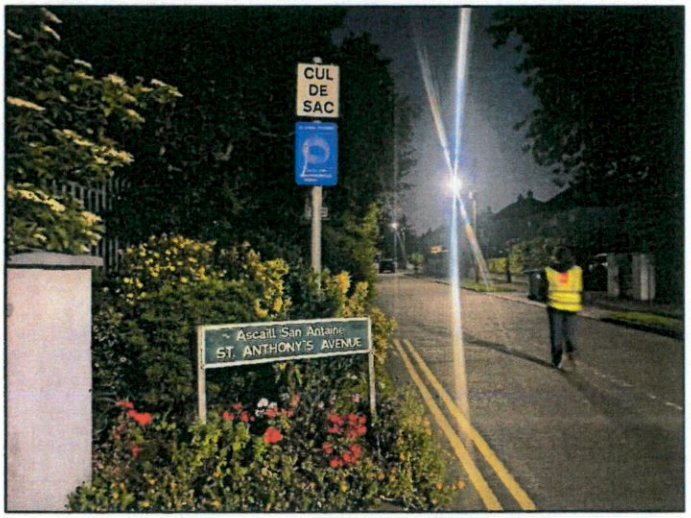

Plate 12 Lighting on the road which runs along the southern boundary of the proposed development site.