Proposed development at Highfield House, Newry Road, Dundalk, Co. Louth

BAT SURVEY REPORT
(Including bat emergence and activity survey)

Version – 17th of September 2024

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1. INTRODUCTION

Ecofact were commissioned to carry out a bat survey at the site of a proposed development on the grounds of Highfield House, Newry Road, Dundalk, Co. Louth. The current report provides the results of desk study and survey inspection of the site which was completed in November 2023 and September 2024. This report has been prepared with regard to the 'Bat Mitigation Guidelines for Ireland v2' by Marnell et al. (2022).

1.1 Bat species in Ireland

There are eleven recorded bat species in Ireland, nine of which are considered resident on the island. Eight resident bat species and one of the vagrant bat species are members of the Vespertilionidae family. The ninth resident species is the Lesser Horseshoe Bat *Rhinolophus hipposideros*, which belongs to the Rhinolophidae family.

The resident Irish bat species are:

- Daubenton's bat (*Myotis daubentionii*)
- Whiskered bat (*Myotis mystacinus*)
- Natterer's bat (*Myotis nattereri*)
- Leisler's bat (*Nyctalus leisleri*)
- Nathusius' Pipistrelle (*Pipistrellus nathusii*)
- Common Pipistrelle (*Pipistrellus pipistrellus*)
- Soprano Pipistrelle (*Pipistrellus pygmaeus*)
- Brown Long-eared bat (*Plecotus auritus*)
- Lesser Horseshoe Bat (*Rhinolophus hipposideros)*

Other bat species (vagrants) recorded are:

- Brandt's bat (*Myotis brandtii*)
- Greater horseshoe bat (*Rhinolophus ferrumequinum*)

1.2 Legislation Relating to Bats

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.

1.2.1 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). It is unlawful to disturb either without the appropriate Licence.

1.2.2 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.

1.2.3 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.

1.2.4 Derogation Licences

All bat species are strictly protected under Annex IV of the EU Habitats Directive, while the Lesser Horseshoe Bat is listed under Annex II of the Directive. A derogation license will therefore be required under Regulation 54 European Communities (Birds and Natural Habitats) Regulations 2011 – 2021 before any development works on the site can take place. Disturbance of a known bat roost is a notifiable action under current national and European legislation.

It is an offence, under Regulation 51 of the European Communities (Birds and Natural Habitats) Regulations, 2011 ('the 2011 Regulations') to:

1. Deliberately capture or kill a bat in the wild;
2. Deliberately disturb a bat particularly during the period of breeding, rearing, hibernation and migration;
3. Damage or destroy a bat's breeding site or resting place, or;
4. (Keep, transport, sell, exchange, offer for sale or offer for exchange any bat taken in the wild, other than those taken legally before the Habitats Directive before the Habitats Directive was implemented.

A person may apply to the Minister under Regulation 54 of the 2011 Regulations for a derogation licence to carry out one or more of these prohibited activities. But, the Minister may only grant such a derogation licence if three criteria are met.

Firstly the Minister may only grant a derogation licence if it is for one of the following specified reasons listed in Regulation 54:

In the interests of protecting wild fauna and flora and conserving natural habitats;
To prevent serious damage, in particular to crops, livestock, forests, fisheries and water and other types of property;
In the interests of public health and public safety, or for other imperative reasons of overriding public interest, including those of a social or economic nature and the beneficial consequences of primary importance for the environment;
For the purpose of research and education, of repopulating and introducing these species and for the breeding operations necessary for these purposes, including the artificial propagation of plats, or;
To allow, under strictly supervised conditions, on a selective basis and to a limited extent, the taking or keeping of bats.

Secondly, the Minister may only issue a derogation if there is no alternative to carrying out the prohibited activity. The first aim of the developer, whether from a private company or a public authority, working with professional advice, should be to entirely avoid any potential impact of a proposed development on bats and their breeding and resting places. Alternatives may involve redesigning a development so that bat roosts, and associated commuting routes and feeding areas are kept intact and that bats are not disturbed, for example by inappropriate lighting. It should be noted that the European Commission has a specific understanding of satisfactory alternative solution. "*An alternative solution cannot be deemed unsatisfactory merely because it would cause greater inconvenience or compel a change in behaviour*" (European Commission, 2021, page 13)2. Decisions about what solution is satisfactory must be science-based and should solve the problem of how to strictly protect the bats in light of the development.

Thirdly the Minister may only grant a derogation if it is not detrimental to the maintenance of the populations of bats at a favourable conservation status (FCS) in their natural range. There is case law from the Court of Justice of the European Union (CJEU) to back this up. One example is the Finnish Wolf Case C-674/17. The ruling establishes that the Member State must "*clearly and precisely*" identify in the derogation what the objectives of the derogation are. It must also establish that the derogation is capable of achieving those objectives and demonstrate that there is no satisfactory alternative. Cumulative effects of derogations must be taken into account when issuing derogations. The maximum number of all derogations must not be detrimental to the maintenance or restoration of the population at FCS. Consideration must be given to other human causes of mortality. Any risk to FCS must be ruled out by detailed conditions based on the level of population, its conservation status and its biological characteristics. The conditions must be precisely defined and they must be monitored to ensure they are implemented. If any of these three criteria are not satisfied, the Minister cannot issue a derogation licence. It must never be assumed that a derogation licence will automatically be granted. In summary, it is clear that a developer must first look to avoid all impacts on bats. This may mean looking at alternative solutions and redesigning the project accordingly. If this is not possible, the developer needs to check whether there are grounds to apply for a derogation licence, based on the reasons given in Regulation 54 of the Habitats Regulations. When applying for a derogation licence the developer must clearly state the reason and describe in detail all alternative solutions which were given serious consideration. Any mitigation intended to ensure that there is no impact or minimal impact on the bats must be clearly described in detail, giving examples of how it worked in other places.

If a derogation licence has been refused by the Minister, any aspect of the development for which the derogation licence was sought, must not go ahead, no matter what other permissions are in place.

The Court of Justice of the European Union (CJEU) judgement (Hellfire Massey C166/22) held that derogation licences should be applied for and granted if needed, before planning consent is considered so that the planning consent reflects the need to comply with Article 12 of the Habitats Directive 92/43/EEC.

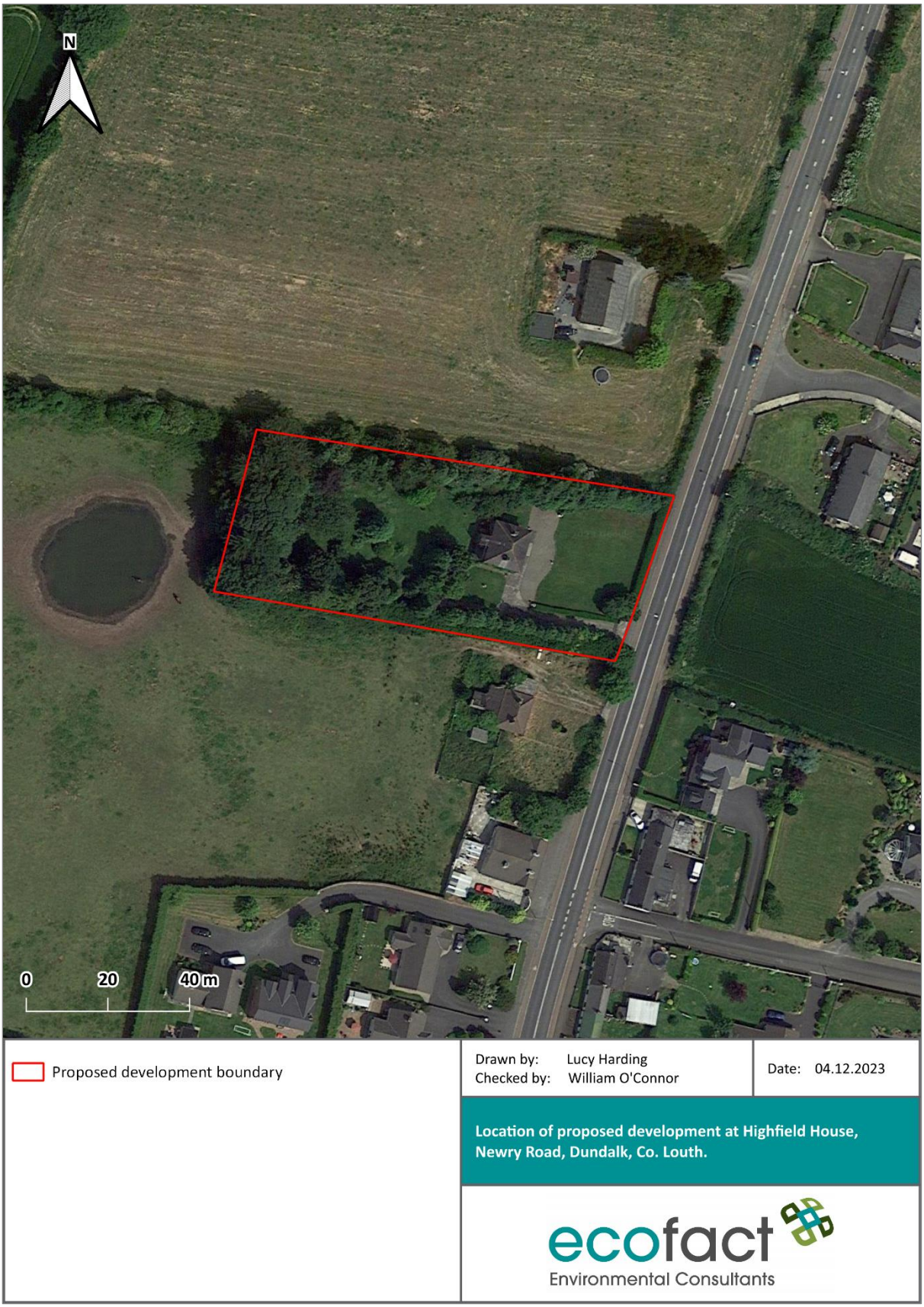

Figure 1 Location of proposed development at Highfield House, Newry Road, Dundalk, Co. Louth.

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 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 (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 4th Edition* by Collins (2023);
- *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 (2023).

Table 1 Definition of bat roost types adapted from Collins (2023).

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 – November 2023

A daytime survey of the proposed development site was carried out in November 2023. This is outside the active bat survey season. The survey had regard to the methodology outlined in *Bat Mitigation Guidelines for Ireland* by Kelleher & Marnell (2006) and *Bat Surveys for Professional Ecologists: Good Practice Guidelines* by Collins (2016). The buildings were first inspected for their potential usage by

bats. The exterior of the main building of Highfield House was inspected for any potential bat roost features. Any potential ingress / egress points were noted in the building, both externally and internally. Binoculars were used for external inspections. The interior of the building could not be accessed for inspection.

The survey also assessed the suitability of the trees on the site for bats and included a search for any indications of bat presence on the site. Each tree was inspected for evidence of bats and any Potential Roost Features (PRFs). Mature trees were inspected for their potential to have bats, using visual observations with the aid of binoculars if necessary to examine the tree for knotholes, dense ivy coverage, woodpecker holes, damaged limbs, lifting bark or impact shatters.

A site walkover of the site also noted any features of ecological importance or interest.

2.2.2 Daytime Inspection – September 2024

The was visited again on the 5th of September 2024. This survey included an updated daytime inspection of the building during daylight hours. The survey involved looking for evidence of roosting bats including droppings, staining, and feeding remains. The survey was completed from the outside of the building.

2.2.3 Emergence / activity surveys – September 2024

An emergence and activity survey was undertaken on the 5th and 6th of September 2024. The surveys included visual and hand-held detector surveys (Elekon Batscanner, Echo Meter Touch Pro 2), thermal imaging surveys (Using Zeis DTI6/40 and DTI/40 units), and use of three static detectors (Two Anabat Chorus detectors and one Anabat Express). The survey was a full night dusk to dawn survey.

Bat detectors with ultrasonic microphones are used as the ultrasonic calls produced by bats cannot be heard by human hearing. Bat species emerging from the building and using the site were recorded. A thermal imaging survey was also

The site could all be accessed and the survey was completed within the appropriate season. The weather conditions were ideal for the surveys and were timed to coincide with a dry mild night.

3. RESULTS

3.1 Desk Study

The site of the proposed development is on the Newry Road, Dundalk, Co. Louth. The site consists of a large house, an adjacent stone shed with a slate roof and surrounding treelines and grassland. There are two Natura 2000 sites within 5km of the property; Dundalk Bay SAC and Dundalk Bay SAC (Figure 2). Neither of these sites are designated for bat species. There are two proposed Natural Heritage Areas within 5km of the proposed development; Trumpet Hill (Louth) pNHA, and Dundalk Bay pNHA (Figure 3). There is no hydrological connectivity between the proposed development site and these protected sites.

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 2 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.,* 2019). The overall assessment of bat habitats for the current study area is given as 37.56, which is considered to be high.

Table 2 Suitability of the study area for the bat species previously recorded in the Dundalk, Co. Louth area (based on the NBDC data). Irish Red list status is also indicated (based on Marnell *et al*., 2019).

Common name	Scientific name	Suitability index	Irish red list status
All bats	-	37.56	
Soprano pipistrelle	*Pipistrellus pygmaeus*	48	Least Concern
Brown long-eared bat	*Plecotus auritus*	48	Least Concern
Common pipistrelle	*Pipistrellus pipistrellus*	53	Least Concern
Lesser horseshoe bat	*Rhinolophus hipposideros*	1	Least Concern
Leisler's bat	*Nyctalus leisleri*	57	Least Concern
Whiskered bat	*Myotis mystacinus*	37	Least Concern
Daubenton's bat	*Myotis daubentonii*	38	Least Concern
Nathusiius's pipistrelle	*Pipistrellus nauthusii*	12	Least Concern
Natterer's bat	*Myotis nattererii*	44	Least Concern

3.1.1 Previous Records

The National Bat Database of Ireland was accessed in order to obtain records of bats in the general study area. A review of bat records within 3km of the proposed development site was completed. According to the National Bat Database of Ireland the nearest bat records to the proposed development site is c. 0.7km northeast for a Soprano Pipistrelle and Common pipistrelle from 2009 and 2004 respectively. There are two more records of the same species c. 1.1km and c. 2.1km west of the proposed development from 2004 and 2008 respectively. There is also a record of a Common pipistrelle c. 1.1km northeast from 2009.

There is a record of a Brown long-eared bat from 2006, c. 2.6km southeast of the proposed development. There are several records of Leisler's bat within 3km of the proposed development, the nearest being c. 1.2km west of the proposed development from 2004. A Daubenton's bat was also recorded at this site in 2003. There are two further records for this species c. 2.2km west of the proposed development from 2008 and 2007. There is a record of Natterer's bat c. 1.1km northeast of the proposed development.

3.2 Field Survey

3.2.1 November 2024

The subject site was visited during November 2023 outside of the active bat season. The buildings, habitats and trees on the site were assessed for their potential to be used by bats. Firstly, the exterior of the Highfield House showed a number of gaps and potential entry and exit points. There were no bat droppings found on site but this could be due to the winter season. This building shows high potential for bats, but with no signs.

All of the mature trees on the site are non-native species, with low ivy cover, and showed no evidence of Potential Roost Features (PRFs). They could however be being used for foraging and commuting as they form linear habitats surrounding the house.

Overall, it is considered that the Highfield house on the site has potential to be a roost for bats. Further surveys during the active bat activity season will be required. No significant PRFs were noted in the treeline and it is noted that the closest trees have low potential for usage by bats.

Other than some minor mammal trails, likely from fox, no other ecological features of interest were identified on the site. The dominant habitats are trees, hedgerows, amenity grassland and artificial surfaces.

3.2.2 September 2024 (Daytime)

The subject site was visited again during September 2024 during active bat season. The buildings, habitats and trees on the site were assessed for their potential to be used by bats. No signs of bat activity were recorded.

All of the mature trees on the site are non-native species. During the winter survey the leaves had died back and no cracks or holes in the trees providing bat PRFs were recorded. However, during the September visit the trees were considered to be very full and had at least some potential. They were previously identified as being of potential use for foraging and commuting by bats.

Overall, it was considered that the Highfield house on the site has potential to be a roost for bats. No significant PRFs were noted in the trees on the site - however they could not be ruled out for bat potential and were very full after a summers growth.

A mammal trail was again recorded on the site. This may be a badger using the site – but this could not be confirmed. There are no badger dwelling. Evidence of usage by Foxes was also recorded. No other ecological features of interest were identified on the site. The dominant habitats are trees, hedgerows, amenity grassland and artificial surfaces.

3.2.3 September 2024 (dusk to dawn surveys)

An emergence and activity survey was undertaken on the 5th to 6th of September 2024. Once the static detectors were set up the survey commenced 30 minutes before dusk. The site was watched from the front and rear of the site. The first activity was recorded at 20.24am when two Leisler's bat appeared overhead. These did not emerge on the site and flew into the area very high. Then at 20:17 two Soprano Pipistrelles were recorded emerging from either the roof of the house or the trees behind the shed. It is sometimes not possible to be absolutely sure where bats emerge from. These bats foraged around the house and then moved to the rear of the site. Following this, two Common pipistrelles started foraging

at the rear of the site and foraged back and forth over the trees. There was a lot of bat activity on the site over the next 30 mins but the numbers of bats present were low. The majority of the passes were from the same small number of bats flying back and forth at the rear of the site and along the southern boundary of the site. There were a few additional passes of Leisler's bats flying overhead. Common Pipistrelles were engaged in mating at the rear of the site and around one of the larger trees. There were many social calls also from Common Pipistrelle and these bats were likely to be mating also.

It was apparent that there was not a major roost on the site however the conclusion was a small number of Pipistrelles were roosting on the site. A maximum of two may have emerged from the roof of the house. We were also very sure that at least one or two of the bats were using the trees on the site. Mating of bats on the site was confirmed. Also, the site was being used for foraging by three species of bats. Some of the bats recorded came from outside the site to the south. However a small number of (<5) were roosting on the site. There was a lot of light spill into the site from the road. The southern side of the site and rear of the site were the most important areas for bats for foraging, commuting, and mating. Leisler's bats occasionally foraged overheard. However, they were flying high and not associated with the site.

Three static detectors set up at the proposed development site for the full night. These detectors confirmed the results of the visual/detector surveys and also provided a higher resolution survey. The results obtained were in line with what was recorded during the visual/detector survey. These overall results of the static detector surveys are given in Tables 3-5 and outlined below.

Chorus unit A was located at the front of the house. A total of 161 bat passes were recorded by this detector across at least six species. The majority of bat passes were from Common pipistrelle. This species was first recorded at 20.37pm. The majority of activity for Common pipistrelles was earlier in the night and lessened as the night went on, with activity finishing at 05.05am. The second most active species was Soprano pipistrelle. The first bat pass was at 20.07am and the last at 04.04am. Similar to Common Pipistrelle activity, was higher earlier in the night. Leisler's bat were first recorded at 20.23pm, all but 5 passes were between 20.23pm and 21.00pm. The last record was 3.03am. Nathusius' Pipistrelle, *Myotis* spp. and Brown Long-eared bat were also recorded. These species were not recorded around dawn or dusk.

Chorus unit B was located at the southern side of the house and recorded the most bat activity. The majority of activity was by Common pipistrelles and began at 20.28pm. Again, the majority of called were early in the night. This species was recorded throughout the survey with the last record at 05.44am. Soprano Pipistrelle activity was also high and began at 20.05pm and the last at 5.58am. There were some around emergence but the majority of passes for this species were after midnight and it was consistently recorded until 5.58am. Leisler's bat were first recorded at 20.24am and lastly at 03.42am, with most of the calls earlier in the night. *Myotis* spp. were recorded between 21.55pm and 4.46am. Nathusius' Pipistrelle, and Brown Long-eared bat were also recorded. These species were not recorded around dawn or dusk. There were Soprano Pipistrelle social calls picked up on all detectors, but they were particularly common at Chorus B.

The Anabat Express unit was located at the rear of the house. At this detector, unlike Chorus A and B, the majority of activity was from Soprano Pipistrelle. The first was recorded at 20.17pm and the last at 5.58am. There were a few bat basses around emergence time but activity level increased steadily after emergence. Common pipistrelle were also recorded, with the first record at 20.37am. Of these, 59 bat passes were between 20.00-21.00pm. After 22.00pm there was a drop in activity, with a slight increase after 5.00am. The last Common pipistrelle was recorded at 5.44am. Leisler's bat, were between 20.24pm and 03.42am. There were 10 *Myotis* spp. recorded at this detector between 21.55pm and

04.46am. Nathusius' Pipistrelle were recorded once at 4.35am. Brown long-eared bats were also recorded at this detector, with the first record at 21.54pm and the last record at 4.51am.

Table 3 Results of the static detectors from the proposed development at Newry Road, Dundalk, Co, Louth from Chorus Unit A

Common name	Species name	No.	%
Soprano Pipistrelle	*Pipistrellus pygmaeus*	25	15.53
Brown Long-eared bat	*Plecotus auritus*	1	0.62
Common Pipistrelle	*Pipistrellus pipistrellus*	108	67.08
Leisler's bat	*Nyctalus leisleri*	20	12.42
Myotis spp.	Myotis spp.	5	3.11
Nathusius' Pipistrelle	*Pipistrellus nathusii*	2	1.24
Unidentified pipistrelle	Pipistrellus spp.	0	
Total		**161**	

Table 4 Results of the static detectors from the proposed development at Newry Road, Dundalk, Co, Louth from Chorus Unit B.

Common name	Species name	No.	%
Soprano Pipistrelle	*Pipistrellus pygmaeus*	241	39.44
Brown Long-eared bat	*Plecotus auritus*	1	0.16
Common Pipistrelle	*Pipistrellus pipistrellus*	338	55.32
Leisler's bat	*Nyctalus leisleri*	24	3.93
Myotis spp.	Myotis spp.	4	0.65
Nathusius' Pipistrelle	*Pipistrellus nathusii*	2	0.33
Unidentified pipistrelle	*Pipistrellus* spp.	1	0.16
Total		**611**	

Table 5 Results of the static detectors from the proposed development at Newry Road, Dundalk, Co, Louth from the Anabat Express Unit.

Common name	Species name	No.	%
Soprano Pipistrelle	*Pipistrellus pygmaeus*	215	52.06
Brown Long-eared bat	*Plecotus auritus*	11	2.66
Common Pipistrelle	*Pipistrellus pipistrellus*	148	35.84
Leisler's bat	*Nyctalus leisleri*	27	6.54
Myotis spp.	Myotis spp.	10	2.42
Nathusius' Pipistrelle	*Pipistrellus nathusii*	1	0.24
Unidentified pipistrelle	Pipistrellus spp.	1	0.24
Total		**413**	

4. IMPACTS

4.1 Roost Habitat Loss

The proposed development involves the renovation and construction works on the Highfield House and areas immediately adjacent. The house on the site has bat potential and was confirmed as being a likely minor roost in the current survey. The house and adjoining trees are used by a very small number (<5) of Pipistrelles for roosting. The proposed development would result in the permanent removal of this roost. This will require mitigation in the form of compensatory roosting habitat.

Pipistrelles are the most common, widespread, and adaptable bat species in Ireland. However, all bats and their roosts are ***strictly protected*** and listed under Annex IV of the EU Habitats Directive. The EU Habitats Directive has been transposed into Irish law with the European Communities (Birds and Natural Habitats) Regulations (2011) (S.I. No. 477/2011). All bat species are also protected here under the Wildlife Act (1976) and Wildlife (Amendment) Act (2000) (S.I. No. 38 of 2000). Impacts on bats may also be the subject of claims under the European Communities (Environmental Liability) Regulations (2008) (S.I. No. 547/2008) where bat and their roosts may have been adversely affected by unauthorised activities.

4.2 Foraging / Commuting Habitat Loss

The proposed development involves construction of car parking spaces to the front of the main house and construction of residential dwellings to the rear of the house. The treelines to the rear and around the boundaries are used by small numbers of bats for foraging and commuting. Moreover, bats were recorded mating on the site during the current survey. The trees on the site will be removed to make way for a boundary wall and the proposed development. Therefore, there will be loss of these trees and the associated bat habitats on the site. This will require mitigation, such as landscaping.

4.3 Disturbance

The proposed development will result in increased noise and human activity on the proposed development site during the works. In the operational phase, there will also be an increase in human activity on the site. There will be increased facilities and accommodation on the proposed development site. The proposed works may disturb / displace bats that are roosting on the proposed development site either in buildings or trees. Even if the building isn't being directly affected, works nearby along with any associated lighting could disturb bats. The level of impact will depend on when the work takes place. Mitigation to minimize disturbance will be required, for example timing of the works outside of the periods when bats are active. For example, if works take place during the winter months, then disturbance will be minimal.

4.4 Lighting

The current proposed development involves the construction of several new residential dwellings and a car park. Increased lighting on paths, car parks, from the accommodation, and on roads will all impact commuting and foraging bats. This will also deter bats from roosting on the site. Therefore, mitigation to minimize light spill impacts will be required.

5. MITIGATION

5.1 Derogation License Requirements

A derogation licence will be required under Regulation 54 of the European Communities EC (Birds and Natural Habitats) Regulations 2011 in advance of any works. Disturbance of a bat roost is a notifiable action under current national and European legislation. This applies even to a minor roost. Mitigation following the Bat Mitigation Guidelines (Marnell *et al*. 2022) will need to be implemented to meet the requirements of a bat derogation licence. The proposed general mitigation approach is outlined below.

5.2 Compensatory roosts

The loss of the roosting habitat on the site can be compensated by the use of bat boxes. The provision of bat boxes would be of benefit to the local bat population. It is recommended that 6 Schwegler 1FF bat boxes will be placed on local trees or the external faces of the new building.

It may also be possible to accommodate bats in the roof in a managed way. An artificial bat roost compartment could be installed that can be accessed via bat tiles. This approach may not be possible on this site but should be explored. The final mitigation details will need to be agreed with the National Parks and Wildlife Service.

5.3 Avoidance Mitigation

Site enabling works should be planned for outside active bat season. The recommended time for these works to take place is October to April.

Works must take place outside of the bird nesting season, which runs from the 1st of March to the 31st of August each year. It is illegal to remove or cause disturbance to an active bird nest during the bird nesting season under the Wildlife Act 1976 (2000).

5.4 Landscaping

The proposed development involves the removal of a foraging and commuting corridor for bats. This is located within the site and around the boundary of the site. Ideally a strip of this could be maintained. If retention of a portion of this corridor isn't feasible then extensive landscaping should be undertaken.

Treelines and hedgerows along the perimeter of the site should be retained wherever possible and could be planted supplementally with native species. 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).

5.5 Lighting

The proposed development will be likely to result in additional light spill on and around the proposed development site.

Light spill should be minimised as far 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).

6. CONCLUSIONS

The site is used by a small number of roosting bats (<5 Pipistrelles). This site only provides minor bat roosting habitat. Small numbers of non-breeding bats use the building and trees on the site, but probably only in the summer and autumn months. Mitigation for bats will be required including compensatory bat roosts, timing of works, limiting of light spill, and provision of landscaping.

No works can take place on the site in the absence of a bat derogation license obtained from the National Parks and Wildlife Service.

Overall, it is concluded that the proposed development will not have a significant impact on bats providing the mitigation measures outlined in the current report are adhered to.

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PLATES

Plate 1 Existing main building (Highfield House) on the proposed development site.

Plate 2 Rear garden and trees at the propsoed development site.

Plate 3 Thermal image of the Highfield House duing the bat activity survey.

Plate 4 Bat detetcor at the rear of Highfield House duing the bat activity survey.

Plate 5 Bat detetcor at the front of Highfield House duing the bat activity survey.

Plate 6 Rear view of the main building on the proposed development site (winter survey).

Plate 7 Small storage building covered in ivy which will be demolished (winter survey).

Plate 8 Trees in the rear area of the proposed development site.

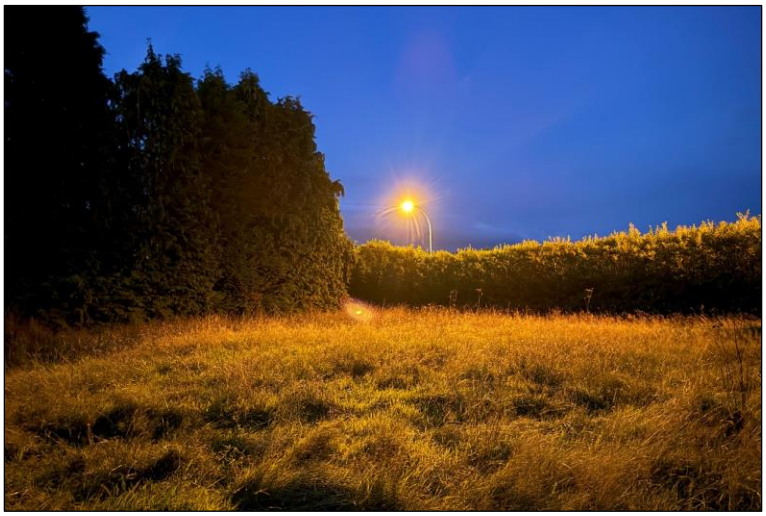

Plate 9 Light spill into the front garden duing the activity survey.