



Bat Survey & Mitigation Measures
For the Demolition of a Derelict Dwelling
at
Williamstown
Co. Galway

Doherty Environmental Consultants Ltd.

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1.0 INTRODUCTION

Galway County Council proposes to demolish an existing derelict residential dwelling and build a new residential in its place at a site in Williamstown, Co. Galway. The location of the subject site is shown on Figure 1.1 and an aerial view of the site is shown on Figure 1.2.

A bat survey was completed to identify the presence or otherwise of roosting bats at the existing derelict residential structure and the shed to the rear of the structure. The aim of the bat survey was to confirm the:

- Potential for the structures on site to support roosting bats;
- Presence of roosting bats at these structures;
- If present, the species roosting at the structure and the estimated number of bats roosting at the structure.

The results of the bat survey and recommendations arising from the survey findings are presented in this report.

1.1 BACKGROUND TO PROPOSED DEVELOPMENT & REASONS FOR DEMOLITION

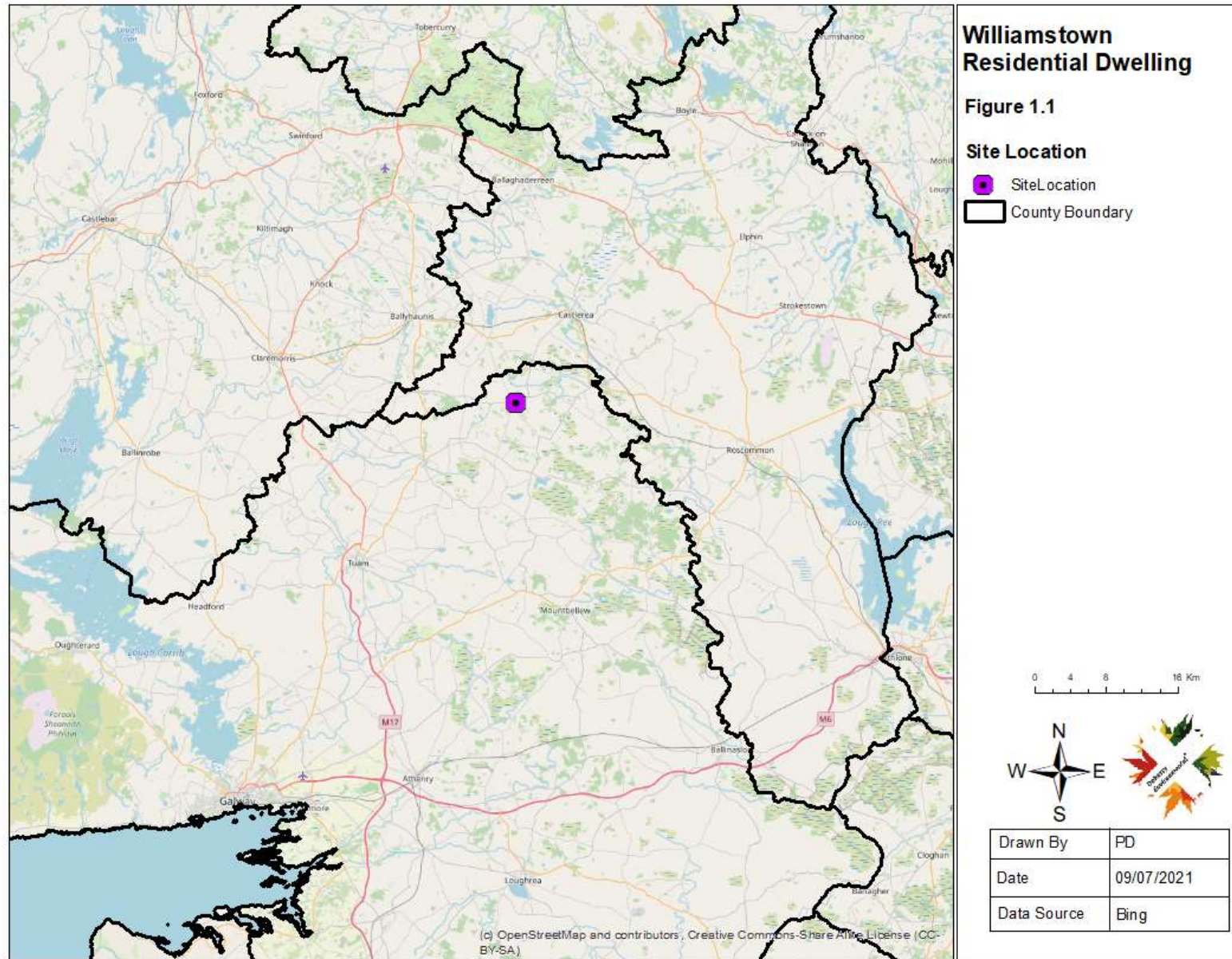
The subject site is in the ownership of Galway County Council and has been identified as an ideal site to meet the housing needs of a candidate in the Williamstown area. The replacement dwelling is required for a family who have a need for a wheelchair accessible dwelling for their daughter. The family current reside in a small two-storey, semi-detached dwelling which is not accessible.

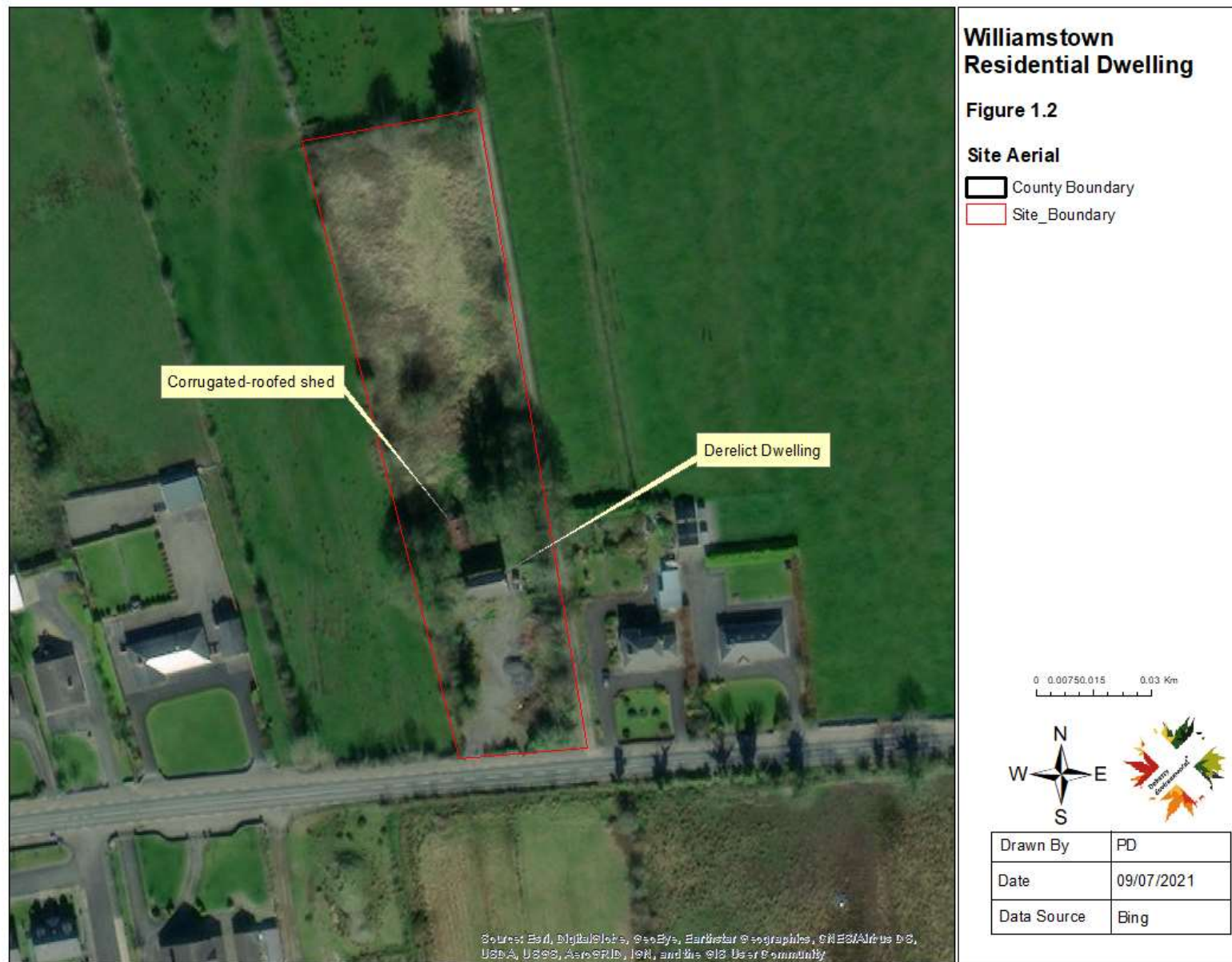
All of the bedrooms and the bathroom in the current dwelling are upstairs and are inaccessible to their daughter. Therefore, a new purpose built dwelling is required to accommodate their daughter's present and future needs as well as the needs of her family.

The existing 2-storey house is in a very poor condition with serious structural deterioration noted to all elements of the building during a site inspection by the project engineers.

Water ingress has rotted the roof and floor structures and they are in danger of imminent collapse while cracking was identified in the chimney and main walls of the house. The cracking appears to be caused by inadequate bracing of the external walls as the partly collapsed first floor and roof is no longer providing horizontal restraint to the external walls. It is the opinion of the project engineers that the building in its current state, poses a significant Health and Safety Risk and should be made safe as a matter of priority.

The project engineers and County Council have determined that the current size and layout of the existing house is not suitable for the housing need proposed for the site, specifically with regard to disabled access and circulation. It is proposed to replace the existing derelict dwelling with a single storey dwelling. The proposed single storey dwelling will provide the required disabled access facilities while providing the family with wheelchair access to the town via the footpath which fronts the site. In light of the above it is the opinion of the County Council and the project engineers that the existing house is demolished for both Health and Safety and housing need reasons.





2.0 OVERVIEW OF THE SURVEY SITE

The subject site is located at the western end on the town of Williamstown. It is accessed from the town by the R360, and an existing footpath is also in place to provide pedestrian access from the subject site to the town.

The subject site is comprised of an existing residential dwelling that is in an advanced state of dereliction and a shed to the rear/north of the dwelling. The dwelling is of 20th Century origin and does not appear on the historic 25-inch mapping from 1888 – 1913. It is likely to be of mid-20th century origin.

The R360 forms the southern boundary of the site. A low-cut hedgerow along a low boundary wall forms the northern boundary. Hedgerows run north along the eastern and western boundaries from the southern boundary. These hedgerows grade into mature treelines along both boundaries in the vicinity of the dwelling and continue north along their respective boundaries. A short line of mature trees also runs west from the eastern boundary to the rear of the existing dwelling. The mature treelines provide shelter to the dwelling from the east, north and west.

The ground between the rear of the dwelling and the shed and surrounding the shed has become colonised by a high sward of ruderal vegetation such as thistles, nettles and brambles.

The dominant land cover surrounding the subject site is improved agricultural grassland, examples of which bound the site to the north, west and east.

Appendix 1: Plates provides a photographic record of the project site.

3.0 BAT SURVEY METHODOLOGY

3.1 DESK STUDY

A search for records of bat species held by the National Biodiversity Data Centre (NBDC) website for the 1km square grids R3702 was completed (last reviewed on 9th July 2021).

3.2 BAT ROOST POTENTIAL OF EXISTING DWELLING

Kelleher & Marnell (2006) provide guidance on assessing the potential for structures to support roosting bats. This guidance identifies a variety of factors that increase or decrease the potential of a structure to function as a bat roost. These factors are outlined in Table 3.1 below.

Table 3.1: Factors Affecting the potential of a building to support a bat roosts, as described by Kelleher & Marnell (2006)

Increase Potential	<p>Disused or little used; largely undisturbed</p> <p>Large roof void with unobstructed flying spaces</p> <p>Large dimension roof timbers with cracks, joints and holes</p> <p>Uneven roof covering with gaps, though not too draughty</p> <p>Entrances that bats can fly in through</p> <p>Hanging tiles or wood cladding, especially on south-facing walls</p> <p>Rural setting</p> <p>Close to woodland and/or water</p> <p>Pre-20th century or early 20th century construction</p> <p>Roof warmed by the sun</p>
Decrease Potential	<p>Urban setting or highly urbanised area with few feeding places</p> <p>Small or cluttered roof void</p> <p>Heavily disturbed</p> <p>Modern construction with few gaps around soffits or eaves</p> <p>Prefabricated with steel sheet materials</p> <p>Active industrial premises</p> <p>Roof shaded from the sun</p>

The existing dwelling within the project site was assessed against these factors to establish the bat roost potential of the structure.

3.3 DAYTIME INSPECTION

The daytime inspection survey was undertaken on the 7th July 2021. Only the exterior of the dwelling and the ground floors could be visually inspected during this survey. Due to the derelict condition of the dwelling no attempt was made to access the upper floor or the loft space of the dwelling.

The shed to the rear of the dwelling was inspected.

The daytime inspection involving searching the above areas for any evidence indicating the presence of bats such as droppings, brown staining from urine, feeding remains and surfaces smoothed around entrance holes. The inspection survey also focused on identifying suitable access and egress points for bats so that these could be targeted during bat detector roost emergence survey.

The following equipment was used during the inspection and activity surveys:

Echo Meter Touch Pro bat detector: and

High-powered mag-lite hand torches and LED head torches.

3.4 ROOST SURVEYS

A dusk roost emergence surveys was completed at the derelict dwelling and shed. The roost emergence survey was completed on the 7th July 2021. The survey was completed manually, and an automatic bat detector was also installed to augment the survey.

A position was taken up to the southwest of the derelict dwelling to complete the manual survey. that afforded a view of the south-facing side of the pitched roof, the open window voids at the south-facing side and the shed to the north of the dwelling. The location is shown on Figure 3.1.

The automated bat detector, an SM4 Bat Full Spectrum bat detector, was installed on the north side of the dwelling between the dwelling and the shed. Appendix 1 Plate 3 shows the automatic detector in position. The location is shown on Figure 3.1. The automatic detector was set to



start record throughout the night, commencing at 30 minutes prior to sunset and terminating 30 minutes after sunrise.

Sunset times on the 7th July was at 21:52. Sunrise time on the 8th July was at 05:23.

A constant watch of the dwelling and shed was undertaken during the surveys, with the high-powered LED torch light focused on the potential access/egress points to the dwelling. The Echometer Touch bat detector was set to record throughout the emergence survey. Conditions during the emergence surveys were recorded.

3.5 SURVEY LIMITATIONS

Due to the advance state of dereliction within the former dwelling it was not possible to inspect the interior of the upper floor or the loft space for the presence of bats or their field signs.

4.0 RESULTS

4.1 DESK TOP REVIEW

A review of National Biodiversity Data Centre (NBDC) in July 2021 did not reveal any previous records for bats within or surrounding the project site. There are no records for bats within the 1km square M6169 in which the subject site is located. There are no records held for any bat species in the 1km grid square M6170 to the north of the subject site. The project site is not located within the zone of influence of any Special Area of Conservation (SAC) that is designated for its role in supporting lesser horseshoe bats. A review of the NPWS National lesser horseshoe bat database indicates that the nearest known lesser horseshoe bat record to the project site is over 18km to the southwest.

4.2 BAT ROOST POTENTIAL

Based on the Kelleher & Marnell (2006) roost potential assessment criteria, Table 4.1 describes the structural features that are listed as factors influencing roost potential.

Table 4.1: Roost Potential Factors identified at the Existing Dwelling

Factor	Factors Influence on Roost Potential
The dwelling is disused;	Increased Potential
Entrances that bats can fly in through were identified on the southern side of the roof where missing roof slates were noted;	Increased Potential
The dwelling is surrounded by mature trees and garden vegetation that provides some woodland habitat;	Increased Potential
The dwelling is at least of early to mid-20 th century construction;	Increased Potential
The roof is constructed of slate and is warmed by the sun;	Increased Potential
Small and/or cluttered roof void. The rooms on the upper floor occupy the majority of the roof void. The ceiling is raised above the roof eaves, with only a small void area estimated to be c. 60cm	Decreased Potential

in height occurring between the apex of the roof ridge and the ceiling.	
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The majority of the factors listed above are representative of factors of increased roost potential. The smaller space in the roof void between the ceiling and the roof is likely to limit the overall suitability of the structure to support a wider range of bat species such as brown long-eared bat and *Myotis* species.

The shed to the rear of the dwelling is of low roost potential owing to the corrugated sheeting that forms the roof of this structure.

4.3 INSPECTION SURVEY RESULTS

No evidence indicating the presence of bats such as droppings or staining were noted on the ground floor of the derelict dwelling, the shed, or on the exterior of the buildings.

4.4 ROOST EMERGENCE SURVEY

4.4.1 Conditions

Conditions during the roost survey were ideal for bat emergence and foraging activity. Conditions remained dry and calm during the survey. Temperatures were mild to warm at 14°C throughout the survey. Cloud over was high throughout.

4.4.2 Emergence Surveys: Observations of Bat Emergence

Three individual Soprano pipistrelle bat were visually observed emerging from the upper northeast window void on the southern elevation between 22:11 and 22:15, approximately 20 minutes after sunset. All three bats were observed flying inside the upper room prior to emerging from the window void.

The possible emergence of at least two further Soprano pipistrelles from the dwelling structure was also suspected, based on the calls detected by the manual bat detector and the observation of two bats immediately adjacent to the southern elevation during the period of emergence.

In total it is estimated that five Soprano pipistrelle roosted at the derelict structure. Based on the results of the survey a small number of Soprano pipistrelle were recorded roosting at the dwelling. The results indicate that the derelict dwelling functions as a day roost or small satellite roost for Soprano pipistrelles.

4.4.3 Emergence Surveys: Summary of Bat Activity

4.4.3.1 Manual Survey Results

Bat flight and foraging activity during the emergence survey on the 7th July, between 21:30 and 23:45 was dominated by Soprano pipistrelle, Common pipistrelle and Leisler's bat.

A total of 21 Soprano pipistrelle calls were recorded.

A total of 28 Common pipistrelle calls were recorded. No Common pipistrelle were observed emerging from the structures on site.

A total of 12 Leisler's bat calls were recorded. No Leisler's bat were observed emerging from the structures on site.

The first bat recorded was a Leisler's bat at 21:39, approximately 13 minutes before sunset. This bat was observed flying high overhead and did not emerge from any of the structures on site. This bat did not emerge from the structures being surveyed but instead was seen approaching the site from the southwest and is likely to have emerged from a roost elsewhere.

4.4.3.2 Automatic Detector Survey

A total of 384 bat calls were registered by the automatic detector positioned in the northern side of the residential dwelling. The species and number of passes associated with them were as follows:

Natterer's Bat – 14

Leisler's bat – 3

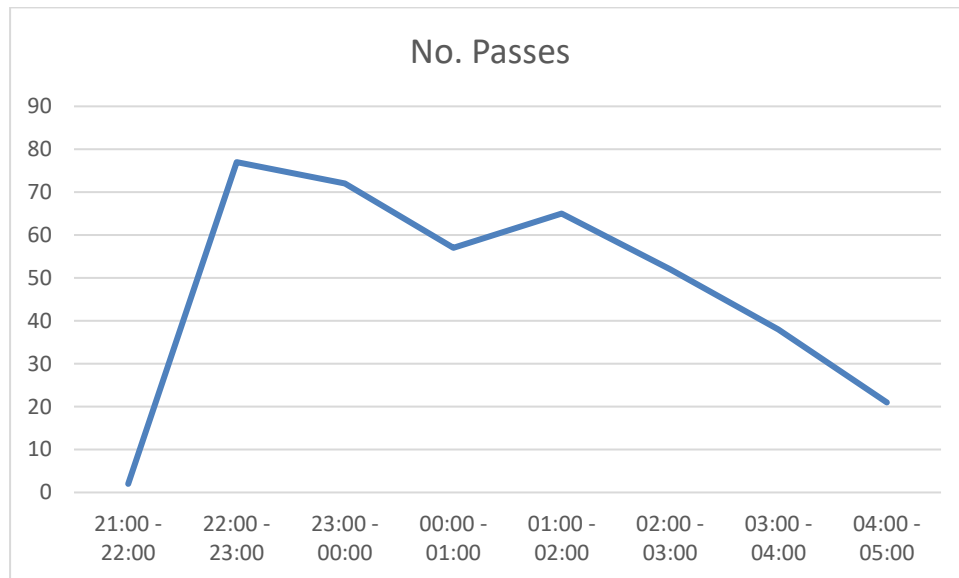
Common pipistrelle – 98

Soprano pipistrelle – 264

Brown long-eared bat – 3

The activity was dominated by Soprano pipistrelle, followed by Common pipistrelle during the survey, with low levels of activity associated with all other species.

The activity was concentrated in the hours between 22:00 and 03:00 and declined thereafter. Graph 1 below displays the levels of activity, based on the number of bat passes recorded per hour, by the automatic bat detector.



Activity between 22:00 and 00:00 was observed during the manual emergence survey and consisted of a low number of bats (no more than 3 observed at any one time), predominantly Soprano pipistrelle foraging in the sheltered area to the north of the dwelling.

Low numbers of bat calls were recorded between 04:00 and 05:00, during the time that coincides with re-entry to roost sites. The low numbers are indicative of an absence of swarming and are consistent with the findings of the emergence survey, indicating the use of the structure as a roost site by low numbers of bats. Based on the results of the emergence survey, combined with the low levels of activity recorded during the re-entry time it is likely that the derelict dwelling functions as a day roost for a low number of Soprano pipistrelle bats.

5.0 DISCUSSION OF SURVEY FINDINGS

The surveys indicate that the derelict dwelling functions as a minor bat roost. Based on the surveys completed it supports a low number of bats, with three Soprano pipistrelle bats directly recorded exiting the building during the 7th July dusk survey and a maximum of five Soprano pipistrelle bats that may have exited the building during the emergence period on the same night. The results of the pre-dawn automatic monitoring at the site also support the results of the emergence surveys, with low levels of activity recorded during re-entry times indicating an absence of swarming and the presence of at most low numbers of bats going to roost at the derelict dwelling. Given that an average roost size of 203 individuals were recorded in Soprano pipistrelle roosts by Barlow & Jones (1999) the roost supported by the derelict dwelling is considered to be of local importance (higher value).

The corrugated roofed shed to the rear of the derelict dwelling does not support any roosting bats. No field signs or bats themselves were observed in the shed during daytime inspections and no bats were observed emerging from or entering the shed during any of the roost surveys completed at the site.

6.0 IMPACT

The derelict dwelling and shed will be demolished as part of the proposed development. The demolition of the derelict dwelling will result in the loss of the bat roost supported by this structure. Given the status of this roost as a feature of local importance (higher value), its loss, in the absence of mitigation, will represent an impact of low negative significance. Mitigation measures are outlined below and provided all mitigation measures are implemented the impact to the local, regional and national Soprano pipistrelle bat population will be neutral.

7.0 MITIGATION

In order to minimise the impact of the loss of the derelict dwelling and shed as a roost site to the local bat population the following mitigation measures will be implemented:

The Contractor will be notified of the strict legal protection afforded to the bat roost supported by the derelict dwelling.

A notice will be erected at the derelict dwelling informing all site staff that it is protected due to the presence of a bat roost.

The timing of demolition works will follow that detailed by Kelleher & Marnell (2006) in Table 8.1 of their guidance document. Given the presence of a small number of Soprano pipistrelle roosting at the structure during the summer season the structure will be scheduled to be demolished between the 1st November and 1st May.

The Contractors will receive training by the project ecologist to advise them on the procedure to follow in the event that bats are discovered in the structure during demolition works.

The works associated with the removal of the roof will be supervised by the project ecologist. Caution will be exercised during the removal of the roofing material from the derelict structure. If bats are found to be present, works will cease and the project ecologist will immediately contact the NPWS.

In order to mitigate for the loss of the roost habitat provided by the derelict dwelling alternative roost habitat will be provided.

Alternative roosting opportunities will be provided in the new structure. A bat brick will provide access to an area of internal loft space at the eastern gable end of the structure. A loft space of 2m x 2m surrounding the bat brick entrance will be provided. The loft space will be enclosed in a timber stub frame with marine ply used as the side-walls and floor. The timber rafters will be exposed within the cavity space to provide roosting opportunities. This cavity space that will be provide roost opportunities for bats will be positioned at the eastern gable end of the structure as that is the side of the building that bats were observed emerging from during the bat survey.

At the western gable end of the building additional roosting opportunities will be provided in the internal walls through the provision of two Build-in Woodstone Bat Boxes.

Finally a minimum of 2 bat boxes will be provided on mature trees that will be retained along the boundary of the subject site.

The provision of the bat roosting measures above will be overseen by a project bat ecologist that will be appointed during the construction phase of the project.

No outdoor night time lighting is proposed to be installed around the boundary of the subject site and there will be no significant change in lighting in the area.

All works associated with the removal of the roof of the derelict dwelling will be undertaken and completed outside the bat activity season between November and May. Bat boxes will be in place on mature trees prior to the commencement of works at the derelict dwelling.

8.0 RESIDUAL IMPACTS

It is considered that, with the implementation of the mitigation measures described above the demolition of the derelict dwelling supporting a day roost/small satellite roost will result in a neutral impact to Soprano pipistrelle and will not undermine the favourable conservation status of the local, regional or national population of this species. The following points are considered to support this finding:

The population of Soprano pipistrelle are at favourable conservation status at a national level;

The population of Soprano pipistrelle is increasing at a national level;

There will be no loss of potential foraging habitat for the local Soprano pipistrelle bat population as a result of the proposed development;

Alternative roosting opportunities have been provided for as part of the proposed development and will provide such opportunities over the long term at the subject site. It is further noted that in the absence of works at the subject site and the provision of these roosting opportunities, it is expected that the current derelict structure will further degrade, and the roof will eventually collapse in over the short to medium term, diminishing the potential for this structure to function as a roost site for bats. In light of this it is considered that the proposed development and the

incorporation of the alternative roosting opportunities will represent a positive impact in terms of the availability of bat roosting habitat in the local area over the longer term.

8.1 FURTHER INFORMATION WITH RESPECT TO A DEROGATION LICENCE

Where it is proposed to disturb or destroy a confirmed bat roost a derogation licence is required under Section 54 of the Birds and Natural Habitats Regulations as amended. Section 54 of these regulations set out the conditions under which a derogation licence to disturb/destroy a bat roost can be granted. Section 54(2) states that:

Where there is no satisfactory alternative and the derogation is not detrimental to the maintenance of the populations of the species to which the Habitats Directive relates at a favourable conservation status in their natural range, the Minister, or the Minister or Ministers of Government with responsibilities for fish species referred to in the Fourth Schedule, may grant such a derogation licence to one or more persons, where it is

- (a) in the interests of protecting wild fauna and flora and conserving natural habitats*
- (b) to prevent serious damage, in particular to crops, livestock, forests, fisheries and water and other types of property*
- (c) 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 beneficial consequences of primary importance for the environment*
- (d) for the purpose of research and education, of repopulating and re-introducing these species and for the breeding operations necessary for these purposes, including the artificial propagation of plants, or*
- (e) to allow, under strictly supervised conditions, on a selective basis and to a limited extent, the taking or keeping of certain specimens of the species to the extent specified therein, which are referred to in the First Schedule*

Based on the information outlined in Section 1 above and the reasons underpinning the demolition of the existing structures and construction of a new dwelling it is considered that an

future derogation licence required to permit the demolition of the derelict dwelling will fall under Section 54(2)(c) of the Regulations, as outlined above.

With regard to the consideration of alternatives to the demolition of the existing derelict dwelling which supports a day roost/small satellite roost and its replacement with a new proposed development it is noted that there are no alternative sites available in Williamstown and the surrounding area to meet the family's housing needs.

Furthermore, as outlined in Section 1 above it is noted that the derelict dwelling poses a health and safety risk and is at risk of collapse in the near future and for these reasons the structure needs to be demolished.

With regard to the maintenance of the Soprano pipistrelle population at a favourable conservation status, it is noted that the national population of Soprano pipistrelle is estimated to be approximately 500,000 to 1,200,000 individuals (NPWS, 2019). The loss of the roost in the absence of any mitigation measures, will have the potential result in disturbance to a maximum of 10 individual (note the size of the numbers roosting at the dwelling have been over-estimated to 10 individuals so that the assessment is based on a worst-case scenario). This is representative of 0.002% of the national population. It is also noted that the roost occurring at the structure is not representative of a maternity roost and is representative of a roost of "small numbers of common species. Not Maternity site" as documented by Kelleher & Marnell (2006). In terms of mitigation/compensation Kelleher & Marnell (2008) noted that there is "flexibility over provision of bat-boxes, access to new buildings etc".

Based on the low numbers of bats supported by the derelict dwelling, the absence of observations indicating that the dwelling functions as a maternity roost and a breeding site for bats, and taking into account the mitigation measures outlined in this report, which are in line with published guidelines, it is considered that the demolition of the derelict dwelling, under licence, will not undermine the maintenance of Soprano pipistrelle populations at favourable conservation status at either the local, regional or national scale. It is again noted that in the absence of works at the subject site and the provision of these roosting opportunities, it is expected that the current derelict structure will further degrade, and the roof will eventually collapse in over the short to medium term, diminishing the potential for this structure to function as a roost site for bats. In light of this it is considered that the proposed development and the incorporation of the alternative roosting opportunities outlined in this report, will represent a

positive impact in terms of the availability of bat roosting habitat in the local area over the longer term.

The design of the project has also ensured that no artificial lighting associated with the project will be provided at the gable ends or along the boundaries of the subject site. This will ensure that darker night time conditions are maintained in areas where alternative roosting opportunities will be provided.

Monitoring of the bat boxes and their use by bats will be completed during the first, third and fifth years after installation. The results of the monitoring will be provided to the NPWS.

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APPENDIX 1: PLATES

Plate 1: View of southern elevation and open window where bats were observed exiting the structure



Plate 2: View of the northern elevation and eastern gable end from the northeast



Plate 3: View of corrugated roofed shed to the rear/north of dwelling



Plate 4: Internal view of the shed to the north of the dwelling

