# Bat Survey Report

## The Cedars, Glounthaune, Co. Cork.

**September 2022**

Prepared for:

CITIDWELL HOMES LIMITED

CIEEM REGISTERED PRACTICE 2022-2023

O'DONNELL ENVIRONMENTAL

## Summary

**Project:** Proposed Residential Development at The Cedars, Glounthaune, Co. Cork.

**Report by:** Tom O'Donnell BSc (Hons) MSc CEnv MCIEEM.

**Statement of Competence:** O'Donnell Environmental is an independent environmental consultancy established by Tom O'Donnell BSc (Hons) MSc CEnv MCIEEM in 2019. O'Donnell Environmental is a Chartered Institute of Ecology and Environmental Management (CIEEM) 'Registered Practice' which demonstrates our commitment to high professional standards, accountability and the delivery of the best outcomes for biodiversity and our Clients.

Tom O'Donnell is a Chartered Environmentalist and a full member of the Chartered Institute of Ecology and Environmental Management. He was awarded a BSc in Environmental and Earth System Science [Applied Ecology] in 2007 and an MSc in Ecological Assessment in 2009, both from UCC. Tom has over 10 years professional experience in the environmental industry, including working on projects such as windfarms, overhead power lines, roads, cycleways and residential developments. Tom is licensed by NPWS for roost disturbance (Ref: DER/BAT 2021-128) and to capture bats (C217/2021).

| **Project Reference: 2022/50** | | | |
|---|---|---|---|
| **Document Rev. No.** | **Status** | **Contributor** | **Date** |
| A | Draft Issue | TO'D | 02/09/2022 |
| 1 | Final Issue | TO'D | 07/09/2022 |
| 2 | Final Issue | TO'D | 08/09/2022 |

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# Appendices

# 1 Introduction

O'Donnell Environmental were commissioned by Citidwell Homes to undertake a bat survey of a site at Annmount, Glounthaune, Co. Cork in support of a planning application. The site measures approximately 0.8ha and contains two derelict hatcheries, a derelict residence (Eircode: T45 FP99) and an associated outbuilding.

The project description is as follows:

*The demolition of 2 no. farm buildings and a derelict dwelling and the construction of 21 no. two storey dwellings adjacent to the under-construction 'The Cedars' Estate. The proposed development will consist of 16 no. 3 bed semi-detached units, 4 no. 4 bed semi-detached units and 1 no. 4 bed detached unit. Access to the proposed development will be via the under-construction internal road network permitted under An Bord Pleanála ref. 300128-17 and register ref. 17/5699. The proposed development will also include all associated drainage, site development and landscaping works.*

The aims of the study were to determine the following:

- To assess and evaluate the likely importance of the existing structures and trees to bats.
- The diversity and relative abundance of bats present within the study area and its immediate environs.

A site location map is presented in **Figure 1.1**.

The proposed works involve the demolition of the current structures in their entirety, removal of trees, site clearance and the construction residences on the site. Associated landscaping and ancillary works are proposed, including lighting.

The current bat survey was commissioned in response to Cork County Councils further clarification request dated 13th June 2022 in relation to planning reference 21/6851.

## 1.1 LEGAL STATUS OF BATS

All bat species and their roosting sites 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. Where human 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. A grant of planning permission does not constitute a licence or permit to disturb bats or interfere with their breeding or resting places.

The key legislation which provides protection to bats is as follows:

- Wildlife Act (1976) and subsequent amendments which makes it unlawful to intentionally disturb, injure or kill a bat or disturb its resting place without a licence to derogate from Regulation 23 of the Habitats Regulations 1997, issued by NPWS.
- The EU Habitats Directive (which has been transposed into Irish law with the European Communities (Birds and Natural Habitats) Regulations 2011) which seeks to protect rare species, including bats, and their habitats and requires that appropriate monitoring of

populations be undertaken. All Irish bat species are listed in Annex IV, while Annex II provides additional protection for the Lesser Horseshoe Bat.


0
75
150 m
Figure 1.1
Study Site Location
Project:
Cedars, Glounthaune, Co. Cork
Prepared for:
Citidwell Homes
Tom O'Donnell CEnv MCIEEM
D: 01/09/2022
Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation
O'DONNELL ENVIRONMENTAL
Legend
Site Boundary

# 2 Methodology

The bat survey was carried out through desk study, visual assessment of buildings and trees, and active bat echolocation detection. Each of these are described below.

## 2.1 DESKTOP REVIEW

A desktop review of publicly available relevant data was undertaken on the National Biodiversity Data Centre (NBDC) and National Parks & Wildlife Service (NPWS) websites. The National Biodiversity Data Centre was reviewed for relevant data, specifically i) existing species records for the 10km square in which the study site is located (W77) and ii) an indication of the relative importance of the wider landscape in which the study site is located, based on Model of Bat Landscapes for Ireland (Lundy *et al*. 2011). In the latter, the index ranges from 0 to 100, with 0 being least favourable and 100 most favourable for bats.

## 2.2 VISUAL ROOST SURVEY

Daytime visual assessments of structures and trees were carried out by Tom O'Donnell BSC (Hons) MSc CEnv MCIEEM on 23rd August 2022 and 31st August 2022 to identify any bat roosting potential which may exist associated with the study area.

A detailed visual assessment of relevant structures and trees was carried out following guidance set out in Collins (2016). The structures surveyed included the derelict residence and two derelict hatchery buildings. The survey was non-destructive, and relevant Potential Roost Features (PRFs) were visually inspected to identify any evidence of bat roosting. Potential roosting features at height were accessed using a 4m ladder.

A ground level assessment of suitability of trees within the site boundary was carried out following Collins (2016), and utilised information and an identification scheme (tags 1441-1483) provided in the accompanying tree survey report (David Law, 2022).

Signs of bat use include bat droppings, feeding remains, potential bat access points identified by characteristic staining and scratches, noise made by bats etc.

Photographs of the study area are shown in **Appendix A**.

Potential Roost Features (PRFs) are described according to the scheme outlined in **Table 2.1**, below.

**Table 2.1. Scheme for describing the potential suitability of features for bats.**

| Suitability | Description |
|---|---|
| Negligible | Negligible features which are likely to be used by roosting bats. |
| Low | A feature with one or more potential roost sites that could be used by individual bats opportunistically.<br>Potential roost sites which do not provide appropriate conditions and / or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation).<br>A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential. |
| Moderate | A structure or tree with one or more potential roost sites that could be used by bats due to characteristics and surrounding habitat but unlikely to support a roost of high conservation status. |
| High | A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat. |

*After 'Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition)', Collins (2016).*

## 2.3 BAT ACTIVITY SURVEYS

Three active bat surveys were carried out. Two emergence (dusk) surveys were carried out on the 16th and 23rd August 2022 and one re-entry (dawn) survey was carried out on 31st August 2022. Surveys followed Collins (2016) and aimed to characterise bat activity in the area and to seek to identify any bat access or egress. The surveys were carried out by three surveyors, Tom O'Donnell, James Downey and Colm Breslin.

Surveyors were positioned to maximise views of the structures, in combination with night vision aids (see below). Echolocation recordings were made on handheld Echo Touch Meter Pro 3 full spectrum recorders. Surveys were carried out during suitable weather conditions. Surveys are detailed in **Table 2.2**, below.

**Table 2.2 - Survey details.**

| Date | Survey | From - To Times | Sunrise / Sunset Time | Weather |
|---|---|---|---|---|
| 16/08/2022 | Emergence | 20:40 - 22:40 | 20:55 | 16°C; F3; dry |
| 23/08/2022 | Emergence | 20:25 - 22:15 | 20:41 | 17°C; F1; dry |
| 31/08/2022 | Re-entry | 05:30 - 07:00 | 06:44 | 12°C; F3; dry |

Guide IR thermal imaging cameras were utilised as an aid to visual assessment during the surveys, following recent best practice guidelines[1].

## 2.4 EVALUATION & IMPACT ASSESSMENT

Evaluation of ecological features follows the NRA (now TII) publication 'Guidelines for Assessment of Ecological Impacts of National Roads Schemes' (2009). Impact assessment follows 'Guidelines on The Information to be Contained in Environmental Impact Assessment Reports' published by the EPA (2022). Reporting generally follows Chartered Institute of Ecology and Environmental

[1] https://cdn.bats.org.uk/uploads/pdf/Interim-guidance-note-on-NVAs-May-2022-FINAL.pdf?v=1653399882

Management (2018) 'Guidelines for Ecological Impact Assessment in the UK and Ireland - Terrestrial, Freshwater, Coastal and Marine'.

## 2.5 SURVEY LIMITATIONS

Full access to the interior and exterior of the buildings was provided by the Client. Surveys were carried out in the latter part of the bat maternity season and the earlier part of the bat maternity season missed. Given the thorough access available for visual survey, this is not considered to be a significant limitation in this instance.

# 3 Results

The proposed site occurs in a peri-urban location and adjoining land used are residential and agricultural. The area contains some foraging and commuting habitat for bats and experiences relatively low levels of light pollution.

## 3.1 DESKTOP SURVEY

### 3.1.1 Designated Sites

No nature conservation sites designated under either national or European legislation are relevant to the current assessment.

### 3.1.2 Data Search

National Biodiversity Data Centre holds previous records of bat presence from within the 10km square (W77) in which the proposed site is located. These records are for Common Pipistrelle (*Pipistrellus pipistrellus*), Soprano Pipistrelle (*Pipistrellus pygmaeus*), Leisler's Bat (*Nyctalus leisleri*), Daubenton's Bat (*Myotis daubentonii*), Whiskered Bat (*Myotis mystacinus*) and Brown Long-eared Bat (*Plecotus auratus*).

The overall bat suitability index value (35.56) according to 'Model of Bat Landscapes for Ireland' (Lundy *et at.* 2011) suggests the landscape in which the proposed site is located is of moderate to high suitability for bats in general. Species specific scores are provided in **Table 3.1**.

**Table 3.1 - Suitability of the study area for the bat species according to 'Model of Bat Landscapes for Ireland' (Lundy *et al.* 2011).**

| Common name | Scientific name | Suitability index |
|---|---|---|
| *All bats* | | *35.56* |
| Soprano pipistrelle | *Pipistrellus pygmaeus* | 50 |
| Brown long-eared bat | *Plecotus auritus* | 51 |
| Common pipistrelle | *Pipistrellus pipistrellus* | 48 |
| Lesser horseshoe bat | *Rhinolophus hipposideros* | 0 |
| Leisler's bat | *Nyctalus leisleri* | 49 |
| Whiskered bat | *Myotis mystacinus* | 43 |
| Daubenton's bat | *Myotis daubentonii* | 30 |
| Nathusius pipistrelle | *Pipistrellus nauthusii* | 10 |
| Natterer's bat | *Myotis nattererii* | 39 |

*Source: https://maps.biodiversityireland.ie/Map. Accessed 01/09/2022.*

## 3.2 VISUAL ROOST SURVEY

The suitability of features on site were assessed for their suitability for roosting bats following Collins (2016) (see **Table 2.1)**. The site contains manmade structures and trees; these are discussed separately below.

### 3.2.1 Structures

A daytime visual inspection was carried out with the aim of identifying bat roosts by either the presence of bats or the presence of signs of past bat roosting. A detailed visual survey was carried out inspecting all safely accessible internal and external areas of the buildings. The survey was non-destructive.

Potential Roosting Features (PRFs) exist in the derelict residence and hatcheries for crevice dwelling bat species. Photos of the structures on site are provided in **Appendix A.**

#### *3.2.1.1 Derelict Residence*

The residence is a single-story block-built structure with a tile roof underlain by bitumen roofing membrane. A standard attic is accessed from the ground floor of the building by means of a hatch. The floor of the attic floor is lined with insulation and there was no evidence of any recent disturbance which may have removed evidence if historic occupancy by bats. A missing roof tile adjacent the chimney, and torn roofing membrane, creates a hole large enough to enable bats to access and egress the building directly. Minor crevices exist beneath occasional gaps in roof tile and decayed fascia and soffit also provides potential roosting opportunities for bats.

A small outbuilding is located off the southern gable of the residence and is block built with a corrugated sheeting roof which contains a large hole.

One Brown Long-eared Bat was present within the attic of the derelict residence when the building was surveyed on the 23rd August 2022 (see **Plate 3.3**). The desiccated remains of four bats (at least one of which identifiable as being a Brown Long-eared Bat) were present in an empty water tank in the attic of the derelict residence. Brown Long-eared Bats are capable of taking flight from a horizontal surface, so it is considered likely that these bats drowned when the tank last contained water. This suggests that occupation by Brown Long-eared Bats may pre-date the abandonment of the house. No significant accumulations of droppings were present, which might indicate the residence has historically been used as a maternity roost.

A small accumulation of droppings, some apparently aged and some recent, were present below a fold in the bitumen roof membrane of the attic of the derelict residence. Two droppings were sent to Sure Screen Scientific for DNA analysis. The analysis shows that the droppings are attributable to Brown Long-eared Bat and Common Pipistrelle, which a high level of confidence (see **Appendix C**). The location and small quantity of droppings present in the attic does not indicate the historic presence of a maternity roost.

No other evidence of roosting by bats was encountered during internal and external searching of the residence.

#### *3.2.1.2 Derelict Hatcheries*

The hatcheries are large, cavity-block built, single story structures with no attic space. The corrugated sheeting roofs are insulated internally with foam insulation boards. Open air gaps in the walls provide access internally for bats. Spaces likely exist between insulation boards and the roofing and such spaces could be utilised by bats. Gaps also exist in the external blockwork where plaster has fallen away, providing access to the cavities of the walls.

A wide array of roosting opportunities are present for crevice dwelling bats, but by the nature of their construction, the buildings likely do not represent optimal roosting conditions.

No evidence of bat roosting could be found during internal and external searching of the buildings. It should be noted that the survey was non-destructive and therefore evidence of bat roosting may be concealed within the fabric of the building and not available to the Surveyor.

### 3.2.2 Trees

A preliminary roost assessment of suitability of trees for roosting bats was undertaken from ground level, following the methodology outlined in Collins (2016). Summer is not the optimal time of year for surveys of roosting features in trees, as leaves can obscure vision, but this is not considered to be a significant limitation in this instance and good visibility of trees was achieved.

The survey follows the descriptions and an identification scheme provided in the tree survey report carried out for the current scheme by David Law (2022). Some trees had features which are considered to have potential to support roosting bats. The trees are categorised according to their potential following Collins (2016) (see **Table 2.1**). This categorisation and the results of the assessment are detailed in **Table 3.2** below and the locations of relevant trees is shown in **Figure 3.2**.

**Table 3.2 - Assessment of roosting potential of trees within and proximal to site boundary.**

| Ref. | Species | Latitude | Longitude | Comment | Suitability for Roosting Bats | Proposed for Felling? |
|---|---|---|---|---|---|---|
| T1441 | Cypress species | 51.91572 | -8.33668 | Hedgerow. | Negligible | No |
| T1442 | Elm | 51.91588 | -8.33634 | | Negligible | Yes |
| T1443 | Elm | 51.91587 | -8.33635 | | Negligible | Yes |
| T1444 | Elm | 51.91587 | -8.33633 | | Negligible | Yes |
| T1445 | Common Hawthorn | 51.91587 | -8.33634 | | Negligible | Yes |
| T1446 | Elm | 51.91578 | -8.33625 | Standing dead tree with thick interweaving ivy stems. | Low | Yes |
| T1447 | Common Ash | 51.91567 | -8.33614 | "Hazard beam" provides a PRF. | Low | Yes |
| T1448 | Elm | 51.91563 | -8.33611 | Standing dead tree with peeling bark which provides a low suitability Potential Roosting Feature (PRF) for crevice dwelling bats. | Low | Yes |
| T1449 | Elm | 51.91561 | -8.33613 | Standing dead tree with peeling bark which provides a low suitability PRF for crevice dwelling bats. | Low | Yes |
| T1450 | Elm | 51.91555 | -8.33608 | Standing dead tree with peeling bark which provides a low suitability PRF for crevice dwelling bats. | Low | Yes |
| T1451 | Common Ash | 51.91553 | -8.33608 | | Negligible | Yes |
| T1452 | Sycamore | 51.91550 | -8.33602 | Low ivy cover provides a PRF. No other PRFs visible. | Low | Yes |
| T1453 | Elm | 51.91547 | -8.33610 | Standing dead tree with peeling bark which provides a low suitability PRF for crevice dwelling bats. | Low | Yes |
| T1454 | Kapuka (*Griselinia*) | 51.91545 | -8.33620 | | Negligible | Yes |
| T1455 | Sycamore | 51.91545 | -8.33624 | | Negligible | Yes |
| T1456 | Common Ash | 51.91540 | -8.33603 | | Negligible | No |
| T1457 | Common Ash | 51.91540 | -8.33599 | | Negligible | No |
| T1458 | Common Ash | 51.91541 | -8.33597 | | Negligible | No |
| T1459 | Common Hawthorn | 51.91543 | -8.33588 | | Negligible | No |
| T1460 | Common Ash | 51.91544 | -8.33583 | | Negligible | No |
| T1461 | Common Hawthorn | 51.91544 | -8.33578 | | Negligible | No |
| T1462 | Common Ash | 51.91545 | -8.33574 | | Negligible | No |

| | | | | | | |
|---|---|---|---|---|---|---|
| T1463 | Common Hawthorn | 51.91546 | -8.33565 | | Negligible | No |
| T1464 | Common Hawthorn | 51.91547 | -8.33563 | | Negligible | No |
| T1465 | Common Hawthorn | 51.91548 | -8.33558 | | Negligible | No |
| T1466 | Common Ash | 51.91548 | -8.33554 | | Negligible | No |
| T1467 | Common Ash x14 | 51.91549 | -8.33548 | | Negligible | No |
| T1468 | Common Ash | 51.91550 | -8.33544 | | Negligible | No |
| T1469 | Common Ash | 51.91551 | -8.33539 | | Negligible | No |
| T1470 | Common Ash | 51.91551 | -8.33536 | Variety of roosting opportunities, but all close to ground level. Low to moderate ivy cover. No PRFs visible at height. Large internal cavity at ground level. | Low | No |
| T1471 | Sycamore | 51.91552 | -8.33530 | | Negligible | No |
| T1472 | Sycamore | 51.91554 | -8.33523 | | Negligible | Yes |
| T1473 | Common Ash | 51.91556 | -8.33510 | Variety of roosting opportunities, but all close to ground level. Low to moderate ivy cover. No PRFs visible at height. | Low | No |
| T1474 | Sycamore | 51.91556 | -8.33507 | | Negligible | No |
| T1475 | Sycamore | 51.91558 | -8.33493 | | Negligible | No |
| T1476 | Common Ash | 51.91560 | -8.33485 | Variety of roosting opportunities, but all close to ground level. Low to moderate ivy cover. No PRFs visible at height. | Low | No |
| T1477 | Willow x13 | 51.91566 | -8.33472 | Minor rot hole E@1.5m AGL. No evidence of usage by bats. | Low | Yes |
| T1478 | Common Ash | 51.91568 | -8.33459 | | Negligible | Yes |
| T1479 | Sycamore | 51.91569 | -8.33449 | Mature Sycamore. Moderate ivy cover which may obscure roosting features. Historically pollarded. | Low | Yes |
| T1480 | Common Ash | 51.91581 | -8.33450 | | Negligible | Yes |
| T1481 | Sycamore | 51.91596 | -8.33456 | | Negligible | Yes |
| T1482 | Elder | 51.91600 | -8.33456 | | Negligible | Yes |
| T1483 | Sycamore | 51.91604 | -8.33465 | | Negligible | Yes |

No roosting bats were encountered during the current tree survey, and no unoccupied roosts which contained signs of bats were encountered. No 'high' or 'moderate' potential tree roosts were identified. Maternity roosts are of considerable conservation importance to bats but given the results of the ground level visual survey in combination with observations made during an active survey carried out during the maternity season, it is unlikely that any maternity roosts are present in any trees within the site boundary.

11 trees within the study area were surveyed and found to have 'low' suitability for roosting bats, with the remainder were assessed as having 'negligible' suitability for roosting bats. Following Collins (2016), no further assessment of 'low' suitability trees is warranted.

A number of potential roosting features (described in **Table 3.2**) were identified, and these were considered to be of sub-optimal quality in general and not suitable for large numbers of bats or maternity roosts. Trees recorded on site contained PRFs including rot holes, welds and hazard beams. Ash dieback disease is apparent on a number of Ash specimens. Some standing dead trees are present, and peeling bark represents a potential roosting feature for bats. **Appendix A** shows images of PRFs recorded during the tree survey.

It is likely that some of these features will be used at least occasionally by day-roosting bats. Most of Irelands bat species are known to exploit a wide variety of roosting opportunities with some being used infrequently. Over time, the value of many of these roosting features to bats may increase.

## 3.3 BAT ACTIVITY SURVEYS

Up to three surveyors simultaneously surveyed the site on three occasions during suitable weather conditions, aided by the use of ultrasonic detectors and thermal imaging and infrared cameras (night vision aids).

During the re-entry (dawn) survey of 31st August 2022, one Soprano Pipistrelle was observed entering a small gap on the western gable of 'Hatchery 1' (see **Figure 3.4**, and photograph **A8**). The bat which was positively identified to species by echolocation recording was observed entering the roost in relative brightness at 6:42am, just before sunrise. The bat crawled through the gap and accessed a cavity withing the wall. Based on visual and olfactory cues, there is no evidence that this is a large roost or a regularly used roosting space. No evidence of staining was present, and the distinctive smell of a bat roost was not present. The crevice is likely to be accessed by individuals or small number of bats in an ad-hoc manner.

On the 23rd August 2022 some early Soprano Pipistrelle activity was noted above the roof of 'Hatchery 2', which indicate the bat was roosting nearby and possibly within the structure. Emergence was not witnessed or recorded and it was not possible to confirm the roosting location of this bat.

No other evidence of bat roosting at the site was recorded during active surveys.

Generally, a moderate level of bat activity was recorded by four species: Common Pipistrelle, Soprano Pipistrelle, Leisler's Bat and Natterer's Bat. Soprano Pipistrelle was the most commonly

recorded species, followed by Common Pipistrelle and Leisler's Bat. A single Natterer's Bat was recorded at 21:42 on the 23rd August 2022 and the Surveyor was located between the two hatchery buildings at the time, the bat was not observed. Despite their confirmed presence on the site, Brown Long-eared Bat was not recorded during active bat surveys and these species often do not echolocate on emergence and re-entry (T. O'Donnell, pers. obvs.).

Some late activity was observed by approx. six foraging Soprano Pipistrelles on the morning of 31st August 2022. These bats were observed to forage at the site until approximately 10 minutes before sunset, before departing the site in a southerly direction.

The site was used for foraging and commuting by bats, but there was no evidence of any defined commuting route reliant on features present on the site (e.g. trees).

## 3.4 SUMMARY OF RESULTS

Overall, the residence (including an associated outbuilding) is considered to have 'high' suitability to support roosting bats based on the presence of spaces which have potential to accommodate multiple bats and good connectivity to foraging habitats in the wider area. Roosting by Brown Long-eared Bat and another bat species (likely Pipistrelle) was confirmed.

The hatcheries each were considered to have 'moderate' suitability for roosting bats overall, and a variety of roosting opportunities are available for crevice dwelling bats. Roosting by Soprano Pipistrelle was confirmed in a crevice on the western gable of Hatchery 1.

No trees within the study area were considered to have 'high' or 'moderate suitability for roosting bats (see **Table 2.1**). 120 trees within the study area were surveyed and found to have 'low' suitability for roosting bats, with the remainder were assessed as having 'negligible' suitability for roosting bats.

Based upon the results of surveys described above, and considering the local context of the proposed site, the study site is considered to be of **Local Importance (Higher Value)** for bats.


**Plate 3.1 Example image from thermal camera covering western side of derelict residence.**


**Plate 3.2 Example image from thermal camera placed on the north-eastern side of derelict residence.**

**Plate 3.3 Brown Long-eared Bat present within attic of derelict residence during survey on 23rd August 2022. (Taken by T. O'Donnell, NPWS License Ref. 39 / 2022).**

**Plate 3.4 Western gable of 'Hatchery 1' (see Figure 3.1). Soprano Pipistrelle roosting location circled in red.**


Hatchery 1
Hatchery 2
Residence
0
10
20m
Figure 3.1
Suitability of Structures for Bats
Project:
Cedars, Glounthaune, Co. Cork
Prepared for:
Citidwell Homes
Tom O'Donnell CEnv MCIEEM
D: 01/09/2022
Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation
O'DONNELL ENVIRONMENTAL
Legend
Site Boundary
Suitability of Structures for Bats
High
Moderate

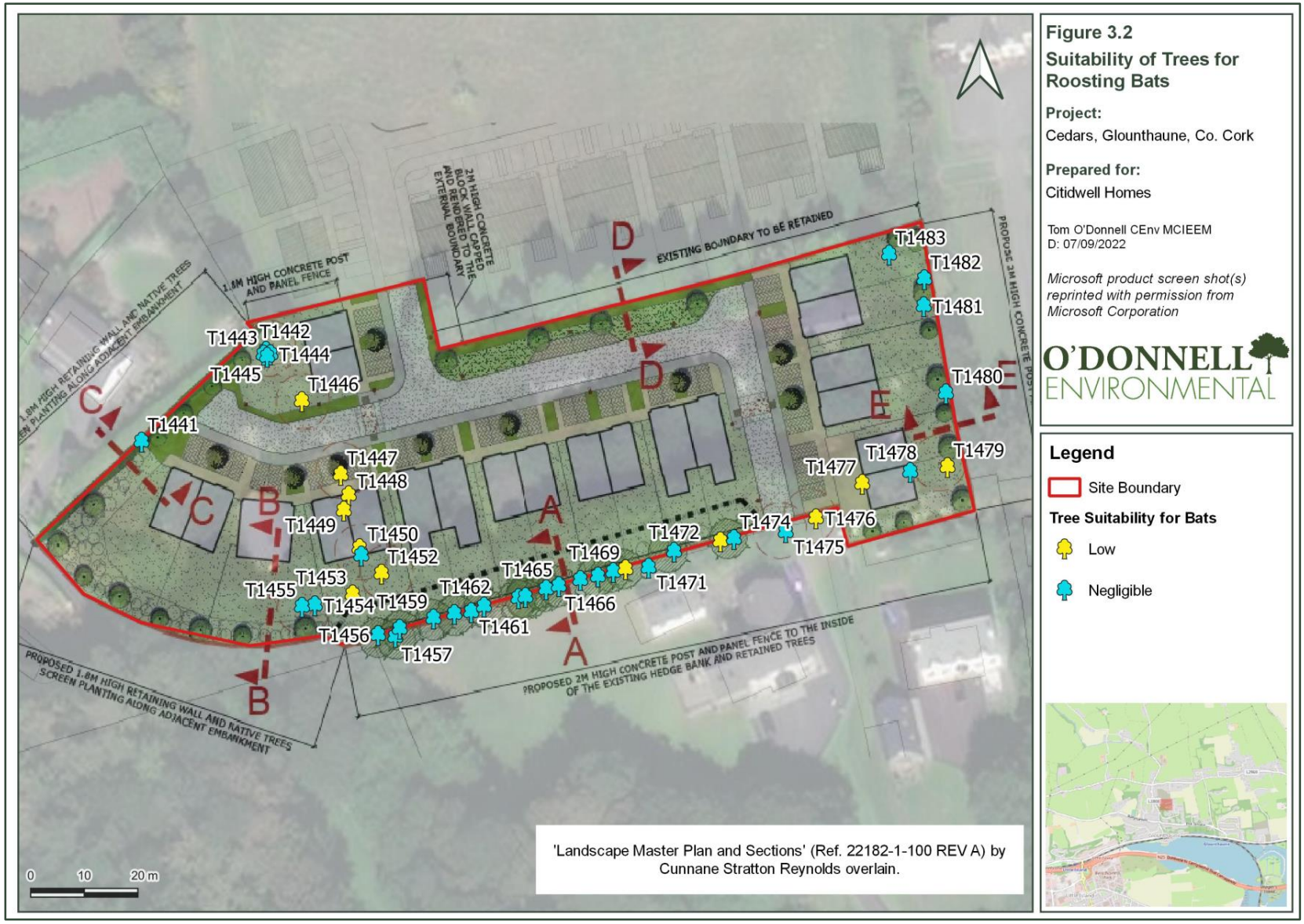


**Figure 3.2**

**Suitability of Trees for Roosting Bats**

**Project:**
Cedars, Glounthaune, Co. Cork

**Prepared for:**
Citidwell Homes

Tom O'Donnell CEnv MCIEEM
D: 07/09/2022

*Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation*

O'DONNELL ENVIRONMENTAL

**Legend**

Site Boundary

**Tree Suitability for Bats**

Low

Negligible

# 4 Potential Impacts

Citidwell Homes intends to carry out site clearance including demolition of structures and felling of identified trees to facilitate the construction of 21 two-storey dwellings adjacent to the under-construction 'The Cedars' Estate, Glounthaune, Co. Cork. The potential for these works to impact upon roosting, commuting and foraging bats has been considered.

Bat roosting by Brown Long-eared Bat, Soprano Pipistrelle and possibly Common Pipistrelle also has been recorded on the site. Foraging by five species of bats has been recorded and overall a moderate level of bat activity was observed at the site.

The below sections discuss the potential effects of the proposed development on bats in both the construction and operational phases.

## 4.1 CONSTRUCTION PHASE

The proposed demolition works would involve the loss of roosting spaces which are occupied in small numbers by common species. Following Marnell *et al*. (2022) the significance of these identified roosts is considered to be low.

Trees are required to be removed to make way for construction or for safety reasons on the advice of an Arborist. Assessment of those trees which will be removed as a result of the proposed development was carried out, and no evidence was recorded of the use of the trees by bats although some potential roosting features were identified.

12 trees of 'low' suitability potential roosting opportunities were identified in trees surrounding the site. Some of the identified roosting features may be used by roosting bats individually or in small numbers, at least occasionally. Of the 43 trees (or discreet groups of trees) present on site, 22 are proposed to be removed to facilitate development or for safety reasons. Nine of the trees which are proposed for removal were considered to have 'low' suitability for roosting bats with the remainder considered to have 'negligible' suitability. The locations of trees which are proposed for removal are shown in **Figure 4.1**.

No other proposed works could have a direct impact on a potential bat roost.

The construction phase will result in the loss of vegetation and trees which provides some foraging and commuting habitat for bats. Large trees on the southern boundary may be locally important to foraging and commuting bats, and it is noted that this treeline will be largely retained although some arborocultural intervention is recommended. While tree planting is proposed as part of the landscaping plan, the temporary reduction in the number of trees on the site may reduce foraging opportunities and landscape connectivity locally for bats.

Illumination of retained vegetation may impact foraging and commuting bats that use treelines, hedgerows and other similar features. Inappropriate or excessive illumination of treelines or hedgerow areas at night can cause disturbance to roosting, commuting and foraging bats. Artificial

lighting is thought to increase the chances of bats being predated upon by avian predators (e.g. owls), and therefore bats may modify their behaviour to avoid illuminated areas.

Indirect impacts on bats could also arise as a result of noise and vibration should these bats roosts be occupied. Of particular relevance to bats is the use of generators which create noise and vibration and are often left running at night. In this instance, generators will not be required at night, and therefore this potential impact is avoided.

The use of heavy machinery in the root zone of trees can cause damage, resulting in increased tree morbidity and mortality. Equally, the use of machinery in proximity to trees can result in accidental damage to the trunk and branches of trees. In the medium and long terms this could result in the death of trees which provide bat roosting opportunities. The tree survey report (David Law, 2022) sets out measures including a root protection zone to prevent this adverse ecological impact.

The pCEMP sets out measures in relation to noise and lighting and during construction works which will avoid or reduce adverse ecological impacts.

The overall effect on bats during the construction phase is considered to be a 'moderate negative' effect at a local level.

## 4.2 OPERATIONAL PHASE

Relative to the construction stage, no additional habitat loss will occur during the operational phase. The establishment and maturation of proposed habitats will increase the value of the site relative to the construction phase for bat species. The overall impact on the value of the site to foraging bats is likely to be slightly diminished when comparing the pre-construction to operational phases.

As discussed above, artificial illumination can cause disturbance to roosting, commuting and foraging bats. While all bat species have a low tolerance for light levels, the following bat species are particularly sensitive to elevated light levels: Brown Long-eared Bat, Whiskered Bat, Natterer's Bat, Daubenton's Bat and Lesser Horse-shoe Bat (BCI, 2010). Leisler's Bat and Pipistrelles can be attracted to sources of light to feed on the insects which congregate there, and this could have the effect of disturbing existing foraging patterns can introduce competitive advantages to the detriment of more light sensitive species.

Following best practice guidance light fittings with minimum (0 to <5%) upwards light will be used. While no definitive information on the acceptable level of artificial lighting on bats is available, 1.5 lux is considered to be a reasonable level of illuminance below which significant negative impacts on bats are unlikely to occur, at least for the least light-sensitive bat species. For comparison, summer sunshine measures approximately 50,000 lux and typical roadside lighting measures 5 lux (Bat Conservation Trust, 2018). Light spillage of greater than 1.5 lux is likely to be contained almost entirely within the redline boundary and light spillage beyond the redline boundary is likely to be minimal in extent and significance (see **Figure 4.2**). It should be noted that the lux contours presented in Figure 4.1 present an unrealistic 'worst-case scenario' in that the screening effect of the proposed residences and landscaping is not considered. Screening will be provided by existing

boundary vegetation and this effect will increase with the establishment and maturation of additional native tree planting proposed for the site boundaries boundary vegetation, in the medium and long terms.

Slight disturbance is likely to occur to bats foraging and commuting within the proposed site and its immediate environs when the operation lighting is illuminated.

The overall effect on bats during the operational phase is considered to be a 'slight negative' effect at a local level.

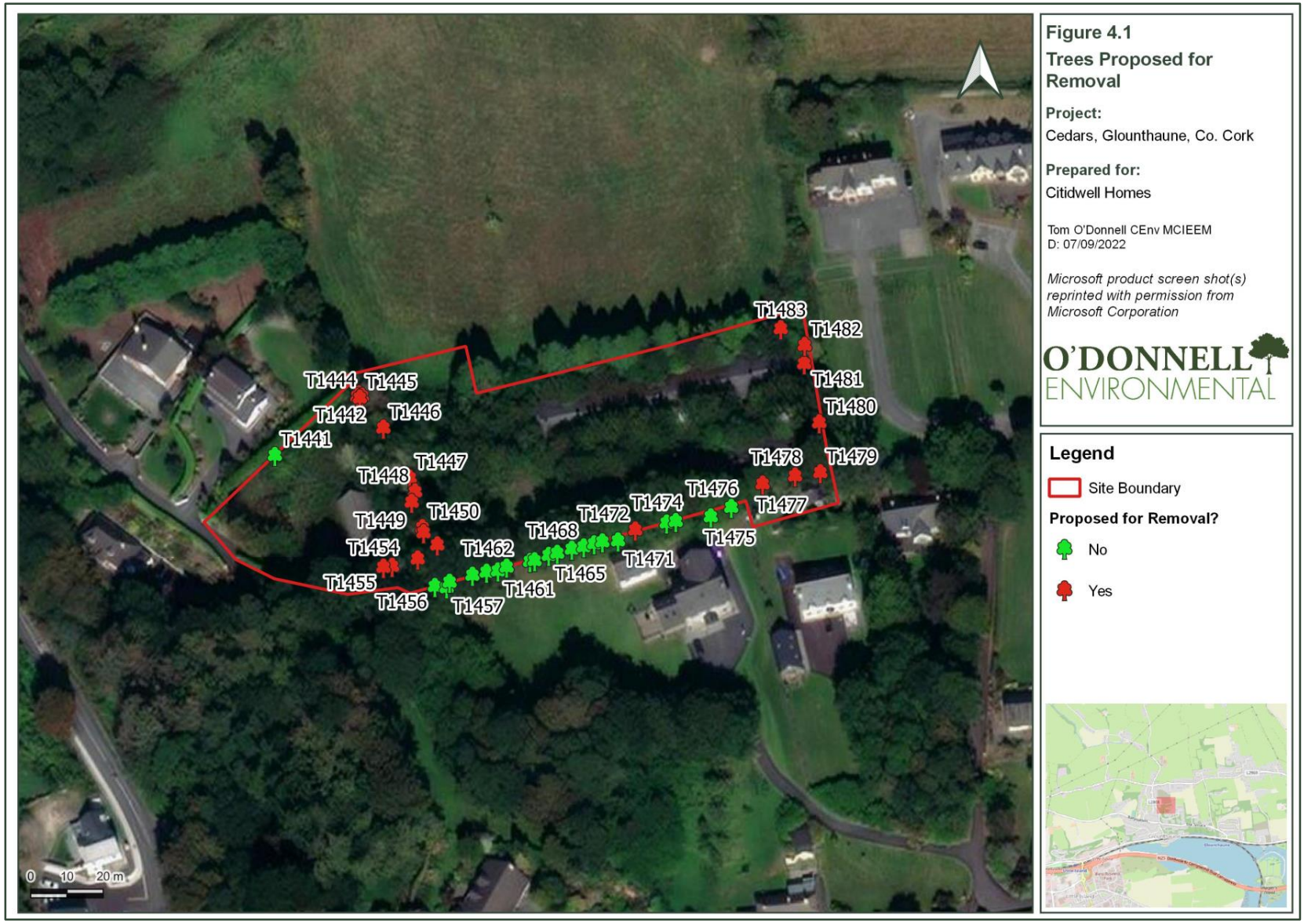
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Figure 4.1
Trees Proposed for Removal
Project:
Cedars, Glounthaune, Co. Cork
Prepared for:
Citidwell Homes
Tom O'Donnell CEnv MCIEEM
D: 07/09/2022
Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation
O'DONNELL ENVIRONMENTAL
Legend
Site Boundary
Proposed for Removal?
No
Yes

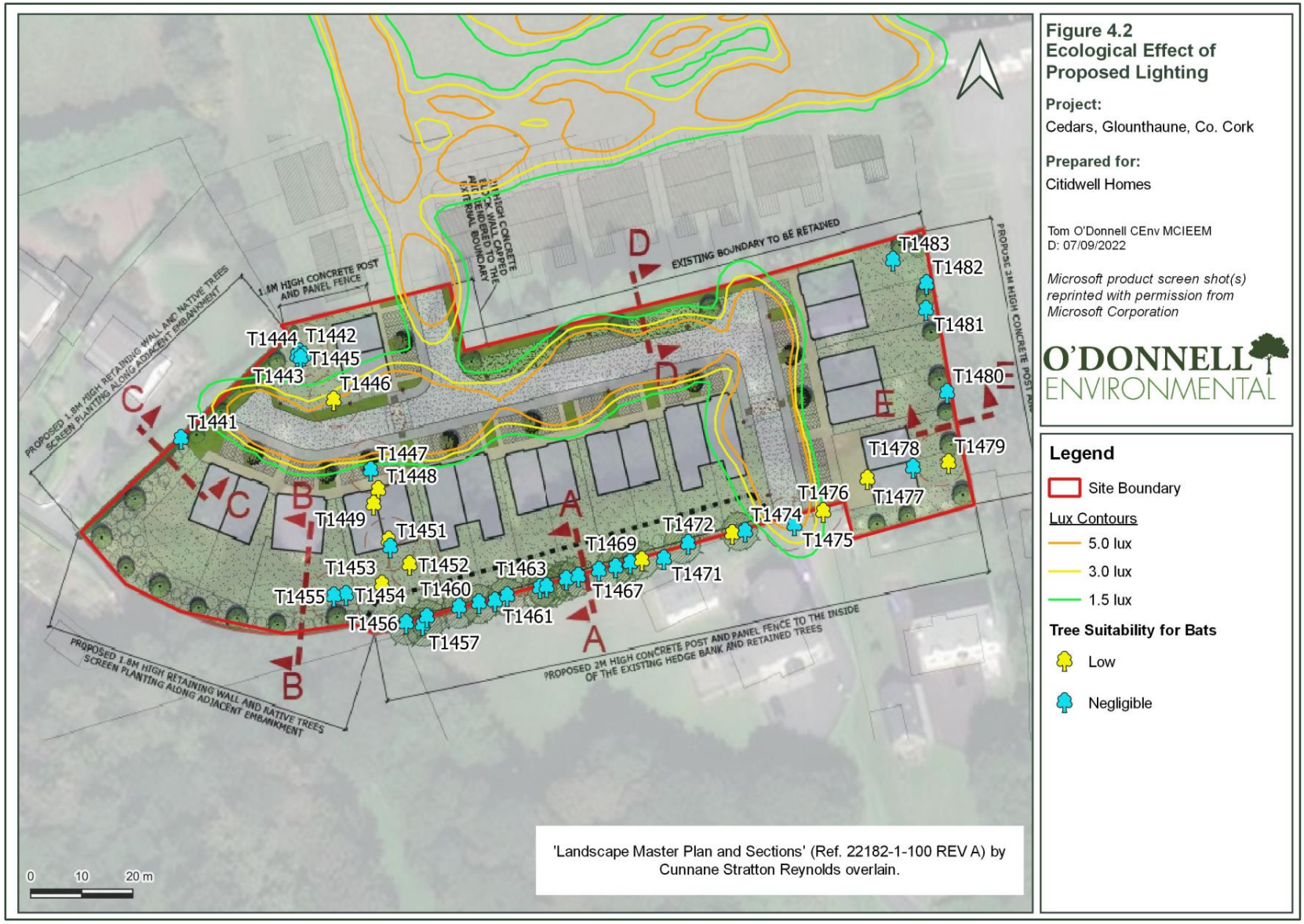



**Figure 4.2**
**Ecological Effect of Proposed Lighting**

**Project:**
Cedars, Glounthaune, Co. Cork

**Prepared for:**
Citidwell Homes

Tom O'Donnell CEnv MCIEEM
D: 07/09/2022

*Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation*

O'DONNELL ENVIRONMENTAL

**Legend**

- Site Boundary

Lux Contours

- 5.0 lux
- 3.0 lux
- 1.5 lux

**Tree Suitability for Bats**

- Low
- Negligible

# 5 Avoidance and Mitigation Measures

Avoidance and mitigation measures to address identified potential negative effects on bats during the construction and operational phase of the proposed development are detailed below.

## 5.1 CONSTRUCTION PHASE

In advance of demolition, repeat surveys will be carried out by a bat licensed Ecologist (as roosts have been identified) in order to confirm that the understanding of the importance of the site to bats as outlined in the current report remains valid. Dependant on the results of that future survey, additional measures may be required e.g. no works during the maternity season in the event a maternity roost has formed on site in the interim.

The buildings present on site provide a wide range of roosting opportunities to bats, and the roosting ecology of bats in winter is poorly understood. In order to avoid detrimental impacts on individual bats in winter when bats may be in torpor, demolition works will be carried out in the spring, summer or autumn, when bats are active. No restrictions on work during the summer are considered warranted (to avoid the maternity season) based on current information as the identified roosting feature appears to be used sporadically and by an individual or possibly small numbers of bats.

A derogation license will be sought and notwithstanding any conditions of that license should it be granted, the following measures will be implemented to minimise risks to bats.

Prior to commencement of demolition of structures, three Schwegler 2F Universal Bat Boxes will be erected at suitable positions on trees (which are not scheduled for felling) in the treeline on the south of the site. Bat boxes provide an appropriate short and medium term mitigation measure for small numbers of crevice dwellings bats and will provide replacement roosting opportunities during construction.

The selection of bat box locations will be decided with cognisance of the following:

- Bat boxes will be installed at a minimum height of 3.5 meters above ground level, and in locations which are inaccessible to unaided climbing (to minimise risk of vandalism).
- Locations will be chosen which are not vulnerable to artificial light or noise pollution.
- Boxes will be installed so that they have southern or westerly aspects and preferably in locations where they will receive some direct sunlight.

Illumination will be installed within the hatcheries and the attic of the residence in advance of proposed demolition to deter bats from roosting here. The lighting will be first illuminated at night when bats are active and have left the roost.

A bat licensed Ecologist will be engaged to provide a toolbox talk on site at commencement of roof stripping works and to supervise roof removal works (e.g. removal of roof tiles) at a minimum. The removal of roofing materials for all structures and the stripping of the fascia and soffit will be carried out with hand tools to minimise the potential impact to any bats roosting within.

An exclusion tube will be installed by a bat licensed Ecologist at the identified Soprano Pipistrelle roosting location at Hatchery 1 at least five days in advance of works. This provides a one-way system whereby one the bat has exited is it unable to return. Based on current information the roost is utilised sporadically by individual bats or small numbers of bats and it is highly likely that several other roosts locally are also utilised.

Two Schwegler 'Bat Tube 1FR' [2] (or similar in agreement with bat licensed Ecologist) will be installed on the southern side of the proposed house numbers 54 (see **Figure 5.1** and **Figure 4.2**) at approximately 5.5m in height. This bat box is detailed in **Appendix B**. This measure will provide permanent bat roosting opportunities which are maintenance free. This location was chosen at is provides a south facing gable with no windows.

Artificial lighting will not be installed above or near the bat boxes or permanent bat roosts or such that the roost locations may be illuminated.


**Figure 5.1 Proposed location of artificial bat roosts (indicated by red arrow) on southern gable of unit number 54.**

[2] https://www.schwegler-natur.de/portfolio_1395072079/fledermaus-fassadenroehre-1fr/?lang=en

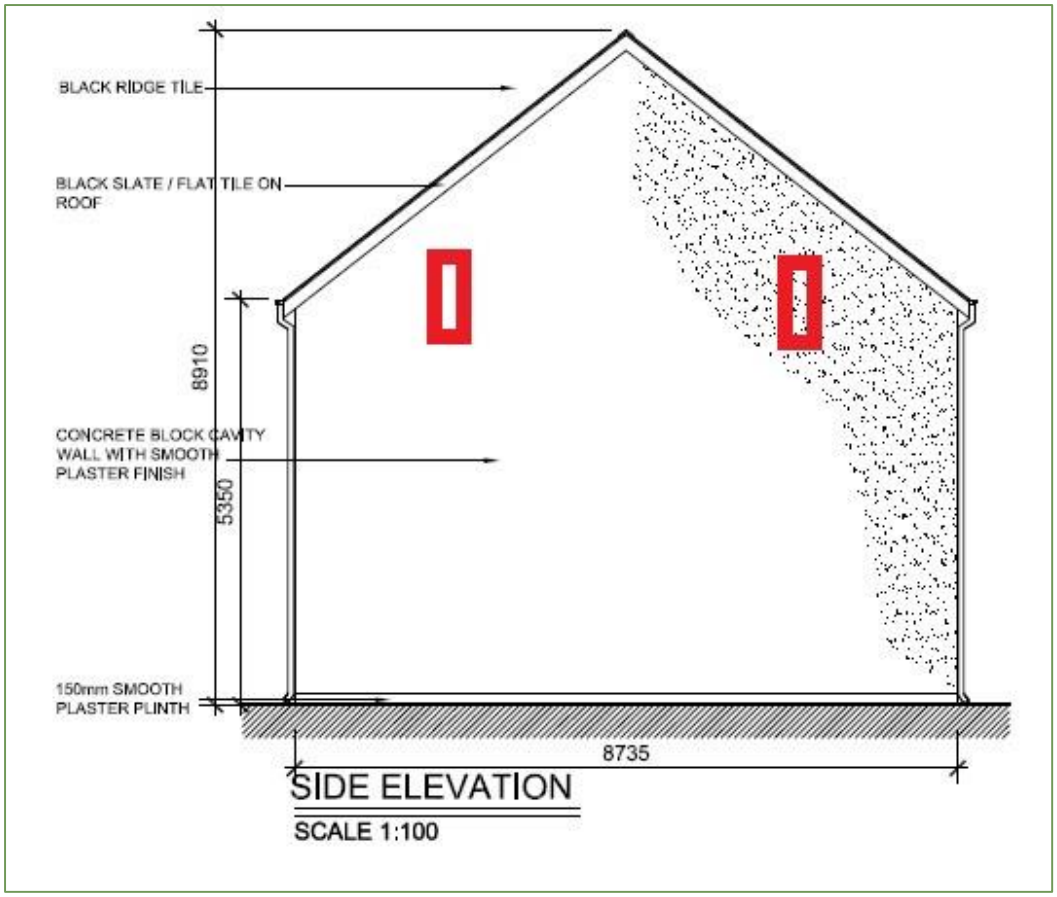



**Figure 5.2 Proposed location of artificial bat roosts (indicated by red rectangle - not to scale) on southern gable of unit number 54.**

Trees with potential to be used by roosting bats are proposed to be removed to facilitate construction and on safety grounds. These trees will be subject to survey by an Ecologist who is licensed to carry out bat disturbance and handling. The survey will confirm that no bats are present prior to felling of the tree. If bats are found a derogation license will be secured from NPWS prior to works. Trees identified as having above 'negligible' suitability for bat roosting will also be lowered carefully to ground level using appropriate machinery and allowed to remain at ground level untouched for 24 hours to allow any bats which may be present to safely depart.

During construction, works will generally take place during daylight hours only, and the site will not be lit during the hours of darkness. If some lighting is required for health, safety or security reasons, lighting shall be directed away from sensitive ecological features. As outlined in the pCEMP, night-time security lighting will be motion activated and not permanently illuminated. These measures are considered sufficient to prevent any adverse impacts on roosting, commuting and foraging bats.

## 5.2 OPERATIONAL PHASE

Boundary vegetation (treelines and hedgerows) that are to be retained as well as the proposed landscaping measures will be allowed to develop naturally and shall be preserved during the

operational phase of the proposed project. Any arborocultural or horticultural intervention shall be the minimised as much as possible to preserve the botanical communities present.

The lighting design process seeks to minimise light pollution on nearby trees and semi-natural habitats, however light spillage will occur onto these features. In order to reduce the ecological disturbance of light spillage the proposed design complies with the following Bat Conservation Trust (2018) recommendations:

- LEDs will be used, as these emit minimal ultra-violet light.
- White and blue wavelengths will be avoided; wavelength will be <2,700 kelvin.
- Lights will peak higher than 550nm.

Subsequent replacements will comply with the above specifications also.

## 5.3 DEROGATION LICENSE

Bat roosts are protected whether they are occupied or not, and it is an offence to disturb a bat roost. A derogation license issued under Regulation 54 (2) (c) of the Birds and Natural Habitats Regulations (2011) is required to facilitate the proposed works.

**Table 4.1** provides responses to four key issues which will be considered during the derogation license decision making process.

**Table 4.1 - Derogation License Checklist**

| | |
|---|---|
| ***Explanation as to why the derogation licence sought is the only available option for works and no suitable alternative exists as per Regulation 54 of the European Communities (Birds and Natural Habitats) Regulations.***<br><br>The hatcheries are no longer required and are not considered to be an appropriate use of space within this residential area. The residence does not conform to modern building and energy efficiency standards, and its location within the site prevents the best use being made of the overall site.<br><br>Energy efficient homes are proposed to replace the existing structures. | ☒ |
| ***Evidence that actions permitted by a derogation licence will not be 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 as is required under Section 54(2) of the European Communities (Birds and Natural Habitats) Regulations.***<br><br>An appropriate level of survey was carried out which complies with current best practice standards, including recent recommendations regarding the use of 'night vision aids'. Based on best available information, the residence is utilised on a regular basis by small numbers of Brown Long-eared Bat and Common Pipistrelles and there is no evidence of a significant roost having occurred here historically. A roost was identified on the western gable of Hatchery 1 when a single Soprano Pipistrelle was observed entering the roost shortly before sunrise. There is no evidence that this roost is used regularly or by large numbers of bats | ☒ |

| | |
|---|---|
| Alternative roosting locations for small numbers of crevice dwelling bats are available locally (e.g. a Brown Long-eared Bat roost is located on Harpers Island less than 2km away (T. O'Donnell pers. obvs.) and following completion of works permanent replacement roosts will be provided.<br><br>It is considered that the proposal will not be detrimental to the maintenance of the bat populations at a favourable conservation status in their natural range and that the proposal will not have a detrimental effect on the local bat populations. | |
| ***Details of any mitigation measures planned for the species affected by the derogation at the location, along with evidence that such mitigation has been successful elsewhere.***<br><br>Two 1FR tube (see **Appendix B)** (or similar in agreement with bat licensed Ecologist) will be installed within the fabric of the southern gable of unit 54 as part of the proposed works (see **Figure 5.1 and Figure 5.2**). On completion of construction, these will provide permanent and maintenance free bat roosting locations.<br><br>Tree mounted bat boxes will provide alternative roosting opportunities during the construction phase and onwards for the medium term (see Chapter 5). | ☒ |
| ***As much information as possible to allow a decision to be made on this application.***<br><br>Full information is outlined in the current report. | ☒ |

# 6 Residual Impacts and Conclusion

Considering the application of the proposed mitigation measures the overall residual effect of the proposed development on mammals is considered to be 'slight negative' at a local level (following EPA. 2022).

# 7 References

CIEEM (2018). Guidelines for Ecological impact Assessment in the UK And Ireland - Terrestrial, Freshwater, Coastal and Marine. Version 1.1.

Collins J. (Ed.) (2016). Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition). The Bat Conservation Trust, London.

EPA (2022). Guidelines on the Information to be Contained in Environmental Impact Assessment Reports.

Lundy, M.G., Aughney, T., Montgomery, W.I. & Roche, N. (2011). Landscape Conservation for Irish Bats & Species-Specific Roosting Characteristics. Bat Conservation Ireland.

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

NRA (National Roads Authority, now TII). (2009). Guidelines for Assessment of Ecological Impacts of National Roads Schemes. Revision 2, 1st June 2009. NRA, Dublin.

# Appendix A
# Photographic Record

**A1.** Southern gable of residence.

**A2.** Attic of residence.

**A3.** Hatchery 1 viewed from southwest.

**A4.** Interior of Hatchery 2.

**A5.** Southern elevation of Hatchery 2.

**A6.** Treeline on southern boundary of site.

**A7.** Desiccated bat, visually identifiable as Brown Long-eared Bat, found within empty water tank in attic of residence.

**A8.** A crack in the western gable of Hatchery 1 (see **Plate 3.4**) which gives access to cavity within the wall and was used by Soprano Pipistrelle for roosting on 31st August 2022.

**A9.** Minor PRF within tree T1477.

**A10.** Large cavity within base of tree T1473.


**A11.** Peeling bark provides a PRF (T1450).

**A12. "**Hazard beam" bark provides a PRF (T1447).

# Appendix B -

## Bat Roost Information

## Bat Tube 1FR

[Pic. 1]: 1FR installed

This Tube system meets the characteristic behavioural requirements of the types of bats that inhabit buildings. The design maintains excellent climatic conditions inside the Tube allowing the animals to either hang onto the wooden rear or onto the wood-concrete front. It requires no maintenance because droppings fall out of the entrance ramp.

**Installation:** Can be installed on external walls – either flush or beneath a rendered surface in concrete and, during renovation work, under wooden paneling or in building cavities (e.g., slab-type building structures, bridges, etc). If required, it can be painted using standard air-permeable exterior paint. Birds will not occupy this box. To allow access into existing cavities in buildings, use the 2FR model below.

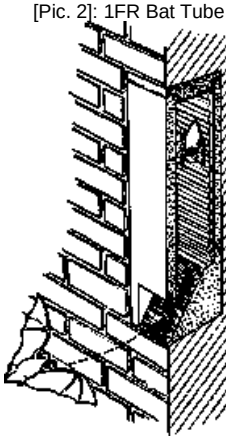
[Pic. 2]: 1FR Bat Tube

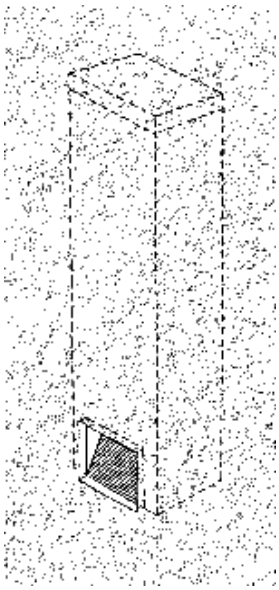
**Suitable for:** Bat species that inhabit buildings

**Material:** SCHWEGLER wood-concrete with integrated wooden panel onto which the bats can cling.

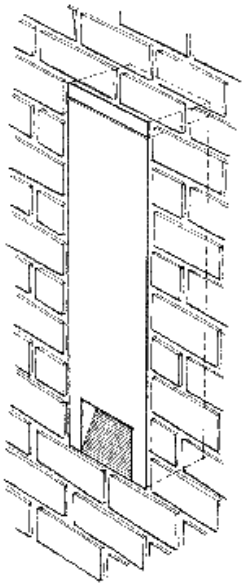
**Colour:** grey material, paintable with standard air-permeable wall-paint
**Dimensions:** height 47.5 x width 20 x depth 12.5 cm
**Entrance:** width 15 x height 2 cm

**Weight:** ca. 9,8 kg





[Pic. 4]: 1FR in rendered surface



[Pic. 5]: 1FR built in brickwork

# Appendix C -

## DNA Report

SureScreen Scientifics

Folio No: E15339
Report No: 1
Purchase Order: 202250
Client: O'DONNELL ENVIRONMENTAL LTD
Contact: Tom O'Donnell

# TECHNICAL REPORT

## ANALYSIS OF BAT DROPPINGS FOR SPECIES OF ORIGIN IDENTIFICATION

### SUMMARY

The droppings of bats contain small amounts of DNA belonging to the organism from which they originated. By analysing droppings collected from a bat roost or colony for the presence of DNA, a robust identification of the species present can be made. Recent advancements in molecular methods including PCR (polymerase chain reaction) and DNA sequencing mean that 92% of bat species worldwide can be identified including all 17 UK resident bat species.

### RESULTS

**Date sample received at Laboratory:** 05/09/2022
**Date Reported:** 08/09/2022
**Matters Affecting Results:** None

| Lab Sample ID. | Site Name | O/S Reference | Genetic Sequence | Common Name | Result | Sequence Simliarity |
|---|---|---|---|---|---|---|
| B1181 | 1 Cedars | | ATTTCCTCGTATAAATAATAT AAGTTTCTGACTCCTACCTC CTTCTTTTCTACTACTACTAG CCTCGTCTATAGTAGAAGCG GGAGCGGGTACAGGCTGAA CAGTCTACCCCCCTCTAGCA GGAAA | Common pipistrelle | *Pipistrellus pipistrellus* | 100% |
| B1182 | 2 Cedars | | CTAATAATTGGAGCCCCTGA TATAGCTTTTCCCCGAATAA ATAACATAAGCTTCTGACTG CTTCCCCCATCTTTTCTACTA CTTTTAGCTTCGTCTGCAGT AGAGGCTGGAGCAGGTACC GGTTGAACAGTCTATCCTCC TTTAGCGGGAAA | Brown long-eared bat | *Plecotus auritus* | 99.31% |

If you have any questions regarding results, please contact us: ForensicEcology@surescreen.com

**Reported by:** Chelsea Warner **Approved by:** Chris Troth

## METHODOLOGY

Once samples have arrived in the laboratory, a single bat dropping is selected for its suitability (freshness and size). The DNA is then isolated using a commercial DNA extraction kit. Using PCR, bat DNA (if present within the sample) is amplified using bat DNA-specific molecular markers designed to amplify a short fragment of the mitochondrial gene. If amplification is successful, the resulting DNA sequence is revealed using a process known as Sanger Sequencing in order to obtain the genetic sequence. The sequence results are aligned against a library of known bat reference sequences using bioinformatics software, which enables us to determine which species the extracted DNA matches with, informing the species identity and sequence similarity (%).

If the initial analysis is unsuccessful, the entire process is repeated up to two additional times with fresh reserve droppings. If no DNA is detected after three attempts, we can be confident that any further analysis of the sample will likely also fail to result in species identification.

## INTERPRETATION

**Genetic Sequence:** The unique DNA sequence obtained from the sample.

**Sequence Similarity:** How closely matched the DNA sequence from your sample is to the sequences within our reference database. This can be interpreted as a score of result accuracy, with the maximum score of 100% indicating an exact match of dropping to the indicated species' reference sequence. Lower scores (80-99%) indicate some variation between the sample and reference sequence, likely due to natural variation between individual genetic sequences and/or systematic variations generated through the sequencing process. Scores below 80% similarity should be interpreted with care and can indicate part degraded or part contaminated samples.

**Inconclusive Result:**

**Degraded sample:**
DNA degraded, unable to determine species identification due to degradation of sample DNA. This can happen either before sample collection (old droppings, exposure to UV etc.) or after sample collection if stored for long periods before analysis or not handled correctly.

**Inhibited/contaminated sample:**
Unable to determine species identity due to contamination or the suspected presence of large quantities of PCR inhibitors. Contamination sources can come from other species which come into contact with droppings, human contamination during sample collection.

**Alternative Result:** Sometimes, other mammalian species such as rodents are detected. We find this to be a common occurrence as some bat droppings can be similar in appearance to rodent droppings. Although sometimes unexpected, repeat analyses in these cases would likely return the same results.

O'DONNELL ENVIRONMENTAL

info@odonnellenviro.ie