Bat Survey Report

Swords Cultural Quarter

June 2022

Prepared for:
Fingal County Council

CIEEM
REGISTERED
PRACTICE 2022-2023

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Summary

Proposal: Swords Cultural Quarter, Swords, Co. Dublin.

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. Since then, O'Donnell Environmental has established itself as a provider of quality, Client-focused ecological and environmental services to public and private sector Clients nationwide. O'Donnell Environmental is a Chartered Institute of Ecology and Environmental Management (CIEEM) 'Registered Practice' which demonstrates our commitment to high professional standards and accountability.

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 15 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).

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3	Final Issue	TO'D	22.06.2022

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Appendices

1 Introduction

O'Donnell Environmental was commissioned by Fingal County Council to undertake a Bat Survey within the zone of influence of the proposed Swords Cultural Quarter redevelopment.

The aims of the study were to determine the following:

- If bat roosting is occurring or likely to occur in the zone of influence of the proposed works.
- The areas and habitats within the zone of influence of the proposed works which are being used by bats (including commuting routes and foraging areas).
- The diversity and relative abundance of bats present.

The site of the proposed works is within the urban area of Swords, Co. Dublin. A site location map is presented in **Figure 1.1**. If approved, the proposed scheme will consist of the following works:

- New major central public and civic space outside Swords Castle.
- A new Library/Civic Centre building to sit alongside County Hall.
- New landscape interventions in the park and the town.
- Landscaping is as shown in Landscape Plan (Dermot Foley Landscape Architects (Ref. SCQ-ZZ-L00-DR-DFLA-LA-02001 - Landscape Plan, dated 07.07.2022).

The proposed works are shown on 'Proposed Site Plan' by O'Donnell + Tuomey (Ref. SCQ-ZZ-L00-DR-ODT-AR-0010- Proposed Site Plan, dated 07.07.2022) see **Appendix B**.

Elements of the proposed works which have potential to impact on bats include the following:

- Loss of structures with potential for bat roosting including St. Michaels House and No. 20 North Street.
- Loss of potential foraging or commuting habitat.
- Disturbance including additional artificial lighting.

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.

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.

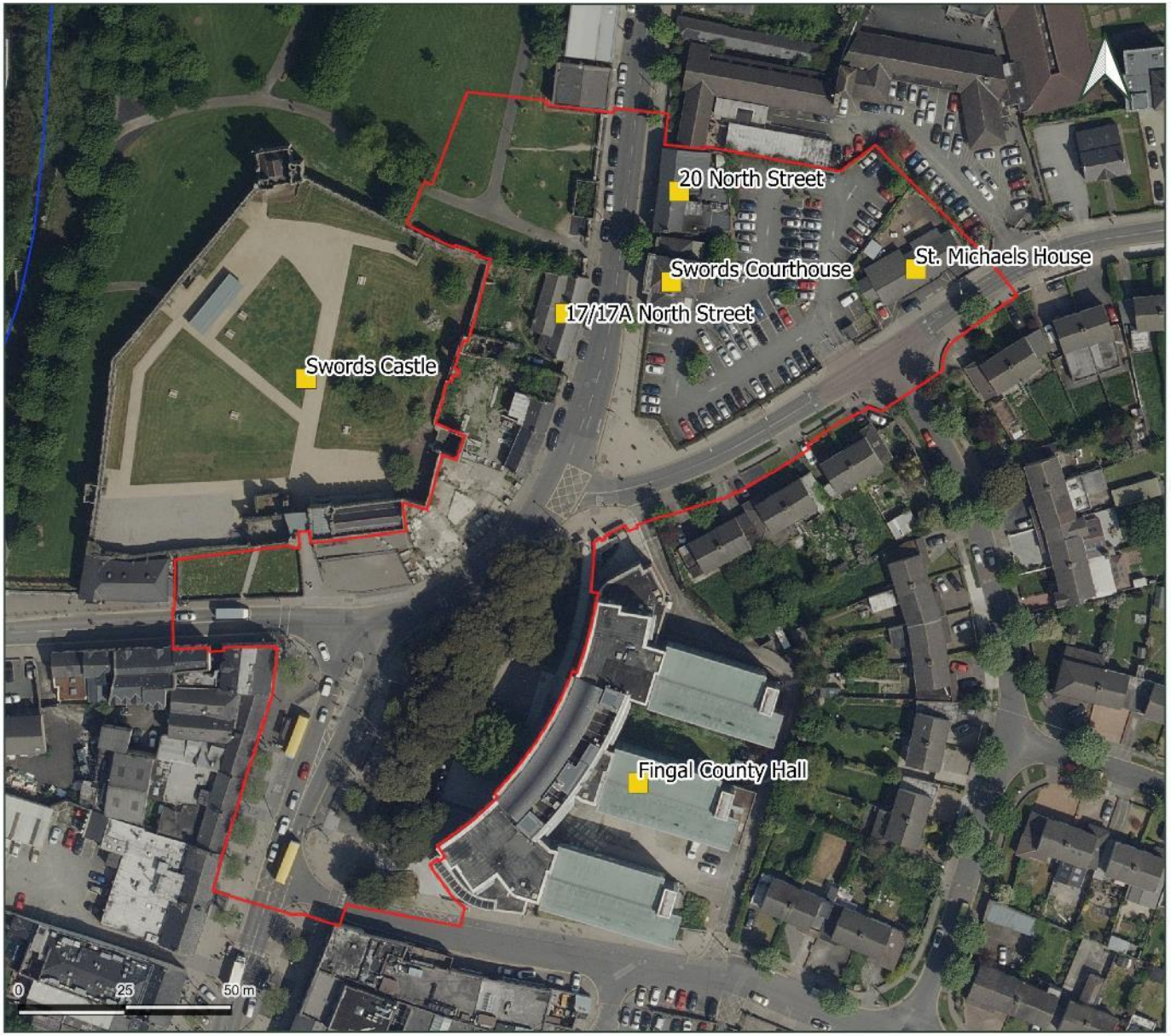

Figure 1.1
Study Site Location

Project:
Swords Cultural Quarter

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D: 11/04/2022

Aerial potography - © Bluesky Geospatial Ltd.

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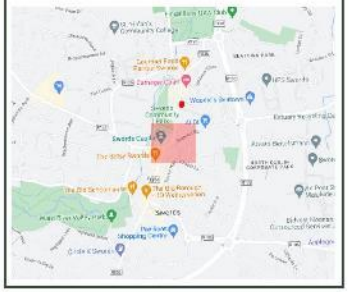
Legend

Site Boundary

Buildings



2 Methodology

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[1]. The National Biodiversity Data Centre was reviewed for relevant data, specifically i) existing species records for the 2km square in which the study site is located (O14Y) 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.

Bat Conservation Ireland (BCI) conducted a search of their records database at the request of O'Donnell Environmental on 5th November 2020. The relevant search area included a 1km radius from a central point within the proposed site (see **Figure 2.1**).

2.2 VISUAL ROOST SURVEY

Daytime visual assessments were carried out by Tom O'Donnell BSC (Hons) MSc CEnv MCIEEM and Donnachadh Powell BSc (Hons) to identify any bat roosting potential which may exist within the zone of influence of the proposed works. Selected photographs of features surveyed 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. 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). 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).

2.2.1 Survey of Structures

Daytime, visual surveys were carried out by Tom O'Donnell and Donnachadh Powell on 9th June 2021 and followed guidance set out in Collins (2016). The surveys were non-destructive, and relevant Potential Roost Features (PRFs) were visually inspected to identify any evidence

[1] Accessed 28th February 2022

of bat roosting. Signs of bat use include bat droppings, feeding remains, potential bat access points identified by characteristic staining and scratches, noise made by bats etc. A 5m ladder, torch and endoscope were utilised as required and GPS data was recorded using a Garmin GPSMAP 64x device.

Buildings were inspected externally and internally (where possible). Building locations are shown in **Figure 1.1**. Consideration was given to context of the building in terms of proximity to potential commuting and foraging habitat and levels of disturbance including light pollution.

A follow up bat survey was carried out in the 'Knights and Squires Chamber', where winter roosting was previously identified by Brian Keeley on 19th March 2015. The survey was carried out by Tom O'Donnell and Donnachadh Powell on 8th March 2022 when weather conditions remained cold, and bats were expected to remain in torpor.

Tom O'Donnell is licensed by NPWS for bat roost disturbance (DER/BAT 2021-128) and to capture bats (C217/2021) while Donnachadh Powell is licensed for bat roost disturbance (DER/BAT 2021- 70).

2.2.2 Survey of Trees

Ground-level roost assessments were carried out by Tom O'Donnell BSc (Hons) MSc CEnv MCIEEM and Donnachadh Powell BSc (Hons) on 9th June 2021 during daylight hours. Surveys were carried out according to 'Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition)' (Collins, 2016). The surveys were carried out during appropriate weather and light conditions.

While winter is the optimal period for ground level surveys of trees, in this instance it is not considered to be a limiting factor because good views of trees were available from ground level. Inspections of potential roosting features which were safely accessible were carried out using a 5m ladder, torch and endoscope where required.

While ground-level tree surveys can confirm the presence of roosting bats, they often cannot conclusively confirm the absence of roosting bats (Collins, 2016). In trees evidence of recent bat occupation can rapidly disappear. For example, droppings can persist in buildings for many years while they generally do not persist for long in tree roosts.

Tree roosts have been shown to be used in a more transient manner than buildings with many species exhibiting roost switching behaviour (Collins, 2016). For example, Waters *et. al.* (1999) observed roost switching in Leisler's Bats every 2 to 10 days during the active season.

For the above reasons, and in line with Collins (2016), this report takes a conservative approach when considering bat roosting potential of trees. This approach reflects the fact that any tree with bat potential may be used at some point or another and the conservation importance of multiple roosting opportunities is poorly understood. Trees were classified according to the guidelines in Collins (2016), see **Table 2.1**.

2.3 BAT ACTIVITY SURVEY

Pre-dawn bat transect (activity) surveys were carried out for 1.5 hours prior to dawn on the 9th June 2021 as described in Collins (2016). Dusk transect surveys were also undertaken from 15 minutes before sunset to 1.5 hours after sunset as per Collins (2016) on the 9th June 2021.

Surveys were carried out by two surveyors (T'OD and DP) who surveyed independently on different transect lines. The surveys were carried out in suitable weather conditions (minimum 10°C, light wind and no precipitation). Ultrasonic detection was carried out using Wildlife Acoustics full spectrum 'Echo Meter Touch Pro' recorders.

The aim of the night-time activity surveys was to investigate bat activity in the zone of influence of the proposed works and to detect any bats which may be re-entering roosts at dawn. While a daytime visual inspection may detect signs of any large aggregations of roosting bats, smaller numbers of bats or bats roosting in discrete locations may not be apparent during daytime visual inspection. The night-time activity surveys primarily utilised visual detection, with the support of ultrasonic detection equipment.

All surveys were carried out on foot. **Figure 3.4** shows the survey routes used as recorded by GPS devices carried by the Surveyors.

2.3.1 Data Analysis

Bat activity sonograms were analysed using Wildlife Acoustics Kaleidoscope Professional sound analysis software and identifications were manually verified. Identification followed Russ (2012).

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 (2017).

Reporting follows Chartered Institute of Ecology and Environmental Management (2018) 'Guidelines for Ecological Impact Assessment in the UK and Ireland - Terrestrial, Freshwater, Coastal and Marine'.

2.5 SURVEY LIMITATIONS

No internal access was available to the property at 17/17A North Street or the Arch House at Swords Castle. Partial access was available to attic spaces within Swords Courthouse. Access to the attic space above the Judge's Office was not available. No works are proposed at the Courthouse and good visibility of the building was available externally during active surveys.

The above listed buildings occur within an area exposed to artificial street lighting where no significant level of bat activity was recorded and no evidence of bat emergence or re-entry was recorded. For these reasons access issues are not considered to be a significant study limitation.

Figure 2.1
Bat Conservation Ireland Roost Record Search Area

Project:

Swords Cultural Quarter

Prepared for:

Fingal County Council.

Tom O'Donnell CEnv MCIEEM
D: 09/08/2021

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

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Legend

- Site Boundary
- 1km search area

3 Results

The proposed site occurs in an urban context, in the town of Swords, Co. Dublin. Within the site boundary there are no semi-natural habitats, but some features of potential ecological significance occur e.g. buildings and trees. Proximal to the study area some semi-natural habitats exist namely the River Ward and associated riparian vegetation as well as hedgerows and treelines. Additionally, these urban areas offer limited landscape connectivity for most bats as a result of a lack of linear landscape features such as treelines and an abundance of artificial light pollution.

3.1 DESKTOP SURVEY

3.1.1 Sites of International Importance

Special Areas of Conservation (SAC) and Special Protection Areas for birds (SPA) are those sites that are deemed to be of European (i.e., international) importance. They form part of a network of sites to be designated across Europe in order to protect biodiversity within the community, known as Natura 2000 sites.

The development site is not located within such a site. There are a total of nine SACs within 15km of the proposed development. These sites do not include bats in their conservation interests, and therefore are not relevant to the current assessment. No other internationally designated sites are relevant to the current assessment. SPAs are designated for bird species, and therefore are not relevant to the current assessment

Table 3.1 - Natura 2000 sites within 15km of the proposed development site.

Site Name	Site Code	Distance (km)
Malahide Estuary SAC	000205	1.14
Rogerstown Estuary SAC	000208	4.62
Baldoyle Bay SAC	000199	6.95
North Dublin Bay SAC	000206	9.81
Rockabill to Dalkey Island SAC	003000	9.86
Ireland's Eye SAC	002193	11.49
Howth Head SAC	000202	12.41
Lambay Island SAC	000204	12.64
South Dublin Bay SAC	000210	13.49
Malahide Estuary SPA	004025	1.19
Rogerstown Estuary SPA	004015	5.05
Baldoyle Bay SPA	004016	6.94
North Bull Island SPA	004006	9.78
South Dublin Bay and River Tolka Estuary SPA	004024	10.81
Ireland's Eye SPA	004117	11.18
Lambay Island SPA	004069	12.63
Howth Head Coast SPA	004113	13.35
Skerries Island SPA	004122	14.92

3.1.2 Sites of National Importance

At a national level, the basic unit of conservation is the Natural Heritage Area or proposed National Heritage Area (NHA/pNHA). NHAs are designated to protect habitats, flora, fauna and geological sites of national importance. Given the scale of the proposed project and context of the study area, 5km is considered to be a suitable screening distance in the case of nationally designated conservation sites.

There are no NHAs within 5km of the proposed site. A total of three pNHAs occur within 5km of the proposed site (see **Table 3.2**), the nearest of which is Malahide Estuary pNHA (000205). Malahide Estuary pNHA is located approximately 990 meters east of the closest point of the proposed works.
There are no special conservation issues associated with these sites which are of relevance to bats or to the current assessment, and therefore these sites are not considered further in this report.

Table 3.2 - Proposed National Heritage Areas within 5 km of the proposed site

Site Name	Site Code	Distance (km)
Malahide Estuary	000205	0.99
Feltrim Hill	001208	2.51
Rogerstown Estuary	000208	4.5

3.1.3 Data Search

National Biodiversity Data Centre holds no previous records of bat presence from within the 2km square (O14Y) in which the proposed site is located. The absence of species records reflects lack of data as opposed to an absence of bats from the relevant area. The following species have previously been recorded in the 10km square (O14) in which the site is located:

- Brown Long-eared Bat (*Plecotus auritus*)
- Daubenton's Bat (*Myotis daubentonii*)
- Leisler's Bat (*Nyctalus leisleri*)
- Natterer's Bat (*Myotis nattereri*)
- Common Pipistrelle (*Pipistrellus pipistrellus*)
- Soprano Pipistrelle (*Pipistrellus pygmaeus*)

Bat Conservation Ireland holds no records of bat roosts within 1km of the study site (see **Figure 2.1**).

The overall bat suitability index value (31.22) 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 3.2**. The Annex II (EU Habitats Directive) listed bat species, Lesser Horseshoe Bat, is assigned a score of zero as the proposed site is outside the known range for this species.

Table 3.2 - 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		*31.22*

Soprano pipistrelle	*Pipistrellus pygmaeus*	45
Brown long-eared bat	*Plecotus auritus*	42
Common pipistrelle	*Pipistrellus pipistrellus*	44
Lesser horseshoe bat	*Rhinolophus hipposideros*	0
Leisler's bat	*Nyctalus leisleri*	46
Whiskered bat	*Myotis mystacinus*	38
Daubenton's bat	*Myotis daubentonii*	31
Nathusiius pipistrelle	*Pipistrellus nauthusii*	1
Natterer's bat	*Myotis nattererii*	34

3.1.4 Previous Studies

Previous bat surveys were undertaken by Brian Keeley B.Sc. (Hons) MCIEEM in relation to the renovation of Swords Castle, which is now partially complete. Visual assessment of the Castle was undertaken on 19th March 2015 and visual assessments and active bat surveys were carried out during July 2015. A single Brown long-eared bat was recorded using a crevice of the roof of the Knights' and Squires' Chamber as a hibernation roost during the winter survey (Keeley, 2015) (see **Appendix C**). Evidence was also recorded of bat activity, possibly Pipistrelles, in the Constables Tower. There were no roosting bats recorded during the summer survey. Two Common Pipistrelles and two Leisler's Bats were recorded foraging within the castle grounds during the summer bat active surveys (Keeley, 2015).

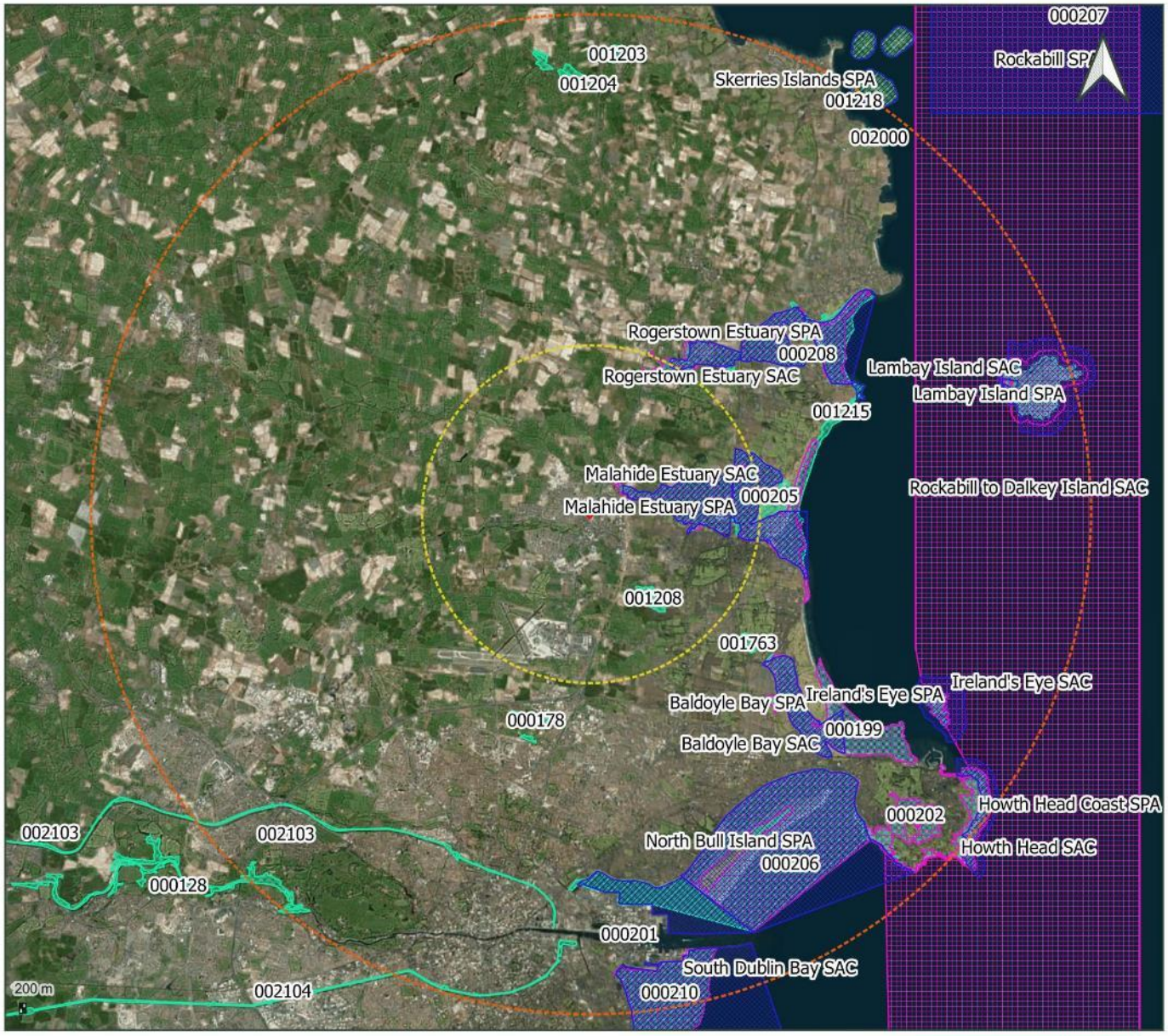

Figure 3.1
Sites Designated for Conservation

Project:
Swords Cultural Quarter

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D: 09/08/2021

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Legend

- Study Area
- 5km Buffer
- 15km Buffer

Designated Sites [NPWS]

- SPA
- SAC
- NHA
- pNHA

3.2 VISUAL ROOST SURVEY

The proposed project will involve works affecting or in close proximity to features such that disturbance to roosting bats would be caused should they be present. 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. Photographs of the selected features are shown in **Appendix A**. The survey was non-destructive.

Bats were not confirmed to be roosting at the study site and no evidence of current or historic roosting was found during internal and external inspections of buildings and trees. Potential roosting opportunities are present in the study site (and widely in the surrounding area) as it often the case in urban areas.

3.2.1 Survey of Structures

A number of buildings/structures were surveyed, and these vary in composition, the locations of structures inspected is shown in **Figure 1.1** and are summarised in **Table 3.3**. Bats were not confirmed to be roosting in any structures within the study area and no evidence of historic roosting was found during the current survey. A description of each structure within the study area is provided below.

No evidence of roosting bats was recorded during the winter hibernation survey within the 'Knights and Squires Chamber'. It is likely that the site may have reduced in value since the 2015 surveys, for example through increased lighting and other human disturbance and vegetation clearance.

3.2.2 Swords Castle

The area of Swords Castle and its environs and associated buildings were surveyed on the 9th June 2021. Although there is a previous recording of a Brown Long-eared Bat found hibernating in the Knights' and Squires' Chamber (Keeley, 2015; see **Appendix C**), no bat species or signs of bats were recorded in this area during the current surveys.

Knights' and Squires' Chamber was inspected thoroughly and no evidence of roosting or other bat activity was present. The Constable's Tower yielded similar results, with no bats or signs of bats found in the upper or ground levels during inspection. Large windows throughout this area cause significant light ingress which would likely deter larger numbers of bats from roosting internally. There are several crevices between the stonework in the Constable's Tower that represent 'low' suitability roosts and have the potential to support small numbers of bats. Most of these are on the lower levels and in the stonework along the staircases.

The Chapel had side rooms with low or negligible potential to support roosting bats, but these rooms experience significant light levels (natural and artificial) and lack of crevices between the stonework. No bat droppings or stains were observed in this area.

There are some mature/semi-mature oak and apple trees within the castle grounds and adjoining the current study area. These trees exhibit potential roosting features; namely rot holes and peeling park. These relevant features were checked for signs of bat roosting and no evidence of current or historic bat roosting was found.

3.2.3 St. Michael's Building

The St. Michael's Building was surveyed internally and externally. Although the attic of this building was highly suitable to support roosting bats (low light ingress, bitumen roofing felt etc.) no bats or droppings were found in this attic. On the exterior of the roof at the rear of the building there were significant openings e.g. in fascia and soffit which created opportunities for bats to enter the attic or spaces within the openings in the roof. No bats or signs of bats were observed.

3.2.4 Vacant Commercial Buildings

Three adjoining residential buildings on North Street were surveyed and found to have no bat presence. The upper floors of these buildings were former residential units. Mice and rat droppings were noted on the floor of the former fast-food restaurant, but no evidence of bats was found. The upper floors are former residential dwellings with slate roofing tiles on the exterior. The bedrooms, kitchens and attics were inspected but no evidence of bat roosting, current or historic, could be found.

3.2.5 Swords Courthouse

The Courthouse Building was found to be well maintained and generally presents few opportunities for crevice dwelling bats. Externally the slate roof was in good order and internally, the ground floor rooms were inspected. The attic above the Judge's Office was locked and there was no available access on the day of inspection. The attic above the public entrance from the main road was inspected and found to have extremely low light ingress, suggesting a well-sealed environment through which offered no obvious access point for bats. There was an attic access point within the main court chamber; however, it was too high to access with a ladder (approximately 15 meters in height). No evidence of bat roosting, current or historic could be found in Swords Courthouse.

3.2.6 Derelict Building

A small building, approximately 5 square meters in area is situated across from the Swords Courthouse. Although there is some vegetation in the interior, this building does not have a roof and therefore has high levels of light penetrating it constantly: sunlight during the day and street lighting at night as it is located adjacent to the footpath along North Street. This building was determined to be negligible in terms of potential to support roosting bats.

Table 3.3 – Results of visual surveys carried out on man-made structures

Structure Name	Roosting Potential	Comment
Swords Castle - Constables Tower	Moderate	Suitable crevices are present within the stonework of the structure, capable of providing roosting opportunities to bats. Some larger crevices capable of hosting several bats. No evidence of bat roosting present.
Swords Castle - Knights and Squires Chamber	**Confirmed**	Suitable crevices remain within the stonework of the structure, capable of providing roosting opportunities to bats.
Swords Castle - Chapel	Low	Recently renovated building which presents negligible suitability for roosting bats internally. Roosting opportunities may exist externally at height.
Swords Castle - Gate House Arch	-	Internal access to the Gate House Arch building was not available.
S. Michael's Building	Moderate	Potential for crevice dwelling species to roost in gaps between roof slates and within fascia and soffit on the rear of the building. No evidence of any bat roosting was noted within the attic space.
21 North Street - Q4U & Easy Money	Low	Former commercial properties on ground floor with residential units on upper floors. Attic space has some potential to support bats. No evidence of current or historic roosting was observed. Significant levels of light pollution front and rear.

21 North Street - Hair Salon	Low	Former commercial premises with residential apartment on upper levels. Negligible potential for bat roosting on ground level. Some potential for roosting in attic space but no evidence of any roosting evident. Significant levels of light pollution front and rear.
21 North Street - Panda Asian Fusion	Low	Former commercial premises on ground floor with residential units on upper floors. Some potential for roosting in attic space but no evidence of any roosting evident. Significant levels of light pollution front and rear.
Swords Courthouse	Low	Swords Courthouse has low potential for bat roosting due to apparent lack of suitable roosting spaces and high levels of light pollution externally. Accessible attic is well sealed and no evidence of any bat roosting. Significant levels of light pollution occur externally.
Structure opposite 21 North Street	Negligible	Stone and red-brick derelict building with no roof and highly exposed to light and weather. Vegetation growing in the inner section presents further difficulty for bats to roost here.

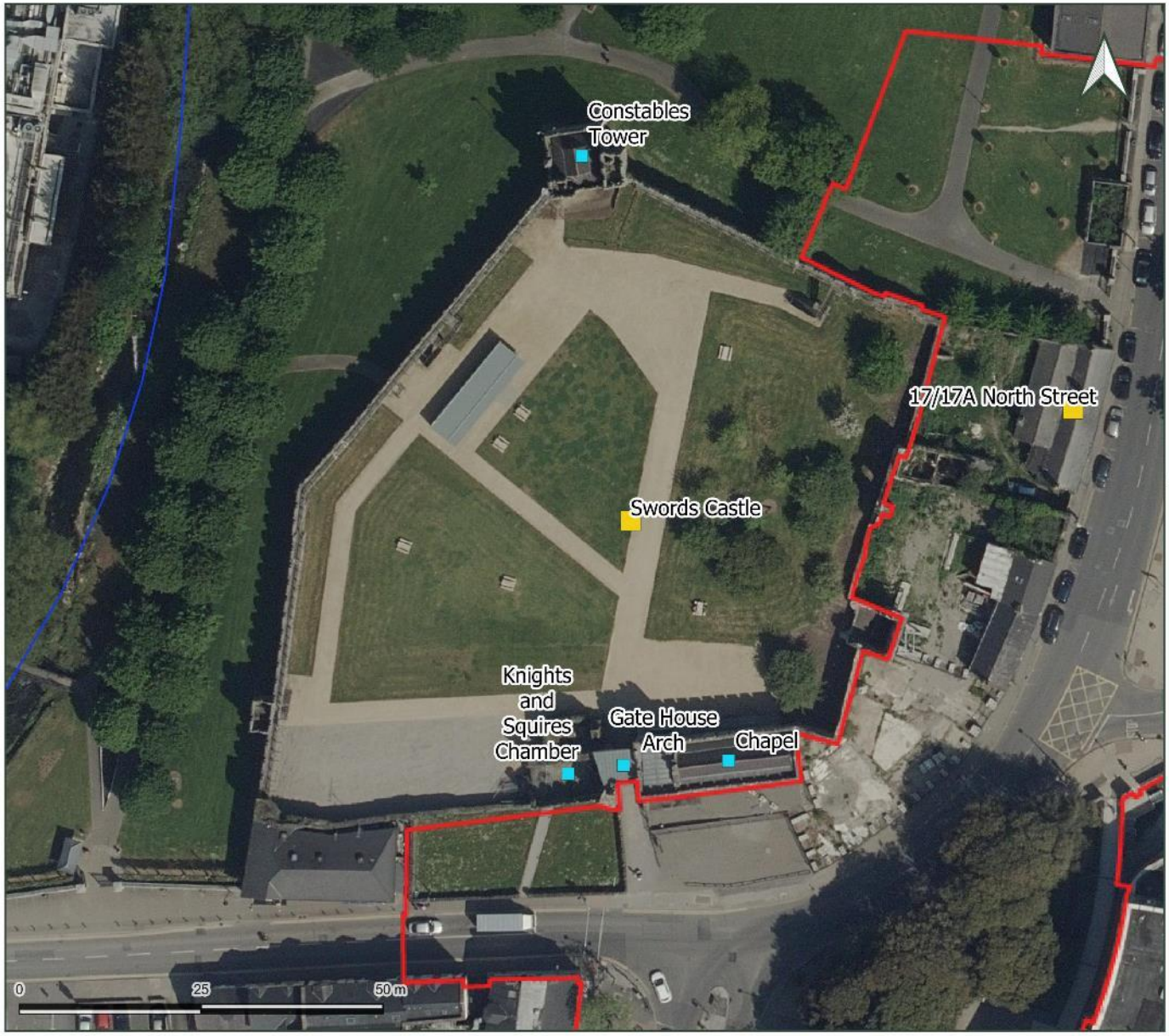

Figure 3.2
Swords Castle

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D: 11/04/2022

Aerial potography - © Bluesky Geospatial Ltd.

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Legend

Site Boundary

Buildings

Swords Castle Buildings

3.2.7 Survey of Trees

Surveys of trees was carried out where the proposed works had potential to cause disturbance should a roost be present. Most Irish bat species roost in trees where suitable roosting opportunities are present. A number of Irish bat species, including Leisler's Bats and Soprano and Common Pipistrelles roost in trees all year round (Collins, 2016).

In Ireland potential roosting features for bats in trees are often associated with decay. While trees of any age can contain suitable bat roosting features, typically roosts are found in mature and veteran trees. Decay in trees often begins with damage, where a limb tears off for example or where damage is caused by an external factor such as badly executed limb removal. Where trees are well maintained, from an arbocultural perspective, they often do not contain these features, and therefore typically do not present many optimal roosting opportunities for bats. Equally, young and vigorously growing trees often do not contain decay associated with rot holes, tear-outs etc. and when damage occurs the trees are generally capable of self-healing.

Tree species present in the study area include Oak (*Quercus spp.*), Pine (*Pinus spp.*), and Sycamore (*Acer pseudoplatatus*). No over-mature or veteran trees are present in the study area; however a number of semi-mature specimens are present.

Potential bat roosting features would often include lifting bark, tear-outs (where the limb has torn off from the main stem) and knot holes (naturally occurring holes in trees where a limb has died but rots back rather than tearing out). Examples of potential roosting sites recorded are shown in **Appendix A**. The urban context of the trees and the high level of light spillage present reduce the value of any potential roosting features present within trees within the study area to bats.

No roosting bats were encountered in trees, and no unoccupied roosts which contained signs of bat occupation were encountered. None of the potential roosting features in trees inspected during the current survey had potential as a maternity roost for any bat species.

No trees in the study area were considered to have 'moderate' or 'high' potential to support roosting bats. **Table 3.4** provides a description of trees with 'low' and 'negligible' potential for roosting bats. Trees (or groups of trees) with 'low' potential are described where they are within or immediately adjoining the proposed works area. The locations of trees described in **Table 3.4** are shown in **Figure 3.3**.

Potential roosting features may be present but not visible during a ground level survey and it is possible that some features may be used at least occasionally by bats and their value to bats may increase over time. Most of Irelands bat species are known to exploit a wide variety of roosting opportunities with some being used infrequently. The roosting ecology of bats in Ireland and the importance of multiple roosting opportunities are poorly understood.

Table 3.4 – Results of visual tree surveys

Map Reference	Suitability for Roosting Bats	Tag Number	Comments
087	Low	-	Several fruit trees in grounds of Swords Castle. Minor PRFs present but no evidence of any bat roosting.
088	Negligible	-	Tree growing from rear of garden. No PRFs visible and strongly exposed to artificial lighting.
090	Negligible	-	Semi-mature tree outside of study area. No PRFs visible and strongly exposed to artificial lighting.
092	Negligible	-	Semi-mature tree adjoining garden. No PRFs visible and strongly exposed to artificial lighting.
094	Low	0525	Some minor PRFs visible from ground level.
095	Low	0524	One PRF visible from ground (open wound) but highly exposed.
096	Low	0523	Some minor PRFs visible at height.
097	Negligible	0521	No PRFs visible from ground level.
098	Low	0520	Some PRF's visible from ground at low height.
099	Negligible	0519	No PRFs visible from ground level.
100	Low	0517	Several PRF's visible but all are shallow.
101	Negligible	0518	No PRFs visible from ground level.
102	Low	0516	Minor PRF's visible from ground level. Suitable for small numbers or individual bats.
103	Low	0515	Large wound at 2 meters height, apparently shallow.
104	Low	0513	Large split on stem at 5 meters height. Highly exposed.
105	Low	0512	PRF visible at 4 meters height (split stem) facing streetlights. Minor PRFs higher up.
106	Low	0511	Some minor PRFs visible from ground level.
107	Low	0510	Damage visible (split stem). Facing streetlights.
108	Low	0509	Wound at 3 meters height. Deep but facing street lighting and downward sloping.
109	Negligible	0508	No PRFs visible from ground level.
110	Low	0507	Some small PRFs visible at height.
111	Negligible	0506	No PRFs visible from ground level.
112	Low	0503	Some PRFs visible e.g. open wounds and splits, but these are shallow.
113	Low	0502	Some minor PRFs visible from ground level.
114	Low	0505	One wound at 2 meters height (shallow). Other minor PRF's (downward sloping) visible at 4 meters height.
115		0504	Some PRFs visible e.g. open wounds and splits, but these are shallow.
116	Low	0501	Some PRFs visible e.g. open wounds, but these are shallow.
117	Low	0500	Some damage visible e.g. split stems. Cobwebs present, suggesting not in use. Split stems facing street lighting.
118	Negligible	0526	No visible PRFs. High exposure to street lighting.
119	Negligible	0447	No visible PRFs. High exposure to street lighting.
120	Negligible	0498	No visible PRFs. High exposure to street lighting.
121	Negligible	0497	No visible PRFs. High exposure to street lighting.
122	Negligible	0499	No visible PRFs. High exposure to street lighting.
123	Negligible	0446	No visible PRFs. High exposure to street lighting.

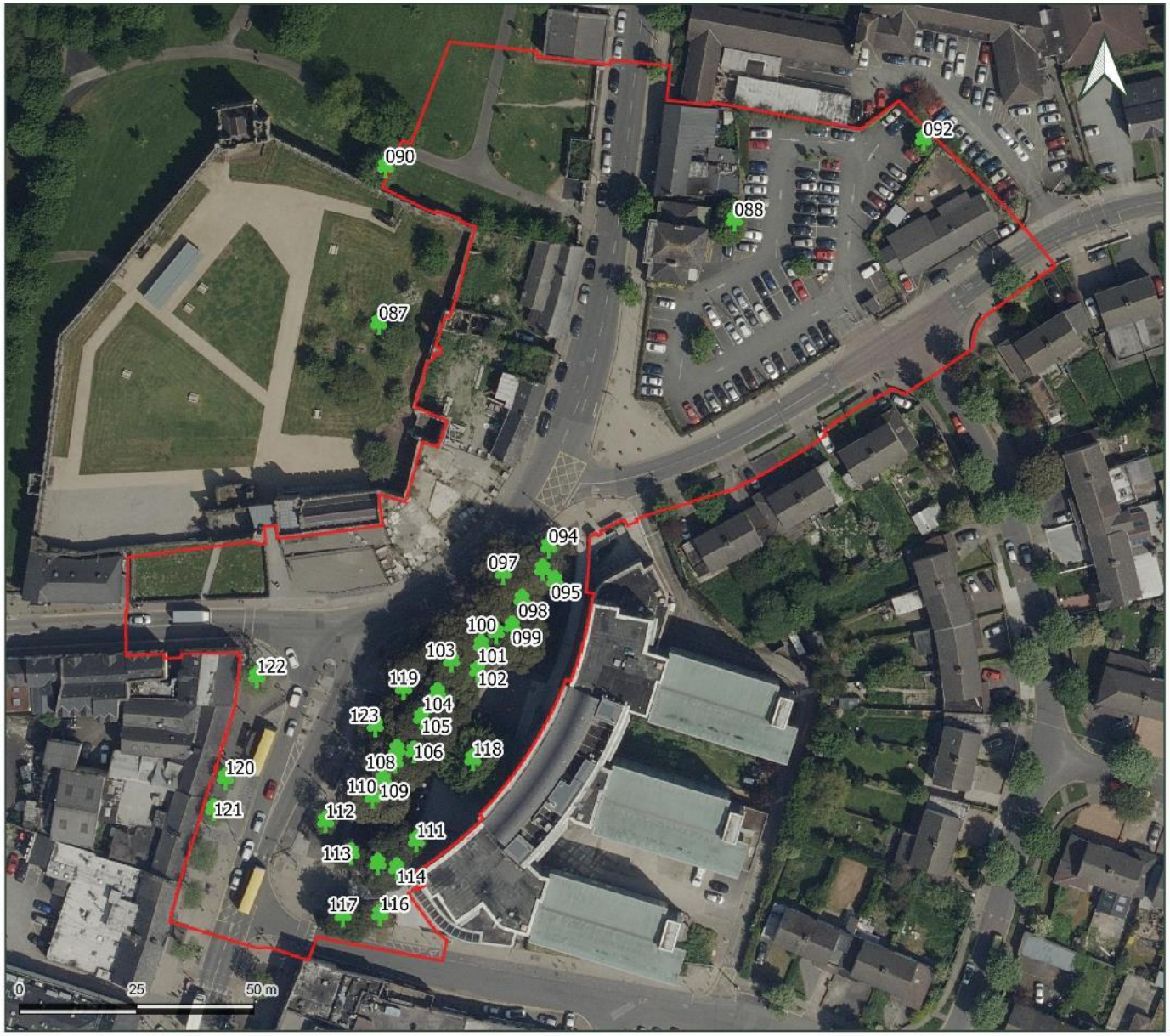


Figure 3.3
Results of Tree Surveys

Project:
Swords Cultural Quarter

Prepared for:
Fingal County Council.

Tom O'Donnell CEnv MCIEEM
D: 11/04/2022

Aerial potography - © Bluesky Geospatial Ltd.

O'DONNELL ENVIRONMENTAL

Legend

Site Boundary

Trees

3.3 BAT ACTIVITY SURVEY

Pre-dawn and post-dusk bat activity (transect) surveys were carried out to investigate bat activity in the zone of influence of the proposed works and to detect any bats which may be entering or leaving roosts.

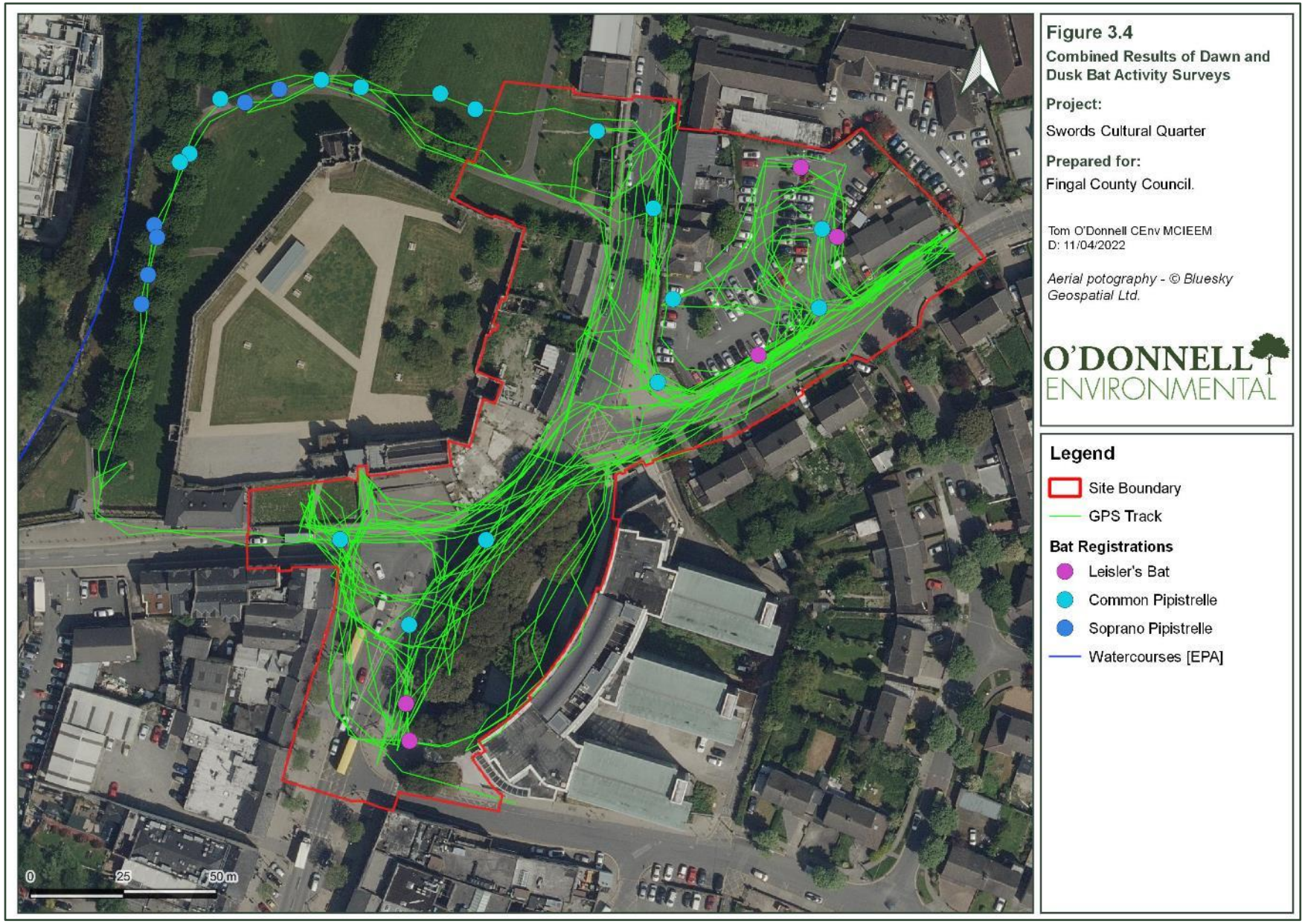
Bat echolocation detections are quantified here as bat "registrations". A registration for the relevant species is attributed when any bat echolocation signal occurs in one recording, which are up to 15 seconds in length. Bat registrations do not equate to numbers of bats as individual bats of the same species cannot be differentiated. A single bat continuously foraging in proximity to the detector can generate a large number of registrations in one night. Variability occurs in the likelihood of detection between species. For example, Leisler's Bats emit a loud low frequency call which travels further and is more easily detected than the quiet higher frequency calls of Brown Long-eared Bats.

Overall a low level of bat activity was recorded, and species diversity was low to moderate. All species recorded were common and widespread in an Irish context. A total of 38 individual registrations of bats were recorded during the course of the bat activity surveys, the locations of all registrations are shown in **Figure 3.4**. Three bat species were recorded, and these were as follows:

- Common Pipistrelle (23 registrations)
- Soprano Pipistrelle (10 registrations)
- Leisler's Bat (5 registrations).

The Annex II (EU Habitats Directive) listed Lesser Horseshoe Bat was not recorded and is not known to occur in Leinster.

Within the proposed site boundary bat activity was extremely low and bats recorded were commuting through the study area as opposed to foraging within. No evidence of any behaviour indicative of roosting was recorded. Within the study site the level of light pollution is generally high and commuting and foraging habitat for bats is sub-optimal or absent. Locally, but outside the study site, relatively higher levels of bat activity were recorded along the Ward River behind Swords Caste, and its adjoining riparian area.


0
25
50 m
Figure 3.4
Combined Results of Dawn and Dusk Bat Activity Surveys
Project:
Swords Cultural Quarter
Prepared for:
Fingal County Council.
Tom O'Donnell CEnv MCIEEM
D: 11/04/2022
Aerial potography - © Bluesky Geospatial Ltd.
O'DONNELL ENVIRONMENTAL
Legend
Site Boundary
GPS Track
Bat Registrations
Leisler's Bat
Common Pipistrelle
Soprano Pipistrelle
Watercourses [EPA]

3.4 SUMMARY OF RESULTS

No evidence of bats roosting, current or historic, was recorded during daytime visual inspections carried out both in summer and winter for the current report. A previous record exists for the use of the 'Knight and Squires Chamber' by a hibernating Brown Long-eared Bat in 2015.

The potential importance of buildings within the study area to bats is limited by the unavailability of proximal foraging and commuting habitat and the high level of anthropogenic disturbance (light in particular but also noise) which occurs in this location.

Overall, a low level of bat activity was recorded in the study area, and species diversity was low to moderate. Three bat species have been recorded foraging and commuting in the environs of the proposed Swords Cultural Quarter site, Swords, Co. Dublin.

The study area is considered to be of '**Low Value (Local Importance)**' for bats.

4 Potential Impacts

Potential impacts on bats as a result of the implementation of the proposed Swords Cultural Quarter are discussed below. Construction works can often present ecological issues which do not occur during the operational phase of a development, potential impacts during both the construction and operational phase are discussed.

4.1 LOSS OF POTENTIAL ROOSTING SITES

Optimal roosting locations are generally absent in the study area, and no roosts were identified during the current survey. 'Low' and 'Moderate' suitability potential roosting opportunities existing in man-made structures and trees within the study area.

A record existing for bat roosting with the 'Knights and Squires Chamber' (Keeley, 2015; see **Appendix C**).

Demolition of man-made structures including St Michaels House, buildings at 20 North Street, a building at 17/17a North Street will be required to facilitate the proposal, and some limited tree felling will occur. This report identifies and describes trees with 'low' and 'negligible' potential to support roosting bats. It is possible that some of these features will be used at least occasionally by bats and their value to bats may increase over time. Their removal represents a loss of potential roosting opportunities to bats.

Roosts in trees are vulnerable to use of heavy machinery in the root zones which can cause accidental damage. This may result in increased tree morbidity and mortality if care is not taken to protect trees which are being retained during construction works. Equally, the use of machinery in proximity to trees can result in accidental damage to the trunk and branches of trees.

4.2 DISTURBANCE DUE TO ILLUMINATION

Inappropriate or excessive illumination of treelines or hedgerows at night can cause disturbance to roosting (e.g. Downs *et al.* (2003) and Boldogh *et al.* (2007)), commuting and foraging bats.

4.3 DISTURBANCE DUE TO NOISE AND VIBRATION

Construction can result in noise, vibration and air emissions through the presence of people and, the use of heavy machinery for example.

Of particular relevance to bats is the use of generators at night which create noise and vibration and are often left running at night.

4.4 POTENTIAL IMPACT SIGNIFICANCE

In the absence of mitigation measures, the above potential impacts would be expected to result in a permanent, 'slight' negative impact on bat ecology at a local scale.

5 Mitigation Measures

Mitigation measures are outlined below where potential impacts on bat conservation have been identified. These mitigation measures will be delivered as part of the proposed scheme.

5.1 LOSS OF ROOSTING SITES

As a record exists for bat roosting with the 'Knights and Squires Chamber' (Keeley, 2015; see **Appendix C**), a derogation license will be sought from NPWS in relation to any works potentially affecting this roost.

Removal of manmade structures and trees identified as having 'low' or 'moderate' suitability for roosting bats will take place when bats are active and within the months of May to October inclusive. For both manmade structures and trees identified as being a confirmed roost or having 'low' or 'moderate' suitability for roosting bats, these features will be surveyed by a bat licensed Ecologist in advance of works to confirm that no bats are present and any guidance from the Ecologist will be followed. A bat licensed Ecologist will be present to supervise removal/felling works. In the event that bat(s) are found to be present during works, works will be stopped and may only proceed with a roost derogation license issued by NPWS.

Arbocultural advice will be sought regarding the protection of trees which are to be retained. At a minimum, appropriate root protection zones will be established prior to commencement of works using a robust barrier to prevent access by machinery during the construction phase.

The installation of bat boxes is considered to be sufficient mitigation against possible negative effects caused by the proposed works. Six 'Standard Bat Boesx' from *Bark Boxes* will be used. Six 'Standard Bat Boxes' will be installed on the trees adjacent to the Ward River that runs through the park adjacent Swords Castle. This is a suitable location for bat boxes due to the proximity of food sources (flying insects near the river) and the low level of light pollution here. The above-detailed boxes are camouflaged to blend in with the bark of trees and will help protect them from vandalism due to their discreet nature. The boxes will be installed to avoid a north facing aspect on the trees at a minimum of 4 meters above ground level in areas difficult to access by unaided climbing.

No artificial lighting will be allowed to illuminate the bat boxes in order to prevent disturbance to any roosting bats.

5.2 DISTURBANCE DUE TO ILLUMINATION

During construction if night-time lighting is required for health, safety or security reasons, lighting units will not be installed within 10m of existing treelines, watercourses or other sensitive ecological features outlined herein and lighting shall be directed away from such ecologically sensitive features. An Ecologist will be consulted if necessary on the placement of temporary lighting.

In order to reduce the ecological disturbance of light spillage during the operational phase, the light sources used for public lighting (including subsequent replacements) will be specified as follows:

- LEDs will be used, as these emit minimal ultra-violet light.
- White and blue component will be avoided by using luminaires with a wavelength of less than 2,700 kelvin.

- Wavelength of luminaires will peak higher than 550nm.

Lighting shall be directed away from such ecologically sensitive features such as existing treelines, watercourses or other sensitive ecological features outlined herein.

6 Residual Impacts

Following the implementation of the avoidance and mitigation measures, outlined above, the potential for disturbance due to construction and operation of the proposed redevelopment is minimised. The potential for loss of a minor roost and further potential roosting features cannot be mitigated within the current scheme.

Disturbance to commuting and foraging bats as a result of the proposed works is expected to be minimal given the general absence of foraging and commuting habitat and high level of anthropogenic disturbance which currently occurs.

Overall, the proposed scheme is likely to result in a permanent, 'imperceptible', negative effect on bat ecology at a local scale.

7 References

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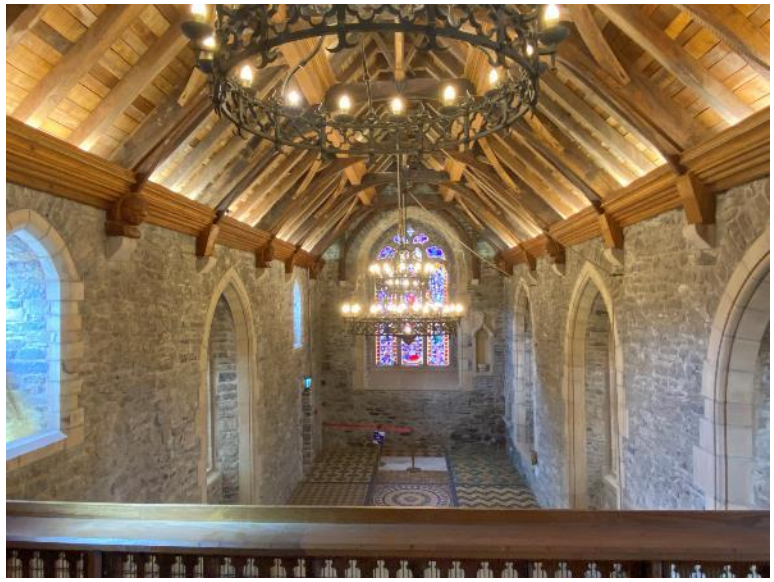
Appendix A – Photographic Record

A1. Swords Castle – Viewed from Bridge Street.

A2. A view of the interior grounds of Swords Castle. Picture was taken outside the Knights' and Squires' Chamber.

A3. The crevice in the Knights' and Squires' Chamber in which a Brown Long-eared Bat was recorded hibernating in 2015.



A4. The Chapel as viewed from the loft, opposite the altar.

A5. Chapel side room. High light exposure and intact pointing and stonework with no potential for bat roosts.

A6. Upper room in the Constable's Tower. Large windows and artificial lighting are clearly shown.

A7. Small crevices in the stonework in the Constable's Tower. Potential to support small numbers of individual bats.

A8. Endoscope survey of crevices in Knights and Squires Chamber.

A9. Front view of St. Michael's building taken from Seatown Road.

A10. Rear view of St. Michael's building showing roof damage.

A11. Old bird's nest within the cavity of the damaged roof of St. Michael's building.

A12. Three adjoining vacant commercial buildings on North Street.

A13. Interior of fast-food restaurant. Several rodent droppings were present but no evidence of bats.

A14. Interior of hair salon on North Street.

A15. Disused jackdaw nest in attic of vacant commercial building at 20 North Street.

A16. Interior of a vacant commercial building showing attic access point.

A17. Rear view of Swords Courthouse taken from Fingal County Council carpark.

A18. Attic access point in main court chamber that was inaccessible due to height.

A19. Some of the trees surveyed outside Fingal County Council.

A20. Tree exhibiting potential roosting features than could be exploited by bats for roosting opportunities.

Appendix B –
Proposed Site Layout

0 25.00m 50.0m

KEY:

Prevailing Winds

REV	DATE	DESCRIPTION	CKD
P01	07.07.22	Issued for Planning	ODT

USE FIGURED DIMENSIONS ONLY
DO NOT SCALE OFF DRAWINGS
CHECK ALL DIMENSIONS ON SITE

NOTES:

Key

- Site Boundary Line
- Building overhangs
- Building Visitor Entrance
- Proposed Street Lighting
- Proposed External Seating

Notes:

- Refer to Landscape + Public Realm Report by Dermot Foley Landscape Architects for proposed landscape design
- Refer to Landscape + Public Realm Report by Dermot Foley Landscape Architects, Ecological Survey Report by Eco Eireann and Energy & Sustainability Report by Ken Fordham for further information regarding proposed external lighting.
- 108 total visitor cycle spaces - 90 visitor cycle spaces to be provided in public realm outside of SCC Building and 18 visitor cycle spaces to be provided along Main Street. 20 total staff cycle spaces
- Refer to Roads Layout Report by MHL for proposed road layout
- Refer to Engineering Report by Horganlynch Consulting Engineers for further information regarding site drainage

O'Donnell+Tuomey
20A Camden Row,
Dublin 8,
Ireland
telephone +353 1 475 2500
email info@odonnell-tuomey.ie

PROJECT:
A176
Swords Cultural Quarter

PROJECT STATUS:
Planning

SCALE:
1 : 500 @A1

ISSUE DATE:
07/07/22

DRAWN BY:
ODT

DRAWING TITLE:
Proposed Site Layout Plan

DRAWING NO:
SCQ-ZZ-L00-DR-ODT-AR-0010

PLANNING

STATUS
S4

REVISION
P01

Appendix C – Previous Bat Survey Report

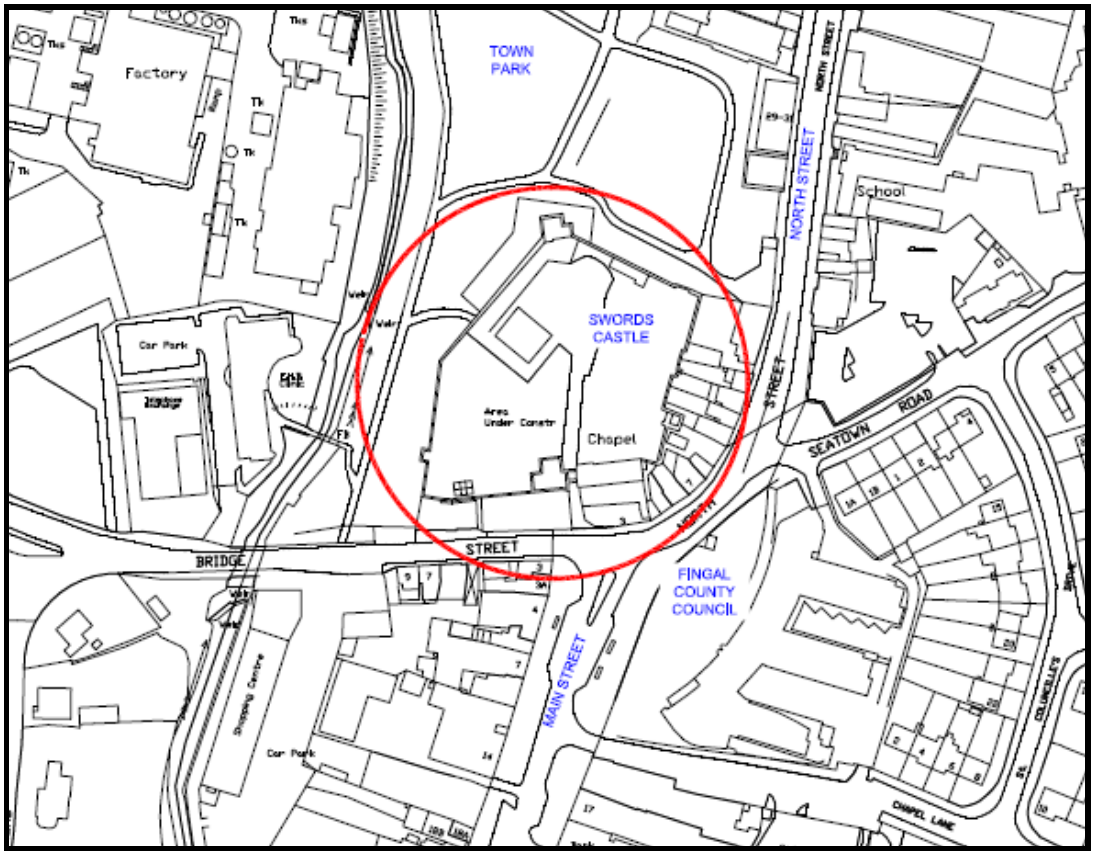
Assessment of Sword's Castle for the presence of bats

Prior to a programme of repairs and restoration

Brian Keeley B.Sc. (Hons) MCIEEM

Ecologist specialising in bats

July 2015



Location of Swords Castle – opposite Fingal County Council offices

Introduction

Swords Castle is at the junction of Main Street, Bridge Street and North Street of Swords in Fingal, County Dublin and this would create the impression that it is surrounded by traffic and concrete.

However, on one side it meets the Town Park and the Ward River. This creates some suitable feeding sites for bats. Previous examinations by the author have revealed several bat species within Swords including common and soprano pipistrelles, Leisler's bat, Daubenton's bat and brown long-eared bat. The latter species has been discovered to roost in the Church of Ireland on Church Road at the end of Bridge Street.

Three of the buildings within the Swords Castle complex are in a semi-ruinous state and these are of particular, immediate interest to Fingal County Council due to the emergency consolidation works already started (the Gate House) and due for extension (Gate House, East Wall).

Fingal County Council commissioned the author to undertake a Bat Survey of Swords Castle, in respect of their responsibilities under the Wildlife Acts and the Habitats Directive; and as an aid to the conservation and development of the public interest in this site. The survey required a winter evaluation followed by a summer assessment to determine whether bats are present at Swords Castle, if so, whether the restoration poses a risk to bats and measures to ensure that bats are unharmed and that their conservation status in Fingal is unaffected by the work.

Winter Bat survey

Swords Castle was examined on 19th March 2015 for any evidence of hibernating or active bats. The site was first visited with architect Mr Brian O'Connor B.Arch.Sc MRIAI, Executive Architect of Fingal County Council to become familiar with the aim of the restoration and the location of the relevant sections (intended for restoration).The survey commenced at the Knight's and Squire's Chamber and from here continued to the Gate house (Plate 1), the Archbishop's Apartments (Plate 2), the Chapel, the Constable's Tower and finally the western and south-western section.

After a thorough visual examination of all accessible areas in daylight, a night time bat detector assessment was undertaken availing of a Songmeter2 BAT+ monitor recording all signals from the upper sonic to ultrasonic range. This was recorded to a SD card for analysis with Kaleidoscope Pro software for bat signals. A handheld Pettersson D240X was used to walk through the Castle grounds and around the perimeter of the Castle along North Street.

Summer Bat survey

The Castle was examined on July 6th 2015 and included a daytime visual assessment followed by a dusk and dawn survey. Temperature at dusk was high and cloud cover was 50% with a very light breeze. The area within which a bat was noted in summer was re-checked prior to dusk and any suitable cavities were checked for evidence of droppings, staining or actual bats.

Surveying commenced at 9.25 pm and involved an observation of the archway at the entrance before beginning walking clockwise at 9.55 pm towards the western wall. The site was repeatedly walked to determine the species of bat present and possible areas from which bats may have emerged or observations of actual emergence.

Remote monitoring throughout the
There was an increase in the breeze by 10.36 pm briefly becoming windy at 10.39 pm. By 10.55 pm the temperature was still high with a subsequent drop of only 2°C by 4.27 am.

Plate 1: Main investigation area and location of roosting bat

Plate 2: Archbishop's Apartments

Weather conditions

The daytime weather conditions were very mild with strong sun but with a cross-wind in some parts of the Castle grounds. This daytime cloudlessness facilitated a rapid drop in temperature towards sunset and onwards (see Met Éireann data below).

SWORDS WEATHER DATA (DUBLIN AIRPORT)						
Date	Rainfall (mm)	Max Temp (°C)	Min Temp (°C)	Grass Min Temp (°C)	Mean Wind Speed (knots)	Sunshine (hours)
19/3/2015	0	11.4	-3	-7	2.7	6.8

Sunset was at 18:36 hours in 19th March 2015. Bat activity would be anticipated from potentially 10 minutes prior to sunset for Leisler's bat and 15 minutes after sunset for pipistrelles.

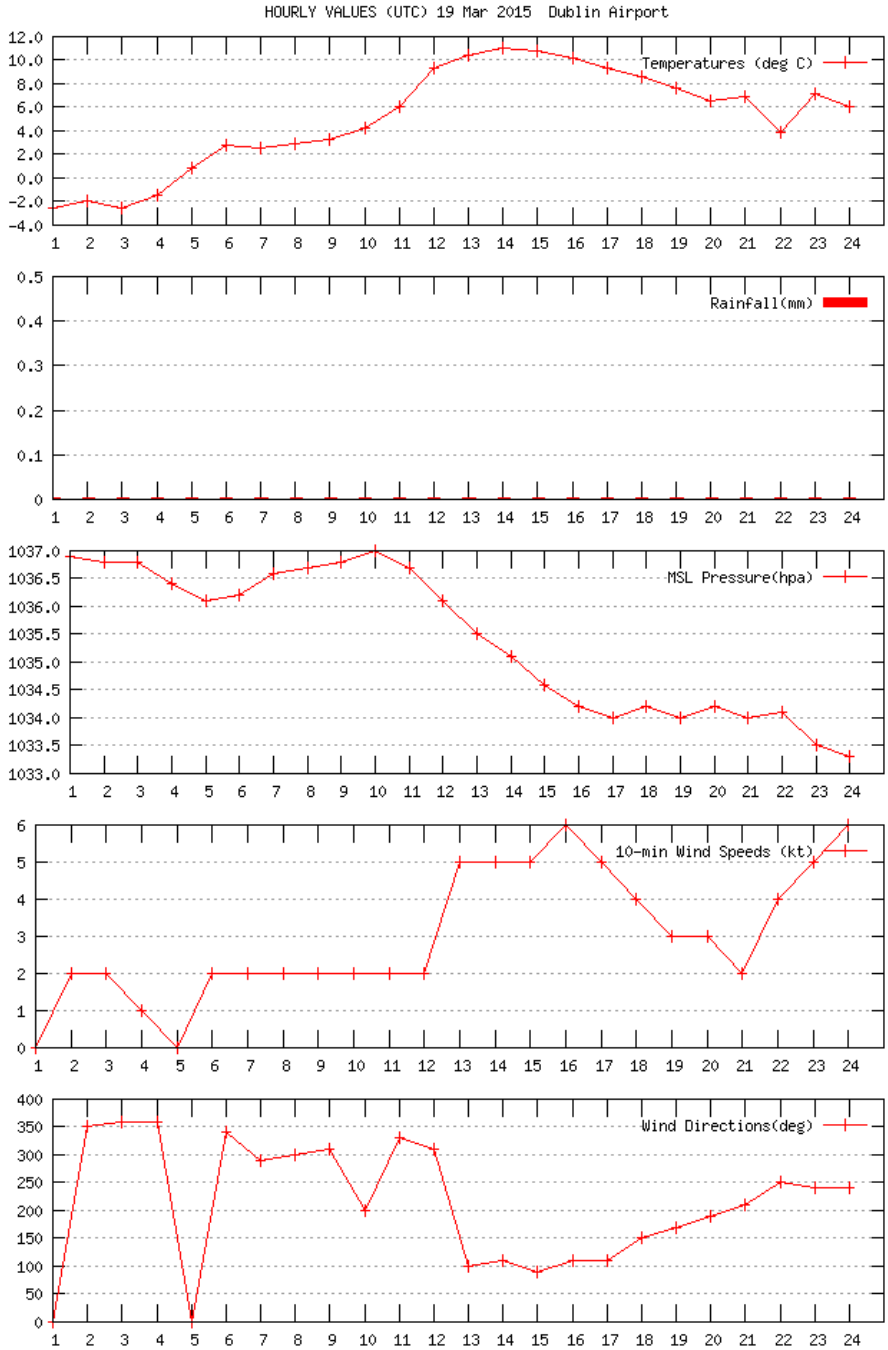


Figure 1: Weather conditions as recorded by Met Éireann

Findings of Winter Bat Survey

Bats Present in Swords Castle March 2015	Yes (see Figure 2)
Species of bat	Brown long-eared bat (*Plecotus auritus)* (Plate 3)
Number of bats seen	1
Were bats active	No
Roost type	Hibernaculum
Location	Knights' and Squires' Chamber
Grid Reference	O1824846941
Roost position	Crevice in ceiling approx. 2.5 metres above ground height

There was no bat activity on the night of survey with temperatures dropping to -3°C and a grass temperature of -7°C. The temperature at sunset was 8°C. This is reaching towards the lower range of temperatures for sustained bat activity, while some activity may occur at much lower temperatures (approaching freezing).

The one bat noted was hibernating or was in sustained torpor within a crevice formed in the ceiling of the room past what is termed the "ESB room" within the Knights' and Squires' Chamber. The bat was 5 to 10 cm deep into a crack of no less than 1 metre in length.

The bat did not become active despite the disturbance of the investigation and repeat examinations between 1.00 pm and 6.30 pm.

Observations of bats circling around this building made by Fingal County Council ecologist Deborah Tiernan were reported by Brian O'Connor at the time of survey and relate back to summer observations from the previous year or earlier. Bats were noted at the Knights' and Squires' Chamber. These may have been feeding bats but may also have been bats returning to the roost (the latter was the suggested option by the observer).

There was no other evidence of roosting bats. March is a period when hibernation is coming to an end but bats may not have entered their summer roost. The absence of any activity on March 19th makes it difficult to determine if bats are roosting in other parts of the proposed restoration area.

Bat droppings within the Constable's Tower (Plates 4 and 5) indicate that bats fly around within this building and given the presence of some stonework cavities and of suitable timbers at ceiling level, it is probable that bats roost here. The droppings suggest a species of pipistrelle within the Constable's Tower rather than brown long-eared bat.

Findings of Summer Bat Survey

There were no bats within the ESB room. Bat activity was late on site with the first bat, a common pipistrelle at 10.34 pm feeding near to the apple trees within the site. This bat was noted feeding along the wall to the chapel and back along the eastern wall and common pipistrelle activity was encountered until 10.41 pm after which a brief signal was noted at the northern tower. No further bat activity was encountered until prior to dawn when a Leisler's bat was heard flying over the gate arch at 4.22 am.

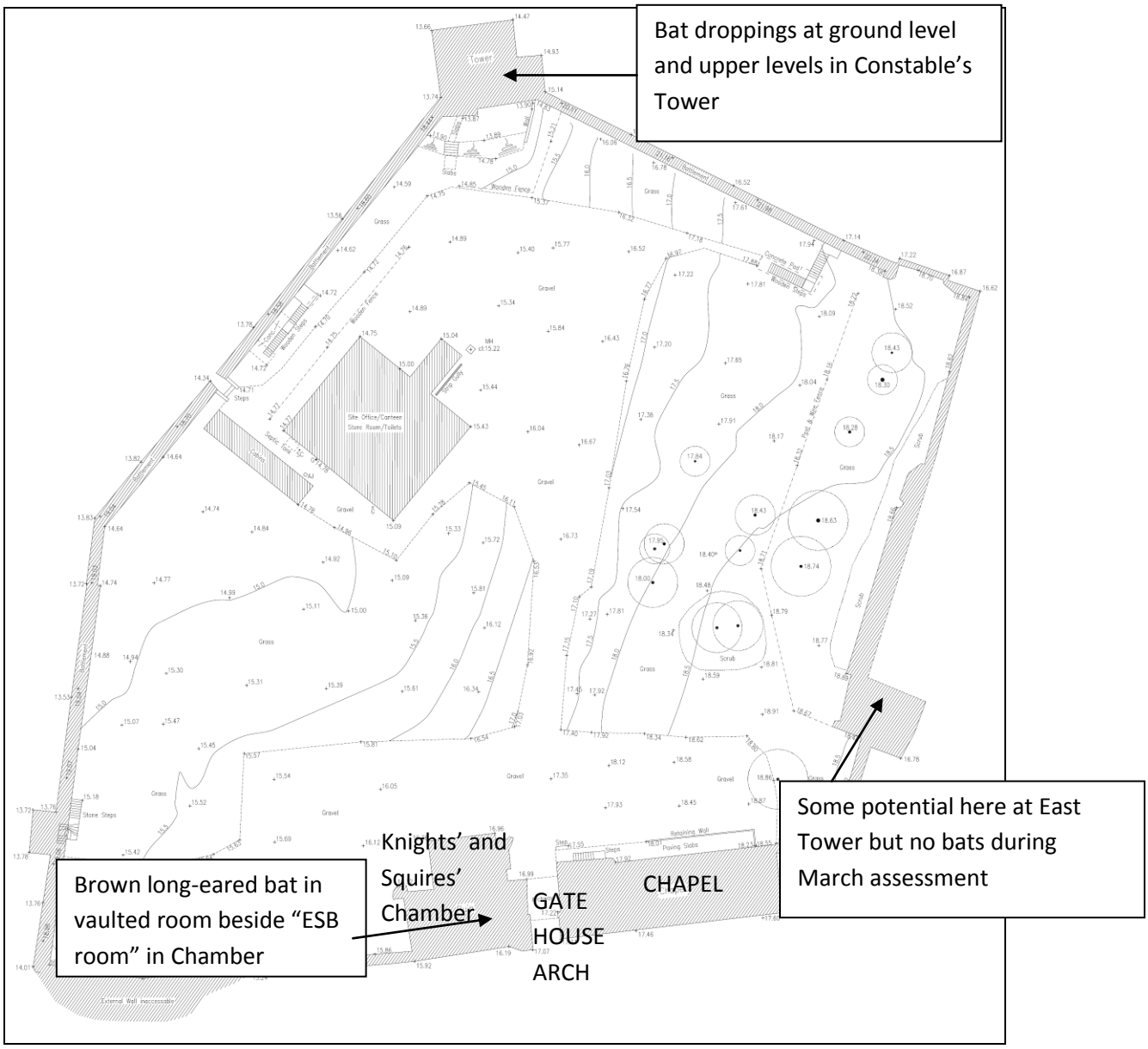


Figure 2: Bat survey areas and evidence of bats

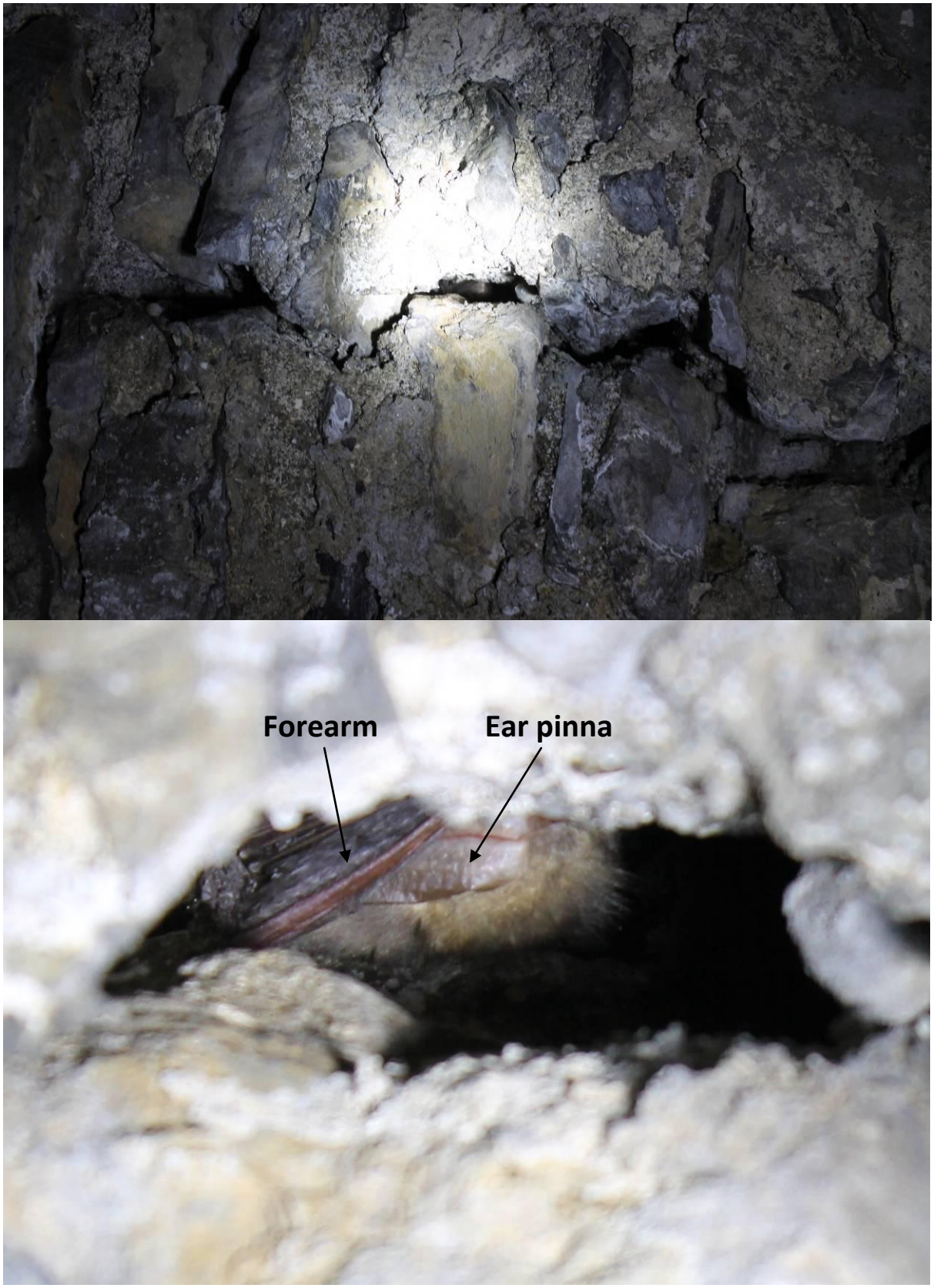


Plate 3: Roost crevice and bat roosting within
This is a brown long-eared bat at rest. The ear pinna is tucked away behind the forearm

Plate 4: Bat droppings scattered around the downstairs store room.

Plate 5: Bat droppings scattered around the upstairs room.

Recommendations

The building is now identified as a bat roost and any disturbance that risks death or injury to the bat or bats must be **avoided.** Where it is necessary to carry out activities that may place bats at risk, these should be planned in order to reduce risk substantially or remove it entirely.

This can be achieved by undertaking a bat assessment in advance of repair, identifying the likely roost site of bats based on a bat detector assessment and avoidance of the immediate roost site to a safe distance proposed by a bat specialist. When it becomes essential to repair or restore the roost site this may require exclusion of the bat(s) under derogation from the National Parks and Wildlife Service if the bat is still present.

Retention of the roost or its replacement is required to avoid contravention of the Wildlife Act (2000). There is no immediate proposal to repair the stonework inside the Knights' and Squires' Chamber. Whenever this is proposed, an assessment of the stonework here is required.

There will be a second assessment of the Swords Castle site during the summer of 2015 for the presence of breeding and roosting bats.

Provision of bat roost sites within the repaired Castle walls would be easily achieved without any risk of collapse or compromise to the aesthetics or historical accuracy of the restoration.

This may be achieved by a number of methods.

The first means of providing roost cavities involves the creation of a mould of existing crevices prior to re-pointing, pressure grouting or gunniting and the removal of the plugging material once the repairs are complete. This provides similar sized crevices (more or less identical to existing crevices) without a compromise to the safety of the wall of the Castle.

This can be achieved by packing the crevice with a material that can be removed easily (or with reasonable effort). *It is important that suitably wide cavities are created to allow bat access. Narrow access gaps and narrow cavities are unsuitable and are not mitigating roost loss by their inclusion.*

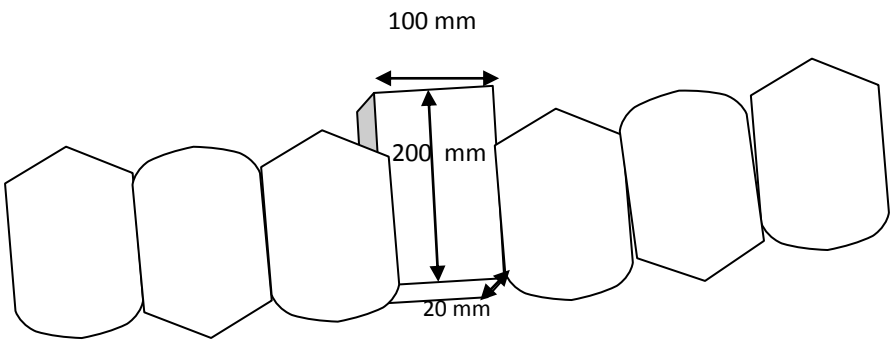


Figure 3: Creating a cavity suitable for bats

A small number of crevices or cavities with a dimension no less than 100 millimetres in length by 20 millimetres in width and no less than 200 millimetres in depth should be retained or existing gaps should be reduced to these dimensions (see Figure 3 above). This may be achieved with cement or a narrow stone cladding and would be most successful at arches, windows, doorways or if it is intended to place them it within a solid wall, a letter box slit to the base of the cavity would suffice.

In vaulted rooms or archways, the following larger cavity may be possible (see Figure 4).

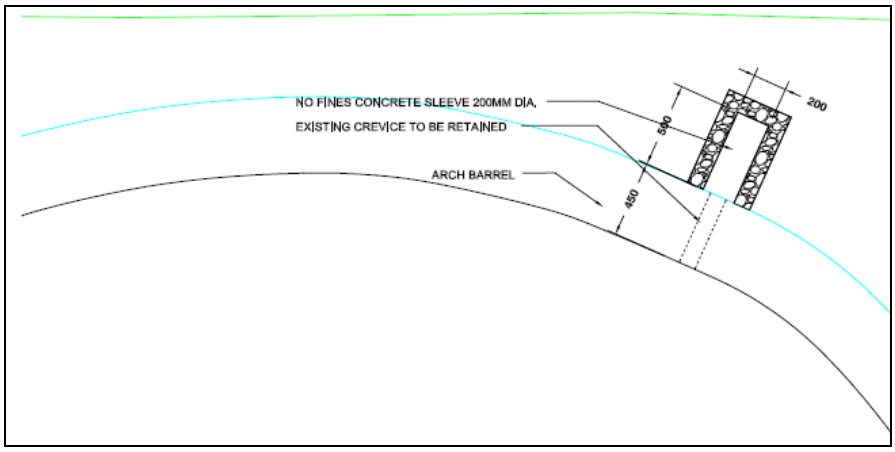


Figure 4: Creating a supported cavity within the vaulted roof within the Knights' and Squires' Chamber (or other sites including the Archbishop's Apartments)

All measures should be no less than 2.5 metres above ground level.

The second means of creating bat access is to use bat boxes. These may be incorporated into or unto the Castle wall to allow access to bats on a smoothened or crevice- / cavity- free wall. Schwegler bat tubes are one option for this (the 1FR bridge box). This box would provide ample roosting space for a colony or population of bats. It may be surrounded by stone cladding, narrow original stonework from the Castle or other means to hide the material used in construction. A second option is the 1GS Schwegler Brick Roost. This can be attached to a ceiling, wall or arch and will provide hibernation conditions for brown long-eared bats as well as suitable roosts for Daubenton's and Natterer's bats in summer.

Schwegler bat boxes suitable for use at Swords Castle

a 1FR Bat Tube (left)

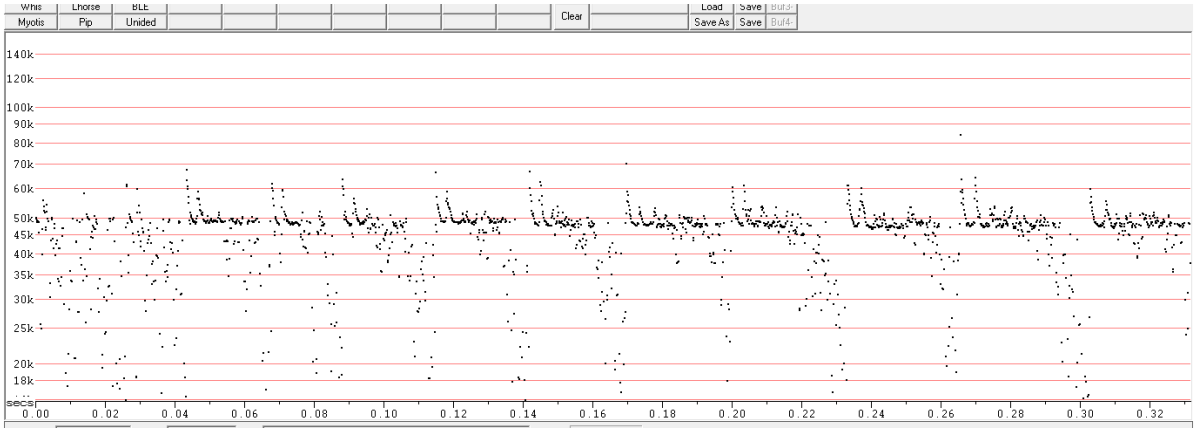
a 1GS Brick Roost

Summer survey

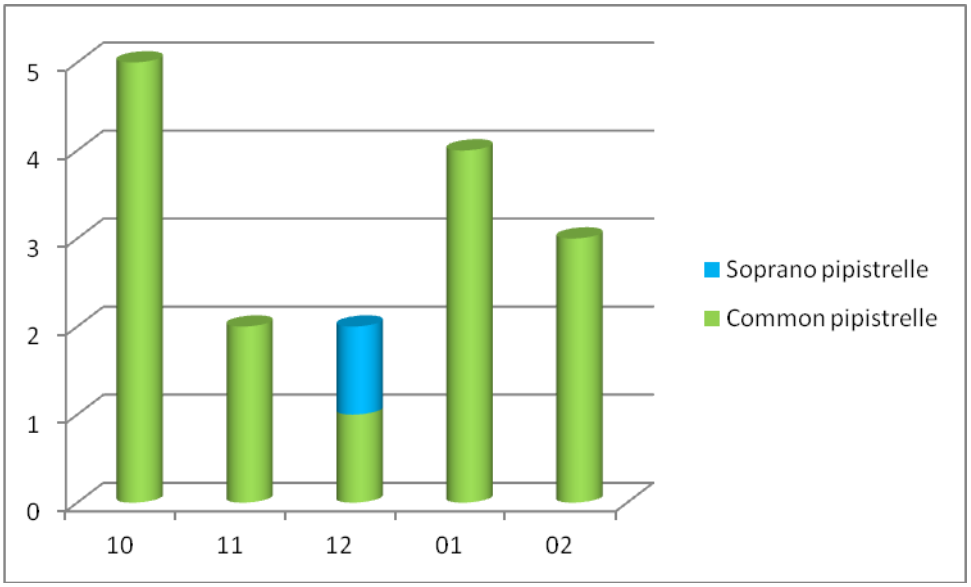
There were no bats roosting within Swords Castle in summer 2015 and there are no further measures required than proposed in March 2015.

Anabat SD2 at stairs to BLE roost site

Bat activity between 21.30 and 05.00: 1 Common pipistrelle pass at 22.32 hours



Bat sonogram from SD1 at stairs to vaulted room formerly occupied by brown long-eared bat



Bat activity recorded by SM2 in Swords Castle yard

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