

The French Church, Greyfriars Street, Waterford

Ecological Survey



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FINAL REPORT



Faith Wilson

ECOLOGICAL CONSULTANT

*Faith Wilson Ecological Consultant CEnv BSc (Hons) MCIEEM
Kestrel Ridge, Tigroney West, Avoca, Co. Wicklow*

French Church, Greyfriars Street, Waterford

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1. INTRODUCTION

1.1 Background

This report has been prepared by Faith Wilson (an independent ecologist and licensed bat specialist) who was commissioned by the Office of Public Works to undertake an ecological survey (including bats and breeding birds) of French Church at Greyfriars Street, Waterford, Co. Waterford as shown on **Figure 1** below.

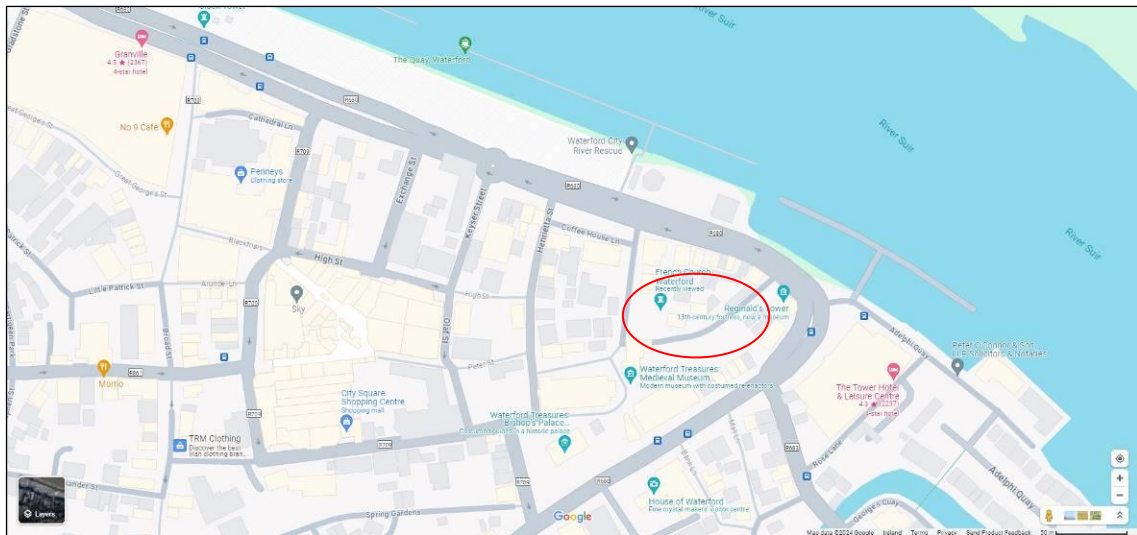


Figure 1. The French Church, Waterford (circled in red).

The scope of works included:

- A botanical and habitat survey,
- An invasive species survey,
- A mammal survey,
- A breeding bird survey, and
- A bat survey.

This study aimed to:

- Describe the habitats present within the site.
- Determine if any botanical species of note are present within the site.
- Identify if are any invasive or non-native species that should be controlled/removed are present.
- Identify of the church is used by any birds (such as swift) for breeding purposes.
- Identify if bats are using the site and what species were present.
- Examine the church tower and walls for roosting potential for bats.
- Examine any trees surrounding the site for roosting potential for bats.
- Identify any feeding areas and if bat commuting routes are present.

- Assess the potential impacts on bats by the proposed conservation works.
- Recommend any mitigation measures necessary to ensure the safeguarding of bats during the works.
- Determine if a bat derogation licence is required for the project.
- Identify measures to conserve the natural history and ecology of the site.

The surveys were undertaken by Faith Wilson BSc CEnv MCIEEM. Faith is a highly experienced ecologist specialising in flora and faunal surveys (including bats), ecological impact assessment, and impact mitigation. Faith is an active member of Bat Conservation Ireland (BCI) and previously served on the board of BCI. Faith attended and helped to deliver the BCI Bat Detector and Bat Handling Workshops which are the standard training for the carrying out of bat surveys in Ireland and also authored the guidance for surveying bats in wind farms in Ireland.

This report details the findings of an ecological survey of the property and recommends mitigation measures to ensure that species of conservation interest such as bats and breeding birds are not negatively impacted during the building conservation works.

1.2 Relevant Legislation

1.2.1 Nature Conservation Designations

International Conservation Designations

Special Areas of Conservation (SACs) are habitats of international significance that have been identified by NPWS and submitted for designation to the EU. SAC is a statutory designation, which has a legal basis under the EU Habitats Directive (92/43/EEC) as transposed into Irish law through the European Communities (Natural Habitats) Regulations, 1997, which were amended in 1998, 2005 and 2011. The European Communities (Birds and Natural Habitats) Regulations 2011 consolidate the European Communities (Natural Habitats) Regulations 1997 to 2005 and the European Communities (Birds and Natural Habitats) (Control of Recreational Activities) Regulations 2010, as well as addressing transposition failures identified in the Court of Justice of the European Union (CJEU) judgements.

A Special Protection Area (SPA) is a statutory designation, which has a legal basis under the EU Birds Directive (79/409/EEC). The primary objective of SPAs is to maintain or enhance the favourable conservation status of the birds for which the SPAs have been designated.

National Conservation Designations

Proposed NHAs are habitats or sites of interest to wildlife that have been identified by NPWS. These sites become NHAs once they have been formally advertised and land owners have been notified of their designation. NHAs are protected under the Wildlife (Amendment) Act, 2000, from the date they are formally proposed. NHA is a statutory designation according to the Wildlife (Amended) Act, 2000 and requires consultation with NPWS if any development impacts on a pNHA.

1.2.2 Bats

Eleven species of bats occur in Ireland and all are protected under both national and international law.

Wildlife Act 1976

In the Republic, under Schedule 5 of the Wildlife Act 1976, all bats and their roosts are protected by law. It is unlawful to disturb either without the appropriate licence. The Act was amended in 2000.

Bern and Bonn Convention

Ireland has also ratified two international conventions, which afford protection to bats amongst other fauna. These are known as the 'Bern' and 'Bonn' Conventions. The Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1982), exists to conserve all species and their habitats, including bats. The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention 1979, enacted 1983) was instigated to protect migrant species across all European boundaries, which covers certain species of bat.

EU Habitats Directive

All bat species are given strict protection under Annex IV of the EU Habitats Directive, whilst the lesser horseshoe bat (*Rhinolophus hipposideros*) and greater horseshoe bat (*Rhinolophus ferrumequinum*) are given further protection under Annex II of the EU Habitats Directive. Both are listed as a species of community interest that is in need of strict protection and for which E.U. nations must designate Special Areas of Conservation (SACs). The latter is only known from a single site and no breeding populations have been recorded to date. The former are a species of the western seaboard of Ireland and have not yet been recorded on the east coast.

The principal pressures on Irish bat species have been identified as follows:

- urbanized areas (e.g. light pollution);
- bridge/viaduct repairs;
- pesticides usage;
- removal of hedges, scrub, forestry;
- water pollution;
- other pollution and human impacts (e.g. renovation of dwellings with roosts);
- infillings of ditches, dykes, ponds, pools and marshes;
- management of aquatic and bank vegetation for drainage purposes;
- abandonment of pastoral systems;
- speleology and vandalism;
- communication routes: roads; and
- inappropriate forestry management.

1.2.3 Invasive Species

The legal framework for the control or eradication of non-native invasive species in the Republic of Ireland is the Birds and Habitats Regulations (2011), which include legislation on invasive and non-native species in Sections 49 and 50.

Since then, the EU Regulation on Invasive Alien Species (EU Regulation 1143/2014) also came into force on the 3rd August 2016.

The plant and animal species to which the Birds and Habitats Regulations (2011) apply are presented in Schedule Three. Part 1 details the plants species, while Part 3 outlines those animal or plant vector materials and are presented below.

Third Schedule: Part 1 Plants

Non-native species subject to restrictions under Regulations 49 and 50.

First column	Second column	Third column
Common name	Scientific name	Geographical application
American skunk-cabbage	<i>Lysichiton americanus</i>	Throughout the State
A red alga	<i>Grateloupia doryphora</i>	Throughout the State
Brazilian giant-rhubarb	<i>Gunnera manicata</i>	Throughout the State
Broad-leaved rush	<i>Juncus planifolius</i>	Throughout the State
Cape pondweed	<i>Aponogeton distachyos</i>	Throughout the State
Cord-grasses	<i>Spartina</i> (all species and hybrids)	Throughout the State
Curly waterweed	<i>Lagarosiphon major</i>	Throughout the State
Dwarf eel-grass	<i>Zostera japonica</i>	Throughout the State
Fanwort	<i>Cabomba caroliniana</i>	Throughout the State
Floating pennywort	<i>Hydrocotyle ranunculoides</i>	Throughout the State
Fringed water-lily	<i>Nymphoides peltata</i>	Throughout the State
Giant hogweed	<i>Heracleum mantegazzianum</i>	Throughout the State
Giant knotweed	<i>Fallopia sachalinensis</i>	Throughout the State
Giant-rhubarb	<i>Gunnera tinctoria</i>	Throughout the State
Giant salvinia	<i>Salvinia molesta</i>	Throughout the State
Himalayan balsam	<i>Impatiens glandulifera</i>	Throughout the State
Himalayan knotweed	<i>Persicaria wallichii</i>	Throughout the State
Hottentot-fig	<i>Carpobrotus edulis</i>	Throughout the State
Japanese knotweed	<i>Fallopia japonica</i>	Throughout the State
Large-flowered waterweed	<i>Egeria densa</i>	Throughout the State
Mile-a-minute weed	<i>Persicaria perfoliata</i>	Throughout the State
New Zealand pigmyweed	<i>Crassula helmsii</i>	Throughout the State
Parrot's feather	<i>Myriophyllum aquaticum</i>	Throughout the State
Rhododendron	<i>Rhododendron ponticum</i>	Throughout the State
Salmonberry	<i>Rubus spectabilis</i>	Throughout the State
Sea-buckthorn	<i>Hippophae rhamnoides</i>	Throughout the State
Spanish bluebell	<i>Hyacinthoides hispanica</i>	Throughout the State
Three-cornered leek	<i>Allium triquetrum</i>	Throughout the State
Wakame	<i>Undaria pinnatifida</i>	Throughout the State
Water chestnut	<i>Trapa natans</i>	Throughout the State
Water fern	<i>Azolla filiculoides</i>	Throughout the State
Water lettuce	<i>Pistia stratiotes</i>	Throughout the State
Water-primrose	<i>Ludwigia</i> (all species)	Throughout the State
Waterweeds	<i>Elodea</i> (all species)	Throughout the State
Wireweed	<i>Sargassum muticum</i>	Throughout the State

EU Regulation 1143/2014 on Invasive Alien Species

On 14 July 2016 the European Commission published Commission Implementing Regulation 2016/1141 which set out an initial list of 37 species to which EU Invasive

Alien Species Regulation 1143/2014 will apply. The associated restrictions and obligations came into force on 3rd August 2016.

Plant species listed on the directive include:

- American skunk cabbage *Lysichiton americanus*
- Asiatic tearthumb *Persicaria perfoliata* (*Polygonum perfoliatum*)
- Curly waterweed *Lagarosiphon major*
- Eastern Baccharis *Baccharis halimifolia*
- Floating pennywort *Hydrocotyle ranunculoides*
- Floating primrose willow *Ludwigia peploides*
- Green cabomba *Cabomba caroliniana*
- Kudzu vine *Pueraria lobata*
- Parrot's feather *Myriophyllum aquaticum*
- Persian hogweed *Heracleum persicum*
- Sosnowski's hogweed *Heracleum sosnowskyi*
- Water hyacinth *Eichhornia crassipes*
- Water primrose *Ludwigia grandiflora*
- Whitetop weed *Parthenium hysterophorus*

Animal species listed on the directive include:

- Amur sleeper *Perccottus glenii*
- Asian hornet *Vespa velutina*
- Chinese mitten crab *Eriocheir sinensis*
- Coypu *Myocastor coypus*
- Fox squirrel *Sciurus niger*
- Grey squirrel *Sciurus carolinensis*
- Indian house crow *Corvus splendens*
- Marbled crayfish *Procambarus* spp.
- Muntjac deer *Muntiacus reevesii*
- North american bullfrog *Lithobates (Rana) catesbeianus*
- Pallas's squirrel *Callosciurus erythraeus*
- Raccoon *Procyon lotor*
- Red swamp crayfish *Procambarus clarkii*
- Red-eared terrapin/slider *Trachemys scripta elegans*
- Ruddy duck *Oxyura jamaicensis*
- Sacred ibis *Threskiornis aethiopicus*
- Siberian chipmunk *Tamias sibiricus*
- Signal crayfish *Pacifastacus leniusculus*
- Small Asian mongoose *Herpestes javanicus*
- South American coati *Nasua nasua*
- Spiny-cheek crayfish *Orconectes limosus*
- Topmouth gudgeon *Pseudorasbora parva*
- Virile crayfish *Orconectes virilis*

On 13 July 2017 the European Commission published Commission Implementing Regulation 2017/1263 which added a further 12 species to the current list of 37 species regulated under the EU Invasive Alien Species Regulation (1143/2014).

These are:

Plant species

- Alligator weed (*Alternanthera philoxeroides*)
- Milkweed (*Asclepias syriaca*)
- Nuttall's waterweed (*Elodea nuttallii*)
- Chilean rhubarb (*Gunnera tinctoria*)
- Giant hogweed (*Heracleum mantegazzianum*)
- Himalayan balsam (*Impatiens glandulifera*)
- Japanese stiltgrass (*Microstegium vimineum*)
- Broadleaf watermilfoil (*Myriophyllum heterophyllum*)
- Crimson fountaingrass (*Pennisetum setaceum*)

Animal species

- Egyptian goose (*Alopochen aegyptiacus*)
- Raccoon dog (*Nyctereutes procyonoides*)
- Muskrat (*Ondatra zibethicus*)

The associated restrictions and obligations came into force from 2 August 2017 for all these species apart from the Raccoon dog, which came into force on 2 February 2019.

Other Invasive Species

The main guidance document that has been prepared dealing with invasive species/noxious weeds on sites is the NRA 'Guidelines on The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads' which was published in 2010. This document details other non-native species of note.

A detailed survey for such species within the environs of the French Church was conducted in order to ensure that any proposed works do not result in the disturbance and spread of any invasive species.

1.2.4 Flora (Protection) Order Species

The Flora (Protection) Order 2022 sets out legal protection for specific Vascular Plants, Charophytes, Bryophytes (liverworts and mosses) and Lichens in Ireland.

It is illegal to cut, uproot or damage the listed species in any way, or to offer them for sale. This prohibition extends to the taking or sale of seed. In addition, it is illegal to alter, damage or interfere in any way with their habitats. This protection applies wherever the plants are found and is not confined to sites designated for nature conservation.

2. METHODOLOGY

2.1 Desk Study and Consultation

A desk study was carried out to collate any available information on the ecological environment of the French Church.

The National Parks and Wildlife Service (NPWS) of the Department of Housing, Local Government and Heritage (DHLGH) database of designated conservation areas and NPWS records of rare and protected plant species were checked with regard to the location of the French Church.

Information on protected species of fauna and flora listed for protection under Annex II of the EU Habitats Directive (92/43/EEC), Annex I of the Birds Directive (79/409/EEC) and the Wildlife (Amendment) Act (2000) was also sought from NPWS and published sources.

A data search was made for any biological records held by the National Biodiversity Data Centre from the vicinity of the monument.

2.2 Field Surveys

The French Church and its grounds were visited on the 26th June 2024 by Faith Wilson. At this time, the building was inspected, the receiving habitat was surveyed and a bat activity survey was completed.

2.2.1 Habitats and Flora

The French Church was surveyed on the 26th June 2024 to identify the habitats present, using the habitat survey and mapping techniques described by Smith *et al.* (2011) and described using the Heritage Council Habitat Classification (Fossitt, 2000). The habitats present were described to Fossitt Level 3 and any correspondence or potential correspondence to habitats listed under Annex I of the EU Habitats Directive were considered and assessed.

A particular focus of the surveys was to determine if any protected species of plant under the Flora (Protection) Order (2022) or listed in the Irish Vascular Plants Red Data Book are present within the environs of the French Church.

Any invasive species present in the environs of the French Church were also checked for. A particular focus of the surveys was for those invasive species listed in the Birds and Habitats Regulations 2011.

2.2.2 Mammals

A dedicated large mammal survey was carried out by Faith Wilson during the site visit using the techniques as prescribed in Ecological Survey Techniques for Protected Flora and Fauna (NRA, 2008).

This entailed searching for and identification of signs, tracks and droppings of various mammals (potential/likely species include fox, hedgehog, brown rat and house mouse along with non-native species such as grey squirrel) within the environs of the French Church.

2.2.3 *Breeding Birds*

The breeding bird survey was underway and any observations of nesting activity or potential nesting sites were made.

2.2.4 *Bats*

The bat survey consisted of several elements – a desktop review and consultation with Bat Conservation Ireland, an inspection of the buildings due for conservation works, an examination of trees in the vicinity of the church and a bat detector activity survey of the site, which was conducted on the 26th June 2024. A Song Meter Mini Bat 2 static detector was left recording in the loft of the tower between the 26th June and 3rd July 2024.

Building Inspection

The French Church was examined for signs of bat use on 26th June 2024. The survey consisted of an external inspection of the church walls, tower and associated grounds. The tower was entered and examined internally.

Bat usage of structures is usually detected by the following signs (though direct observations are also occasionally made):

- bat droppings (these will accumulate under an established roost or under access points);
- insect remains (under feeding perches);
- oil (from fur) and urine stains;
- scratch marks; and
- bat corpses.

Tree Survey

The nature and type of habitats present are also indicative of the species likely to be present. Trees near the entrance to the French Church were assessed for their potential use by bats using the following standard criteria, which were created by bat specialists from Bat Conservation Ireland for use in the assessments of tree roosts on large infrastructural projects and are summarised in NRA (2006):

- Presence or absence of bat droppings (these can be hard to find amongst leaf litter or may be washed away following periods of wet weather),
- Bat droppings may also be seen as a black streak beneath holes, cracks, branches, etc.,
- Presence or absence of smooth edges with dark marks at potential entrances to roosts,
- Presence or absence of urine stains at potential entrances to roosts,
- Presence of natural cracks and rot holes in the trunk or boughs of the tree,
- Hollow trees,
- Presence or absence of creepers such as ivy or honeysuckle on trees (ivy clad trees are often used by bat species such as pipistrelles as roosts),

- Presence or absence of loose bark such as that of sycamore, or flaky bark on coniferous species such as cedars, cypress and Scot's pine,
- Presence or absence of bracket fungi which may indicate a rotten or potentially hollow centre to the tree,
- Known bat roosts previously identified,
- Trees with storm or machinery damage or broken boughs,
- Clutter level - where the branches and trunk are easily accessible, this is considered a better tree for bat roosts,
- Adjoining habitat - if there are a variety of feeding opportunities for bats, this increases the potential of a tree as a bat roost,
- Adjoining potential roosts / known roosts. This raises the likelihood of a tree being of benefit as bats may move roosts if the roost becomes too hot or cold during roosting and a nearby alternative roost is highly desirable.

Bat Activity Survey

In accordance with best practice as described in the 'Guidelines for the Treatment of Bats During the Construction of National Road Schemes' (NRA 2006), Bat Surveys for Professional Ecologists: Good Practice Guidelines - 3rd edition (Collins, 2016) and 'Bat Mitigation Guidelines for Ireland' (Marnell, *et al.* 2022), a bat activity survey of the general environs of the site was conducted during the active bat season. This survey assisted in determining if any bat roosts are present in any of the structures, what bat species occur within the site and if bats are using the site for foraging or commuting purposes.

A bat detector survey was carried out at dusk on the 26th June 2024 using several types of bat detectors - these included a handheld Echometer Touch Pro 2 and a Bat Box Duet heterodyne detector. A Song Meter Mini Bat 2 static detector was left in the loft of the tower between the 26th June and 3rd July 2024. Bats were identified by their ultrasonic calls coupled with behavioural and flight observations and on computer by sound analysis of recorded echolocation and social calls with dedicated software (Wildlife Acoustic's Kaleidoscope Pro; version 5.6.0).

The emergence of bats from the buildings at dusk was monitored and a walkover survey of the site was conducted.

Bat activity is predominantly bi-modal, with bats taking advantage of increased insect numbers on the wing during the periods after dusk and before dawn, (there is usually a lull in activity in the middle of the night). While this holds true for 'hawking' species (bats that capture prey in the open air), 'gleaning' species such as Brown Long-eared Bats (*Plecotus auritus*), Natterer's Bats (*Myotis nattereri*) and Whiskered/Brandt's Bats (*Myotis mystacinus/brandtii*) remain active throughout the night, as prey is available on foliage for longer periods. The nature and type of habitats present are also indicative of the species likely to be present.

Bat activity is governed by the activity of their insect prey and insect abundance is in turn governed by weather conditions and climate. Insects, and therefore bats, are unlikely to be present at temperatures below 7°C or during periods of strong winds or heavy rainfall so surveying in such conditions is not possible. The field survey was undertaken within the active bat season and during good weather conditions.

3. RESULTS

3.1 General Description of the Site

The French Church, also known as Greyfriars Abbey, is a Franciscan friary built in c.1240 which is listed as a National Monument (WA009-005032). It is located on what was known as French Street but is now known as Greyfriars Street in Waterford City.

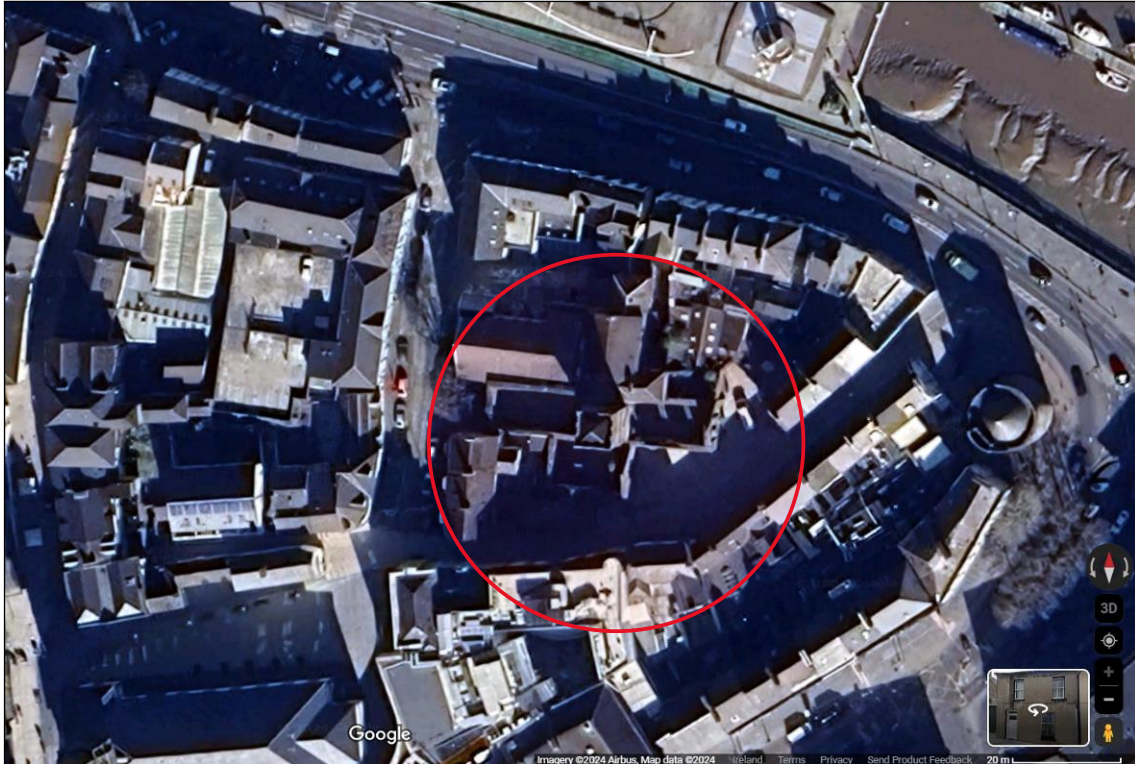


Figure 2. Satellite view of the French Church and surrounds (circled in red).

The church ruins comprise of the remaining perimeter walls of the nave, chancel and transept, above which is a 25m high tower added during the late 15th century as shown in **Figure 3**. The tower has three levels, all of which were inspected during the survey. A monument to the Waterford-born Franciscan priest Luke Wadding and a number of medieval grave slabs are located within the grounds of the church.

The site is currently accessible to the public by appointment.

Development of the surrounding area is also proposed as part of an urban regeneration project by Waterford City & County Council to provide redevelopment of vacant buildings for residential and retail units, a public plaza beside French Church and improved access links (**Figure 4**).

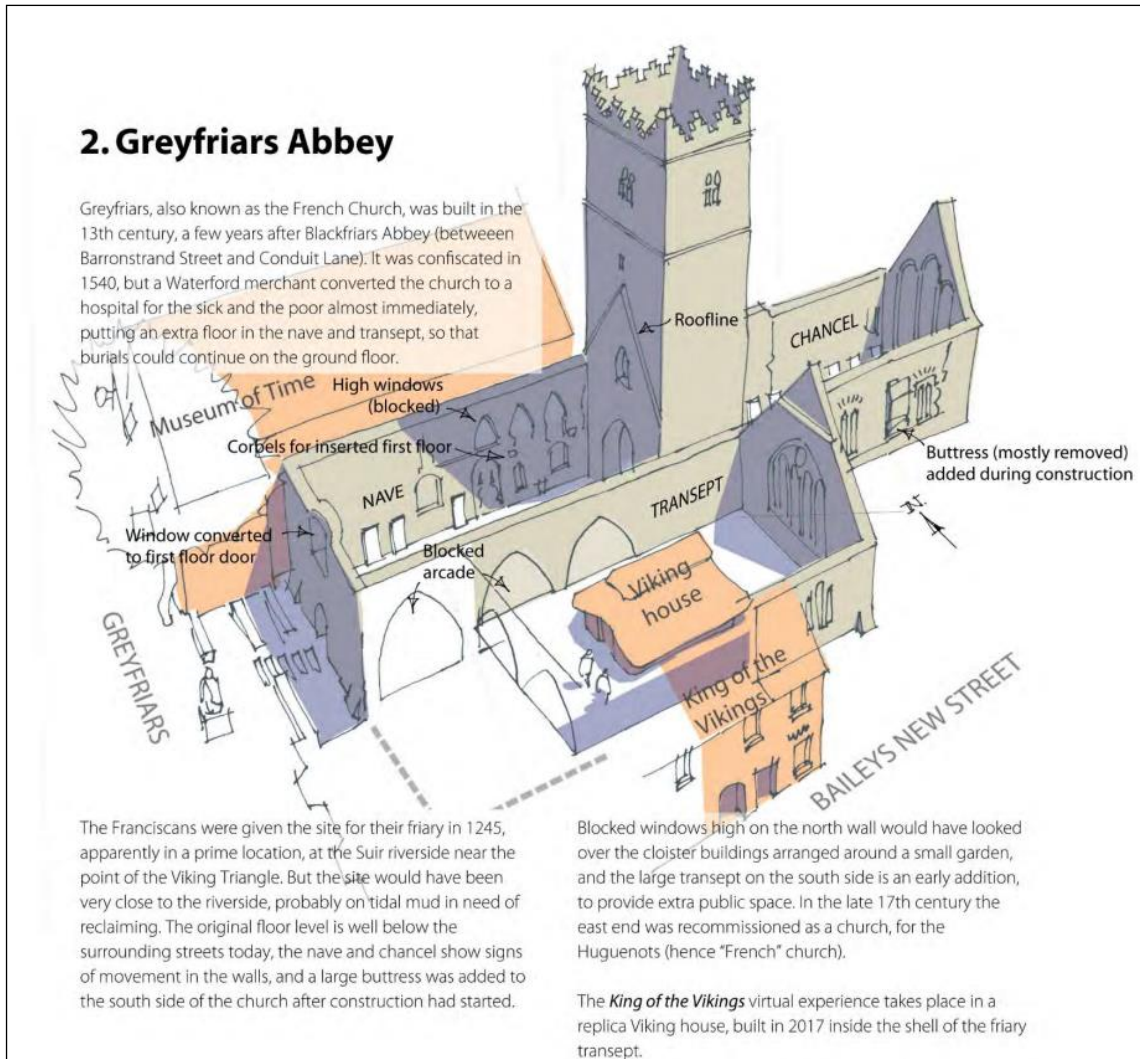


Figure 3. A visual of the layout of the French Church (Source: Irish Walled Towns Network).



Figure 4. Aerial View of Proposed Friary Precinct / Parade Quay from the South.

3.2 Receiving Environment

The church is surrounded by other buildings with no natural vegetation present in the wider landscape as can be seen on **Figure 5** and **Plate 1** below.



Figure 5. The urban nature of the lands surrounding the French Church in Waterford.

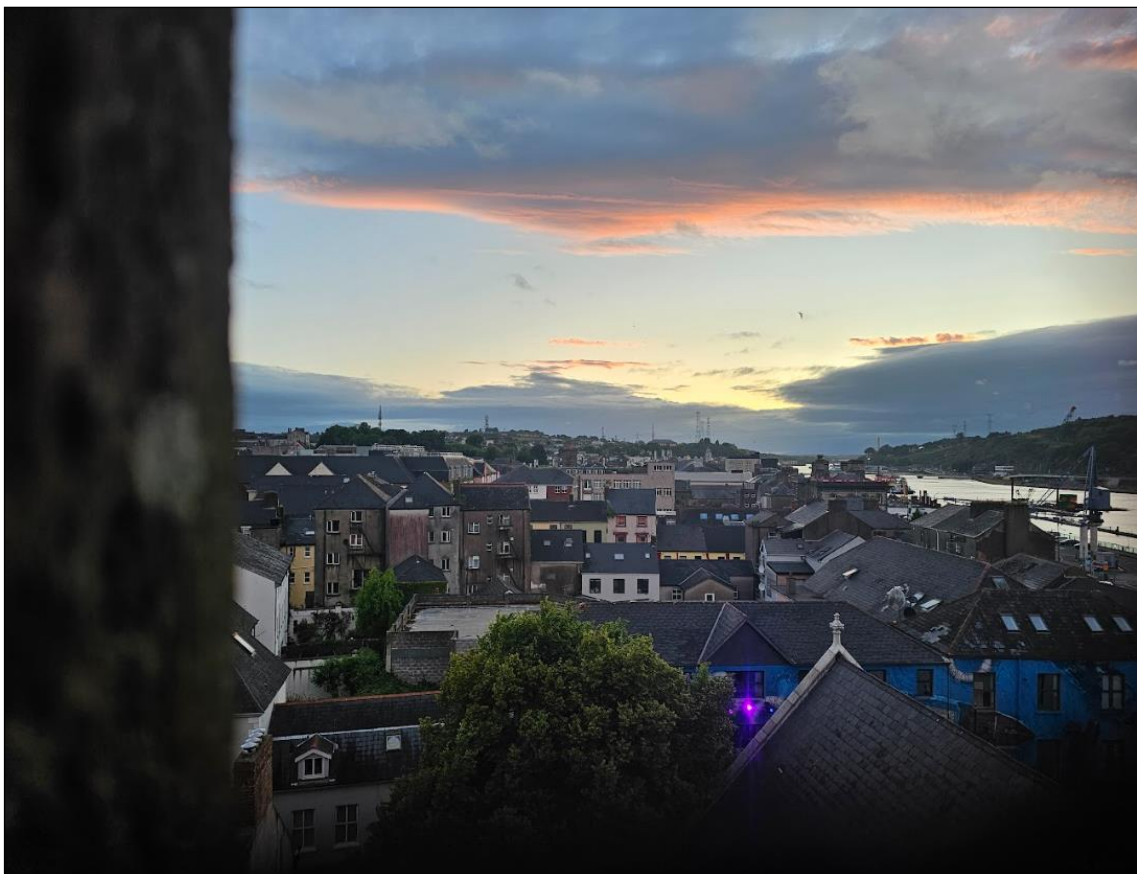


Plate 1. View of urban surroundings to the east from the tower.

A mature Lime tree (*Tilia cordata*) is located at the entrance to the church grounds (**Plate 2**). The River Suir is located to the north of the church (**Plate 3**).



Plate 2. The River Suir to north of the French Church.



Plate 3. Entrance to the French Church with mature Lime (*Tilia cordata*).

3.3 Desktop Research

3.3.1 Nature Conservation Designations

The French Church is not currently designated for the purposes of nature conservation. The closest designated site is the Lower River Suir SAC (Site Code: 002137). The boundaries of this site can be seen on **Figure 6** below.



Figure 6. The Lower River Suir SAC (Site Code: 002137) is located to the north of French Church.

The Lower River Suir SAC (Site Code: 002137) is designated for the following species and habitats of international conservation importance:

- Atlantic salt meadows (*Glauco-Puccinellietalia maritima*) [1330]
- Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitriche-Batrachion* vegetation [3260]
- Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]
- Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0]
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) [91E0]
- *Taxus baccata* woods of the British Isles [91J0]
- *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029]
- *Austropotamobius pallipes* (White-clawed Crayfish) [1092]
- *Petromyzon marinus* (Sea Lamprey) [1095]
- *Lampetra planeri* (Brook Lamprey) [1096]
- *Lampetra fluviatilis* (River Lamprey) [1099]
- *Alosa fallax fallax* (Twaite Shad) [1103]
- *Salmo salar* (Salmon) [1106]
- *Lutra lutra* (Otter) [1355]

None of these species or habitats are found or are likely to occur in the environs of the French Church.

3.3.2 Biological Records held by The National Biodiversity Data Centre

The National Biodiversity Data Centre (NBDC) provides information on biological records submitted throughout Ireland. For the purposes of biological recording records in the country are divided up into 10km squares and then further divided into 2km and 1km squares. The French Church lies in NBDC 2 km square S61B (Figure 7). There are 421 biological records for this 2km square, including records of plants, amphibians, birds, insects, mammals, and mosses.

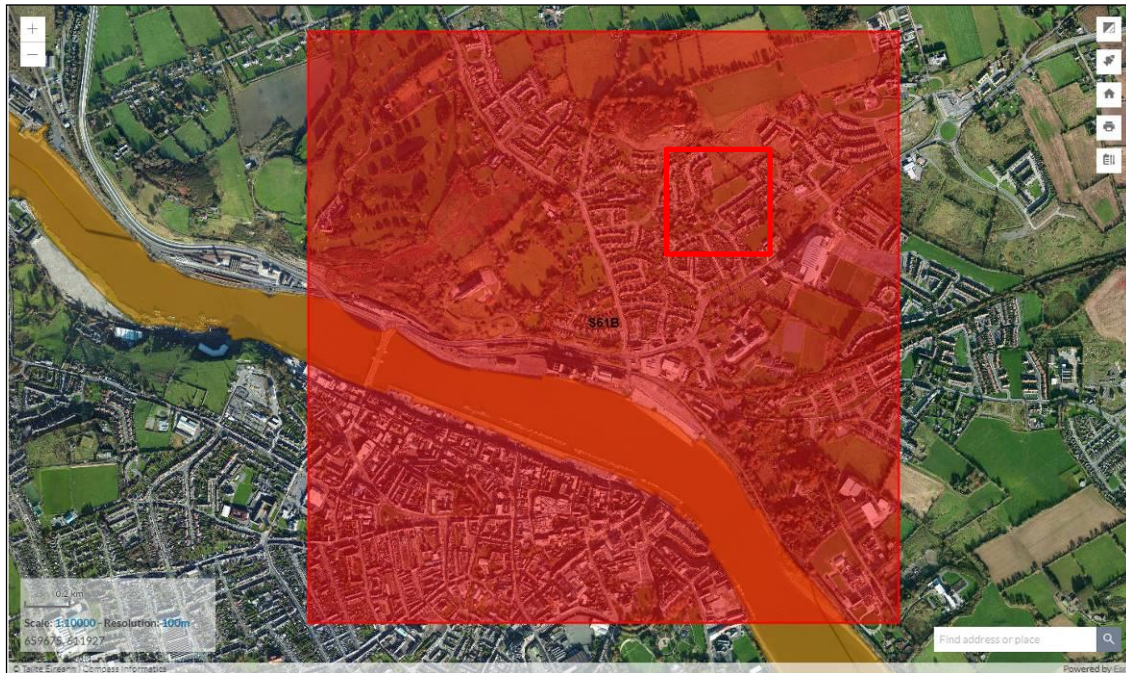


Figure 7. French Church lies in NBDC 2 km square S61B (Source: NBDC).

3.3.3 Bats

The church has the potential to support a variety of bat species given the age and nature of the building.

Other species recorded from within the 10km square (S61) in which the French Church is situated, include:

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

These include records of known bat roosts from within the city including from Ferrybank to the north of the site.

3.4 Bat Survey Results

3.4.1 Visual Inspection

A visual inspection of the site, including the church walls and three levels of the tower, were performed by Faith Wilson on the 26th June 2024.

The visual inspection of the tower confirmed evidence of a bachelor bat roost and a number of features were identified which provide suitable roosting habitat in the structure. These can be easily retained during the repointing works without compromising the structure or integrity of the building.

There was evidence of discarded Small Tortoiseshell butterfly wings which exhibits predation and feeding within the tower (**Plate 4**).



Plate 4. Small Tortoiseshell butterfly wings discarded during feeding (circled in red).

Evidence of old bat droppings were also found during investigations within the tower (**Plate 5**).



Plate 5. Bat droppings found in on the window sill (circled in red).



Plate 6. Level 0, Transept archway. There are many suitable locations in the stonework here that bats could avail of for roosting purposes.



Plate 7. Tower walls above the windows. Note the crevices and ledges in the rough mortar finish, providing bat roosting shelter in the walls and stonework.



Plate 8. Historic dove nesting locations in the tower.



Plate 9. Windows in the tower are covered with a 1cm grating to prevent access by birds. This also limits bat access to roosting spaces within the tower.

The small number and scattered nature of the droppings are indicative of use by a small number of bats (likely to be a bachelor roost) as opposed to a maternity roost.

During the visual inspection, the impact of light pollution within the property and from the surrounding environment was also assessed. Artificial lights affect bat feeding behaviour and can cause bats to desert a roost.

Within the grounds of the church, ground-level floodlights (**Plate 10**) were located so as to illuminate the structure's brickwork and features. In addition, the neighbouring pub has a number of high-powered lights pointing in different directions and angles (**Plate 11**). These light sources increase levels of light disturbance for bats roosting and hunting in this location and the surrounding area.

It was noted from dusk that on both sides of the church tower, the windows and therefore the majority of potential roost exits, are illuminated by artificial light (**Plates 12 and 13**). This light can affect bat emergence, and therefore interfere with important evening feeding times.



Plate 10. Level 0, ground level floodlight within the church grounds.



Plate 11. Level 0, multiple lights from neighbouring property, circled in red.



Plate 12. Light pollution from neighbouring properties shines directly on potential roost exit points.



Plate 13. Light pollution from neighbouring properties shows at ground level and at the roost exit on Level 3 of the tower, circled in red.

3.4.2 Detector Survey

A bat detector survey was carried out at dusk on the 26th June 2024 by Faith Wilson.

The survey recorded low levels of bat activity on the site and no emergence of bats was recorded. A single species of bat, Common Pipistrelle (*Pipistrellus pipistrellus*) were recorded flying over the site.

A minimum of 3-4 Common Pipistrelle bats were recorded foraging within the site after sunset as can be seen on **Figure 8**. Evidence of what is deemed a bachelor roost of Common Pipistrelle bats (old droppings and feeding signs) were noted within the tower.



Figure 8. Bat activity at the French Church.

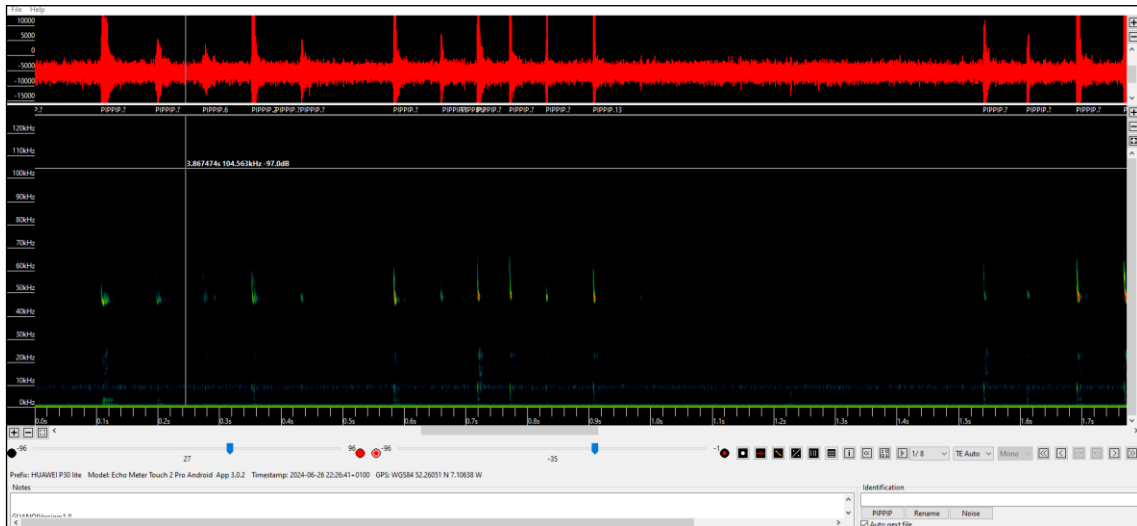


Figure 9. Sonogram of Common pipistrelle bat hunting in the French Church.

No bats were seen emerging from the church structures for which the conservation works are proposed. All bats appeared to approach the site from the north.

3.4.3 Survey Constraints

There were no constraints to the survey. The recommended time period for bat surveys is shown on **Figure 10** and **Table 1** below (Source: NPWS Bat Mitigation Guidelines).

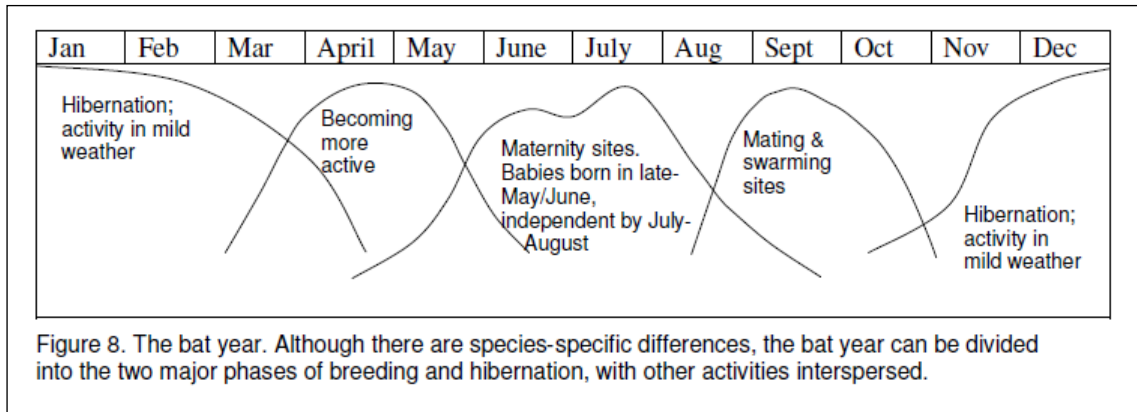


Figure 10. The Bat Year (Source: NPWS Bat Mitigation Guidelines).

Table 1. The applicability of survey methods. (Source: NPWS Bat Mitigation Guidelines).

Season	Roost Type	Inspection	Bat detectors and emergence counts
Spring (Mar - May)	Building	Suitable (signs, perhaps bats)	Limited, weather dependent
	Trees	Difficult (best for signs before leaves appear)	Very limited, weather dependent
	Underground	Suitable (signs only)	Static detectors may be useful
Summer (June- August)	Building	Suitable (signs and bats)	Suitable
	Trees	Difficult	Limited; use sunrise survey
	Underground	Suitable (signs only)	Rarely useful
Autumn (September - November)	Building	Suitable (signs and bats)	Limited, weather dependent
	Trees	Difficult	Rather limited, weather dependent; use sunrise survey?
	Underground	Suitable (signs, perhaps bats)	Static detectors may be useful
Winter (December - February)	Building	Suitable (signs, perhaps bats)	Rarely useful
	Trees	Difficult (best for signs after leaves have gone)	Rarely useful
	Underground	Suitable (signs and bats)	Static detectors may be useful

At the time of the survey, the weather was breezy although calm within the church. There was a light drizzle of rain. The light wind and drizzle may have limited insect, and therefore bat, activity during the survey period. Temperatures were warm, still at 17 °C when the survey finished at approximately 23.30.

3.5 Botanical Survey

An inventory of the plant species recorded on the tower and walls of the French Church was completed during the site visit. Species recorded around and on historic buildings can often include both archaeophytes and neophytes as well as native plants. (An archaeophyte is a plant species which is non-native to a geographical region, but which was an introduced species in "ancient" times, typically assessed as becoming

established before 1500AD. A neophyte is a non-native plant species, which has escaped into the wild after 1500AD). The plants found in the environs of historic buildings can often inform us about the uses of the property in times gone by as they would have formed part of the diet and herbs used for healing purposes.

Species recorded include:

- Pellitory of the wall (*Parietaria judaica*)
- Ivy leaved toadflax (*Cymbalaria muralis*)
- Broad-leaved Willowherb (*Epilobium montanum*)
- Red Valerian (*Centranthus ruber*)
- Buddleia (*Buddleia davidii*)
- Lime Tree, located at entrance (*Tilia cordata*).

3.6 Invasive Species

Two non-native plant species were recorded on the tower and walls of the French Church. Both of these species are known to impact the native flora of stone walls as well as causing problems structurally for monuments and other buildings. These were:

- Red Valerian (*Centranthus ruber*)
- Buddleia (*Buddleia davidii*)

3.7 Breeding Birds

No active nests were recorded on the tower and walls of the French Church. The walls here contain very few features that birds such as Blue tit's or other species could use. The windows in the tower have been grilled to prevent pigeons entering the structure. This also reduces access for bats.

4. DESCRIPTION OF LIKELY SIGNIFICANT IMPACTS

4.1 Scheduled Works

The scheduled conservation works to the French Church include:

- Raking out old mortar. Irrigate open joints. Air clean. Cleaning down walls. Repointing all masonry with a compatible lime-based mortar, using appropriate sands and aggregates.
- Flaunching of wall tops with lime mortar.
- Consolidation of the masonry core with lime mortar where needed.
- Repairing and -/or replacement of lost or loose face stones with lime mortar to arrest further decay.
- Careful removal of any vegetation which may be present.

4.2 Potential Impacts of the Conservation Works on Flora

Often conservation works can set out the removal of vegetation from the building which destroys the native wall flora and also leads to a sanitised looking structure, which loses its sense of place and character.

4.3 Potential Impacts of the Conservation Works on Bats

There is evidence that a small number of bats are currently roosting in this building and hence a bat derogation licence is required. The church hosts a number of potential roosting locations as indicated on the photographic inventory above. These could be lost during the conservation works if they are not retained and bats could also be entombed during the works if they are not checked for roosting bats which may be in hibernation within them and unable to escape.

5. ECOLOGICAL MITIGATION MEASURES

5.1 Consideration of Alternatives – Bat Derogation Licence

The building conservation works are required for the preservation of French Church, which is a listed monument protected under the National Monuments Act.

The works are necessary for the conservation of the structure and safety of visitors and staff to the building.

The bat survey and mitigation measures outlined below demonstrate that bats have been considered as part of the works and that they can be protected during the works and their roosting spaces successfully conserved and enhanced.

The alternative would be for the building works to not proceed and the condition of the building to deteriorate which would not serve the purpose of either the bats or the monument.

5.2 Proposed Mitigation Measures for Bats

A number of specific measures are required for bats for the works at the French Church.

These follow the best practice guidelines as detailed in Marnell, *et al.* (2022), CIEEM (2021) and Aughney *et al.* (2008) to minimise any disturbance to bats within the site and ensure that they remain in the area.

A bat derogation license is required for the proposed works to the French Church and this has been sought from NPWS.

The French Church contains a confirmed Common Pipistrelle bachelor bat roost and a bat derogation licence is required for the proposed works.

The species of bat for which the bat derogation licence applies Common Pipistrelle (*Pipistrellus pipistrellus*) is listed as species of Least Conservation Concern in the Irish Red List (Marnell, F., Looney, D. & Lawton, C. (2019) Ireland Red List No. 12: Terrestrial Mammals. National Parks and Wildlife Service, Department of the Culture, Heritage and the Gaeltacht, Dublin, Ireland.).

The church is utilised by a small roost of Common Pipistrelle bat. A series of mitigation measures to ensure that the bats are protected during the works are outlined below. These works will ensure the long term conservation of the bat roosts in the French Church. A number of minor works and modifications to the building will ensure that the roosting opportunity for bats within the church will be improved in the long term.

These mitigation measures have been shown to be successful and will result in the long term favourable conservation status of the species at this site.

Measure 1: Retention of Potential Roosts for Bats in the Church Stonework

Potential roosting locations within the stone work for bats should be retained and could potentially be improved during the conservation works in the French Church.

Once the bat derogation licence is granted and the works are due to commence those features within the church stonework which have been identified as having potential for roosting bats will be re-examined **prior to any repointing works commencing** to ensure that bats have not taken up residence within same in the intervening period.

Once the scaffolding has been erected those features, including those which could not be reached from ground level, will be inspected using an endoscope by a bat specialist to determine if any bats are present. If any bats are present these areas will be clearly identified and not worked on until the bats are either excluded or these areas will be retained in full.

Suitable bat access points will be shown to the project stone masons and the potential for their retention discussed.

Any areas which do not require pointing from a structural perspective will then be lightly blocked with hessian cloth to ensure that bats cannot re-enter these crevices during the works.

This will then be removed as repointing takes place or on completion leaving these crevices accessible to bats in the future.



Plate 14. Gaps between the French Church perimeter walls and other buildings should be also retained as these provide protected areas free from human traffic or interference.

Measure 2: Provision of Access to Roosts for Bats in the Church

It is recommended that access to the main tower in the church is retained and modified to allow continued access by bats.



Plate 15. Level 0, showing the length of the chancel, the transept and tower with the nave and entrance beyond. The red arrows highlight openings that provide potential access points for bats, if the grating is appropriately modified. Access door circled in red.



Plate 16. Removing a single row or creating an access space within the grating at the top of each of the windows will provide bat egress to the tower, without allowing other larger animals and birds such as pigeon to enter.

Measure 3: Improvements to the Tower for Roosting Bats

There are a series of suitable crevices and holes that were noted internally in the stonework of the church tower. These offer roosting potential for bats and should not be refilled, repointed or otherwise repaired or restored without consultation with a suitable qualified bat specialist.

Within the tower, there are also several areas with ceiling/roof surfaces that could be made more suitable for bat roosts amongst the joists and beams as shown on **Plate 17** below.

Doubling up some of these timbers on these joists thereby creating a gap of 18mm between them, which would offer crevice dwelling species a space in which to roost.



Plate 17. Level XX, showing a covered ceiling with exposed joists. This provides safe roosting opportunities for bats, without risk of entanglement in roofing membranes. Timbers here can be doubled up to create a roosting location for bats – indicative locations for timbers shown by red line.

The attic/upper floor of the tower contains an exposed timber roof structure. The slates on the roof here are underlain by a breathable membrane – Tyvek or similar.

In recent years concerns have been raised about the use of modern roofing membranes in buildings either used by or designed for future bat uses. These are called Non-Bitumen Coated Roofing Membranes. Their use in general has not been recommended in bat roosts as they can entrap and tangle bats causing their death.

The Bat Mitigation Guidelines for Ireland state:

‘Modern roof linings and breathable membranes that are composed of fibres have been shown to trap and ensnare bats causing mortality. These are commonly called “Non-bitumen coated roofing membranes”. The use of these materials should be carefully considered if bats are in the building. Older linings such as mineral felt or rough timber should instead be used where possible to facilitate bat roosting. It may however be acceptable to use breathable membranes and such linings in conjunction with older linings, on the advice of a bat specialist, if it can be ensured that bats will only come into contact with the latter. In some cases breathable membranes can be made safe for bats by adding a layer of Netlon and batons’.

In this instance the addition of rough sawn timber boards to the apex of the roof where bats are most likely to roost is recommended to reduce snagging and entanglement potential. The building contractor will ensure that only bat safe, pre-treated timbers are used. The bat specialist will advise on same.

This attic area can also be made more favourable to roosting bats by blocking out the day light from the skylight on the roof. This skylight provides access to the roof

perimeter. It could be darkened with black card/thin sheet of plywood cut to fit the glass and pinned into place with panel pins to the frame or the glass could be painted with black out paint.



Plate 18. Level 3, Attic of the tower. By covering the roofing membrane with rough wood panels, the risk of entanglement in these roosting areas can be reduced.

Measure 4: Building and Site Illumination

The French Church is highly illuminated at night as can be seen from the photographic record presented above. Some of this lighting is under the control of the Office of Public Works whilst some stems from adjoining properties. In general lighting should be avoided where possible within a site that supports bats as it deters some bat species from foraging.

This is especially true for any illumination of structures which have bat roosting potential with flood lighting as many species of bats are especially sensitive to light disturbance near a roost/potential roost.

It is recommended that as part of the works that the lighting on site is reviewed. If it is deemed that lighting of the French Church is desirable or necessary, it should be designed to be bat friendly and targeted only on the lower part of the structure avoiding illumination of the higher portions of the structure and most certainly not upwards to the upper portions of the roof and the sky.



Plate 19. Darkening this skylight would improve the roof space of the tower for roosting bats.

Measure 5: Bat Boxes

A number of bat boxes could be erected within the tower once the building restoration works are complete and while the contractor is present to assist with their placement. These could be easily incorporated into the interior of the building and remain visually unobtrusive.

Health and Safety Issues:

Workers on OPW sites should be informed that bats are a protected species under both Irish and European legislation. Ideally bats should only be handled by a licensed bat specialist. If a grounded bat is encountered (typically a young bat) it should only be handled wearing gloves and lifted up in a piece of cloth (such as a tea towel) before being returned to the roost. As with all wild animals, bats can carry diseases, and hence protective measures to ensure that one is not bitten by a bat should be taken.

5.3 Removal of Invasive Species

Red Valerian (**Plate 20**) is an invasive plant and should be carefully removed throughout the site during maintenance and restoration works.

Buddleia should also be removed. However, the walls should not undergo any other excessive cleaning or vegetation removal beyond that needed for the stabilisation of the building.



Plate 20. Examples of Red Valerian growing on the perimeter walls of the entrance to the French Church (circled in red).

5.4 Conservation of Native Wall Flora

Species recorded on the walls include:

- Pellitory of the wall (*Parietaria judaica*)
- Ivy leaved toadflax (*Cymbalaria muralis*)
- Broad-leaved Willowherb (*Epilobium montanum*), and
- a large non-native Lime Tree, located at entrance (*Tilia cordata*).

These plants all support a variety of invertebrate species including species of micro-moths and leaf miners on which bats hunt.

They also provide habitat and cover for other invertebrates such as spiders, woodlice, etc. They should be retained where possible.



Plate 21. Some areas of the walls have significant vegetation such as this cover of ivy leaved toadflax. Vegetation such as this does not compromise the building in comparison to species such as trees and dense ivy whose roots can work their way into the wall structure.



Plate 22. Pellitory of the Wall (*Parietaria judaica*).

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