Cistern House Extension and Walled Garden

Ward River Regional Park, Brackenstown, Swords, Co. Dublin

Bat Survey

25th September 2025

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Bat Survey

1. INTRODUCTION

1.1 Background

Faith Wilson Ecological Consultant was commissioned by Fingal County Council to prepare a bat survey prior to construction works/renovations to the Cistern House Extension and the stabilisation/restoration of the boundary wall of the Upper and Lower Walled Gardens in the Ward River Regional Park at Brackenstown, Swords, Co. Dublin.

Faith was appointed by Fingal County Council to advise on any ecological sensitivities associated with the proposed works and to identify and prepare any mitigation measures that might be required to avoid or ameliorate same.

1.2 Project Location

The location of the walled garden within the Ward River Regional Park is shown on **Figure 1** below. Ward River Regional Park is located to the west of Swords along the valley of the Ward River from Knocksedan Bridge to Main Street Swords a distance of approximately 3 Kilometres. The Park is comprised of 89 Hectares (220 Acres), and is bounded by agricultural lands to the West, residential developments to the North and South and the urban centre of Swords to the East. The walled garden is part of Brackenstown Demesne – an important historic site/landscape.

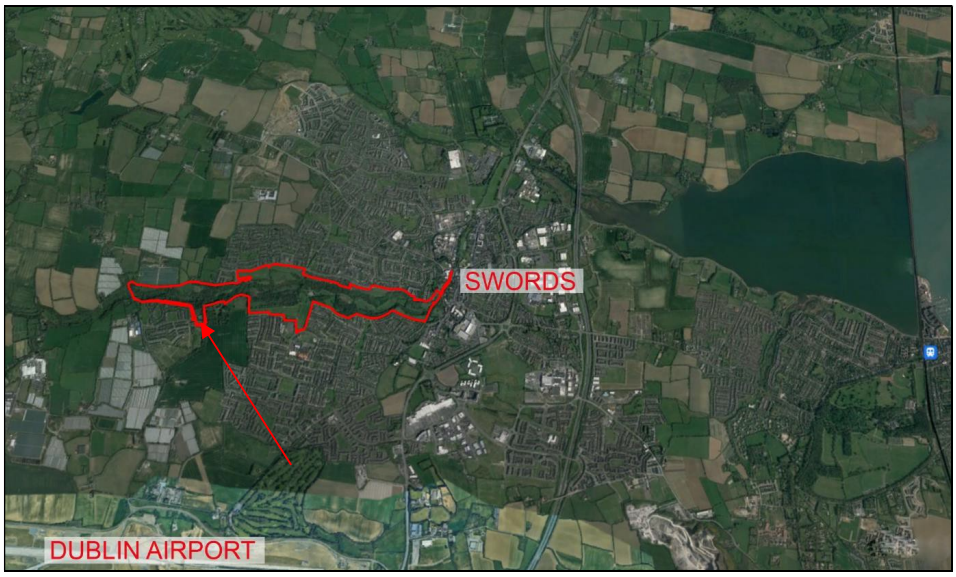

Figure 1. Location of Walled Gardens in the Ward River Regional Park at Brackenstown House, Brackenstown, Swords, Co. Dublin.

1.3 Relevant Ecological Legislation

1.3.1 Nature Conservation Designations

The location of the proposed works are not located within a designated area from the perspective of nature conservation.

1.3.2 Bats

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

Nine species are resident and have confirmed breeding populations while two species are deemed to be vagrants as set out in **Table 1.3.2** below.

Table 1.3.2. Legal protection and status of the Irish bat fauna.

Common and scientific name	Wildlife Act 1976 & Wildlife (Amendment) Acts 2000 & 2010	Irish Red List status	Habitats Directive	Bern & Bonn Conventions
Common pipistrelle *Pipistrellus pipistrellus*	Yes	Least Concern	Annex IV	Appendix II
Soprano pipistrelle *P. pygmaeus*	Yes	Least Concern	Annex IV	Appendix II
Nathusius' pipistrelle *P. nathusii*	Yes	Not referenced	Annex IV	Appendix II
Leisler's bat *Nyctalus leisleri*	Yes	Near Threatened	Annex IV	Appendix II
Brown long-eared bat *Plecotus auritus*	Yes	Least Concern	Annex IV	Appendix II
Lesser horseshoe bat *Rhinolophus hipposideros*	Yes	Least Concern	Annex II Annex IV	Appendix II
Greater horseshoe bat *Rhinolophus ferruginous*		Data Deficient	Annex II Annex IV	Appendix II
Daubenton's bat *Myotis daubentonii*	Yes	Least Concern	Annex IV	Appendix II
Natterer's bat *M. nattereri*	Yes	Least Concern	Annex IV	Appendix II
Whiskered bat *M. mystacinus*	Yes	Least Concern	Annex IV	Appendix II
Brandt's bat *M. brandtii*	Yes	Data Deficient	Annex IV	Appendix II

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.

2. PROJECT DESCRIPTION

2.1 Conservation Works

The Brackenstown Walled Gardens are a feature of the Ward River Regional Park and were associated with Brackenstown House. Historic structures within the walled garden were surveyed and identified within the Ward River Regional Park Conservation Management Plan, dated January 2024, prepared by COADY Architects.

Within the study COADY Architects (2024) identified a number of historical structures within the Walled Garden which required emergency repair works based on the following criteria:

- Danger to the public due to risk of collapse
- Danger of collapse resulting in loss of historical fabric
- Works required to preserve historical fabric that would be at significant risk of deterioration if not safeguarded within the next 12-24 months.

This report deals with three of the historical structures within the Walled Garden – the Cistern House Extension (Building No. 10) and the Northern Walled and Southern Walled Gardens as shown on **Figure 2** below.

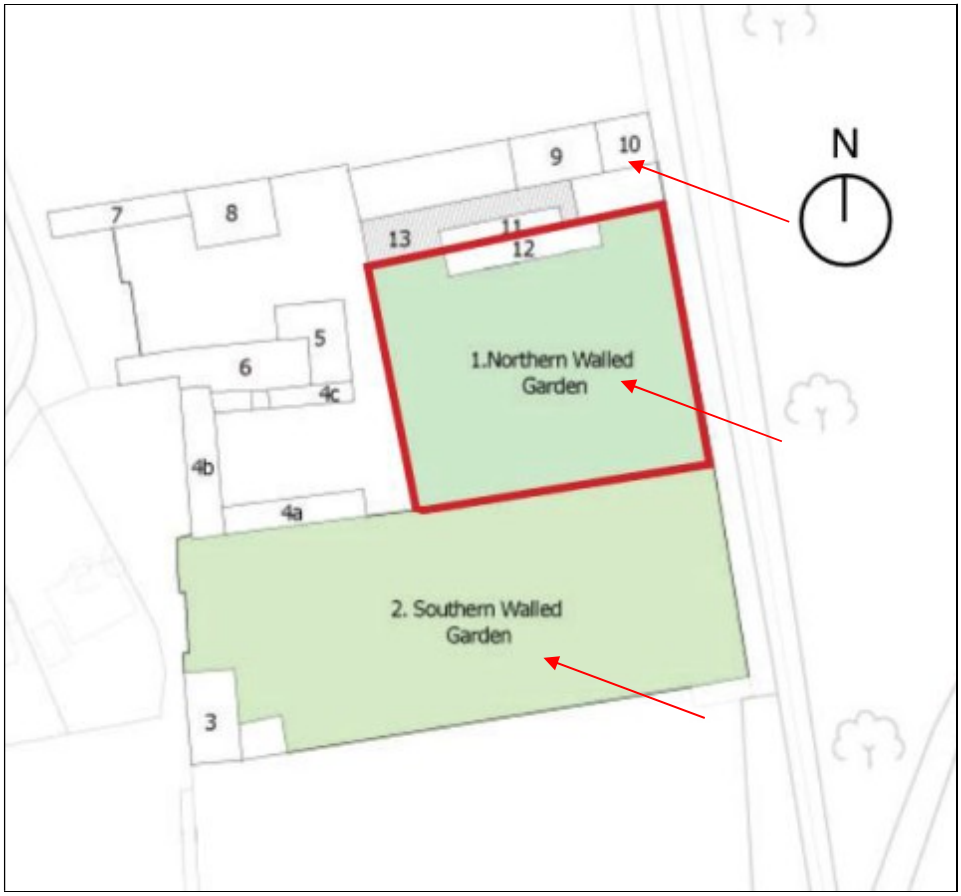

Figure 2. Location of the Cistern House Extension (Building No. 10) and the Northern Walled and Southern Walled Gardens.

2.2 Built Structures – Walled Garden

The built structures within the Walled Garden proposed for repair or protection form part of the historic built heritage of Brackenstown House. These and the natural features of the former demesne landscape associated with Brackenstown House such as planted woodlands and shelterbelts, original field boundary hedgerows, the Ward River and Ushers Lake can be seen in the historic mapping available from the Ordnance Survey Ireland as presented below on **Figures 3** to **5**.

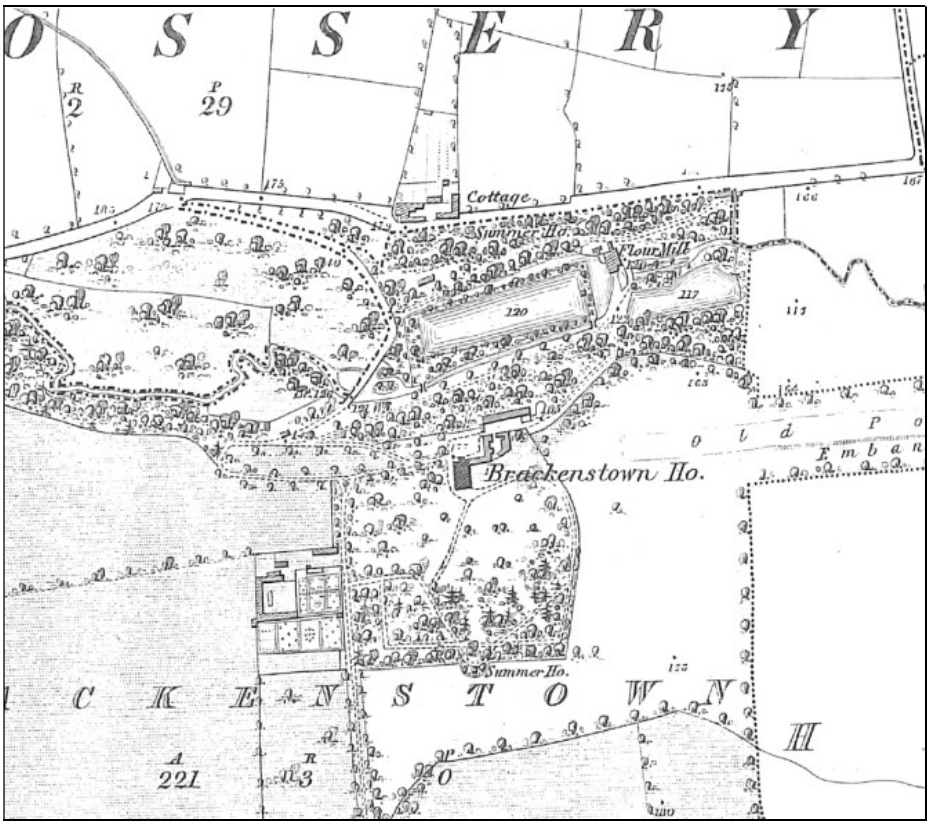

Figure 3. First Edition Ordnance Survey 6″ Mapping - 1837.

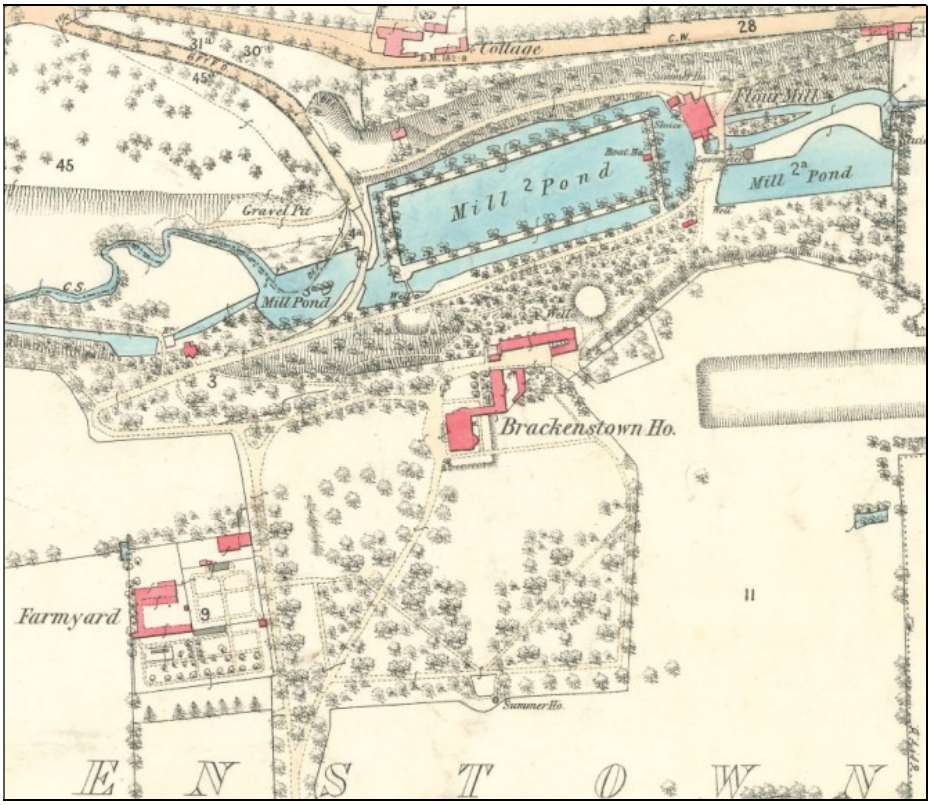

Figure 4. First Edition Ordnance Survey 6″ Mapping – colour edition - 1865.

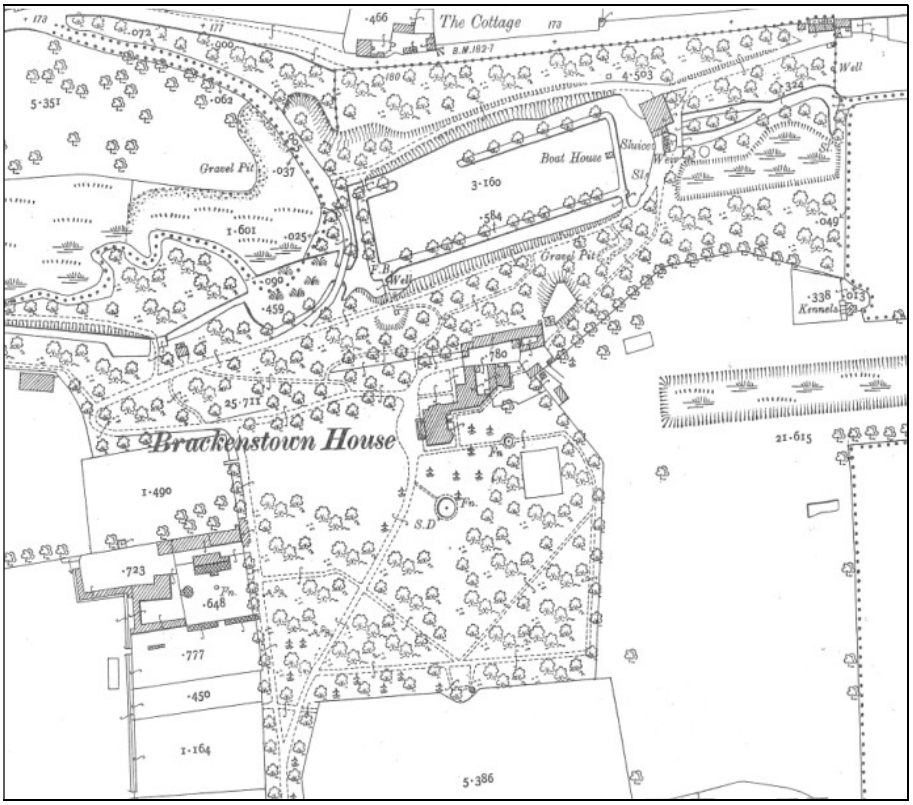

Figure 5. Last Edition Ordnance Survey 6" Mapping - 1908.

The proposed works, which are the subject of this report, are for the perimeter walls of the Northern and Southern Walled Garden and the Cistern House Extension.

The Walled Garden is divided into the Northern and Southern Section as shown on **Figures 6** and **7** below.

The built structures, which were the subject of the conservation reports within the Walled Garden include:

- The perimeter walls of the northern and southern walled gardens
- Animal shed (since demolished)
- Stable buildings (southern, western and northern blocks)
- Former Gardener's Cottage
- Outbuildings
- Modern farm sheds
- Cistern House
- Cistern House Extension
- Buildings at the rear of the Conservatory
- Corrugated Roofed Shed
- Potting Shed

These are shown on **Figures 8** to **20** below.

Figure 6. The northern Walled Garden.

Figure 7. The southern Walled Garden.

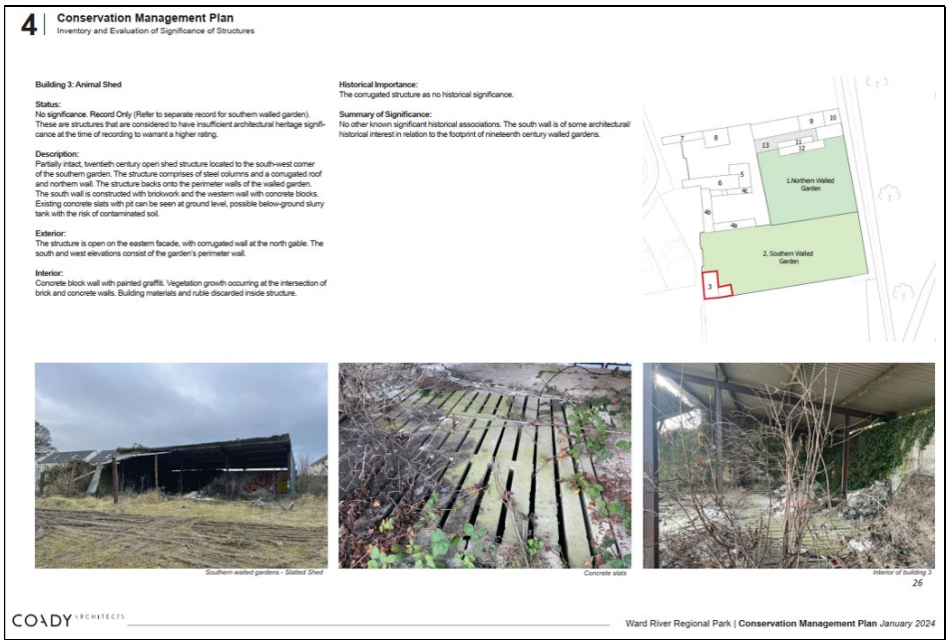

Figure 8. The Animal Shed (removed under a previous contract).

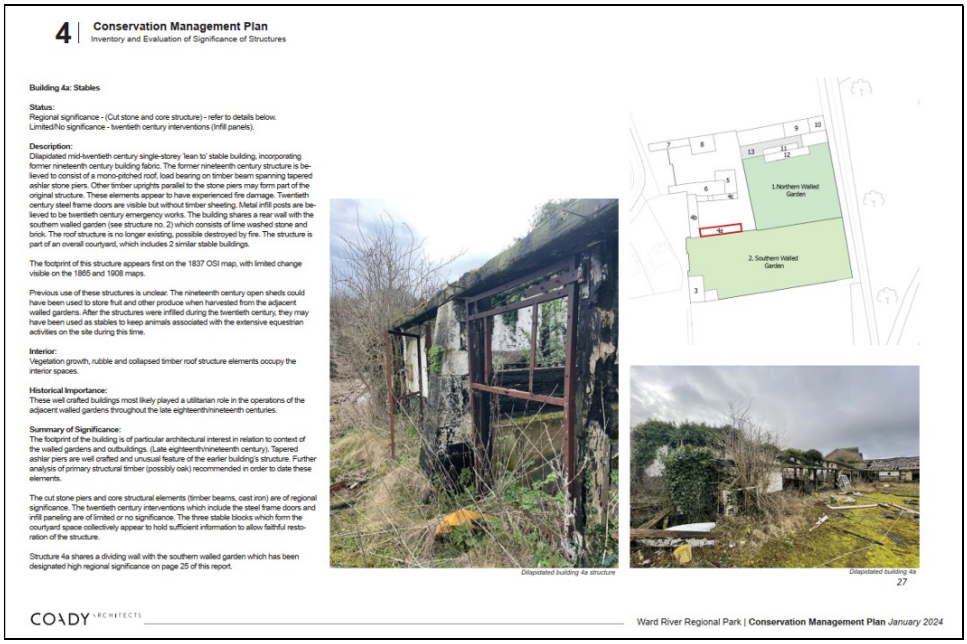

Figure 9. The Southern Stables.

4 | Conservation Management Plan
Inventory and Evaluation of Significance of Structures

Building 4b: Stables

Status:
Regional significance - (Cut stone and core structure) - refer to details below.
Limited/no significance - twentieth century interventions (Infill panels).

Description:
Dilapidated mid-twentieth century single-storey 'lean to' stable building, incorporating former nineteenth century building fabric. Mono-pitched natural slate roof with cut-timber purlins, load bearing on a timber beam spanning tapered ashlar stone piers. Other timber uprights parallel to the stone piers seem to be contemporaneous with the roof structure. A number of these elements appear to have experienced fire damage. Twentieth century timber sheeting and steel frame doors are visible, providing infill between structure columns, these elements are showing considerable signs of rot and decay.

The rear wall is possibly stone/brick and partly rendered forming part of the overall perimeter structure of the walled gardens. The structure is part of a courtyard, which includes 2 similar stable buildings.

Previous use of these structures is unclear. The nineteenth century open sheds could have been used to store fruit and other produce when harvested from the adjacent walled gardens. After the structures were infilled during the twentieth century, they may have been used as stables to keep animals associated with the extensive equestrian on the site during this time.

The footprint of this structure appears first on the 1836 OSI map, with limited change visible on the 1865 and 1908 maps.

Interior:
Vegetation growth and parts of the building's roof structure have collapsed inside. No access available.

Historical Importance:
These buildings most likely played a utilitarian role in the operations of the adjacent walled gardens throughout the late eighteenth/nineteenth century.

Summary of Significance:
The footprint of the building is of **particular architectural interest** in relation to context of the walled gardens and outbuildings. (Late eighteenth/nineteenth century). Tapered ashlar piers are well crafted and unusual feature of the earlier building's structure. Further analysis of primary structural timber (possibly oak) recommended in order to date these elements.

The cut stone piers and core structural elements (timber beams,cast iron) are of regional significance. The twentieth century interventions which include the steel frame doors and infill paneling are of limited or no significance. The three stable blocks which form the courtyard space collectively appear to hold sufficient information to allow faithful restoration of the structure.

Structure 4b's rear masonry wall forms part of the overall perimeter of farmyard and is an integral part of the stable's building footprint. This structural element is also of regional significance.

Courtyard consisting of buildings 4a, 4b and 4c.

Building 4b existing facade

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COADY ARCHITECTS

Ward River Regional Park | **Conservation Management Plan** *January 2024*

Figure 10. The Western Stables.

4 | Conservation Management Plan
Inventory and Evaluation of Significance of Structures

Building 4c: Stables

Status:
Regional significance - (Cut stone and core structure) - refer to details below.
Limited/no significance - twentieth century interventions (Infill panels).

Description:
Dilapidated mid-twentieth century single-storey 'lean to' stable building, incorporating former nineteenth century building fabric. Mono-pitched natural slate roof with cut-timber purlins, load bearing on an timber beam spanning tapered ashlar stone piers. Other timber uprights parallel to the stone piers seem to be contemporaneous with the roof structure. Twentieth century timber sheeting and steel frame doors are visible, providing infill between structure columns, these elements are showing considerable signs of rot and decay. The facade has also been targeted with graffiti. Northern wall appears to be cement rendered, with slate capping and a section has collapsed onto the roof structure.

The rear wall is possibly stone/brick and shared with the former dwelling/outbuildings to the north. The structure is part of a courtyard, which includes 2 similar stable buildings.

The use of these structures is still unclear. The nineteenth century open sheds could have been used to store fruit and other produce when harvested from the adjacent walled gardens. After the structures were infilled during the twentieth century, they may have been used as stables to keep animals associated with the extensive equestrian activities on the site during this time.

The footprint of this structure appears first on the 1836 OSI map, with limited change visible on the 1865 and 1908 maps.

Interior:
Vegetation growth and parts of the building's roof structure have collapsed inside. No access available.

Historical Importance:
These buildings most likely played a utilitarian role in the operations of the adjacent walled gardens throughout the late eighteenth/nineteenth century.

Summary of Significance:
The footprint of the building is of particular architectural interest in relation to context of the walled gardens and outbuildings. (Late eighteenth/nineteenth century). Tapered ashlar piers are well crafted and unusual feature of the earlier building's structure. Further analysis of primary structural timber (possibly oak) recommended in order to date these elements.

The cut stone piers and core structural elements (timber beams,cast iron) are of regional significance. The twentieth century interventions which include the steel frame doors and infill paneling are of limited or no significance. The three stable blocks which form the courtyard space collectively appear to hold sufficient information to allow faithful restoration of the structure.

Structure 4c's shares rear masonry wall with the gardener's cottage and outbuildings and is an integral part of the stable's building footprint. This structural element is also of regional significance.

Dilapidated building 4c

Dilapidated building 4c facade

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COADY ARCHITECTS

Ward River Regional Park | **Conservation Management Plan** *January 2024*

Figure 11. The Western Stables.

Figure 12. The Gardener's Cottage.

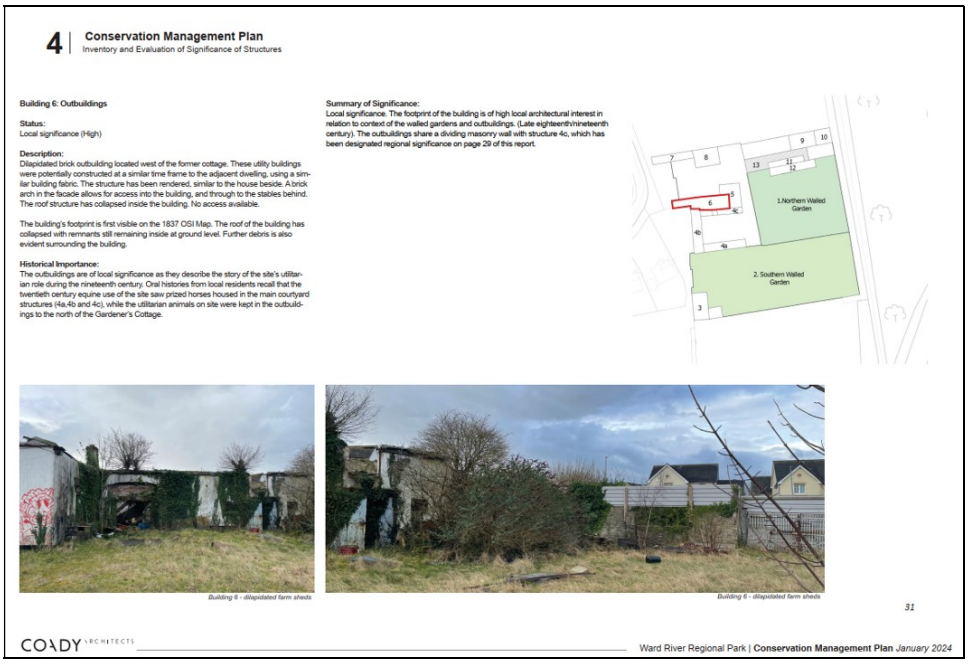

Figure 13. The Outbuildings.

Figure 14. The Farm Shed.

Figure 15. The Farm Shed (since removed).

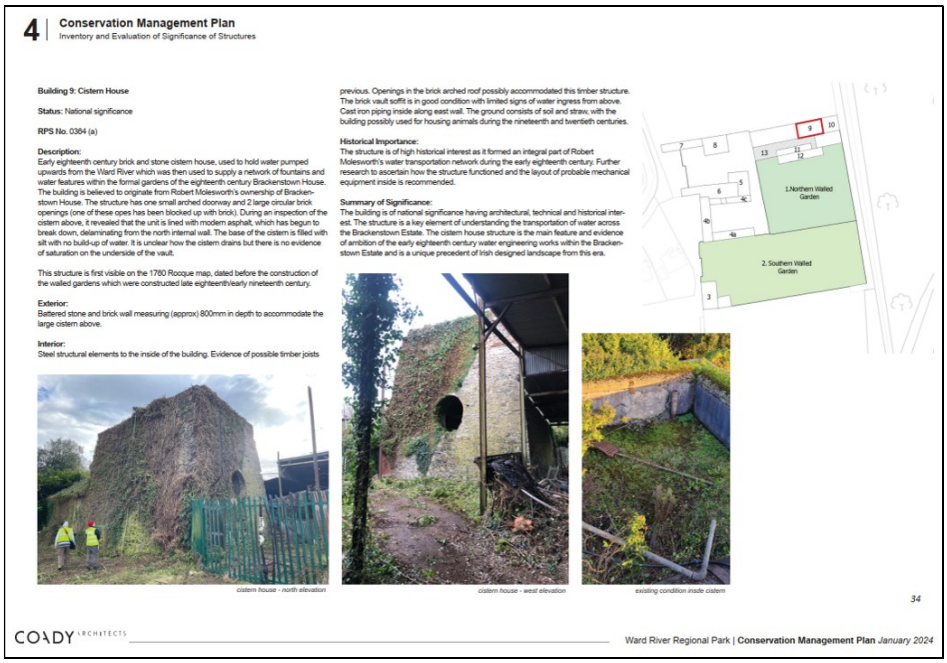

Figure 16. The Cistern House.

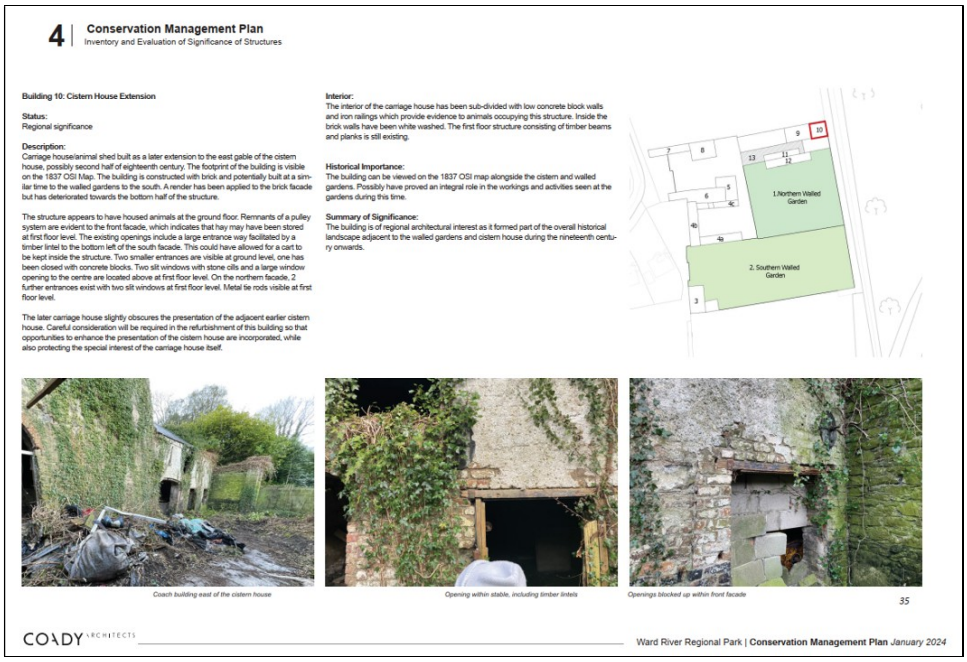

Figure 17. The Cistern House Extension.

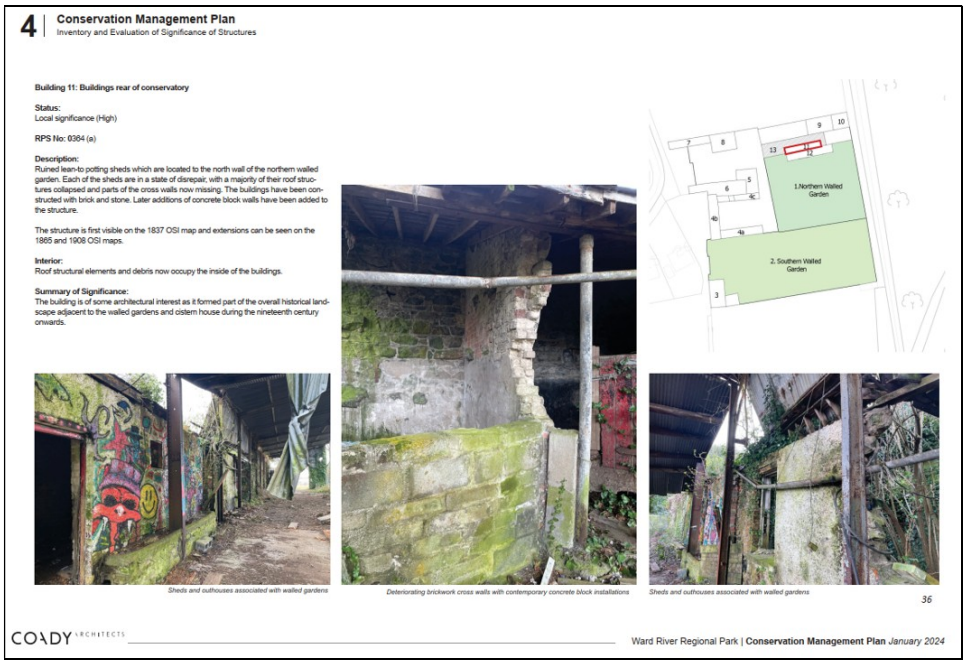

Figure 18. Building 13 to the rear of the Conservatory.

Figure 19. The Potting Shed.

Figure 20. The Corrugated Roof Shed (since removed).

2.2.1 Northern Walled Garden

PUNCH Consulting Engineers (2024) report:

The Northern Walled Garden measures approximately 37.85m x 46m, with a natural ground (garden) area of approximately 1673.65m².

The walls present as structurally stable overall with localised evidence of cracking, weathering and decay due to extensive ivy/vine covering and vegetation growth.

The walls are constructed as random rubble laid to course and finished with a two-skin deep English Garden Wall bonded brick. The walls appear to all be of similar width and height, approximately 0.44m wide x 4m high. Top of walls are lime mortar flaunched to a segmental curve.

Examples of areas requiring attention are presented below.

Plate 1. Vertical joint lines at midpoint of Eastern wall.

Plate 2. Crack at North-East Corner.

Plate 3. Crack in the NW Wall.

2.2.2 Southern Walled Garden

PUNCH Consulting Engineers (2024) report:

The Southern Walled Garden measures approximately 34.25m x 86.55m, with a natural ground (garden) area of approximately 2917.37m². The walls present as structurally adequate, apart from the Eastern wall and South-Eastern corner. The Western boundary has been rebuilt with more modern concrete blocks and steel fencing. The Southern wall is missing varying numbers of top masonry courses. There is localised evidence of cracking, weathering and decay due to extensive ivy/vine covering and vegetation growth. The walls are constructed as random rubble, laid to course at instances and extended and infilled with brick constructed in English Garden Wall bond.

Portions of the wall are constructed entirely of brick bonded in English Garden Wall style and portions are finished internally with brick of the same bond. The walls appear to all be of similar width and height, approximately 0.44m wide x 4m high.

Examples of areas requiring attention are presented below.

Plate 4. Crack in south-east corner.

Plate 5. Structural crack in southern wall.

2.2.3 Cistern House Extension

PUNCH Consulting Engineers report:

The Cistern House Extension appears to have been added to the Cistern House and is not tied into the original Cistern House. The extension is a brick constructed two-storey building with a pitched timber roof with natural stone slate covering. There is no stairway, external access is presumed. There are relieving brick arches visible in the walls above the timber lintels forming rectangular doorways. The first floor is timber floor construction. The external walls benefit from the addition of pattress plates and there are arrow slit windows on the upper level.

Examples of areas requiring attention are presented below.

Plate 6. Rectangular openings on south façade.

Plate 7. Timber floor joists spliced at steel beam.

Plate 8. View of roof towards Cistern House.

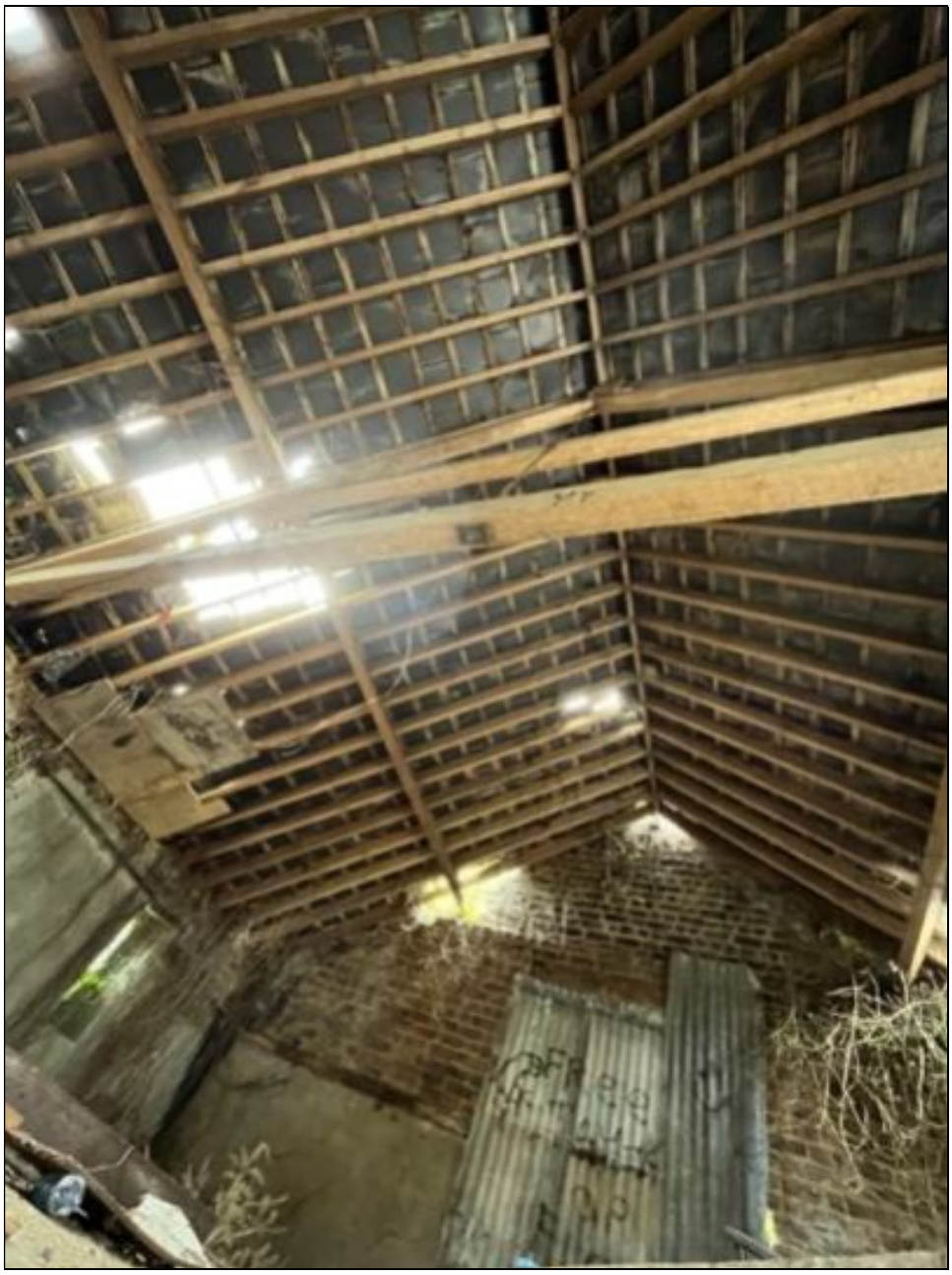

Plate 9. Timber truss of roof.

Plate 10. Roof of slate on battens with lime mortar.

2.4 Proposed Works

A number of works are proposed for the conservation of these structures. These are set out below.

2.4.1 Northern Walled Garden

The proposed works include:

- Filling and injection of cracks in walls using a lime-based mortar
- Replacement of the top course and coping of the entire perimeter of the walled garden walls
- Repointing of brick work using a lime-based mortar
- Removal of isolated instances of brick damage/decay and replacement with undamaged bricks

2.4.2 Southern Walled Garden

The proposed works include:

- Rebuilding of the southern block wall as English wall bonded brick
- Potential for rebuilding of the entire Southern boundary wall

- The western boundary fence and existing block wall is to be removed and replaced with brick walls to match the existing historic walls

2.4.3 Cistern House Extension

The proposed works include:

- Rebuilding of the semi-elliptical arch to the 2.5m wide opening
- Timber lintels over windows are to be replaced like-for-like
- Removal and replacement of steel beam after adequate propping of the existing timber floor joists
- Replacement of existing floor joists and floorboards
- The pattress plates and tie rods should be preserved and protected during any maintenance or restoration works. They should be checked and tightened on completion of works
- Once safe access is possible the timber rafters will be more closely inspected and the stone slates and ridge caps will be removed to replace the battens and any identified damaged rafters.

3. METHODOLOGY

In line with best practice a specialised bat survey was commissioned to determine the potential for/confirm the use of the Cistern House Extension and the Northern and Southern Garden Boundary Wall for roosting by bats and to inform any mitigation measures required.

The bat survey consisted of several elements – a desktop review and consultation with Bat Conservation Ireland, an inspection of the historic structures for their potential to support roosting bats, an inspection of the structures for signs of roosting bats and a bat detector survey in the environs of the Walled Garden and the Cistern House Extension.

The aims of the surveys were to:

a) To determine what species of bats are utilising the Cistern House Extension and the walls in the walled garden.
b) To identify if any roosting sites are present in any of the structures to which conservation works are proposed.
c) To ensure that bats are considered and protected in the conservation works and to determine if a bat derogation licence is required for the works.

The bat surveys were carried out by Faith Wilson in 2023, 2024 and 2025. Faith was assisted by Kim Lake.

Bat activity in buildings/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.

The nature and type of habitats present are also indicative of the species likely to be present.

Bats were identified by their ultrasonic calls coupled with behavioural and flight observations made using a Guide TK612 Thermal Monocular and on computer by sound analysis of recorded echolocation and social calls with dedicated software (Wildlife Acoustic's Kaleidoscope Pro; version 5.6.0).

Activity Surveys

2023

A Song Meter Mini static bat detector was deployed in the corrugated shed beside the Cistern House in the Walled Garden on the 20th June 2023 and in the south west corner of the southern walled garden near the slatted shed with corrugated roof and steel columns between the 22nd and 26th August 2023 as shown on **Figure 21** below.

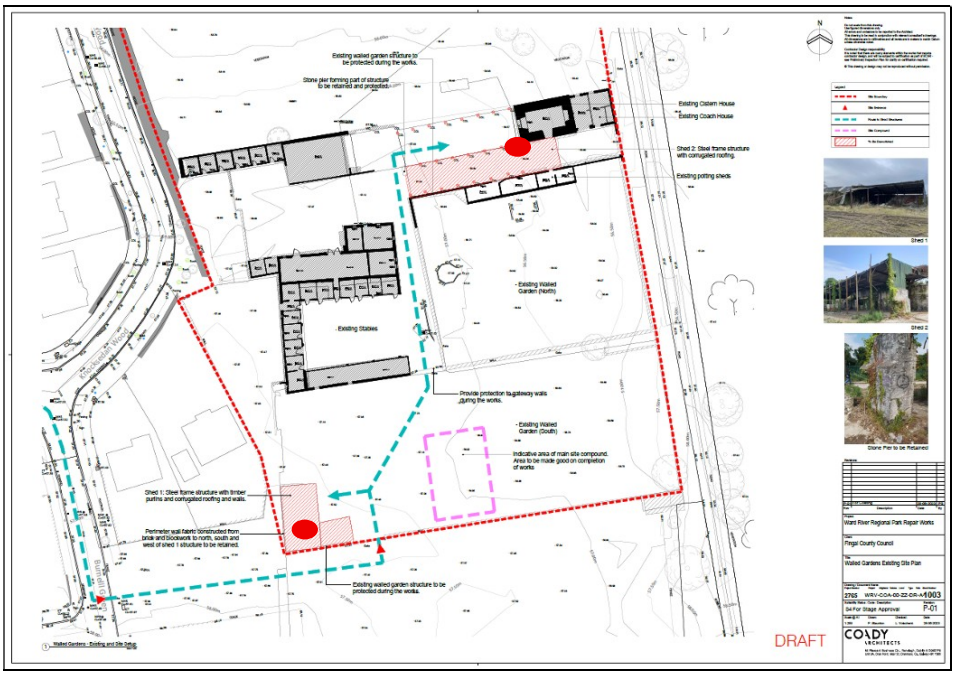

Figure 21. Locations of SM2 bat detectors beside the Cistern House and in the south west corner of the southern walled garden in June and August 2024.

2024

Two Song Meter Mini static bat detectors were deployed in the Walled Garden from the 17th to the 23rd July 2024 as shown on **Figure 22** below. One was erected on an Elder tree with the eastern walled garden and one in the old stable buildings. A visual inspection of the walls and structures for potential roosting locations for bats in the stone/brick work was also completed using an endoscope.

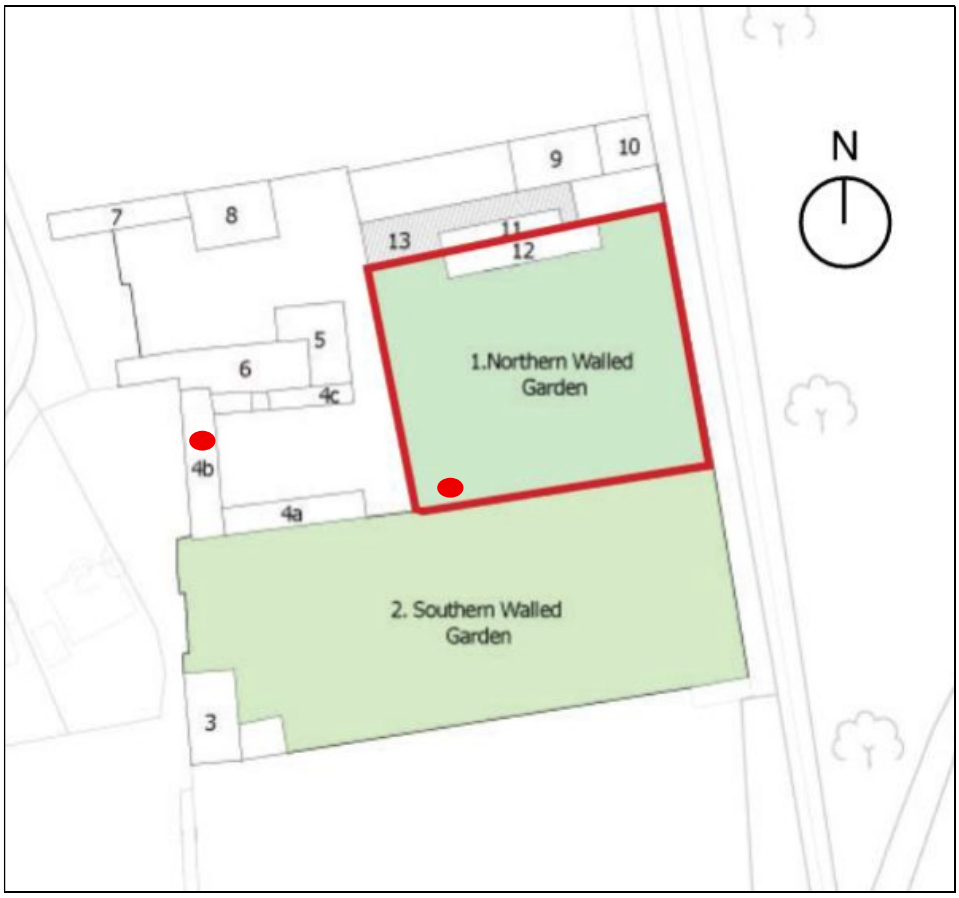

Figure 22. Locations of SM2 bat detectors in Building 11 and the Stables in July 2024.

2025

A bat activity survey was carried out at dusk on the 6th August 2025 which focused on the emergence of bats from the Cistern House Extension. Observations of bats using the area were made with a thermal imaging scope (Guide TK612 Thermal Monocular) which afforded additional visual detectability of bats as darkness fell.

Visual Inspections
Suitable crevices, holes and gaps in walls and stonework of the walled garden walls and the Cistern House Extension were inspected using an endoscope to determine if any bats were present.

Survey Constraints
The bat surveys were completed during the recommended time period for bat surveys as can be seen on **Figure 23** below (Source: NPWS Bat Mitigation Guidelines).

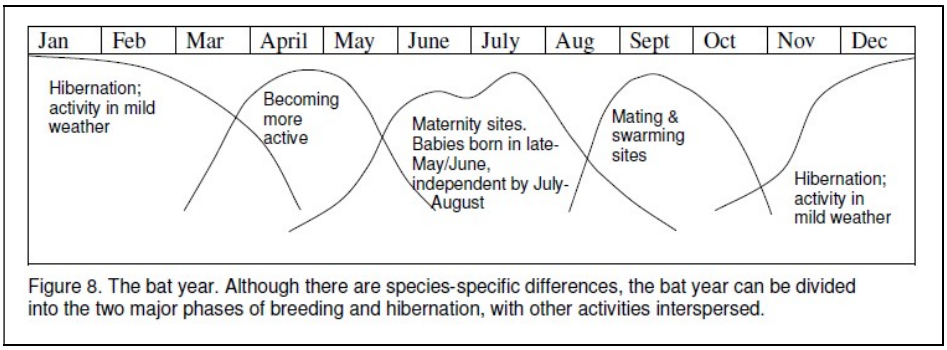

Figure 23. The Bat Year. (Source: NPWS Bat Mitigation Guidelines).

Table 5.2 within that same document is also presented below, which outlines the appropriate months for bat surveys.

Table 5.2. 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	Very limited, weather dependent

		leaves appear)	
	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

Survey Constraints

The unsafe condition of the Cistern House Extension and the security measures applied to the building meant it could not be adequately inspected internally for bats.

Unsocial behaviour on the night of the survey in 2024 also prevented an adequate survey of this building. One of the Song Meter mini static bat detectors had originally been placed in the Building at the Rear of the Conservatory (Building 11) in order to be near to the Cistern House Extension but this was relocated to the Western Stable Building (Building 4b) on account of the anti-social behaviour in the Cistern House Extension.

4. RESULTS

4.1 Desktop Research

The Bat Conservation Ireland Database of bat records was searched for records of bats from the environs of Swords. The database contains records of roosts, ad hoc observations and the results of surveys such as the BATLAS 2010 and 2020 projects and the All Ireland Daubenton's Monitoring Project.

Species recorded from the Swords area include:

- Common pipistrelle (*Pipistrellus pipistrellus*),
- Soprano pipistrelle (*Pipistrellus pygmaeus*),
- Nathusius' pipistrelle (*Pipistrellus nathusii*),
- Brown long-eared bat (*Plecotus auritus)*
- Leisler's bat (*Nyctalus leisleri*),
- an unidentified pipistrelle species (*Pipistrellus* sp.).
- Daubenton's bat (*Myotis daubentonii*),
- Natterer's bat (*Myotis nattereri*) and
- Whiskered bat (*Myotis mystacinus*).

A survey completed by NATURA in 2015 of the Ward River Valley and Broadmeadow confirmed that;
'Five species of bats were found to forage in the Park. There are abundant potential roosting habitats for bats including crevices in old trees and cavities in built structures such as bridges, walls and the castle in Swords'.

Common name	Scientific name	Status in 2015	Status in 2003*	Principal habitat(s)
Common pipistrelle	*Pipistrellus pipistrellus*	Present	Present	Various
Soprano pipistrelle	*Pipistrellus pygmaeus*	Present	Present	Various
Leisler's bat	*Nyctalus leisleri*	Present	Present	Woodland
Brown long-eared bat	*Plecotus auritus*	Present	Present	Woodland
Daubenton's bat	*Myotis daubentonii*	Present	Present	Lake, rivers
Natterer's bat	*Myotis nattereri*	Possible	Not recorded	Woodland
Whiskered bat	*Myotis mystacinus*	Possible	Not recorded	Woodland

*after Keeley (2003)

Table 4.2.1. Five bat species were previously confirmed using the Ward and Broadmeadow Valleys in 2015 (NATURA, 2015).

Other bat surveys conducted by this author were completed in 2023 and 2024. These included detector surveys of built structures in the Ward River Regional Park. These surveys confirmed the presence of Common pipistrelle, Soprano pipistrelle and Leisler's bat with Daubenton's bat recorded on Ushers Lake and a confirmed tree roost near the Cascades.

4.2 Bat Survey Results

4.2.1 Detector Survey – Cistern House and Southern Walled Garden - 2023

The static detector in the Walled Garden which was erected near the Cistern House recorded the presence of five species of bats here on the 20th June 2023. These were Leisler's bat, Common pipistrelle, Soprano pipistrelle, Brown long eared and an unidentified *Myotis* bat. The most commonly recorded bat was the Soprano pipistrelle followed by the Leisler's as can be seen on **Table 4.2.2** below.

Table 4.2.2. Bat registrations recorded by the Song Meter Mini static bat detector in the Walled Garden near the Cistern House in 2023.

Species	Leisler's bat	*Myotis sp.*	Common pipistrelle	Soprano pipistrelle	Brown long eared
No. of registrations	19	2	8	32	1

A second detector was located near the slatted shed with corrugated roof and steel columns in the south west corner of the southern walled garden (since removed). The main species recorded here were Leisler's bat and Common pipistrelle, with records of Soprano pipistrelle, a *Myotis* bat and Brown long eared bat also made as can be seen on **Table 4.2.3** below.

Table 4.2.3. Bat registrations recorded by the Song Meter Mini static bat detector in the south west corner of the southern walled garden near the slatted shed with corrugated roof and steel columns in August 2023.

Species	Leisler's bat	*Myotis sp.*	Common pipistrelle	Soprano pipistrelle	Brown long eared
No. of registrations	29	1	304	23	3

4.2.2 Visual Inspection of Cistern House Extension and Walls in the Walled Garden – 2024

The walls of the Walled Garden were inspected on the 17th and 23rd July 2024, when suitable crevices and holes that could be reached from ground level were examined using an endoscope. There was no evidence of bats roosting within the wall structures at this time but several suitable crevices were identified and should be retained within the brick work if structurally possible.

It was not possible to enter the Cistern House Extension as the building had been secured to prevent vandalism. The condition of the upper timber floor in the building was also poor preventing adequate access.

4.2.3 Detector Survey – Southern Walled Garden - 2024

The static detector in the Southern Walled Garden recorded the presence of five species of bats between the 17th and 23rd July 2024. These were Leisler's bat, Common pipistrelle, Soprano pipistrelle, Brown long eared and an unidentified *Myotis* bat. The most commonly recorded bat was the Soprano pipistrelle followed by the Leisler's as can be seen on **Table 4.2.4** below.

Table 4.2.4. Bat registrations recorded by the Song Meter Mini static bat detector in the Southern Walled Garden.

Species	**Leisler's bat**	***Myotis sp.***	**Common pipistrelle**	**Soprano pipistrelle**	**Brown long eared**
No. of registrations	82	1	65	107	12

4.2.4 Detector Survey – Western Stable Buildings - 2024

The static detector in the Western Stable Buildings recorded the presence of four species of bats between the 17th and 23rd July 2024. These were Leisler's bat, Common pipistrelle, Soprano pipistrelle, and Brown long eared bat. The most commonly recorded bat was the Soprano pipistrelle followed by the Leisler's as can be seen on **Table 4.2.5** below.

Table 4.2.5. Bat registrations recorded by the Song Meter Mini static bat detector in the Western Stable Buildings.

Species	**Leisler's bat**	**Common pipistrelle**	**Soprano pipistrelle**	**Brown long eared**
No. of registrations	14	14	2	1

4.2.5 Inspection of the Northern and Southern Garden Boundary Walls – 2025

The Northern and Southern Garden Boundary Walls were inspected and suitable crevices and holes were inspected with an endoscope for roosting/hibernating bats.

No bats were recorded roosting within the Northern and Southern Garden Boundary Walls, however a number of suitable crevices and holes were identified, which could be retained without compromising the structural integrity or fabric of the wall. The wall offers good hibernation potential for roosting bats and may also be used during the summer months by small numbers of bats.

Plate 11. Potential roosting locations in the Walled Garden walls to be retained.

4.2.6 Visual Inspection of the Cistern House Extension

The ground floor of the Cistern House Extension was accessed on the 5th August 2025 and the surfaces searched for evidence of roosting bats in the form of droppings, etc. The upper part of the building was viewed from below but could not be safely inspected.

A photographic record of the building from the survey completed by PUNCH Consulting Engineers is presented below.

Figure 4.10.1: Semi-elliptical arch to 2.5m opening

Figure 4.10.2: Rectangular openings on south facade

Figure 24. The southern side of the Cistern House Extension.

Figure 4.10.3: Spliced, deformed steel beam and temporary support

Figure 4.10.4: Timber floor joists spliced at steel beam

Figure 25. Lower floor of the Cistern House Extension.

The upper part of the building contains a wooden floor and the roof is composed of natural slates fixed to battens with natural lime parging. This is very favourable to roosting bats – brown long-eared in particular.

Figure 4.10.14: Aerial view of roof with natural stone slate

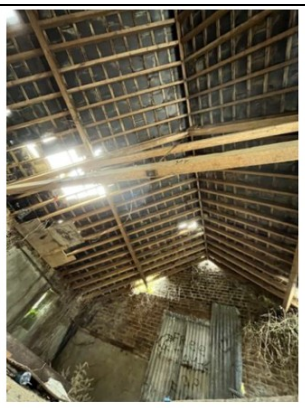

Figure 4.10.15: Timber truss at ridge beam midspan

Figure 4.10.16: View of roof towards Cistern House

Figure 26. Roof and upper floor of the Cistern House Extension.

4.2.7 Detector Survey – Cistern House Extension

The static detector in the Cistern House Extension recorded the presence of three species of bats between the 5th and 6th August 2025. These were Leisler's bat, Common pipistrelle, and Soprano pipistrelle. The most commonly recorded bat was the Common pipistrelle followed by the Soprano pipistrelle as can be seen on **Table 4.2.6** below.

Table 4.2.6. Bat registrations recorded by the Song Meter Mini static bat detector in the Cistern House Extension.

Species	Leisler's bat	Common pipistrelle	Soprano pipistrelle
No. of registrations	3	11	10

The bat activity survey carried out at dusk on the 6th August 2025 which focused on the emergence of bats from the Cistern House Extension recorded a single bat emerging from the building to the south. This was a common pipistrelle bat which was recorded on an Echometer Touch 2 Pro.

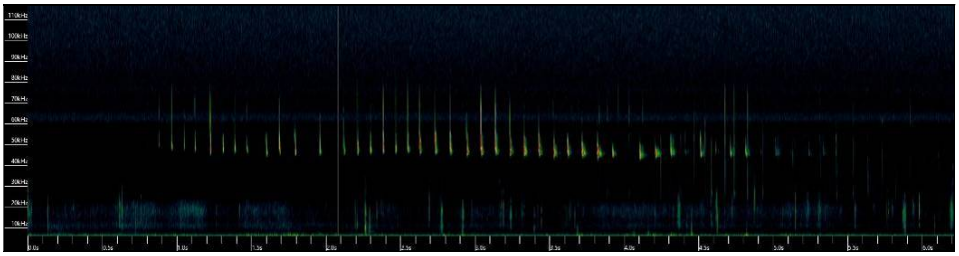

Figure 27. Emerging common pipistrelle bat recorded on an Echometer Touch 2 Pro.

A review of recordings from the SM2 during the bat activity survey identified a number of bats were present within the buildings – these appeared to have emerged through the hole in the roof on the north side of the building and flew north towards the river as they were not seen emerging by the survey team.

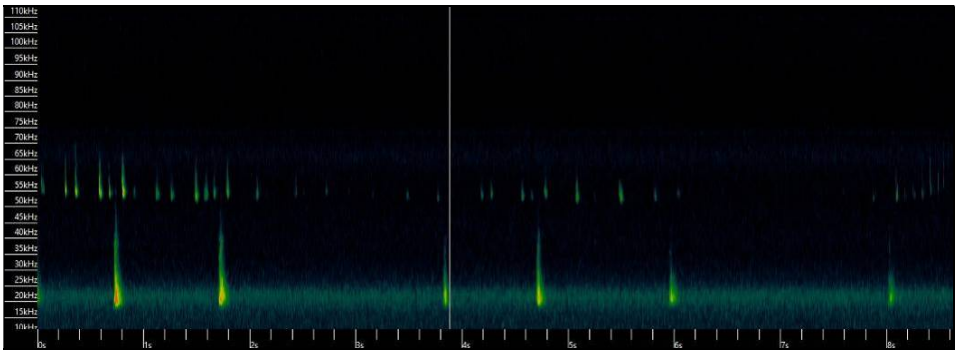

Figure 28. Leisler's bat and Soprano pipistrelle bat recorded by the SM2.

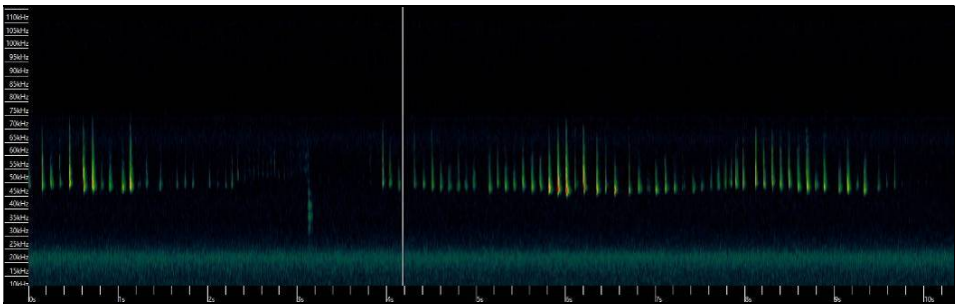

Figure 29. Common pipistrelle bat recorded by the SM2.

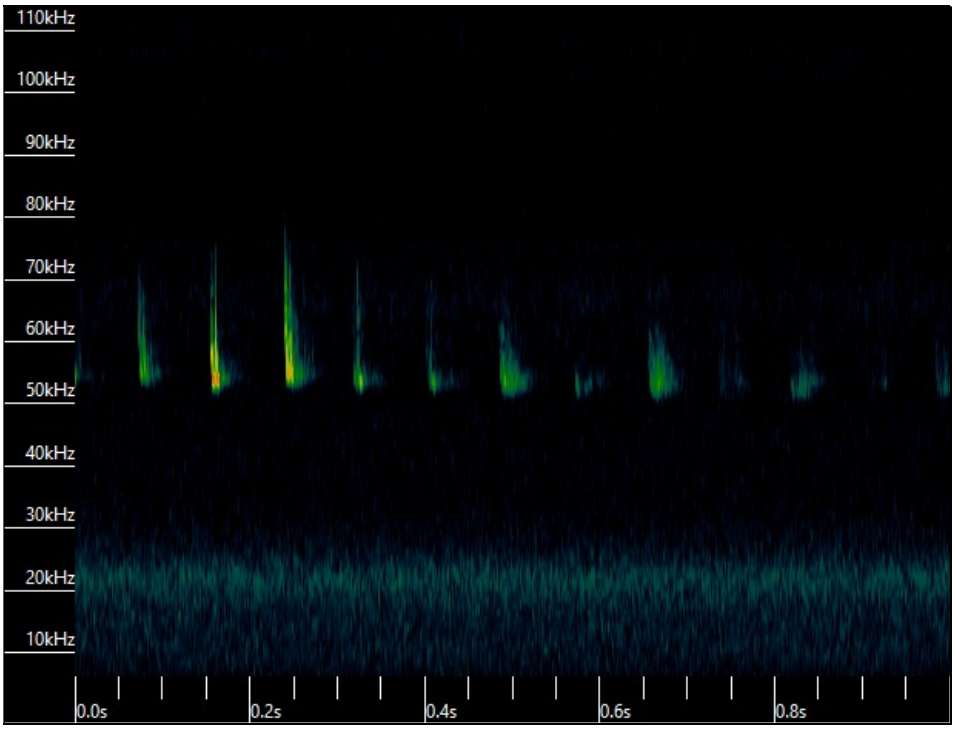

Figure 30. Soprano pipistrelle bat recorded by the SM2.

4.2.8 Bat Derogation Licence - Structures

The Cistern House Extension contains a confirmed bat roost so a bat derogation licence will be required for the works.

5. POTENTIAL IMPACTS

The use by four species of bats listed under Annex IV of the EU Habitats Directive, of the Cistern House Extension for roosting purposes has been confirmed from the present surveys. These were Leisler's bat, Common pipistrelle, Soprano pipistrelle and Brown long-eared bat.

The principal potential impacts on bats arising from the proposed works to the Cistern House Extension include the potential for loss of roosts within the building for bats should access to the upper floor/roof space be sealed off or if suitable roosting locations are not retained within the stone structure of the building or in the garden Boundary Walls.

6. PROPOSED MITIGATION MEASURES

6.1 Bat Derogation Licence

A bat derogation licence will be required for the works to the Cistern House Extension.

The bat derogation licence normally has a period of validity for the works – this depends on what type of roost is encountered and what the proposed works are. The aim of this is to avoid impacting the bats during the most vulnerable periods in their life cycle – breeding or hibernation.

This report forms part of the application for a Derogation Licence for these works.

The bat derogation licence must undergo three tests for approval as follows:

- Test 1: Reason for the Derogation
- Test 2: Absence of Alternative solutions
- Test 3: Impact of a Derogation on Conservation Status

A bat derogation licence will be sought for conservation works under the following reason:

"In the interests of public health and public safety, or for other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment"

A conservation management plan has been developed for the buildings and structures within the Walled Garden at the Ward River Valley Park (COADY, 2024). The structural survey of the buildings and structures completed by PUNCH Consulting Engineers (2024) has identified that the condition of the walled garden walls and the Cistern House Extension building require, rebuilding, stabilisation and repairs to conserve the built heritage fabric of the site. The current condition of the Cistern House Extension has been identified as a health and safety hazard.

These conservation works have potential impacts on roosting bats which have been confirmed to utilise the Cistern House Extension building and may utilise the walls.

A Do Nothing approach is not favourable as if no works are proposed the Cistern House Extension building will continue to deteriorate. The purpose of the works is to secure and conserve the historic structures in the walled garden for the long-term and to bring the walled garden and structures within it back into public use as part of the masterplan for the development of the Ward River Regional Park. It Cistern House Extension currently in poor condition and will continue to deteriorate without intervention. The increased frequency of heavy rainfall events resulting from global warming will accelerate this deterioration. In addition the building currently poses a health and safety risk and the walled garden has been fenced off for safety reasons.

The proposed conservation works and mitigation measures set out below ensure the protection of the bats during the works and the long-term conservation of their roosting locations within the Cistern House Extension building as well as the structure itself and similarly for the walled garden walls.

All four species of bats utilising the structure are widespread species in Ireland and are listed as 'Least Concern' on the Ireland Red List No. 12:

Terrestrial Mammals (Marnell *et al.,* 2019), meaning they are not in any threatened category.

The proposed conservation works in the walled garden and the Cistern House Extension building will not be detrimental to the maintenance of populations of these species at a favourable conservation status in their natural range as required under Section 54 (2) of the European Communities (Birds and Natural Habitats) Regulations.

A range of roosting locations will be retained within the walled garden walls to provide continued access to roosting sites for bats and a dedicated roosting space within the Cistern House Extension building will be created.

6.2 Protection of Potential Bat Roosts - Walls

A number of features in the boundary walls of the walled garden have been identified as having roosting potential for bats. These are primarily located on the northern wall of the northern walled garden. Where possible these will be retained or rebuilt under the supervision of a suitably qualified ecologist.

These areas will be inspected be inspected by a suitably qualified bat specialist and features identified as having roosting potential for bats will be marked up for retention.

Plate 12. Gaps behind brickwork in the Walled Garden Walls can be created during the stone repairs.

If some of these cannot be retained they will be inspected with an endoscope by a bat specialist and if no bats are present the spaces can be blocked up

with hessian or similar to prevent bats from accessing them. The hessian can then be removed and the areas repointed safely.

6.3 Timing of Works to the Cistern House Extension

The works to the Cistern House Extension will be scheduled for the winter months as bat numbers are lower in structures at that time. Once the building is made safe structurally with the removal and replacement of steel beam after adequate propping of the existing timber floor joists the upper floor can then be inspected. The existing floor joists and floorboards will then be replaced as necessary. Ideally the slates If the timber rafters will be more closely inspected and the stone slates and ridge caps will be removed to replace the battens and any identified damaged rafters.

6.4 Retention and Protection of the Cistern House Extension Roost

The upper floor of the Cistern House Extension will be conserved and retained for roosting bats. The 1st floor will be entirely replaced and a folding attic stair with a trapdoor will be fitted. Solid timber doors will be fitted in both openings to promote darkness. As it is the intention of FCC to make the building weatherproof the vertical slots will also be closed up. To allow for bat movement it is proposed to fit 3 x bat slates in the roof. These works will make the building more favourable for roosting bats.

Different species of bats have different roosting preferences as shown on **Figure 31** below. We have three species of bat that favour crevices for roosting purposes (Common pipistrelle, Soprano pipistrelle, and Leisler's bat) and Brown long eared bats that need a flight space in their roost. Other *Myotis* bat species may also be present or use the building in the future.

Table 1.2: The roosting preferences of UK bat species

Category	Bat species
Crevice-dwelling bats (that tend to be hidden from view) and roof-void dwelling bats (that may be visible on roof timbers)	Common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle, Brandt's, whiskered Noctule, serotine, Leisler's, Daubenton's, greater mouse-eared, barbastelle and Bechstein's
Bats that need flight space in certain types of roost	Natterer's, and brown and grey long-eared
Bats that need flight space and flying access	Greater horseshoe, lesser horseshoe

Figure 31. Roosting requirements for bats.

6.4.1 Creation of a dedicated bat roosting area for crevice dwelling bats (Pipistrelle, Leisler's, and *Myotis* sp.)

The renovation of the Cistern House Extension will easily incorporate a dedicated bat roosting area for crevice dwelling bats.

The general fabric of the roof space of the building will remain accessible to bats and not be closed off or sealed up particularly at the wall plate/roof interface. Three bat access slates will also be installed – two on the north side of the roof and one on the southern side.

Where roof trusses/timbers are required for repair/replacement they can be reinstalled by doubling up the timbers up to create a gap between the two timbers that bats may avail of to roost in. Approximately five such features will be created.

Access points to the upper floor of the Cistern House Extension and the roost design has followed the best practice guidance for crevice dwelling species as set out below in **Figures 32** to **33** (Source: Dr Carol Williams of the Bat Conservation Trust (2010). Biodiversity for Low and Zero Carbon Buildings A Technical Guide for New Build).

Table 3.1: General outline of roosting and nesting requirements

Bat/bird species	Access dimensions	Roost/nesting dimensions	Height of entry
Crevice-dwelling bats	15–20 mm (h) x 20–50 mm (w)	Any size as long as some components of the area are crevices about 20–30 mm as the width of the gap Greater total areas of about 1 sq m would be useful for nursery (summer) roosts Male roosts contain smaller numbers of bats or even individual bats Roof void dwelling bats need timber joists or beams on which to roost	2–7 m
Bats needing a flying area	15–20 mm (h) x 20–50 mm (w)	2–2.8 m (h) x 5 m (w) x 5 m (l) not trussed to allow flight. Ideally 2.8 m height, but a height of 2 m may be acceptable in some circumstances. To incorporate roost crevices dimensions as above with crevice-dwelling bats	Over 2 m
Horseshoe bats	Lesser horseshoes 300 mm (w) x 200 mm (h) Greater horseshoes 400 mm (w) x 300 mm (h)	2–2.8 m (h) x 5 m (w) x 5 m (l) not trussed to allow flight. Ideally 2.8 m height, but a height of 2 m may be acceptable in some circumstances	Over 2 m

Figure 32. General outline of bat roosting requirements – crevice dwelling species.

Aspect of roost	Temperature °C		Materials and other comments
	Summer	Winter	
Summer nursery roosts on most southerly or westerly aspect for solar heating Male roosts and winter hibernation roosts on northerly aspect	30–40 (daytime)	0–6	Rough (for grip) Non-toxic or corrosive No risk of entanglement Suitable thermal properties (reducing 24-hour fluctuations), but allowing maximum thermal gain for summer roosts Access not lit by artificial lighting
The crevice-roosting provision within the roost to be located on the south or west side for solar heating. The flight area not as important	30–40	0–6	
The roost is most likely to be in a roof space and this should have an orientation that allows a south-facing solar gain or, better still, an L-shape to allow temperature-range choice	30–40	6–10	

Figure 33. General outline of bat roosting requirements – crevice dwelling species (contd.).

6.4.2 Creation of a dedicated bat roosting area for bats requiring a flying area (Brown long eared bats)

Brown long-eared bats can, in the same way as crevice-dwelling bats, gain access to their roost spaces by crawling through a small gap, but they need a roost in which they can fly especially when females are roosting during the summer.

Inside the roof space of the Cistern House Extension, bats will roost within crevices, but they will require the additional space for flying and dimensions of 2.8 m (h) x 5 m (w) x 5 m (l) are optimal. It is important that the design fo the existing roof space does not change (with the addition of framed or trussed rafters) to ensure sufficient flight space.

6.4.3 Timber Treatment/Insecticides

Should any necessary timber treatment operations be required (e.g. of extant roof timbers which are to be conserved or of new timbers proposed for use) only bat safe poisons will be used. FCC and the building contractor will ensure that only bat safe, pre-treated timbers are used where necessary during the restoration of the roof. Should any of the timbers or roof spaces within the building require the use of insecticides only bat safe insecticides will be used.

6.4.4 Roofing Membranes

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 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 the UK the Bat Conservation Trust brought together Natural England, NatureScot, Natural Resources Wales, senior academics, bat ecologists and industry experts in roofing materials to form a steering group that has set up the test protocols for roofing underlays intended for use where bats are present.

At present only one product in the UK has passed the snagging propensity test completed by an independent laboratory. This is **TLX 'Bat Safe'**.

For technical questions covering any of the below areas in relation to TLX 'Bat Safe' please contact TLX Insulation on 00 44 1204 674 730 or email sales@tlxinsulation.co.uk

TLX can provide free technical support from their head office in Bolton on:

- How TLX Batsafe should be installed
- Building regulations advise and how they apply
- Condensation risk calculations
- Access to CAD drawings
- Energy payback calculations
- Advice can also be sought from building control or the relevant manufacturer of any membrane that has passed the snagging propensity test.

Additional products may also be approved in the intervening period of the project so it is recommended that updates on whether other suitable products have passed the independent snagging propensity test are checked.

6.4.5 Lighting

Many species of bats are sensitive to lighting and it has been shown that lighting can deter bats from using an area for foraging. Given the importance of the walled garden and it's buildings within the Ward River Regional Park with a confirmed bat roost present and the recorded presence of several species of foraging bats in the wider area it is important that the Cistern House, the Cistern House Extension, other buildings and the walled garden, and adjoining habitats in the valley are not illuminated. At present there is no requirement for lighting for the property.

Should this requirement change any lighting proposed for the property will not be developed without detailed design in terms of the potential impacts of same on the bats.

6.4.6 Health and Safety Issues

Workers on the project will 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 will only be handled wearing gloves and lifted up in a piece of cloth (such as a tea towel) before being placed in a ventilated closed cardboard box. A bat specialist will be called and can then attend site and advise on what to do. 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.

6.4.7 Bat Monitoring

Monitoring will be required on an ongoing basis during the works and will be completed by a licensed bat specialist.

This monitoring will involve the following aspects:

- Monitoring of the bat mitigation measures as set out in this report. All mitigation measures will be checked to determine that they were successful. A full summer bat survey will be completed post-works.

6.5 Ecological Clerk of Works/Bat Specialist

FCC, with the support and oversight of a retained qualified ecologist/bat specialist will ensure the various mitigation measures outlined in this report are implemented.

7. CONCLUSION

A confirmed bat roost has been found within the Cistern House Extension and a number of potential bat roosting locations have been identified in the walls of the Walled Garden at Brackenstown.

A bat derogation licence has therefore been sought from National Parks and Wildlife Service given the likelihood of encountering bats over the course of the building renovation.

Ultimately the restoration of the Cistern House Extension will be of benefit to bats as the building will be preserved and utilised, a dedicated bat roosting area will be created and the renovation works to the walls will include access for roosting bats.