

Bat Survey

Residential Development on Lands at Kilmashogue House and Coill Avon house,
Whitechurch Road, Rathfarnham, Dublin 16



FINAL REPORT

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1. INTRODUCTION

1.1 Background

This report has been prepared by Faith Wilson (an independent ecological consultant and licensed bat specialist) who was appointed by BCDK Limited and Coill Avon Limited to update bat surveys previously completed for lands proposed for development for a Strategic Housing Development at Kilmashogue House and Coill Avon House, Whitechurch Road, Rathfarnham, Dublin 16.

The study area consists of two separate parcels of land located to the west of Whitechurch Road and adjoining the M50 motorway (as can be seen on the Google Maps imagery shown below on **Figure 1.1.1**).



Figure 1.1.1 Study area shown in red - Whitechurch, Co. Dublin (Google Maps).

The main interest in the study area from a bat perspective is in the Whitechurch Stream River Corridor, the hedgerows and treelines along the field boundaries and the areas of grassland habitat (which can be seen on the Google Maps imagery in **Figure 1.1.1** above).

Both land parcels also contain some built structures which potentially contain the breeding and resting places of several protected bat species which could be disturbed by the proposed development.

Given the potential sensitivity of the site for bats a series of bat surveys were previously conducted in 2019 and 2020 (Keeley (2019) and Keeley (2020)).

The current survey (2021) built on these previous surveys and were completed to update the results of same and to see if any significant changes to the site had occurred from the perspective of bats.

The aim of the current bat survey was to:

- a) Confirm (and update if required) what species of bats are known the lands at Whitechurch and the immediate environs.
- b) To confirm if bats are using any of the structures within the site for roosting purposes.
- c) To identify if any trees are confirmed or have potential to support roosting sites for bats.
- d) To confirm if bats are utilising the study area for foraging purposes and ensure the project design takes due cognisance of same.
- e) To determine if a bat derogation licence is required for any of the proposed works.

This report should be read in conjunction with the bat survey reports which were previously completed on the lands (Keeley (2019) and Keeley (2020)) and is intended as an update to same as opposed to a standalone report.

1.2 Project Description

The proposed development on a site that extends to 6.77 hectares includes the derelict Kilmashogue House (southern lands) and Coill Avon house (northern lands), adjacent roads in the control of South Dublin County and Dun Laoghaire Rathdown County Councils and consists of the following developments: -

- Demolition of Kilmashogue House and outbuildings and demolition of Coill Avon house and outbuildings;
- The refurbishment and re-use of 2 no. stone outbuildings for community use, to be incorporated into an area of public open space on the southern lands;
- The construction of a mixed-use development comprising neighbourhood centre and 178 no. residential units comprising 72 no. houses, 38 no. apartments and 68 no. duplex apartments;
- The 72 no. houses will comprise 2, 2.5 and 3-storey detached, semi-detached and terraced units to include:-
 - 7 no. 2-bed houses;
 - 44 no. 3-bed houses;
 - 21 no. 4-bed houses;
- The 38 no. apartments and 68 no. duplex apartments are located across 7 no. buildings ranging in height from 3 to 5-storey consisting of 1 no. Block A/B, 1 no. Block C, 1 no. Block E, 1 no. Block S and 3 no. Blocks T-type as follows: -
 - **Block A/B:** 5-storey over basement and podium accommodating 10 no. 1-bed apartments, 16 no. 2-bed duplex apartments and 1 no. 3-bed duplex apartment with associated balconies/terraces;

- **Block C:** 5-storey over basement accommodating 4 no. 1-bed apartments and 8 no. 2-bed duplex apartments with associated balconies/terraces;
 - **Block E:** 4-storey over basement accommodating 8 no. 1-bed apartments and 16 no. 2-bed duplex apartments with associated balconies/terraces;
 - **Block S:** 3-storey accommodating 2 no. 2-bed duplex apartments and 1 no. 3-bed apartment and 1 No. 3-bed duplex apartments with associated balconies/terraces;
 - **Block T:** 3no. 3-storey buildings accommodating 6 no. 1-bed apartments, 18 no. 2-bed duplex apartments, 9 no. 3-bed apartments and 6 no. 3-bed duplex apartments, all with associated balconies/terraces;
- Block A/B and Block C are arranged around a landscaped podium. The neighbourhood centre is located below this podium and accommodates a 2-level creche (313m²) at lower ground and ground floor level, and 3 no. retail/non-retail/cafe service units (470m²) at ground level;
 - The basement below Block A/B and Block C accommodates 50 no. car parking spaces, bicycle parking, bin stores, plant and staff service area (80m²);
 - The basement below Block E accommodates 35 no. car parking spaces, bicycle parking, bin store and plant;
 - A section of link street with footpath and cycle path (approx. 438 linear metres) extending from the junction of Whitechurch Road and College Road on an alignment parallel to the M50, to provide access to the southern development lands and incorporating a bus turning circle;
 - Upgrade works to College Road including a new two-way cycle track and relocated footpath from the Whitechurch Road junction to provide connectivity to the Slang River pedestrian/cycle Greenway;
 - A new signalised crossroads junction to connect the proposed link street with Whitechurch Road and College Road;
 - Upgrade to the existing vehicular access at the entrance to Coill Avon house on Whitechurch Road;
 - Foul sewer drainage works along Whitechurch Road from the Kilmashogue junction to the existing junction at Glinbury housing estate;
 - All landscaping, surface car parking, boundary treatments, infrastructure works, ESB substation, and associated site works and services.



Figure 1.1.2 Proposed Site Layout - Southern Site.

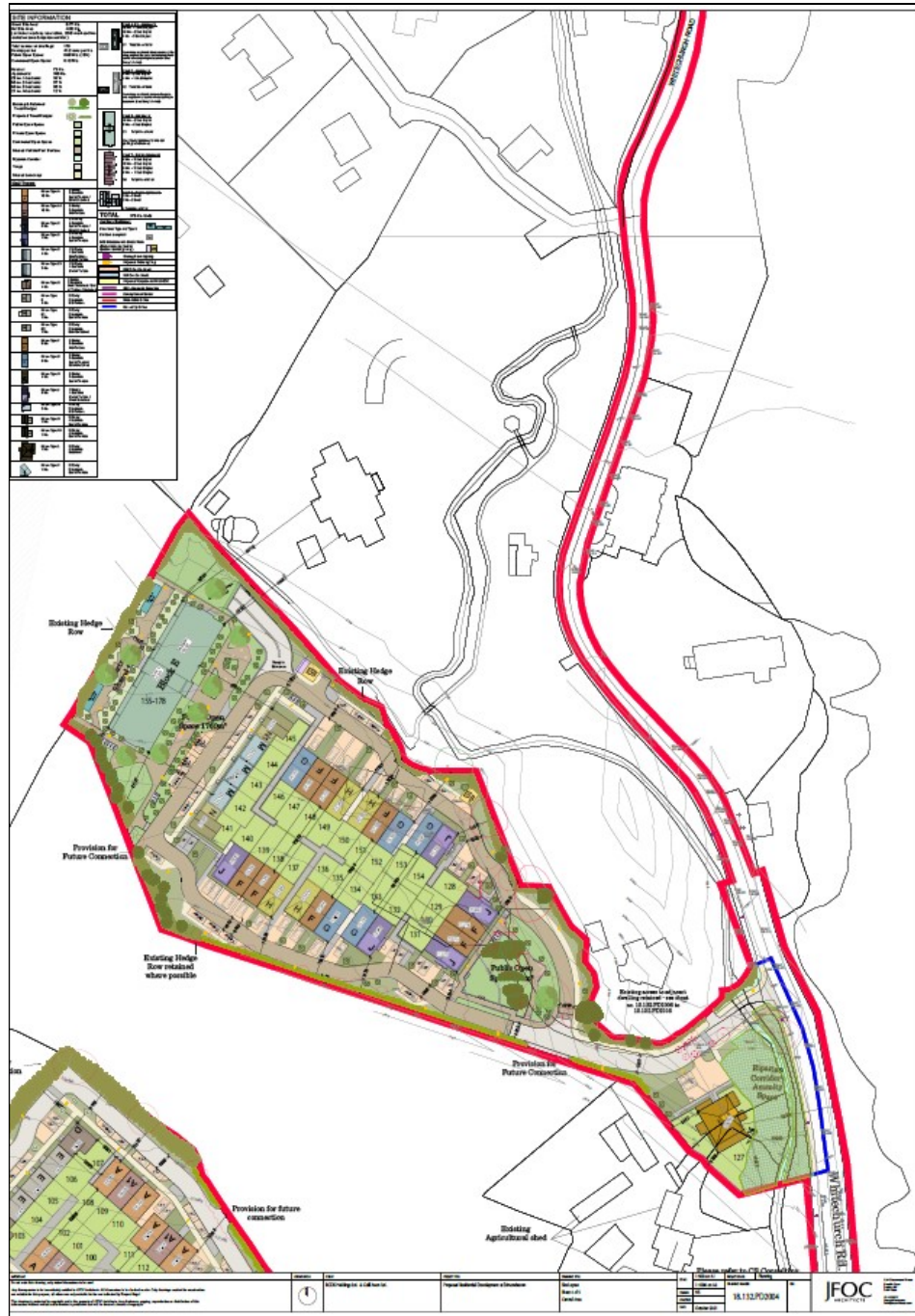


Figure 1.1.3 Proposed Site Layout - Northern Site.

1.3 Relevant Legislation

1.3.1 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.

1.4 Survey constraints

The bat surveys conducted by Brian Keeley were conducted during May 2019 (northern lands) and June 2020 (both southern and northern lands), which is within the optimum time for surveying bat activity as can be seen below (Source: NPWS Bat Mitigation Guidelines).

The current surveys were conducted on 5th and 13th October 2021 which is within the optimum time for surveying bat mating and swarming activity.

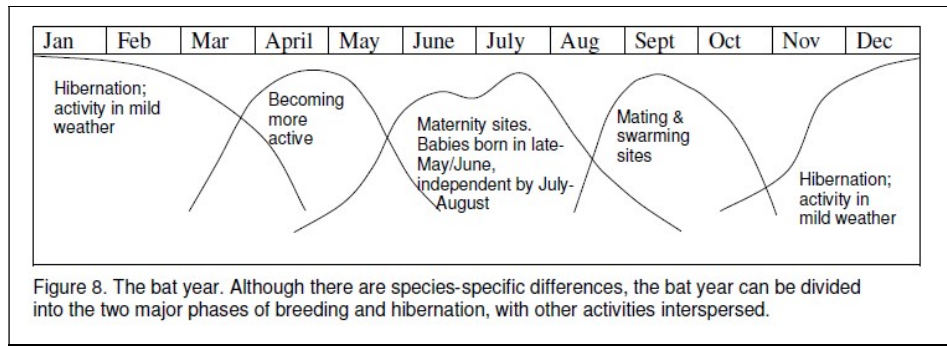


Table 5.2 within that same document is also presented below, which outlines the appropriate months for bat surveys.

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 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

It was not possible to physically access the old farmhouse building in the southern lands as the entrances are all blocked up. Only a small part of the house in the northern lands could be safely accessed.

2. METHODOLOGY

2.1 Project Description

It is proposed to develop housing on these lands as described above in **Section 1.2** and shown on **Figure 1.1.2** and **1.1.3** above.

2.2 Desk Study and Consultation

The Bat Conservation Ireland database and other bat specialists were consulted regarding records of bat activity in the area.

2.3 Field Surveys

In accordance with best practice as described in the 'Guidelines for the Treatment of Bats During the Construction of National Road Schemes' (NRA 2006) and 'Bat Mitigation Guidelines for Ireland' (Kelleher 2006), a bat activity survey of the general environs of the study area was conducted during the active bat season (in this instance focusing on mating/swarming activity).

The bat surveys were carried out by Faith Wilson, a licensed bat specialist, and built on the previous surveys conducted by Brian Keeley in 2019 and 2020, which took place during the summer period.

Dusk/dawn surveys were completed at each site by Keeley and a colleague on the 9th/10th June 2020 when a handheld Echometer 3 (EM3) full spectrum receiver was used for each site. These surveys also utilised a Songmeter Mini which was placed on the windowsill of the buildings in each site proposed for demolition at both sites. The surveys conducted by Keeley in 2020 built on the previous surveys completed by Keeley in the northern lands in May 2019.

The bat surveys were conducted by Faith Wilson on the 5th and 13th October 2021 and consisted of a detector survey of the northern site on the former date and the southern site on the latter. Several types of bat detectors - two Batbox Duet Heterodyne/Frequency Division detectors, a Pettersson D100 Heterodyne detector and an Echometer Touch Pro were utilised. The detector survey initially focused on dusk emergence at the buildings on each property and a general walkover of the properties was then completed to inform how bats are using the site for foraging or commuting purposes at this time of year. These surveys determined what bat species are present particularly along the Whitechurch Stream and helped to point towards the potential for mating roosts/swarming activity.

A visual assessment of trees as potential bat roosts was also completed. The trees 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 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 (*Plecotus auritus*), Natterer's (*Myotis nattereri*) and Whiskered/Brandt's bats (*Myotis mystacinus/brandtii*) remain active throughout the night, as prey is available on foliage for longer periods.

3. RESULTS

3.1 Desktop Research

The Bat Conservation Ireland Database of bat records was searched for records of bats from the study area.

There are a number of records in the Bat Conservation Ireland database from the immediate study area. These include records from the Church of Ireland property, which is located c. 80m to the north east of the northern site on the east side of Whitechurch Road. In 1998 the church was surveyed as part of the surveys for bat roosts in Church of Ireland churches and brown long eared bat droppings were found in the chancel and south side gallery (Dr Niamh Roche, pers. comm.). Since then the church has been illuminated and this may have caused the bats to abandon the roost.

The stable building associated with the church was surveyed for bats by this author, in May 2012 prior to its conversion for use by the parish. That survey recorded that the building offered many opportunities for bat use but no bats or signs of bats were observed visually during the building survey and no bats were either seen or detected either emerging from the stable building or using the general environs of the church and grounds at that time.

Other records of bats from within a 10km radius of the environs of Whitechurch within the Bat Conservation Ireland database include those of roosts and other records made from ad hoc observations, car monitoring transect surveys, dedicated EIS work by other bat specialists, the BATLAS 2010 project and the Neighbourhood Bats Project 2021.

These include records of the following species:

- Soprano pipistrelle (*Pipistrellus pygmaeus*)
- Common pipistrelle (*Pipistrellus pipistrellus*)
- Unidentified pipistrelle (*Pipistrellus* spp.)
- Daubenton's bat (*Myotis daubentonii*)
- Leisler's bat (*Nyctalus leisleri*)
- Natterer's bat (*Myotis nattereri*)
- Whiskered bat (*Myotis mystacinus/brandtii*)
- Unidentified *Myotis* sp.

The previous surveys conducted by Keeley in 2019/2020 recorded four species of bats on the lands. These were:

- Leisler's bat (*Nyctalus leisleri*)
- Soprano pipistrelle (*Pipistrellus pygmaeus*)
- Common pipistrelle (*Pipistrellus pipistrellus*)
- Brown long-eared bat (*Plecotus auritus*)

No roosts were confirmed in any of the buildings on site due for demolition in these surveys.

3.2 Receiving Environment

The lands proposed for development at Whitechurch are currently undeveloped and consist of two separate properties – Kilmashogue House (southern lands) and Coill Avon house (northern lands).

Descriptions of the buildings and the results of the previous surveys are presented in the 2019 and 2020 bat survey reports which accompany this application (Keeley (2019) and Keeley (2020)).

The habitats present on these lands are described in the Ecological Impact Assessment Report (Fogarty, 2021), which accompanies this planning application as follows:

‘Site 1 (the southern lands) are a series of fields of improved agricultural grassland – GA1 which are grazed by cattle and sheep. This is composed of grasses such as Cock’s-foot *Dactylis glomerata*, Creeping Bent *Agrostis stolonifera* and Perennial Rye *Lolium perenne* along with White Clover *Trifolium repens*, Docks *Rumex* sp., Thistle *Cirsium* sp. and other common grassland plants. The boundary with the motorway is a recently-planted hedgerow – WL1 with Maple *Acer* sp., Birch *Betula* sp., Beech *Fagus sylvatica* and Larch *Larix decidua*. Nearby buildings and artificial surfaces – BL3 are associated with stretches of the non-native New Zealand Broadleaf *Griselinia littoralis*, Sycamore *Acer pseudoplatanus* and very large Cypress *Cuprocyparis* sp. Using methodology from the Heritage Council these recently-planted or non-native hedgerows can be assessed as ‘lower significance’ (Foulkes et al., 2013).

Traditional field boundaries elsewhere are native hedgerows composed of Elder *Sambucus nigra*, Hawthorn *Crataegus monogyna*, Blackthorn *Prunus spinosa*, Grey Willow *Salix cinerea* and Ash *Fraxinus excelsior*. Due to their age and species diversity these are assessed as ‘higher significance’.

The main parcel of land on Site 2 (northern lands) is a dry meadow – GS2 and has not been recently grazed by animals. There are grasses such as Cock’s-foot *Dactylis glomerata* and Creeping Bent *Agrostis stolonifera* as well as typical grassland plants such as Nettle *Urtica dioica* and Broad-leaved Dock *Rumex obtusifolius* with occasional Brambles *Rubus fruticosus* agg. Within this field there is a disused building – BL3.

Tall treelines – WL2 to the south are dominated by the non-native Leyland Cypress *Cuprocyparis leylandii* and so are of low nature value (‘lower significance’). A hedgerow – WL1 to the north-west and north-east is of native origin with Hawthorn *Crataegus monogyna*, Brambles, Ivy *Hedera helix* but also the non-native Snowberry *Symphoricarpos albus*. This is a ‘higher significance’ feature.

The Whitechurch Stream is an eroding river – FW1 with a riparian vegetation including Cherry Laurel *Prunus laurocerasus*, Sycamore *Acer pseudoplatanus* and Winter Heliotrope *Petasites fragrans*. It forms a corridor with a tall treeline and broadleaved woodland – WD2 with tall Ash, Sycamore, Horse Chestnut *Aesculus hippocastanum* and the non-native Snowberry *Symphoricarpos albus*.

At site 2 there is a large Crack Willow *Salix fragilis*. The stream forms the eastern boundary of both Site 1 and Site 2 but is not fish passable as it is culverted under the M50 motorway as well as a number of other sections downstream of this point.

There are no ponds or bodies of open water on the development lands and no habitats which could be considered wetlands.

There are no plant species which are listed as alien invasive under Schedule 3 of SI No 477 of 2011.

Overall the lands can be described as being of low biodiversity value although 'higher significance' treelines and hedgerows, along with the Whitechurch Stream and broadleaved woodland are all of high local value to biodiversity'.

3.3 2021 Detector Surveys

The aim of the current surveys were to update the previous studies conducted by Keeley (2019/2020) and to see if any bat roosts were present in the buildings at this time of year, if there were potential bat roosts within any trees within the lands by visually inspecting them and to identify areas of importance for foraging and commuting bats within the study area. Recordings were made visually and with the ultrasound detectors.

The 2021 detector surveys recorded four species of bats using the lands for foraging and commuting purposes. These were

- Leisler's bat (*Nyctalus leisleri*)
- Soprano pipistrelle (*Pipistrellus pygmaeus*)
- Common pipistrelle (*Pipistrellus pipistrellus*)
- Brown long-eared bat (*Plecotus auritus*)

Northern Lands

The first detector survey conducted on 5th October 2021 on the northern lands recorded four species of bats. Conditions were suitable for the survey as although late in the season it was calm, partially overcast and dry with temperatures of 11.5°C and sunset was at 18:49. The survey commenced at 18:30 and was concluded at 21:00.

No bats were recorded emerging from the derelict house on the property and the largest amount of activity was recorded at the Whitechurch Stream where a minimum of five to six common and soprano pipistrelle bats were recorded foraging in the dense undergrowth. These were joined by a minimum of two

brown long eared bats (these are very difficult to locate based on their low ultrasonic emissions and it is probable that there are more bats of this species present). They will also emerge in sheltered sites close to vegetation and follow the contours of a building/woodland and hence they are the most likely species to be overlooked in any assessment based on echolocation analysis. The presence of a previously confirmed roost of brown long-eared bats in the church across the road points to the importance of the valley corridor for this species.

The wooded avenue leading up to the house also had good levels of bat activity with three species recorded foraging here - common and soprano pipistrelle bats (3 - 4 bats) and a single Leisler's bat, which was emitting social calls in this area which would indicate the presence of a mating roost at this time of year.

A noted feature of the northern lands is the dark character of its environs, in particular the driveway bounded by beech, ash, Monterey cypress, Scot's pine, sycamore and wild cherry which renders it very favourable for foraging bats and other fauna.

Southern Lands

The second detector survey was conducted on the 13th October 2021 on the southern lands. Sunset was at 18.33 and the survey commenced at 18:00 under dry, calm conditions. The survey concluded at 21:00.

This survey recorded a single common pipistrelle foraging in the vicinity of the derelict farmhouse at 19:30 with no other bat activity recorded in the environs of same. The lands to the west of here are currently used for sheep pasture and the bright lights from the M50, which adjoins these lands to the south, makes these parts of the property less favourable for bats.

Other bat activity was concentrated in the northern portion of the site where significant foraging activity of common and soprano pipistrelle bats was recorded.

3.4 Review of Previous Detector Surveys

The survey of the northern lands conducted by Keeley in May 2019 and June 2020 recorded three species of bats as shown on **Figure 3.4.1** and **3.4.2** below with foraging and commuting activity recorded across the site.

Similar results were documented by Keeley in June 2020 on the southern lands as shown on **Figure 3.4.3** below.

The current surveys conducted in 2021 did not find any significant differences in terms of bat activity across the site, usage by buildings or other features with the exception of mating activity as would be expected at this time of year.



Figure 3.4.1. Bat survey of the northern lands conducted in May 2019 (Keeley 2019).



Figure 3.4.2. Bat survey of the northern lands conducted in June 2020 (Keeley 2020).



Figure 3.4.3. Bat survey of the southern lands conducted in June 2020 (Keeley 2020).

4. ASSESSMENT OF SIGNIFICANCE FROM THE PERSPECTIVE OF BATS

4.1 Importance of the Lands for Bats

No bat roosts have been confirmed from any of the buildings proposed for demolition within the site and therefore a bat derogation licence is not currently required for the demolition of these buildings.

There is potential for bats to roost in some of the trees within the northern lands in particular, where social calls were recorded and a mating roost is likely.

The main interest from a bat perspective of the lands proposed for development at Whitechurch is for foraging and commuting bats. Four species of bats have been recorded foraging and commuting here to date (studies completed between 2019 – 2021).

The undisturbed nature of the Whitechurch Stream with dense vegetation alongside it continues to provide rich foraging for bats and other wildlife, forming an important wildlife corridor and an important piece of green infrastructure within the environs of Whitechurch.

The Whitechurch Stream rises on the slopes of Tibbradden Mountain and Two Rock Mountain at Kilmashogue and Tibbradden. The Whitechurch Stream is a tributary of the Owendoher River. The Owendoher River converges with the Dodder River downstream of the Whitechurch lands at Templeogue. Water quality monitoring conducted on the Owendoher 100m downstream of the footbridge near Willbrook Grove has recorded water quality of Q3, which is of 'Poor Status'. The water quality of the Whitechurch Stream in this section was deemed in the 2013 – 2018 Water Framework Directive monitoring round as being of 'Good Status'.

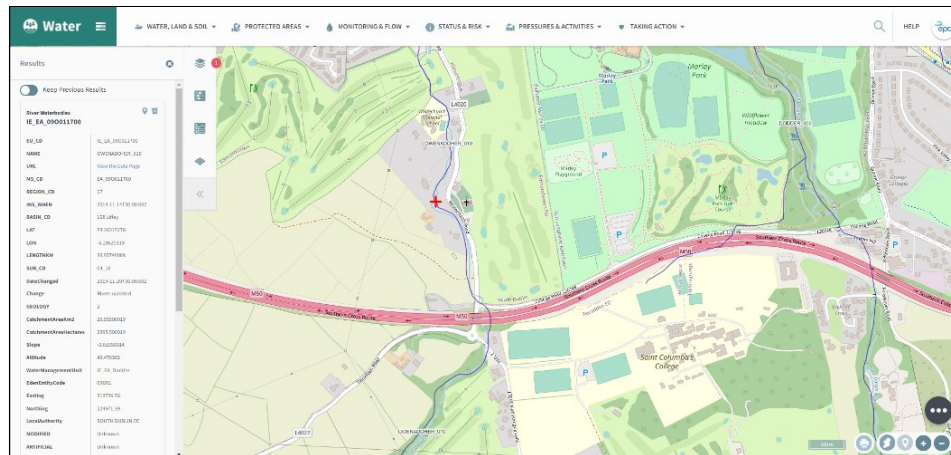


Figure 4.1.1. The Whitechurch Stream, which is a tributary of the Owendoher River, is found along the eastern boundary of the site.

This watercourse and associated riparian corridor and the adjoining lands to the east and south (beyond the M50 motorway) have been identified in the draft South Dublin County Council County Development Plan 2022 – 2028 as

part of the green infrastructure network for the county as shown on **Figure 4.1.2** below.

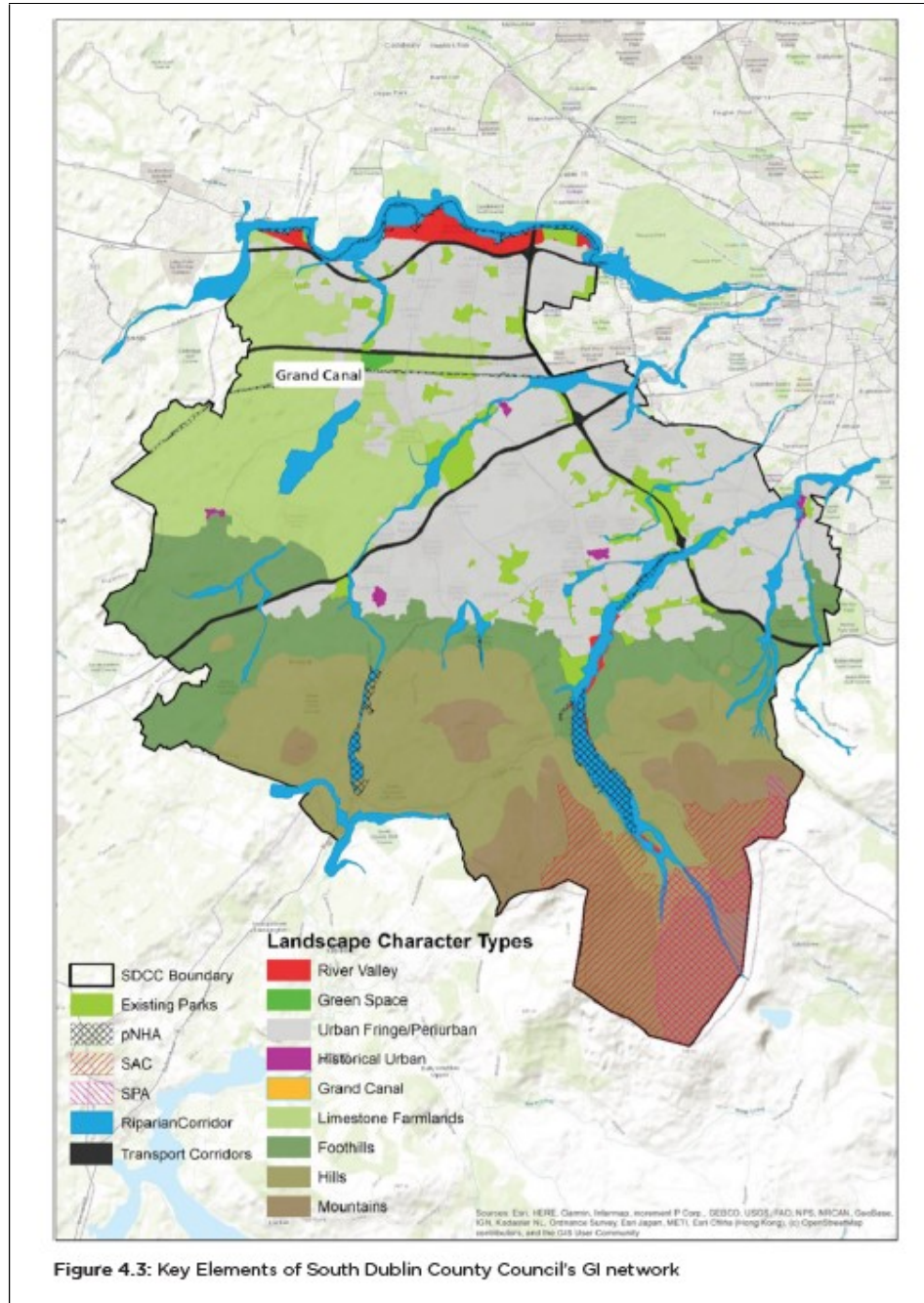


Figure 4.1.2. The Whitechurch River corridor is mapped as part of the green infrastructure network for the county in the draft South Dublin County Council County Development Plan 2022 - 2028.

The Whitechurch Stream forms part of the M50 green infrastructure corridor (Strategic Corridor 2) and is mapped as a secondary green infrastructure link (L14) in the green infrastructure strategy map for the county in the draft South Dublin County Council County Development Plan 2022 - 2028 as

shown on **Figure 4.1.3** below and the objectives for which are presented on **Figure 4.1.4** below.

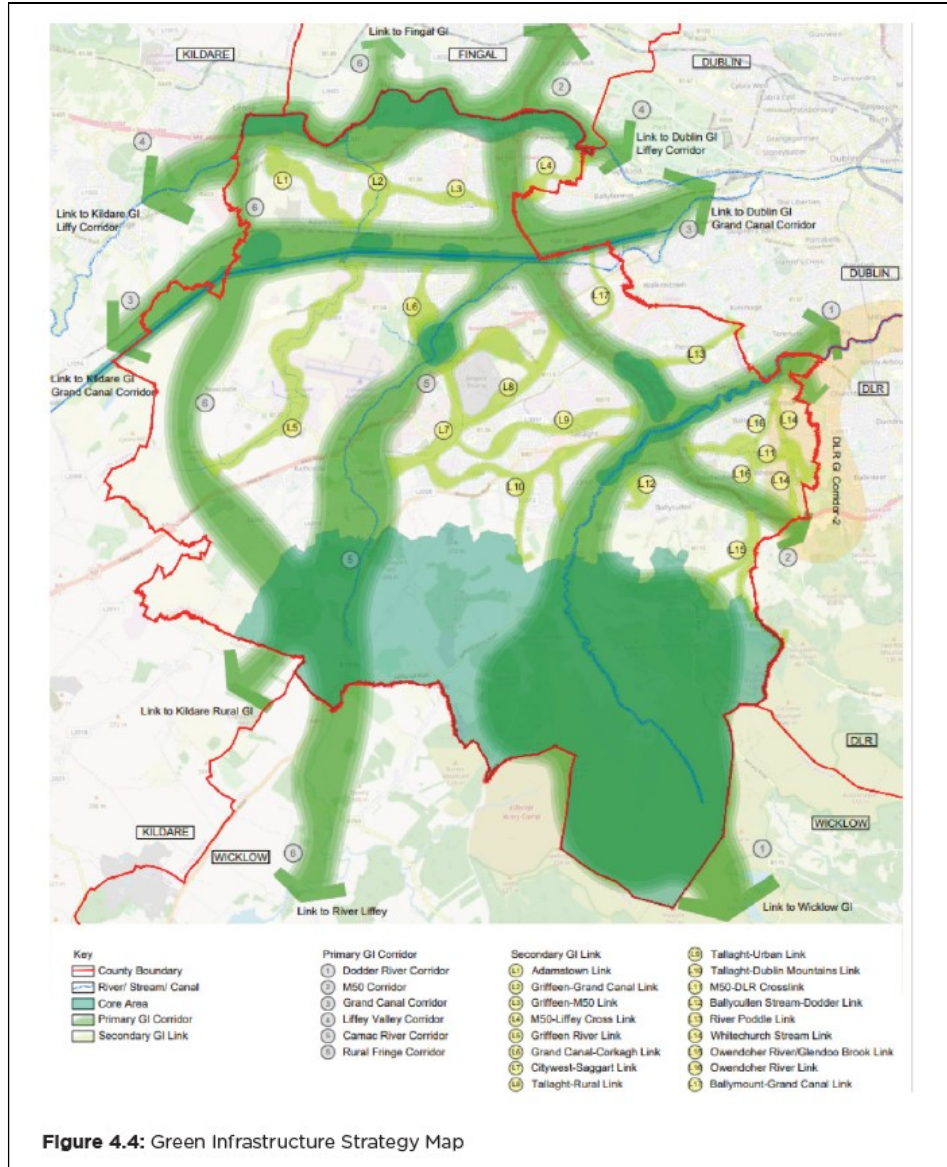


Figure 4.1.3. The Whitechurch River corridor is mapped as a secondary green infrastructure link (L14) in the green infrastructure strategy map for the county in the draft South Dublin County Council County Development Plan 2022 – 2028.

Strategic Corridor 2: M50 Corridor
<p>The M50 is an important piece of national transport infrastructure that links South Dublin County Council to DLR, DCC, and Fingal. While it acts to sever connectivity for biodiversity and for local communities, the GI Strategy recognises that there are opportunities for GI enhancement along the M50.</p> <p>The M50 spans the biodiversity corridors of the River Liffey, the Grand Canal, the Camac, the Poddle, the Dodder, and the tributaries of the Whitechurch and Owendoher Rivers. It also spans the Dodder Valley Linear Park and bisects Tymon Park. A range of other open spaces and local and neighbourhood parks are also located along its perimeter, such as at Ballymount, Kilnamanagh, Knockmitten, and Collinstown.</p> <p>An opportunity exists to identify and enhance the interconnection of the parks, green spaces and river corridors situated along the M50. Measures include providing additional north-south, pedestrian and cyclist green links (e.g. at Grand Canal) as well as link as east-west links where possible. This will help create further GI connectivity for the benefit of biodiversity and for recreational purposes.</p> <p>The M50 corridor also extends into the administrative area of Dún Laoghaire-Rathdown County Council. to the south and Fingal County Council to the north. As such, there is further opportunity for cross-county extension of GI improvements into these counties to further enhance the importance of this corridor e.g. Potential for GI links from the County to lands at Dunsink is one such opportunity.</p>
<p>Overarching Objectives:</p> <ul style="list-style-type: none">→ To enhance connectivity between existing parks and open spaces on either side of the M50 corridor.→ To enhance corridor links and biodiversity value through appropriate planting along both sides of the M50 Corridor, to maximise opportunities to ameliorate noise and air pollution, increase visual amenity, enhance biodiversity and provide continuous ecological corridors and green links where possible in consultation with TII/NTA.→ To promote the connectivity of the M50 GI Corridor with Dublin's wider regional GI network, in consultation with Dún Laoghaire-Rathdown County Council and Fingal County Council.→ To investigate the potential to implement improved pedestrian and cycling infrastructure between the Grand Canal corridor and green spaces at Knockmitten.→ To identify and support additional north-south pedestrian and cyclist green links (e.g. at Grand Canal) as well as east-west links where possible.

Figure 4.1.4. The Whitechurch River corridor forms part of the Strategic Corridor 2 – M50 Corridor in the green infrastructure strategy map for the county in the draft South Dublin County Council County Development Plan 2022 – 2028.

4.2 Identification of Potential Impacts on Bats

The 2019/2020 surveys identified the potential impacts on bats as follows:

Loss of cover for feeding and commuting:

As bats most commonly feed along hedgerow and treelines and both trees and hedges provide shelter from wind and visibility to predators, the removal of vegetation can affect how a bat commutes through a site and feeds within the site. This may lead to a bat needing to fly over greater distances to find food and roosts.

Increased light levels within the area:

Housing requires lighting for access and safety and for convenience and display and this development would see the introduction of street lighting, house lighting, garden lighting and a reduction in the dark areas wherein most bat activity occurs.

Impacts of changes to the site on resident and local bats:

The reduction in cover and lighting alterations to the site will have a long-term to permanent slight negative impact on the bat population of the region. This will act cumulatively with other changes to the area associated with housing or other construction.

The current survey reconfirms these previous findings. The main potential impacts on bats arise from the following:

- Potential for loss of roosting spaces within buildings on the site
- Potential for loss of roosting opportunity in trees within the site
- Potential for loss of foraging habitat arising from the loss of vegetation within the site
- Potential for loss of commuting routes for bats arising from the loss of vegetation within the site boundaries
- Potential for damage to retained habitats of importance to bats during the construction phase of the development
- Potential for lighting to be used on the site which could act as a barrier to the movement of bats through the area

A series of mitigation measures to reduce/ameliorate same are set out below in **Section 5**.

5. PROPOSED MITIGATION MEASURES

A number of mitigation measures for bats are presented below.

A bat derogation license is not currently required for the proposed development of these lands.

5.1 Building Demolition

The buildings on both sites, which are scheduled for demolition, will be resurveyed for bats prior to any proposed demolition works as some time may have elapsed between the present survey and these works once planning permission is granted.

If any bat roosts are present a bat derogation licence will then be sought for the development from National Parks and Wildlife Service.

The results of this bat survey will inform the demolition process. Generally a precautionary approach to the demolition of the building will be taken, whereby the roof will be stripped manually with the expectation that bats may be present. One side of the roof will be removed (slates/tiles, fascia, soffits, felt, etc.) and then the building left overnight before the other side is removed. This work will be done during the winter months (i.e. October – March) when bat numbers are known to be lower in buildings and will also avoid the bird breeding season.

5.2 Provision of Roosting Opportunity within the Refurbished Stone buildings

It is proposed to refurbish and reuse two old stone buildings within the property for community use.

Detailed design has been completed by the bat specialist in conjunction with the project architects to ensure provision for roosting bats is designed in these buildings, which will incorporate a dedicated bat roosting area, for crevice dwelling bats.

Access points to the dedicated roosting areas and the roost design has followed the best practice guidance as set out below in **Figures 5.2.1 to 5.2.6** (Source: Dr Carol Williams of the Bat Conservation Trust (2010). Biodiversity for Low and Zero Carbon Buildings A Technical Guide for New Build).

Access points to the roosting locations in the refurbished buildings will not be illuminated.

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 5.2.1. General outline of bat roosting and nesting requirements.

Aspect of roost	Temperature °C		Materials and other comments
Summer nursery roosts on most southerly or westerly aspect for solar heating	Summer 30–40 (daytime)	Winter 0–6	Rough (for grip) Non-toxic or corrosive
Male roosts and winter hibernation roosts on northerly aspect			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 5.2.2. General outline of bat roosting and nesting requirements (contd.).

3.12.1 **Roof space**

Drawing Nos 5 and 6 provide provision for crevice-dwelling bats in a roof design that uses tiles and allows access to the space between the tiles/slates and the U value envelope. Included in these figures are examples of the placement of some of the ready-made products, as well as bespoke bat-roosting areas.

Drawing No. 5

Roofspace 1 – solid wall construction at roof eaves and ridge providing places for bats and birds (uninsulated outbuilding)

- 1 Ridge roost, similar materials to (3c)
- 1a Option: Could be empty ridge tile space with closed ends and ways through to next ridge tile space
- 2 Handmade clay ridge tile with bat access
- 3 Bat roost fixed to side of rafters below ridge beam, 2 boards spaced apart, 15–20 mm minimum, 25–30 mm maximum
- 3a Option: Reclaimed, locally grown or FSC temperate softwood scraps
- 3b Option: FSC WBP water boil proof plywood strips
- 3c Option: Cement-wood particle board, Roughened/grooved surface for climbing and hanging
- 4 Reclaimed, locally grown or FSC temperate softwood rafters, 200 mm (avoid trussed rafters)
- 5 Reclaimed, locally grown or FSC temperate durable hardwood wall plate
- 6 As (7)
- 7 Potential roost/nest box/platform positions (not necessarily all together, along length of building) some face fixed, some sheltering under others
- 8 Bat access tile set, 18 mm gap x 165 mm long
- 9 Handmade clay plain tile roofing, 265 mm x 160 mm x 10 mm
- 10 Mortar bedding
- 11 Reclaimed, locally grown or FSC Oak or durable hardwood ridge purlin

Figure 5.2.3. Example of build up in roof space for crevice dwelling bats in an uninsulated roof space.

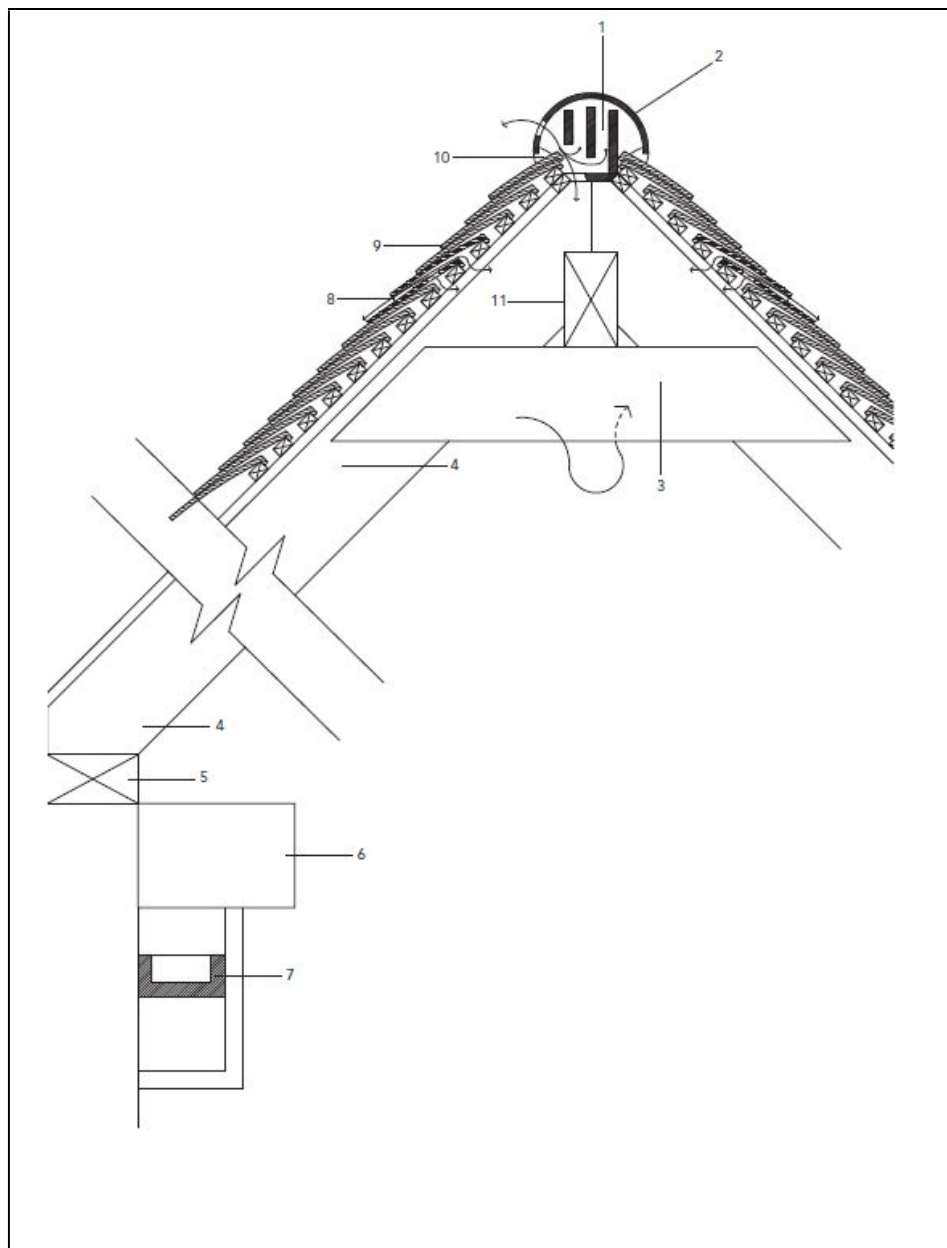


Figure 5.2.4. Drawing showing detailed design of roof space for crevice dwelling bats in an uninsulated space.

Drawing No. 6	
Roofspace 2 – Insulated cavity wall and pitched roof	
providing places for bats and small birds	
1	Additional layer of underlay below gap supported on FSC board on battens
2	'Pro clima Intello Plus' ATL Air tightness layer, polyolefine, lapped and sealed joints
3	Cellulose fibre insulation, 3 x 100 mm
4	Drylining ceiling board
5	Reclaimed, locally grown or FSC temperate softwood wall plate, 75 x 100 mm with GMS holding down straps
6	Air tight parge coat: clay, lime or gypsum, 5–8 mm or plaster
7	Cellular clay blockwork inner leaf, 100 mm
8	Reclaimed, locally grown or FSC temperate softwood wall plate, 100 x 75 mm
9	Full fill cavity wall insulation, 3 x 100 mm rock mineral fibre
10	Option: 2 part long wall tie, austenitic stainless steel (304 equivalent), 400 mm
10a	Option: 'MagmaTech TeploTie Type 4', extruded basalt and fibre long wall tie, 425 x 6.5 dia. mm
11	Fired clay facing brick outer leaf, 102 x 215 x 65 mm
12	'RoofBLOCK masonry roof overhang system' Hollow precast 'eco-concrete' eaves/verge system incorporating bird or bat roosts (modified size required and shown here)
13	Gutter galvanized mild steel (half round)
14	Reclaimed, locally grown or FSC temperate softwood rafters, 200 mm (avoid trussed rafters)
15	Bat access tile set, 18 mm gap x 165 long mm
16	Cement-wood particle board, Roughened/grooved surface for climbing and hanging
17	'Pro clima Solitex Plus' WTL Wind Tightness Layer vapour permeable roofing underlay (breathing roof), lapped and sealed joints
17a	Gap in underlay (17) below bat access tile set (15)
18	Reclaimed, locally grown or FSC temperate durable species softwood roof tiling battens
19	Handmade clay plain tile roofing, 265 x 160 x 10 mm

Figure 5.2.5. Example of build up in roof space for crevice dwelling bats in an insulated roof space.

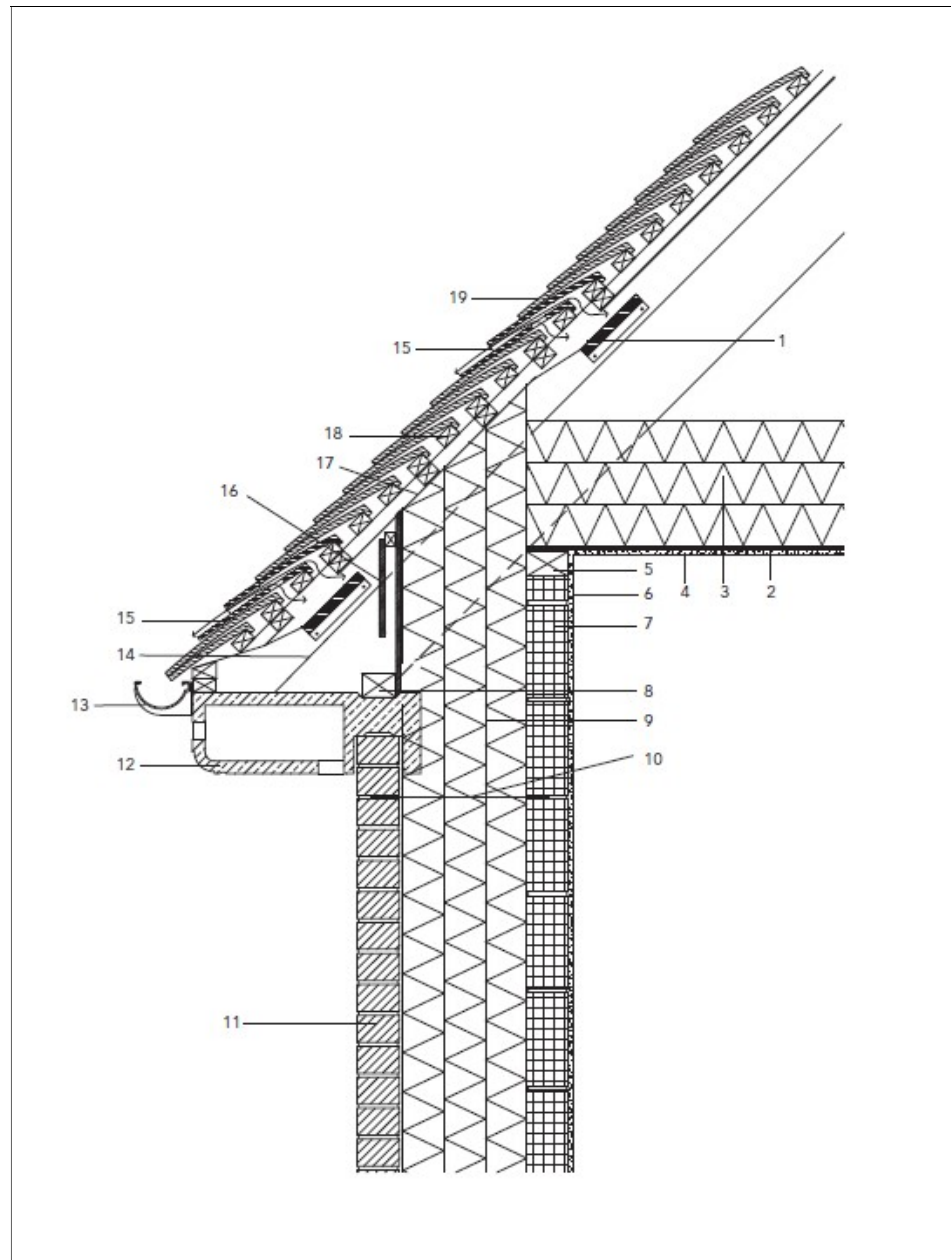


Figure 5.2.6. Drawing showing detailed design of roof space for crevice dwelling bats in an insulated space.

A site meeting will be required with the contractor prior to works commencing to explain the concept of the roost design and the requirements of the bats.

5.3 Avoidance of Impact on the Whitechurch Stream corridor

Given the importance of the entire Whitechurch Stream corridor for a minimum of four species of foraging bats it is important that the river and adjoining scrub, mature trees and riparian areas are not encroached upon or developed and that a buffer zone of 10m as a minimum is created along this feature in line with the green infrastructure objectives set out in the draft

South Dublin County Council County Development Plan 2022 – 2028 – see below.

GI3 Objective 3:

To promote and protect native riparian vegetation along all watercourses and ensure that a minimum 10m vegetated riparian buffer from the top of the riverbank is maintained/reinstated along all watercourses within any development site.

Care must therefore be taken to ensure that green infrastructure involves greening existing infrastructure rather than adding built infrastructure to existing biodiversity corridors.

The vegetation along the river corridor must be afforded protection (see **Section 5.5**) prior to commencement of works on site and signed off on by an ecologist.

5.4 **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 both lands and the Whitechurch Stream corridor for a minimum of four species of foraging bats it is important that the Whitechurch Stream river corridor, adjoining wooded habitats, and retained hedgerow boundary features are not illuminated.

Many species of bats and other mammals are sensitive to lighting and will avoid areas which are illuminated.

It is therefore recommended that any lighting used in the development will not overspill onto the Whitechurch Stream river corridor, adjoining wooded habitats, and retained hedgerow boundary features thereby ensuring that a dark corridor for foraging and commuting bats and movement for other wildlife is maintained – see **Figure 5.4.1** below.

Excellent guidance is available from the Bat Conservation Trust/Institution of Lighting Professionals Guidance Note 08/18 - Bats and artificial lighting in the UK. Bats and the Built Environment series.

General design recommendations from the BCT (2018) include the following in relation to luminaires:

- All luminaires should lack UV elements when manufactured. Metal halide, fluorescent sources should not be used.
- LED luminaires should be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability.
- A warm white spectrum (ideally <2700Kelvin) should be adopted to reduce blue light component.
- Luminaires should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats (Stone, 2012).
- Internal luminaires can be recessed where installed in proximity to windows to reduce glare and light spill. (See **Figure 5.4.2** below.)

- The use of specialist bollard or low-level downward directional luminaires to retain darkness above can be considered. However, this often comes at a cost of unacceptable glare, poor illumination efficiency, a high upward light component and poor facial recognition, and their use should only be as directed by the lighting professional.
- Column heights should be carefully considered to minimise light spill.
- Only luminaires with an upward light ratio of 0% and with good optical control should be used – See ILP Guidance for the Reduction of Obtrusive Light.
- Luminaires should always be mounted on the horizontal, ie no upward tilt.
- Any external security lighting should be set on motion-sensors and short (1min) timers.
- As a last resort, accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only to where it is needed.

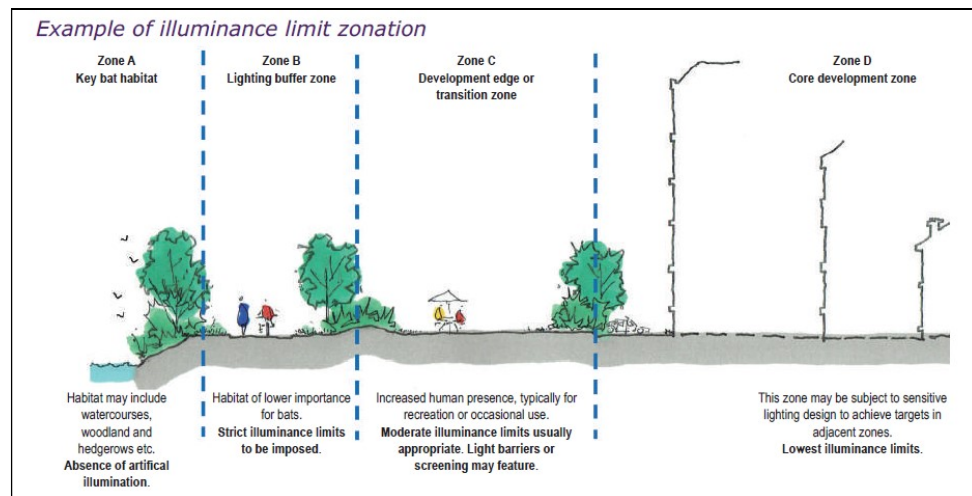


Figure 5.4.1. Limiting illumination of bat habitats.

The design recommendations from the BCT (2018) for wildlife-friendly lighting have been incorporated into the lighting design for the scheme by the project lighting designers (RAMS) where possible who state:

‘To minimise the impact of the lighting on the retained mature trees, we have inclined the luminaires at zero-degree inclination. We have selected luminaire distributions to concentrate light into the areas that require illumination and to minimise spill outside of these areas. We design the average light level to be as close to the minimum lux level permitted to comply with the appropriate lighting level, and to achieve a higher overall uniformity. This reduces hot spots under the light source which helps to reduce light scatter through reflection and refraction. We have provided a drawing showing spill light outside the site boundary, which is minimal. It also shows the spill onto the wet area, which is minimal. The largest impact is from the road lighting, but the Isoluxlines do not show the blocking effect of the existing mature trees as it is beyond the capacity of the design software’.

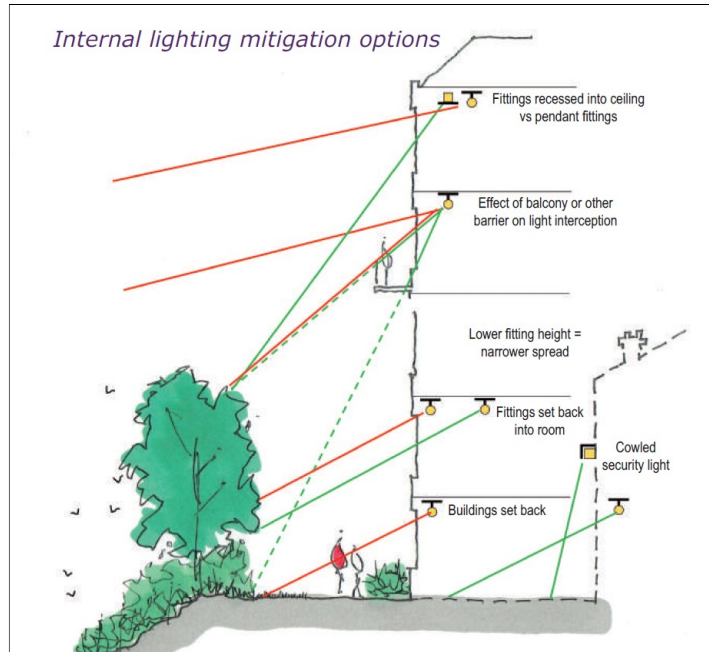


Figure 5.4.2. Internal building lighting mitigation options.

As mentioned above the light spill from buildings also needs to be considered – see best practice guidance above on **Figure 5.4.2** for internal lighting mitigation options to be considered at the detailed lighting design stage.

5.5 Protection for Retained Trees and Vegetation

All areas of natural vegetation adjoining the Whitechurch Stream corridor, adjoining woodland habitats and all boundary trees and hedgerows surrounding the housing development that are to be retained will be given adequate protection from accidental damage by machinery during site works. Areas will be clearly delineated by tree protection fencing or other measures. These measures will be signed off on by an ecologist prior to the commencement of building works.

Section 40 of the Wildlife Act 1976, as amended by Section 46 of the Wildlife (Amendment) Act 2000, restricts the cutting, grubbing, burning or destruction by other means of vegetation growing on uncultivated land or in hedges or ditches during the nesting and breeding season for birds and wildlife, from 1 March to 31 August. **No clearance of vegetation will take place during this period.**

5.6 Felling of Potential Bat Roosts in Trees

Given that some time will have lapsed between the current surveys and commencement of works trees will be re-inspected to determine which have potential to support roosting bats.

All trees identified as potential bat roosts will be subject to appropriate felling measures as detailed in NRA *Guidelines for the Treatment of Bats during the Construction of National Road Schemes* (National Roads Authority 2006). The felling/clearance of trees will be scheduled for the autumn months of

September/October when bats are less likely to be using trees. This also avoids the bird breeding season.

The felling of those trees, which have been identified as potential bat roosts, must be supervised by a bat specialist holding a bat handling licence issued by the National Parks and Wildlife Service, (Department of Housing, Local Government and Heritage). If bats are encountered they should be removed by the licence holder to a bat box, to be sited on a nearby tree and the NPWS notified.

Identified trees must be felled carefully. Specific advice in relation to individual trees will be given on site by a bat specialist. Gradual dismantling of some mature trees may be necessary to ensure the safety of any bats which may be roosting within significant sized boughs or in the trunk. The tree should be inspected by a bat specialist, and depending on the structure of the tree they may need to be left intact on the ground for 24 hours to allow any bats within them to escape prior to processing.

5.7 Roosting Potential for Bats

In order to improve roosting potential for bats in retained boundary features 10 Schwegler type bat boxes will be purchased and erected under the supervision of a suitably qualified ecologist/bat specialist on trees within the general study area.

5.8 Landscaping/Planting Proposals

Existing hedgerows which are to be retained will be strengthened with additional hedgerow planting as set out in the landscaping drawings which accompany the planning application.

These native species will provide a food source, shelter and habitat for foraging bats, nesting habitat for birds and a food source for pollinators. All species used should be of certified native origin and sourced locally to ensure genetic provenance to the area - certified material is available from the forestry nurseries who supply the native woodland scheme.

6. CONCLUSIONS

No bat roosts have been confirmed from any of the buildings proposed for demolition within the site during any of the surveys conducted to date and therefore a bat derogation licence is not currently required for the demolition of these buildings.

There is potential for bats to roost in some of the trees within the northern lands in particular, where social calls were recorded and a mating roost is likely.

The main interest from a bat perspective of the lands proposed for development at Whitechurch is for foraging and commuting bats. Four species of bats have been recorded foraging and commuting here to date (studies completed between 2019 – 2021).

The undisturbed nature of the Whitechurch Stream with dense vegetation alongside it continues to provide rich foraging for bats and other wildlife, forming an important wildlife corridor and an important piece of green infrastructure within the environs of Whitechurch.

A series of detailed mitigation measures have been set out in **Section 6**, which if implemented in full will reduce impacts on bats in the local environs of the site.

The development of these lands from agricultural use to that of housing will however reduce their overall value for local biodiversity including species of bats.

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