ECOLOGICAL IMPACT ASSESSMENT REPORT

FOR

PROPOSED RESIDENTIAL DEVELOPMENT

AT

WHITECHURCH ROAD,
RATHFARNHAM,

DUBLIN 14

ON BEHALF OF

DUNGREY LTD.

Prepared by
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1 INTRODUCTION

Enviroguide Consulting was commissioned by Dungrey Ltd. to undertake an Ecological Impact Assessment for a Proposed Development at Whitechurch Road, Rathfarnham, Co. Dublin.

This Ecological Impact Assessment (EcIA) assesses the potential effects of the Proposed Development, on habitats and species; particularly those protected by National and International legislation or considered to be of particular nature conservation importance. This report will describe the ecology of the Proposed Development area, with emphasis on habitats, flora and fauna, and will assess the potential effects of the Construction and Operational Phases of the Proposed Development on these ecological receptors. The report follows Guidelines for Ecological Impact Assessment in the UK and Ireland, by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2018).

1.1 Quality assurance and competence

Synergy Environmental Ltd., T/A Enviroguide Consulting, is wholly Irish Owned multi-disciplinary consultancy specialising in the areas of the Environment, Waste Management and Planning. All of our consultants carry scientific or engineering qualifications and have a wealth of experience working within the Environmental Consultancy sectors, having undergone extensive training and continued professional development.

Enviroguide Consulting as a company remains fully briefed in European and Irish environmental policy and legislation. Enviroguide staff members are highly qualified in their field. Professional memberships include the Chartered Institution of Wastes Management (CIWM), the Irish Environmental Law Association and Chartered Institute of Ecology and Environmental Management (CIEEM).

All surveying and reporting have been carried out by qualified and experienced ecologists and environmental consultants. Rozalyn O'Hora, Project Ecologist with Enviroguide Consulting undertook the onsite surveys, desktop research and report writing for this report. Rozalyn has a M.Sc. Hons. (Ecological Assessment) from University College Cork, and a BSc (Honours) (Environmental Science) from National University of Ireland, Galway. She has a wealth of experience in desktop research, literature scoping-review, and report writing, as well as practical field experience (Habitat surveys, bird surveys, Terrestrial large mammals etc.).

Liam Gaffney, Senior Ecologist with Enviroguide Consulting assisted with the onsite surveys. Liam has a M.Sc. Hons (Wildlife Conservation and Management) and a B.Sc. Hons (Zoology) from University College Dublin, and a wealth of practical field experience (Habitat surveys, Wintering bird surveys, large mammals, fresh water macro-invertebrates etc.) as well as abundant experience in desktop research, literature scoping-review, and report writing.

Aisling Walsh is a Professional Ecologist and director of Ash Ecology Environmental Ltd. undertook the bat survey that informs this assessment. Aisling has a wealth of academic qualifications having studied a MSc in Biodiversity and Conservation (TCD), A BSc (Hons) Zoology (NUIG), a Diploma in Applied Aquatic Sciences (GMIT), a Post Graduate Diploma in Statistics (TCD), and a Certificate in Environmental Noise (Institute of Acoustics); while also holding a full membership of the Chartered Institute of Ecology and Environmental Management (CIEEM). Aisling has written numerous Ecological Impact Assessments (EcIA),

Screening for Appropriate Assessment Stage I and Stage II Natura Impact Statement, Environmental Impact Assessments/Statements, Badger Surveys, Bat Surveys, Habitat Surveys. She has also provided input and reviewed Ecological and Environmental assessments for several EIA Reports and conducted numerous noise surveys for EPA licensed facilities. AEE is listed as a Registered Practice by the CIEEM.

2 RELEVANT LEGISLATION

An Ecological Impact Assessment (EcIA) is a process of identifying, quantifying, and evaluating potential effects of development-related or other actions on habitats, species and ecosystems (CIEEM, 2016). The Proposed Development is a sub-threshold for an Environmental Impact Assessment (EIA) under the Planning and Development Regulations 2011-2018.

When an EcIA is undertaken as part of an EIA process it is subject to the EIA Regulations (under the EU Planning and Development [Environmental Impact Assessment] Regulations 2001-2018). An EcIA is not a statutory requirement, however it is a best practice evaluation process. This EcIA has been undertaken to support and assess the Proposed Development planning application and assesses the potential impacts that the Proposed Development may have on the ecology of the site and its environs. Where potential for a risk to the environment is identified, mitigation measures are proposed on the basis that by deploying these mitigation measures the risk is eliminated or reduced to an insignificant level. This EcIA is provided to assist the Competent Authority with its decision making in respect of the Proposed Development.

2.1 National Legislation

2.1.1 Wildlife Act 1976 and amendments

The Wildlife Act 1976 was enacted to provide protection to birds, animals, and plants in Ireland and to control activities which may have an adverse impact on the conservation of wildlife. With regard to the listed species, it is an offence to disturb, injure or damage their breeding or resting place wherever these occur without an appropriate licence from the National Parks and Wildlife Service (NPWS). This list includes all wild birds along with their nests and eggs. Intentional destruction of an active nest from the building stage up until the chicks have fledged is an offence. This includes the cutting of hedgerows from the 1st of March to the 31st of August. The act also provides a mechanism to give statutory protection to Natural Heritage Areas (NHAs). The Wildlife Amendment Act 2000 widened the scope of the Act to include most species, including the majority of fish and aquatic invertebrate species which were excluded from the 1976 Act.

2.1.2 EU Habitats Directive 1992 and EC (Birds and Natural Habitats) Regulations 2011

The EU Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (Habitats Directive 1992) provides protection to particular species and habitats throughout Europe. The Habitats Directive has been transposed into Irish law through the EC (Birds and Natural Habitats) Regulations 2011.

Annex IV of the EU Habitats Directive provides protection to a number of listed species, wherever they occur. Under Regulation 23 of the Habitats Directive, any person who, in regard

to the listed species, "Deliberately captures or kills any specimen of these species in the wild, deliberately disturbs these species particularly during the period of breeding, rearing, hibernation and migration, deliberately takes or destroys eggs from the wild or damages or destroys a breeding site or resting place of such an animal shall be guilty of an offence."

2.1.3 Flora (Protection) Order, 2015

The Flora (Protection) Order (S.I. No. 356/2015) affords protection to several species of plant in Ireland, including 68 vascular plants, 40 mosses, 25 liverworts, 1 stonewort and 1 lichen. This Act makes it illegal for anyone to uproot, cut or damage any of the listed plant species and it also forbids anyone from altering, interfering, or damaging their habitats. This protection is not confined to within designated conservation sites and applies wherever the plants are found.

2.1.4 Invasive Species Legislation

Certain plant species and their hybrids are listed as Invasive Alien Plant Species in Part 1 of the Third Schedule of the *European Communities (Birds and Natural Habitats) Regulations* 2011 (SI 477 of 2011, as amended). In addition, soils and other material containing such invasive plant material, are classified in Part 3 of the Third Schedule as vector materials and are subject to the same strict legal controls.

Failure to comply with the legal requirements set down in this legislation can result in either civil or criminal prosecution, or both, with very severe penalties accruing. Convicted parties under the Act can be fined up to €500,000.00, jailed for up to 3 years, or both.

Extracts from the relevant sections of the regulations are reproduced below.

"49(2) Save in accordance with a licence granted [by the Department of Arts, Heritage and the Gaeltacht], *any person who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow in anyplace* [a restricted non-native plant], *shall be guilty of an offence.*

49(3) ... it shall be a defence to a charge of committing an offence under paragraph (1) or (2) to prove that the accused took all reasonable steps and exercised all due diligence to avoid committing the offence.

50(1) Save in accordance with a licence, a person shall be guilty of an offence if he or she [...] offers or exposes for sale, transportation, distribution, introduction, or release—
(a) an animal or plant listed in Part 1 or Part 2 of the Third Schedule,
(b) anything from which an animal or plant referred to in subparagraph (a) can be reproduced or propagated, or
(c) a vector material listed in the Third Schedule, in any place in the State specified in the third column of the Third Schedule in relation to such an animal, plant or vector material."

2.2 International Legislation

2.2.1 EU Birds Directive

The Birds Directive constitutes a level of general protection for all wild birds throughout the European Union. Annex I of the Birds Directive includes a total of 194 bird species that are considered rare, vulnerable to habitat changes or in danger of extinction within the European

Union. Article 4 establishes that there should be a sustainable management of hunting of listed species, and that any large scale non-selective killing of birds must be outlawed. The Directive requires the designation of Special Protection Areas (SPAs) for: listed and rare species, regularly occurring migratory species and for wetlands which attract large numbers of birds. There are 25 Annex I species that regularly occur in Ireland and a total of 153 Special Protection Areas have been designated.

2.2.2 EU Habitats Directive

The Habitats Directive aims to protect some 220 habitats and approximately 1000 species throughout Europe. The habitats and species are listed in the Directives annexes, where Annex I covers habitats and Annex II, IV and V cover species. There are 59 Annex I habitats in Ireland and 33 Annex IV species which require strict protection wherever they occur. The Directive requires the designation of Special Areas of Conservation for areas of habitat deemed to be of European interest. The SACs together with the SPAs from the Birds Directive form a network of protected sites called Natura 2000.

2.2.3 Water Framework Directive

The EU Water Framework Directive (WFD) 2000/60/EC is an important piece of environmental legislation which aims to protect and improve water quality. It applies to rivers, lakes, groundwater, estuaries, and coastal waters. The Water Framework Directive was agreed by all individual EU member states in 2000, and its first cycle ran from 2009 – 2015. The Directive runs in 6-year cycles, so the second (current) cycle runs from 2016 – 2021.The aim of the WFD is to prevent any deterioration in the existing status of water quality, including the protection of good and high water quality status where it exists. The WFD requires member states to manage their water resources on an integrated basis to achieve at least 'good' ecological status, through River Basin Management Plans (RBMP), by 2027.

2.2.4 Bern and Bonn Convention

The Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1982) was enacted to conserve all species and their habitats. The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention 1979, enacted 1983) was introduced to give protection to migratory species across borders in Europe.

2.2.5 Ramsar Convention

The Ramsar Convention on Wetlands is an intergovernmental treaty signed in Ramsar, Iran, in 1971. The treaty is a commitment for national action and international cooperation for the conservation of wetlands and their resources. In Ireland there are currently 45 Ramsar sites which cover a total area of 66,994 Ha.

3 DESCRIPTION OF THE PROPOSED DEVELOPMENT

3.1 Location

The Proposed Development Site is located at Whitechurch Road, Rathfarnham, Dublin 14. Whitechurch road bounds the Site to the west, residential dwellings and their associated open spaces bound the Site to the south and east and Loreto high school bounds the site to the north. The Site is 0.58 Ha in size.

The Site is zoned as '*RES*' under the South Dublin County Council Development Plan 2016 – 2022 – '*To protect and/or improve residential amenity*'.

3.2 Description

The Proposed Development shall provide for the demolition of two existing habitable structures on Site including a bungalow (Silveracre), an existing cottage (No. 6 Whitechurch Road) and a row of several derelict structures / cottages located along the eastern boundary of the Site, the extent of the proposed demolition is 433 sq.m. It is proposed to construct 22 no. 4 bed 4 storey units ranging in size from 197 sq.m to 214 sq.m, all with associated private balcony/terrace areas.

Vehicular and pedestrian access is proposed via a new entrance on Whitechurch Road. The Proposed Development shall provide for 44 no. car parking spaces, a new single storey bicycle storage shed and provision of bin storage to be provided at the front curtilage of the dwelling for all terraced units, all boundary treatment, all site services and all associated Site development and landscaping works.

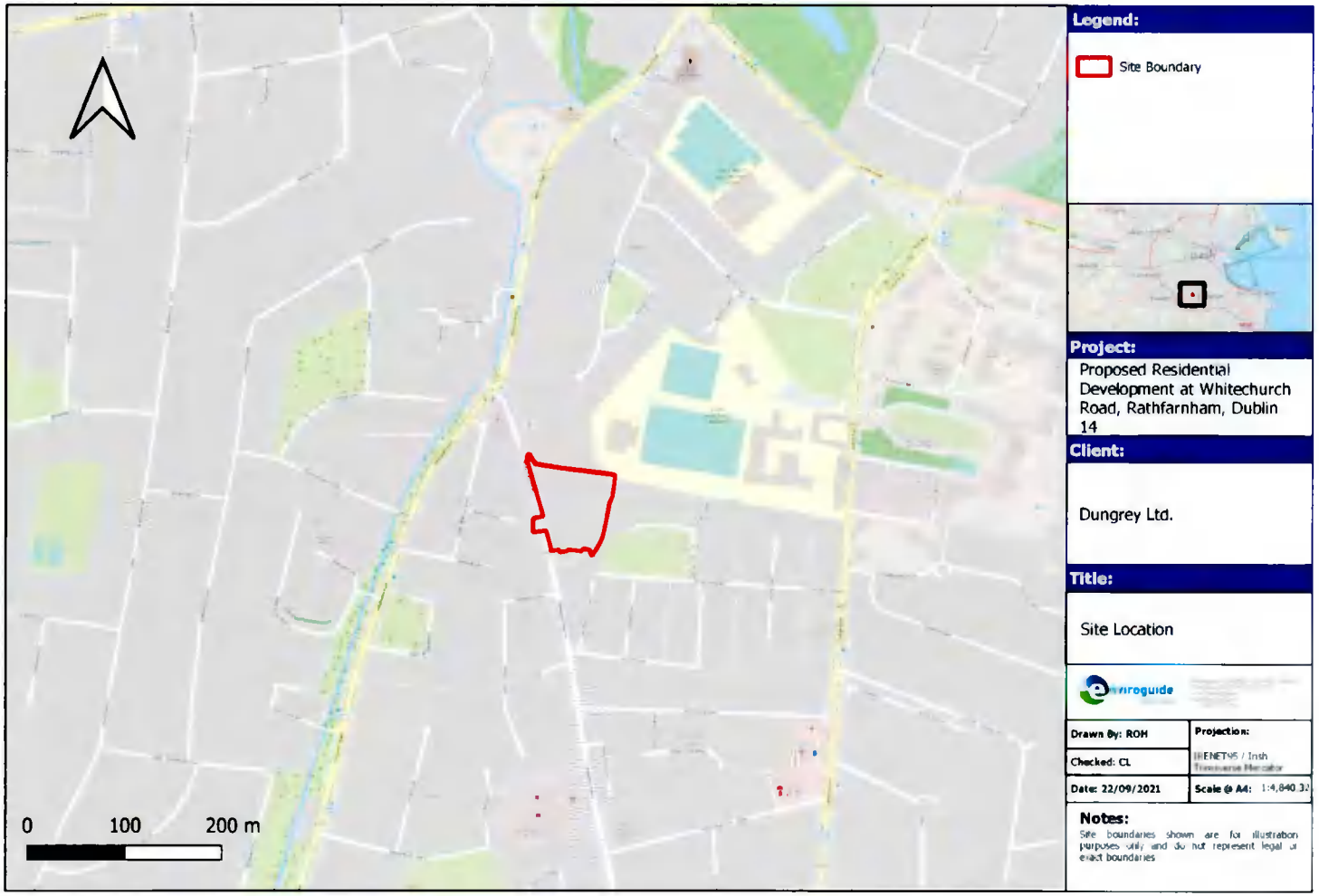

FIGURE 3-1. SITE LOCATION.

4 METHODOLOGY

This section details the steps and methodology employed to undertake an Ecological Impact Assessment of the Proposed Development. The proposed methodology provides a robust and detailed assessment of the potential impacts on the ecology of the Site likely to occur as a result of the Proposed Development. Appropriate mitigation measures are then recommended, where deemed necessary, to negate and minimise to negligible any predicted impacts.

4.1 Scope of Assessment

The specific objectives of the study were to:

- Undertake baseline ecological surveys and evaluate the nature conservation importance of the Site of the Proposed Development.
- Identify and assess the direct, indirect, and cumulative ecological implications or impacts of the Proposed Development during its lifetime.
- Where possible, propose mitigation measures to remove or reduce those impacts at the appropriate stage of development.

4.2 Desk Study

A desktop study was carried out to collate and review available information, datasets and documentation sources pertaining to the Site's natural environment. The desktop study relied on the following sources:

- Information on species records and distributions, obtained from the National Biodiversity Data Centre (NBDC) at *www.maps.biodiversityireland.ie* ;
- Information on waterbodies, catchment areas and hydrological connections obtained from the Environmental Protection Agency (EPA) at *www.gis.epa.ie* ;
- Information on bedrock, groundwater, aquifers and their statuses, obtained from Geological Survey Ireland (GSI) at *www.gsi.ie* ;
- Information on the network of designated conservation sites, boundaries, qualifying interests and conservation objectives, obtained from the National Parks and Wildlife Service (NPWS) at *www.npws.ie* ;
- Satellite imagery and mapping obtained from various sources and dates including Google, Digital Globe, Bing and Ordnance Survey Ireland;
- Information on the existence of permitted developments, or developments awaiting decision, in the vicinity of the Proposed Development from South Dublin County Council;
- Information on the extent, nature and location of the Proposed Development, provided by the applicant and/or their design team;
- The current conservation status of birds in Ireland taken from Gilbert et al. (2021).

- The pollinator friendly planting code provided by The All-Ireland Pollinator Plan (2015-2020) available at www.pollinators.ie

A comprehensive list of all the specific documents and information sources consulted in the completion of this document is provided in Section 11, References.

4.3 Field surveys

4.3.1 Habitat Surveys

Habitat and Invasive Flora surveys of the Site of the Proposed Development were conducted by Enviroguide on the 12th of August 2021. Habitats were categorised according to the Heritage Council's '*A Guide to Habitats in Ireland*' (Fossitt, 2000) to level 3. The habitat mapping exercise had regard to the 'Best Practice Guidance for Habitat Survey and Mapping' (Smith et al., 2010) published by the Heritage Council. Satellite imagery was used together with GPS to accurately enable field navigation. Habitat categories, characteristic plant species, invasive species and other ecological features were recorded.

4.3.2 Bat Surveys

Bat roost inspection, emergence and activity surveys were carried out by Bat Ecologist Aishling Walsh on the 29th of June 2021. The equipment used included the Elekon Bat Logger M. Visual observations were taken with the aid of a powerful L.E.D. torch (AP Pros-Series 220 Lumens High Performance Spotlight). A Seek Thermal Reveal Pro High-Resolution Thermal Imaging Camera was also used along with a RIDGID 36848 Micro CA-150 Hand-Held Borescope. This piece of equipment is fitted with a camera and allows visibility of confined spaces and narrow passages potentially used by hibernating/roosting bats. Affected buildings were examined in detail for bats, signs of bats, or evidence of bat activity, using a torch where necessary.

4.3.3 Bird Surveys

A walkover bird survey was completed at the Site of the Proposed Development on the 12th of August 2021. The survey methodology followed the British Trust for Ornithology's (BTO) *Common Bird Census* (CBS) technique (Bibby *et al.*, 1992). The Site is relatively compact and is largely comprised of buildings and artificial surfaces alongside open space with low ground cover, it was considered that the use of transects or quadrat surveying was not required.

4.3.4 Mammal Surveys

Mammal surveys of the Site were carried out in conjunction with the habitat survey on the 12th of August 2021. The Site was examined for tracks, scat and other signs of mammals. The habitat types recorded throughout the survey area were used to assist in identifying the fauna considered likely to utilise the area. During this survey, the Site was searched for tracks and signs of mammals as per Bang and Dahlstrom (2001).

4.3.5 Invasive Species Surveys

The Site was assessed for the presence of invasive plant species on the 12th of August and 23rd of September 2021.

4.4 Assessment

The value of the ecological resources, i.e., the habitats and species present or potentially present, was determined using the ecological evaluation guidance given in the National Roads Authority's Ecological Assessment Guidelines (NRA, 2009a), presented in Appendix I. This evaluation scheme, with values ranging from locally important to internationally important, seeks to provide value ratings for habitats and species present that are considered ecological receptors of impacts that may ensue from a proposal. Any habitats or species evaluated as being of Local Importance (higher value) or greater and considered to be at risk of significant effects as a result of the Proposed Development, are selected as potential Key Ecological Receptors (KERs) and assessed further.

The assessment of the potential impact of the Proposed Development on the identified KERs was carried out with regard to the criteria outlined in the draft EPA Guideline (EPA, 2017), presented in Appendix II. These guidelines set out a number of parameters such as quality, magnitude, extent and duration that should be considered when determining which elements of the Proposed Development could constitute impact or sources of impacts.

4.5 Limitations

An extensive search of available datasets for records of rare and protected species within proximity of the Proposed Development has been undertaken as part of this assessment. However, the records from these datasets do not constitute a complete species list. The absence of species from these datasets does not necessarily confirm an absence of species in the area.

5 BASELINE ECOLOGICAL CONDITIONS

5.1 Desk Study

5.1.1 General Site Overview

Geology, Hydrology and Hydrogeology

The Site of the Proposed Development is within the Liffey and Dublin Bay WFD catchment, the Dodder_SC_010 sub catchment and the Owenadoher_010 (IE_EA_09O011700) WFD River Sub Basin (EPA,2021).

The Whitechurch/ Kilmashogue stream (EPA Code 09K06) is located 15m west of the Proposed Development. Works will be required adjacent to this waterbody as treated surface water will be discharged from the Site to this stream, as such the red line boundary extends westwards to the stream to include these works. The Whitechurch/ Kilmashogue stream is a tributary of the Owenadoher River which in turn is a tributary of the River Dodder. The Whitechurch/ Kilmashogue stream travels in a northerly direction past the Proposed Development for 108 river meters before entering the Owenadoher river (EPA Code 09O01) and continues for a further 900 river meters before entering the River Dodder (EPA Code 09D01). The status of the Whitechurch/ Kilmashogue stream and Owenadoher river is *Good*, and the waterbodies are *At Risk* of Not Achieving their Water Framework status Objectives (EPA,2021). The WFD status of the River Dodder is *Moderate*, and the waterbody is also *At Risk* of Not Achieving its Water Framework Status Objectives (EPA,2021). An EPA monitoring station (station code RS09O011700) is located on the River Owenadoher north of the Proposed Development, which has a Q-Value score of 3-4, *Moderate* (EPA,2021).

The Site of the Proposed Development is situated on the Dublin groundwater body, which has a status of *Good* and is *Not at Risk* of not meeting its WFD objectives (EPA,2021). The underlying bedrock is *dark limestones and shale ('calp) of the Lucan formation*, the aquifer type in the area is a *Locally Important Aquifer (LI), bedrock which is moderately productive only in local zones* (GSI,2021). Subsoils are *limestone gravels*, and the soil is classed as *urban* (EPA, 2021). The level of vulnerability to groundwater contamination from human activities is *Low* (GSI,2021).

5.1.2 Designated Sites

The Habitats Directive (92/43/EEC) seeks to conserve natural habitats and wild fauna and flora by the designation of Special Areas of Conservation (SACs) and the Birds Directive (2009/147/EC) seeks to protect birds of special importance by the designation of Special Protection Areas (SPAs). It is the responsibility of each member state to designate SPAs and SACs, both of which will form part of Natura 2000, a network of protected sites throughout the European Community. SACs are selected for the conservation of Annex I habitats (including priority types which are in danger of disappearance) and Annex II species (other than birds). SPAs are selected for the conservation of Annex I birds and other regularly occurring migratory birds and their habitats. The annexed habitats and species for which each site is selected correspond to the qualifying interests of the sites; from these the conservation objectives of the site are derived. The potential for effects on European Sites is fully considered in the Appropriate Assessment Screening Report that accompanies this application.

Natural Heritage Areas (NHAs) are areas considered important at a national level for the habitats present, or which hold species of plants and animals whose habitat needs protection. Proposed NHAs (pNHAs) are areas which were published on a non-statutory basis in 1995 but have not since been statutorily proposed or designated. These sites are deemed to be of significance for wildlife and habitats. Some pNHAs occupy a relatively small area, such as a roosting place for rare bats, while others are relatively large e.g., a woodland or lake. Under the Wildlife Amendment Act (2000), NHAs are legally protected from damage from the date they are formally proposed for designation.

No NHAs are located within or directly adjacent to the Proposed Development. The nearest pNHA to the Proposed Development is the Dodder Valley pNHA located 2.8km to the west. The Proposed Development maintains no significant impact pathway with this pNHA, hydrological or otherwise. There is a potential hydrological link connecting the Proposed Development, South Dublin Bay pNHA and North Dublin Bay pNHA via the Whitechurch stream. However, the AA Screening for the Proposed Development concluded that, on the basis of objective information, the possibility **may be excluded** that the Proposed Development will have a significant effect on any European site including those within Dublin Bay. The conclusion of the AA screening assessment applies to the aforementioned pNHAs, due to their location within Dublin Bay.

Identification of Designated Sites

The methodology used to identify relevant designated sites comprised the following:

- Use of up-to-date GIS spatial datasets for European and nationally designated sites and water catchments – downloaded from the NPWS website (www.npws.ie) and the EPA website (www.epa.ie) to identify designated sites which could potentially be affected by the Proposed Development;
- The catchment data were used to establish or discount potential hydrological connectivity between the Project Boundary and any designated sites.
- All designated sites within the precautionary zone of influence (within 15km of the Proposed Development Site) were identified and are shown in Table 5-1 and listed in Table 5-1.
- The potential for connectivity with designated sites at distances of greater than 15km from the Proposed Development was also considered in this initial assessment. In this case, there is no potential connectivity between the Proposed Development Site and designated sites located at a distance greater than 15km from the Proposed Development.
- Table 5-1 provides details of all relevant designated sites as identified in the preceding steps. The potential for pathways between European sites and the Proposed Development Site was assessed on a case-by-case basis using the Source-Pathway-Receptor framework. Those designated sites where a pathway was identified are highlighted in green. Pathways considered included:
    a. Direct pathways (e.g. proximity (i.e. location within the designated site), water bodies, air (for both air emissions and noise impacts).

b. Indirect pathways (e.g. disruption to migratory paths, 'Sightlines' where noisy or intrusive activities may result in disturbance to shy species.

- The site synopses and conservation objectives of these sites, as per the NPWS website (www.npws.ie), were consulted and reviewed at the time of preparing this report.

The result of this preliminary screening concluded that there is a total of seven SACs, four SPAs and twenty-three pNHAs located within the precautionary Zone of Influence of the Proposed Development Site. The distances to each site listed are taken from the nearest possible point of the Proposed Development Site boundary to nearest possible point of each European site or pNHA.

TABLE 5-1. DESIGNATED SITES WITHIN THE ZONE OF INFLUENCE (15KM) OF THE PROPOSED DEVELOPMENT AND POTENTIAL PATHWAYS BETWEEN THEM. SITES THAT HAVE BEEN SCREENED INTO THIS ECIA FOR FURTHER ASSESSMENT ARE SHADED IN GREEN.

Site Name & Code (Receptor)	Qualifying Interests (*= priority habitats)	Distance to Proposed Development	Potential Pathway to receptors
Special Area of Conservation			
Wicklow Mountains SAC (002122)	[3110] Oligotrophic Waters containing very few minerals [3130] Mixed *Najas flexilis* lake habitat [3160] Dystrophic Lakes [4010] Wet Heath [4030] Dry Heath [4060] Alpine and Subalpine Heaths [6130] Calaminarian Grassland [6230] Species-rich Nardus Grassland* [7130] Blanket Bogs (Active)* [8110] Siliceous Scree [8210] Calcareous Rocky Slopes [8220] Siliceous Rocky Slopes [91A0] Old Oak Woodlands [1355] Otter (*Lutra lutra*)	5.8 km	None.
South Dublin Bay SAC (000210)	[1140] Tidal Mudflats and Sandflats [1210] Annual vegetation of drift lines [1310] Salicornia and other annuals colonising mud and sand [2110] Embryonic shifting dunes	6 km	Yes - There is a potential hydrological link via surface water discharges from the Site and foul discharges from Ringsend WwTP. However, the AA Screening concluded that the possibility **may be excluded** that the Proposed Development will have a significant effect on this site.
Glenasmole Valley SAC (001209)	[6210] Orchid-rich Calcareous Grassland* [6410] *Molinia* Meadows [7220] Petrifying Springs*	6.5 km	None.
Knocksink Wood SAC (000725)	[7220] Petrifying Springs* [91A0] Old sessile oak woods with Ilex and Blechnum in the British Isles [91E0] Alluvial Forests*	10 km	None.
North Dublin Bay SAC (000206)	[1140] Tidal Mudflats and Sandflats [1210] Annual Vegetation of Drift Lines [1310] Salicornia Mud [1330] Atlantic Salt Meadows [1410] Mediterranean Salt Meadows [2110] Embryonic Shifting Dunes [2120] Marram Dunes (White Dunes) [2130] Fixed Dunes (Grey Dunes)* [2190] Humid Dune Slacks [1395] Petalwort *Petalophyllum ralfsii*	10.3 km	Yes - There is a potential hydrological link via surface water discharges from the Site and foul discharges from Ringsend WwTP. However, the AA Screening concluded that the possibility **may be excluded** that the Proposed Development will have a significant effect on this site.

Site Name & Code (Receptor)	Qualifying Interests (*= priority habitats)	Distance to Proposed Development	Potential Pathway to receptors
Ballyman Glen SAC (000713)	[7220] Petrifying springs with tufa formation (Cratoneurion)* [7230] Alkaline fens	12.2 km	None.
Rockabill to Dalkey Island SAC (003000)	[1170] Reefs; [1351] Harbour Porpoise (*Phocoena phocoena*)	13 km	None.
Special Protection Area			
Wicklow Mountains SPA (004040)	[A098] Merlin *Falco columbarius* [A103] Peregrine *Falco peregrinus*	6 km	None.
South Dublin Bay and River Tolka Estuary SPA (004024)	[A046] Light-bellied Brent Goose *Branta bernicla hrota* ; [A130] Oystercatcher *Haematopus ostralegus* ; [A137] Ringed Plover *Charadrius hiaticula* ; [A141] Grey Plover *Pluvialis squatarola* ; [A143] Knot *Calidris canutus* ; [A144] Sanderling *Calidris alba* ; [A149] Dunlin *Calidris alpina alpina* ; [A157] Bar-tailed Godwit *Limosa lapponica* ; [A162] Redshank *Tringa tetanus* ; [A179] Black-headed Gull *Chroicocephalus ridibundus* ; [A192] Roseate Tern *Sterna dougallii* ; [A193] Common Tern *Sterna hirundo* ; [A194] Arctic Tern *Sterna paradisaea* ; [A999] Wetlands	6.1 km	Yes - There is a potential hydrological link via surface water discharges from the Site and foul discharges from Ringsend WwTP. However, the AA Screening concluded that the possibility **may be excluded** that the Proposed Development will have a significant effect on these sites.
North Bull Island SPA (004006)	[A046] Light-bellied Brent Goose *Branta bernicla hrota* [A048] Shelduck *Tadorna tadorna* [A052] Teal *Anas crecca* [A054] Pintail *Anas acuta* [A056] Shoveler *Anas clypeata* [A130] Oystercatcher *Haematopus ostralegus* [A140] Golden Plover *Pluvialis apricaria* [A141] Grey Plover *Pluvialis squatarola* [A143] Knot *Calidris canutus*	0.3 km	
Dalkey Islands SPA (004172)	[A192] Roseate Tern *Sterna dougallii* ; [A193] Common Tern *Sterna hirundo* ; [A194] Arctic Tern *Sterna paradisaea*	12.8 km	None.

Site Name & Code (Receptor)	Qualifying Interests (*= priority habitats)	Distance to Proposed Development	Potential Pathway to receptors
Proposed Natural Heritage Area[1]			
Dodder Valley pNHA (000991)	*There are no formal qualifying interests listed for proposed Natural Heritage Areas (pNHA). A general site synopsis is available for most sites on the NPWS website.*	2.8 km	None.
Fitzsimon's Wood pNHA (0017)		4.1 km	None.
Grand Canal pNHA (002104)		4.2 km	None.
South Dublin Bay pNHA (000210)		6 km	There is a potential hydrological link via Ringsend WwTP outfall point discharging to Dublin Bay and surface water discharges from the Site. However, the AA Screening for the Proposed Development concluded that there will be no significant effects on European sites within Dublin Bay. The results of the AA screening assessment can be applied to this pNHA, due to the location of this pNHA within South Dublin Bay.
Booterstown Marsh pNHA (001205)		6 km	None.
Glenasmole Valley pNHA (001209)		6.5 km	None.
Royal Canal pNHA (002103)		6.8 km	None.

[1] General site synopses are available from the NPWS (https://www.npws.ie/protected-sites/nha). It is noteworthy that these synopses are based in many cases on old survey data and may not accurately reflect the status of the site at the current time.

Site Name & Code (Receptor)	Qualifying Interests (*= priority habitats)	Distance to Proposed Development	Potential Pathway to receptors
Liffey Valley pNHA (000128)		8 km	None.
North Dublin Bay pNHA (000206)		8.1 km	There is a potential hydrological link via Ringsend WwTP outfall point discharging to Dublin Bay and surface water discharges from the Site. However, the AA Screening for the Proposed Development concluded that there will be no significant effects on European sites within Dublin Bay. The results of the AA screening assessment can be applied to this pNHA as this pNHA is located within North Dublin Bay.
Dolphins, Dublin Docks pNHA (000201)		8.1 km	None.
Lugmore Glen pNHA (001212)		8.2 km	None.
Dingle Glen pNHA (001207)		8.9 km	None.
Ballybetagh Bog pNHA (001202)		9 km	None.
Knocksink Wood pNHA (000725)		10 km	None.
Dalkey Coastal Zone and Killiney Hill pNHA (001206)		10.4 km	None.

Site Name & Code (Receptor)	Qualifying Interests (*= priority habitats)	Distance to Proposed Development	Potential Pathway to receptors
Slade of Saggart and Crooksling Glen pNHA (000211)		10.9 km	None.
Loughlinstown Woods pNHA (001211)		11.2 km	None.
Glencree Valley pNHA (001755)		11.4 km	None.
Santry Demesne pNHA (000178)		12 km	None.
Ballyman Glen pNHA (000713)		12.2 km	None.
Powerscourt Woodland pNHA (001768)		12.6 km	None.
Dargle River Valley pNHA (001754)		14.5 km	None.
Grand Canal pNHA (002104)		14.5 km	None.

A Screening for Appropriate Assessment for the Proposed Development, prepared in accordance with the requirements of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011) as amended and the Planning and Development Act, 2000, is presented separately to this EclA. The following conclusion is extracted from the Appropriate Assessment Screening Report, which concluded that the Proposed Development would not have a significant effect on any European Sites.

"In conclusion, upon the examination, analysis and evaluation of the relevant information and applying the precautionary principle, it is concluded by the authors of this report that, on the basis of objective information; the possibility may be excluded that the Proposed Development will have a significant effect on any of the European sites listed below:

- *North Dublin Bay SAC (000206)*
- *South Dublin Bay SAC (000210)*
- *South Dublin Bay and River Tolka Estuary SPA (004024)*
- *North Bull Island SPA (004006)*

In carrying out this AA screening, ***mitigation measures have not been taken into account****. Standard best practice construction measures which could have the effect of mitigating any effects on any European Sites have similarly not been taken into account.*

Further to the screening exercise carried out above, it can be concluded, on the basis of the best scientific knowledge available, that the possibility of any significant effects on any European sites, whether arising from the project itself or in combination with other plans and projects, ***can be excluded****. Thus, there is no requirement to proceed to Stage 2 of the Appropriate Assessment process; and the preparation of a Natura Impact Statement (NIS) is not required."*

A designated site will only be at risk from likely significant effects where the Source-Pathway-Receptor link exists between the Proposed Development and the site. As such, pNHAs are not considered further in this report.

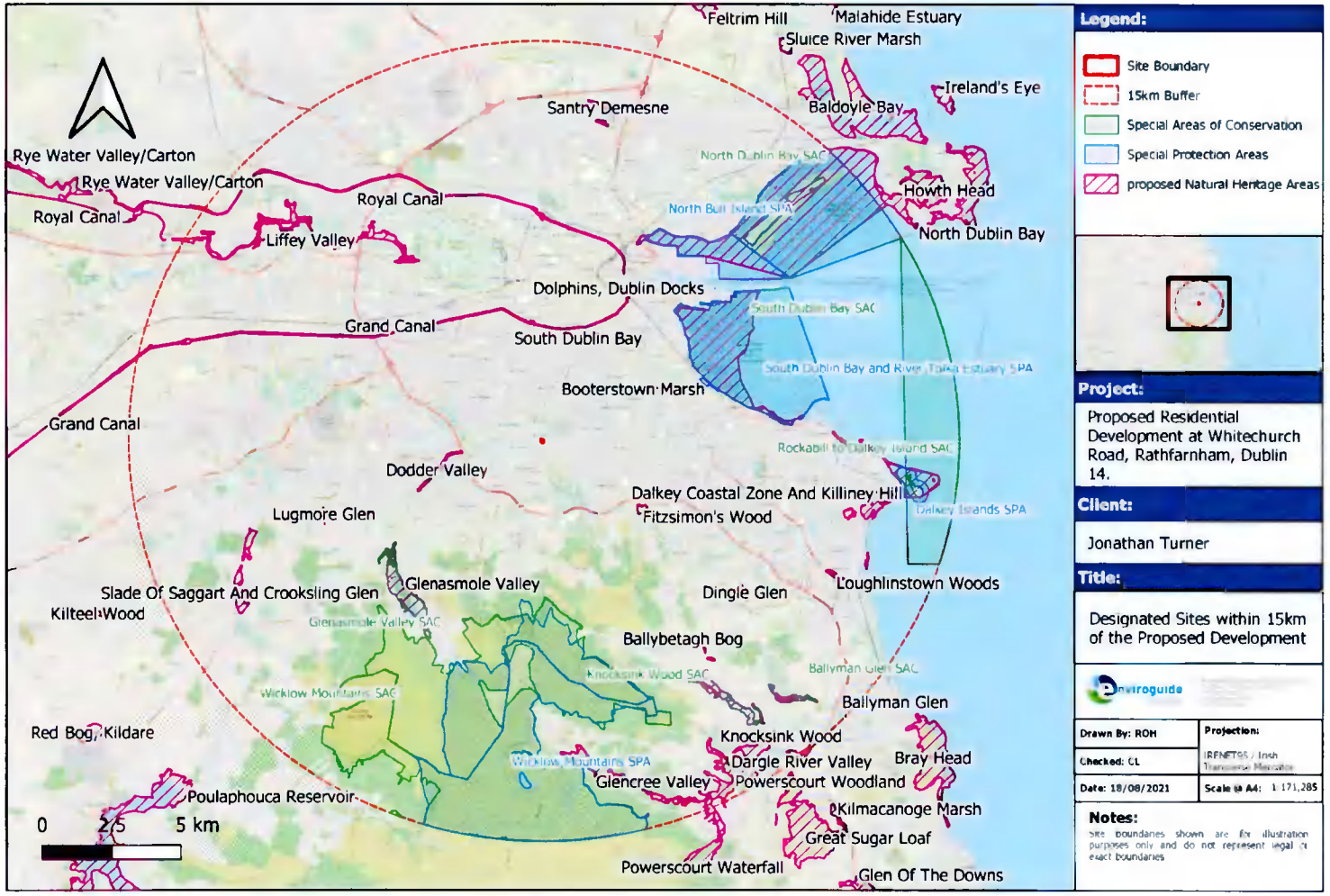

FIGURE 5-1. DESIGNATED SITES WITHIN 15KM OF THE PROPOSED DEVELOPMENT SITE.

5.1.3 Species and Species Groups

The Site of the Proposed Development is located within the Ordnance Survey Ireland National 10km grid square O12, 2km grid square O12P and 1km grid square O1428. Species records from the National Biodiversity Data Centre (NBDC) online database for this grid square were studied for the presence of rare or protected flora and fauna. The following records were excluded:

- Records greater than 20 years old.
- Species records with no designation or conservation status (excluding mammals and birds).
- Records of species placed on the Waiting List or identified as Least Concern, Data Deficient, Near Threatened or Not Evaluated in national red lists (Lockhart et al. 2012; Wyse Jackson et al., 2016), unless they are listed on the Flora Protection Order

In addition, data from various sources (e.g., Inland Fisheries Ireland, Flora Protection Order Map Viewer) were used to determine the presence of species in the vicinity of the Proposed Development. The following sections outline the results of this assessment.

5.1.3.1 Flora

Rare and Protected Flora

Species records from the NBDC online database were studied for the presence of rare of protected flora. There are no records of rare or protected flora within the O12 and O12P tetrad associated with the Site of the Proposed Development. Examination of the Flora Protection Order – Bryophytes Map Viewer[2] indicates that there are no protected bryophyte species within, or within the vicinity of the Proposed Development Site.

Invasive Plant Species

Species records from the NBDC online database were studied for the presence of invasive plant species. Twenty invasive species are listed for the 10km grid square O12, seven invasive species are listed for the 2km grid square O12 and no invasive plant species are recorded for the 1km grid square O1428.

Four Medium Impact species and three High impact species are listed for the 2km grid square associated with the Site. Medium impact species recorded for the 2km grid square O12P include, Butterfly-bush *Buddleja davidii*, Himalayan Honeysuckle *Leycesteria Formosa,* Sycamore *Acer pseudoplatanus* and Three-cornered Garlic *Allium triquetrum.* High Impact plant species recorded within the 2km grid square include, *Fallopia x bohemica,* Indian balsam *Impatiens glandulifera* and Japanese Knotweed *Reynoutria japonica*.

5.1.3.2 Birds

A total of 60 bird species have been recorded within the O12P tetrad by the NBDC. Of these, four are listed as *Red,* seventeen as *Amber* and thirty-nine as *Green* in *Birds of Conservation Concern in Ireland 2020-2026* (Gilbert et al., 2021).

[2] https://dahg.maps.arcgis.com/apps/webappviewer/index.html?id=71f8df33693f48edbb70369d7fb26b7e

Red-listed species include:

- Common Swift *Apus apus*
- Grey Wagtail *Motacilla cinerea*
- Little Grebe *Tachybaptus ruficollis*
- Tufted Duck *Aythya fuligula*

Amber listed species include:

- Barn Swallow *Hirundo rustica*
- Black-tailed Gull *Larus ridibundus*
- Common Coot *Fulica atra*
- Kingfisher *Alcedo atthis*
- Common Linnet *Carduelis cannabina*
- Starling *Sturnus vulgaris*
- European Robin *Erithacus rubecula*
- Goldcrest *Regulus regulus*
- Great Cormorant *Phalacrocorax carbo*
- Great Sotted Woodpecker *Dendrocopos major*
- Herring Gull *Larus argentatus*
- House Martin *Delichon urbicum*
- House Sparrow *Passer domesticus*
- Mew Gull *Larus canus*
- Mistle Thrush *Turdus viscivorus*
- Mute Swan *Cygnus olor*
- Spotted Flycatcher *Muscicapa striata*

5.1.3.3 Mammals (excl. bats)

Records for native terrestrial mammals were retrieved from the NBDC online database. Four native terrestrial mammals were recorded within the 2km tetrad O12P. Table 5-2 below lists these species, their date of last record and summarises their protected status.

TABLE 5-2. RECORDS OF TERRESTRIAL MAMMALS FOR THE SURROUNDING 2KM (O12P) GRID SQUARE FROM THE NBDC.

Species	Grid square	Date of last record	Source	Designation
NATIVE				
Eurasian Badger (*Meles meles*)	**O12P**	19/03/2014	Atlas of Mammals in Ireland 2010-2015	- Protected species - Wildlife (Amendment) Act 2000 - Bern Convention Appendix III
Red Fox (*Vulpes vulpes*)	**O12P**	11/10/2018	Mammals of Ireland 2016-2025	- n/a

European Otter (*Lutra lutra*)	**O12P**	19/09/2017	Mammals of Ireland 2016-2025	- Protected species - Wildlife (Amendment) Act 2000 - EU Habitats Directive – Annex II & IV - Bern Convention Appendix III
Pine Marten (*Martes martes*)	**O12P**	12/02/2015	Atlas of Mammals in Ireland 2010 – 2015	- Protected species - Wildlife (Amendment) Act 2000 - EU Habitats Directive – Annex V

All of the above species are protected under the Wildlife Act 1976 (as amended) the EU Habitats Directive 1992 and EC (Birds and Natural Habitats) Regulations 2011, except for Red Fox. Although not afforded the same level of protection as other mammal species listed above; wilful harming of the animal should be avoided. Fox are also protected from a variety of hunting/extermination techniques as per the **Wildlife Acts 1976 to 2012**; and from acts of cruelty as per the **Animal Health and Welfare Act 2013**.

No mammal species were directly recorded during the Site survey on the 12th of August 2021. Although not recorded by the NBDC within the 2km tetrad O12P, smaller mammals such as Hedgehog (*Erinaceus europaeus*), Pygmy Shrew (*Sorex minutus*) and Wood Mouse (*Apodemus sylvaticus*) are likely present at the Site of the Proposed Development. The potential habitat at the Site for these small mammal species is minimal, and suitable habitat for these species is available in the surrounding lands. Potential Fox scent was noted at the southwest of the Site, although not directly recorded at the Site Red Fox (*Vulpes vulpes*) are abundant in the locality and likely utilise the Site.

The Whitechurch stream is hydrologically linked to the Proposed Development. According to the Dublin City Otter survey, carried out as part of an Action of the Dublin City Biodiversity Action Plan 2015 – 2020 (Macklin et al., 2019), a moderate number of Otter signs were recorded with Otter usage relatively high along the surveyed reaches of the Whitechurch stream. Otter sign distribution was clustered in both the upper and lower reaches of the survey sections, this may be partly explained by higher human disturbance levels in the middle reaches.

FIGURE 5-2 OTTER SIGN DISTRIBUTION ON THE SURVEYED STRETCHES OF THE WHITECHURCH STREAM AND OWENDOHER RIVER AS SURVEYED APRIL 2018 – APRIL 2019 (ADAPTED FROM MACKLIN ET AL., 2019).

5.1.3.4 Bats

In view of their sensitive status across Europe, all species of bat have been listed on Annex IV of the EC 'Habitats Directive and some, such as the lesser horseshoe bat, are given further protection and listed on Annex II of this Directive. The obligations of the Habitats Directive have been transposed into Irish law and combined with the Wildlife Acts 1976 to 2018, ensure that individual bats and their breeding sites and resting places are fully protected. This has important implications for those who own or manage sites where bats occur.

All bat species are protected under the Wildlife Acts which make it an offence to wilfully interfere with or destroy the breeding or resting place of these species; however, the Acts permit limited exemptions for certain kinds of development.

Records for Bat species recorded in the 2km National Grid Square were retrieved from the NBDC online database, along with records obtained from the NPWS. Four species of bat have been recorded within the 2km O12P grid square which encompass the Site, Daubenton's Bat *Myotis daubentonii*, Lesser Noctule *Nyctalus leisleri*, Pipistrelle Bat *Pipistrellus pipistrellus sensu lato* and Soprano Pipistrelle *Pipistrellus pygmaeus*. These species records are listed in Table 5-3 below.

TABLE 5-3. RECORDS OF BATS FOR THE SURROUNDING 2KM (O12P) GRID SQUARE FROM THE NBDC.

Species	Grid square	Date of last record	Source	Designation
Lesser Noctule (*Nyctalus leisleri*)	**O12P**	19/07/2017	National Bat Database of Ireland	- EU Habitats Directive - Annex IV - Wildlife (Amendment) Act 2000
Daubenton's Bat (Myotis daubentonii)	**O12P**	03/08/2014	National Bat Database of Ireland	- EU Habitats Directive - Annex IV

Species	Grid square	Date of last record	Source	Designation
				- Wildlife (Amendment) Act 2000
Pipistrelle Bat (*Pipistrellus pipistrellus sensu lato*)	**O12P**	19/07/2007	National Bat Database of Ireland	- EU Habitats Directive - Annex IV - Wildlife (Amendment) Act 2000
Soprano Pipistrelle (*Pipistrellus pygmaeus*)	**O12P**	19/07/2017	National Bat Database of Ireland	- EU Habitats Directive - Annex IV - Wildlife (Amendment) Act 2000

The NBDC maps landscape suitability for bats based on Lundy *et al.*, 2011. The maps are a visualisation of the results of the analyses based on a 'habitat suitability' index, with the index ranging from 0-100 with 0 being least favourable and 100 being most favourable for bats. The overall assessment of bat habitats for the Site is given as 25.44, relatively low. The species with the highest individual suitability scores for the area encompassing the Site are Leisler's bat *Nyctalus leisleri,* Common pipistrelle *Pipistrellus pipistrellus,* and Soprano pipistrelle *Pipistrellus pygmaeus*, with 49, 47 and 41, respectively.

5.1.3.5 Fish

5.1.3.5.1 Atlantic salmon (*Salmo salar*)

There are three salmonid fish species native to Ireland, namely Atlantic Salmon *Salmo salar*, Brown Trout *S. trutta* and Arctic Char *Salvelinus alpinus*. In Ireland, Arctic Char are confined to lentic habitats. They typically occur in upland lakes, corries, as well as lowland small and larger lakes with areas of deep water. Given the lack of suitable habitat for Arctic Char in the vicinity of the Proposed Development, they are not considered threatened by it, and are therefore not considered further in this report. Conversely, Brown Trout are a relatively common species, occurring in almost every brook, stream, river, and lake in Ireland (Kennedy and Fitzmaurice, 1971 cited in King et al., 2011). In addition, anadromous populations (sea trout) occur in many coastal river systems. Brown trout are protected by the Fisheries Acts 1959 to 2006 and are present within the Whitechurch stream, with suitable spawning grounds available.

Atlantic Salmon are generally widespread in Ireland where habitat quality is suitable and access to river systems from the sea is possible (no barriers to obstruct migration). Atlantic Salmon are listed under Annex II and V of the Habitats Directive and are protected by the Fisheries Acts 1959 to 2006. Furthermore, Atlantic Salmon are categorised as 'vulnerable' in the Irish Freshwater Fish Red List (King et al., 2011).

The Whitechurch stream, despite its highly modified nature provides an important ecological corridor and is hydrologically connected to the Site. Previous Water Framework Directive (WFD) surveys conducted by Inland Fisheries Ireland (IFI) identified that although salmon are present in the lower reaches of the Dodder River, they are unable to access the upstream reaches past Clonskeagh Weir and therefore are not considered present within The Owendoher River and Whitechurch Stream (IFI, 2008). The results of an electric fishing survey conducted by the IFI in 2011 within the Owendoher river conclude that brown trout were the

only species recorded. Both the Owendoher River and Whitechurch Stream are considered important wild trout nursery streams.

5.1.3.5.2 Lamprey (*Lampetra sp. & Petromyzon marinus*)

All three lamprey species recorded in Ireland are listed on Annex II of the EU Habitats Directive. Lamprey larval burrows are characteristically found at eddies or backwaters, on the inside of bends or behind obstructions, where current velocity is below that of the main stream and where organic material tends to accumulate (Kelly & King, 2001). There are no records for any species of lamprey within the 2km grid square associated with the site of the Proposed Development and no suitable habitat is present at the Site of the Proposed Development. Lamprey species have been recorded in the Dodder River. As with salmon, the weir at Clonskeagh Bridge would act as a barrier to further upstream migration for sea lamprey. Brook lamprey have been recorded within the Dodder River from Beaver Road to Oldbawn during Inland Fisheries Ireland surveys in 2013 and 2014 (Kelly *et al.*, 2014, Kelly *et al.*, 2015).

5.1.3.5.3 European eel (*Anguilla anguilla*)

European eel is a red listed species and is currently considered to be the most threatened fish species in Ireland (King et al. 2011). There are no records for European eel within the 2km grid square associated with the site of the Proposed Development and no suitable habitat for this species is present at the Site of the Proposed Development. However, European eel have been recorded where the Owendoher enters the River Dodder at Bushy Park during the 2014 Inland Fisheries Ireland surveys (Kelly *et al.*, 2015).

5.1.3.6 Amphibians

The Common Frog *Rana temporaria* was recorded within the 2km grid Square O12P. The Common Frog is listed under Annex V of the EU Habitats Directive and is further protected in Ireland under Wildlife (Amendment) Act 2000. The preferred habitat for Common Frog includes ponds, drains and slow-moving streams which have plenty of algae and plants near the edge and have shallow edges to enable easy access. There are no habitats at the Site of the Proposed Development for this species and the Whitechurch stream is unlikely to be an important breeding habitat for Common Frog. The Whitechurch stream is also considered unsuitable for Smooth Newt *Lissotriton vulgaris*.

5.1.3.7 Invertebrates

5.1.3.7.1 White-clawed Crayfish *(Austropotamobius pallipes)*

In Ireland, the white-clawed crayfish most commonly occurs in small and medium-sized lakes, large rivers, streams and drains, wherever there is sufficient lime (Reynolds, 2007). The overall conservation status of the white-clawed crayfish in Ireland is inadequate, due to the reduction in its range and the continuing pressures that it faces (NPWS,2013).

There are no records for this species within the 2km grid square O12P which encompasses the Site of the Proposed Development and no suitable habitat types are present within the Site. A review of the NBDC maps indicate that there are no records of crayfish within the Dodder sub-catchment and the outer circle of the M50 appear to represent the most easterly distribution of crayfish. As such this species is not assessed further.

5.1.3.7.2 Marsh Fritillary (*Euphydryas aurinia*)

Marsh Fritillary butterfly is listed under Annex II of the EU Habitats Directive and is the only insect protected by law in Ireland. There are no records for this species within the 2km grid square O12P

Neither Marsh Fritillary, nor its associated food plant; Devil's bit scabious (*Succisa pratensis*), were recorded during Site surveys. Butterfly forms of Marsh Fritillary are active in May-June and Devil's bit scabious flowering in July-September. The Site does not contain wet grassland, a habitat often inhabited by this species. As such, it is deemed that the Site does not provide suitable habitat for Marsh Fritillary.

5.1.3.8 Other species and species groups

There are no records on the NBDC database for rare or protected invertebrates or reptiles within the relevant tetrad associated with the Site of the Proposed Development.

5.2 Field Surveys

5.2.1 Habitats & Flora

The habitats within the Proposed Development Site boundary were surveyed. Several distinct habitat types (codes follow Fossitt, 2000) were recorded within the survey area, namely:

BL3 – Buildings and Artificial Surfaces
BL1 – Stone Walls and Other Stonework
BC4 – Flower Beds and Borders
WS1 – Scrub
WL1 – Hedgerows
WS3 – Ornamental / non-native shrub
ED3 – Recolonising Bare Ground
GA2 – Amenity Grassland
FW2- Depositing Lowland River
WL2 - Treeline
Mosaic of GA2 and WS1 – Amenity Grassland and Scrub
Mosaic of ED3 and WS1 – Recolonising Bare Ground and Scrub

5.2.1.1 Cultivated and Build Land

BL3- Buildings and Artificial Surfaces

This habitat was recorded at the north and south of the Site and is comprised of the current residential properties on Site, sheds, concrete block walls and a roadway.

BL1 – Stone Walls and Other Stonework

This habitat was recorded at the southwest of the Site and consists of the remnants of old buildings and boundary walls. Plant species found growing within the cracks of these walls include Great Willowherb *Epilobium hirsutum*, Herb Robert *Geranium robertianum* and Butterfly Bush *Buddleja davidii.*

FIGURE 5-3. STONEWALL (BL1) HABITAT AT THE SITE..

BC4 – Flower Beds and Borders

A strip of ornamental planting is located along the northern boundary of the Site and makes up part of the current landscaping of the residential bungalow on Site.

5.2.1.2 Woodland and Scrub Habitats

WS1 – Scrub

Areas of recolonising bare ground within the old buildings on Site have transitioned to Scrub along the western boundary of the Site. The dominant species here include Bramble *Rubus fruticosus,* Ivy *Hedera helix,* Ragwort *Jacobaea vulgaris,* Hedge Bindweed *Calystegia sepium,* Wood Avens *Geum urbanum* and Nettle *Urtica dioica*.

FIGURE 5-4 SCRUB (WS1) HABITAT AT THE SITE.

WL1 – Hedgerows

There are two forms of this habitat present within the Site boundary. The first is a planted and managed, ornamental hedge located to the north of the Site which forms part of the landscaping of the current residential bungalow on Site. This hedge consists of planted non-native Cotoneaster *Cotoneaster spp.* and Cherry Laurel *Prunus laurocerasus.* The second is a section of more natural hedgerow, located to the south of the Site. This hedgerow is primarily comprised of Elder *Sambucus nigra*, Bramble *Rubus fruticosus,* Ivy *Hedera helix* and Hedge Bindweed *Calystegia sepium.*

FIGURE 5-5 PLANTED HEDGEROW (WL1) HABITAT AT THE SITE.

FIGURE 5-6 SEMI-NATURAL HEDGEROW (WL1) HABITAT AT THE SITE.

WL2 – Treeline

A treeline is located on the western bank of the Whitechurch stream, species here include Willow *Salix spp*, Ash *Fraxinus excelsior* and Sycamore *Acer pseudoplatanus*. The understory is dominated by Red-osier Dogwood *Cornus sericea*, Hedge bindweed *Calystegia sepium* and Nettle *Urtica dioica* with Winter Heliotrope *Petasites pyrenaicus* also located along this bank.

FIGURE 5-7 – TREELINE HABITAT ALONG THE WHITECHURCH STREAM

WS3 – Ornamental/ non-native shrub

This habitat forms part of the current landscaping for the residential bungalow on Site. Typical species include Cotoneaster spp., Ivy *Hedra helix*, Shrubby cinquefoil *Potentilla fruticosa*, Fuchsia (*Fuchsia magellanica*) and Siberian tea (*Bergenia crassifolia*).

FIGURE 5-8. ORNAMENTAL/ NON-NATIVE SHRUB (WS3) HABITAT AT THE SITE.

5.2.1.3 Grassland Habitats

GA2 – Amenity Grassland

This is the main habitat type within the boundary of the Proposed Development Site, as indicated in Figure 5-14. Species recorded here include Yarrow *Achillea millefolium*, Daisy *Bellis perennis*, Self-heal *Prunella vulgaris*, Creeping Buttercup *Ranunculus repens*, White

clover *Trifolium repens*, Nettle *Urtica dioica*, Greater Plantain *Plantago major*, Ribwort Plantain *Plantago lanceolata*, Dandelion *Taraxacum spp.*, Dock *Rumex spp* Knotgrass *Polygonum aviculare,* Long-stalked Crane's-bill *Geranium columbinum* and Bird's-foot-trefoil *Lotus corniculatus.* Wetter sections of GA2 are dominated by Horsetail *Equisetum arvense*, American Wilowherb *Epilobium ciliatum*, Yorkshire Fog *Holcus lanatus* and Redshank *Persicaria maculosa.*

FIGURE 5-9 AMENITY GRASSLAND (GA2) HABITAT AT THE SITE.

5.2.1.4 Exposed Rock and Disturbed Ground habitats

ED3 – Recolonising Bare Ground

This habitat type occurs throughout the Site where previously artificial surfaces of tarmac and concrete have been invaded by vegetation. Typical vegetation found in this habitat include Pineappleweed *Matricaria discoidea*, Greater Plantain *Plantago major*, Dandelion *Taraxacum spp.* and Knotgrass *Polygonum aviculare.*

FIGURE 5-10 RECOLONISING BARE GROUND (ED3) HABITAT AT THE SITE.

5.2.1.5 Habitat Mosaics

Mosaic of GA2 and WS1 – Amenity Grassland and Scrub

This habitat mosaic occurs where shrubs and brambles have encroached on the amenity grassland habitat, if left unmanaged these areas will completely transition to Scrub habitat. Dominant species here include Bramble *Rubus fruticosus*, Ivy *Hedera helix*, Ragwort *Jacobaea vulgaris*, American Willowherb *Epilobium ciliatum* and Hedge Bindweed *Calystegia sepium*.

Mosaic of ED3 and WS1 – Recolonising Bare Ground and Scrub

This habitat mosaic occurs within the old buildings to the west of the Site and if left unmanaged would transition to Scrub habitat. Dominant species here are *Rubus fruticosus*, Ivy *Hedera helix*, Hedge Bindweed *Calystegia sepium*, Great Willowherb *Epilobium hirsutum*. The non-native Butterfly Bush *Buddleja davidii* and Bilbao's Fleabane *Conyza floribunda* were also found here.

FIGURE 5-11 MOSAIC OF RECOLONISING BARE GROUND (ED3) AND SCRUB (WS1) HABITAT AT THE SITE.

5.2.1.6 Freshwater habitats

FW1 – Eroding/Upland River

The Whitechurch stream is located west of the Proposed Development. There is little instream vegetation along this waterbody, and it is largely shaded by the riverbank vegetation consisting of Willow *Salix spp*, Ash *Fraxinus excelsior* and Sycamore *Acer pseudoplatanus*. The understory is dominated by Red-osier Dogwood *Cornus sericea*, Hedge bindweed *Calystegia sepium* and Nettle *Urtica dioica*. The Whitechurch stream has been heavily modified through straightening, widening and reinforcement of the riverbanks.

FIGURE 5-12. DEPOSITING/LOWLAND RIVER HABITAT – THE WHITECHURCH STREAM

5.2.1.7 Invasive Flora

Butterfly Bush *Buddleja davidii (*Medium Impact Invasive*)*, Cherry Laurel *Prunus laurocerasus (*High Impact Invasive*)*, Bilbao's Fleabane *Conyza floribunda* and Cotoneaster *Cotoneaster Spp*. were all found on Site.

The riverbanks of the Whitechurch stream where works will be required for the installation of the surface water sewer outfall point was also surveyed for the presence of invasive species. Winter Heliotrope *Petasites pyrenaicus*, Sycamore *Acer pseudoplatanus* and Red-osier Dogwood *Cornus sericea* were found along the western riverbank. Red-osier Dogwood was the only non-native species recorded along the eastern riverbank where the Proposed Works will occur. Red-osier Dogwood is listed as a slight to moderate invasive species.

None of the species found are listed on Schedule III of the *European Communities (Birds and Natural Habitats) Regulations* 2011 (SI 477 of 2011, as amended).

FIGURE 5-13 A - HIGH IMPACT CHERRY LAUREL (PRUNUS LAUROCERASUS) HEDGEROW AT THE SITE.

B - MEDIUM IMPACT BUTTERFLY BUSH (BUDDLEJA DAVIDII) AT THE SITE

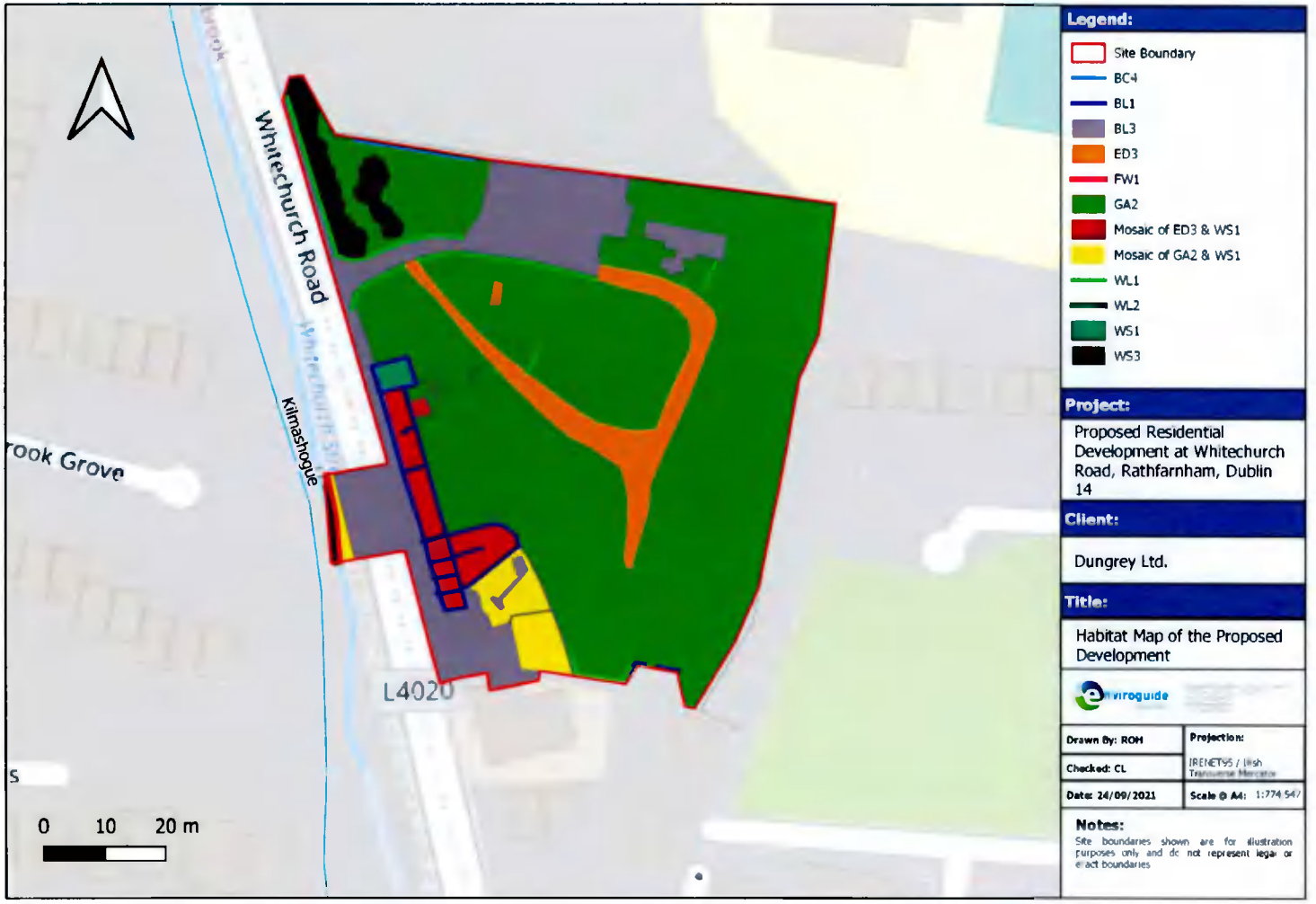

FIGURE 5-14. HABITATS AT THE SITE OF THE PROPOSED DEVELOPMENT.

5.2.2 Birds

Results from the Enviroguide bird survey carried out at the Site of the Proposed Development on the 12th of August 2021 are shown below in Table 5-4. A total of four species were recorded within the Site during the survey. All four species were observed overhead, with one species Woodpigeon *Columba palumbus* possibly breeding nearby

TABLE 5-4 BIRD SPECIES RECORDED WITHIN THE PROJECT SITE DURING THE BIRD SURVEY AND THEIR ASSOCIATED BREEDING STATUS.

Species	BoCCI[3] Status	Breeding Status
Woodpigeon (*Columba palumbus)*	Green	Possibly breeding nearby
Herring Gull (*Larus argentatus)*	Amber	Not breeding
Magpie (*Pica pica*)	Green	Not breeding
Jackdaw (Corvus monedula)	Green	Not breeding

No species on Red List of the Birds of Conservation Concern in Ireland were recorded. One species which is on the Amber List of the Birds of Conservation Concern in Ireland, Herring Gull, was recorded.

5.2.3 Bats

5.2.3.1 General Activity Survey

According to the report carried out by Aisling Walsh of Ash Ecology (See Appendix III) bat activity around the Site of the Proposed Development was generally low, a total of two species of bat was recorded on Site.

The most frequent bat species recorded were Common Pipistrelle (*Pipistrellus pipistrellus*) and Leisler's Bat (*Nyctalus leisleri*). The results of the activity survey are summarised in Table 5-5 and Figure 5-15 below. The cluster of bat activity records was due to the same bat recircling as opposed to emerging from the shed labelled Building 2. This bat flew over the wall from the north of the Site.

[3] Birds of Conservation Concern in Ireland 4 2020-2026 (Gilbert, *et al.*, 2021).

TABLE 5-5 SUMMARY OF BAT ACTIVITY RECORDED AT THE SITE OF THE PROPOED DEVELOPMENT

Species	Total Number of Passes	Peak Frequency (KHz)
Common Pipistrelle *(Pipistrellus pipistrellus)*	**15**	46.5
Leisler's Bat (*Nyctalus leisleri)*	**1**	26.9

FIGURE 5-15 BAT ACTIVITY MAP. IMAGE EXTRACTED FROM THE BAT SURVEY REPORT BY ASH ECOLOGY & ENVIRONMENTAL LTD. JULY 2021.

5.2.3.2 Building Assessment Survey.

The existing buildings were inspected on Site. No evidence of bats such as bat droppings, staining or smearing were found at any potential entry point to the buildings. Cracks, crevices etc. were investigated for ingress / egress points. No bat emergence was detected or observed from the structures onsite. In addition, bat potential of the main building and shed (Building 1 and 2 above) was assigned a 'negligible' and 'low' rating. The series of old stone walls with numerous crevices were assigned a 'Moderate' rating, while the derelict cottage to the south-east of the Site (building 4 above) was assigned a 'Moderate' rating.

5.2.3.3 Landscape Evaluation

The Site of the Proposed Development is of local importance (lower value) for bats due to the sprawling suburban areas surrounding the Site. The Site lacks mature trees and lacks connectivity to other treelines. The walls along the boundary of the Site provide some

commuting lines for bats. The lack of bat activity on the Site may be due, in part, to light spill from the streetlights along the Whitechurch Road.

5.3 Designated sites, habitat and species evaluation

Designated fauna which have the potential to utilise habitat within the immediate area of the Proposed Development, or for which records exist in the wider area, have been evaluated below in Table 5-6 for their conservation importance. In addition, designated sites and habitats have been evaluated. This evaluation follows the Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009b). The rationale behind these evaluations is also provided. The term 'Key Ecological Receptors' KERs is used when impacts upon these receptors are likely.

TABLE 5-6. EVALUATIONS OF DESIGNATED SITES, HABITATS AND FAUNA RECORDED WITHIN THE SURROUNDING AREA.

Designated Sites/Species /Habitats	Evaluation	Key Ecological Receptor (KER)	Rationale
Designated Sites			
SACs & SPAs	International Importance	**No**	Potential impacts on European sites are addressed in the AA Screening accompanying this application. Although there is a potential hydrological link via surface water discharges from the Site and foul waters treated at Ringsend WwTP, the AA screening concluded that there will be no significant impacts to the integrity of any European Site.
pNHAs	National Importance	**No**	The closest pNHA to the Proposed Development is Dodder Valley pNHA located 2.8 km upstream from the Proposed Development. This pNHA is located upstream of the Proposed Development along the River Dodder. The Proposed Development will not have a negative impact on the water quality in the River Dodder and significant effects on any pNHA due to the Proposed Development can be ruled out.
Habitats			
WS1 Scrub	Local importance (lower value)	**No**	Small sections of this habitat type present on Site, largely made up of sprawling sections of bramble and Ragwort. May provide some shelter/foraging potential for local fauna, but not considered of conservation value.
WL1 Hedgerows	Local importance (lower value)	**No**	Insubstantial areas of this habitat type are semi-natural in nature, with the majority of the hedgerow habitat on Site consisting of planted non-native hedgerow that forms parts of the Site's current landscaping. This habitat may provide shelter/foraging/nesting habitat for local fauna but is not considered of conservation value.
WL2 – Treeline	Local importance (lower value)	**No**	This habitat is located along the western bank of the Whitechurch Stream. This habitat may provide shelter/foraging potential for local fauna but will not be impacted by the Proposed Works.

Designated Sites/Species /Habitats	Evaluation	Key Ecological Receptor (KER)	Rationale
WS3 Ornamental / non-native Shrub	Local importance (lower value)	**No**	Insubstantial areas of this habitat present at the Site of the Proposed Development. Although it may offer potential habitat to fauna, it is not considered of conservation importance.
BL1 Stone walls and other stonework	Local importance (higher value)	**Yes**	The stonewalls at the Site of the Proposed Development may provide habitat for several fungi, flora or fauna. These features were determined to have 'Moderate' bat potential and may provide potential commuting lines for bats.
BL3 Buildings and Artificial Surfaces	Local importance (lower value)	**No**	Man-made habitat of low biodiversity value.
BC4 Flower Beds and Borders	Local importance (lower value)	**No**	Insubstantial areas of this habitat present on Site, it is not considered of conservation importance.
GA2 Amenity Grassland	Local importance (lower value)	**No**	Low diversity, managed grassland not considered to be of conservation value.
ED3 Recolonising Bare Ground	Local importance (lower value)	**No**	Recolonising bare ground of little biodiversity value.
Mosaic of GA2 Amenity Grassland and WS1 Scrub	Local importance (lower value)	**No**	An unmanaged residential back garden which has been encroached by sprawling sections of bramble. May provide habitat for small mammals and pollinators but is not of conservation value.
Mosaic of ED3 Recolonising Bare Ground and WS1 Scrub.	Local importance (lower value)	**No**	This habitat may provide shelter and foraging habitat for local fauna but is ecologically limited and not of conservation concern.
FW1 Upland eroding watercourse (The Whitechurch Stream)	Local importance (higher value)	**Yes**	This stream is located west of the Site and is hydrologically connected to the Proposed Development via surface water drains.
Mammals			
Small mammals e.g., Eurasian Pygmy Shrew *Sorex minutus* and Hedgehog *Erinaceus europaeus;* Wood Mouse *Apodemus sylvaticus*	Local importance (higher value)	**Yes**	No evidence of these species recorded during the field survey or records from the NBDC within the 2km grid square O12P. However, they may utilize the habitats at the Site which will be affected by the Proposed Development, namely some sections of the hedgerows, scrub and amenity grassland which will be removed. It is noted that the potential habitat at the Site for these species is minimal and suitable habitat is available for these species in the surrounding lands.

Designated Sites/Species /Habitats	Evaluation	Key Ecological Receptor (KER)	Rationale
Badger *Meles meles*	Local importance (lower value)	**No**	The badger is an adaptable species of lowland grassland and woodland habitats (Marnell et al., 2009). No setts or tracks were identified during the surveys and the Site would not provide an important foraging habitat for this species.
Pine Marten *Martes martes*	Local importance (lower value)	**No**	The favoured habitats of the Pine Marten are woodland and scrub, however, this species also occurs in mature gardens. The habitats at the Site of the Proposed Development are not considered important for this species.
Irish Hare *Lepus timidus* subsp. *hibernicus*	Local Importance (lower value)	**No**	The favoured habitat of the Irish hare is improved grassland (Marnell et al., 2009). There is no suitable habitat for hare within the Proposed Development Site.
Irish Stoat *Mustela erminea* subsp. *hibernica*	Local Importance (lower value)	**No**	Stoat are found in various habitats from coastal grasslands to woodlands and uplands, however they tend to avoid open habitats (Marnell et al., 2009). The habitats at the Site of the Proposed Development are not considered important for this species.
Red Fox *Vulpes vulpes*	Local importance (lower value)	**No**	No evidence of dens on-site, however fox scent was noted to the southwest of the Site. Species are abundant locally however the Site would not provide an importance foraging habitat with the urban nature of the surrounding area.
Otter *Lutra lutra*	Local importance (higher value)	**Yes**	No suitable habitat present within the Site for Otter. however Otter are known to utilise areas along the Whitechurch Stream and Owendoher River.
Bat Assemblage	Local importance (higher value)	**Yes**	The existing structures on Site are superficially considered to have some suitability for roosting bats, but no bats were recorded emerging from the structures during the survey. Two common bat species were recorded within the vicinity of the Site but neither used the Site for extended periods of time. The stone walls and buildings on site offer some bat potential and bats likely utilise the Whitechurch stream for foraging and commuting.
Birds			
Birds	Local importance (higher value)	**Yes**	Amber and Green-listed species recorded within a range of habitats across the Site.
Amphibians			
Common Frog *Rana temporaria*	Local Importance (lower value)	**No**	A common species, the preferred habitat for Common frog includes easily accessible shallow pools and ponds which have abundant algae. There is little potential habitat within the Site of the Proposed Development, or links to potential habitat for this species.
Smooth Newt *Lissotriton vulgaris*	Local Importance (lower value)	**No**	Smooth newts are found in still or slow-moving water. No potential habitat at the Site to support this species and they are unlikely to occur within the Whitechurch Stream.
Fish			

Designated Sites/Species /Habitats	Evaluation	Key Ecological Receptor (KER)	Rationale
Brown Trout *Salmo trutta;* European Eel *Anguilla anguilla;* Brook and River Lamprey *Lampetra* spp.	Local Importance (Higher value)	**Yes**	No potential habitat at the Site to support these species, however IFI records show these species are present within the Whitechurch Stream and Owendoher River which is hydrologically connected to the Site.

6 POTENTIAL IMPACTS OF THE PROPOSED DEVELOPMENT

As per the relevant guidelines, likely effects have been assessed for Key Ecological Receptors only, as listed in Table 5-6. The following were identified as KERs:

Habitats

- FW1 Upland eroding watercourse
- BL1 Stone walls and other stonework

Species/Species Groups

- Small mammals e.g. Eurasian Pygmy Shrew *Sorex minutus*; Hedgehog *Erinaceus europaeus*; Wood mouse *Apodemus sylvaticus*
- Otter *Lutra lutra*
- Bat Assemblage
- Bird Assemblage
- Fish Assemblage

6.1 Construction Phase

6.1.1 Impacts on Habitats

The Proposed Development will require Site clearance which will result in a total or partial loss of the majority of the habitats on Site. The Site contains numerous old stone walls which can have biodiversity value and can be home to a variety of flora. The stone walls on Site lacked dense ivy cover and were deemed to have 'Moderate' bat potential. The impact of the removal of the stone walls within the Site of the Proposed Development is considered to be *negative, permanent, moderate* at a local level in the absence of mitigation.

There is a slight potential for surface water run-off from the Site, containing silt, oil, cementitious material or other pollutants to enter the Whitechurch Stream. Works will be required close to this waterbody to install the surface water sewer and outfall point to the Whitechurch stream. This constitutes a *negative, short-term, moderate* impact in the absence of suitable mitigation.

6.1.2 Impacts on Fauna

6.1.2.1 Mammals (excluding bats)

The Proposed Development could have a potential *negative*, *permanent*, *slight* impact at a local level on Hedgehog, Wood Mouse or Pygmy Shrew in the absence of mitigation/compensatory measures, through the removal of amenity grassland and shrub/hedgerow habitat within the Site of the Proposed Development. Due to the limited size of the Proposed Development Site, the populations of these species on the Site are anticipated to be small. Hedgehog, Wood Mouse, and Pygmy Shrew are listed as of 'least concern' in the recent Red List for terrestrial mammals in Ireland and the removal of these habitats does not have the potential to have a significant effect on their conservation status.

Noise and dust generated during the Construction Phase has the potential to cause *negative, short-term, slight* impacts in the form of disturbance to mammals at a local level. Due to the high level of human disturbance within the Vicinity of the Site, mammals would be accustomed to the existing urban ambient noise levels associated with the busy Whitechurch Road.

Small mammal species such as Pygmy Shrew, and in particular Hedgehog, have the potential to become entangled in construction materials such as netting and plastic sheeting, as well as other waste materials, causing entrapment and injury or death. This constitutes a *negative, short-term, significant* risk at a local level associated with the Construction Phase of the Proposed Development.

The canalised nature of the Whitechurch stream and the proximity to exposed human activity along the Whitechurch Road is not conductive to Otter holt establishment. According to the Dublin City Otter survey (Macklin et al., 2019) the potential Otter holts along the Whitechurch stream are located upstream of the Site and as such will not be impacted by the Proposed Development

There is a slight possibility of potential surface water discharges containing silts, sediments and/or pollutants to enter the Whitechurch stream during the Construction phase of the Proposed Development. This risk constitutes a *negative, short-term, moderate* impact to Otter utilising the waterbody in the absence of suitable mitigation.

6.1.2.2 Birds

A total of four bird species were recorded within the Site of the Proposed Development during the bird survey carried out on the 12th of August 2021. Of these four species, one was considered to be possibly breeding nearby. Herring Gull was the only Amber-listed species recorded at the Site. No red listed species were recorded during the survey.

The loss of the scrub, grassland and hedgerow habitat at the Site could have a potential *negative, permanent, slight* impact at a local level on some hedgerow species through the removal of these habitats.

Should vegetation be cleared as part of the Construction Phase during the breeding bird season (March 1st to August 31st); there is the potential for nesting birds to be harmed and nests to be destroyed. This would be in contravention of the Wildlife Act 1976 (as amended) which provides protection to breeding bird species and their nests and young. Therefore, in the absence of any mitigation or precaution, this risk represents a potential *negative, permanent, significant* impact to local breeding birds.

The increased noise and dust levels associated with the Construction Phase of the Proposed Development may have the potential to cause *negative, short-term, slight* impacts to local bird populations.

6.1.2.3 Bats

There was a low rate of bat activity recorded at the Site of the Proposed Development, with the activity confined to the east and northeast of the Site. The buildings and structures onsite were inspected for the signs of bats, or evidence of bat activity. Although no bat emergence was detected from the buildings or structures on Site, a number of structures (old stone walls and a derelict cottage) were assigned a 'Moderate rating', should works be carried out to these buildings without a pre-demolition survey this represents a potential *negative, permanent, significant* impact to local bats.

A potential impact to bats has been identified in the form of excess light spill onto the Whitechurch stream and wooded areas along its bank, although it is noted that the Whitechurch road is currently well illuminated from streetlights. This excess lighting could negatively impact this commuting/foraging route. In the absence of suitable mitigation this constitutes a potential *negative, short-term, moderate* impact to local bats.

6.1.2.4 Fish

There is a slight potential for surface water run-off from the Site, containing silt, oil, cementitious material or other pollutants to enter the Whitechurch Stream to the west of the Site. This could potentially constitute a *negative, short-term, moderate* impact to fish species within the waterbody in the absence of suitable mitigation.

6.2 Operational Phase

6.2.1 Impacts on Habitats

Negative impacts as a result of the Operational Phase of the Proposed Development on terrestrial habitats are not anticipated. The planting of native trees, pollinator friendly flower and shrub species as part of the proposed landscaping plan will result in a *positive, permanent, moderate* impact overall.

Negative impacts on waterbodies as a result of the Operational Phase of the Proposed Development are not anticipated due to the surface water management measures incorporated into the project design. The drainage system for the proposed Development has been designed in accordance with Part H of the Building Regulations, BS EN 752 Drain and Sewer Systems outside buildings, the Greater Dublin Regional Code of Practice for Drainage Works and the Greater Dublin Strategic Drainage Study (GDSDS). The proposed surface water management system includes a stormwater attenuation facility and permeable paving.

6.2.2 Impacts on Fauna

6.2.2.1 Mammals

During the Operational Phase, there is potential for disturbance to mammals utilising the Site in general through night-time light pollution. This could have a *negative, permanent, moderate* impact on mammals in the locality.

Negative impacts on waterbodies as a result of the Operational Phase of the Proposed Development are not anticipated due to the surface water management measures incorporated into the project design, as such negative impacts on Otter are not anticipated.

6.2.2.2 Birds

An overall increase in native tree cover is proposed at the Site during the Operational Phase. The landscape plan entails the planting of native species including Birch *Betula pubescens*, Wild Cherry *Prunus avium*, Mountain Ash *Sorbus acuparia*, Hawthorn *Crataegus monogyna* and Ivy *Hedra helix*. The planting of pollinator friendly flower and shrub species is also proposed where possible, this will increase insect abundance on Site which in turn provides additional food for birds. This constitutes a *positive, permanent, moderate* impact on birds in the locality.

6.2.2.3 Bats

During the Operational Phase, there is potential for disturbance to local bats utilising the area through night-time pollution. Excess light spill could render normally dark commuting and foraging routes unsuitable for bats. This could have a *negative, permanent, moderate* impact on bats in the locality in the absence of suitable mitigation

6.2.2.4 Fish

Negative impacts on waterbodies as a result of the Operational Phase of the Proposed Development are not anticipated due to the surface water management measures incorporated into the project design, as such negative impacts on Fish are not anticipated.

6.3 Do nothing impact

If the Proposed Development were not to go ahead, habitats at the Site of the Proposed Development would continue to evolve. Scrub would continue to encroach on the recolonising bare ground and amenity grassland, the stone walls on site would continue to support a small variety of flora and potential habitat for bats. The hedgerows and amenity grassland would continue to be managed and species poor. The majority of the land would continue to be of low biodiversity value.

7 Mitigation and Enhancement Measures

7.1 Construction Phase

7.1.1 Terrestrial Habitats

7.1.1.1 Planting of native flora and protecting pollinators

In order to mitigate the loss of scrub and hedgerow habitat at the Site, the planting of native and pollinator friendly species has been incorporated into the landscape plan. Native species to be planted include Birch *Betula pubescens*, Wild Cherry *Prunus avium*, Mountain Ash *Sorbus acuparia*, Hawthorn *Crataegus monogyna* and Ivy *Hedra helix*. The Proposed landscaping schedule also includes a number of pollinator friendly species such as Silverberry *Elaeagnus x ebbingei*, and Lime *Tilia x cordata* 'Greenspire'. The planting of native flora will

improve local biodiversity and increase insect abundance. This in turn will provide additional food for mammals and birds at the Site.

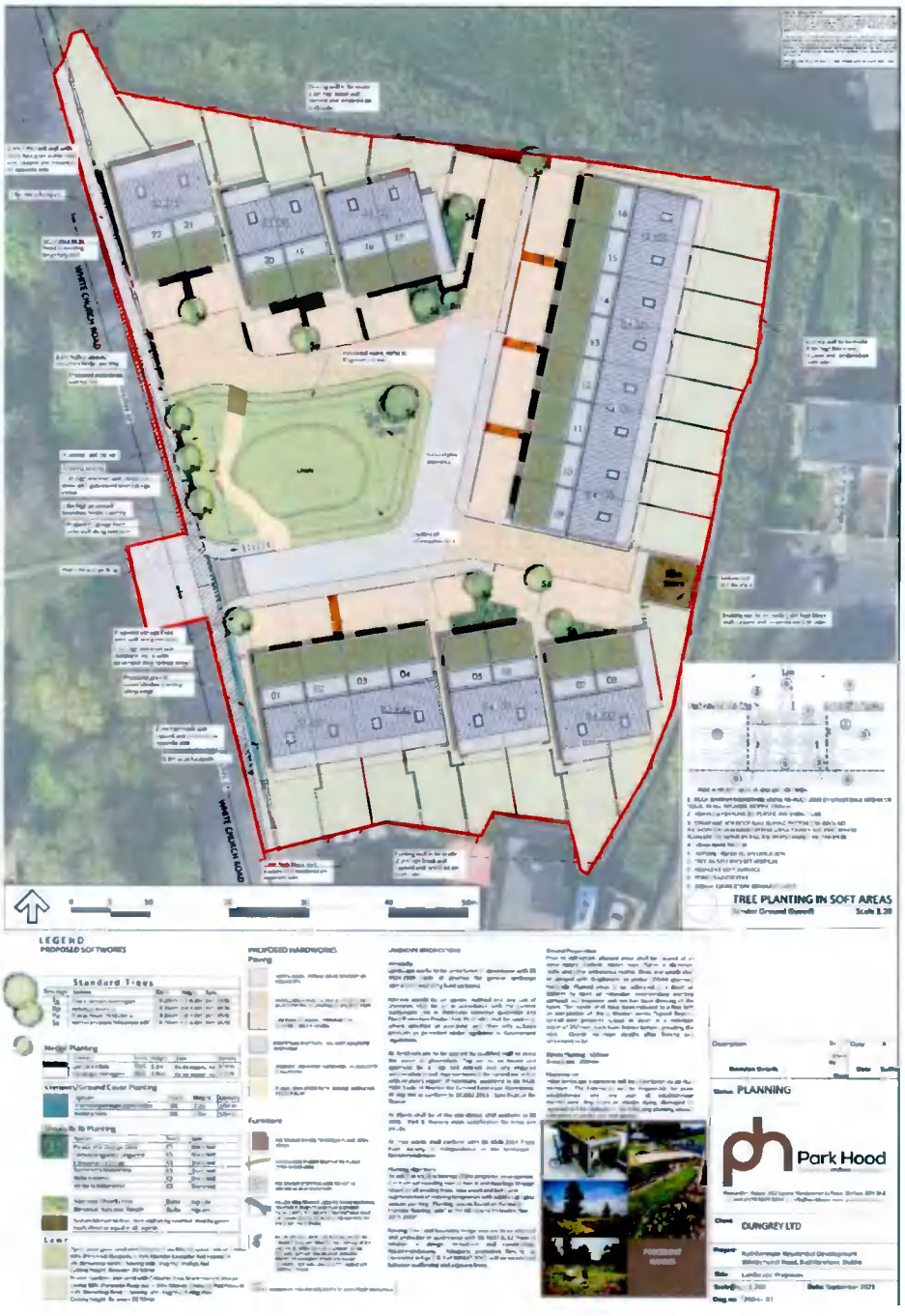

FIGURE 7-1. LANDSCAPE PLAN FOR THE PROPOSED DEVELOPMENT (PARK HOOD CHARTERED LANDSCAPE ARCHITECTS, DRAWING NO. 7260-L-101)

7.1.2 General Protection of Surface Waters

Fuel and Chemical Storage

Appropriate storage facilities will be provided on Site. Areas of high risk include:

- Fuel and chemical storage
- Refuelling Areas
- Site Compound
- Waste storage areas

There will be no washdown facilities for plant and equipment at the Proposed Development Site.

Fuel, oils and chemicals will be stored on an impervious base within a bund remote from any surface water ditches or locations.

All tank, container and drum storage areas shall be rendered impervious to the materials stored therein. Bunds shall be designed having regards to Environmental Protection Agency guidelines 'Storage and Transfers of Materials for Scheduled Activities' (2904). All tank and drum storage areas shall, as a minimum, be bunded to a volume not less than the greater of the following:

- 110% of the capacity of the largest tank or drum within the bunded area; or
- 25% of the total volume of substance that could be stored within the bunded area.

Concrete mixer trucks will not be permitted to wash out on Site with the exception of cleaning the chute into a container which will be removed off Site to an authorised facility. Water will not be discharged to open water courses.

General Protection Measures

A hydrological connection exists between the Site of the Proposed Development and the Whitechurch stream via surface water discharge. The Whitechurch stream is the primary tributary of the Owendoher River.

These waterbodies are hydrologically connected to Dublin Bay however the potential for surface water generated at the Site of the Proposed Development to reach Dublin Bay and cause significant effects is deemed to be negligible due to the small scale of the Proposed development, the downstream distance to Dublin Bay and the consequential significant dilution factor in the Whitechurch Stream, Owendoher River, River Dodder, River Liffey and Dublin Bay.

All works carried out as part of the Proposed Development will comply with all Statutory Legislation including the Local Government (Water Pollutions) acts, 1977 and 1990. Personnel working on the Site will be trained in the implementation of environmental control and emergency procedures. Standard best international practice will be adhered to throughout the construction phase, including but not limited to:

- CIRIA, (2001), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors.

- Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (C650), 2005.
- BPGCS005, Oil Storage Guidelines.
- CIRIA 697, The SuDS Manual, 2007.
- UK Pollution Prevention Guidelines (PPG) UK Environment Agency, 2004.
- Construction Industry Research and Information Association CIRIA C648: Control of water pollution from linear construction projects: Technical guidance (Murnane et al. 2006).
- CIRIA C648: Control of water pollution from linear construction projects: Site guide (Murnane et al. 2006); and
- Inland Fisheries Ireland (2016). Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters.

The below general protection of water quality measures will act to reduce the likelihood of any potential impact on aquatic species and water quality in the Whitechurch stream and Owendoher River, during the Construction Phase of the Proposed Development:

- No direct discharges will be made to any receiving drainage network or waterbodies.
- Pumping of concrete will be monitored to ensure that there is no accidental discharge.
- There will be no mixer washings or excess concrete discharged on Site. All excess concrete is to be removed from Site and all washout of concrete chutes to be captured in a tank which shall be removed offsite for disposal at an unauthorised wastewater treatment facility.
- Surface water run-off will be treated using silt trays/settlement ponds and temporary interceptors and traps will be installed until such time as permanent facilities are constructed.
- Any oil and lubricant changes and maintenance will take place offsite.
- Refuelling of plant and machinery on Site shall take place in a designated impermeable area.
- Any imported materials will, as much as possible, be placed on Site in their proposed location and double handling will be avoided. Where this is not possible designated temporary material storage areas will be used.
- All containment and treatment facilities will be regularly inspected and maintained.
- Refuelling of plant during the Construction Phase will only be carried out at designated refuelling station locations on Site. Each station will be fully equipped for spill response and a specially trained and dedicated Environmental and Emergency Spill Response team will be appointed before the commencement of works on Site.

- Only emergency breakdown will be carried out on Site. Drip trays and spill kits will be available on Site to ensure that any spills from vehicles are contained and removed off Site.
- Any other diesel, fuel or hydraulic oils stored on Site will be stored in bunded storage tanks – the bunded area will have a volume of at least 110% of the volume of the stored materials as per best practice guidelines (Enterprise Ireland, BPGCS005).
- Portaloos and/or containerised toilets and welfare units will be used to provide facilities for Site personnel. All associated waste will be removed from Site by a licenced waste disposal contractor.

All wastewater generated on-site during the Construction Phase will be stored and disposed of appropriately by discharge to foul sewer or by tankering off Site. Under no circumstances will any treated wastewater generated onsite (from equipment washing, road sweeping etc.) be released into nearby watercourses.

7.1.3 Headwall and Surface Water Sewer Construction

It is proposed to construct the headwall and base via *in situ* concrete. If required, sandbags will be placed at the outfall during the Construction Phase.

All in-stream works will be carried out in accordance with an approved method statement and under the direction of Inland Fisheries Ireland personnel.

Once the schedule of instream works has been drawn up the developer will consult with Inland Fisheries Ireland (IFI) before commencing works. All works will be completed in agreement with IFI.

The works shall be carried out in accordance with IFI (2016) Guidelines on the Protection of fisheries during construction works in and adjacent to water. Works associated with the headwall construction will be supervised by an Ecological Clerk of Works (ECoW)

7.1.3.1 Constraints Zone

- The timing of the headwall installation will be scheduled to ensure no instream works shall be carried out during the closed season for instream works (October 1st to June 30th).
- Prior to construction on the headwall, a constraints zone will be identified and implemented at the construction area adjacent to the Whitechurch stream. This area will:
    - Ensure the avoidance of physical damage to the Whitechurch stream.
    - Ensure all work will be carried out in the dry and effectively isolated from the Whitechurch stream.
    - Ensure that no suspended sediment and associated nutrients are released into surface waters from excavation and earthworks.
- No stockpiling of construction materials will take place within the constraints zone.
- No refuelling of machinery or overnight parking of machinery is permitted in this area.

- If cast-in-place concrete is required, all work must be carried out in the dry and effectively isolated from any water courses or drainage ditches
- There will be no mixer washings or excess concrete discharged on Site. All excess concrete is to be removed from Site and all washout of concrete chutes to be captured in a tank which shall be removed offsite for disposal at an authorised wastewater treatment facility.
- If the machinery operations are required, this shall take place from the riverbank.
- Any excess construction material shall be immediately removed from the area and sent to an authorised waste recovery facility.
- Any imported materials will, as much as possible, be place on Site in their proposed location and double handling will be avoided. Where this is not possible designated temporary material storage areas will be used.
- Drip trays and spill kits will be available on Site to ensure that any spills from vehicles are contained and removed off Site.
- Where in-stream bed material is to be removed, coarse aggregates, if present, should be stockpiled for replacement in the stream.
- No direct discharges will be made to waters, especially where there is potential for cement or residues in discharges.
- Run-off from the working Site or any areas of exposed soil should be channelled and intercepted at regular intervals for discharge to silt-traps or lagoons with over flows directed to land rather than to a watercourse.
- The developer will ensure that erosion control i.e. silt-traps, silt-fencing and swales are regularly maintained during the Construction Phase.
- A regular review of weather forecasts of heavy rainfall will be conducted, and a contingency plan will be prepared for before and after such events to minimise any potential nuisances. As the risk of the break-out of silt laden run-off is higher during these weather conditions, no work will be carried out during such periods where possible.
- A survey for invasive flora will be carried out at the location of the headwall prior to works commencing. If any invasive flora listed on Schedule III of the European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011, as amended) are recorded, an Invasive Species Management Plan will be prepared prior to works taking place.
- Biosecurity measures will be strictly adhered to throughout the proposed works. Measures will be in accordance with IFI (2010) Biosecurity Protocol for Field Survey Work. Where staff are working instream, staff footwear and PPE will be inspected on daily completion of the works and vegetation, or debris removed. Footwear will be dipped in or scrubbed with a disinfectant solution (e.g., 1% solution of Virkron Aquatic or another proprietary disinfection product) and thoroughly dried afterwards. Sandbags, if used, will not be re-used in other watercourses.

7.1.4 Fauna

7.1.4.1 Bats

A pre-demolition survey for bats should be undertaken of the stone wall structures labelled as 3 as per Figure 5-15 to ensure no bats are present at this time. If bats are found to be using these structures at this later date a derogation licence from the National Parks and Wildlife Services (NPWS) will be required. As the cottage (labelled 4) is now part of the Site, a survey of the inside and immediately outside for bats prior to any demolition works will be required, this should be done at the appropriate time of year by a suitably qualified Ecologist. If the existing occupied house becomes vacant for a significant length of time prior to demolition, this house along with the adjacent shed will also require a follow up survey.

7.1.4.2 Birds

Any clearance of vegetation will be carried out outside the main breeding season, i.e. outside of 1st March to 31st August, in compliance with the Wildlife Act 1976 (as amended). Should any vegetation removal be required during this period, this vegetation will be checked for bird nests, and if any are noted during this evaluation prior to removal, a derogation licence will be required from the NPWS. Similarly, a derogation licence will be required for the removal of nests within the buildings if found during the pre-demolition survey.

This would note the section of habitat that is a nest site, the precise location within the hedgerow/scrub, the species of bird present; and also elaborate the means by which the birds would be protected prior to nest removal. If eggs have been laid, the nest will be protected until the young have fledged after which time the nest could be destroyed (under licence from the NPWS only). This would also require further compensatory measures including nesting sites for birds if practicable.

7.1.4.3 Reduction of noise and dust related impacts

Reduction of noise impacts

Short-term increases in disturbance levels as a direct result of human activity and through increased generation of noise during the Construction Phase can have a range of impacts depending upon the sensitivity of the ecological receptor, the nature and duration of the disturbance and its timing.

Noise generated during the Construction Phase of the Proposed Development could cause temporary disturbance to a number of faunal species in the vicinity of the Site of the Proposed Development. To mitigate this disturbance, the following measures will be implemented:

- Selection of plant with low inherent potential for generating noise.
- Siting of plant as far away from sensitive receptors as permitted by site constraints.
- Avoidance of unnecessary revving of engines and switch off plant items when not required.
- Keep plant machinery and vehicles adequately maintained and serviced.
- Proper balancing of plant items with rotating parts.
- Keep internal routes well maintained and avoid steep gradients.
- Minimise drop heights for materials or ensure a resilient material underlies.

- Use of alternative reversing alarm systems on plant machinery.
- Where noise originates from resonating body panels and cover plates, additional stiffening ribs or materials should be safely applied where appropriate.
- Limiting the hours during which site activities likely to create high levels of noise are permitted.
- Appointing a site representative responsible for matters relating to noise.
- Monitoring typical levels of noise during critical periods and at sensitive locations.

These measures will ensure that any noise disturbance to nesting birds or any other fauna species in the vicinity of the Site of the Proposed Development will be reduced to a minimum.

Reduction of dust related impacts

The following general dust control measures will be followed for the duration of the Construction Phase of the Proposed Development and will ensure no significant dust related impacts occur to nearby sensitive receptors including local faunal species.

- In situations where the source of dust is within 25m of sensitive receptors screens (permeable or semi-permeable) will be erected.
- Haulage vehicles transporting gravel and other similar materials to site will be covered by a tarpaulin or similar.
- Access and exit of vehicles will be restricted to certain access/exit points.
- Vehicle speed restrictions of 20km/hr will be in place.
- Bowsers will be available during periods of dry weather throughout the construction period.
- During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser will operate to ensure moisture content is high enough to increase the stability of the soil thereby reducing the amount of dust.
- Stockpiles will be stored in sheltered areas of the site, covered, and watered regularly or as needed if exposed during dry weather.
- Gravel should be used at site exit points to remove caked-on dirt from tyre tracks.
- Equipment should be washed at the end of each workday.
- Hard surfaced roads will be wet swept to remove any deposited materials.
- Unsurfaced roads will be restricted to essential traffic only.
- If practical, wheel-washing facilities should be located at all exits from the construction site.
- Dust production as a result of site activity will be minimised by regular cleaning of the site access roads using vacuum road sweepers and washers. Access roads should be cleaned at least 0.5km on either side of the approach roads to the access points.

- Public roads outside the site shall be regularly inspected for cleanliness, as a minimum daily, and cleaned as necessary. A road sweeper will be made available to ensure that public roads are kept free of debris.
- The frequency of cleaning will be determined by the site agent and is weather and activity dependent
- The height of stockpiles will be kept to a minimum and slopes should be gentle to avoid windblown soil dust.
- The following will be dampened during dry weather:
    - Unpaved areas subject to traffic and wind
    - Stockpiles
    - Areas where there will be loading and unloading of dust-generating materials
- Under no circumstances should wastewater from equipment, wheel or surface cleaning enter the surface water drainage network.

7.1.4.4 Hedgehog, Wood Mouse and Pygmy Shrew

As noted in the British Hedgehog Preservation Society's publication *Hedgehogs and development*, during the Construction Phase of the Proposed Development Hedgehogs have the potential to be impacted through the loss of suitable hibernation and nest sites in the form of piles of dead wood, vegetation and leaves. This can be mitigated through the careful removal of dead wood/leaves to another part of the Site where they will not be affected. Woody debris from the proposed clearance of vegetative areas on site can also be left in this out-of-the way location as compensatory Hedgehog, Wood Mouse, and Pygmy Shrew habitat during the Construction Phase.

Hedgehog also frequent long grass for foraging and daytime nesting sites so caution when strimming/ mowing these areas of the Site is advised.

Small mammals have the potential to be impacted locally by the Proposed Development through the loss of suitable hedgerow and scrub habitat across the Site. Due to the limited size of the Proposed Development Site, the populations of these species on the Site are anticipated to be small. Potential impacts to these species will be reduced through the planting of native flora.

As best-practice, all construction-related rubbish on site e.g., plastic sheeting, netting etc. should be kept in a designated area on site and kept off ground level so as to protect Hedgehogs from entrapment and death. The above measures will also act to mitigate potential negative impacts on other small mammal species potentially found on site e.g., Pygmy Shrew.

Work likely to cause disturbance during hibernation – for example removal of hibernation habitats such as log piles, hedgerows and dense scrub – **shouldn't take place during November to March**. Where this seasonal restriction cannot be observed, Site clearance will be supervised by an appropriately experienced Ecological Clerk of Works (ECoW).

7.1.4.5 Otter

There are a number of Otter habitat features upstream of the Proposed Development located along the Whitechurch stream (Dublin City Otter Survey, Macklin et al., 2019). These habitats are a significant distance upstream of the Proposed Development and as such should not be impacted by the Proposed Development works.

The works required for the installation of the surface water outfall sewer does not have the potential to significantly impact potential commuting territories along the Whitechurch stream in terms of physical impediments. However, the establishment of new holts cannot be ruled out in the interim between planning and construction, in the interest of best practice and to ensure compliance with legal protection afforded to otters the following measure is proposed:

- Prior to construction works commencing, the appointed contractor will engage the services of a suitably qualified ecologist to conduct a preconstruction Otter survey of the Proposed Development. This survey will be undertaken in accordance with the *Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes* (NRA, 2006).
- If an active Otter holt is confirmed within 150 meters of the proposed works, a local NPWS conservation ranger will be contacted. This may require an application for a derogation licence from the NPWS to exclude the Otter holt. If required, any further mitigation measures required will follow those outlined in the *Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes* (NRA, 2006) and will be agreed with the NPWS at the time of licence application.

7.1.5 Non-native Species

One high impact invasive species was recorded at the Site, Cherry Laurel *Prunus laurocerasus.* Although not considered to be 'high impact' invasive species or listed under regulation S.I. 477, other non-native species recorded at the Site include Butterfly Bush *Buddleja davidii (*Medium Impact*)*, Bilbao's Fleabane *Conyza floribunda* (Low impact) and Cotoneaster *Cotoneaster Spp.* (Low impact).

Winter Helitrope *Petasites pyrenaicus* (Low impact), Sycamore *Acer pseudoplatanus* (Medium impact) and Red-osier Dogwood *Cornus sericea* (Low impact) were also recorded along the section of the Whitechurch stream where works will be required for the installation of the surface water management system.

Invasive species should be controlled/removed as per the appropriate best-practice guidelines. Removal and disposal should be carried out in accordance with appropriate guidelines such as TII (formerly NRA) *Guidelines on The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads* (2010), with consideration given to the prevention of the spread of these plants.

Best practice should be observed for the duration of the Proposed Works. All plant and equipment employed must be thoroughly cleaned down and washed into a dedicated and contained area prior to arrival on Site and on leaving the Site to prevent the spread of invasive species. A sign off sheet should be contained by the contractor to ensure cleaning.

Adequate Site hygiene signage should be erected in relation to the management of non-native invasive material.

7.1.6 Biosecurity

The following will be adhered to, to avoid the introduction of invasive species to the Proposed Development Site.

- Prior to undertaking any construction works and certainly if a growing season passes between grant of planning permission and commencement of works, a suitably qualified specialist will undertake a preconstruction invasive species survey, within the appropriate botanical survey season (April to September), of the area of works.
- Any material required on the site will be sourced from a stock that has been screened for the presence of any invasive species by a suitably qualified ecologist and where it is confirmed that none are present.
- All machinery will be thoroughly cleaned and disinfected prior to arrival on site to prevent the spread of invasive species.

7.1.7 Timing of vegetation clearance and instream works

The following table provides guidance for when vegetation clearance and instream works are permissible. Information sources include the British Hedgehog Preservation Society's *Hedgehogs and Development* and *The Wildlife (Amendment) Act, 2000*, the IFI's *Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters* (2016)

TABLE 7-1. SEASONAL RESTRICTIONS ON VEGETATION REMOVAL. RED BOXES INDICATE PERIODS WHEN CLEARANCE/WORKS ARE NOT PERMISSIBLE.

Ecological Feature	January	February	March	April	May	June	July	August	September	October	November	December
Breeding Birds	Vegetation clearance permissible		Nesting bird season No clearance of vegetation or works to relevant structures permitted unless confirmed to be devoid of nesting birds by an ecologist						Vegetation clearance permissible			
Hibernating mammals (namely Hedgehog, excluding bats)	Mammal hibernation season No clearance of vegetation or works to relevant structures permitted unless confirmed to be devoid of hibernating mammals by an ecologist					Vegetation clearance permissible					Mammal hibernation season No clearance of vegetation or works to relevant structures permitted unless confirmed to be devoid of hibernating mammals by an ecologist/suitably experienced ECoW	
Fisheries (Resource (e.g salmonids)	Instream works not permissible						Instream works permissible			Instream works not permissible		

The preferred period for vegetation clearance is **within the months of September and October** (Table 7-1). Vegetation should be removed in sections working in a consistent direction to prevent entrapment of protected fauna potentially present (e.g., Hedgehog).

Where this seasonal restriction cannot be observed, a check for active roosts and nests will be carried out immediately prior to any Site clearance by an appropriately qualified ecologist / ornithologist and repeated as required to ensure compliance with legislative requirements.

Only in exceptional circumstances and with the agreement of the IFI can instream works be carried out outside the July – September period indicated above in Table 7-1. Seasonal restrictions on vegetation removal. Red boxes indicate periods when clearance/works are not permissible.

7.2 Operational Phase

7.2.1 Watercourses

Regular inspection and maintenance of all surface water infrastructures should be carried out to ensure the long-term protection of the general hydrological environment.

7.2.2 Bats

7.2.2.1 Lighting for Bats

In order to minimise disturbance to bats utilising the Site in general, the lighting and layout of the Proposed Development will be designed to minimise light spill onto habitats potentially used by the local bat population for foraging or commuting. This can be achieved by ensuring that the design of lighting accords with guidelines presented in the Bat Conservation Trust & Institute of Lighting Engineers 'Bats and Lighting in the UK - Bats and Built Environment Series', the Bat Conservation Trust 'Artificial Lighting and Wildlife Interim Guidance' and the Bat Conservation Trust 'Statement on the impact and design of artificial light on bats'.

It is recommended that bat-friendly lighting measures are incorporated into the project design and associated lighting plan. Dark buffer zones can be effectively used to separate important habitats or features from lighting by forming a dark perimeter around them (ILP, 2018). Buffer zones rely on ensuring light levels within a certain distance of features do not exceed certain defined limits. The buffer zone can be further subdivided into zones of increasing illuminance limit radiating away from the feature. Examples of this application can be seen below in Figure 7-2 below.

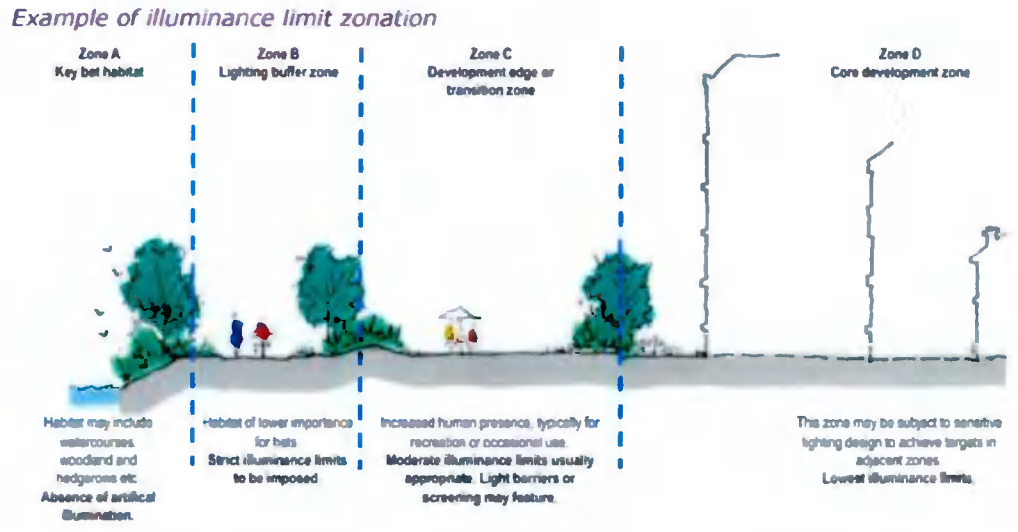

FIGURE 7-2 EXTERNAL LIGHTING ZONATION DIAGRAM ADAPTED FROM ILP (2018).

Night-time lighting across the Site of the Proposed Development will be kept to a minimum during both the Construction and Operational Phases of the Proposed Development (once satisfying health & safety requirements), through the reduction of light spill from the building interior via windows/entrances, and the reduction of spill/glare from outdoor lighting in place on the building exterior and throughout the development grounds.

Incorporation of the appropriate luminaire specifications as advised by a lighting professional can have a considerable input in mitigating the potential impact of night-time lighting on local bats.

Based on the above guidance documents, the lighting scheme will incorporate the following measures:

- The avoidance of direct lighting of existing trees to be retained, or proposed areas of habitat creation / landscape planting.
- Unnecessary light spill is controlled through a combination of directional lighting and hooded / shielded luminaires or strategic planting to provide screening vegetation.
- Lights will be of low intensity. It is better to use several low intensity lights than one strong light spilling light across the entire area.
- Narrow spectrum lighting will be used with a low UV component. Glass also helps reduce the UV component emitted by lights.
- The use of LED luminaries where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability.
- The colour rendering of the selected light fitting should be 3000k making the LED fittings a warmer light, helping to further minimize the impact on the local wildlife.
- Where possible, luminaries will be recessed where installed in proximity to windows to reduce glare and light spill (Figure 7-3).

- Column heights will 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, i.e., no upward tilt.

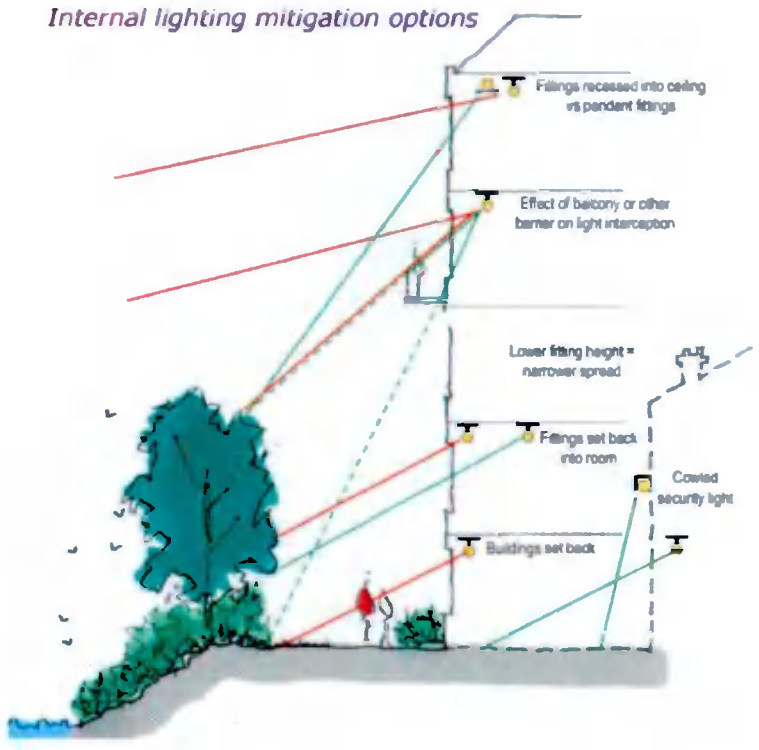

FIGURE 7-3. INTERNAL LIGHTING GUIDANCE DIAGRAM ADAPTED FROM ILP (2018)

7.2.2.2 Roosting Opportunities

A series of 5+ bat boxes will be erected on suitable substrates around the Site to provide future roosting opportunities for bats. The type recommended is the 2F Schwegler Bat Box.

8 CUMULATIVE IMPACTS

If the Proposed Development and existing or proposed projects or plans impact on the same KERs, there is potential to lead to cumulative impacts which could be of a higher level of significance.

8.1.1 Existing granted planning permissions

There are several existing planning permissions on record in the area. These are typically small in scale (e.g., extensions or one-off dwellings) or already constructed. A larger-scale development identified within the vicinity of the Proposed Development is as follows:

SD20A/0296: Planning permission was sought for the redevelopment at the site of the existing Girls National School (Part of the site is in the curtilage of Loreto Abbey, a Protected Structure – RPS No. 253) consisting of demolition of existing school buildings and portacabins;

construction of new 3,833sq.m part 3-, 2- and 1-storey 21 classroom primary school building, connected to existing 2-storey granite building which is to be refurbished; demolition of existing 3-storey red brick Lourdes Nursing Home fronting Convent Lane; refurbishment of and alterations to existing Teresa Ball House with new 85sq.m extension and change of use from nursing home to educational use with 3-classrooms and ancillary resource teaching areas; Teresa Ball House is in the curtilage of Loreto Abbey, a Protected Structure (RPS No. 253); construction of 2-storey, 20-classroom temporary school prefabricated accommodation for school use during the demolition and construction works; associated vehicular drop-off, set-down and parking provisions; associated hard-surface play areas, landscaping, boundary treatments; associated surface water attenuation, foul and surface water drainage connections, site works and ancillary serves. Planning permission granted 01/04/2021.

SD19A/0050: Planning permission was sought for (i) the demolition of a two storey, four bedroom detached house; (ii) the construction of a two storey five bedroom detached house; (iii) widening of the existing vehicular entrance gate for the provision of two car park spaces; (iv) pedestrian entrance gate in the existing front garden wall; (v) roof lights, boundary treatments, landscaping, SuDS drainage and all associated works necessary to facilitate the development. Planning permission granted 14/06/2019.

8.1.2 Relevant Policies and Plans

The following policies and plans were reviewed and considered for possible in-combination effects with the Proposed Development.

- South Dublin Draft County Development Plan 2022-2028
- South Dublin County Council Development Plan 2016 – 2022
- Draft Biodiversity Action Plan for South Dublin County 2020 – 2026

Upon examination of the listed plans and projects, it is concluded that there is no possibility for any in-combination effects between these projects and plans and the Proposed Development.

These developments will result in an overall reduction of natural habitats present in the area. However, due to the nature of the low value habitats present within the Site of the Proposed Development, in addition to the now largely developed surrounding area, it is considered that the Proposed Development will not result in any significant cumulative negative impacts on biodiversity in the area. The Site of the Proposed Development is not considered to be of high value as a local refuge for any rare or protected species. Also, the South Dublin County Biodiversity Action Plan is set out to protect and improve biodiversity, and as such will not result in negative in-combination effects with the Proposed Development.

9 Residual Impacts

Residual impacts are impacts that remain once mitigation has been implemented or impacts that cannot be mitigated. Table 9-1Table 9-1 provides a summary of the impact assessment for the identified Key Ecological Resources (KERs) and details the nature of the impacts identified, mitigation proposed and the classification of any residual impacts.

Provided all mitigation measures are implemented in full and remain effective throughout the lifetime of the Development, no significant negative residual impacts on the local ecology or on any designated nature conservation sites are expected from the Proposed Development.

TABLE 9-1. SUMMARY OF POTENTIAL IMPACTS ON KER(S), MITIGATION PROPOSED AND RESIDUAL IMPACTS.

Key Ecological Resource	Level of Significance	Potential Impact	Impact Without Mitigation				Proposed Mitigation	Residual Impact
			Quality	Magnitude / Extent	Duration	Significance		
Stone walls and other stonework (BL1)	Local Importance (higher value)	Loss of habitat at the Site	Negative	Local	Permanent	Moderate	Planting of a range of native and non-native shrub and tree species to take place as part of project design. Pollinator friendly species incorporated into the landscape plan.	**Not-significant**
Upland eroding watercourse (The Whitechurch stream) (FW1)	Local Importance (higher value)	Deterioration in water quality due to potential contaminated surface water discharges associated with the Construction Phase.	Negative	Local	Short-term	Moderate	Mitigation measures to protect surface waters as outlined in section **7.1.2.**	**Negligible**
Brown Trout, European Eel, Brook and River Lamprey	Local Importance (higher value)	Deterioration in water quality due to potential contaminated surface water discharges associated with the Construction Phase.	Negative	Local	Short-term	Moderate	Protection of surface waters during the Construction and Operational Phases – refer to section **7.1.2** for more details.	**Negligible**
Otter	Local Importance (higher value)	Deterioration in water quality due to potential contaminated surface water discharges associated with the Construction Phase.	Negative	Local	Short-term	Moderate	Protection of surface waters during the Construction and Operational Phases – refer to section **7.1.2** for more details.	**Negligible**

Key Ecological Resource	Level of Significance	Potential Impact	Impact Without Mitigation				Proposed Mitigation	Residual Impact
			Quality	Magnitude / Extent	Duration	Significance		
Small mammals (e.g. Eurasian Pygmy Shrew; Hedgehog)	Local Importance (higher value)	Minor loss of sections of potential foraging and commuting habitat.	Negative	Local	Permanent	Slight	Planting of shrub and tree species to take place as part of project design.	**Negligible**
		Disturbance due to noise and dust generated during Construction Phase.			Short-term	Slight	Construction related noise control/minimisation measures to be implemented.	
		Mortality or injury during Construction Phase			Short-term	Significant	Best practise construction waste storage/handling measures to be implemented. Work likely to cause disturbance during hibernation – for example removal of hibernation habitats such as log piles and dense scrub – will not take place during **November to March**. Where this seasonal restriction cannot be observed, vegetation will be removed under the supervision of a suitably experienced ECoW.	
		Disturbance of foraging routes/habitat due to increased lighting as a result of the Proposed Development.			Permanent	Moderate	Wildlife friendly lighting measures are incorporated into the public lighting design described in **section 7.2.2.1**	

Key Ecological Resource	Level of Significance	Potential Impact	Impact Without Mitigation				Proposed Mitigation	Residual Impact
			Quality	Magnitude / Extent	Duration	Significance		
Breeding-Bird assemblage	Local Importance (higher value)	Minor loss of potential foraging and nesting habitat.	Negative	Local	Permanent	Slight	Planting of shrub and tree species to take place as part of project design.	**Negligible.**
		Disturbance due to noise generated during Construction Phase.			Short-term	Slight	Construction related noise control/minimisation measures to be implemented.	
		Mortality during construction Phase			Permanent	Significant	No removal of vegetation to be carried out during nesting season.	
Bat assemblage	Local Importance (Higher value)	Minor loss of potential foraging and roosting habitat.	Negative	Local	Permanent	Slight	Planting of shrub and tree species to take place as part of the project design. Placement of bat boxes (5) on Site.	**Negligible**
		Minor disturbance of foraging habitat/routes due to increased lighting.			Permanent	Moderate	Wildlife friendly lighting measures incorporated into the project design (see section **7.2.2.1** for more details).	
		Mortality during the Construction Phase in the absence of a pre - demolition survey.			Permanent	Significant	A pre-demolition survey of structures labelled 3 and 4 and Silveracre bungalow (should it become vacant prior to demolition) prior to any works being carried out (see section **7.1.4.1** for more details).	

10 CONCLUSION

It is considered that provided the mitigation measures proposed are carried out in full, there will be no significant negative impact to any valued habitats, designated sites or individual or group of species as a result of the Construction and Operational Phases of the Proposed Development.

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APPENDIX I – VALUE OF ECOLOGICAL RESOURCES

The criteria outlined in the table below, taken from the Guidelines for *Assessment of Ecological Impacts of National Road Schemes* published by the NRA, were used for assigning value to designated sites, habitats and species within the Site of the Proposed Development and surrounding area.

Importance	Criteria

International Importance	- 'European Site' including Special Area of Conservation (SAC), Site of Community Importance (SCI), Special Protection Area (SPA) or proposed Special Area of Conservation.
	- Proposed Special Protection Area (pSPA).
	- Site that fulfills the criteria for designation as a 'European Site' (see Annex III of the Habitats Directive, as amended).
	- Features essential to maintaining the coherence of the Natura 2000 Network.
	- Site containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive.
	- Resident or regularly occurring populations (assessed to be important at the national level) of the following:
	  - Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and/or
	  - Species of animal and plants listed in Annex II and/or IV of the Habitats Directive.
	- Ramsar Site (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971).
	- World Heritage Site (Convention for the Protection of World Cultural & Natural Heritage, 1972).
	- Biosphere Reserve (UNESCO Man & The Biosphere Programme).
	- Site hosting significant species populations under the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals, 1979).
	- Site hosting significant populations under the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 1979).
	- Biogenetic Reserve under the Council of Europe.
	- European Diploma Site under the Council of Europe.
	- Salmonid water designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988, (S.I. No. 293 of 1988).

National Importance	- Site designated or proposed as a Natural Heritage Area (NHA).
	- Statutory Nature Reserve.
	- Refuge for Fauna and Flora protected under the Wildlife Acts.
	- National Park.
	- Undesignated site fulfilling the criteria for designation as a Natural Heritage Area (NHA); Statutory Nature Reserve; Refuge for Fauna and Flora protected under the Wildlife Act; and/or a National Park.
	- Resident or regularly occurring populations (assessed to be important at the national level) of the following:
	  - Species protected under the Wildlife Acts; and/or
	  - Species listed on the relevant Red Data list.
	- Site containing 'viable areas' of the habitat types listed in Annex I of the Habitats Directive.

County Importance	- Area of Special Amenity. - Area subject to a Tree Preservation Order.

	- Area of High Amenity, or equivalent, designated under the County Development Plan.
	- Resident or regularly occurring populations (assessed to be important at the County level) of the following:
	  - Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;
	  - Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;
	  - Species protected under the Wildlife Acts; and/or
	  - Species listed on the relevant Red Data list.
	- Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.
	- County important populations of species, or viable areas of semi-natural habitats or natural heritage features identified in the National or Local BAP (Biodiversity Action Plan), if this has been prepared.
	- Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county.
	- Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.

Local Importance (Higher Value)	- Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP, if this has been prepared;
	- Resident or regularly occurring populations (assessed to be important at the Local level) of the following:
	  - Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;
	  - Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;
	  - Species protected under the Wildlife Acts; and/or
	  - Species listed on the relevant Red Data list.
	- Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality;
	- Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value.

Local Importance (Lower Value)	- Sites containing small areas of semi-natural habitat that are of some local importance for wildlife; - Sites or features containing non-native species that are of some importance in maintaining habitat links.

APPENDIX II – EPA IMPACT ASSESSMENT CRITERIA

Criteria used to define quality of effects.

In line with the draft EPA Guidelines (EPA, 2017), the following terms are defined when quantifying the quality of effects:

Quality	Definition
Positive Effects	A change which improves the quality of the environment (for example by increasing species diversity; or improving the reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).
Neutral Effects	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
Negative/adverse Effects	A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property by causing nuisance).

Criteria used to define significance of effects.

In line with the draft EPA Guidelines (EPA, 2017), the following terms are defined when quantifying significance of impacts:

Significance of Effects	Definition
Imperceptible	An effect capable of measurement but without significant consequences.
Not significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate	An effect which alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
Very significant	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
Profound	An effect which obliterates sensitive characteristics.

Criteria used to define duration of effects.

In line with the draft EPA Guidelines (EPA, 2017), the following terms are defined when quantifying duration and frequency of effects:

Quality of Effects	Definition
Momentary	Effects lasting from seconds to minutes
Brief	Effects lasting less than a day
Temporary	Effects lasting less than a year
Short-term	Effects lasting one to seven years
Medium term	Effects lasting seven to fifteen years

Long-term	Effects lasting fifteen to sixty years
Permanent	Effects lasting over sixty years
Reversible	Effects that can be undone, for example through remediation or restoration.

APPENDIX III – BAT SURVEY REPORT

July
2021

Bat Survey Report

Silveracre Bungalow, Whitechurch Rd, Rathfarnham, Dublin 14

ASH Ecology & Environmental

Aisling Walsh M.Sc MCIEEM Trading as Ash Ecology & Environmental Ltd.
Tel: 089 4991181 / Company Reg: 630819 /
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1. INTRODUCTION

1.1 Purpose of the Report

Ash Ecology and Environmental Ltd (AEE) was commissioned to carry out a bat activity and emergence survey on behalf of Enviroguide Consulting during June 2021as part of a proposed housing development.

The site is located along at Silveracre Bungalow, Whitechurch Rd, Rathfarnham, Dublin 14; see Figure 1. An aerial photo of site and surrounding landscape is shown as Figure 2.

A bat survey was required to assess the value of the site for bats, namely any habitats, trees, stone walls and buildings present.

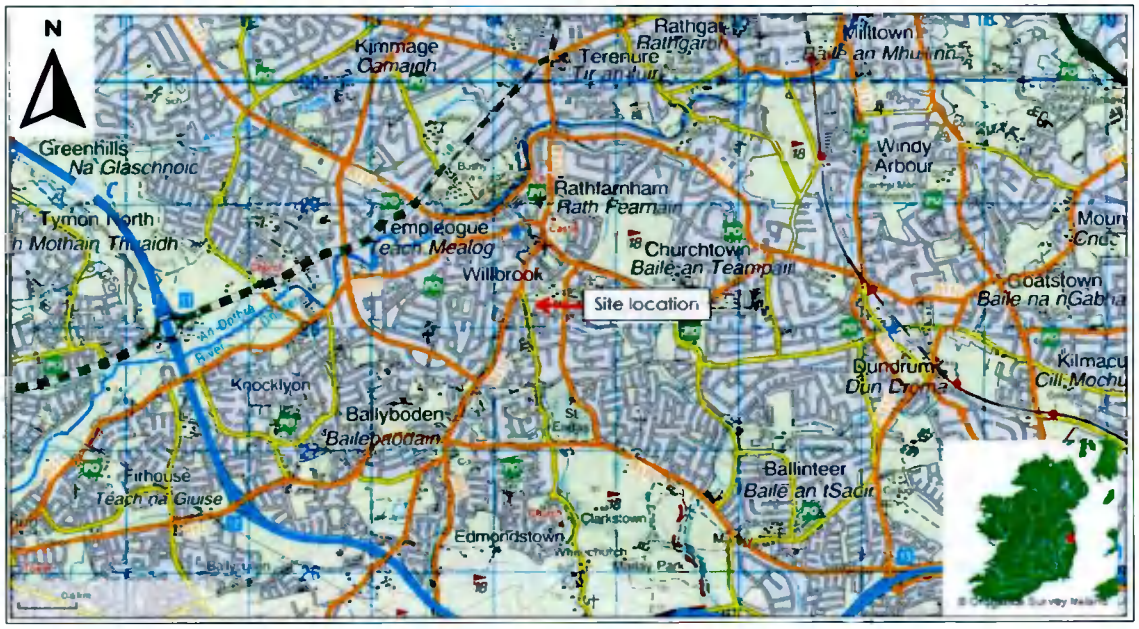

Figure 1 Site Location Map

Figure 2 Aerial Photo of Site and surrounding landscapes (mainly suburban).

1.2 Competency of Assessor

This report has been prepared by Ash Ecology & Environmental Ltd (AEE) whose managing director and leading ecologist is Aisling Walsh who is a full member of the Chartered Institute of Ecological & Environmental Management (CIEEM) and whose qualifications include M.Sc. (Dist) in Biodiversity and Conservation (TCD) and B.Sc. (Hons) Zoology (NUIG). Aisling has over 14 years of experience providing environmental consultancy and environmental assessment services. Aisling has written numerous Ecological Impact Assessments (EcIA), Screening for Appropriate Assessment Stage I and Stage II Natura Impact Statement, Environmental Impact Assessments/Statements, Badger Surveys, Bat Surveys, Habitat Surveys. She has also provided input and reviewed Ecological and Environmental assessments for several EIS and EIA Reports and conducted numerous noise surveys for EPA licensed facilities. AEE is listed as a Registered Practice by the CIEEM and a member of Bat Conservation Ireland. Aisling Walsh is a licenced bat ecologist (DER/BAT 2020 – 46 EUROPEAN, DER/BAT 2020 – 48 EUROPEAN).

1.3 Bat Legislation

In view of their sensitive status across Europe, all species of bat have been listed on Annex IV of the EC 'Habitats and Species Directive' and some, such as the lesser horseshoe bat, are given further protection and listed on Annex II of this Directive. This Directive was transposed into Irish law as the European Communities (Natural Habitats) Regulations, 1997, and combined with the Wildlife Acts (1976 to 2018), ensures that individual bats and their breeding sites and resting places are fully protected. This has important implications for those who own or manage sites where bats occur.

All bat species are protected under the Wildlife Acts 1976-2018 which make it an offence to wilfully interfere with or destroy the breeding or resting place of these

species; however, the Acts permit limited exemptions for certain kinds of development.

All species of bats in Ireland are listed on Schedule 5 of the 1976 Act, and are therefore subject to the provisions of Section 23, which make it an offence to:

1. *Intentionally kill, injure or take a bat,*
2. *Possess or control any live or dead specimen or anything derived from a bat,*
3. *Wilfully interfere with any structure or place used for breeding or resting by a bat,*
4. *Wilfully interfere with a bat while it is occupying a structure or place which it uses for that purpose.*

1.4 Derogation licences

In order to obtain a licence to allow the destruction of bat roosts etc., in advance of any otherwise legitimate development which may impact on the favourable conservation status of bats, Section 25 of the Habitats Regulations must be satisfied. It must therefore be demonstrated by the applicant that all reasonable steps have been taken to minimise the impact and that any remaining damage will be adequately compensated for. The first aim of the developer, working with professional advice, should be to entirely avoid or minimise the potential impact of a proposed development on bats and their breeding and resting places.

Current NPWS advice is that there should be no net loss in local bat population status, taking into account factors such as population size, viability and connectivity. Hence, when it is unavoidable that a development will affect a bat population, the mitigation should aim to maintain a population of equivalent status in the area.

One of the key aims of the Directive is to encourage member states to maintain at, or restore to, favourable conservation status those species of community interest (Article 2(2)). 'Favourable conservation status' is defined in the Habitats and Species Directive (Article 1(i)). Conservation status is defined as "the sum of the influences acting on the species concerned that may affect the long term distribution and abundance of its population within the territory." It is assessed as favourable when: "population dynamics data on the species concerned indicate that it is maintaining itself on a long term basis as a viable component of its natural habitats, and the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and there is, or will probably continue to be, a sufficiently large habitat to maintain its populations on a long term basis." Note that even though there is apparent overlap between the Wildlife Acts and the Habitats Regulations, they run concurrently. No action in relation to bats that would not be permitted under the Habitats Regulations may be licensed under the Wildlife Acts.

Derogation licences granted under the Regulations include reference to the relevant provisions of the Wildlife Acts to ensure that all requirements for licensing are covered in the one document. It should also be noted that a licence only

allows what is permitted within its terms and conditions; it does not legitimise all actions related to bats at a given site.[1]

2. METHODOLOGY

2.1 Information Sources

A desk-based review of information sources was completed. Information contained on the websites of the National Parks and Wildlife Service (NPWS)[2] and the National Biodiversity Data Centre (NBDC)[3] was reviewed. The following publications and websites were also reviewed and consulted:

- Bat Conservation Ireland https://www.batconservationireland.org/
- Bat Roosts in Trees: A Guide to Identification and Assessment for Tree-Care and Ecology Professionals (2018)
- Bat Conservation Trust (2018) Bats and artificial lighting in the UK Bats and the Built Environment series[4]
- Kelleher, C. & Marnell, F. (2006) Bat Mitigation Guidelines for Ireland. Irish Wildlife Manuals, No. 25. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.
- Mitchell-Jones, A.J. & McLeish, A.P. (eds). 2004., 3rd Edition Bat Workers' Manual, JNCC, Peterborough, ISBN 1 86107 558 8
- Bat Conservation Ireland (2012) Bats and Appropriate Assessment Guidelines, Version 1, December 2012. Bat Conservation Ireland, www.batconservationireland.org[5]
- Bat Conservation Trust (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines 3rd edition
- Bat Conservation Ireland (2010) Bats & Lighting Guidance Notes for: Planners, engineers, architects and developers[6]
- Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes (National Roads Authority, 2005).
- Guidelines for the Treatment of Bats during the Construction of National Road Schemes (National Roads Authority, 2005).
- Bats and Lighting in the UK – Bats and the Built Environment Series (Institute of Lighting Professionals, September 2011
- Guidance Notes for the Reduction of Obtrusive Light GN01 (Institute of Lighting Professionals, 2011.
- Bats and Lighting – Guidance Notes for Planners, Engineers, Architects and Developers (Bat Conservation Ireland);
- The Eurobats Mitigation of Lighting Document

[1] Kelleher, C. & Marnell, F. (2006) Bat Mitigation Guidelines for Ireland. Irish Wildlife Manuals, No. 25. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.
[2] The National Parks and Wildlife Services map viewer http://webgis.npws.ie/npwsviewer/
[3] The National Biodiversity Data Centre www.NBDC.ie
[4] https://www.theilp.org.uk/documents/guidance-note-8-bats-and-artificial-lighting/
[5] https://www.batconservationireland.org/wp-content/uploads/2013/09/BCIreland-AA-Guidelines_Version1.pdf
[6] https://www.batconservationireland.org/wp-content/uploads/2013/09/BCIrelandGuidelines_Lighting.pdf

2.2 Desk Study

2.2.1 *Previous Records*

A desktop review was carried out to identify the previous records of Bat species within the Proposed Development Site and its environs. The study area occurs in 10km² Grid Square O12. The website the NBDC (www.nbdc.ie) was accessed on 03/07/2021 to establish any previous bat records and shown below in Table 1.

Table 1 Historical Bat Records in 10km² Grid Square O12 (NBDC website www.nbdc.ie accessed 03/07/2021)

Species Name - Common	*Species Name - Latin*	Last Documented Record O12
Brown Long-eared Bat	*Plecotus auritus*	08/06/2010
Daubenton's Bat	*Myotis daubentonii*	05/09/2014
Lesser Noctule	*Nyctalus leisleri*	31/10/2014
Nathusius's Pipistrelle	*Pipistrellus nathusii*	04/08/2012
Natterer's Bat	*Myotis nattereri*	04/08/2011
Common Pipistrelle	*Pipistrellus pipistrellus*	31/10/2014
Soprano Pipistrelle	*Pipistrellus pygmaeus*	31/10/2014
Whiskered Bat	*Myotis mystacinus*	01/06/2004

2.2.2 *Species Background*

Ireland had ten known bat species until February 2013, when a single live greater horseshoe bat (*Rhinolophus ferrumequinum*) was found roosting in Co. Wexford[7]. On 8th June 2020, a single audio recording was confirmed in the Glendaough area, Co. Wicklow. It was found on two more occasions in the same area in early July 2020 (Bat Conservation Ireland, July 2020).

The ten species (excluding the greater horseshoe) are briefly described overleaf. For a more comprehensive overview see McAney, 2006.[8]

The dependence of Irish bat species on insect prey has left them vulnerable to habitat destruction, land drainage, agricultural intensification and increase use of pesticides. Also, their reliance on buildings as roosting sites has made them particularly vulnerable to renovation works and the use of timber chemical treatment. Buildings are highly important as roosting sites for bats and all Irish bat species use buildings for all roost types. Most significant in terms of roosts in houses are maternity roosts, but cellars and even attics may serve as hibernation sites for bats. Roosts within buildings can far exceed the numbers encountered in trees, bridges, caves or cliffs and roosts of over 1,000 bats have been recorded in buildings.[9]

[7] National Biodiversity Data Centre http://www.biodiversityireland.ie/new-bat-species-found-in-ireland/

[8] McAney, K. (2006) *A Conservation Plan for Irish Vesper Bats.* Irish Wildlife Manual No.20. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government.

[9] NRA (2005) Guidelines for the Treatment of Bats Prior to the Construction of National Road Schemes. National Roads Authority, Dublin

2.2.2.1 Family Vespertilionidae:

Common pipistrelle *Pipistrellus pipistrellus*
This species was only recently separated from its sibling, the soprano or brown pipistrelle P. pygmaeus[10], which is detailed below. The common pipistrelle's echolocation calls peak at 45 kHz. The species forages along linear landscape features such as hedgerows and treelines as well as within woodland.

Soprano pipistrelle *Pipistrellus pygmaeus*
The soprano pipistrelle's echolocation calls peak at 55 kHz, which distinguishes it readily from the common pipistrelle on detector. The pipistrelles are the smallest and most often seen of our bats, flying at head height and taking small prey such as midges and small moths. Summer roost sites are usually in buildings, but tree holes and heavy ivy are also used. Roost numbers can exceed 1,500 animals in mid-summer.

Nathusius' pipistrelle *Pipistrellus nathusii*
Nathusius' pipistrelle is a recent addition to the Irish fauna and has mainly been recorded from the north-east of the island in Counties Antrim and Down[11] and also in Fermanagh, Longford and Cavan. It has also recently been recorded in Counties Cork and Kerry.[12] However, the known resident population is enhanced in the autumn months by an influx of animals from Scandinavian countries. The status of the species has not yet been determined.

Leisler's bat *Nyctalus leisleri*
This species is Ireland's largest bat, with a wingspan of up to 320mm; it is also the third most common bat, preferring to roost in buildings, although it is sometimes found in trees and bat boxes. It is the earliest bat to emerge in the evening, flying fast and high with occasional steep dives to ground level, feeding on moths, caddisflies and beetles. The echolocation calls are sometimes audible to the human ear being around 15 kHz at their lowest. The audible chatter from their roost on hot summer days is sometimes an aid to location. This species is uncommon in Europe and as Ireland holds the largest national population the species is considered as Near Threatened here.

Brown long-eared bat *Plecotus auritus*
This species of bat is a 'gleaner', hunting amongst the foliage of trees and shrubs, and hovering briefly to pick a moth or spider off a leaf, which it then takes to a sheltered perch to consume. They often land on the ground to capture their prey. Using its nose to emit its echolocation, the long-eared bat 'whispers' its calls so that the insects, upon which it preys, cannot hear its approach (and hence, it needs oversize ears to hear the returning echoes). As this is a whispering species, it is extremely difficult to monitor in the field as it is seldom heard on a bat detector. Furthermore, keeping within the foliage, as it does, it is easily overlooked. It prefers to roost in old buildings.

[10] Barratt, E. M., Deauville, R., Burland, T. M., Bruford, M. W., Jones, G., Racey, P. A., & Wayne, R. K. (1997) *DNA Answers the Call of Pipistrelle Bat Species. Nature* 387: 138 - 139.
[11] Richardson, P. (2000) *Distribution Atlas of Bats in Britain and Ireland 1980 - 1999.* The Bat Conservation Trust, London, England.
[12] Kelleher, C. (2005) *International Bat Fieldcraft Workshop, Killarney, Co. Kerry.* National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government.

Natterer's bat *Myotis nattereri*

This species has a slow to medium flight, usually over trees but sometimes over water. It usually follows hedges and treelines to its feeding sites, consuming flies, moths, caddisflies and spiders. Known roosts are usually in old stone buildings but they have been found in trees and bat boxes. The Natterer's bat is one of our least studied species and further work is required to establish its status in Ireland.

Daubenton's bat *Myotis daubentonii*

This bat species feeds close to the surface of water, either over rivers, canals, ponds, lakes or reservoirs but it can also be found foraging in woodlands. Flying at 15 kilometres per hour, it gaffs insects with its over-sized feet as they emerge from the surface of the water - feeding on caddis flies, moths, mosquitoes, midges etc. It is often found roosting beneath bridges or in tunnels and also makes use of hollows in trees.

Whiskered bat *Myotis mystacinus*

This species, although widely distributed, has been rarely recorded in Ireland. It is often found in woodland, frequently near water. Flying high, near the canopy, it maintains a steady beat and sometimes glides as it hunts. It also gleans spiders from the foliage of trees. Whiskered bats prefer to roost in buildings, under slates, lead flashing or exposed beneath the ridge beam within attics. However, they also use cracks and holes in trees and sometimes bat boxes. The whiskered bat is one of our least studied species and further work is required to establish its status in Ireland.

Brandt's bat *Myotis brandtii*

This species is known from five specimens found in Counties Wicklow (Mullen, 2007), Cavan, and Clare in 2003, a specimen in Kerry in 2005[13] and another in Tipperary in 2006.[14] No maternity roosts have yet been found. It is very similar to the whiskered bat and cannot be separated by the use of detectors. Its habits are similar to its sibling.

2.2.2.2 Family Rhinolophidae:

Lesser horseshoe bat *Rhinolophus hipposideros*

This species is the only representative of the Rhinolophidae or horseshoe bat family in Ireland. It differs from our other species in both habits and looks, having a unique nose leaf with which it projects its echolocation calls. It is also quite small and, at rest, wraps its wings around its body. Lesser horseshoe bats feed close to the ground, gleaning their prey from branches and stones. It often carries its prey to a perch to consume, leaving the remains beneath as an indication of its presence.

The echolocation call of this species is of constant frequency and, on a heterodyne bat detector, sounds like a melodious warble. The species is confined to six counties along the Atlantic seaboard: Mayo, Galway, Clare, Limerick, Kerry and Cork. The current Irish national population is estimated at 12,500 animals. This

[13] Kelleher, C. 2006a Nathusius pipistrelle Pipistrellus nathusii and Brandt's Bat Myotis brandtii - New Bat Species to Co. Kerry – Irish Naturalists' Journal 28: 258.

[14] Kelleher, C. 2006b Brandt's Bat Myotis brandtii, New Bat Species to Co. Tipperary. Irish Naturalists' Journal 28: 345.

species is listed on Annex II of the EC Habitats Directive and 41 Special Areas of Conservation have been designated in Ireland for its protection. Where it occurs, it is often found roosting within farm buildings.

2.2.3 *Landscape Suitability*

The National Biodiversity Data Centre (NBDC) maps landscape suitability bats based on Lundy *et al.* (2011). The maps are a visualisation of the results of the analyses based on a 'habitat suitability' index. The index ranges from 0 to 100 with 0 being least favourable and 100 most favourable for bats. The overall assessment of bat habitats for the current study area is given as 25.44, relatively low. Table 2 gives the suitability of the study area for the bat species found in the study area (based on NBDC) along with their Irish Red List Status (from Marnell *et al.*, 2019).[15]

Table 2 Suitability of the study area for the bat species found in the Rathfarnham area (based on the NBDC data) with Irish Red list status indicated.

Common name	Scientific name	Suitability index	Irish red list status
All bats	-	25.44	Least Concern
Soprano pipistrelle	*Pipistrellus pygmaeus*	41	Least Concern
Brown long-eared bat	*Plecotus auritus*	26	Least Concern
Common pipistrelle	*Pipistrellus pipistrellus*	47	Least Concern
Lesser-horseshoe bat	*Rhinolophus hipposideros*	0	Least Concern
Leisler's bat	*Nyctalus leisleri*	49	Least Concern
Whiskered bat	*Myotis mystacinus*	21	Least Concern
Daubenton's bat	*Myotis daubentonii*	21	Least Concern
Nathusius' pipistrelle	*Pipistrellus nathusii*	7	Least Concern
Natterer's bat	*Myotis nattereri*	17	Least Concern

2.2.4 *Bat Roosts*

Bats were originally cave and tree dwelling animals but many now find buildings just as suitable for their needs. Bats are social animals and most species congregate in large colonies during summer. These colonies consist mostly of females of every reproductive class, with some juvenile males from the previous year. Male bats normally roost individually or in small groups meeting up with the females in the late autumn-early winter, when it is time to mate. In summer, bats seek warm dry buildings in which they can give birth and suckle their young. In winter, they seek out places with a constant low temperature and high humidity where they can become torpid and hibernate during adverse weather conditions. However, bats do not hibernate continuously during winter and will awake and hunt during mild nights when there are insects available, and it is energetically advantageous to forage.

[15] Marnell, F., Looney, D. & Lawton, C. (2019) Ireland Red List No. 12: Terrestrial Mammals. National Parks and Wildlife Service, Department of the Culture, Heritage and the Gaeltacht, Dublin, Ireland.

2.2.4.1 Maternity Roosts

Maternity roosts are the most significant roosts and they are predominantly all-female aggregations that are formed from late May onwards and remain as a relatively cohesive unit until mid to late August. Not all female bats give birth annually. These females that do bear young in a given year avail of a suitable building, tree and sometimes cave (or equivalent). The young are flightless for several weeks and hence are vulnerable to dangers such as tree felling and restoration, reinforcement or demolition of structures such as buildings and bridges.

2.2.4.2 Mating Roosts

Most bat species mate in autumn but pregnancy does not occur until the following spring. During this time males will take possession of a cavity in a building, tree, bridge, cave or mine and attract females to these sites to establish a harem. Male bats call both from a perch and in flight in much the same manner that male birds sing.

2.2.4.3 Hibernation Roosts

Bats have a high metabolic rate and in temperate countries, such as Ireland, flying insects are not available in sufficient numbers during winter to sustain bats. Therefore, bats hibernate during winter. In hibernation sites, bats are often completely inactive for several days and are extremely vulnerable to disturbance by human activities due to the time taken for them to become sufficiently active to allow escape. Hibernation may extend from November to the end of March, during which time bat activity will take place sporadically.

2.2.4.4 Night Roosts

These are roosts which are used as resting places for bats between foraging bouts. They also provide retreats for bats from predators or during inclement weather conditions. They also function as feeding perches and may be important for socialising.

2.3 General Activity Survey

A general bat activity survey was also undertaken on the 29th June 2021 from 21.27 to 23.57 (sunset was 21.57) by walking the Site boundary to include all structures onsite i.e. the occupied dwelling house and other structures (stone walls, shed etc). A cottage outside the site boundary was assessed from a distance but not internally. The weather was optimal for a bat survey with temperatures on the night 16-17°C in calm conditions. Bat activity and emergence surveys are best carried out April to September in suitable weather conditions[16], [17] which this survey was.

[16] Kelleher, C. & Marnell, F. (2006) Bat Mitigation Guidelines for Ireland. Irish Wildlife Manuals, No. 25. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.

The equipment used for the bat activity survey included an Elekon Bat Logger M detector. Visual observations were taken with the aid of a powerful L.E.D. torch (AP Pros-Series 220 Lumens High Performance Spotlight). General Site photos are contained in Appendix A.

2.4 Buildings Assessment Methodology

A bat potential assessment of the occupied dwelling and other structures was also carried out on the 29th June 2021. A Seek Thermal Reveal Pro High-Resolution Thermal Imaging Camera, along with a RIDGID 36848 Micro CA-150 Hand-Held Borescope was available for any inspection of any crevices/roof spaces on the building (where accessible). The borescope is fitted with a camera and allows visibility of confined spaces and narrow passages potentially used by hibernating/roosting bats. It allows spaces up to 3m from ground level to be inspected.

The BCT guidelines were followed for the assessment rating[17] and classified using Table 4.1 of the BCT guidelines (2016) which is shown as Table 3. See Figure 3 and Plates in Appendix A for pictures of the buildings and structures onsite.

[17] *Bat Surveys for Professional Ecologists, Good Practice Guidelines (2016)*

Table 3 Guidelines for assessing the potential suitability of proposed development sites for bats, based on the presence of roost features within the landscape, to be applied using professional judgement.

Suitability	Description Roosting habitats	Commuting and foraging habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats.	Negligible habitat features on site likely to be used by commuting or foraging bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions[a] and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation[b]). A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential.[c]	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions[a] and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions[a] and surrounding habitat.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to and connected to known roosts.

[a] For example, in terms of temperature, humidity, height above ground level, light levels or levels of disturbance.
[b] Evidence from the Netherlands shows mass swarming events of common pipistrelle bats in the autumn followed by mass hibernation in a diverse range of building types in urban environments (Kerstens *et al.*, 2015). This phenomenon requires some research in the UK but ecologists should be aware of the potential for larger numbers of this species to be present during the autumn and winter in large buildings in highly urbanised environments.
[c] This system of categorisation aligns with BS 8596:2015 Surveying for bats in trees and woodland (BSI, 2015).

2.5 Bat Potential Tree Assessment

There were no trees with bat roosting potential onsite, i.e. trees with features listed below and so in that regard no bat potential tree assessment was carried out.

- Natural holes (e.g., knot holes) arising from naturally shed branches or branches previously pruned back to a branch collar.
- Man-made holes (e.g., cavities that have developed from flush cuts or cavities created by branches tearing out from parent stems).
- Cracks/splits in stems or braches (horizontal and vertical).
- Partially detached or loose bark plates.
- Cankers (caused by localised bark death) in which cavities have developed.
- Other hollows or cavities, including butt rots.
- Compression of forks with included bark, forming potential cavities.
- Crossing stems or branches with suitable roosting space between.
- Ivy stems with diameters in excess of 50mm with suitable roosting space behind (or where roosting space can be seen where a mat of thinner stems has left a gap between the mat and the trunk).
- Bat or bird boxes.
- Other suitable places of rest or shelter.

2.6 Landscape Evaluation

Ecological survey results were evaluated to determine the significance of identified features located in the study area on an importance scale ranging from international-national-county-local (from NRA, 2009) The local scale is approximately equivalent to one 10km square but can be operationally defined to reflect the character of the area of interest. Because most sites will fall within the local scale, this is sub-divided into two categories: local importance (higher value) and local importance (lower value).

3. RESULTS

3.1 General Activity Survey

The results of the bat survey carried out 29th June 2021 are summarized in Table 4 with the complete dataset of bat species identified in real time in the field using the Elekon Batlogger M detector presented in Appendix B. A map outlining the locations of the bat calls is shown as Figure 3.

In total two species of bat were detected (16 bat passes) for June 2021. An overall low rate of bat activity was recorded despite ambient weather and reasonably low lighting levels. The most frequent bat species detected was Common Pipistrelle. The cluster of bat activity dots was due to the same bat recircling as opposed to emerging from the shed labelled Building 2. This bat flew over the wall from the north.

Table 4 Bat Results Summary Data – 29th June 2021

Species Name – Common	Species Name – Latin	Number of Passes	Peak Frequency (kHz)
Common Pipistrelle	*Pipistrellus pipistrellus*	15	46.5
Leisler's Bat	*Nyctalus leisleri*	1	26.9

Figure 3 Buildings/structures onsite (labelled) with Bat Activity Map

3.2 Buildings Assessment Survey

The buildings and structures onsite were inspected as per the methodology set out in Section 2.4. All spaces that could potentially allow bats access the buildings were visually examined in detail for bats, signs of bats, or evidence of bat activity, using a torch where necessary. Cracks, crevices etc. were investigated for ingress / egress points and evidence of bat habitation, such as smearing lines, droppings, and staining.

No bat emergence was detected or observed from any of the buildings and structures (stone walls) onsite during the survey on June 29th 2021. Table 5 lists the rating assigned to a building/structure as per Table 3 along with a brief description and any recommendations. See also Plates in Appendix A relating to same.

Table 5 Assessment of Building and Structures Onsite

Building / Structure No. as per Figure 3	Bat Emergence June 29th 2021	Description of Building/Structure and rating as per Table 3	Recommendation
1	No	A presently occupied house in good condition with negligible bat access points. Illuminated by general domestic lighting in evening. A 'Negligible' rating assigned (as per Table 3).	No further surveys required unless house becomes unoccupied for a significant length of time.
2	No	A shed falling into disrepair close to main house. A 'Low' rating assigned (as per Table 3).	A pre-demolition may be a consideration if main house becomes unoccupied.
3	No	A series of old stone walls with numerous crevices. A 'Moderate' rating assigned (as per Table 3).	A pre-demolition bat survey.
4	No	This derelict cottage was outside the site boundary during site visit so the inside as not inspected. A 'Moderate' rating assigned (as per Table 3).	A pre-demolition bat survey if this area becomes part of the development site.

3.3 Landscape Evaluation

The landscape is considered of local importance (Lower value) for bats due to the sprawling suburban areas all around the site, see Figure 2. A lack of mature trees onsite connect it to other treelines with the walls along the boundaries providing some commuting lines for bats.

4. RECOMMENDATIONS

4.1 Demolition Works

As per Table 5, a pre-demolition survey for bats should be undertaken of the stone wall structures labelled 3 as per Figure 3 to ensure no bats are present at this time. If bats are found using these buildings at this later date a derogation licence from the National Parks and Wildlife Services (NPWS) will be required. If the cottage (labelled 4) becomes part of the site this should also be surveyed inside and immediately outside for bats prior to any demolition works at the appropriate time of year. If the existing occupied house becomes vacant for a significant length of time prior to demolition, then this house, along with adjacent shed, should also have a follow survey.

4.2 Lighting for Bats

In order to minimise disturbance to bats utilising the site in general, the lighting and layout of the proposed development should be designed to minimise light-spill onto habitats used by the local bat population foraging or commuting. This can be achieved by ensuring that the design of lighting accords with guidelines presented in the Bat Conservation Trust & Institute of Lighting Engineers *'Bats and Lighting in the UK - Bats and Built Environment Series'*, the Bat Conservation Trust *'Artificial Lighting and Wildlife Interim Guidance'* and the Bat Conservation Trust *'Statement on the impact and design of artificial light on bats'*. Therefore, where possible, the lighting scheme should include the following:

- The avoidance of direct lighting of proposed areas of habitat creation / landscape planting.
- Unnecessary light spill controlled through a combination of directional lighting and hooded / shielded luminaires or strategic planting to provide screening vegetation.
- Lights should be of low intensity. It is better to use several low intensity lights than one strong light spilling light across the entire area.
- Narrow spectrum lighting should be used with a low UV component. Glass also helps reduce the UV component emitted by lights.
- The colour rendering of the selected light fitting should be 3000k making the LED fittings a warmer light, helping to further minimize the impact on the local wildlife

4.3 Roosting Opportunities

A series of 5+ bat boxes will be erected on suitable substrates around the Site to provide future roosting opportunities for bats. The type recommended is the 2F Schwegler Bat Box.

5. CONCLUSION

The Site itself is considered to be of Lower Importance for bats for the following reasons:

- Bat activity on site was relatively low on the night of survey (June 29th 2021) with only 2 species detected.
- There was no bat emergence from any of the buildings/structures onsite during the survey.
- No mature trees are present on the site.
- The immediate surrounding landscape is mainly suburban with a relatively low bat suitability score assigned.

On the basis of the findings of the survey works completed June 2021 it is concluded that the overall impact on bats, arising from the Proposed Development, will most likely be negligible for bats if:

- A bat friendly lighting design is implemented
- Bat boxes (~5) are erected on suitable substrates e.g. walls, around the site during the operational phase.
- Nature tree species are planted.
- A pre-demolition survey of buildings and structures is undertaken as per Section 4.1 to ensure no bats are present at this future time.

APPENDICES

APPENDIX A

Plate 1 Main Building, currently occupied house, with Negligible Bat Roosting Potential.

Plate 2 Building with Low Bat Roosting Potential.

Plate 3 Old Stone walls with Moderate Bat Roosting Potential.

Plate 4 Old Stone walls with Moderate Bat Roosting Potential.

Plate 5 Derelict cottage outside current site boundary, Moderate Bat Roosting Potential to the rear.

Plate 6 Derelict cottage outside current site boundary, Moderate Bat Roosting Potential to the rear.

Plate 7 General site photo – Mainly amenity grassland, no mature trees for Bats to roost.

Plate 8 General site photo – Mainly amenity grassland, no mature trees for Bats to roost.

APPENDIX B

29/06/2021	Species Text	Calls [#]	Mean Peak Frequency [kHz]	Mean Max Frequency [kHz]	Mean Min Frequency [kHz]	Mean Call Length [ms]	Mean Call Distance [ms]	Temperature [°C]	Latitude [WGS84]	Longitude [WGS84]
22:33:04	Common Pipistrelle	1	43.3	46.1	43	5.9	0	17	53.29208	-6.28645
22:34:39	Common Pipistrelle	7	43.2	45.2	42.7	7	165	17	53.29208	-6.28644
22:35:08	Common Pipistrelle	3	46.6	49.2	46.2	2.8	232	17	53.2921	-6.28646
22:35:32	Common Pipistrelle	2	47.3	49.3	47.1	2.3	75	17	53.29211	-6.28646
22:36:29	Common Pipistrelle	3	46.6	50.9	46.2	3.7	320	17	53.29209	-6.28643
22:37:59	Common Pipistrelle	2	46.7	49.3	45.9	3.9	178	17	53.2921	-6.28645
22:39:34	Common Pipistrelle	15	43.8	46.7	43.2	5	90	17	53.29208	-6.28645
22:44:01	Leisler's Bat	1	25.9	26.2	23.5	7.2	0	17	53.29211	-6.28718
22:45:27	Common Pipistrelle	4	44.3	49.3	43.7	4.6	128	17	53.29209	-6.28646
22:46:54	Common Pipistrelle	6	43.6	48.2	43.1	5.5	82	17	53.29206	-6.28647
22:53:25	Common Pipistrelle	14	45.1	57	44.5	5	90	17	53.29207	-6.28629
22:54:06	Common Pipistrelle	35	45.9	53.4	45	4	90	17	53.29205	-6.28623
22:54:43	Common Pipistrelle	32	44.7	57.9	44.1	5	90	16	53.29182	-6.28627
22:55:11	Common Pipistrelle	47	45	55.8	44.4	5	90	16	53.2917	-6.2863
22:55:22	Common Pipistrelle	30	45	53.3	44.4	5	104	16	53.29165	-6.28632
23:24:21	Common Pipistrelle	32	45	59.1	44.3	5	90	16	53.29195	-6.28626