ECOLOGICAL IMPACT ASSESSMENT REPORT

FOR

RESIDENTIAL DEVELOPMENT

AT

LANDS AT GORDON PARK, OLD NAAS ROAD, KINGSWOOD, DUBLIN 22

ON BEHALF OF

GREENWALK DEVELOPMENT LTD.

Prepared by
Enviroguide Consulting

Dublin
3D Core C, Block 71, The Plaza, Park West, Dublin 12

Kerry
19 Henry Street
Kenmare, Co. Kerry

Wexford
M10 Wexford Enterprise Centre, Strandfield Business Park, Rosslare Road, Wexford

www.enviroguide.ie
info@enviroguide.ie
+353 1 565 4730

DOCUMENT CONTROL SHEET

Client	Greenwalk Development Ltd.
Project Title	Residential Development at Lands at Gordon Park, Old Naas Road, Kingswood, Dublin 22.
Document Title	Ecological Impact Assessment Report

Revision	Status	Author(s)	Reviewed	Approved	Issue Date
01	Internal Draft	Liam Gaffney *Senior Ecologist*	Colin Lennon *Technical Director*	-	-
02	Client issue	Liam Gaffney *Senior Ecologist*	Colin Lennon *Technical Director*	Colin Lennon *Technical Director*	22/11/2021
03	Final	Liam Gaffney *Senior Ecologist*	-	-	25/11/2021

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

REPORT LIMITATIONS

Synergy Environmental Ltd. t/a Enviroguide Consulting (hereafter referred to as "Enviroguide") has prepared this report for the sole use of Greenwalk Development Ltd in accordance with the Agreement under which our services were performed. No other warranty, expressed or implied, is made as to the professional advice included in this Report or any other services provided by Enviroguide.

The information contained in this Report is based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested and that such information is accurate. Information obtained by Enviroguide has not been independently verified by Enviroguide, unless otherwise stated in the Report. The methodology adopted and the sources of information used by Enviroguide in providing its services are outlined in this Report.

The work described in this Report is based on the conditions encountered and the information available during the said period of time. The scope of this Report and the services are accordingly factually limited by these circumstances.

All work carried out in preparing this report has used, and is based upon, Enviroguide's professional knowledge and understanding of the current relevant national legislation. Future changes in applicable legislation may cause the opinion, advice, recommendations or conclusions set out in this report to become inappropriate or incorrect. However, in giving its opinions, advice, recommendations and conclusions, Enviroguide has considered pending changes to environmental legislation and regulations of which it is currently aware. Following delivery of this report, Enviroguide will have no obligation to advise the client of any such changes, or of their repercussions.

Enviroguide disclaim any undertaking or obligation to advise any person of any change in any matter affecting the Report, which may come or be brought to Enviroguide's attention after the date of the Report.

Certain statements made in the Report that are not historical facts may constitute estimates, projections or other forward-looking statements and even though they are based on reasonable assumptions as of the date of the Report, such forward-looking statements by their nature involve risks and uncertainties that could cause actual results to differ materially from the results predicted. Enviroguide specifically does not guarantee or warrant any estimate or projections contained in this Report.

Unless otherwise stated in this Report, the assessments made assume that the site and facilities will continue to be used for their current or stated proposed purpose without significant changes.

The content of this report represents the professional opinion of experienced environmental consultants. Enviroguide does not provide legal advice or an accounting interpretation of liabilities, contingent liabilities or provisions.

If the scope of work includes subsurface investigation such as boreholes, trial pits and laboratory testing of samples collected from the subsurface or other areas of the site, and environmental or engineering interpretation of such information, attention is drawn to the fact that special risks occur whenever engineering, environmental and related disciplines are applied to identify subsurface conditions. Even a comprehensive sampling and testing programme implemented in accordance with best practice and a professional standard of care may fail to detect certain conditions. Laboratory testing results are not independently verified by Enviroguide and have been assumed to be accurate. The environmental, ecological, geological, geotechnical, geochemical and hydrogeological conditions that Enviroguide interprets to exist between sampling points may differ from those that actually exist. Passage of time, natural occurrences and activities on and/or near the site may substantially alter encountered conditions.

1 INTRODUCTION

1.1 Background

Enviroguide Consulting was commissioned by Greenwalk Development Limited., to undertake an Ecological Impact Assessment for a proposed residential development ('The Proposed Development'). on a site at Gordon Park, Old Naas Road, Kingswood, Dublin 22

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 Site of the Proposed Development with emphasis on habitats, flora and fauna, and will assesses the potential effects of both 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).

1.2 Quality assurance and competence

Synergy Environmental Ltd., T/A Enviroguide Consulting, is a wholly Irish Owned multi-disciplinary consultancy specialising in the areas of Environment, Waste Management and Planning. All consultants have scientific or technical 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's 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. Enviroguide Senior Ecologist Liam Gaffney undertook the habitat, flora and fauna surveys pertaining to this report, while contracted Bat Specialist Aisling Walsh undertook the bat survey and associated reporting.

Liam Gaffney has a B.Sc. in Zoology (Hons) and a M.Sc. (Hons) in Wildlife Conservation and Management, from University College Dublin, and a wealth of experience in desktop research, literature scoping-review, and report writing, as well as practical field experience (Habitat surveys, Invasive species surveys, Wintering bird surveys, large mammals, fresh water macro-invertebrates etc.). Liam has extensive experience in compiling Biodiversity Chapters of EIARs, EcIAs, AA screening and NIS reports, and in the overall assessment of potential impacts to ecological receptors from a range of developments. Liam is also a Qualifying member of CIEEM, the Chartered Institute of Ecology and Environmental Management.

Aisling Walsh is a director of Ash Ecology and Environmental Ltd. and 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).

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 at Gordon Park, Kingswood, Dublin 22, is sub-threshold for an Environmental Impact Assessment (EIA) under Schedule 5, Part 2 10, (b) of the Planning and Development Regulations 2001 – 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 practise evaluation process. This EcIA has been undertaken to support and assess the Proposed Development planning application and assesses the potential impact that the Proposed Development may have on the ecology of the site and its environs. Where a potential risk to the environment is identified, measures are proposed on the basis that by deploying such measures the risk is eliminated or reduced to an insignificant level. This EcIA is provided to assist the relevant 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 in order 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. In 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 National Parks and Wildlife Service (NPWS). This list includes all 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) from the date they are proposed for designation i.e., at a time they become proposed Heritage Areas (pNHAs). 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 Habitat 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 the 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 provides 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 154 Special Protection Areas have been designated.

2.2.2 EU Habitats Directive

The Habitats Directive aims to protect some 220 habitats and approx. 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 and are herein referred to as 'European Sites'.

2.2.3 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 in order to give protection to migratory species across borders in Europe.

2.2.4 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 66,994ha.

3 METHODOLOGY

This section details the steps and methodology employed to undertake an Ecological Impact Assessment of the Proposed Development.

3.1 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 measures to remove or reduce those impacts at the appropriate stage of the Proposed Development.

3.2 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 desk study, completed November 2021, relied on the following sources:

- Information on species records and distributions, obtained from the National Biodiversity Data Centre (NBDC) at *maps.biodiversityireland.ie*
- Information on waterbodies, catchment areas and hydrological connections obtained from the Environmental Protection Agency (EPA) at *gis.epa.ie*
- Information on bedrock, groundwater, aquifers and their status, obtained from Geological Survey Ireland (GSI) at *www.gsi.ie*
- Information on the network designated conservation sites, site 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 Ordinance Survey Ireland
- Information on the existence of permitted development, or developments awaiting decision, in the vicinity of the Proposed Development using sources such as the South Dublin County Council (SDCC) online planning database and The National Planning Application Map Viewer at *www.myplan.ie.*
- 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, Stanbury & Lewis (2021).

A comprehensive list of all the specific documents and information sources consulted in the completion of this report is provided in Section 10, References.

3.3 Field Surveys

3.3.1 Habitat Surveys

Habitat and botanical surveys of the Site of the Proposed Development were conducted by Enviroguide on the 13th July 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. Habitats within the surrounding area of the Proposed Development were classified based on views from the Site and satellite imagery where necessary (Google Earth, Digital Globe and OSI).

3.3.2 Invasive Species Surveys

An invasive flora survey was carried out in tandem with the habitat survey of the Site on the 13th July 2021. The timing of this survey was within the optimal range for identifying flora species, allowing confidence in the determination of presence or absence of invasive flora species at the Site. The survey focused on those high-risk species 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), however, other known lower risk species were also identified and noted where present.

3.3.3 Bat Surveys

3.3.3.1 Potential Bat Roost Surveys

A Potential Bat Roost survey was conducted of the buildings and trees at the Site of the Proposed Development on 16th July 2021 by Bat Ecologist Aishling Walsh of Ash Ecology & Environmental Ltd (AEE). Trees at the Site were assessed from ground level for potential bat roost features (PBRFs) such as holes, splits, loose bark and other suitable bat roost features, and then assigned to a roost potential category as per *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (J., Collins (Bat Conservation Trust), 2016). These roost potential categories then define what measures and considerations must apply when considering these trees in terms of the Proposed Development.

A Seek Thermal Reveal Pro High-Resolution Thermal Imaging Camera was available along with a RIDGID 36848 Micro CA-150 Hand-Held Borescope for inspection of any crevices on trees as required.

3.3.3.2 Bat Activity Survey

A bat activity survey was conducted on the 16th July 2021 to ascertain if any bat species were using the Site and to assess the level of bat activity within and close to the Site of the Proposed Development.

The bat activity survey began at 21.10, a half hour before sunset (21.40) and lasted until 23.40 as per the best practise guidelines.[1] The survey was undertaken during favourable weather

[1] Collins, J (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines 3rd edition

conditions i.e., calm with mild temperatures of 19-21°C. Surveys are best carried out April to September in suitable weather conditions as was the case with this survey.

The equipment used 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).

3.3.4 Bird Surveys

A breeding bird survey was completed at the Site of the Proposed Development on 13th July 2021. The survey methodology followed the British Trust for Ornithology's (BTO) *Common Bird Census* (CBS) technique (Bibby *et al*, 1992). The site was walked with all bird species encountered recorded on field sheets, along with the corresponding breeding evidence code (see Appendix IV), location (on 1:500 field maps), behaviour and numbers.

3.3.5 Mammal Surveys

Mammal surveys of the site were carried out in conjunction with the other field surveys on 13th June 2021. The Site was searched for tracks and signs of mammals and their activities. The habitat types recorded throughout the survey area were used to assist in identifying the fauna considered likely to utilise the area.

3.3.6 Other Fauna

During the course of all surveys at the Site of the Proposed Development, other species of fauna were noted if observed, and these are included in the report where applicable.

3.4 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, 2009), 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 thus considered further for assessment.

The assessment of the potential effect or impact of the Proposed Development on the identified key ecological receptors was carried out with regard to the criteria outlined in the draft EPA Guidelines (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.

3.5 Limitations and Constraints

An extensive search of available datasets for records of rare and protected species within proximity of the Site 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.

4 BASELINE ECOLOGICAL CONDITIONS

4.1 Site Overview

The Site of the Proposed Development comprises the current Clondalkin Rugby Football Club ground, with ground cover largely made up of playing pitches and hardstanding associated with the clubhouse and carpark. The Site is located just off the Old Naas Road and is bound to the east and north by a tributary of the Kingswood Stream and the Roadstone Group Sports Club respectively; to the west by residential and commercial lands, and to the south by further residential lands.

4.1.1 Geology, Hydrogeology and Hydrology

4.1.2 Geology

The Site is underlain by the Lucan bedrock formation (CDLUCN) and is described as *'Dark limestone & shale (`calp)'*. The groundwater rock units underlying the area are classified as *Dinantian Upper Impure Limestones* (GSI, 2021). The sub-soil at the Site of the Proposed Development is classified as *Till derived from Limestones* (GSI, 2021).

4.1.3 Hydrogeology

Kingswood and the surrounding area is located within the Dublin groundwater body, which has an overall Water Framework (WFD) status of *Good* according to the EPA (EPA, 2021). The Site of the Proposed Development is located on a *Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones,* with groundwater vulnerability in the area listed as *High* across the Site (EPA, 2021).

4.1.4 Hydrology

The Site of the Proposed Development is located within the Liffey and Dublin Bay river catchment, the River Liffey sub catchment (Liffey_SC_090) and the CAMAC_030 sub basin (EPA, 2021).

An unnamed tributary of the Kingswood Stream (EPA Code: 09K07) runs along part of the Site's eastern boundary. The Kingswood Stream flows for approx. 850m due northwest before it joins the Camac River (EPA Code: 09C02). The Baldonnel_Upper watercourse (EPA Code: 09B91) also flows ca. 300m to the west of the Site, flowing north until it also joins the Camac. Both of these named tributaries rise in the uplands to the south of the Site of the Proposed Development. The Camac flows northeast until it outflows into the River Liffey at Heuston Station ca. 10km from the Site of the Proposed Development as the crow flies. The Liffey flows a further ca. 9km from this point before outflowing into Dublin Bay.


KINGSWOOD STREAM
0
25
50 m
Legend:
Site Outline
Unnamed stream
EPA Waterbodies
Rivers and Streams
Google Satellite
Camac
Project:
Proposed Residential Development at Gordon Park, Old Naas Road, Kingswood, Dublin 22
Client:
Greenwalk Development Ltd
Title:
Figure 1. Existing stream connection detail.
enviroguide
Drawn By: LG
Checked: CL
Date: 19/11/2021
Projection: IRENET95 / Irish Transverse Mercator
Scale: 1:1667 @ A4
Notes:
Site boundaries shown are for illustration purposes only and do not represent legal or exact boundaries

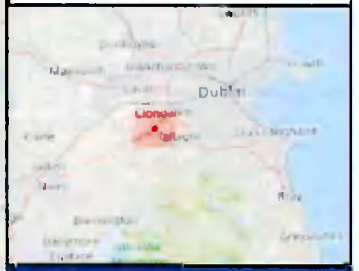
Legend:

Site Outline

EPA Waterbodies

Rivers and Streams

OSM Standard



Project:

Proposed Residential Development at Gordon Park, Old Naas Road, Kingswood, Dublin 22

Client:

Greenwalk Development Ltd

Title:

Figure 2. Site Location

Drawn By: LG	Projection: IRENET95 / Irish Transverse Mercator
Checked: CL	
Date: 19/11/2021	Scale: 1:29426 @ A4

Notes:

Site boundaries shown are for illustration purposes only and do not represent legal or exact boundaries

4.2 Designated Sites

4.2.1 European Sites

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. The Directive requires the designation of Special Areas of Conservation (SACs) for areas of habitat deemed to be of European interest, and 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. The SACs together with the SPAs form a network of protected sites called Natura 2000.

No European Sites are located within, or directly adjacent to, the Site of the Proposed Development, however, it is proposed to discharge surface water from the Site during the operational phase to a tributary stream of the Kingswood Stream, which runs along the Site's eastern boundary. The Proposed Development therefore maintains a hydrological connection to European Sites located within the inner Dublin Bay; namely South Dublin Bay SAC, North Dublin Bay SAC, South Dublin Bay and River Tolka Estuary SPA and North Bull Island SPA; via the Kingswood, River Camac and River Liffey. As detailed in the Appropriate Assessment Screening Report for this Proposed Development, submitted with this application under separate cover, the Proposed Development maintains no significant impact pathway with the Dublin Bay European Sites and significant effects on these sites have been screened out. See section 6.1 for further details.

4.2.2 Nationally Designated Sites

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 a 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 Site of the Proposed Development. The nearest pNHAs to the Site are located upstream and to the south in the form of the 'Slade of Saggart and Crooksling Glen pNHA' and the 'Lugmore Glen pNHA'. As these Sites are located upstream of the Site of the Proposed Development and designated largely for woodland and wetland habitats, it is not envisaged that an impact pathway exists linking them to the Proposed Development. Indirect hydrological connections exist between the Proposed Development and pNHAs located within the inner Dublin Bay; via the Kingswood, River Camac and River Liffey as described above.

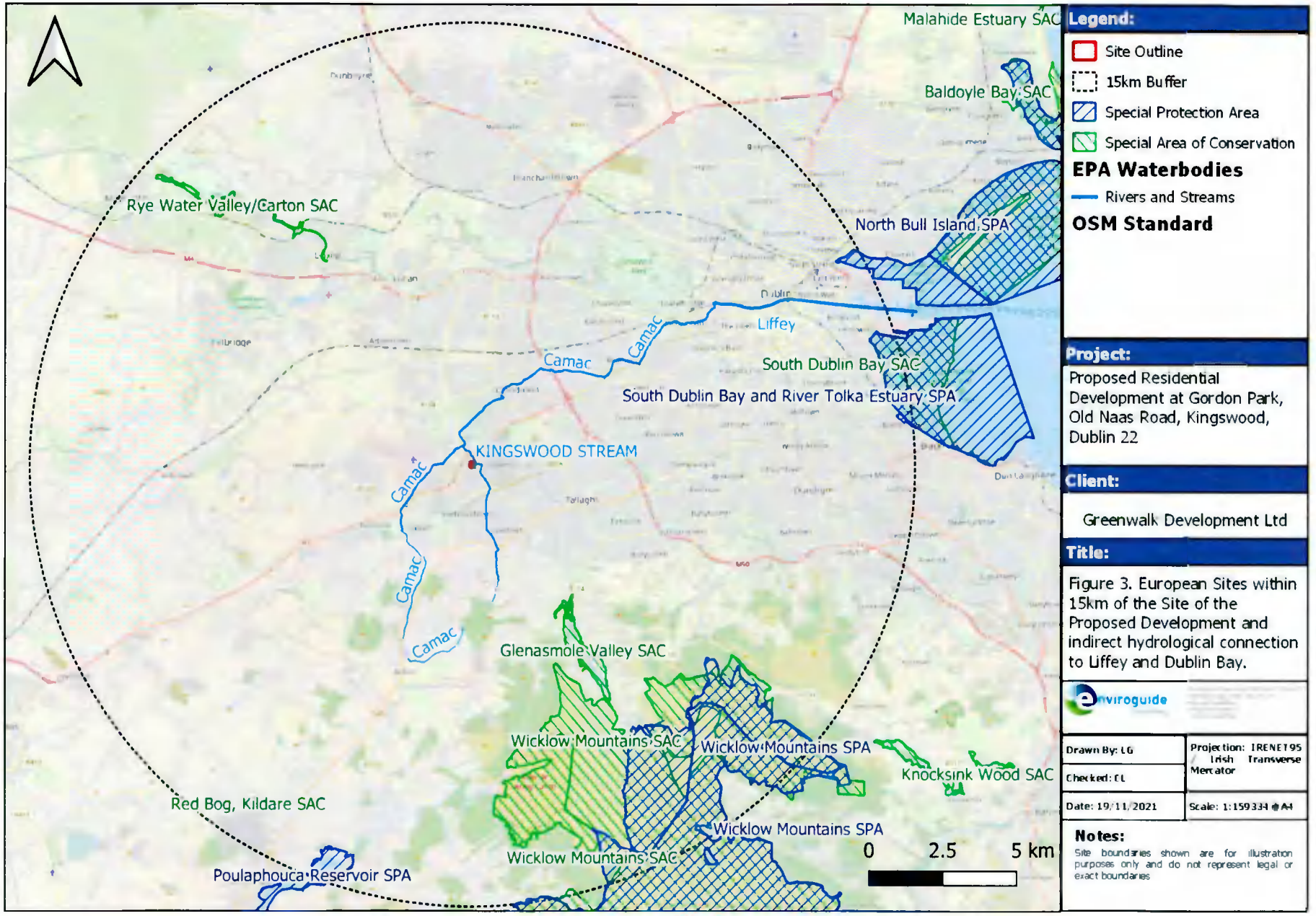
The following pNHAs are located downstream of the Proposed Development i.e., within the Liffey Estuary and/or inner Dublin Bay.

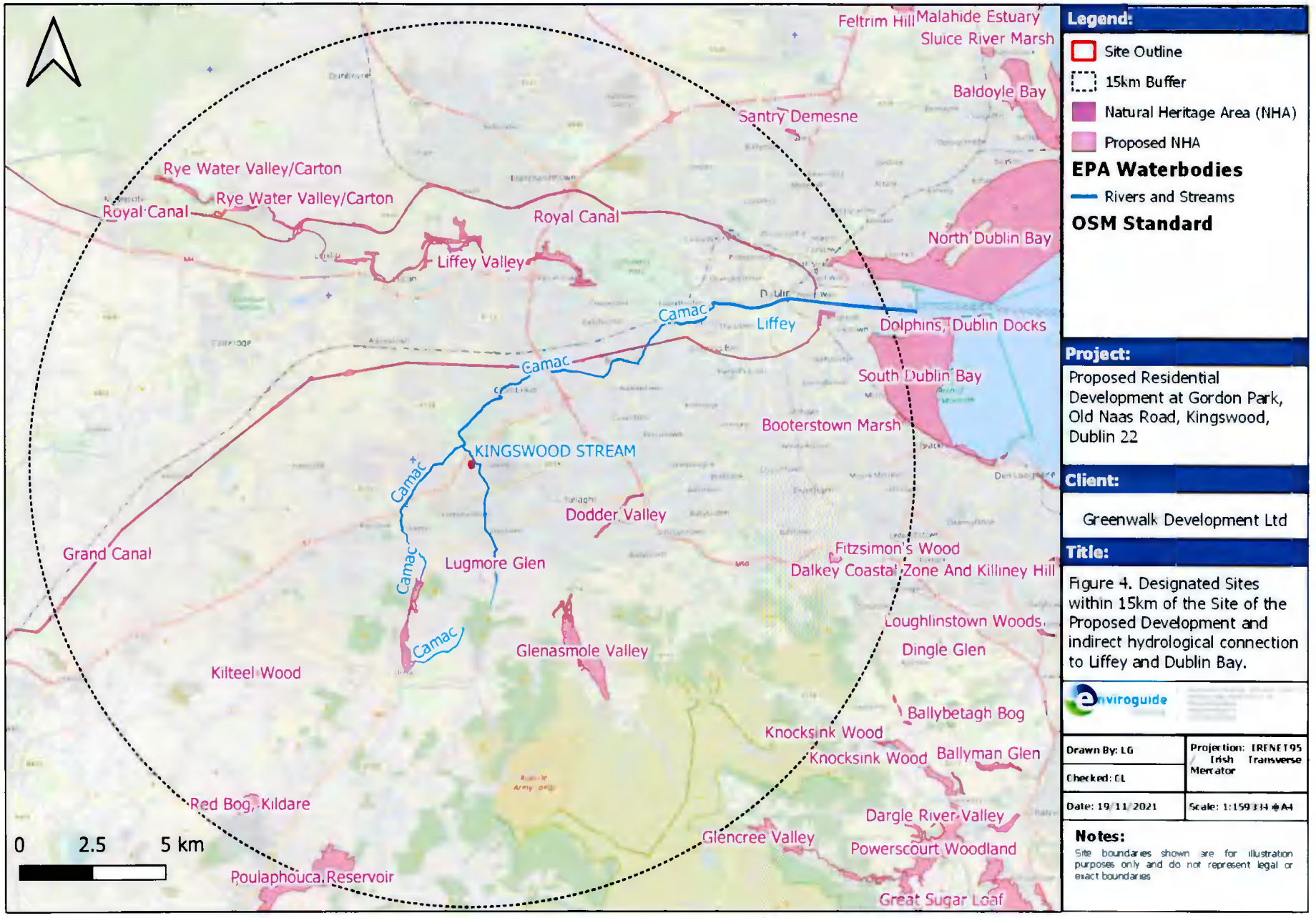
- Dolphins, Dublin Docks pNHA (000201). Anthropogenic structures located ca. 15km north-east of the subject lands within the Liffey Estuary. There is no specific information

on its designation as a pNHA available from the NPWS online database, however, it is covered by the South Dublin Bay and River Tolka Estuary SPA; the Site Synopsis of which notes the pNHAs importance to nesting Common and Arctic Terns who breed here in nationally important numbers.

- South Dublin Bay pNHA (000210). Located *ca.* 28km north-east of the subject lands. There is no information on its designation available from the NPWS online database, however, as it overlaps with the South Dublin Bay SAC, and it is considered likely to have been designated for similar reasons.
- North Dublin Bay pNHA (000206). Located *ca.* 33km north-east of the subject lands. There is no information on its designation available from the NPWS online database, however, as it overlaps with the North Dublin Bay SAC, and it is considered likely to have been designated for similar reasons.

See section 6.1 for further details. The protected sites located within 15km of the Proposed Development are presented in Figures 3 and 4 below.


Malahide Estuary SAC
Baldoyle Bay SAC
Rye Water Valley/Carton SAC
North Bull Island SPA
Liffey
Camac
Camac
Camac
South Dublin Bay SAC
South Dublin Bay and River Tolka Estuary SPA
KINGSWOOD STREAM
Camac
Camac
Camac
Glenasmole Valley SAC
Wicklow Mountains SAC
Wicklow Mountains SPA
Knocksink Wood SAC
Red Bog, Kildare SAC
Wicklow Mountains SPA
Wicklow Mountains SAC
Poulaphouca Reservoir SPA
0
2.5
5 km
Legend:
Site Outline
15km Buffer
Special Protection Area
Special Area of Conservation
EPA Waterbodies
Rivers and Streams
OSM Standard
Project:
Proposed Residential Development at Gordon Park, Old Naas Road, Kingswood, Dublin 22
Client:
Greenwalk Development Ltd
Title:
Figure 3. European Sites within 15km of the Site of the Proposed Development and indirect hydrological connection to Liffey and Dublin Bay.
enviroguide
Drawn By: LG
Checked: CL
Date: 19/11/2021
Projection: IRENET95 / Irish Transverse Mercator
Scale: 1:159334 @ A4
Notes:
Site boundaries shown are for illustration purposes only and do not represent legal or exact boundaries


Feltrim Hill
Malahide Estuary
Sluice River Marsh
Baldoyle Bay
Santry Demesne
Rye Water Valley/Carton
Rye Water Valley/Carton
Royal Canal
Royal Canal
Liffey Valley
North Dublin Bay
Camac
Liffey
Dolphins, Dublin Docks
Camac
South Dublin Bay
Booterstown Marsh
KINGSWOOD STREAM
Camac
Dodder Valley
Grand Canal
Fitzsimon's Wood
Dalkey Coastal Zone And Killiney Hill
Lugmore Glen
Camac
Camac
Loughlinstown Woods
Glenasmole Valley
Dingle Glen
Kilteel Wood
Ballybetagh Bog
Knocksink Wood
Knocksink Wood
Ballyman Glen
Red Bog, Kildare
Dargle River Valley
Glencree Valley
Powerscourt Woodland
Poulaphouca Reservoir
Great Sugar Loaf
0
2.5
5 km
Legend:
Site Outline
15km Buffer
Natural Heritage Area (NHA)
Proposed NHA
EPA Waterbodies
Rivers and Streams
OSM Standard
Project:
Proposed Residential Development at Gordon Park, Old Naas Road, Kingswood, Dublin 22
Client:
Greenwalk Development Ltd
Title:
Figure 4. Designated Sites within 15km of the Site of the Proposed Development and indirect hydrological connection to Liffey and Dublin Bay.
Drawn By: LG
Projection: IRENET95 / Irish Transverse Mercator
Checked: CL
Date: 19/11/2021
Scale: 1:159 334 @ A4
Notes:
Site boundaries shown are for illustration purposes only and do not represent legal or exact boundaries

4.3 Habitats

The habitats within the vicinity of the Site of the Proposed Development are coded and categorised to level 3 according to Fossitt (2000). The following habitats were identified:

- Amenity Grassland (GA2)
- Dry Meadows and Grassy verges (GS2)
- Scrub (WS1)
- Buildings and Artificial Surfaces (BL3)
- Stonewalls and other Stonework (BL1)
- Recolonising Bare Ground (ED3)
- Treelines (WL2)
- Hedgerows (WL1)
- Depositing/Lowland River (FW2)

4.3.1 Amenity Grassland (GA2)

This habitat makes up the majority of the groundcover at the Site and comprises several rugby pitches. This species poor habitat contained Perennial Ryegrass *Lolium perenne,* occasional Dandelion *Taraxacum vulgaria,* White Clover *Trifolium repens* and Broadleaf plantain *Plantago major.* This habitat is of **negligible** ecological value in its current state.

Figure 5. Amenity grassland GA2 habitat makes up the main groundcover at the Site (Image taken facing north).

4.3.2 Dry Meadows and Grassy Verges (GS2)

This semi-natural habitat type is present in limited sections along the margins of the Site; along the western boundary and as an understory to the hedgerows at the Site. Species present included Yorkshire Fog *Holcus lanatus,* False Oat-grass *Arrhenathereum elatius,* Common Couch *Elytrigia repens,* Cleavers *Galium aparine,* Creeping Thistle *Cirsium arvense,* Hogweed *Heracleum sphondylium,* Wood Avens *Geum urbanum,* Dock *Rumex sp.,* Common Nettle *Urtica dioica,* Smooth Hawksbeard *Crepis capillaris,* Dandelion, Purple Toadflax *Linaria*

purpurea, Common Ramping Fumitory *Fumaria muralis,* Great Willowherb *Epilobium hirsutum,* Spear Thistle *Cirsium vulgare,* Hedge Mustard *Sisymbrium officinale,* and Common Mallow *Malva sylvestris.* Given the low ecological value of the majority of the ground cover at the Site, these patches of more species rich habitat are considered to be of **local importance (lower value)** at the Site scale.

4.3.3 Scrub (WS1)

One small section of this habitat is located in the northernmost corner of the Site, to the left on entering the carpark gates. A mound of earth is present with ED3 habitat establishing and the WS1 habitat further in by the boundary of the Site. Species included Hawthorn *Crataegus monogyna,* Elder *Sambucus nigra,* Dock and Common Nettle. This habitat is minor in its representation at the site and is considered to be of **local importance (lower value)** at the Site scale.

Figure 6. A small section of scrub is present in the northernmost corner of the Site (Image facing north)

4.3.4 Buildings and Artificial Surfaces (BL3)

This habitat comprises the carpark and building that make up the northern portion of the Site. This habitat has **no ecological value** due to the modern nature of the building and lack of bat potential.

4.3.5 Recolonising Bare Ground (ED3)

Small sections of this habitat type are present on banks in the south-west and north of the Site as well as a pile of debris along the western boundary wall. Species here were analogous to those GS2 species described above with the addition of Hispid fleabane *Conyza floribunda*, Smooth sowthistle *Sonchus oleraceus*, American Willowherb *Epilobium ciliatum*, Creeping Buttercup *Ranunculus repens*, Nipplewort *Lapsana communis* and Ragwort *Jacobaea vulgaris*. This habitat is minor in its representation at the site and is considered to be of **negligible** ecological value.

4.3.6 Spoil (ED2)

A linear pile of construction rubble lies along part of the Site boundary in the north-west of the Site. This habitat transitions to recolonising bare ground habitat in places here as vegetation begins to establish. This habitat is considered to be of **local importance (local value)** at the Site scale as it provides some minor habitat complexity to the Site.

Figure 7. Spoil and recolonising bare ground habitats located along the Site's north-western boundary.

4.3.7 Treelines (WL2) and Hedgerows (WL1)

These linear habitat features are located along the eastern and western margins of the Site. A hedgerow comprised of Elder, Hawthorn, Blackthorn *Prunus spinosa*, Bramble *Rubus fructicosus agg.*, Dog Rose *Rosa canina*, Sycamore *Acer pseudoplatanus* and Ash *Fraxinus excelsior*, runs along the western boundary of the Site, separating the Site from the stream. The understorey of this hedgerow contains species such as Bush Vetch *Vicia sepium*, Hogweed, Common nettle, and Yarrow *Achillea millefolium*. A short ornamental section of hedgerow is present in the south-west of the Site in the adjacent private garden. Ornamental species including Rose *Rosa sp.*, and Honeysuckle *Lonicera sp.*, were noted.

Treelines run along the Site's western boundary, mostly comprised of semi-mature/mature multi-stem Sycamore and Ash. A prominent non-native Cypress *Cupressus sp.*, treeline of

approx. 50m in length is located along part of the Site's south-western boundary. Small groups of Scots Pine *Pinus sylvestris* are present along the north and north-eastern boundaries.

These woody habitat features are deemed to be of **local importance (Higher value)** due to their provision of habitat connectivity, nesting habitat to a variety of fauna, and potential roosting/foraging/commuting habitat to local bats should they be present.

Figure 8. Hedgerow habitat makes up the eastern boundary of the Site, with the stream located just beyond.

Figure 9. Cypress treeline located in the south-west of the Site with grassy verge GS2 habitat visible along its base.

4.3.8 Stonewalls and other Stonework (BL1)

A section of this habitat runs along part of the Site's western boundary. This habitat, although relatively old in appearance, supported limited flora species with Atlantic Ivy *Hedera hibernica* the main species present. This habitat is deemed of **local importance (Higher value)** at the Site scale due to its age and structure.

Figure 10. Example of Stone wall BL1 habitat along the Site's western boundary.

4.3.9 Depositing/Lowland River (FW2)

A stream runs along part of the Site's eastern boundary. Although not within the boundary of the Site, the Proposed Development does have the potential to affect this watercourse and so it is assessed further in this report. The Site-side bank of this stream is quite steep with the hedgerow taking up most of its surface area and species such as Bramble, Ivy and nettle visible. This stream has been channelised artificially in places and directed through the Roadstone Sports Club grounds by way of a culvert. A review of satellite imagery shows that the stream remains open for the most part as it runs through the sports club grounds and joins with the Kingswood Stream flowing north. This stream is deemed of **local importance (Higher value)** due to its connection with other watercourses including the Camac River.

Figure 11. View of the unnamed stream as it passes under a culvert into the sports club lands to the east of the Site.

Legend:

- Site Outline
- Buddleja

Linear habitats

- Old Stone Wall BL1
- Hedgerow WL1
- Treeline WL2
- Stream FW2

Habitats

- Built Land BL3
- Spoil ED2
- Recol. Bare Ground ED3
- Amenity Grassland GA2
- Grassy Verge GS2
- GS2/ED3 Mozaic
- Scrub WS1

Google Satellite

Project:

Proposed Residential Development at Gordon Park, Old Naas Road, Kingswood, Dublin 22

Client:

Greenwalk Development Ltd

Title:

Figure 12. Habitat Map

Drawn By: LG	Projection: IRENET95 / Irish Transverse Mercator
Checked: CL	
Date: 19/11/2021	Scale: 1:1221 @ A4

Notes:

Site boundaries shown are for illustration purposes only and do not represent legal or exact boundaries

4.4 Flora and Fauna

The Site of the Proposed Development is located within the Ordnance Survey National Grid 10km Square O02. Species records from the National Biodiversity Data Centre (NBDC) online database for this area were studied for the presence of rare/protected/invasive flora and fauna species.

4.4.1 Rare and Protected Flora

One species of plant listed as *Endangered* has been recorded within the national grid O02: Blue Fleabane *Erigeron acer* in 2017. Another species: *Lamiastrum galeobdolon subsp. Montanum*, a subspecies of Yellow Archangel listed as *Vulnerable,* has also been recorded as recently as 2020 within this 10km grid. No records of rare flora, e.g., those classified as 'critically endangered', 'endangered', or 'vulnerable' on the *Ireland Red List No. 10: Vascular Plants* (Wyse-Jackson *et al.*, 2016) or the *Ireland Red List No. 8: Bryophytes* (Lockhart *et al.*, 2012), were identified during surveys of the Site of the Proposed Development. The Site does not contain any species listed on the Flora (Protection) Order 2015.

4.4.2 Invasive Plant Species

Records were collated for species of flora considered to be invasive within the 10km (O02) grid within which the Site of the Proposed Development is located.

Sixteen species of invasive plant have been recorded in this grid square, 10 of which are listed in Part 1 the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 (SI 477 of 2011, as amended):

- American Skunk-cabbage (*Lysichiton americanus*)
- Curly Waterweed (*Lagarosiphon major*)
- Fringed Water-lily (*Nymphoides peltata*)
- Giant Hogweed (*Heracleum mantegazzianum*)
- Giant Knotweed (*Fallopia sachalinensis*)
- Indian Balsam (*Impatiens glandulifera*)
- Japanese Knotweed (*Fallopia japonica*)
- New Zealand Pigmyweed (*Crassula helmsii*)
- Rhododendron *Rhododendron ponticum*
- Three-cornered Garlic (*Allium triquetrum*).

The remaining 6 species collected for this 10km grid are:

- Black Currant (*Ribes nigrum*) (Medium Impact Invasive)
- Butterfly-bush (*Buddleja davidii*) (Medium Impact Invasive)
- Cherry Laurel (*Prunus laurocerasus*) (High Impact Invasive)
- Sycamore (*Acer pseudoplatanus*) (Medium Impact Invasive)
- Turkey Oak (*Quercus cerris*) (Medium Impact Invasive)
- Wild Parsnip (*Pastinaca sativa*) (Medium Impact Invasive)

Several plants of Butterfly-bush/Buddleja were recorded during the Site surveys; along the south-western boundary an in the north-east of the Site.

4.4.3 Mammals (excl. bats)

Records for terrestrial mammals were retrieved from the NBDC online database for the grid square O02. The following protected species were included in these results:

- Eurasian Badger *Meles meles*
- Eurasian Red Squirrel *Sciurus vulgaris*
- European Otter *Lutra lutra*
- Irish Hare *Lepus timidus subsp. hibernicus*
- Pine Marten *Martes martes*
- Irish Stoat (*Mustela erminea subsp. hibernica*)
- Eurasian Pygmy Shrew *Sorex minutus*
- Red Deer *Cervus elaphus*
- West European Hedgehog *Erinaceus europaeus*

Additional commonly occurring protected mammal species were also considered in the context of the Site of the Proposed Development and its environs.

Badger is listed as 'least concern' in Ireland (Marnell, Looney & Lawton, 2019). The nearest recorded occurrence of this species from the vicinity of the Site of the Proposed Development is a roadkill record from the R136 road located ca. 200m to the east of the Site (Enda Mullen, 2016). No signs of badgers such as snuffle holes (feeding signs), latrines (droppings) or setts (dwelling places) were found within the subject lands during survey, and the lands were widely accessible in terms of surveying for badger.

Western European Hedgehog and Pygmy Shrew may potentially utilise the hedgerows and less maintained parts of the Site. These small mammals are both listed as 'Least concern' by Marnell, Looney & Lawton (2019) and inhabit both urban and rural landscapes.

Red Squirrel is listed as listed as 'Least concern' by Marnell, Looney & Lawton (2019) with number increasing in recent years (Lawton et al., 2020). Several records of this species exist from the uplands to the south of the Site of the Proposed Development. This species is limited to more rural parts of the country with higher tree cover e.g., woodland, commercial forestry plantations etc., (Lawton et al., 2020), and is unlikely to utilise the Site of the Proposed Development; due to the general lack of suitable habitats at the Site and its urban surroundings.

Otter, listed as 'least concern' by Marnell, Looney & Lawton (2019), are unlikely to utilise the Site of the Proposed Development due to the minimal availability of suitable habitat within the Site itself and its immediate surroundings. The lands were not found to contain any otter holts or couch sites (resting places). The unnamed stream that runs along the eastern Site could theoretically provide some foraging/commuting habitat for this species, which is known to use the Camac River downstream.

Pine marten and Irish Stoat are listed as 'least concern' in Ireland (Marnell, Looney & Lawton, 2019). There are several records of these species from rural lands to the south of the Site, outside of the city. Pine marten is a species most often associated with woodland and forestry plantations, tending to avoid urban environments. Stoat are more ubiquitous although also unlikely to occur in highly built up areas. The Site of the Proposed Development provides little in the way of wooded habitat and therefore these mustelids are not likely to be present

Red Deer are present within the Wicklow Mountains, alongside their hybrids with Sika Deer (*Cervus nippon*). These species would not be found at the Site in question due to its built-up urban surroundings. Similarly, Irish hare ('least concern') are not expected to use the Site as no signs of this species were observed during surveys and the Site has no connectivity to other grassland areas likely to support Hare.

4.4.4 Bats

The full Bat Report prepared by Bat Ecologist Aishling Walsh is attached in Appendix IV.

Six species of bat have been recorded within the 10km Grid O02 based on the results of a search of the NBDC database. These species are common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, Leisler's bat *Nyctalus leisleri*, Brown long-eared bat *Plecotus auritus,* Natterer's Bat *Myotis nattereri* and Daubenton's bat *Myotis daubentonii.* All of the aforementioned are listed as being of 'least concern' in Ireland, with the exception of Leisler's bat which is listed as 'least concern' (Marnell, Looney & Lawton, 2019).

4.4.4.1 Roost Inspection Surveys

No bat emergence was detected or observed from the clubhouse building present onsite during the survey on July 16th 2021. In addition, the bat potential of the building onsite was deemed to be low with limited bat roost features observed on external examination.

The conifer treeline along the south-western boundary contained trees classed as 'Low' bat potential, while treeline sections present along the eastern and north-western boundaries contained 'moderate' bat potential trees.

4.4.4.2 Activity Surveys

The results of the bat survey in July 2021 are summarized in Table 1 below. A map outlining the locations of the bat calls recorded on July 16th 2021, along with potential bat roosting, foraging and commuting habitat observed at the Site is shown in Figure 13.

A total of three species of bat were detected on the night, amounting to a low rate of bat activity. The most frequent species recorded was Leisler's Bat. The majority of bat activity was along the existing mature treelines.

Table 1. Bat Results Summary Data –July 16th 2021

Species Name – Common	Species Name – Latin	Number of Passes	Peak Frequency (kHz)
Common Pipistrelle	*Pipistrellus pipistrellus*	8	46.5
Soprano Pipistrelle	*Pipistrellus pygmaeus*	2	55.5
Leisler's Bat	*Nyctalus leisleri*	12	26.9

Figure 13. Figure adapted from Bat Report showing locations of bat records and habitat assessment results for features at the Site.

4.4.5 Birds

Results from the breeding bird survey carried out at the Site of the Proposed Development on 13th July 2021 are shown in Table 2 below. A total of 8 species were identified within the vicinity of the Site of the Proposed Development.

Red-listed Bird Species

There were no species recorded breeding on Site during the July 2021 breeding bird survey which are on the Red List of the Birds of Conservation Concern in Ireland.

Amber-listed Bird Species

There were 2 species recorded breeding on Site during the July 2021 breeding bird survey which are on the Amber List of the Birds of Conservation Concern in Ireland.

Table 2. Bird species recorded within the vicinity of the Site during breeding bird surveys.

Species	BoCCI Status	EU Designation	Breeding Status	Notes
Swallow *(Hirundo rustica)*	Amber	N/A	**Not-breeding**	Feeding over the site and singing on telephone wire.
Herring Gull *(Larus argentatus)*	Amber	N/A	**Not-breeding**	Flying overhead.

Wren *(Troglodytes troglodytes)*	**Green**	N/A	**Possible breeder**	Several recorded on site along the hedgerows on the site boundaries.
Goldfinch *(Carduelis carduelis)*	**Green**	N/A	**Possible breeder**	Flying overhead.
Hooded Crow (*Corvus corone*)	**Green**	N/A	**Possible breeder**	Perched on fence. Common species.
Rook (*Corvus frugilegus*)	**Green**	N/A	**Possible breeder**	Foraging on site. Common species.
Jackdaw (*Corvus monedula*)	**Green**	N/A	**Possible breeder**	Foraging on site. Common species.
Blackbird *(Turdus merula)*	**Green**	N/A	**Possible breeder**	Alarm calling along Hedgerow. Common species.

Most of the bird species observed are common urban species and were associated with boundary vegetation at the Site, with corvid species recorded foraging on the playing pitches. The treelines and hedgerows within the lands are likely to be an important nesting and feeding resource for local bird species in this urban setting.

4.4.6 Fish

The nearest Inland Fisheries Ireland (IFI) sample Site to the Site of the Proposed Development, according to the IFI National Research Survey Program map application (IFI, 2021) is the Site: *Moneenalion Commons Br._A* (Site code: 09C020250A), located on the ca. 1km to the north-west, along the River Camac. In 2011 Brown Trout *Salmo trutta* were present within this stretch of the Camac. Further along the Camac at the *Riverside Estate Br. (near Riversdale)_A* sample site (Site code: *09C020310A*), European Eel *Anguilla anguilla* was recorded along with Brown Trout also in 2011. Brown Trout are listed as 'least concern' (King et al., 2011) and protected under the Fisheries Acts 1959 to 2006, while European Eel are listed as 'critically endangered'.

The Site is located upstream of the Camac and maintains a hydrological link to said river via the stream along its eastern boundary. As such, on a precautionary basis, these fish species are considered further in this report.

4.4.7 Amphibians

Common frog *Rana temporaria* (a species of 'least concern' in Ireland according to King *et al.*, 2011) maintains no NBDC records within the tetrad O02 or 2km square O0528 within which the subject lands are located. Common frog is widely distributed in Ireland; however, it is deemed that they are unlikely to occur at the Site of the Proposed Development due to the lack of suitable breeding habitat for amphibians, *i.e.,* ponds, ditches, present at the Site and its urban surroundings. Likewise Smooth Newt *Lissotriton vulgaris* is not deemed to be present at the Site.

4.4.8 Invertebrates

There is a record of White-clawed crayfish *Austropotamobius pallipes* collected from the Camac River as part of the *River Biologists' Database (EPA)* from 2013, at sampling station:

Br SE of Baldonnell Ho, ca. 1km north-west of the Site of the Proposed Development. This species is protected under Annexes II and V of the EU Habitats Directive.

The Site is located upstream of the Camac and maintains a hydrological link to said river via the stream along its eastern boundary. As such, on a precautionary basis, this species is considered further in this report.

4.4.9 Other species and species groups

No records of Common lizard (*Lacerta vivipara*) exist within the vicinity of the Proposed Development. There is little to no habitat of value for common lizard within the Site, and therefore this species is not assessed further in this report.

4.5 Summary of Ecological Evaluation

The habitats present, and species likely to utilise the Site, have been evaluated below in Table 3 for their conservation importance based on the NRA evaluation scheme (NRA, 2009b). Those selected as key ecological receptors (KERs) are those which are evaluated to be of at least local importance (higher value) and at risk of significant effects resulting from the Proposed Development. The impacts of the Proposed Development on these receptors are assessed below in section 6. The summary in the table below indicates the evaluation rating assigned to each receptor and the rationale behind these evaluations.

Table 3. Evaluation of habitats and species within the vicinity of Site of the Proposed Development.

Ecological Receptor	Evaluation	Rationale	Key Ecological Receptor (KER)?
Designated Sites			
Downstream pNHAs and European Sites	National and International Importance	Hydrological link present linking the Proposed Development to downstream pNHAs and European Sites.	**Yes**
Habitats			
Treelines WL2 **Hedgerows WL2**	Local Importance (Higher Value)	Provide cover and connectivity at the Site	**Yes**
Old Stone wall BL1	Local Importance (Higher Value)	Provides some habitat diversity to the Site due to its age.	**Yes**
Depositing River FW2	Local Importance (Higher Value)	Provides connectivity to downstream aquatic sensitivities.	**Yes**
Scrub WS1, Amenity Grassland GA2, Grassy verges GS2, Built ground BL3, Spoil ED2, Recolonising bare ground ED3	Negligible value or Local Importance (Lower Value)	Little to no ecological value.	**No**
Fauna			
Hedgehog and Pygmy shrew	Local Importance (Higher Value)	Hedgehog and Pygmy shrew may utilise hedgerows at the Site.	**Yes**
Otter	Local Importance (Higher Value)	Known to be present along downstream Camac River.	**Yes**
Other Mammals	Not of importance in context of the Site of Proposed Development	Unlikely to utilise the Site as explained in Section 4.4.3.	**No**
Bird assemblages and their nests and eggs	Local Importance (Higher Value)	Several common species recorded at the Site and likely breeding in hedgerows/tree lines.	**Yes**
Bat assemblage	Local Importance (Higher Value)	Low bat activity recorded at the Site. Foraging/commuting habitat present.	**Yes**
Downstream aquatic species e.g., Fish, Invertebrates	Local Importance (Higher Value)	Brown Trout, European Eel and White-clawed Crayfish recorded within River Camac downstream.	**Yes**

Reptiles and amphibians	Not of importance in context of the Site of Proposed Development	Little suitable habitat present. Unlikely to occur.	No

5 DESCRIPTION OF THE PROPOSED DEVELOPMENT

The Proposed Development consists of 77 no. dwellings, comprised of 63 no. 2 storey houses, and 14 no. apartments & duplex units accommodated in 1 no. 3 storey building. The proposed houses are comprised of 8 no. 2 bed houses & 55 no. 3 bed houses. The proposed apartments & duplex units are comprised of 7 no. 1 bed apartments at ground floor & 7 no. 3 bed duplex units overhead. The Proposed Development also provides for all associated site development & infrastructural works, car & bicycle parking, open spaces & landscaping, bin & bicycle storage. Access to the development will by via a new vehicular entrance at the south-west corner of the site, off the Old Naas Road. Permission is also sought to demolish the existing building on site, approx. 455m².

5.1.1 Operational Phase

The Operational Phase will comprise of residential use.

5.1.1.1 Operational Surface Water Drainage

An Engineering Services Report has been prepared by TJ O'Connor Consulting Engineers (TJOC) in relation to the Proposed Development. This report notes that there is currently no public surface water drainage infrastructure in the Old Naas Road in proximity to the Site, and that ground water discharge of surface waters is not fully feasible for this development due to the underlying clay soils present across the Site, particularly in the west.

As such, the surface water management system has been designed to allow for these underlying conditions and a hybrid solution is proposed. This will consist of infiltration to the ground where possible and the collection of surface water via a piped network eventually discharging into the existing watercourse located along the eastern boundary of the Site.

The overall approach to surface water management at the Site will thus involve the following:

- The driveways of houses will be provided with permeable paving. Rainwater from the front roofs of the houses will discharge to the subbase of the permeable paved driveways where it will be stored and released to ground via infiltration or to the surface water network via a fin drain within the subbase. The base of the driveway build-up will be provided with a geotextile membrane to allow surface water to infiltrate to ground where possible.
- Rainwater from the rear roofs of the houses will be collected in a filter drain in the rear gardens of the house. These filter drains will allow infiltration to the ground but will also be connected to the surface water network to allow larger rainfall events to be managed therein.
- The roads and footpaths at the Site will discharge to a surface water piped network within the roads. The overall attenuation for the Site will be provided in two main areas at the site, namely at the northwest of the Site and at the east of the Site, within a green space area adjacent to the proposed surface water outfall location. There is also a small Bioswale area to the southwest corner of the site that collects surface water from the rear roofs of House No's 16-23.

Surface water at the Site will be intercepted and treated by a suite of SUDS measures incorporated into the project design prior to discharge from the Site. These will include:

- Permeable paving under car parking areas and driveways.
- Filter drains throughout the Site to allow infiltration to ground where possible.
- Two Stormtech underground attenuation systems.
- A Klargester petrol interceptor NSBE025 (by-pass separator) located prior to outflow to the receiving stream.

With regard SUDS, it is a policy of South Dublin County Council as laid out in the County Development Plan 2016- 2022 (Policy IE2, Objectives 3, 4 & 5 in particular) to require that all new developments incorporate these sustainable drainage systems in their design. The Plan states in Section 11.6.1 (iii) (pg.224):

"In general, all new developments will be required to incorporate Sustainable Urban Drainage Systems (SUDS). SUDS include devices such as swales, permeable pavements, filter drains, storage ponds, constructed wetlands, soakways and green roofs."

It is noted that these design features are a requirement in all new development, as per the above policy; to contribute to the improvement of water quality in receiving waterbodies, the reduction of flooding downstream and the easing of pressures on existing drainage networks. They are in **no way** included as a mode of mitigating potential effects on European Sites as a result of the Proposed Development. Even in the absence of these SUDS measures, it is deemed that there would be no potential for significant effects to occur at downstream European Sites as a result of the Proposed Development.

5.1.1.2 Operational Foul Water

Foul waters from the Proposed Development will be discharged eventually to Ringsend WWTP for treatment via the existing foul water drainage network along the Old Naas Road. It is proposed to connect the development to the existing 600 diameter foul sewer at the southwest corner of the Site. The applicant has received a Confirmation of Feasibility from Irish Water for the Proposed Development.

Figure 14. Indicative representation of Proposed Development Layout, adapted from CSR Landscape Masterplan drawing no: 21578-2-101, dated October 2021.

6 POTENTIAL IMPACTS OF THE PROPOSED DEVELOPMENT

6.1 Impacts on Designated Sites

The Appropriate Assessment Screening Report containing information for the purposes of Stage 1 Screening for AA is presented in a separate document with this application, the conclusions of which are presented below:

"In conclusion, upon the examination, analysis, and evaluation of the relevant information, and in 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 any significant effect on the European Sites listed below:*

- *Wicklow Mountains SAC [002122]*
- *Rye Water Valley/Carton SAC [001398]*
- *Glenasmole Valley SAC [001209]*
- *Red Bog, Kildare SAC [000397]*
- *South Dublin Bay SAC [000210]*
- *North Dublin Bay SAC [000206]*
- *Wicklow Mountains SPA [004040]*
- *South Dublin Bay and River Tolka Estuary SPA [004024]*
- *North Bull Island SPA [004006]*
- *Poulaphouca Reservoir SPA [004063]*

These complete, precise, and definitive findings, based on the best available scientific evidence, remove all reasonable scientific doubt that the Proposed Development will have any significant effects on the European Sites detailed above. It should be noted that no measures intended to avoid or reduce the potential harmful effects of the project on any European Site have been taken into account in this Appropriate Assessment Screening Report and its conclusions."

6.1.1 Natural Heritage Areas

As was the case when screening out European Sites during the Appropriate Assessment process, the pNHAs within the precautionary zone of influence of the Proposed Development were assessed and screened for significant Source-Pathway-Receptor linkages, that could result in impacts at these protected Sites.

Dublin Bay pNHAs

Although a tenuous hydrological connection exists between the Site and Dublin Bay pNHAS via the Kingswood Stream and Rivers Camac and Liffey, it is deemed that the likelihood of significant effects arising at these sites as a result of surface waters generated by the Proposed Development is **negligible**.

These sites located in Dublin Bay maintain a hydrological link with the Site via proposed surface water discharges (post attenuation and SUDS treatment) to the tributary of the Kingswood Stream that runs along part of the Site's eastern boundary. The Kingswood Stream flows for approx. 850m due northwest before it joins the Camac River, which flows northeast until it outflows into the River Liffey at Heuston Station ca. 10km from the Site of the Proposed Development as the crow flies. The Liffey flows a further ca. 9km from this point before outflowing into Dublin Bay (approx. 22km downstream of the Site of the Proposed Development).

Due to the potential for dilution and mixing within the receiving surface water network i.e., Kingswood Stream, River Camac and River Liffey, and subsequently within Dublin Bay itself, it is deemed that any inadvertent construction Phase, or Operation Phase related surface water run-off would not have the potential to lead to significant effects at these Sites.

6.2 Impacts on Habitats and Flora

In the absence of mitigation or compensation, the Proposed Development will result in the loss and replacement of existing grassland and hardstanding habitats at the Site. Some sections of hedgerow, treeline and scrub will also be lost, however, the hedgerow located along the eastern boundary is being retained, as are some of the trees along the western boundary. Furthermore, a significant increase in hedge and tree planting at the Site is proposed which would increase the habitat connectivity and heterogeneity at the Site, particularly for small birds. The loss of the existing habitats at the Site is therefore considered to represent a **neutral** impact.

The stone wall habitat at the Site is being either retained or reinstated and therefore, there will be no long-term loss of this habitat.

The construction of a surface water outfall to the stream along the eastern boundary of the Site has the potential to cause some contamination and siltation of the watercourse if carried out in the absence of mitigation. This could lead to further impacts downstream. As such, there is the potential for **short-term, negative, slight impacts** at the local scale.

6.3 Impacts on Mammals

6.3.1 Small Mammals & Otter

No mammals of conservation concern were recorded within the Site of the Proposed Development. Small mammals such as European Hedgehog and Pygmy Shrew may be present at the Site and have the capacity to be negatively affected through a loss/fragmentation of habitat at the Site, a **negative, permanent, moderate impact** at a local scale, and through direct mortality if certain habitat removal works take place during the hibernation period of Hedgehog, and through entrapment and death as a result of construction plastic and netting etc. Both represent **negative, Short-term, significant impacts** at a local scale.

Although included as a precautionary KER, Otter are unlikely to be significantly affected by the Proposed Development. This is due largely to the nature of the development and its link to Otter waters along the Camac i.e., a residential development and associated surface water discharges (post treatment) to a tributary watercourse. A suite of SUDS measures have been

included in the project design to improve the quality of surface waters leaving the Site prior to discharge. This SUDS system along with the subsequent capacity for dilution within the receiving waterbodies will ensure that significant reductions in water quality downstream as a result of the Proposed Development will not occur. The potential for impacts on Otter are therefore deemed to be **negligible**.

6.3.2 Bats

All bat species in Ireland are protected under the Wildlife Acts and are listed in Annex IV of the EU Habitats Directive 92/43/EEC. It is an offence under Section 23 of the Wildlife Acts and under Section 51 of the Birds and Natural Habitats Regulations to kill or to damage or destroy the breeding or resting place of any bat species. Under the Birds and Natural Habitats Regulations it is not necessary that the action should be deliberate for on offence to occur. This places an onus of due diligence on anyone proposing to carry out works that might result in such damage or destruction.

Although no bat roosts were recorded onsite, potential habitat for roosting bats was noted and this could become occupied in the future. As such, the Proposed Development will result in the physical loss of some potential bat roosting habitat and some foraging commuting habitat. However, the majority of foraging/commuting habitat at the Site is being retained and a significant increase in linear vegetative structures is proposed; criss-crossing the Site and increasing the overall habitat for feeding bats at the Site.

Nigh-time lighting at the Site has the potential to further remove areas of bat habitat as a result of bat avoidance behaviour along previously unlit areas.

As such, these impacts represent **neutral;** and **permanent, negative, moderate impacts** at a local scale, respectively.

6.4 Impacts on Birds

6.4.1 Direct harm and Habitat loss

Bird species are protected under the Wildlife Acts and it is an offence to disturb birds while on their nests, or to wilfully take, remove, destroy, injure or mutilate their eggs or nests.

In the absence of adoption of protocols for the protection of birds and their nests, there is potential for direct impacts on nesting birds and/or mortality of birds arising from the clearance of vegetation or the demolition of buildings within the subject lands. This scenario would be most likely if works were to occur during the time of year when birds are likely to be nesting (1st March to 31st August, inclusive). Impacts arising from vegetation clearance works would represent a **negative, short-term, significant** impact at the local scale.

The Proposed Development will also result in a loss of some foraging/nesting/roosting habitat for birds at the Site, however, this will be offset by the provision of new habitat opportunities across the Site through the level of proposed planting proposed. As such, the landscaping of the Site will in fact represent a **positive, permanent, significant impact** to birds at a local scale.

6.4.2 Noise Disturbance

The Construction Phase of the Proposed Development will likely involve elevated noise levels associated with the proposed demolition and excavation works. As a result, there is a potential risk of noise disturbance to birds in the vicinity of the Site, representing a **negative, Short-term, significant** impact at a local scale in the absence of suitable mitigation.

6.5 Impacts on Downstream Aquatic species

Potential impacts have been identified to aquatic species that may be present downstream of the Proposed Development.

6.5.1 Surface water run-off

Although included as precautionary KERs, Brown Trout, European Eel and White-clawed Crayfish are unlikely to be significantly affected by the Proposed Development. This is due largely to the nature of the development and its link to the Camac i.e., a residential development and associated surface water discharges (post treatment) to a tributary watercourse. A suite of SUDS measures have been included in the project design to improve the quality of surface waters leaving the Site prior to discharge. This SUDS system along with the subsequent capacity for dilution within the receiving waterbodies will ensure that significant reductions in water quality downstream as a result of the Proposed Development will not occur. The potential for adverse impacts on these aquatic species is therefore deemed to be **negligible**.

6.6 Do Nothing Impact

If the Proposed Development were not to go ahead, the Site would continue in its usage as amenity lands. If current maintenance by the rugby club were to halt, the lands would gradually become overgrown, forming meadow and eventually scrub habitats as the hedgerows encroached into the fields over time.

6.7 Cumulative Impacts

6.7.1 Existing Granted Developments

A search of planning applications located within the vicinity of the Site of the Proposed Development was conducted using online planning resources such as the National Planning Application Database (NPAD) (MyPlan.ie) and South Dublin County Council's Planning Application Map. Any planning applications listed as granted or decision pending from within the last five years were assessed for their potential to act in-combination with the Proposed Development and cause significant effects on the local environment. Longer-term developments granted outside of this time period were also considered where applicable.

It is noted that many of the developments within the vicinity of the Site of the Proposed Development are applications from more than 5 years ago, that have since been completed. Other more recent applications are largely for small-scale works e.g., sports floodlighting columns.

Several more recent applications are detailed below:

1. **Planning Ref**: SD17A/0049 **Application Date**: 21/8/2017 **Applicant:** Roadstone Group Sports Club **Decision:** GRANT PERMISSION **Granted:** 23/10/2017 **Distance from Proposed Development:** Adjacent to the east.

   Description: Construction of an extension and alterations to the existing sports centre building which will include alterations to part of the existing ground floor plan and the construction of a new single storey flat roof extension measuring 303sq.m to the rear and side of existing building. Accommodation will include 4 changing rooms, physio room, gym, refs room, coaching room, TV lounge, store all other associated facilities and site works.

2. **Planning Ref**: SD21A/0043 **Application Date**: 25/2/2021 **Applicant:** Roadstone Group Sports Club **Decision:** GRANT PERMISSION **Granted:** 31/5/2021 **Distance from Proposed Development:** Adjacent to the east.

   Description: 6 floodlighting poles with varying pole top luminaire assemblies (4 poles will be 18.29m high and 2 poles are 12.19m high) located around existing grass pitches and all associated site works.

3. **Planning Ref**: SD21A/0039 **Application Date**: 10/6/2021 **Applicant:** The Commissioners of Public Works in Ireland **Decision:** GRANT PERMISSION **Granted:** 13/8/2021 **Distance from Proposed Development:** 100m to the south.

   Description: Installation of 2 x 3 metre high extract flues from proposed laboratories; construction of a covered boat storage compound within a secured parking area formed with a new 3 metre high security fence with access gates to the rear (north-west) side of the site, internal alteration within the existing building and all associated site works.

4. **Planning Ref**: SD16A/0326 **Application Date**: 25/11/2016 **Applicant:** Bradawl Limited **Decision:** GRANT PERMISSION **Granted:** 07/2/2017 **Distance from Proposed Development:** Adjacent to the north-west.

   Description: Provision of 3 HGV fuelling pumps located adjacent to the existing truck wash with 2 fuel dispensing islands, 2 illuminated totem signs (c.6.5m in height), 5 underground diesel storage tanks (40,000 litre capacity in each). Ancillary lighting and site landscaping works. Access to development is provided off the Old Naas Road and permission is also sought for the reinstatement and extension of the public footpath located directly north and south of the existing entrance to the site.

5. **Planning Ref**: SD16A/0293 **Application Date**: 2/6/2017 **Applicant:** Roadstone Limited **Decision:** GRANT PERMISSION **Granted:** 07/2/2017 **Distance from Proposed Development:** 225m to the east.

   Description: Retention of the following: (1) Quarry control office & garage (1835sq.m) & 5 storage portacabins (14sq.m,14sq.m, 14sq.m 12.6sq.m & 8.4sq.m); (2) ESB switching station (58sq.m) & substation (36sq.m); (3) spare parts storage area (c. 2445sq.m); (4) maintenance shed (117.7sq.m); (5) car park (30 spaces & 627.7sq.m); (6) 2 lampost (10.5m high); (7) 'Clause 804' plant (1177.7sq.m); (8) wet sand plant (684.4sq.m); (9) 2 weighbridges (325.4sq.m); (10) general waste storage area (c. 12.5sq.m); (11) quarry fuelling station with two 9m3 fuel tanks (126.8sq.m); (12) metal

recycling storage area (c.310sq.m); (13) truck parking area (c. 6632sq.m); (14) 1 security camera post (2.2m high); (15) 1 lamp post (9.2 high); (16) hydrocarbon interceptor; (17) tyre storage bays (c.140sq.m); (18) dry sand pant (2203.4sq.m); (19) 1 lamp post (10.3m high); (20) quarry stores (163sq.m); (21) effluent holding tank; (22) security station (13.9sq.m) and 2 lamp post (6.5m high); (23) wheel wash (236.3sq.m); (24) 'Tricel' effluent treatment system; (25) settlement lagoon system (3208.9sq.m); (26) sand polishing filter; (27) security fence (2.9m high); (28) overburden storage mound (7.3 ha); (29) perimeter screening berm (5m to 8m high by 1.6km long & 6ha); (30) perimeter screening berm (5.2m high by 310m long & 7930sq.m); (31) plant storage area (8356sq.m); (32) perimeter screening berm (9.2m high by 147 long & 4770sq.m); (33) screening berm (8.4m high by 340m long & 5257sq.m); (34) perimeter screening berm (6.5m high by 240m long & 5665sq.m); (35) perimeter screening berm (9m high by 320m long & 1ha); (36) screening berm (2.7m high by 245m long &3125sq.m); (37) screening berm (3.5m high by 950m long & 1.1ha); (38) screening berm (3m high by 243m long & 3030sq.m); (39) screening berm (3.3m high by 238m long & 2088sq.m); (40) settlement pond area (6.4ha); (41) screening berm (3.5m high by 379m long & 4793sq.m); (42) screening berm (3.1m high by 244m long & 3743sq.m); (43) internal access road (285m long) to Outer Ring Road entrance/exit, gate, pedestrian gates, footpaths, paladin fencing (1.8m high) & 6 lampposts (6m high); (44) screening berm (5.2m high by 215m long & 4040sq.m); (45) relocation of entrance to C&D recovery site permitted under SD02A/0167 & all ancillary site works; internal roads & landscape planting.

6. **Planning Ref**: SD21A/0012 **Application Date**: 27/1/2021 **Applicant:** Roadstone Limited **Decision:** GRANT PERMISSION **Granted:** 07/2/2017 **Distance from Proposed Development:** 280m to the east.
   Description: Deepening of part (c. 43ha.) of the existing and permitted quarry (An Bord Pleanala refs. 301177 & QD0026) to a quarry floor level of -10mOD using conventional blasting techniques; use of mobile processing plant; product stockpiles; final restoration scheme and all ancillary works within a planning application area of 49.4ha and within the overall landholding of 241.6ha and will be accompanied by an Environmental Impact Assessment Report (EIAR).

With regard the above granted application (Ref: SD21A/0012), involving the continued extraction activities in Belgard Quarry by Roadstone Limited, it is noted that an Appropriate Assessment Screening for this Development was prepared by SLR Consulting (Ireland) Ltd. (SLR, 2021) as part of this application.

The AA screening describes the drainage arrangements of the development as being part of the wider drainage arrangements of the quarry, as managed by Roadstone in compliance with the conditions of the Section 261 conditions (Quarry Ref. SDQU05A/2). The activities involve limestone extraction below the water table; with the waters drained via sumps to enable the works. These waters are used in ancillary manufacturing processes and dust suppression, with excess waters from the Site discharged to the Kingswood Stream west of the quarry under the existing discharge licence (Ref: WPW/472/007-1). Before discharging to the stream, the waters are treated by an Integrated Constructed Wetland (ICW) consisting of two wetland areas of 10,700m^2 and pass through a hydrocarbon interceptor immediately prior to entering

the stream. The AA screening notes that the development in question doesn't require any changes to the existing discharge licence arrangement.

The SLR Assessment concludes that no significant effects would arise from the above extraction, due largely to the distances involved between the Site and downstream European sites and subsequent dilution capacity in the receiving waterbodies, the nature of the waters being discharged (ground and surface waters) and the nature of the QIs listed for the European Sites in Dublin Bay. This is noted to be the case even in the absence of the ICW and water treatment measures. The report goes on to state that significant cumulative effects involving the development and other plans and projects will not arise due to this lack of any identified impact pathways linking the Site and the European sites in question.

As such, it can be concluded that the Proposed Development at Gordon Park, Kingswood, does not have the potential to act in-combination with the above extraction activities, or any other nearby development for that matter, and lead to likely significant effects on downstream European or nationally designated sites. The nature of the Proposed Development itself (Small scale residential), along with the tenuous nature of the hydrological connection between the Site and downstream European Sites, rules out the possibility of significant effects on said sites from the Proposed Development and, thus, also the possibility of significant in-combination effects involving other plans/projects.

6.7.2 Operation of Ringsend WwTP

In June 2018 Irish Water applied for (and subsequently received) planning permission for upgrade works to the Ringsend WwTP facility. These are currently on-going and will increase the capacity of the facility from 1.6 million PE to 2.4 million PE. This plant upgrade will result in an overall reduction in the final effluent discharge of several parameters from the facility including BOD, suspended soils, ammonia, DIN and MRP. An Environmental Impact Assessment Report (EIAR) was submitted by Irish Water as part of this application. The EIAR contains sections relating to Marine Biodiversity and Terrestrial Biodiversity, and each contains a section on the 'do-nothing scenario'. These review the effects of the WwTP on biodiversity in Dublin Bay *in the absence of the upgrade works* and so are relevant to this report.

The EIAR report acknowledges that under the do-nothing scenario "the areas in the Tolka Estuary and North Bull Island channel will continue to be affected by the cumulative nutrient loads from the river Liffey and Tolka and the effluent from the Ringsend WwTP", which could result in a decline in biodiversity and the deterioration of the biological status of Dublin Bay (Irish Water, 2018). Nevertheless, these negative impacts of nutrient over-enrichment are considered "unlikely" (Irish Water, 2018). This is because historical data suggests that pollution in Dublin Bay has had little or no effect on the composition and richness of the benthic macroinvertebrate fauna. The EIAR notes that "although a localised decline could occur, it is not envisaged to be to a scale that could pose a threat to the shellfish, fish, bird or marine mammal populations that occur in the area." Furthermore, the EIAR notes that significant impacts on waterbird populations foraging on invertebrates in Dublin Bay due to nutrient over-enrichment are "unlikely" to occur (Irish Water, 2018). What is important in the context of this AA screening report is that the do-nothing scenario predicts that nutrient and suspended solid loads from the WwTP will "continue at the same levels and the impact of these loadings should maintain the same level of effects on marine biodiversity" and that "if the *status quo* is

maintained there will be little or no change in the majority of the intertidal faunal assemblages found in Dublin Bay which would likely continue to be relatively diverse and rich across the bay."

Therefore, it can be concluded based on scientific evidence that significant effects on marine biodiversity and the European and nationally designated sites within Dublin Bay from the *current* operation of Ringsend WwTP are not occurring. Importantly, this conclusion is not dependent upon any future works to be undertaken at Ringsend. Thus, in the absence of any upgrading works, significant effects to said protected sites as a result of in-combination effects involving waste waters produced by the Proposed Development can be excluded.

6.7.3 Relevant Policies and Plans

In addition, the following Policies and Plans were reviewed and considered for possible in-combination effects with the Proposed Development.

- South Dublin County Development Plan 2016-2022

It is noted that there is potential for proposed plans and projects within the Kingswood/Clondalkin area, and the areas covered by the South Dublin County Development Plan to have cumulative, negative impacts on conditions in Dublin Bay; via rivers, streams and other surface water features. However, the core strategy, policies and objectives of the above County Development Plan have been developed to anticipate and avoid the need for developments that would be likely to significantly affect the integrity of any European or nationally designated site.

Furthermore, such developments are required to conform to the relevant regulatory provisions for the prevention of pollution, nuisance or other environmental effects likely to significantly affect the integrity of protected sites. In addition, sustainable development, including SUDS measures for all new developments; is inherent in the objectives of all development plans within the Greater Dublin Area, as per the Greater Dublin Regional Code of Practice for Drainage Works.

Upon examination of the above listed plans and projects within the general vicinity of the Proposed Development, and adopting a precautionary approach, it is concluded that there is no potential for significant in-combination effects on Dublin Bay European or nationally designated sites involving the Proposed Development.

7 MITIGATION AND ENHANCEMENT MEASURES

7.1 Mitigation 1: Construction Phase Surface water management

To ensure that no contaminated waters containing silt, fuel, cementitious materials etc., have the potential to enter the receiving surface water network during the Construction Phase of the Proposed Development, a suite of mitigation measures will be put in place, and will be included in the CEMP prepared by the contractor, along with all other relevant measures recommended to protect environmental sensitivities during the Proposed Works.

7.1.1 Watercourse Protection

All works adjacent to the unnamed stream present along the eastern corner of the Site will be carried out in accordance with Inland Fisheries Ireland (IFI), "*Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters*" (IFI, 2016).

Contact will be made with IFI to ensure the works comply with the provisions of the Fisheries Act and Habitats Regulations, and in accordance with any detailed operational and construction requirements issued by IFI.

To prevent elevated levels of erosion and sedimentation at the Site during the Construction Phase, surface water discharge from the Site will be managed and controlled for the duration of the construction works, until the permanent surface water drainage system (including attenuation and storage) for the Proposed Development is complete.

Direct Watercourse Protection

The construction of a surface water outfall to the stream is proposed. This will likely involve the altering of the stream channel to some degree and therefore poses a risk of sediment release to the watercourse. To minimise this risk, best practise Construction measures for works within, or in the vicinity of watercourses will also be followed as per '*Guidelines for the crossing of watercourses during the construction of national road schemes*' (TII, 2008) and '*Control of water pollution from linear construction projects - CIRIA C648*' (CIRIA, 2006). The below measures will be included in the CEMP to prevent the release of hydrocarbons, polluting chemicals, sediment/silt and contaminated waters into the receiving surface water network:

- A suitably qualified Ecological Clerk of Works (ECoW) will be present on-site during the surface water outfall construction.
- Entry to the channel of the stream by vehicles and/or personnel will not be permitted unless absolutely necessary.
- Instream machine works should be minimised, and any machines working in or near the watercourse must be protected against leakage or spillage of fuels, oils, greases and hydraulic fuels.
- Works involving the breaking of stream banks e.g., any reprofiling of the stream channel, will be carried out with suitable and effective mitigation in place to minimise/ prevent sediment release to the stream i.e., cofferdams, Silt-traps and other suitable in-stream measures for the collection/filtration of sediment e.g., straw bales.

- Every care must be taken to insure against spillage of concrete or leakage of cement grout within cofferdams.
- Suitable temporary erosion control measures will be employed where required, to prevent sedimentation/erosion arising from any newly profiled banks while new vegetation establishes e.g., jute/coir mesh blankets.
- Features such as silt fencing and/or berms, will be installed prior to the commencement of construction to ensure the protection of the stream during construction works. A silt fence set back **at least 10m** from the watercourse will be required, to be constructed of a suitable geotextile membrane to ensure water can pass through, but that silt will be retained.
- An interceptor trench will be required in front of the silt fencing. The silt fence must be capable of preventing 425µ (micron) and above sediment from passing through. It should also be resistant to damage during deformation resulting from loading by entrapped sediment.
- The silt fences will be monitored to ensure that they remain functional throughout construction of the Proposed Development. Where necessary, maintenance will be carried out on the fences to ensure that they continue to be effective. This will be particularly important after heavy rainfall events. The checks will be undertaken by a suitably qualified person nominated to act as Ecological Clerk of Works (ECoW). The frequency of monitoring will depend on the stage of works, and local environmental conditions. Daily checks may be appropriate during the initial site clearance, during works in the vicinity of the watercourse, and during and after storm events. Weekly or bi-weekly checks may be appropriate at other times.

Construction Best Practise

- Surface waters generated at the construction site will be managed using a system of temporary on-site attenuation features e.g., Stilling or settling ponds, and will be fitted with silt barrier devices such as silt fences and/or silt busters. Treated waters from the attenuation features will be directed to vegetated areas of grassland a minimum of 50m from any watercourse. Rate of release will be controlled such that waters do not flow overland directly to the watercourse.
- Location of stilling/settling ponds will take into account groundwater vulnerability at the site and will be located in suitable areas.
- Discharge water generated during placement of concrete will be stored and removed off site for treatment and disposal.
- There will be no washing out of any concrete trucks on site.
- Specific areas for storage, delivery, loading/unloading of materials will be designated, which will have appropriate containment/spill protection measures where required.
- Leachate generation from stockpiles or waste receptacles will be prevented by using waterproof covers.
- Prolonged exposure of contaminated soils or groundwater to the atmosphere will be avoided where practical or unnecessary.

- Appropriate bunding, storage and signage arrangements for all deleterious substances will be used.
- Robust and appropriate Spill Response Plan and Environmental Emergency Plans will be included within the Contractor's CEMP and the details of which will be communicated, resourced and implemented for the duration of the works.
- Control measures and spill clean-up equipment adequate to treat spills at the Site will be available and staff will be trained and experienced in using said equipment.
- A register will be kept of all hazardous substances either used on site or expected to be present. The register shall be available at all times and shall include as a minimum: valid safety sheets; Health & Safety, environmental controls to be implemented when storing, handling, using and in the event of spillage of materials; emergency response procedures/precautions for each material; the Personal Protective Equipment (PPE) required when using the material.
- All existing services will be mapped, and a plan will be put in place to decommission/divert and manage any drains or sewers which are associated with the Site.
- A plan for dealing with any unknown drains or services which may be encountered during the works will be set out and implemented.
- Any drains or sewers which could act as pathways for contamination from the Site will be blocked where required.
- Any surface water inflow into the main areas of excavation will be minimised where possible.

It is deemed that once the mitigation measures described above are implemented in full, there will be no potential for likely significant adverse effects to the receiving waterbody as a result of the construction of the Proposed Development.

7.2 Mitigation 2: Controlled Vegetation Removal/ Construction Site Hygiene

7.2.1 Hedgehog

During the Construction Phase of the Proposed Development Hedgehogs in particular have the potential to be significantly impacted through the loss of suitable hibernation and nest sites in the form of piles of dead wood, vegetation and leaves on site.

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 management of hedgerow/treeline areas on site should also be left in this out-of-the way area as compensatory hedgehog habitat during the Construction Phase.

Work likely to cause disturbance during hibernation – for example removal of hibernation habitats such as log piles and dense scrub/hedgerow – should not take place during Winter i.e., 1st November to 1st March, but also must take into account the breeding bird season in order to avoid potential nest destruction and bird mortality. As such, it is recommended that any removal of the hedgerow or scrub be carried out in **September/October** where possible

in order to ensure the best biodiversity outcome and to comply with the Wildlife Acts 1976 and Amendments.

Hedgehogs and other small mammals can become trapped in construction materials, such as plastic sheeting and netting, leading to suffocation and death. This can be easily addressed by storing materials off the ground overnight.

7.2.2 Birds

In order to comply with legislation protecting birds and their nests, pruning or removal of hedgerows, scrub and treelines will be conducted outside of the breeding bird season (i.e., outside of March 1st through August 31st, inclusive).

Should any vegetation removal be required during this period, this vegetation should be checked for birds by a qualified ecologist. If any are noted during this evaluation prior to removal, the ecologist will be consulted on how best to proceed and the NPWS may need to be contacted. If eggs have been laid, the nest will be suitably protected until the young have fledged, after which time the nest can be destroyed under the supervision of a suitably qualified Ecologist.

7.2.3 Bats

Where trees are to be removed to facilitate construction and/or in the interest of health and safety, they will first be checked for the presence of bats by an appropriately qualified, experienced, and licensed professional. In the case that trees are required to be removed to facilitate construction, works will be carried out **within the period: late August to late October/early November.** This corresponds to the season when bats are less vulnerable to disturbance, as they are not rearing young and have not yet entered hibernation.

For any trees identified as being of 'Moderate' bat roosting potential, the following measures as outlined in the Bat Report should be carried out:

- A Bat Tree Assessment of any trees that are to be removed from the treelines identified as having 'Moderate' bat roosting potential.
- A pre-felling bat survey the night before felling of any such trees to confirm the absence of bats.
- If bats are found to be using the affected trees with 'Moderate' bat potential as a roost, or are deemed highly likely to do so, then a derogation licence from the National Parks and Wildlife and Services (NPWS) will be required with tree felling postponed. Tree felling can only proceed if a licence is acquired along with justification for why each particular tree requires removal.

The following tree felling methodology should be followed:

- Felling during the winter months should be avoided as this creates the additional risk that bats may be in hibernation and thus unable to escape from a tree that is being felled. Additionally, disturbance during winter may reduce the likelihood of survival as the bats' body temperature is too low and they may have to consume too much body fat to survive.
- Tree-felling should be undertaken using heavy plant and chainsaw. There is a wide range of machinery available with the weight and stability to safely fell a tree. Normally trees are

pushed over, with a need to excavate and sever roots in some cases. In order to ensure the optimum warning for any roosting bats that may still be present, the tree should be pushed lightly two to three times, with a pause of approximately 30 seconds between each nudge to allow bats to become active. The tree should then be pushed to the ground slowly and should remain in place for a period of at least 48 hours to allow bats and other wildlife to escape.

- Trees felled should never be sawn up or mulched immediately in case protected wildlife is present.
- Trees used for future landscaping planting should comprise of predominantly native Irish species.

7.3 Mitigation 3: Noise Control

A number of measures will be included in the Construction Environmental Management Plan (CEMP) prepared by the contractor, as set out in *BS 5228-1: A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise*, that will be put in place during the Construction Phase of the Proposed Development. These will ensure that the level of noise caused by the proposed works will be controlled/reduced where possible so as to minimise the potential disturbance impact on local bird species.

These measures will include but are not limited to:

- Selection of plant with low inherent potential for generating noise.
- Avoid 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 becomes a source of 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 local birds or any other fauna species in the vicinity of the Site of the Proposed Development will be reduced to a minimum.

7.4 Mitigation 4: Night-time lighting

It is recommended that the impact of increased night-time lighting as a result of the Proposed Development be mitigated through the incorporation of bat-friendly lighting measures into the project design and associated lighting plan.

In order to minimise disturbance to bats commuting/foraging in the vicinity of the Site, lighting will be designed to minimise light-spill onto any hedgerows or treelines to be retained or planted at the Site. This can be achieved by ensuring that the design of lighting adheres to the guidelines presented in the Bat Conservation Trust & Institute of Lighting Engineers *'Bats and Lighting in the UK - Bats and Built Environment Series'*, (ILP, 2018) 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 will include the following:

- The minimisation of night-time lighting emitted during both the Construction and Operational Phases of the Proposed Development (once health and safety requirements are met). Lighting will be dimmed by 25% from the hours of midnight to 6am as stated in the Lighting Design Report for this development (Redmond AMS, 2021).
- The avoidance of direct lighting of the existing hedgerow along the eastern boundary, as well as areas of proposed tree and hedge planting.
- Unnecessary light spill controlled through a combination of directional lighting and hooded / shielded luminaires.
- Areas around the perimeter should not be lit up nor lighting directed towards it. Lighting in these areas should not increase beyond existing night-time lux levels or 1 lux, whichever is the lesser. Much of the Site's boundaries are formed by the back gardens of the proposed dwellings, and as such will not be subject to public lighting. In addition, the green space in the east of the Site will remain largely unlit, forming a dark buffer along the eastern boundary
- Vertical light spill at light sources should be below 3m to avoid potential bat flight paths.
- No floodlighting will be used – this causes a large amount of light spillage into the sky significantly impacting bats. The spread of light should be kept below the horizontal.
- Hoods, louvres, shields or cowls should be fitted on the lights to reduce light spillage.
- 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 source of light are Light Emitting Diodes (LEDs), which have a narrow beam that are highly directional and a highly energy efficient light source.

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.

Night-time lighting across the Site of the Proposed Development should be kept to a minimum during both the Construction and Operational Phases of the Proposed Development 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 Site (see Figure 15 below).

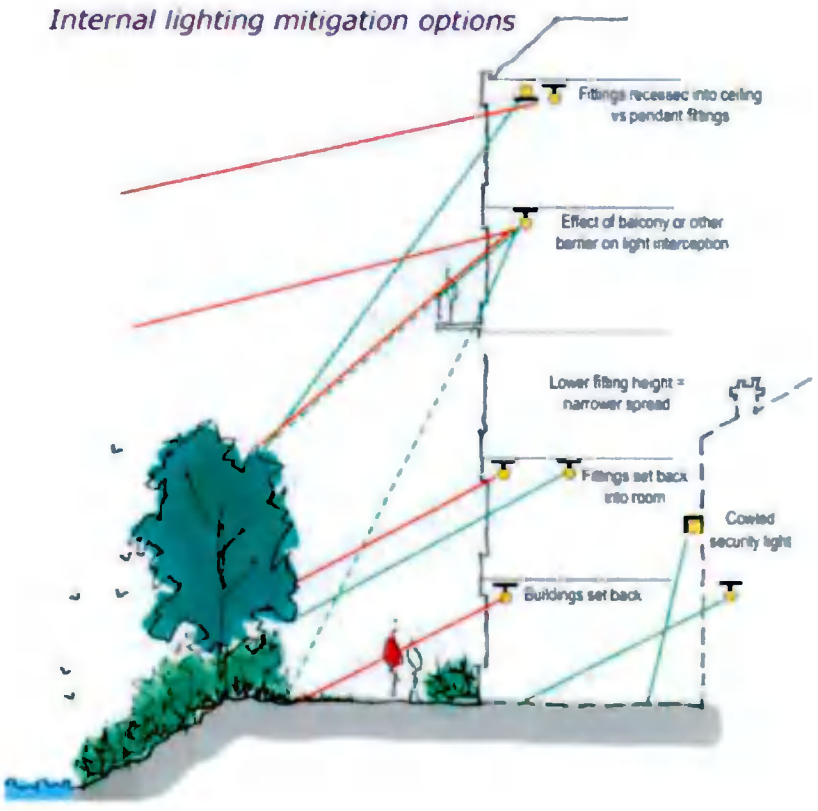


Figure 15. Internal Lighting Guidance Diagram adapted from ILP (2018).

7.5 Habitat Enhancement

7.5.1 Hedgehog Highways

By creating a number of separate private dwellings and gardens at a Site, the land becomes fragmented and largely inaccessible to species such as Hedgehogs, which like to roam each night in search of food (garden pests e.g., slugs). This can easily be fixed by ensuring that the boundaries and barriers within and surrounding the Site i.e., garden fencing, railings and gates, are permeable for Hedgehogs. This can be done by:

- the use of fence panels with 13 x 13 cm holes at ground level (Hedgehog holes),
- leaving a sufficient gap beneath gates,
- and leaving brick spaces at the base of brick walls

Figure 16. Examples of 'Hedgehog highways' that can maintain habitat connectivity for Hedgehogs in residential developments (Images: BHPS Guidance document).

A variety of fence suppliers stock specific hedgehog-friendly fencing options, which can be easily incorporated at little or no additional cost. These simple measures will provide habitat connectivity at this Site for Hedgehogs and reduce the impact of the land-use change on this species.

Including details of hedgehog-friendly features in the new home owner's welcome pack will raise awareness and prevent home owners from reversing these features, for instance blocking fence holes.

7.5.2 Bat Habitat provision

A series of 5+ bat boxes will be erected suitable surfaces around the site to provide future roosting opportunities. The eave walls of taller buildings at the Site may be suitable, as would more mature trees. The type recommended is the 2F Schwegler Bat Box or similar durable woodcrete design. A suitably qualified ecologist should be consulted when erecting the bat boxes to maximise their chance of being successfully utilised by roosting bats.

8 RESIDUAL IMPACTS

Residual impacts are those that remain once mitigation has been implemented or impacts that cannot be mitigated. Table 4 below 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.

Standard Construction Phase control measures have been outlined to ensure that the Proposed Development does not impact on any species or habitats of conservation importance or designated sites. It is essential that these mitigation measures are complied with, in order to ensure that the Proposed Development complies with National conservation legislation.

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

Table 4. 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/ Mitigating Factors	Residual Impact
			Quality	Magnitude / Extent	Duration	Significance		
Designated Sites								
No potential for significant impacts identified. Refer to Appropriate Assessment for detail on European Sites.								
Habitats and Flora								
Treelines Hedgerows	Local Importance (Higher Value)	Loss of some sections of habitat. Offset by the level of proposed tree and hedge planting at the Site	Neutral	Local	Permanent	Not significant	- Planting of additional trees and hedgerows at the Site. - Retention of eastern hedgerow boundary.	**Neutral, Not Significant.**
Stone Wall	Local Importance (Higher Value)	No impact envisaged as to be retained and or reinstated.	Neutral	Local	Permanent	Not significant	- No mitigation required	**Neutral, Not Significant.**
Depositing River	Local Importance (Higher Value)	Reduction in water quality as a result of potential contamination due to Construction Phase of Proposed Development.	Negative	Local	Short-term	Slight	- All construction works to be carried out in accordance with the CEMP. - Suite of best practise and watercourse protection measures as outlined in Section 7.1.	**Negligible.**

							- Suite of SUDS measures to be in place for the duration of the lifetime of the Proposed Development, as outlined in the Engineering Services Report.	
Fauna								
Small Mammals	Local Importance (Higher Value)	Loss/fragmentation of habitat as a result of Proposed Development. Mortality during clearance works and construction phase.	Negative	Local	Permanent Short-term	Moderate Significant	- Vegetation clearance to be carried out in months of September/October where possible, to avoid Hedgehog Hibernation period. - Incorporation of 'hedgehog highways' into fence design across development to ensure habitat connectivity. - Good construction site practises to ensure construction materials/waste stored appropriately.	**Negative, Permanent, Not significant.**
Otter	Local Importance (Higher Value)	No impacts envisaged. See section 6.3 for detail.	-	-	-	-	-	**Negligible**

Bat assemblage	Local Importance (Higher Value)	Loss of potential roosting and existing foraging/commuting habitat as a result of Proposed Development through vegetation clearance and operational lighting.	Neutral	Local	Permanent	Not significant	- Bat friendly lighting incorporated into the project design. - Retention of eastern hedgerow. - Provision of additional bat roosts in the form of 5+ bat boxes to be situated at suitable locations at the Site. - Provision of proposed tree and hedge planting will provide new foraging opportunities.	**Negligible.**
Bird assemblage (Amber-listed)	National Importance	Disturbance due to noise and increased human presence during Construction Phase Potentially destruction of nests, eggs and young during vegetation clearance. Loss of habitat at the Site.	Negative	Local	Short-term Permanent Permanent	Significant Significant Slight	- Construction related noise control/minimisation measures to be included in CEMP as in section 7.3. - Vegetation clearance to take place outside of the period **March 1st – August 31st** to avoid the nesting season. - Proposed increase in native tree and hedgerow planting across the Site	**Negative, Short-term, Slight** **Negligible.** **Positive, Permanent, Significant.**

Bird assemblage (Green-listed)	National Importance						will provide new habitat for local birds.	
Brown Trout, European Eel and White-clawed Crayfish	National and International Importance	No impacts envisaged. See section 6.5 for detail.	-	-	-	-	-	**Negligible**

9 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 Proposed Development.

Based on the successful implementation of these measures and proposed works, to be carried out in accordance with the final CEMP and landscape plan, it is deemed that there will be no significant negative ecological impacts arising from Construction and Operation Phases of the Proposed Development.

10 REFERENCES

Aughney, T., Kelleher, C. & Mullen, D. (2008). Bat Survey Guidelines: Traditional Farm Buildings Scheme. The Heritage Council, Áras na hOidhreachta, Church Lane, Kilkenny.

Bang, P. and Dahlstrom, P. (2001). Animal Tracks and Signs, Oxford University Press, Ox-ford.

British Hedgehog Preservation Society (BHPS) Guidance Document: Hedgehogs and Development. Available at: https://www.hedgehogstreet.org/development/

Bibby, C. J., Burgess, N. D. & Hill, D. A. (1992). Bird Census Techniques. Academic Press, New York.

Blamey, M., Fitter, R. and Fitter, A. (2003). Wild Flowers of Britain and Ireland. London: A & C Black.

City of Toronto, City Planning (2016). Bird-Friendly Best Practises, Glass. Bird-Friendly Development Guidelines. City of Toronto.

City of Toronto, City Planning (2017). Best Practices for Effective Lighting. City of Toronto.

CIEEM (2015). Guidelines for Ecological Report Writing. Chartered Institute of Ecology and Environmental Management, Winchester, UK.

CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management, Winchester, UK.

Gilbert, G. Stanbury, A. and Lewis, L., (2021). Birds of Conservation Concern in Ireland 4: 2020-2026. Irish Birds 43: 1–22.

Curtis, T.G.F. and McGough, H.N. (1988). The Red Data Book 1: Vascular Plants. Dublin: The Stationery Office.

Defra (2009) Construction Code of Practice for the Sustainable Use of Soils on Construction Sites.

Eirgrid. (2012). Ecology Guidelines for Electricity Transmission Projects. A Standard Approach to Ecological Impact Assessment of High Voltage Transmission Projects

EPA (2002). Guidelines on information to be contained in Environmental Impact Statements. Published by the Environmental Protection Agency, Ireland.

EPA (2017). Guidelines on the information to be contained in Environmental Impact Assessment Reports (Draft). Published by the Environmental Protection Agency, Ireland.

EPA, (2021). Environmental Protection Agency Online Mapping [ONLINE] Available at: http://www.epa.ie/ [Accessed Nov 2021].

Fitzpatrick. Ú., Weekes, L. & Wright M. (2016) Identification Guide to Ireland's Grasses. 2nd Edition. Publish by National Biodiversity Data Centre, Carriganore, Waterford.

Fossitt, J. A. (2000). A Guide to Habitats in Ireland. Kilkenny: The Heritage Council.

GSI, (2021). Geological Survey of Ireland website [ONLINE] Available at: http://www.gsi.ie/ accessed [Accessed Nov 2021].

Inland Fisheries Ireland (IFI) (2021). IFI National Research Survey Programme. Online Map application. Accessed: Nov 2021. Available at: https://ifigis.maps.arcgis.com/apps/webappviewer/index.html?id=9a31fedb077c4fb2991184842b7ef025.

Igoe, F., Quigley, D.T.G., Marnell, F., Meskell, E., O' Connor, W. & Byrne, C. (2004). The Sea Lamprey (Petromyzon marinus L.), River Lamprey (Lampetra fluviatilis L.) and Brook Lamprey (Lampetra planeri) (BLOCH) in Ireland: General Biology, Ecology, Distribution and Status with Recommendations for Conservation. Biology and Environment: Proceedings of the Royal Irish Academy, 104B(3), 43-56.

Institution of Lighting Professionals (ILP). (2018). Guidance Note 08/18: Bats and artificial lighting in the UK. *Bats and the Built Environment series.* Available at: https://www.theilp.org.uk/documents/guidance-note-8-bats-and-artificial-lighting/

King, J.L., Marnell, F., Kingston, N., Rosell, R., Boylan, P., Caffrey, J.M., FitzPatrick, Ú., Gargan, P.G., Kelly, F.L., O'Grady, M.F., Poole, R., Roche, W.K. and Cassidy, D. (2011). Ireland Red List No. 5: Amphibians, Reptiles and Freshwater Fish. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland

Kingston, N. (2005). Proposed Red Data List for Vascular Plants. A Consultation Document from the National Parks and Wildlife Service, Department of Environment, Heritage and Local Government.

Kelly, F.L., and King, J.J. (2001) A review of the ecology and distribution of three lamprey species, Lampetra fluviatilis (L.), Lampetra planeri (Bloch) and Petromyzon marinus (L.): A context for conservation and biodiversity considerations in Ireland. Biology and Environment: Proceedings of the Royal Irish Academy 101B(3), 165-185.

Lawton, C., Flaherty, M., Goldstein, E.A, Sheehy, E. and Carey, M. (2015) Irish Squirrel Survey 2012. Irish Wildlife Manuals, No. 89. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Ireland.

Lundy M.G., Aughney T., Montgomery W.I., Roche N. (2011) Landscape conservation for Irish bats & species specific roosting characteristics. Bat Conservation Ireland.

Martin, J.R., O'Neill, F.H. & Daly, O.H. (2018) The monitoring and assessment of three EU Habitats Directive Annex I grassland habitats. Irish Wildlife Manuals, No. 102. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Ireland.

McAney, K. (2008). 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.

Murnane, E., Heap, A., and Swain, A., (2006). Control of water pollution from linear construction projects. Technical guidance. CIRIA C648. Published by CIRIA, UK.

NBDC, (2021). National Biodiversity Data Centre online mapping [ONLINE] Available at: http://maps.biodiversityireland.ie/Map.aspx. [Accessed Nov 2021].

NPWS, (2013a). The Status of EU Protected Habitats and Species in Ireland. Habitats Assessments Volume 2, Version 1.0. Unpublished Report, National Parks & Wildlife Services. Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

NPWS, (2013b). The Status of EU Protected Habitats and Species in Ireland. Species Assessments Volume 3, Version 1.0. Unpublished Report, National Parks & Wildlife Services. Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

NPWS, (2021). National Parks and Wildlife Service website [ONLINE] Available at: http://www.npws.ie/en/ [Accessed Nov 2021].

NRA (2006) Guidelines for the Treatment of Bats during the Construction of National Road Schemes. National Roads Authority (now Transport Infrastructure Ireland), Dublin.

NRA (2009a). Environmental Assessment and Construction Guidelines. National Roads Authority (now Transport Infrastructure Ireland), Dublin.

NRA (2009b). Guidelines for Assessment of Ecological Impacts of National Road Schemes. National Roads Authority (now Transport Infrastructure Ireland), Dublin.

O'Neill, F.H., Martin, J.R., Devaney, F.M. & Perrin, P.M. (2013) The Irish semi-natural grasslands survey 2007-2012. Irish Wildlife Manuals, No. 78. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Ireland.

Preston, C. D., Pearman, D. A., and T.D. Dines (2002). New Atlas of the British and Irish Flora. Oxford University Press.

SLR Consulting (Ireland) Ltd. (2021). Appropriate Assessment Screening Report. Belgard Quarry – Deepening of Existing Quarry, Fortunestown, Tallaght, Dublin 24. SLR ref: 501.00180.00190.

Smith, G.F., O'Donoghue, P, O'Hora K., and Delaney, E. (2010). Best Practice Guidance for Habitat Survey and Mapping. Published by the Heritage Council.

Stone, E.L., Jones, G., Harris, S. (2012). Conserving energy at a cost to biodiversity? Impacts of LED lighting on bats. Glob. Change Biol. 18, 2458–2465.

APPENDIX I - VALUATION AND IMPACT CRITERIA FOR ASSESSING 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.

TABLE A. DESCRIPTION OF VALUES FOR ECOLOGICAL RESOURCES BASED ON GEOGRAPHIC HIERARCHY OF IMPORTANCE (NRA, 2009B).

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 fulfils 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: o Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and/or o 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: o Species protected under the Wildlife Acts; and/or o Species listed on the relevant Red Data list. o 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: o Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; o Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; o Species protected under the Wildlife Acts; and/or o Species listed on the relevant Red Data list. o 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; 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: o Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; o Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; o Species protected under the Wildlife Acts; and/or o o Species listed on the relevant Red Data list. o 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 is of some importance in maintaining habitat links.

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. See Table B below.

TABLE B. DEFINITION OF QUALITY OF EFFECTS.

Quality	Definition
Positive Effects	A change which improves the quality of the environment (for example, by increasing species diversity; or the improving 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 or 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. See Table C below.

TABLE C. DEFINITION OF SIGNIFICANCE OF EFFECTS.

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 Effects	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate Effects	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant Effects	An effect which, by its character, magnitude, duration or intensity alters 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 Effects	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. See Table D below.

TABLE D. DEFINITION OF DURATION OF EFFECTS.

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

Reversible Effects	Effects that can be undone, for example through remediation or restoration

APPENDIX II – BREEDING BIRD STATUS CODES (BRITISH TRUST FOR ORNITHOLOGY - BTO)

Breeding Status Codes

Non-breeding	
F	**F**lying over
M	Species observed but suspected to be still on **M**igration
U	Species observed but suspected to be s**U**mmering non-breeder
Possible breeder	
H	Species observed in breeding season in suitable nesting **H**abitat
S	**S**inging male present (or breeding calls heard) in breeding season in suitable breeding habitat
Probable breeding	
P	**P**air observed in suitable nesting habitat in breeding season
T	Permanent **T**erritory presumed through registration of territorial behaviour (song etc.) on at least two different days a week or more part at the same place or many individuals on one day
D	Courtship and **D**isplay (judged to be in or near potential breeding habitat; be cautious with wildfowl)
N	Visiting probable **N**est site
A	**A**gitated behaviour or anxiety calls from adults, suggesting probable presence of nest or young nearby
I	Brood patch on adult examined in the hand, suggesting **I**ncubation
B	Nest **B**uilding or excavating nest-hole
Confirmed breeding	
DD	**D**istraction-**D**isplay or injury feigning
UN	**U**sed **N**est or eggshells found (occupied or laid within period of survey)
FL	Recently **FL**edged young (nidicolous species) or downy young (nidifugous species). Careful consideration should be given to the likely provenance of any fledged juvenile capable of significant geographical movement. Evidence of dependency on adults (e.g. feeding) is helpful. Be cautious, even if the record comes from suitable habitat.
ON	Adults entering or leaving nest-site in circumstances indicating **O**ccupied **N**est (including high nests or nest holes, the contents of which cannot be seen) or adults seen incubating
FF	Adult carrying **F**ecal sac or **F**ood for young
NE	**N**est containing **E**ggs
NY	**N**est with **Y**oung seen or heard

APPENDIX III – BAT SURVEY REPORT

July
2021

Bat Survey Report

Clondalkin Rugby Football Club
Gordon Park,
Kingswood Cross,
Co. Dublin

ASH Ecology & Environmental

Aisling Walsh M.Sc MCIEEM Trading as Ash Ecology & Environmental Ltd.
Tel: 089 4991181 / Company Reg: 630819 /
Office: Monine Kilfinane, Co. Limerick / Full membership of the CIEEM

Contents

Tables

Figures

Appendices

1. INTRODUCTION

1.1 Purpose of the Report

Ash Ecology and Environmental Ltd (AEE) was commissioned to carry out a bat activity survey on behalf of Enviroguide Consulting during July 2021as part of a proposed housing development for Greenwalk Ltd (c/o Armstrong Fenton).

The site is located at the existing Clondalkin Rugby Football Club Gordon Park, Kingswood Cross, Co. Dublin (Grid Ref 53.300062, -6.418590); see Figure 1. An aerial photo with existing layout and surrounding landscape is shown as Figure 2. A proposed site layout is shown as Figure 3.

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

Figure 1 Site Location Map

Figure 2 Aerial Photo of Site showing existing layout and surrounding urbanised landscapes

Figure 3 Proposed Site Layout

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]

[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. 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

[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 O02. The website the NBDC (www.nbdc.ie) was accessed on 20/07/2021 to establish any previous bat records and shown below in Table 1.

Table 1 Historical Bat Records in 10km² Grid Square O02 (NBDC website www.nbdc.ie accessed 20/06/2021)

Species Name - Common	*Species Name - Latin*	Last Documented Record O02
Brown Long-eared Bat	*Plecotus auritus*	05/07/2012
Daubenton's Bat	*Myotis daubentonii*	21/08/2014
Lesser Noctule	*Nyctalus leisleri*	18/09/2012
Natterer's Bat	Myotis nattereri	14/09/2011
Common Pipistrelle	*Pipistrellus pipistrellus*	15/10/2012
Soprano Pipistrelle	*Pipistrellus pygmaeus*	05/08/2012

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 species is listed on Annex II of the EC Habitats Directive and 41 Special Areas of Conservation have

[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.

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 individual bat species and between 36.44 - 58.56 for the highest average range. The overall average assessment of bat habitats for the current study area is given as 39.67, relatively high. 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 Kingswood area (based on the NBDC data) with Irish Red list status indicated.

Common name	Scientific name	Suitability index	Irish red list status
All bats	-	39.67	Least Concern
Soprano pipistrelle	*Pipistrellus pygmaeus*	50	Least Concern
Brown long-eared bat	*Plecotus auritus*	55	Least Concern
Common pipistrelle	*Pipistrellus pipistrellus*	59	Least Concern
Lesser-horseshoe bat	*Rhinolophus hipposideros*	0	Least Concern
Leisler's bat	*Nyctalus leisleri*	59	Least Concern
Whiskered bat	*Myotis mystacinus*	38	Least Concern
Daubenton's bat	*Myotis daubentonii*	34	Least Concern
Nathusius' pipistrelle	*Pipistrellus nathusii*	20	Least Concern
Natterer's bat	*Myotis nattereri*	42	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 16th of July 2021 from 21.10 to 23.40 (sunset was 21.40) by walking the Site boundary to include all structures onsite. The weather was very optimal for a bat survey with temperatures on the night 19-21°C in calm conditions. Bat activity and emergence surveys are best carried out from April to mid-September in suitable weather conditions[16] which this survey was.

The equipment used for the bat activity survey included a 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.

[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.

2.4 Buildings Assessment Methodology

A bat potential assessment of the building onsite was also carried out on the 16th of July 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 overleaf.

[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 (Korsten *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

A number of semi-mature trees were present along sections of the site boundaries, see Figure 4. The treelines were assessed as a section for any 'Potential Roost Features' (PRFs) listed below and, to assess whether the treeline may be used as important commuting and foraging routes.

- 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.

Certain factors such as orientation of the feature, height from the ground, the direct surroundings and its location in respect to other features may enhance or reduce the potential value.

Trees were then classified into general bat roost potential groups based upon the presence of these features. An evaluation table is shown as Table 4.

Table 4 Classification and Survey Requirements for Bats in Trees[18]

Classification of Tree	Description of Category and Associated Features (based on Potential Roosting Features listed above)	Likely Further Survey Work / Actions
Confirmed Roost	Evidence of roosting bats in the form of live / dead bats, droppings, urine staining, mammalian fur oil staining, etc.	A National Parks and Wildlife (NPWS) derogation licence application will be required if the tree or roost site is affected by the development or proposed arboricultural works. This will require a combination of aerial assessment by roped access bat workers (where possible, health and safety constraints allowing) and nocturnal survey during appropriate periods (e.g. nocturnal survey - May to August) to inform on the licence. Works to tree undertaken under supervision in accordance with the approved good practice method statement provided within the licence. However, where confirmed roost site(s) are not affected by works, work under a precautionary good practice method statement may be possible.

[18] Bat Surveys for Professional Ecologists: Good Practice Guidelines (J., Collins (Bat Conservation Trust), 2016[18]).

Classification of Tree	Description of Category and Associated Features (based on Potential Roosting Features listed above)	Likely Further Survey Work / Actions
High Potential	A tree with one or more Potential Roosting Features that are obviously suitable for larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter protection, conditions (height above ground level, light levels, etc.) and surrounding habitat. Examples include (but are not limited to); woodpecker holes, larger cavities, hollow trunks, hazard beams, etc.	Aerial assessment by roped access bat workers (if appropriate) and / or nocturnal survey during appropriate period (May to August). Following additional assessments, tree may be upgraded or downgraded based on findings. If roost sites are confirmed and the tree or roost is to be affected by proposals a licence from the NPWS will be required. After completion of survey work (and the presence of a bat roost is discounted), a precautionary working method statement may still be appropriate.
Moderate Potential	A tree with Potential Roosting Features which could support one or more potential roost sites due to their size, shelter protection, conditions (height above ground level, light levels, etc.) and surrounding habitat but unlikely to support a roost of high conservation status (i.e., larger roost, irrespective of wider conservation status). Examples include (but are not limited to); woodpecker holes, rot cavities, branch socket cavities, etc.	A combination of aerial assessment by roped access bat workers and / or nocturnal survey during appropriate period (May to August). Following additional assessments, tree may be upgraded or downgraded based on findings. After completion of survey work (and the presence of a bat roost is discounted), a precautionary working method statement may still be appropriate. If a roost site/s is confirmed a licence from the NPWS will be required.
Low Potential	A tree of sufficient size and age to contain Potential Roosting Features	No further survey required but a precautionary

Classification of Tree	Description of Category and Associated Features (based on Potential Roosting Features listed above)	Likely Further Survey Work / Actions
	but with none seen from ground or features seen only very limited potential. Examples include (but are not limited to); loose/lifted bark, shallow splits exposed to elements or upward facing holes.	working method statement may be appropriate.
Negligible/No potential	Negligible/no habitat features likely to be used by roosting bats	None.

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 on July 16th, 2021, are summarized in Table 5 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 4.

In total three species of bat were detected. As expected, due to the lighting regime on the Site and surrounds, a low rate of bat activity was recorded despite the high bat landscape suitability score assigned. The most frequent bat species heard was Leisler's Bat.

The majority of bat activity was along the existing mature treelines - as opposed to the main habitat on site consisting of amenity grassland, buildings and hardstanding.

Table 5 Bat Results Summary Data – 16th July 2021

Species Name – Common	Species Name – Latin	Number of Passes	Peak Frequency (kHz)
Common Pipistrelle	*Pipistrellus pipistrellus*	8	46.5
Soprano Pipistrelle	*Pipistrellus pygmaeus*	2	55.5
Leisler's Bat	*Nyctalus leisleri*	12	26.9

Figure 4 Bat Activity Map with Legend

3.2 Buildings Assessment Survey

The existing clubhouse building onsite was 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 the building onsite during the survey on July 16th, 2021. In addition, the bat potential of the building onsite was deemed to be 'Low' (Table 3) with limited bat roost features observed on external examination of the buildings.

3.3 Bat Potential Tree Assessment

The treeline along the southwest boundary contained trees classed as 'Low' bat potential as even though trees were mature, they lacked PRFs and were non-native conifer (Table 4 and Figure 4):

"A tree/s of sufficient size and age to contain Potential Roosting Features but with none seen from ground or features seen only very limited potential."

However, the treelines along the east and northwest contained trees contained 'Moderate' bat potential due to a high cover of ivy or cracks, holes and crevices (See plates in Appendix A).

> *"A tree with Potential Roosting Features which could support one or more potential roost sites due to their size, shelter protection, conditions (height above ground level, light levels, etc.) and surrounding habitat but unlikely to support a roost of high conservation status (i.e., larger roost, irrespective of wider conservation status)."*

3.4 Landscape Evaluation

The landscape is considered of local importance (Higher value) for bats due to a high score for landscape suitability for bats, however on a localised level the area is well illuminated and urbanised in nature compared to the west and southwest, see Figure 2. The mature treelines provide commuting and foraging corridors to small pockets of woodland to the south.

4. RECOMMENDATIONS

4.1 Buildings Assessment

The clubhouse was deemed to be of Low potential for roosting bats and no bats emerged from the building during the survey in July 2021. If bats are uncovered during demolition works then works should cease and a derogation licence from the National Parks and Wildlife Services (NPWS) acquired to continue.

4.2 Tree Removal

Individual trees and Treelines/Hedgerows should be retained where possible for commuting, foraging and potentially roosting bats.

Specifically, where tree felling is absolutely necessary, the following protocol should be followed for trees classed as 'Low' and 'Moderate'. No trees of 'High' potential were identified:

- Tree-felling should be undertaken in the period late August to late October/early November. During this period bats are capable of flight, and this may avoid risks associated with tree-felling.

- Felling during the winter months should be avoided as this creates the additional risk that bats may be in hibernation and thus unable to escape from a tree that is being felled. Additionally, disturbance during winter may reduce the likelihood of survival as the bats' body temperature is too low and they may have to consume too much body fat to survive.

- Tree-felling should be undertaken using heavy plant and chainsaw. There is a wide range of machinery available with the weight and stability to safely fell a tree. Normally trees are pushed over, with a need to excavate and sever roots in some cases. In order to ensure the optimum warning for any roosting bats that may still be present, an affected tree will be pushed lightly two to three times, with a pause of approximately 30 seconds between each nudge to allow bats to become active. Any affected trees should then be pushed to the ground slowly and should remain in place for a period of at least 48 hours to allow bats/other wildlife to escape.

- A derogation licence from the National Parks and Wildlife Services (NPWS) will be required if bats are uncovered during tree felling.

4.3 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, or on existing trees to be retained
- 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

4.4 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 Moderate Importance for bats for the following reasons:

- The Site is currently well lit up.
- Bat activity of the site was low on the night of survey, 22 bat passes (July 16th, 2021)
- The building onsite has 'Low' bat potential.

On the basis of the findings of the survey works 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.
- Trees and Treelines/Hedgerows are retained where possible. In the case where tree felling is necessary to facilitate the development then a soft tree felling procedure outlined in Section 4.2 should be carried out and semi-mature native species of trees are planted to compensate.
- Bat boxes (~5) are erected on suitable substrates e.g., on trees if available (or walls if not), around the site during the operational phase.
- Works will cease if bats are uncovered during building demolition or tree felling and a Derogation Licence acquired from the NPWS.

APPENDICES

APPENDIX A

Plate 1 Existing Club House, Low bat roosting potential.

Plate 2 Site is Amenity Grassland with some mature treelines along field boundaries. Eastern Treeline with 'Moderate' bat roosting potential shown here.

Plate 3 Example of treeline with 'Low' bat roosting potential to the southwest boundary. Non-Native conifer species.

Plate 4 View of western treeline (Old Naas Road) with 'Moderate' bat roosting potential shown in distance.

Plate 5 Example of Trees with 'Moderate' Bat potential along the western treeline (Old Naas Road).

Plate 6 Tree with 'Moderate' bat potential located between the northwest and southwest treelines.

APPENDIX B

16/07/2021	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]
21:48:51	Leisler's Bat	6	26.5	27.9	25.3	7.1	300	21	53.29979	-6.41797
22:06:22	Common Pipistrelle	25	44.3	58.2	43.7	7	94	21	53.29962	-6.41715
22:11:50	Leisler's Bat	4	25	29.3	24	10.3	101	21	53.29968	-6.41722
22:12:02	Common Pipistrelle	28	43.5	56.2	43	7	90	21	53.29974	-6.41734
22:15:54	Leisler's Bat	7	23.3	26.1	22.4	10.5	190	21	53.2997	-6.41726
22:16:53	Common Pipistrelle	15	45.8	53.5	45.3	3	85	21	53.29957	-6.41713
22:18:47	Soprano Pipistrelle	1	54.3	54.6	53.4	9.2	0	21	53.2989	-6.41692
22:28:34	Leisler's Bat	12	24.1	26.4	23.4	10	215	21	53.30015	-6.41845
22:31:39	Leisler's Bat	5	23.9	25.9	22.4	13.1	313	20	53.29944	-6.41881
22:32:15	Leisler's Bat	12	24.9	28	23.7	9	230	20	53.29919	-6.41888
22:33:42	Leisler's Bat	7	26.8	32.3	25.6	9	157	20	53.29905	-6.41874
22:34:17	Soprano Pipistrelle	1	53.1	53.4	52.2	11.1	0	20	53.29889	-6.41898
22:34:39	Leisler's Bat	44	25.4	32.3	24.3	10	220	20	53.29902	-6.41881
22:34:51	Leisler's Bat	39	24.8	30.6	23.6	9	220	20	53.29891	-6.41865
22:35:14	Leisler's Bat	9	25	31.2	24.1	12	295	20	53.29874	-6.41846
22:42:15	Common Pipistrelle	6	47.2	51.4	46.6	4	98	20	53.29851	-6.41793
22:47:18	Common Pipistrelle	27	47	67.4	46.5	4	94	20	53.29851	-6.41793
23:06:33	Common Pipistrelle	1	47	50	46.7	2.6	0	20	53.29852	-6.4179
23:16:36	Common Pipistrelle	22	46.1	69.4	45.6	5	65	20	53.29852	-6.41789
23:17:02	Common Pipistrelle	1	49.1	50.3	46.7	4.6	0	20	53.29861	-6.41746
23:37:52	Leisler's Bat	2	28.5	28.8	27.8	10.5	579	20	53.29883	-6.41679
23:40:00	Leisler's Bat	1	24.4	33.9	23.5	17	0	19	53.29983	-6.41741