5 BIODIVERSITY

5.1 Introduction

This chapter of the EIAR consists of an impact appraisal of the proposed Large-Scale Residential Development, during construction and operation, on Lands at Wayside, Enniskerry Road and Glenamuck Road, Kilternan, Dublin 18 (Figure 5-1), hereafter referred to as the Proposed Development (development activities) and Proposed Development site (location as depicted in Figure 5-1), under the heading of Biodiversity. Further details regarding the Proposed Development are provided in Chapter 2 of this EIAR.

In accordance with the requirements of *Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment* (i.e. the EIA Directive), this chapter of the EIAR identifies, describes and assesses the likely direct and indirect significant effects of the Proposed Development on biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC (i.e. the Habitats and Birds Directives). In addition, this chapter of the EIAR also identifies, describes, and assesses the likely direct and indirect significant effects of the Proposed Development on species protected pursuant to the Wildlife Act 1976 (as amended).

The EIA Directive does not provide a definition of biodiversity. The Convention on Biological Diversity, however, gives a formal definition of biodiversity in its article 2: "biological diversity means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems". Alongside the term “biodiversity” the terms “ecology” and “ecological” are also used throughout this chapter as a broader term to consider the relationships of biodiversity receptors to one another and to their environment.

The aims of this assessment were to:

- Establish baseline ecological data for the Proposed Development site and other relevant areas;
- Determine the ecological value of the identified ecological features;
- Assess the impact of the Proposed Development on ecological features of value;
- Recommend mitigation measures to avoid, reduce and remedy the identified impacts;
- Identify any residual impacts after mitigation; and
- Identify any appropriate enhancement or post-construction monitoring requirements.

A separate stand-alone Appropriate Assessment (AA) Screening Report (Scott Cawley Ltd., 2024) has been prepared and submitted as part of the planning application documentation. The AA Screening Report contains information to inform the competent authority’s assessment of potential impacts on European sites as a result of the Proposed Development either alone or in combination with other plans/projects.

Figure 5 - 1 Location of the Proposed Development site within the surrounding environment

5.1.1 Quality Assurance and Competency of Experts

This Biodiversity chapter for the EIAR has been prepared by Sorcha Shanley and reviewed by Barbara Kasl and Tim Ryle, of Scott Cawley Ltd.

Sorcha Shanley is a Senior Consultant Ecologist with Scott Cawley Ltd. She holds an honours degree in Natural Sciences with a specialisation in Zoology from Trinity College Dublin, and a Masters degree in Marine Biology from the University of Essex. She has two years' professional experience in ecological consultancy in Ireland, carrying out a range of habitat and protected species surveys, including bat, otter, badger and breeding and wintering birds. She has undertaken Ecological Clerk of Works roles, overseeing the implementation of mitigation measures, and has prepared and contributed to Appropriate Assessment Screening reports, Natura Impact Statements (NIS) and Ecological Impact Assessments (EcIA) for a range of development projects across the country.

Barbara Kasl is a Senior Ecologist with Scott Cawley Ltd., and a Ph.D. in Zoology from the University of the Witwatersrand in Johannesburg, South Africa. She is a terrestrial fauna ecologist, specialising in technical environmental reporting and brings to Scott Cawley Ltd., 20 years' experience in ecological and environmental consulting in the impact assessment sector, with core strengths in impact assessment and technical report writing.

Tim Ryle is a Principal Ecologist with Scott Cawley Ltd. He holds an honours degree in Botany from University College Dublin and was later awarded a Ph.D. from the same institution. He is a full Member of the Institute of Environmental Scientists. Tim is an experienced ecological consultant with twenty years' experience in private consultancy in designing, undertaking and

managing a wide range of ecological surveys and in assessing impacts and designing mitigation measures and biodiversity enhancements, in particular for protected species including badgers, otters, bats, birds, amphibians as well as habitats of conservation importance. He is also experienced in undertaking Appropriate Assessment for small-scale development projects and larger infrastructural projects, land plans as well as national/government plans.

5.2 Study Methodology

5.2.1 Planning, Policy and Legislation

The collation of ecological baseline data and the preparation of this impact assessment has had regard to the following legislation and policy documents. This is not an exhaustive list but the most relevant legislative and policy basis for the purposes of preparing this Biodiversity chapter.

The following international legislation is relevant to the Proposed Development:

- Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 as amended by Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 ('the EIA Directive').
- Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora; hereafter, referred to as the 'Habitats Directive'. The Habitats Directive is the legislation under which the Natura 2000 network[1] was established and special areas of conservation (SACs) are designated for the protection of natural habitat types listed in Annex I, and habitats of the species listed in Annex II, of that directive.
- Directive 2009/147/EEC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds; hereafter, referred to as the 'Birds Directive'. The Birds Directive is the legislation under which special protection areas (SPAs) are designated for the protection of endangered species of wild birds listed in Annex I of that directive.
- Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy hereafter, referred to as the 'Water Framework Directive'. The Water Framework Directive' is the legislation requiring the protection and improvement of water quality in

[1] The Natura 2000 network is a European network of important ecological sites, as defined under Article 3 of the Habitats Directive 92/43/EEC, which comprises both special areas of conservation and special protection areas. Special conservation areas are sites hosting the natural habitat types listed in Annex I, and habitats of the species listed in Annex II, of the Habitats Directive, and are established under the Habitats Directive itself. Special protection areas are established under Article 4 of the Birds Directive 2009/147/EC for the protection of endangered species of wild birds. The aim of the network is to aid the long-term survival of Europe's most valuable and threatened species and habitats.

In Ireland these sites are designed as European sites - defined under the Planning Acts and/or the Birds and Habitats Regulations as (a) a candidate site of Community importance, (b) a site of Community importance, (c) a candidate special area of conservation, (d) a special area of conservation, (e) a candidate special protection area, or (f) a special protection area. They are commonly referred to in Ireland as Special Areas of Conservation (SACs) and Special Protection Areas (SPAs).

all waters (rivers, lakes, groundwater, and transitional coastal waters) with the aim of achieving good ecological status by 2015 or, at the latest, by 2027.

The following national legislation is relevant to the Proposed Development:

- Wildlife Act 1976 (as amended); hereafter collectively referred to as the 'Wildlife Acts'. The Wildlife Acts are the principal pieces of legislation at national level for the protection of wildlife and for the control of activities that may harm wildlife. All bird species, 22 other animal species or groups of species, and 86 species of flora are protected under this legislation.
- Planning and Development Acts 2000 (as amended); hereafter collectively referred to as the 'Planning and Development Acts'. This piece of legislation is the basis for Irish planning. Under the legislation, development plans (usually implemented at local authority level) must include mandatory objectives for the conservation of natural heritage and for the conservation of European Sites. It also sets out the requirements in relation to environmental assessment with respect to planning matters, including transposition of the Habitats and Birds Directive into Irish law.
- European Communities (EC) (Birds and Natural Habitats) Regulations 2011 (as amended) (S.I. 477 of 2011 (as Amended); hereafter the 'Birds and Habitats Regulations'. This legislation transposes the Habitats and Birds Directives into Irish law. It also contains regulations (49 and 50) that deal with invasive species (those included within the Third Schedule of the regulations).
- European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003). This legislation transposes the Water Framework Directive into Irish Law.
- Flora (Protection) Order, 2022. This lists species of plant protected under Section 21 of the Wildlife Acts.
- Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EIAR). (EPA, 2022).
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment. August 2018. (Department of Housing, Planning and Local Government, 2018).

The following plans and policies are relevant to the Proposed Development:

- Fourth National Biodiversity Action Plan 2023-2023 (Department of Housing, Local Government and Heritage, 2023)
- All-Ireland Pollinator Plan 2021-2025 (National Biodiversity Data Centre, 2021)
- Dún Laoghaire-Rathdown County Development Plan 2022-2028 (Dún Laoghaire-Rathdown County Council, 2022)
- Dún Laoghaire-Rathdown Biodiversity Plan 2021-2025 (Dún Laoghaire-Rathdown County Council, 2021)
- Wicklow County Development Plan 2022-2028 (Wicklow County Council, 2022)

5.2.2 Guidance

The process of identifying, quantifying, and evaluating potential impacts of the Proposed Development on habitats, species and ecosystems was undertaken in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM, 2022). In addition, reference to the following recognised guidance defined the scope and evaluation process:

- Collins (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition) The Bat Conservation Trust;
- Collins (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th Edition) The Bat Conservation Trust;
- European Commission (2017) Environmental Impact Assessment of Projects – Guidance on the preparation of the Environmental Impact Assessment Report;
- EPA (2022) Guidelines on the information to be contained in Environmental Impact Assessment Reports;
- Institute of Lighting Professionals (2021) Guidance Note 01/21: Guidance notes for the reduction of obtrusive light;
- Marnell, F. Kelleher, C & Mullen, E. (2022). Bat Mitigation Guidelines for Ireland V2. Irish Wildlife manuals, No. 134. National Parks & Wildlife Service, Department of Housing, Local Government and Heritage, Ireland;
- NBDC (2019) Pollinator-friendly management of: Transport Corridors. All-Ireland Pollinator Plan, Guidelines 9. National Biodiversity Data Centre Series No. 20, Waterford. Sept, 2019;
- NBDC (2021) All Ireland Pollinator Plan 2021-2025;
- TII[2] (2005a) Guidelines for the Treatment of Badgers Prior to the Construction of National Road Schemes;
- TII (2005b) Guidelines for the Treatment of Bats during the Construction of National Road Schemes;
- TII (2006a) Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes;
- TII (2006b) Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes
- TII (2006c) Guidelines for the protection and preservation of trees, hedgerows and scrub prior to, during and post Construction of National Road Schemes;
- TII (2008a) Environmental Impact Assessment of National Road Schemes – A Practical Guide (Revision 1);

[2] Transport Infrastructure Ireland (TII) was established through a merger of the National Roads Authority and the Railway Procurement Agency under the Roads Act 2015, with effect from 1st of August 2015.

- TII (2008b) Ecological Survey Techniques for Protected Flora and Fauna during the Planning of National Road Schemes;
- TII (2009) Guidelines for Assessment of Ecological Impacts of National Road Schemes;
- TII (2020a) The Management of Invasive Alien Plant Species on National Roads – Standard; and
- TII (2020b) The Management of Invasive Alien Plant Species on National Roads – Technical Guidance.

5.2.3 Scope of Assessment

5.2.3.1 Study Area

The study area is defined by the Zone of Influence (ZoI) of the Proposed Development with respect to the ecological receptors that could potentially be affected on and beyond the Proposed Development site. The study area was defined by the findings of the desk study (presence/absence of protected habitats, flora or fauna within the ZoI) and best practice methodology referenced above for assessing effects on those ecological features. In general, the study area includes the site of the Proposed Development and consideration is also given to species and habitats outside this area on a case-by-case basis.

5.2.3.2 Establishing a Zone of Influence

The ZoI, or distance over which potentially significant effects may occur, will differ across the Key Ecological Receptors (KERs), depending on the potential impact pathway(s). The results of both the desk study and the suite of ecological field surveys undertaken have established the habitats and species present within, and in the vicinity of, the Proposed Development site. The ZoI was informed and defined by the sensitivities of each of the likely KERs present, in conjunction with the nature and potential impacts associated with the Proposed Development. In some instances, the ZoI extends beyond the study area (e.g., surface water quality effects of a sufficient magnitude can extend, and affect, receptors at significant distances downstream).

The ZoI of the Proposed Development in relation to terrestrial habitats is generally limited to the footprint of the Proposed Development, and the immediate environs (to take account of shading or other indirect impacts, such as air quality). Hydrogeological / hydrological linkages (e.g., rivers or groundwater flows) between impact sources and wetland / aquatic habitats can often result in impacts occurring at significant distances.

With regards to hydrological impacts, the distances over which water-borne pollutants are likely to remain in sufficient concentrations to have a likely significant effect on receiving waters and associated wetland / terrestrial habitat and species are highly site-specific and related to the predicted magnitude of any potential pollution event. Evidently, it will depend on volumes of discharged waters, concentrations, and types of pollutants (in this case sediment, hydrocarbons, and heavy metals), volumes of receiving waters, and the ecological sensitivity of the receiving waters. In the case of the Proposed Development, the ZoI of potential impacts on surface water quality in the receiving environment could potentially extend downstream as far as Killiney Bay.

The ZoI in relation to direct impacts to wintering birds could extend up to *c.* 300m from the Proposed Development for general construction activities, as many species (such as waterbirds) are highly susceptible to disturbance from loud and unpredictable noise during construction[3].

However, as many estuarine bird species use inland habitat areas at distances from the coast, the effect of *ex-situ* impacts could extend a considerable distance from the Proposed Development. In the case of the Proposed Development, impacts to wintering birds within this 300m band could affect the use of potential *ex-situ* sites for bird species listed as Special Conservation Interests (SCI) of the nearby European sites, South Dublin Bay and River Tolka Estuary SPA, South Dublin Bay and River Tolka Estuary SPA, Dalkey Islands SPA , North Bull Island SPA, North-West Irish Sea SPA, Howth Head Coast SPA and The Murrough SPA.

The ZoI for small mammal species, such as the pygmy shrew, would be expected to be limited to no more than *c.* 100m from the proposed Project Development due to their small territory sizes and sedentary lifecycle. The disturbance ZoI in relation to otters, badgers, stoat, and hedgehogs may extend over greater distances[4] than smaller mammal species due to their ability to disperse many kilometres from their natal site; however, the ZoI of significant disturbance impacts to badger and otter breeding/resting places (including impacts associated with elevated noise levels) is likely to be no more than approximately 150m from the Proposed Development boundary[5].

The ZoI of potential impacts to bat roosts are dependent on many factors (such as species, roost type, surrounding habitat and commuting routes), this is assessed on a case-by-case basis and the ZoI may increase/decrease from this distance accordingly. Given the large foraging ranges for some species[6], the effect of potential landscape scale impacts, such as habitat loss and severance, could extend for several kilometres from the Proposed Development but the most significant effects are likely to occur within a 3km core sustenance

[3] Current understanding of construction related noise disturbance to wintering waterbirds is based on the research presented in Cutts *et al.* (2009) and Wright *et al.* (2010). In terms of construction noise, levels below 50dB would not be expected to result in any response from foraging or roosting birds. Noise levels between 50dB and 70dB would provoke a moderate effect/level of response from birds, i.e. birds becoming alert and some behavioural changes (*e.g.* reduced feeding activity), but birds would be expected to habituate to noise levels within this range. Noise levels above 70dB would likely result in birds moving out of the affected zone or leaving the site altogether. At *c.* 300m, typical noise levels associated with construction activity (BS 5228) are generally below 60dB or, in most cases, are approaching the 50dB threshold.

[4] Otter territory size from Ó Néill L. (2008) Population dynamics of the Eurasian otter in Ireland. Integrating density and demography into conservation planning. PhD thesis. Trinity College, Dublin; Badger territory size from TII (2006a) Guidelines for the Treatment of Badgers Prior to the Construction of National Road Schemes ; Irish stoat territory size from Sleeman, P.D (2016) Irish Stoat (*Mustela erminea hibernica*) Pp 102-103 In Lysaght, L. and Marnell, F. (Eds) (2016) Atlas of Mammals in Ireland 2010-2015, National Biodiversity Data Centre, Waterford; Pine marten territory size from O'Mahony, D. (2016) Pine marten (*Martes martes*) Pp. 100-101 In Lysaght, L. and Marnell, F. (Eds) (2016) Atlas of Mammals in Ireland 2010-2015, National Biodiversity Data Centre, Waterford and Hedgehog territory size from Haigh, A. (2011). The Ecology of the European hedgehog (*Erinaceus europaeus*) in rural Ireland. PhD Thesis, UCC.

[5] This ZoI (i.e. *c.* 150m from the Proposed Development boundary) for badgers and otters has been defined in accordance with TII guidelines i.e. Guidelines for the Treatment of Badgers Prior to the Construction of National Road Schemes (TII, 2005b), and Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes (TII, 2006c), and is considered to be of a precautionary distance. During construction-related disturbance, the screening effect provided by surrounding vegetation and buildings would likely reduce the actual distance of the ZoI for badgers and otters.

[6] Leisler's bats have been recorded foraging up to 13km from maternity roost sites (Shiel *et al.*, 1999)

zone (BCT, 2020) associated with roosts of the following bat species which are known to occur in the area; Leisler's bat, Nathusius' pipistrelle, soprano pipistrelle and brown long-eared bat. As per the Bat Conservation Trusts' Guidelines (Collins *et al.,* 2016), core sustenance zones are defined as the area surrounding a communal bat roost within which habitat availability and quality will have a significant influence on the resilience and conservation status of the colony using the roost.

The ZoI in relation to amphibian species is likely to be limited to direct habitat loss and severance with the proposed Project Development and/or indirect impacts to water quality in any wetland habitats hydrologically connected to the proposed Project.

The ZoI in relation to the common lizard is likely to be limited to direct habitat loss and severance with the proposed Project Development and disturbance/displacement effects in the immediate vicinity during construction.

The ZoI of general construction and operational activities (i.e. risk of spreading/introducing non-native invasive species, dust deposition and disturbance due to increased noise, vibration, human presence and lighting) is considered unlikely to extend more than several hundred metres from the site of the Proposed Development.

5.2.4 Desk Study

A desk study was undertaken in May 2024, to collate available information on the local ecological environment. The following resources were used to inform the assessment presented in this report:

- Data on European sites, Natural Heritage Areas (NHAs) or proposed Natural Heritage Areas (pNHAs) as held by the National Parks and Wildlife Service (NPWS) from https://www.npws.ie/protected-sites and https://www.npws.ie/maps-and-data – refer to Figure 5 3 and Figure 5 4 for locations of protected sites in the vicinity of the Proposed Development[7];
- Records of rare and protected species for the 2km grid square(s), as held by the National Biodiversity Data Centre www.biodiversityireland.ie;
- Ordnance Survey Ireland mapping and aerial photography from http://map.geohive.ie;
- Data on waterbodies, available for download from the Environmental Protection Agency (EPA) web map service. Available from https://gis.epa.ie/EPAMaps;
- Information on soils, geology, and hydrogeology in the area available from the Geological Survey Ireland (GSI) online Spatial Resources service. Available from https://www.gsi.ie/en-ie/data-and-maps/Pages/Groundwater.aspx;
- Information on the conservation status of birds in Ireland from Birds of Conservation Concern in Ireland (Gilbert *et al.*, 2021);
- Survey results included in the Biodiversity chapter of the Environmental Impact Assessment Report for Kilternan Village Strategic Housing Development at Wayside,

[7] The following SAC, SPA, NHA and pNHA GIS boundary datasets are the most recently available at the time of writing: SAC_ITM_2024_05, SPA_ITM_2024_01, NHA_ITM-2019_06 and pNHA_ITM_2015_11.

Enniskerry Road and Glenamuck Road, Kilternan, Dublin 18 (Enviroguide Consulting, 2022) (ABP-313860-22);

- Information on light-bellied Brent goose inland feeding sites (Scott Cawley Ltd. 2017);
- Macklin, R. & Brazier, B. (2019). Otter survey of selected rivers in Dún Laoghaire-Rathdown County Council district with management recommendations. Prepared by Triturus Environmental Ltd. for Dún Laoghaire Rathdown County Council.
- Information on the location, nature and design of the Proposed Development supplied by the Applicant's design team;
- Information contained within the Appropriate Assessment (AA) Report for this Proposed Development (Scott Cawley Ltd, 2024); and
- Hydrological and Hydrogeological Risk Assessment Report for a Large-Scale Residential Development on Lands at Wayside, Enniskerry Road and Glenamuck Road, Kilternan, Dublin 18 (Enviroguide Consulting, 2024).

5.2.5 Field Surveys

This section details the methodologies of all ecological surveys undertaken at the Proposed Development site (Table 5-1). The surveys aimed to detect the presence, or likely presence, of rare/threatened, protected or invasive species, and to record the habitats present in the Proposed Development site. The surveys provided baseline information regarding the existing ecology of the Proposed Development site. Incidental records of plants, bird species and protected species were collected throughout the surveys undertaken in 2022 and 2023. The data relied upon in this report is valid for use as a primary source, represents the site baseline and does not impose limitations on the ability to assess any impacts of the proposed development on biodiversity.

Table 5-1 Ecological Survey Dates

Survey	Survey Dates
Habitat Surveys	30th of March 2023
Terrestrial Fauna (excluding bats)	30th of March 2023
Building Inspections	30th of March 2023
Bat Emergence and Transect Activity Surveys	23rd of May 2023 28th of June 2023 27th of July 2023
Bat Static Detector Activity Surveys	April/May/June/July 2023
Breeding Bird Surveys	26th of April 2023 26th of May 2023 27th of June 2023
Wintering Bird Surveys	8th of December 2022

	4th of January 2023 14th of February 2023 14th of March 2023

5.2.5.1 Habitat and Flora Surveys

A habitat survey was undertaken of the Proposed Development site on the 30th of March 2023 by Sorcha Shanley of Scott Cawley Ltd., following the methodology described in *Best Practice Guidance for Habitat Survey and Mapping* (Smith *et al.*, 2011). A site walkover was carried out on 13th of May 2024, to verify habitat types had not changed from previous surveys. Surveys found that no change had occurred since previous visits.

All habitat types were classified using the *Guide to Habitats in Ireland* (Fossitt, 2000), recording the indicator species and recording any species of conservation interest. Vascular and bryophyte plant nomenclature generally follow that of *The National Vegetation Database* (Weekes & Fitzpatrick, 2010), having regard to more recent taxonomic changes to species names after the *New Flora of the British Isles* (Stace, 2019) and the *British Bryological Society's Mosses and Liverworts of Britain and Ireland: A Field Guide* (Atherton *et al.*, 2010). Annex I habitat types were classified after *the Interpretation manual of European Union Habitats EUR28* (European Commission, 2013) with reference to the corresponding national habitat survey reports and NPWS wildlife manuals, as applicable. The nomenclature for Annex I habitats follows that of the *Interpretation manual of European Union Habitats EUR28* with abbreviated names after those used in *The Status of EU Protected Habitats and Species in Ireland. Volume 1: Summary Overview* (NPWS, 2019a and 2019b).

5.2.5.2 Fauna Surveys

5.2.5.2.1 Terrestrial Fauna (excluding Bats)

A terrestrial fauna survey (excluding bats) was undertaken on the 30th of March 2023 by Sorcha Shanley of Scott Cawley Ltd. The presence/absence of terrestrial fauna species was determined through the detection of field signs such as tracks, markings, feeding signs, and droppings, as well as by direct observation. The habitats on site were assessed for signs of usage by protected/red-listed fauna species, and their potential to support these species. Surveys to check for the presence of badger setts and other potential mammal resting places within the Proposed Development site, and to record any evidence of use, were undertaken on this date.

5.2.5.2.2 Bats

5.2.5.2.2.1 Habitat and Tree Surveys

Habitat suitability for foraging/commuting/roosting bats was assessed during a survey of the Proposed Development site on the 30th of March 2023. During this survey trees were assessed for their suitability for roosting and / or foraging bats, based on advice contained within *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (Collins, ed., 2016), which has been reproduced in Table 5-2, *Bat Mitigation Guidelines for Ireland V2* (Marnell, Kelleher & Mullen (2022), and *Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes* (TII, 2006a).

Several trees located across the Proposed Development boundary were examined from ground level for potential to support roosting bats. They were assessed based on the presence of features commonly used by bats, including:

- Natural holes;
- Cracks/splits in major limbs;
- Loose bark; and
- Hollows/cavities.

Table 5-2 Assessment Criteria for potential suitability of Proposed Development sites for bats, derived from similar criteria in Bat Surveys for Professional Ecologists: Good Practice Guidelines[8][9]

Suitability	Description of 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 [10] 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). 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.	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or un-vegetated 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 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 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 in a more regular	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as

[8] Collins, J. (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines*. 3rd edition. Bat Conservation Trust, London.
[9] The newest edition of the guidelines was released in September 2023 – Collins, J. (2023) *Bat Surveys for Professional Ecologists: Good Practice Guidelines 4th Edition*. The 2016 edition of guidelines was used at the time of surveys and guidance followed is still relevant.
[10] For example, in terms of temperature, humidity, height above ground level, light levels or levels of disturbance.

	basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.	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 a known roost.

5.2.5.2.2.2 Building Inspections

Internal and external inspections of the buildings and outhouses within the Proposed Development site were carried out by Shea O'Driscoll and Sorcha Shanley of Scott Cawley Ltd., during daylight hours on the 30th of March 2023, under NPWS Licence No. DER/BAT 2023-02. A systematic inspection of the external and all accessible internal areas and roof spaces of the buildings involved a search for evidence of bats such as:

- Bat droppings (these will accumulate under an established roost or under access points);
- Insect remains (under feeding perches);
- Oil (from fur) and urine stains;
- Scratch marks;
- Pupae of bat parasites such as *Nycteribia kolenatii*; and
- Bat corpses.

Any crevices, in so far as they could be safely accessed, were examined using a strong narrow-beamed torch and an endoscope (RIDGID® Micro CA-350) where necessary. Binoculars were used to examine potential bat roost features that could not be reached from the ground.

The suitability of potential roost features (PRFs) and habitats within the Proposed Development sites were assessed and categorised according to the criteria described in Table 5-2.

5.2.5.2.2.3 Bat Activity Surveys

Three roost presence/absence surveys were undertaken by Scott Cawley Ltd., ecologists on the 23rd of May 2023, 28th of June 2023 and 27th of July 2023, during calm, dry weather conditions, with temperatures within the range suitable for bat activity (i.e., above 10°C).

A total of three dusk emergence surveys were carried out, with four surveyors observing the buildings for bats emerging from potential roost sites. The buildings were surveyed from 15 minutes before sunset until 1.5 hours after sunset. Emergence surveys were followed by walked transect surveys which covered the Proposed Development site, and a representation of each habitat type within the lands, to record bat activity across the site. The surveys were conducted using direct observation and handheld ultrasound detectors (Elekon BatLogger M). Echolocation recordings were analysed using Elekon BatExplorer software, with reference to *British Bat Calls: A Guide to Species Identification* (Russ, 2012).

5.2.5.2.2.4 Static Detector Deployment

The walked transects described above were supplemented by static bat detectors (Songmeter 2 (SM2) BAT +), which were deployed for 5 days at the start of April, May, June and July 2023, covering six different locations within the Proposed Development site. These locations were chosen with an emphasis on areas identified as being potentially suitable for roosting, commuting and/or foraging bats and are shown in Figure 5-2.

Figure 5 - 2 Bat activity transect routes and static bat detector locations within and adjacent to Proposed Development site

5.2.5.2.3 Breeding Birds

Habitat suitability for breeding birds was assessed during a site walkover survey of the Proposed Development site on 30th of March 2023. Following this, three dedicated breeding bird surveys were undertaken within the Proposed Development site on 26th of April 2023, 26th of May 2023 and 27th of June 2023 by Scott Cawley Ltd. Methodology followed an adapted version from the Bird Monitoring Methods - A Manual of Techniques for Key UK Species (Gilbert *et al.*, 1998). A walkover route was undertaken which covered the site and a representation of each habitat type within the Proposed Development site. All bird species seen or heard within the site (including those flying overhead) were recorded and their location and activity noted onto suitably scaled maps. Breeding bird territory analysis was undertaken, and territories mapped as possible breeders, probable breeders, or confirmed breeders as per British Trust for Ornithology (BTO) recognised breeding bird behaviour classifications[11].

[11] https://www.bto.org/sites/default/files/u36/downloads/breedingcodes.pdf

5.2.5.2.4 Wintering birds

Wintering bird surveys were undertaken on the 8th of December 2022, 4th of January 2023, 14th of February 2023 and 14th of March 2023 by Scott Cawley Ltd., ecologists using a methodology based on the Bird Monitoring Methods - A Manual of Techniques for Key UK Species (Gilbert *et al.*, 1998). The study area covered the lands within the Proposed Development site as shown in Figure 5-1. Lands were initially surveyed visually using binoculars/scope from a vantage point(s) at the edge of the study area followed by a walkover of the area to identify birds which may not be visible from a distance (e.g. waders) and evidence of usage by wildfowl such as swans or geese (e.g. droppings). Birds were identified by sight and general location and activity were recorded using the British Trust for Ornithology (BTO) species and activity codes.

5.2.6 Ecological Evaluation and Impact Assessment

5.2.6.1 Ecological Evaluation

Ecological receptors (including identified sites of ecological importance) are valued with regard to the ecological valuation examples set out in *Guidelines for Assessment of Ecological Impacts of National Roads Schemes: Revision 2* (TII, 2009) and the guidance provided in *Guidelines for Ecological Impact Assessment in the UK and Ireland* (CIEEM, 2022) – refer to Appendix 5-2 for examples of how ecological importance is assigned. In accordance with these guidelines, important ecological features within what is referred to as the ZoI of the Proposed Development which are "both of sufficient value to be material in decision making and likely to be affected significantly" are deemed to be 'Key Ecological Receptors' (KERs). These are the ecological receptors which may be subject to significant effects from the Proposed Development, either directly or indirectly. KERs are those biodiversity receptors with an ecological value of Local Importance (Higher Value) or greater.

5.2.6.2 Impact Assessment

Ecological impact assessment is conducted following a standard source-pathway-receptor model, where, in order for an impact to be established all three elements of this mechanism must be in place. The absence or removal of one of the elements of the mechanism is sufficient to conclude that a potentially significant effect would not occur.

- Source(s) – e.g. pollutant run-off from Proposed Development;
- Pathway(s) – e.g. groundwater connecting to nearby qualifying wetland habitats; and
- Receptor(s) – e.g. wetland habitats and the fauna and flora species they support.

5.2.6.3 Characterising and Describing the Impacts

The parameters considered in characterising and describing the potential impacts of the Proposed Development are per the EPA's *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* (Environmental Protection Agency, 2022) and CIEEM's (2022) *Guidelines for Ecological Impact Assessment in the UK and Ireland*: whether the effect is positive, neutral or negative; the significance of the effects; the extent and context of the effect; the probability, duration and frequency of effects; and, cumulative effects.

Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location. The following development types are included in considering cumulative effects:

- Existing projects (under construction or operational);
- Projects which have been granted consent but not yet started;
- Projects for which consent has been applied for which are awaiting a decision, including those under appeal; and
- Projects proposed at a plan level, if relevant (e.g. future strategic infrastructure such as roads or greenways).

The likelihood of an impact occurring, and the predicted effects, can also be an important consideration in characterising impacts. In some cases, it may not be possible to definitively conclude that an impact will not occur. In these cases, the evaluation of significant effects is based on the best available scientific evidence but where reasonable doubt still remains then the precautionary principle is applied, and it may need to be assumed that significant effects may occur. Professional judgement is used in considering the contribution of all relevant criteria in determining the overall magnitude of an impact.

5.2.6.4 Significant Effects

In determining whether potential impacts will result in significant effects, the CIEEM guidelines (2018) were followed. The approach considers that significant effects will occur when there are impacts on either:

- The structure and function (or integrity) of defined sites, habitats or ecosystems; or
- The conservation status of habitats and species (including extent, abundance and distribution).

Integrity

The term “integrity” may be regarded as the coherence of ecological structure and function, across the entirety of a site that enables it to sustain all of the biodiversity or ecological resources for which it has been valued (National Roads Authority, 2009).

The term ‘integrity’ is most often used when determining impact significance in relation to designated areas for nature conservation (e.g. SACs, SPAs or pNHA/NHAs) but can also be the most appropriate method to use for non-designated areas of biodiversity value where the component habitats and/or species exist with a defined ecosystem at a given geographic scale.

An impact on the integrity of an ecological site or ecosystem is considered to be significant if it moves the condition of the ecosystem away from a favourable condition: removing or changing the processes that support the sites’ habitats and/or species; affect the nature, extent, structure and functioning of component habitats; and/or, affect the population size and viability of component species.

Conservation Status

Similar definitions for conservation status given in the EU Habitats Directive 92/43/EEC, in relation to habitats and species, are also used in the CIEEM (2022) and National Roads Authority (2009) guidance which are summarised as follows:

- For natural habitats, conservation status means the sum of the influences acting on the natural habitat and its typical species, that may affect its extent, structure and functions as well as its distribution, or the long-term survival of its typical species, at the appropriate geographical scale.
- For species, conservation status means the sum of influences acting on the species concerned that may affect the abundance of its populations, as well as its distribution, at the appropriate geographical scale.

An impact on the conservation status of a habitat or species is considered to be significant if it will result in a change in conservation status, having regard to the definitions of favourable conservation status provided in the EU Habitats Directive 92/43/EEC – i.e. into the future, the range, area and quality of habitats are likely to be maintained/increased and species populations are likely to be maintained/increased.

According to the CIEEM (2022) methodology, if it is determined that the integrity and/or conservation status of an ecological receptor will be impacted on, then the level of significance of that impact is related to the geographical scale at which the impact will occur (i.e. local, county, national, international). In some cases, an impact may not be significant at the geographic scale at which the ecological feature has been valued but may be significant at a lower geographical level. For example, a particular impact may not be considered likely to have a negative effect on the overall conservation status of a species which is considered to be internationally important. However, an impact may occur at a local level on this internationally important species. In this case, the impact on an internationally important species is considered to be significant at only a local, rather than an international level.

5.3 The Receiving Environment (Baseline Situation)

5.3.1 Designated Sites

5.3.1.1 European Sites

There are no European sites within or directly adjacent to the boundaries of the Proposed Development site. The closest European sites to the Proposed Development are Knocksink Wood SAC (000725), located *c.* 2.8km south, followed by Ballyman Glen SAC (000713), located 3.5km south.

The Proposed Development site is within the Ovoca-Vartry catchment. The closest watercourse to the Proposed Development site is the Shanganagh River, located *c.* 250m to the southeast. The Shanganagh River flows east for *c.* 6.5km until it discharges directly into Killiney Bay. The closest European sites to the outfall of the Shanganagh River at Killiney Bay include Rockabill to Dalkey Island SAC (003000) and Dalkey Island SPA (004172), located 1.5km and 3.2km from the outfall, respectively.

The European sites in the vicinity of the Proposed Development, their distance from the Proposed Development and their Qualifying Interests (QI)/Special Conservation Interests

(SCI) are presented in Appendix 5-1. The locations of those European sites relative to the Proposed Development are illustrated in Figure 5-3.

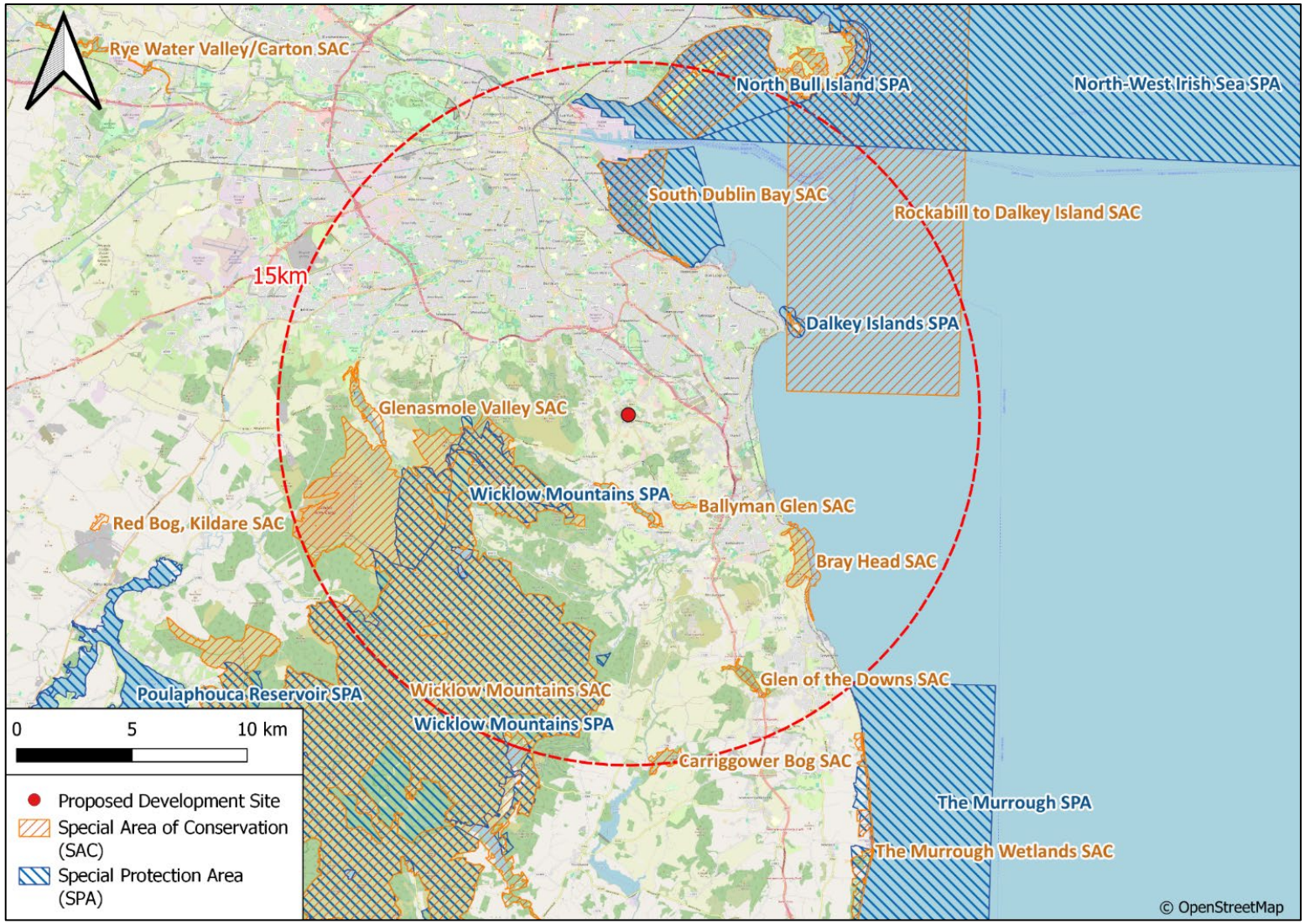

Figure 5 - 3 European sites in the vicinity of the Proposed Development

5.3.1.2 Nationally Designated Sites

Natural Heritage Areas (NHAs) are designated under the Wildlife Acts to protect habitats, species or geology of national importance. In addition to NHAs there are proposed NHAs (referred to as pNHAs), which are also sites of significance for wildlife and habitats and were published on a non-statutory basis in 1995 but have not since been statutorily proposed or designated. Proposed NHAs are offered protection in the interim period under county or city development plans which requires that planning authorities give due regard to their protection in planning policies and decisions. Many of the pNHA sites, and some of the NHAs, in Ireland overlap with the boundaries of European sites.

There are no nationally designated sites within or directly adjacent to the boundaries of the Proposed Development site. Several pNHA sites are located within the vicinity of the Proposed Development site. The nearest pNHA is Dingle Glen pNHA (001207) which is located approximately 560m east of the Proposed Development site. Dingle Glen is a mature broadleaf woodland, mixed with rocky outcrops, within a glacier meltwater channel, providing a diversity of habitats within a small undisturbed area. There are no hydrological pathways connecting the Proposed Development site to Dingle Glen pNHA. Other pNHAs in the vicinity of the Proposed Development site include Fitzsimon's Wood pNHA (001753), Loughlinstown Woods pNHA (001211), Ballybetagh Bog pNHA (001202), Ballyman Glen pNHA (000713), and Knocksink Wood pNHA (000725).

Surface waters within the Proposed Development site ultimately discharge into the Southwestern Irish Sea-Killiney Bay coastal waterbody via the Shanganagh River. Therefore, the Proposed Development is hydrologically connected to the following nationally designated sites in the downstream receiving environment: Loughlinstown Wood pNHA (001211) and Dalkey Coastal Zone and Killiney Hill pNHA (001206). The latter site is located *c.* 3.2km east, at the closest point, and has been designated for a range of features, including its coastal habitats.

The nationally designated sites in the vicinity of the Proposed Development, their distance from the Proposed Development and their biodiversity features of note[12] are presented in Appendix 5-1. The locations of those sites relative to the Proposed Development are illustrated in Figure 5-4.

[12] As noted by NPWS online documentation https://www.npws.ie/protected-sites/nha

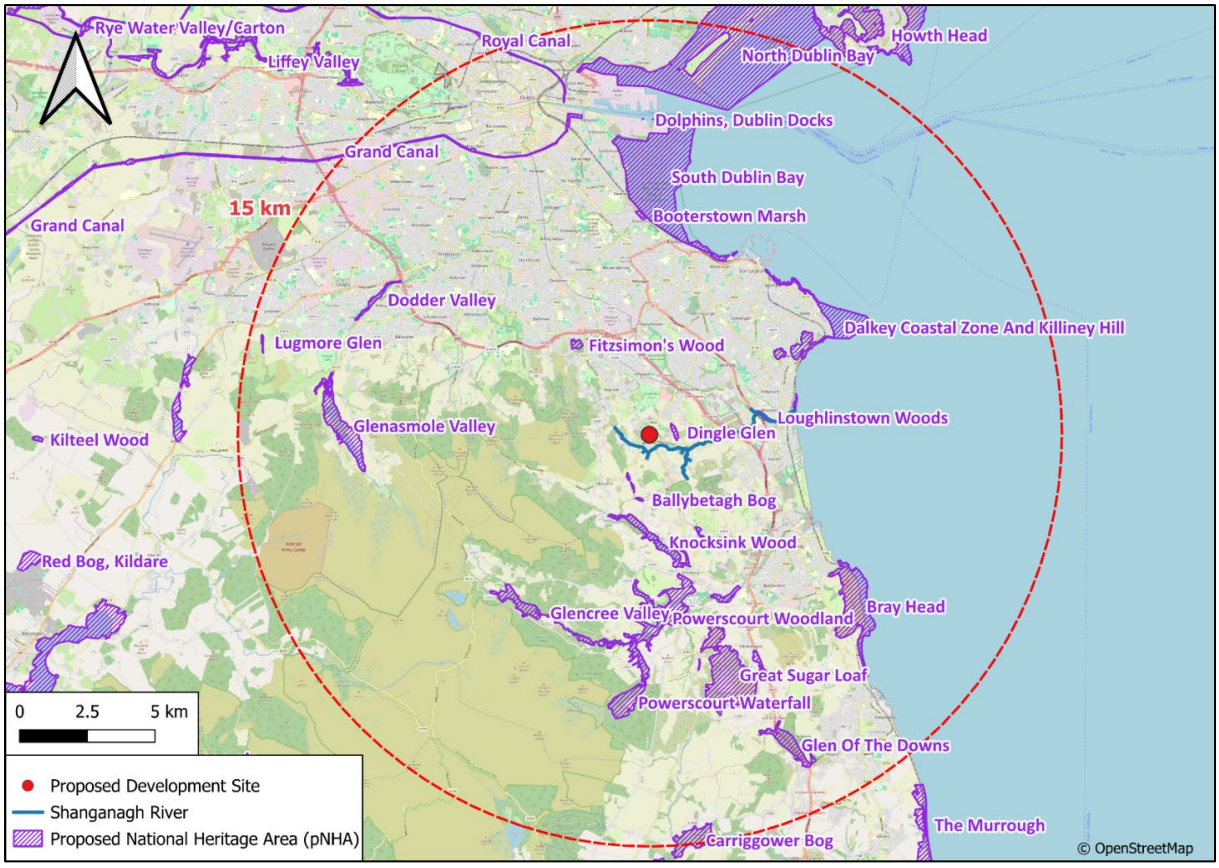

Figure 5 - 4 Nationally designated sites in the vicinity of the Proposed Development site

5.3.1.3 Other Designated Areas

There are a number of Ramsar sites within the vicinity of the Proposed Development, namely Baldoyle Bay (Site code 413), North Bull Island (Site code 406) and Sandymount Strand / Tolka Estuary (Site code 832). As these Ramsar sites overlap with European sites and/or NHAs / pNHAs which this EIAR assessment is considering, no further discussion is provided.

Special Amenity Area Orders have been recognised in Ireland, many of them in the Greater Dublin Area including Wicklow, and can cross local authority administrative boundaries. They include North Bull Island, Howth Head, Liffey Valley, and Bray Head. The designations reinforce protection for green belts via land plans and objectives contained therein. As such these areas have been considered in the overall EIAR biodiversity assessment and Appropriate Assessment by virtue of overlapping nature designations.

While there are no Tree Preservation Orders in the Proposed Development site, there are trees listed under the objective “To protect and preserve trees and woodland” in the County Development Plan.

5.3.2 Habitats and Flora

The National Biodiversity Data Centre (NBDC) database search returned no records of any plant species listed on Annex II of the EU Habitats Directive within 2km of the Proposed Development site. There were records within *c.*2km of the Proposed Development for the

following non-native invasive species which are listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 (as amended):

- Himalayan Knotweed *Persicaria wallichii;*
- Giant hogweed *Heracleum mantegazzianum;*
- Giant-rhubarb *Gunnera tinctoria;*
- Japanese Knotweed *Reynoutria japonica;*
- Spanish Bluebell *Hyacinthoides hispanica; and*
- Three-cornered garlic *Allium triquetrum.*

No records of plant species protected through their inclusion within the Flora (Protection) Order, 2022 were recorded during the field surveys or in previous surveys on the site (Enviroguide Consulting, 2022). Furthermore, no non-native invasive species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) were recorded within the Proposed Development site during field surveys.

The following habitat types of the Heritage Council classification system (Fossitt, 2000) were identified within the subject lands and are mapped in Figure 5-5.

- Improved agricultural grassland (GA1);
- Amenity grassland (GA2);
- Dry meadows and grassy verges (GS2);
- Scrub (WS1);
- Immature woodland (WS2);
- Ornamental / /non-native shrub (WS3);
- Treelines (WL2);
- Mixed broadleaf woodland (WD1);
- Spoil and bare ground (ED2);
- Recolonising bare ground (ED3); and
- Buildings and artificial surfaces (BL3).

None of the habitats recorded correspond to Annex I habitats of the EU Habitats Directive and described within the Interpretation Manual of European Union Habitats (European Commission, 2013).

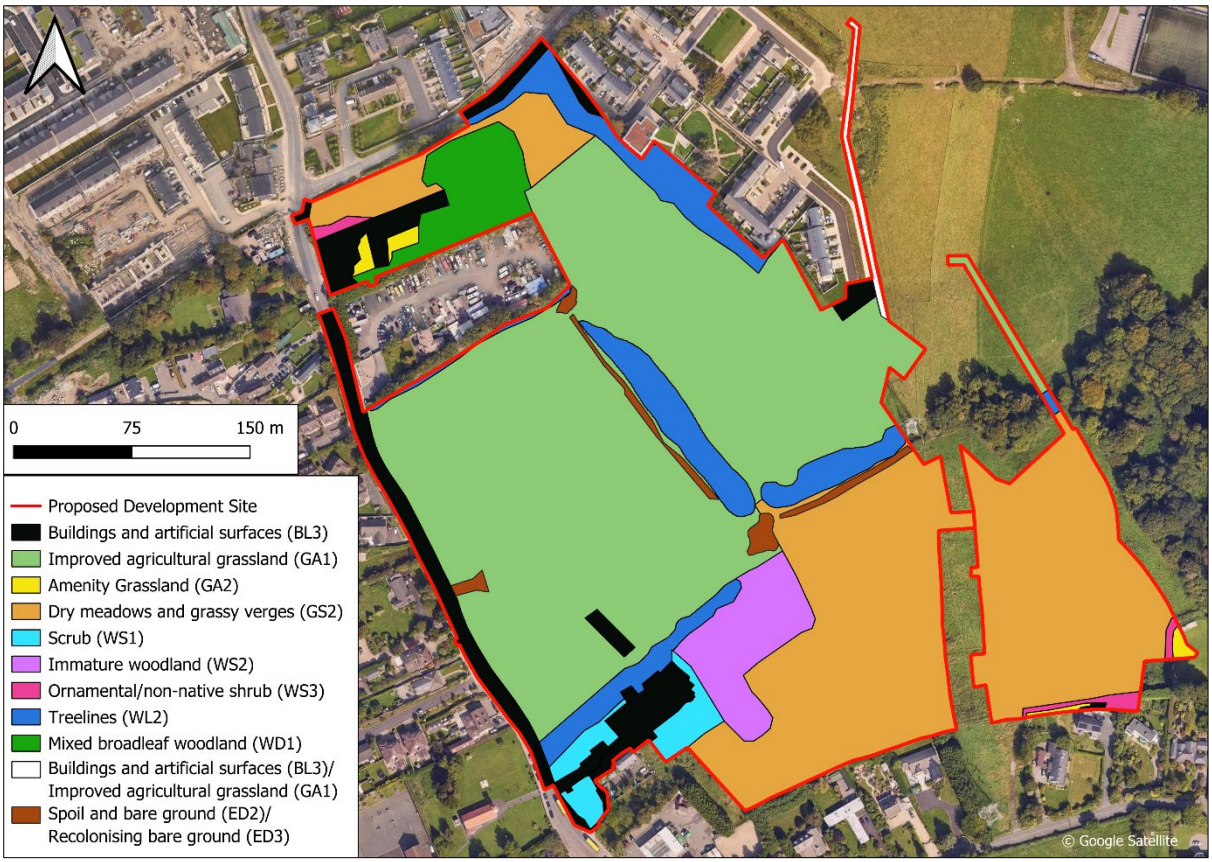

Figure 5 - 5 Habitats recorded within the Proposed Development site

5.3.3 Habitats of Local Importance (Lower Value)

Of the 11 habitat types recorded, eight are valued as being of Local Importance (Lower Value) due to their built structure, low diversity or managed nature. Although evaluated as Local Importance (Lower Value), some of these habitats may provide some use, albeit limited, for local wildlife and habitat linkage purposes. This has been assessed within the relevant fauna sections of this EIAR Biodiversity Chapter.

Buildings and artificial surfaces (BL3) include all hardstanding areas, access roads, the Former Country Market building (wooden structure), prefabricated buildings and shipping containers, the existing disused 'Rockville' building and associated outbuildings with limited value for local biodiversity. Amenity grassland (GA2) is present in lawns at the Country Market and in neighbouring residential gardens. Spoil and bare ground (ED2) is associated with access pathways within the site, as well as areas that have been cleared of grassy vegetation due to consistent disturbance from cattle and areas used to store rubble/debris and excavated material. Improved agricultural grassland (GA1) accounts for a large area of the Proposed Development site and is characterised by improved and heavily managed, species poor grassland, such that a short grass sward is present. These areas have a low species diversity, have limited botanical value and are heavily grazed by cattle. Patches of recolonising bare ground (ED3) are present where previously cleared areas are transitioning back to vegetated grassland. Sections of ornamental / non-native planting (WS3) are present along the driveway to the disused Country Market and the existing neighbouring properties. Small patches of scrub (WS1), with limited botanical value are present throughout the Proposed Development site. The dominant scrub species noted within the Proposed Development site is bramble

Rubus fruticosus agg. An immature woodland (WS2) of ash *Fraxinus excelsior* is located towards the southern end of the site. This plantation is low in species diversity with the understorey dominated by bramble, ivy *Hedera helix* and nettle *Urtica dioica*.

5.3.4 Habitats of Local Importance (Higher Value)

5.3.4.1.1 Dry Meadows and Grassy Verges (GS2)

This habitat type is present in the northern and southern areas of the site. Sections of the dry meadows and grassy verges habitat shows evidence of poaching and grazing by cattle. The most common species are the rank grass species such as cock's foot *Dactylis glomerata*, Yorkshire fog *Holcus lanatus* and common bent *Agrostis capillaris* with false oat-grass *Arrhenatherum elatius* also present. Forb species present include meadow buttercup *Ranunculus acris*, creeping buttercup *Ranunculus repens*, ribwort plantain *Plantago lanceolata*, rosebay willowherb *Chamaenerion angustifolium*, creeping thistle *Cirsium arvense*, dandelion *Taraxacum officinale* agg, red clover *Trifolium pratense*, white clover *Trifolium repens,* meadow vetchling *Lathyrus pratensis*, bush vetch *Vicia sepium* and bitter dock *Rumex obtusifolius*.

Despite the overall low biodiversity value of the dry meadows and grassy verges habitat (i.e.: dominated by rank grasses and limited forb species), this grassland is considered to be of Local Importance (Higher Value), due to its slightly greater floristic diversity than GA1 habitat.

Plate 5-1: Dry meadows and grassy verges within the Proposed Development site

5.3.4.1.2 Treelines (WL2)

A number of treelines are present within the Proposed Development site boundary. A small treeline is located along the northern border of the Proposed Development site adjoining Boyle's coal yard and another is located along northern side of the disused 'Rockville' building and associated outbuildings. A larger more substantial treeline runs through the centre of the site, from northwest to southeast. This treeline joins another which continues west to east. There is also a treeline along the boundary with the existing Rockville residential development and Glenamuck Road to the northeast of the site. The most dominant species noted throughout these treelines include European beech *Fagus sylvatica*, ash, oak *Quercus* sp., sycamore *Acer pseudoplatanus*, hazel *Corylus avellana* and elder *Sambucus nigra*.

Examples of this habitat is shown in Plate 5-2 and Plate 5-3 and is considered to be of Local Importance (Higher Value), as it forms part of the wider linear habitat network and provides a valuable resource for the ecological connectivity of the Proposed Development site to the surrounding wider area.

Plate 5-2: Central treeline within the Proposed Development site

Plate 5-3. Northern treeline within the Proposed Development site

5.3.4.1.3 Mixed Broadleaf Woodland (WD1)

Broadleaved woodland occurs along the northern boundary of the Proposed Development site. The broadleaved woodland is a mature stand of trees and includes the following tree species European beech, Elm *Ulmus* sp., Lime *Tilia* sp., ash, silver birch *Betula pendula* and oak species. Understorey vegetation includes ivy, bracken *Pteridium aquilinum*, bramble, holly *Ilex aquifolium* and nettle. There is a substantial area of woodland adjacent to the Proposed Development site, outside the eastern boundary.

Overall, mixed broadleaved woodland within the Proposed Development site has been valued as Local Importance (Higher Value) due to the diversity this habitat provides in the wider landscape as well as the presence of mature established native tree species. Additionally,

woodland habitat within the Proposed Development site provides a valuable resource for breeding birds, refuge for terrestrial mammals, and foraging and commuting habitat for bats.

5.3.5 Fauna

5.3.5.1 Terrestrial Mammals (Excluding Bats)

5.3.5.1.1 Badger

Badger *Meles meles*, and their breeding and resting places, are protected under the Wildlife Acts. The NBDC database holds records for badger within *c.* 2km of the Proposed Development site. The most recent NBDC record for badger is from *c.* 500m west of the Proposed Development site from 2011.

No evidence of badger activity or presence within the Proposed Development site, including setts, snuffle holes or scat was recorded during the field surveys. The habitats present within the Proposed Development site, namely grassland and woodland, provide potential suitable habitat for badgers. Although no badger setts were identified within the Proposed Development site, given the suitability of the wider environs for badgers, a precautionary approach has been taken and the local badger population is valued to be of Local Importance (Higher Value).

5.3.5.1.2 Otter

Otter *Lutra lutra*, and their breeding and resting places, are protected under the Wildlife Acts. Otter are also listed on Annex II and Annex IV of the EU Habitats Directive and are afforded strict protection under the Habitats Directive and the European Communities (Birds and Natural Habitats) Regulations, 2011.

There were no signs of otter present within the Proposed Development site and there are no watercourses within the Proposed Development site. However, the Shanganagh River is located *c.* 250m from the Proposed Development site. The Carrickmines Stream, which is a tributary of the Shanganagh River (and located further downstream, separate from the Proposed Development is listed as being important for otter (Macklin & Brazier, 2019), being one of the few remaining unculverted river systems in Dun Laoghaire-Rathdown County Council lands and containing a range of glides, pools and riffles, which are suitable for salmonid species which is prey for otter. The closest European site for which otter is a QI is the Wicklow Mountains SAC, *c.* 4km southwest of the proposed development site. Neither the Shanganagh River nor its tributaries are located within, or connected to, the Wicklow Mountains SAC, and there is no direct link between the otter populations. the Shanganagh River system is located c. 250m south of the Proposed Development site and is potentially important for otter, therefore the Proposed Development site has been valued as County Importance with regard to otter.

5.3.5.1.3 Other Small Mammals

Hedgehog *Erinaceus europaeus* and Pygmy Shrew *Sorex minutus* are both protected under the Wildlife Acts, with records returned from the desk study of both within 2km of the Proposed Development site.

No signs of small mammals were noted during the site surveys within the Proposed Development site. However, the rank unmanaged grassland, scrub and woodland habitats

within the Proposed Development site are suitable for the aforementioned species. These species are widespread and common in Ireland (Marnell *et al.*, 2019). As such, the local small mammal populations are assessed as being of a Local Importance (Higher Value).

5.3.5.2 Bats

Bats, and their breeding and resting places, are protected under the Wildlife Acts. All bat species are also listed on Annex IV of the EU Habitats Directive (with the Lesser Horseshoe bat also listed on Annex II) and are afforded strict protection under the Habitats Directive and the European Communities (Birds and Natural Habitats) Regulations, 2011.

A search of the database of species records held by the NBDC returned records of six bat species within *c.*2km of the Proposed Development site, namely Natterer's bat *Myotis nattereri*, brown long-eared bat *Plecotus auritus*, Daubenton's bat *Myotis daubentoniid*, Leisler's bat *Nyctalus leisleri*, soprano pipistrelle *Pipistrellus pygmaeus* and common pipistrelle *Pipistrellus pipistrellus*. All bats in Ireland are listed as being of "least concern" (Nelson *et al.,* 2019).

During the field surveys, 20 trees within the Proposed Development site were recorded as containing potential roost features (PRFs) for bats, which include flaking bark, knot holes, cavities, broken limb and dense ivy cover. Their locations are shown on Figure 5-6 and details are included in Appendix 5-3.

Figure 5-6 PRF trees recorded within the Proposed Development site

There are seven buildings/structures located within the Proposed Development site (Figure 5-7). Building 1 is a derelict dwelling known as 'Rockville' and Buildings 2-6 are the five

associated derelict outbuildings, all located in the southwest end of the site. Building 7 is the former Kilternan Country Market, a wooden structure in the northwest end of the site. No evidence of bats was recorded during external and internal building inspections of any of the buildings within the Proposed Development site.

During the first dusk emergence survey on the 23rd of May 2023, one soprano pipistrelle bat was observed emerging from the southeastern face of Building 4 from a gap under the roofing. During the second dusk emergence survey on the 28th of June 2023, one soprano pipistrelle bat was recorded emerging from the same location on the southeastern side of the building and flying southeast. No bats were observed emerging during the dusk emergence survey on the 27th of July 2023. No bats were observed emerging from any other building or structure in the Proposed Development site. No roosts were identified during surveys of these buildings undertaken in 2021 for a previous planning application (Enviroguide Consulting, 2022).

The buildings in the southwest of the Proposed Development site (Buildings 1-6) are illuminated to the west by streetlights and by security floodlights on a number of the buildings, with the majority of this lighting concentrated around the courtyard on the western side of Building 4. There are security floodlights on east and south walls of Building 4. The building in the northwest of the site (Building 7) is highly illuminated by streetlights and security lighting on all sides. Floodlighting is considered likely to inhibit bat activity.

Figure 5 - 7 Buildings/structures within the Proposed Development site

At least five bat species were recorded within and adjacent to the Proposed Development site during bat activity surveys: common pipistrelle, soprano pipistrelle, Leisler's bat, brown long-eared bat and an undetermined bat species of the genus *Myotis*. A number of pipistrelle species *Pipistrellus* spp. calls were also recorded, that cannot be differentiated by analytical software as belonging to either soprano pipistrelle or common pipistrelle as the frequency of

the call falls between the thresholds for the two species. Similarly, bat species of the genus *Myotis* are difficult to identify to species level based on call analysis and are therefore grouped together as *Myotis* spp. The locations of the bat calls recorded during the activity surveys are illustrated in Figure 5-8, with common pipistrelle and Leisler's bats being the most recorded species.

Figure 5 - 8 Bat activity noted within and adjacent to the Proposed Development site

At least four bat species were recorded on automated static bat detectors deployed within the Proposed Development site: Leisler's bat, common pipistrelle, soprano pipistrelle, and unidentified Myotis bats. Common pipistrelle was the most detected bat species, followed by Leisler's bat. The static locations at the central treelines recorded the most commuting and foraging bats within the Proposed Development site.

Given the presence of one small bat roost, the number of bat species recorded within the Proposed Development site and suitability of the site for foraging, commuting and roosting, the Proposed Development site has been valued as Local Importance (Higher Value) with regards to bats.

5.3.5.3 Breeding Birds

All wild birds, and their nests and eggs, are protected under the Wildlife Acts. Some bird species are also listed on Annex I of the EU Birds Directive.

A range of common bird species were observed in the Proposed Development site and surrounding areas during surveys conducted in May and June 2023 (Figure 5-9).

The majority of species recorded within or flying over the Proposed Development site during the surveys were species that are green listed as per the Birds of Conservation Concern in Ireland (BoCCI) (Gilbert. *et al.*, 2021) and included: jackdaw *Corvus monedula*, magpie *Pica pica*, blackbird *Turdus merula*, hooded crow *Corvus cornix*, woodpigeon *Columba palumbus*, goldfinch *Carduelis carduelis*, chaffinch *Fringilla coelebs*, wren *Troglodytes troglodytes*, blue tit *Cyanistes caeruleus*, robin *Erithacus rubecula*, dunnock *Prunella modularis*, coal tit *Periparus ater*, rook *Corvus frugilegus*, blackcap *Sylvia atricapilla*, chiffchaff *Phylloscopus collybita*, great tit *Parus major*, long-tailed tit *Aegithalos caudatus*, song thrush *Turdus philomelos* and stonechat *Saxicola torquatus*.

Amber listed birds were also recorded during these surveys and included swallow *Hirundo rustica*, starling *Sturnus vulgaris*, house martin *Delichon urbicum*, goldcrest *Regulus regulus*, linnet *Linaria cannabina*, herring gull *Larus argentatus,* house sparrow *Passer domesticus* and willow warbler *Phylloscopus trochilus*.

Given the range of species, presence of amber listed bird species and availability of suitable nesting and foraging habitat, the Proposed Development site has been valued as Local Importance (Higher Value) for breeding birds.

Figure 5 - 9 Breeding bird activity noted within and adjacent to the Proposed Development site

Table 5-3 Breeding bird activity within the Proposed Development site

Common name	Scientific name	BoCCI[13]	Breeding status
Blackbird	*Turdus merula*	Green-listed	Recorded throughout the site. No breeding confirmed but breeding is probable within the trees/ hedgerows across the site.
Blackcap	*Sylvia atricapilla*	Green-listed	Recorded throughout the site. No breeding confirmed but breeding is probable within the trees/ hedgerows across the site.
Blue tit	*Cyanistes caeruleus*	Green-listed	Recorded throughout the site. Breeding confirmed within the site.
Chaffinch	*Fringilla coelebs*	Green-listed	Recorded throughout the site. No breeding confirmed but breeding is probable within the trees/ hedgerows across the site.
Chiffchaff	*Phylloscopus collybita*	Green-listed	Recorded throughout the site. No breeding confirmed but breeding is probable within the trees/ hedgerows across the site.
Coal Tit	*Periparus ater*	Green-listed	Recorded throughout the site. No breeding confirmed but breeding is probable within the trees/ hedgerows across the site.
Dunnock	*Prunella modularis*	Green-listed	Recorded throughout the site. No breeding confirmed but breeding is probable within the trees/ hedgerows across the site.
Goldcrest	*Regulus regulus*	Amber-listed	Recorded throughout the site. No breeding confirmed but breeding is probable within the trees/ hedgerows across the site.
Goldfinch	*Carduelis carduelis*	Green-listed	Recorded throughout the site. No breeding confirmed but breeding is probable within the trees/ hedgerows across the site.
Great tit	*Parus major*	Green-listed	Recorded throughout the site. No breeding confirmed but breeding is probable within the trees/ hedgerows across the site.
Herring Gull	*Larus argentatus*	Amber-listed	Recorded flying across the site. No breeding confirmed within the site.
Hooded Crow	*Corvus cornix*	Green-listed	Recorded throughout the site. No breeding confirmed but breeding is probable within the trees/ hedgerows across the site.
House Martin	*Delichon urbicum*	Amber-listed	Numerous birds recorded feeding and flying over the site. Not considered to breed within

[13] Gilbert. *et. al*., (2021)

Common name	Scientific name	BoCCI[13]	Breeding status
			the site but potential nesting in nearby suitable buildings.
House sparrow	*Passer domesticus*	Amber-listed	Numerous birds recorded feeding and flying over the site. Not considered to breed within the site but potential nesting in nearby suitable buildings
Jackdaw	*Corvus monedula*	Green-listed	Recorded throughout the site. No breeding confirmed but breeding is probable within the trees/ hedgerows across the site.
Linnet	*Linaria cannabina*	Amber-listed	Recorded throughout the site. No breeding confirmed but breeding is probable within the site.
Long-tailed tit	*Aegithalos caudatus*	Green-listed	Recorded once within the site. No breeding confirmed within the site.
Magpie	*Pica pica*	Green-listed	Recorded throughout the site. No breeding confirmed but breeding is probable within the trees/ hedgerows across the site.
Robin	*Erithacus rubecula*	Green-listed	Recorded throughout the site. No breeding confirmed but breeding is probable within the trees/ hedgerows across the site.
Rook	*Corvus frugilegus*	Green-listed	Recorded throughout the site. No breeding confirmed but breeding is probable within the trees/ hedgerows across the site.
Song thrush	*Turdus philomelos*	Green-listed	Recorded throughout the site. No breeding confirmed but breeding is probable within the trees/ hedgerows across the site.
Starling	*Sturnus vulgaris*	Amber-listed	Recorded flying across the site and foraging within the site. No breeding confirmed within the site.
Stonechat	*Saxicola torquatus*	Green-listed	Recorded throughout the site. No breeding confirmed but breeding is probable within the trees/ hedgerows across the site
Swallow	*Hirundo rustica*	Amber-listed	Numerous birds recorded feeding and flying over the site. Not considered to breed within the site but potential nesting in nearby suitable buildings.
Willow warbler	*Phylloscopus trochilus*	Amber-listed	Recorded once within the site. No breeding confirmed within the site.
Woodpigeon	*Columba palumbus*	Green-listed	Recorded throughout the site. No breeding confirmed but breeding is probable within the trees/ hedgerows across the site.

Common name	Scientific name	BoCCI[13]	Breeding status
Wren	*Troglodytes troglodytes*	Green-listed	Recorded throughout the site. No breeding confirmed but breeding is probable within the trees/ hedgerows across the site.

5.3.5.4 Wintering Birds

During the wintering bird surveys very low numbers of wintering bird species were recorded (Figure 5-10). Only herring gull, black-headed gull *Chroicocephalus ridibundus* and great black-backed gull *Larus marinus* were recorded within the Proposed Development site. A peak count of 24 herring gull was recorded on one occasion (4th of January 2023), a peak count of 26 black-headed gull was recorded on one occasion (14th of February 2023) and one great black-backed gull was recorded on one occasion (4th of January 2023). Redwing *Turdus iliacus* and fieldfare *Turdus pilaris* were recorded within the Proposed Development site on one occasion.

Wintering bird surveys were undertaken for a previous application within the Proposed Development site on the 19th of February, 2nd of March 2021, 19th of March 2021, 23rd of November 2021, 20th of December 2021, 19th of January 2022, 22nd of February 2022 and 22nd March 2022 (Enviroguide Consulting, 2022). Low numbers of herring gull, curlew and black-headed gull were recorded within the Proposed Development site - a peak count of 2 herring gull recorded on one occasion (21st of December 2021), a peak count of four curlew recorded on one occasion (23rd of November 2021) and a peak count of seven black-headed gull recorded on one occasion (23rd of November 2021). No other wintering bird species were recorded during these field surveys within the Proposed Development site.

Herring gull is amber-listed and an SCI species of The Murrough SPA located *c.*17.5km southeast of the Proposed Development site. Black-headed gull is amber listed and is an SCI of South Dublin Bay and River Tolka Estuary SPA located approximately 6.6km north of the Proposed Development site. Great black-backed gull is green-listed and an SCI species for North-West Irish Sea SPA located approximately 12km northeast of the Proposed Development site. Curlew is an SCI of North Bull Island SPA located approximately 12km northeast of the Proposed Development site.

Due to the low numbers of herring gull, black-headed gull and great black-backed gull and curlew recorded, and no evidence of usage by other SCI species, the Proposed Development site is not considered to support numbers of SCI species significant for the maintenance of populations associated with Dublin Bay or any other European sites. The majority of the Proposed Development site is dominated by areas of agricultural grassland, treelines, recolonising bare ground and artificial surfaces, which may provide some habitat for foraging wintering non-SCI passerine species but provides low suitability for wetland and wader species. Therefore, this site does not represent an important inland *ex-situ* site or habitat for wintering herring gull, black-headed gull, great black-backed gull, curlew or any other SCI species. In light of the above, the Proposed Development site is assessed as being of Local Importance (Lower Value) for wintering birds.

Figure 5 - 10 Wintering bird noted during surveys of the Proposed Development site

5.3.5.5 Common lizard

Common lizard *Zootoca vivipara* were not recorded during any of the surveys and have not been recorded within 2km of the Proposed Development site, based on a review of the NBDC database.

This species is strongly associated with heathland and coastal dune habitats (Marnell, 2002; Farren *et al.*, 2010); neither habitat types were identified within the Proposed Development site. Therefore, common lizard is not considered likely to be present within the Proposed Development site. As such, common lizard populations are considered to be of Local Importance (Lower Value).

5.3.5.6 Amphibians

The common frog *Rana temporaria* and the smooth newt *Lissotriton vulgaris* are legally protected under the Wildlife Acts. The common frog is also listed under Annex V of the Habitats Directive. No evidence of common frog or smooth newt were identified within the Proposed Development site during the surveys.

Amphibians require access to aquatic habitats (including ephemeral ponds) to breed. The Proposed Development site does not contain any aquatic habitat features and therefore does not contain suitable habitat for breeding amphibians. Local common frog and smooth newt populations are of Local Importance (Lower Value).

5.3.6 Summary of Ecological Evaluation

Table 5 4 summarises the ecological evaluation of all receptors taking into consideration legal protection, conservation status and local abundance, and identifies the Key Ecological Receptors (KERs). Species, habitats and features not qualifying as KERs are not subjected to impact assessment in line with current best practice of assessing the impacts on what are determined to be important ecological or biodiversity features: CIEEM and National Roads Authority guidelines (CIEEM, 2018 and National Roads Authority, 2009).

Table 5-4 Ecological evaluation of all receptors, considering legal protection, conservation status and local abundance, and identification of the Key Ecological Receptors (KERs).

Ecological Receptor	Ecological Valuation	KER
Designated Sites		
Rockabill to Dalkey Island SAC	International	Yes
Dalkey Island SPA	International	Yes
Loughlinstown Wood pNHA	National	Yes
Dalkey Coastal Zone and Killiney Hill pNHA	National	Yes
All other SAC or SPA sites	International	No
All other NHA or pNHA sites	National	No
Habitats		
Dry meadows and grassy verges (GS2)	Local Importance (Higher Value)	Yes
Immature woodland (WS2)	Local Importance (Lower Value)	No
Improved agricultural grassland (GA1)	Local Importance (Lower Value)	No
Amenity grassland (GA2)	Local Importance (Lower Value)	No
Recolonising bare ground (ED3)	Local Importance (Lower Value)	No
Treelines (WL2)	Local Importance (Higher Value)	Yes
Scrub (WS1)	Local Importance (Lower Value)	No
Ornamental/non-native shrub (WS3)	Local Importance (Lower Value)	No
Buildings and artificial surfaces (BL3)	Local Importance (Lower Value)	No
Spoil and bare ground (ED2)	Local Importance (Lower Value)	No
Mixed broadleaf woodland (WD1)	Local Importance (Higher Value)	Yes
Fauna Species		

Ecological Receptor	Ecological Valuation	KER
Badgers	Local Importance (Higher Value)	Yes
Otter	County Importance	Yes
Bats	Local Importance (Higher Value)	Yes
Other small mammals	Local Importance (Higher Value)	Yes
Breeding birds	Local Importance (Higher Value)	Yes
Wintering birds	Local Importance (Lower Value)	No
Common Lizard	Local Importance (Lower Value)	No
Amphibians	Local Importance (Lower Value)	No

5.4 Characteristics of the Proposed Development

Chapter 2 of this EIAR includes a detailed description of the Proposed Development.

Briefly, the development will principally consist of:

- The demolition of *c.* 740 square meters (sq m) of existing structures on site comprising a derelict dwelling known as 'Rockville' and associated derelict outbuildings (*c.* 573 sq m) and the former Kilternan Country Market (wooden structure) (*c.* 167 square metre (sq m))
- The provision of a mixed-use development principally consisting of 487 No. residential units (196 No. houses, 201 No. duplex units and 90 No. apartments) and a Neighbourhood Centre
    - The western site will comprise 362 No. residential units and the Neighbourhood Centre, which will provide an anchor retail store (*c.* 1,310 sq m), retail/commercial (*c.* 3,284 sq m), a creche (*c.* 691 sq m), café (*c.* 326 sq m), restaurant (182 sq m) and a community facility (*c.* 332 sq m), and the eastern site will comprise 125 No. residential units.
    - The 487 No. residential units will consist of 53 No. 1 bedroom units (35 No. apartments and 18 No. duplexes), 150 No. 2 bedroom units (38 No. houses, 16 No. apartments and 96 No. duplexes), 236 No. 3 bedroom units (110 No. houses, 39 No. apartments and 87 No. duplexes) and 48 No. 4 bedroom units (48 No. houses).
- The proposed development will range in height from 2 No. to 4 No. storeys (including podium/undercroft level in Apartment Blocks 1, 2 and 3 and Duplex Block 10 on the eastern site).

The development also provides for:

- A pedestrian/cycle route through the Dingle Way from Enniskerry Road to the future Glenamuck Link Distributor Road

- 854 No. car parking spaces (125 No. in the undercroft of Apartment Blocks 1, 2 and 3 and Duplex Blocks T and U and 729 No. at surface level) including 28 No. mobility impaired spaces, 87 No. electric vehicle spaces, 2 No. car share spaces, and 4 No. drop-off spaces/loading bays
- Motorcycle parking; bicycle parking; bin storage
- Provision of new telecommunications infrastructure at roof level of the Neighbourhood Centre including shrouds, antennas and microwave link dishes (18 No. antennas, all enclosed in 9 No. shrouds and 6 No. transmission dishes, together with all associated equipment)
- Private balconies, terraces and gardens;
- Hard and soft landscaping; sedum roofs; solar panels; boundary treatments; lighting; substations; plant; and all other associated site works above and below ground.

Surface Water Drainage

The surface water drainage for 12.6ha of the 14.2ha site (i.e., the drained site area) has been divided into four catchment areas as follows:

- Catchment 1 (9.99ha) outfalls into the existing piped infrastructure constructed as part of the existing Rockville development (D17A/0793) to the northeast of the site. The connection point of the attenuated flow will be downstream of the existing Rockville attenuation system into the existing 300mm surface water drain. This surface water drain currently discharges to the existing roadside drainage channel located in Glenamuck Road which in turn flows approximately 1.4km downstream in a north-easterly direction along Glenamuck Road before discharging to the Glenamuck North Stream. It is noted that the existing 300mm surface water drain will eventually be diverted to the regional attenuation pond located beside the Glenamuck Road/GDRS junction permitted as part of the DLRCC GLDR/GDRS roads project.
- Catchment 2 (0.21ha) will outfall into the 225mm surface water drain to be constructed as part of the GDRS upgrade. It is understood that this drainage channel flows north along Enniskerry Road before discharging to the Glenamuck North Stream approximately 0.42km north of the Site.
- Catchment 3 (0.56ha) outfalls into the existing 300mm surface water drain in Enniskerry Road at the Glenamuck Road junction.
- Catchment 4 (1.80ha) outfalls into the 300mm surface water drain to be constructed as part of the GLDR project.

Surface water from all remaining areas of the proposed development (i.e., undeveloped / landscaped areas - 1.6ha) will continue to discharge to ground.

Surface water runoff from the proposed development will be managed in accordance with the principles and objectives of Sustainable Drainage Systems (SuDS) and the Greater Dublin Sustainable Drainage System (Dublin Drainage Consultancy, 2005) to treat and attenuate water prior to discharge to the outfall point. A full SuDS treatment train approach has been implemented in accordance with the CIRIA SuDS Manual, as detailed in Engineering Infrastructure Report (Roger Mullarkey & Associates, 2024a) and includes:

- Filter drains to the rear of the housing.

- Permeable paving to all parking spaces.
- Rainwater butts (200l) to the rear downpipes.
- Swales adjacent to roads where practically feasible.
- Tree pits where practically feasible.
- Extensive Green Roofs and Blue Roof.
- Bio-Retention areas and Rain Garden areas.
- Silt-trap/catchpit manholes.
- Hydrobrake limiting flow to the drained area Qbar greenfield rate.
- Petrol interceptors.
- Stone lined voided arch retention storage devices.

Foul Water Drainage

The foul drainage from the proposed development has been divided into four catchment areas as follows:

- Catchment 1 (308 No. residential units, 5,434m^2 commercial / retail and 619m^2 creche) outfalls into the existing 225mm foul sewer constructed as part of the existing Rockville development (D17A/0793 and D18A/0566) to the northeast of the site. The existing Rockville foul sewer has been submitted by the Rockville developer for taking-incharge by Uisce Éireann (hereafter referred to as UE) and the Applicant has a wayleave agreement for the connection into this foul pipe. This existing infrastructure in turn outfalls downstream into the existing UE-owned 300mm foul drainage piped infrastructure on Glenamuck Road.
- Catchment 2 (18 No. residential units) outfalls into the 225mm foul sewer to be extended as part of the Glenamuck Road upgrade.
- Catchment 3 (36 No. residential units) outfalls into the existing 300mm UE owned foul sewer in Enniskerry Road at the Glenamuck Road junction.
- Catchment 4 (125 No. residential units) outfalls into the 225mm foul sewer to be constructed as part of the GLDR project.

Foul water from the Proposed development will be treated in the Shanganagh Wastewater Treatment Plant (WwTP) (Discharge Licence No. D0039-02) before ultimately discharging to the Southwestern Irish Sea - Killiney Bay coastal waterbody. The Shanganagh WwTP is currently operating below its design capacity of 186,000 PE, with a current (peak week) loading of 138,672 PE. The predicated PE for the proposed development is 2,568 PE, which can be accommodated within the existing operating capacity. The Shanganagh WwTP is compliant with the limits set out in its licence and its discharge is not having an observable negative impact on water quality in Killiney Bay.

The proposed foul sewer outfall from the proposed development site will be via the existing piped foul drainage system constructed as part of the Rockville schemes (D17A/0793 and D18A/0566), the 225mm foul sewer to be extended as part of the Glenamuck Road upgrade,

the existing 300mm UÉ owned foul sewer in Enniskerry Road at the Glenamuck Road junction, and the 225mm foul sewer to be constructed as part of the GLDR project.

5.5 Potential Impacts of the Proposed Development

As per the relevant guidelines noted, likely significant effects have only been assessed for KERs, as listed in Table 5-4. An effect is considered to be ecologically significant if it is predicted to affect the integrity or conservation status (Section 5.2.6 of a KER at a specified geographical scale. All effects are described in the absence of mitigation.

5.5.1 Construction Phase

5.5.1.1 Construction Phase Impacts on Designated Sites

This section describes and assesses the potential for the Proposed Development to result in likely significant effects on designated sites that lie within the ZoI of the Proposed Development.

5.5.1.1.1 European Sites

This section describes and assesses the potential for the Proposed Development to result in likely significant effects on European sites that lie within the ZoI of the Proposed Development. In the context of European sites this is focused on the habitats and species for which the sites are selected (QIs for SACs and SCIs for SPAs) and the conservation objectives supporting their conservation status in each site. This assessment is directly related to the assessment methodology for European sites required under the Habitats Directive, which is presented separately in the AA Screening Report (Scott Cawley Ltd., 2024) for the Proposed Development that accompanies this application.

Section 3.3 of the AA Screening report identified the potential impacts of the Proposed Development in relation to European sites, which are summarised below:

- Habitat loss and fragmentation: The Proposed Development site does not lie within or overlap with the boundary of any European site. Therefore, there are no European sites at risk of direct habitat loss impacts. As the Proposed Development site does not traverse any European sites there is no potential for habitat fragmentation to occur. The site does not represent an important inland *ex-situ* site or habitat for wintering herring gull, black-headed gull, lesser black-backed gull or any other SCI species.
- Habitat degradation as a result of hydrological impacts: The Proposed Development is located upstream of Southwestern Irish Sea - Killiney Bay. A Hydrological and Hydrogeological Risk Assessment Report was prepared for the Proposed Development by Enviroguide Consulting (Enviroguide Consulting, 2024), which concluded that surface run-off from the Proposed Development will not result in any perceptible impact on water quality in downstream receiving waters in Killiney Bay. This is due to the lack of direct pathway via surface runoff (open water courses) to any water body and the separation distances and the assimilation capacity of the receiving water bodies, taking account of the existing baseline conditions and WFD status.
- Habitat degradation as a result of hydrogeological impacts: The Proposed Development lies within the Wicklow groundwater body (Wicklow IE_EA_G_076). It is

not proposed to extract groundwater as part of this development and no significant groundworks which could potentially interact with the underlying groundwater body. As outlined in the Hydrological and Hydrogeological Risk Assessment Report (Enviroguide Consulting, 2024), considering the characteristics of the poor granite bedrock aquifer it is unlikely that there would be widespread impact within the Wicklow GWB. Groundwater flow paths are localised and baseflow is limited within the granite aquifer and therefore no likely hydrogeological impacts are predicted. Therefore, there is no possibility of significant effects on any European site as a result of hydrogeological impacts from the Proposed Development.

- Habitat degradation as a result of introducing/spreading non-native invasive species: No Third Schedule non-native invasive species were recorded within the Proposed Development site, and therefore there is no risk of their accidental spread or introduction to habitats within European sites.
- Disturbance and displacement impacts: Disturbance or displacement of fauna species could potentially occur within the vicinity of the Proposed Development. The potential ZoI for mammals could extend to 150m (Cutts *et al.*, 2009)[14] and 300m for birds. There are no European sites within the disturbance ZoI; the nearest European site to the Proposed Development is *c.* 2.7km away. The lands within the Proposed Development site do not constitute an *ex-situ* habitat or site for any SCI species. Therefore, there is no possibility of disturbance or displacement effects arising from the Proposed Development.

The assessment presented in the AA Screening Report concluded that the potential impacts associated with the Proposed Development do not have the potential to affect the receiving environment and, consequently, do not have the potential to affect the conservation objectives supporting the QIs or SCIs of any European sites; either alone or in combination with any other plans or projects.

5.5.1.1.2 Nationally Designated Sites

In the case of NHAs and pNHAs the assessment considers whether the integrity[15] of any such site would be affected by the Proposed Development with reference to the ecological features for which the site is designated or is proposed.

The ZoI of the Proposed Development in relation to designated sites extends to NHAs/pNHAs downstream of the Proposed Development in Shanganagh River and its tributaries and to Killiney Bay. There are no hydrological pathways connecting the proposed site to the nearest designated site, Dingle Glen pNHA, nor are there any impacts to the pNHA as a result of the Proposed Development. The only nationally designated sites within the potential ZoI of the Proposed Development are Loughlinstown Woods pNHA and Dalkey Coastal Zone and Killiney Hill pNHA. These designated sites are either located within proximity to or in the downstream receiving environment within the Southwestern Irish Sea – Killiney Bay Coastal

[14] This is consistent with Transport Infrastructure Ireland (TII) guidance (Guidelines for the Treatment of otters prior to the Construction of National Road Schemes (TII 2006) and Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes) (TII 2005) documents. This is a precautionary distance, and likely to be moderated by the screening effect provided by surrounding vegetation and buildings, with the actual ZoI of construction related disturbance likely to be much less in reality.

[15] Refer to Section 5.2.6 for definition and impact assessment methodology.

Waterbody [16], to which the surface waters from the lands ultimately discharge via the Shanganagh River.

Notwithstanding the location of the aforementioned designated sites in the downstream receiving environment, there is not considered to be any potential for significant effects arising from the construction or operation of the Proposed Development on these nationally designated sites for the same reasons as European sites above, in addition to the reasons outlined below.

Loughlinstown Wood pNHA

The Proposed Development is located upstream of this nationally designated site, which is known to contain an area of wet woodland, which corresponds with the EU priority Annex I habitat [91E0] alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) (or alluvial woodland). It is not clear from the NPWS site synopsis for this designated site whether alluvial woodland is a reason for designation of the site, however it has been treated as such on a precautionary basis. According to most recent Article 17 reporting on EU Annex I habitats, the main threats and pressures facing Alluvial woodland in Ireland are from invasive alien species, problematic native species, and clear-cutting or removal of trees (NPWS, 2019a and 2019b). The Proposed Development does not traverse Loughlinstown Woods pNHA, and therefore there is no potential for significant effects to arise from direct habitat loss (e.g. tree removal) or fragmentation.

Alluvial woodland habitat is characterised by a regime of periodic high-water flooding. While in theory, and in the absence of any mitigation, there is potential for contaminated discharges (e.g. leaks or spills of hydrocarbons from plant, release of cementitious materials) to surface or ground waters to reach the woodland (e.g. during or immediately after a storm event when elevated river levels result in flooding of the woodland), no significant effects are anticipated on alluvial woodland habitat. This conclusion has been reached in light of the following:

- The distance between the area of construction works and alluvial woodland habitat ;
- The dilution factor in the receiving groundwater body and the Shanganagh River and its tributaries;
- A contamination event would have to coincide with a period of high water, which is considered to be unlikely; and
- The scale of the proposal and the distance between the Proposed Development and the surface water network.

Dalkey Coastal Zone and Killiney Hill pNHA

A small area of the Dalkey Coastal Zone and Killiney Hill pNHA is located at the outfall of the Shanganagh River to Killiney Bay, corresponding to an area of shingle beach and drift banks[17]. This site has been designated for its “fine example of a coastal system with habitats ranging from the sublittoral to coastal heath” (NPWS, 2009b). The Proposed Development does not overlap with Dalkey Coastal Zone and Killiney Hill pNHA, and therefore there is no potential for significant effects to arise from direct habitat loss or fragmentation.

[16] Based on review of spatial data on water features, including sub basins, and coastal waterbodies, held by the EPA and available for review on the EPA MapViewer www.epa.ie

[17] Based on a review of orthophotography of the designated site from google maps www.google.com/maps

Based on a review of water quality data for Killiney Bay available from the EPA mapviewer, the Southwestern Irish Sea – Killiney Bay coastal waterbody is currently listed as 'Unpolluted'. While any potential release of sediments and/or pollutants (such as hydrocarbons) during construction and/or operation of the Proposed Development could theoretically affect water quality in the receiving surface water environment, there is no likelihood of any perceptible effect on water quality in Killiney Bay. This is because there is a large distance of separation between the Proposed Development and Killiney Bay and potential for pollution to be dissipated within the drainage network.

The Southwestern Irish Sea – Killiney Bay is currently unpolluted, and the Proposed Development will not result in any measurable effect on water quality in Killiney Bay. There are also protective policies and objectives in place at a strategic planning level, within the functional areas of Dún Laoghaire-Rathdown (Dún Laoghaire-Rathdown County Council, 2022) and Wicklow County (Wicklow County Council, 2022), to protect water quality in Killiney Bay.

Therefore, the Proposed Development will not result in significant effects on nationally designated sites at any geographic scale.

5.5.1.2 Construction Phase Impacts on Habitats

5.5.1.2.1 Habitat Loss

The ZoI of habitat loss impacts will be confined to within the Proposed Development boundary. None of the habitats identified within the Proposed Development were rated greater than of Local Importance (Higher Value). The majority of the habitat loss will include the improved agricultural grassland (GA1), as well as the areas of spoil and bare ground (ED2) and recolonising bare ground (ED3) within these fields, and small areas of amenity grassland (GA2). As these habitats are of Local Importance (Lower Value), their removal or modification will not result in a likely significant effect on biodiversity at any geographic scale.

Construction of the Proposed Development will also result in the loss of dry meadows and grassy verges (GS2) habitat within the Proposed Development site. However, given the relatively low species diversity recorded in this habitat, the current management of the land (i.e. cattle grazing) and the proposed landscaping which will include the localised creation of wildflower meadows, the loss of this habitat is not likely to result in a significant negative effect, at any geographic scale.

The Proposed Development will result in the loss of some treelines (WL2) across the Proposed Development site. However, the majority of treelines within and on the periphery of the Proposed Development site are being retained, in particular the more established treelines, including the treeline running from northwest to southeast through the centre of the site. There are a total of 225 trees within the Proposed Development, 76 of which will be removed and 149 of which will be retained. This will result in a permanent impact significant at a local geographic scale. Landscape planting, including new native trees, shrub and hedge planting, is outlined as part of the Proposed Development, with proposed planting of 1250 trees. The proposed landscape planting will reduce the long-term effect of habitat loss arising from the Proposed Development.

The Proposed Development will result in the loss of some of the mixed broadleaf woodland (WD1) within the site's northern section, however most of the woodland will be retained. This will result in a permanent impact significant at a local geographic scale. Landscape planting

including new native trees and shrubs is outlined as part of the Proposed Development. The proposed landscape planting will reduce the long-term effect of habitat loss arising from the Proposed Development. There will be no impacts to the broadleaf woodland area to the east of the Proposed Development boundary.

Habitat loss may also lead to habitat fragmentation, i.e., creating new divisions of existing habitat blocks and/or contributing to an existing trend of fragmenting semi-natural habitat blocks; however, considering the habitat types to be lost, their extents and the surrounding habitats beyond the Proposed Development boundary, this potential impact will not result in a significant effect at any local geographic scale.

5.5.1.2.2 Damage to Retained Vegetation

In the absence of any mitigation, there is potential for damage to areas of treelines marked for retention. While sections of these habitats are being retained within the Proposed Development, there remains a risk of damage to the habitats arising during construction such as driving vehicles and storing materials within tree root protection zones, or through accidental machinery strikes to branches or trunks of trees. This impact, in a worst-case scenario could result in damage and degradation of trees, and ultimately death of individual trees. This impact would be significant at a local geographic scale and the duration of impact would be long-term.

5.5.1.2.3 Introducing or spreading non-native invasive plant species

Planting, dispersing, or allowing/causing the dispersal, spread or growth of certain non-native plant species is controlled under Article 49 of the European Communities (Birds and Natural Habitats) Regulations, 2011, and refers to plant or animal species listed on the Third Schedule of those regulations. The accidental spread of non-native invasive plant species as a result of construction works has the potential to impact terrestrial habitats within and immediately adjacent to the Proposed Development boundary, potentially affecting plant species composition, diversity and abundance over the long-term. The effects of introducing such non-native invasive plant species to highly sensitive and ecologically important habitat areas (e.g. designated area for nature conservation or areas of Annex I habitat) have the potential to result in a likely significant negative effect, at geographic scales ranging from local to international.

No non-native invasive species of the Third Schedule were recorded within the Proposed Development site and therefore there is no risk of them being spread beyond the boundaries of the Proposed Development site.

5.5.1.3 Construction Phase Impacts on Badger

5.5.1.3.1 Habitat loss

Construction will result in the permanent loss of suitable badger foraging habitat within the Proposed Development site. No signs of badger, including setts or feeding signs, were observed across the Proposed Development site. Notwithstanding the absence of any signs of badger, given the suitability of the site for badger, a precautionary approach has been adopted in that badgers could use the Proposed Development site on occasion for foraging.

Although badger activity may be altered by the Proposed Development, it is anticipated that badgers could forage across retained habitats and newly created habitats (e.g. suburban

gardens, linear parks and green spaces) following construction of the Proposed Development. The overall loss of habitat is small and not significant at any scale, considering the lack of signs of use by badger and that the Proposed Development site is surrounded in the wider landscape by agricultural lands, hedgerows, treelines, etc., all of which provide suitable commuting and foraging habitat for badger. In light of the above, it is predicted that the loss of foraging habitat associated with the Proposed Development is unlikely to affect the conservation status of the local badger population and will not result in a likely significant negative effect, at any geographic scale.

5.5.1.3.2 Disturbance/displacement

Increased human presence and/or noise and vibration during construction or operation, has the potential to displace badgers from foraging habitat. However, considering the lack of evidence of any badger activity recorded within the Proposed Development site and that the majority of human disturbance/noise will typically be undertaken during normal daylight hours and badgers are nocturnal in habit, significant displacement of badgers from foraging areas is unlikely to affect the local badger population.

Nocturnal mammals, such as the badger, are likely to be disturbed by the introduction of artificial light into foraging areas (Rich & Longcore, 2005) which could affect use of foraging areas. Disturbance or displacement due to light effects could occur during construction. However, the retention of treelines throughout the site would act as a visual buffer which will provide a visual barrier between foraging areas and the works area during construction. However, it is possible that temporary lighting required during the construction stage of the Proposed Development may illuminate previously unlit feeding and/or commuting areas, e.g. areas away from habitat retention areas making them unsuitable for badgers. However, any effects associated with artificial lighting during construction of the Proposed Development, is likely to be temporary and confined to specific areas within the site.

It is therefore predicted that displacement/disturbance effects associated with increased human presence and/or noise and vibration and artificial light spill is unlikely to affect the conservation status of the local badger population and will not result in significant negative effect, at any geographic scale.

5.5.1.4 Construction Phase Impacts on Otter

5.5.1.4.1 Habitat loss

No aquatic habitats were identified within the Proposed Development site therefore there will be no loss of aquatic or suitable riparian/terrestrial foraging habitat due to the Proposed Development. No signs of otter were identified within the Proposed Development site during the multidisciplinary survey. Therefore, the Proposed Development will not result in a significant negative effect, with regard habitat loss for otter, at any geographic scale.

5.5.1.4.2 Disturbance/displacement

Increased human presence and/or noise and vibration during construction or operation, has the potential to displace otter from foraging habitat. However, considering the lack of aquatic habitats within the Proposed Development site and the distance between the Shanganagh River and the Proposed Development site, significant displacement of otter from foraging areas is unlikely to affect the local otter population. Thus, the Proposed Development will not result in significant negative effects, at any geographic scale.

5.5.1.4.3 Effects of water quality impacts

The ZoI of potential impacts on surface water quality in the receiving freshwater environment could extend downstream as far as Southwestern Irish Sea - Killiney Bay coastal waterbody. Surface water run-off generated during construction could potentially carry silt, oils or other contaminants into the local surface water network which discharges to the Shanganagh River.

Given the lack of suitable aquatic habitats within the Proposed Development site and the distance between the Proposed Development site and the local surface water network, the potential impacts of surface water pollutants on the prey availability of otter are considered to be insignificant. The Hydrological and Hydrogeological Risk Assessment Report (Enviroguide Consulting, 2024) concluded that surface run-off from the Proposed Development will not result in any perceptible impact on water quality in the Shanganagh River or downstream receiving waters of Killiney Bay. Therefore, negative effects on otter are not likely to be significant at any geographic scale.

5.5.1.5 Construction Phase Impacts on Other Small Mammals

5.5.1.5.1 Habitat loss

The majority of the Proposed Development site consists of agricultural grassland and treelines with potentially suitable habitat to support small mammal species, such as pygmy shrew or hedgehog. Given the relatively low numbers of individuals of each species that are likely to be affected, and that they are highly mobile species, site clearance is unlikely to result in a level of mortality that would significantly and negatively affect the species' conservation status, even at a local geographic scale.

5.5.1.5.2 Disturbance/displacement

In conjunction with any displacement effects associated with habitat loss, increased human presence and/or noise and vibration associated with construction works, has the potential to displace mammal species from both breeding/resting places and from foraging habitat. However, considering that disturbance will be short-term, it is extremely unlikely to result in any long-term effects on the local mammal population or their conservation status. Particularly considering the extensive planting outlined within the landscaping design, the retention of treelines as outlined within the landscaping plan prepared for this application and the abundance of alternative suitable habitat of a similar nature surrounding the Proposed Development site. Therefore, disturbance/displacement is unlikely to result in a significant negative effect, at any geographic scale.

5.5.1.6 Construction Phase Impacts on Bats

5.5.1.6.1 Direct Mortality

Bats, and their breeding and resting places, are strictly protected under the Birds and Habitats Regulations, and under the Wildlife Acts, and it is an offence under that legislation to intentionally kill or injure bats or to interfere with or destroy their breeding or resting places. A small bat roost was identified in one building during emergence surveys of the derelict buildings and structures within the Proposed Development site. As such, there is the potential for any bat roosting in this structure to be injured or killed during demolition works. Therefore, mitigation measures are included to ensure that building demolition works do not result in bats being accidentally killed or injured during construction. A bat derogation licence application

was submitted to the NPWS in on 5th June 2024. The Bat Mitigation Report, which informed and supported the derogation licence application is included in Appendix 5-5. The loss of this structure, if used by roosting bats, would be significant at the local geographic scale only, given the low number of bats likely to be roosting therein and considerable artificial lighting in the vicinity.

Multiple trees within the Proposed Development site were deemed to have suitability for roosting bats, due to the evidence of potential roost features that could accommodate small numbers of bats. While most of the treelines are to be retained as part of the Proposed Development, it is proposed to remove some of the trees within the site. As such, there is the potential for bats roosting in these trees to be injured or killed during site clearance works. Therefore, mitigation measures and an application for derogation licence has been prepared and submitted to the NPWS to ensure that vegetation clearance does not result in bats being accidentally killed or injured during construction. This could result in a significant negative effect on the bats at the level of individual bats.

5.5.1.6.2 Habitat Loss

The removal of treeline and woodland habitat will result in the loss of foraging and commuting habitat for bat species within the Proposed Development site. However, there is alternative suitable foraging habitat located in the agricultural lands surrounding the Proposed Development site, within the area of woodland to the south-east and treelines and woodland to be retained as part of the landscaping proposal for the development, all of which will be sufficient to maintain the local population in the long-term.

It is therefore predicted that, despite any temporary effects, the loss of foraging/commuting habitat associated with the Proposed Development is unlikely to affect the conservation status of the local bat population and will not result in a likely significant negative effect, at any geographic scale, especially considering that the most frequently recorded species- common pipistrelle, soprano pipistrelle and Leisler's bat, are known to have a widespread distribution across the region, and in Ireland (Roche *et al.*, 2014) and that these species are showing an increase in their population trend.

Considering the extent of tree/vegetation across the Proposed Development, within the context of its current extent (i.e., in most cases tree removal is limited to the outermost trees in strips of linear roadside woodland), thereby avoiding complete fragmentation, this impact will be significant at the local level only.

5.5.1.6.3 Disturbance/Displacement

Light levels are not anticipated to increase significantly during the construction phase of the proposal, as works will be largely confined to daylight hours, and therefore there will not be a requirement for long-term lighting of the Proposed Development site which could affect suitable bat foraging habitat in the vicinity. It is proposed to retain areas of woodland and treelines within the site which will provide a visual barrier between these areas of the site and any works areas that require lighting during construction. However, it is possible that temporary lighting required during the construction stage of the Proposed Development may illuminate previously unlit feeding and/or commuting areas, e.g. areas away from retained habitats making them unsuitable for bats. However, any effects associated with artificial lighting during construction of the Proposed Development, are likely to be temporary and confined to specific areas within the site. Additionally, the most common species recorded

within the Proposed Development site i.e. Leisler's bat, soprano pipistrelle and common pipistrelle bat are some of the least sensitive to artificial light spill and are recorded in towns and cities across Ireland. For these reasons, significant effects arising from disturbance or displacement of bats are not anticipated to be significant at any geographic scale.

5.5.1.6.4 Direct Mortality

There is potential for direct mortality to occur as new buildings which may present a collision risk are constructed. However, fixed structures such as those proposed as part of the Proposed Development present a low risk in terms of collision. Therefore, the Proposed Development is considered to not have a significant negative effect on the bat populations at any geographic scale with regard to direct mortality from building collisions during construction.

5.5.1.7 Construction Phase Impacts on Breeding Birds

5.5.1.7.1 Habitat loss

The clearance of vegetation within the lands will result in the permanent loss of foraging and nesting habitats for birds. This includes grassland, scrub, treeline and woodland habitats utilised by a range of common bird species. However, there is alternative suitable foraging/breeding habitat, including hedgerows, woodlands and treelines located in the vicinity of the Proposed Development site as well as within the areas of woodland and treelines to be retained as part of the landscaping proposal. All of this will be sufficient to maintain the local population in the long-term. Additionally, the majority of birds recorded within the Proposed Development site include a range of common bird species, which occur in suburban settings throughout the greater Dublin area. It is likely that they will continue to utilise areas of the Proposed Development site following completion of construction. It is therefore predicted that, despite any potential temporary effects, the loss of foraging/breeding habitat associated with the Proposed Development the effects of habitat loss are not significant at any geographic scale.

5.5.1.7.2 Direct mortality

All birds, their nests, eggs and unfledged young are protected in Ireland through the Wildlife Acts. In the absence of any mitigation, there is potential for clearance of vegetation to result in mortality of birds or their young, or the destruction of a nest. This would most likely occur if site preparation works were to be undertaken during the breeding bird season, i.e. between 1st of March and 31st of August. The effects of mortality or loss of a nest for all breeding birds would have a significant negative effect at the local geographic scale.

5.5.1.7.3 Disturbance/displacement

There is likely to be an increase in noise and human presence within the Proposed Development site during construction (and operation) which is likely to displace breeding birds from habitat areas within and adjacent to the Proposed Development boundary. Although it is not possible to quantify the magnitude of this potential impact (or the potential effect zone) it could potentially extend for several hundred metres from the Proposed Development. Given that the majority of bird species recorded and likely to breed on the Proposed Development site are common urban species already exposed to existing noise and disturbance in the immediate vicinity of the proposed works (especially associated with the on-going Rockville development), they are anticipated to continue breeding and utilising lands in and adjacent to

the Proposed Development site. For these reasons, significant negative effects arising from disturbance or displacement are not predicted.

5.5.2 Operational Phase

5.5.2.1 Operational Phase Impacts on Designated Sites

5.5.2.1.1 European Sites

Given the minor contribution of the Proposed Development to the outstanding capacity of the Shanganagh WwTP, the fact that the Shanganagh WwTP's discharge is compliant with its licensed limits and the fact that the discharge is not having an observable negative impact on water quality in Killiney Bay, the Proposed Development will not have any perceptible impact on water quality of Killiney Bay.

Therefore, there is no possibility of the Proposed Development undermining the conservation objectives of any of the QIs or SCIs of the European sites in, or associated with, Killiney Bay as a result of foul water discharges.

Therefore, the Proposed Development will not adversely affect (either directly or indirectly) the integrity of any European site.

5.5.2.1.2 Nationally Designated Sites

There are no nationally designated sites within the potential ZoI of any operational phase outputs from the Proposed Development as they are not within the ZoI of foul water discharges from the site. Loughlinstown Wood pNHA is located upstream of the discharge point from the Shanganagh WwTP. Dalkey Coastal Zone and Killiney Hill pNHA has been designated for high-water mark habitats (e.g. shingle banks) which are not vulnerable to any potential nutrient deposition arising from increases in foul water loading to Shanganagh WwTP and the discharge is having no perceptible impact on Killiney Bay. For these reasons, there is no possibility of significant negative effects on Nationally designated sites arising from the Proposed Development.

5.5.2.2 Operational Phase Impacts on Habitats

There are no operational phase impacts predicted for habitats arising from the Proposed Development.

5.5.2.3 Operational Phase Impacts on Badger

The Proposed Development has the potential to displace badgers from foraging habitat during operation given the increased number of people likely to be using the Proposed Development site during operation. However, considering that the majority of human disturbance/noise will typically be undertaken during normal daylight hours and badgers are nocturnal in habit, significant displacement of badgers from adjacent foraging areas is considered unlikely to significantly affect the local badger population.

Disturbance or displacement due to light effects could occur during operation. However, as outlined within the landscaping proposals accompanying this application, planting of native woodland shrubs/trees such as hawthorn *Crataegus monogyna* will be established within the site, which, along with minimising the requirement for maintenance machinery (i.e. lawnmowers), will provide a level of screening from residential dwellings and artificial light spill and reduce the levels of disturbance to foraging badgers using the Proposed Development site and adjacent areas. This will be further enhanced through the retention of woodland and

treelines throughout the Proposed Development site as outlined on the landscaping plan prepared for this application.

5.5.2.4 Operational Phase Impacts on Otter

No operational phase impacts are predicted on otter as a result of the Proposed Development.

5.5.2.5 Operational Phase Impacts on Other Small Mammals

There are no operational phase impacts to small mammal species predicted to arise from the Proposed Development at any geographic scale.

5.5.2.6 Operational Phase Impacts on Bats

An increase in the existing light levels during operation, within the Proposed Development site could potentially indirectly affect bat species that utilise the site for foraging and/or commuting.

Given the presence of lighting in the immediate surrounding environment (i.e. within the Rockville development to the northeast) and street lighting along the surrounding roads including the Glenamuck Road and the Enniskerry Road, the local bat population is expected to be habituated to artificial light spill, especially as the most common species recorded within the Proposed Development site, i.e. Leisler's bat, soprano pipistrelle and common pipistrelle bat, are some of the least sensitive to artificial light spill, and are recorded in towns and cities across Ireland.

Additionally, in the operational lighting plan prepared for the Proposed Development by Sabre Lighting, artificial light has been minimised and where possible will be avoided for areas of high bat activity e.g. the central treelines to be retained, and the woodland area to the east. . Lighting along the treeline to be retained will consist of low intensity lighting with uplighting sources kept to a minimum to reduce sky glow/light dispersal.

In light of the existing habitats within the lands, the range of species utilising the lands, and the design measures adopted for lighting plan of the Proposed Development site, significant effects arising from disturbance or displacement of bats are not anticipated to be significant at any geographic scale.

The presence of new multi-storey structures within the Proposed Development site could potentially result in direct mortality of bat species that utilise the site for foraging and/or commuting, through collisions. Recent studies, investigating the cause of bat collisions with buildings found that building material is an important factor to be considered (Greif *et al.,* 2017) Whilst the design of the facades of the buildings do include windows, as shown on the elevation drawings prepared by Mc Crossan O Rourke Manning Architects for the Proposed Development, no large surfaces of glass are proposed. The use of brickwork will help to minimise the effect of the glazing, making the buildings more detectable to bats and therefore reduce the potential for collisions to occur.

Irish bat species navigate largely by echolocation calls, and fixed structures such as those proposed as part of the Proposed Development present a low risk in terms of collision. Therefore, the Proposed Development is considered to not have a significant negative effect on the bat populations at any geographic scale with regard to direct mortality from building collisions.

5.5.2.7 Operational Phase Impacts on Breeding Birds

The planting proposed as part of the landscape design for the site will, as it becomes established and matures, serve to provide additional nesting and foraging opportunities for the local bird population, therefore no operational phase impacts from habitat loss are predicted for breeding birds. Although there will be an increase in noise and human presence within the Proposed Development site during operation, the majority of bird species recorded within the Proposed Development site, and likely to breed there, are common urban species that are likely to adapt to human presence within the Proposed Development site.

The presence of new multi-storey structures within the Proposed Development site could potentially result in direct mortality of bird species that utilise the site for foraging and/or commuting, due to collisions.

From a review of available literature on the subject, bird collisions with man-made structures are common and well documented (Banks, R.C., 1979), (Jenkins, *et al.*, 2010), (Klem, D., 1990), (Erickson, *et al.*, 2005), (Erickson, *et al.*, 2001) with migratory passerine species the most prevalent collision victims (Bing *et al.*, 2012) (Longcore *et al.*, 2013). Bird collision with buildings is generally associated with reflective material such as windows or large surfaces of glass which create a mirror and appear to show the continuation of the sky or surrounding landscape, an effect that can be exacerbated by lighting (Sheppard, C. & Phillips, G., 2015). Whilst the design of the facades of the apartments and neighbourhood centre buildings do include windows, as shown on the elevation drawings prepared by Mc Crossan O Rourke Manning Architects for the Proposed Development no large surfaces of glass are proposed. The external surfaces of the buildings will be a combination of brickwork and pressed metal cladding.

The use of different materials and design in the facades and elevations will minimise the effect of glazing, making the building more detectable to birds and therefore reduce the potential for collisions to occur. In the absence of mitigation there could be a low level of mortality attributable to bird collision with glazing on the proposed buildings, however this impact will not cause any significant effect at a local scale or any other geographic scale.

5.5.3 Potential Cumulative Impacts

Potential cumulative impacts may arise during construction and operation, as a consequence of the Proposed Development acting in-combination with other plans and projects, on water quality in the downstream surface water environment, disturbance to birds, bats and badger, as well as habitat loss to bats, birds and badger.

There are granted planning permissions for residential or other small-scale developments such as extensions to existing dwellings, construction of new car parking spaces, etc. in the immediate vicinity of the Proposed Development site as well as larger scale developments in close proximity to the Proposed Development site, some of which may be in construction at the same time as the Proposed Development. A list of the projects considered in the cumulative impacts assessment has been included in Appendix 5-4.

As demonstrated in Section 5.7 it is considered there are no residual significant ecological effects on designated sites, habitats, badger, bats or breeding birds. Therefore, there is no potential for cumulative effects to arise.

In addition, the potential for cumulative effects to arise from any existing or proposed land use plans or developments is regulated and controlled by the environmental protective policies and objectives of the Dún Laoghaire-Rathdown County Development Plan 2022-2028 and the Wicklow County Development Plan 2022-2028. Any existing/proposed plan or project that could potentially act in combination with the Proposed Development, must adhere to these overarching environmental protective policies and objectives (including policies GIB18, GIB19, GIB20, GIB21, GIB22, GIB23, GIB24, GIB25 and GIB28). These policies and objectives will ensure the protection of local biodiversity within the ZoI of the Proposed Development. These policies and objectives also include the requirement for any future plans or projects to undergo Screening for Appropriate Assessment and/or Appropriate Assessment to examine and assess their effects on European sites, alone and in combination with other plans and projects.

Proposed Schemes which have not yet been submitted to the Planning Authority must comply with all applicable planning and environmental approval requirements and be in accordance with the objectives and policies of the relevant development plan and its policies and objectives, which would ensure the protection of the natural environment.

In light of the above no cumulative effects are predicted with regard to biodiversity, in conjunction with the Proposed Development.

5.5.4 "Do Nothing" Impact

Under the do-nothing scenario, it is expected that management of the Proposed Development site would remain unchanged and that the existing woodlands, treelines, grasslands and scrub would continue to grow and develop. Characteristics of the site would, therefore, not change other than through natural processes or landowner management, and it would likely continue to support similar flora and fauna.

5.6 Avoidance, Remedial and Mitigation Measures

Mitigation measures are proposed for KERs where a potential significant effect has been identified and include precautionary measures for some potential significant effects.

All measures described below will be implemented in full and included in the Construction Environmental Management Plan (CEMP) to accompany the planning submission. The CEMP is a live document that will be updated by the appointed contractor.

5.6.1 Construction Phase

5.6.1.1 Designated Sites

As set out in Section 5.5.1.1 and the AA Screening Report, which concluded that the Proposed Development is not likely to have a significant effect on any European or Nationally designated sites, mitigation measures intended to avoid or reduce any harmful effects of the Proposed Development on European sites were not required.

5.6.1.2 Habitats

5.6.1.2.1 Landscape Management Plan

The landscape design incorporates and supports a wide array of habitats and will include the planting of 1250 new native trees. The landscape design includes a multitude of habitat boxes to cater for birds, insects, and bats, as well as a series of raingardens and swales which will provide habitat for a variety of animals while also serving as water retention features. Also included in the design plan are wildflower meadows and woodland planting.

5.6.1.2.2 Retention and Protection of Vegetation during Construction

Any vegetation (including trees, hedgerows or scrub adjacent to, or within, the Proposed Development boundary) which is to be retained shall be afforded adequate protection during the construction phase in accordance with the Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, During and Post Construction of National Road Schemes (TII, 2006b), as follows:

- All trees along the Proposed Development boundary that are to be retained, both within and adjacent to the Proposed Development boundary (where the root protection area of the tree extends into the Proposed Development boundary), will be fenced off at the outset of works and for the duration of construction to avoid structural damage to the trunk, branches or root systems of the trees. Temporary fencing will be erected at a sufficient distance from the tree so as to enclose the Root Protection Area (RPA) of

the tree. The RPA will be defined based upon the recommendation of a qualified arborist.

- Where fencing is not feasible due to insufficient space, protection for the tree/hedgerow will be afforded by wrapping hessian sacking (or suitable equivalent) around the trunk of the tree and strapping stout buffer timbers around it.
- The area within the RPA will not be used for vehicle parking or the storage of materials (including soils, oils and chemicals). The storage of hazardous materials (e.g. hydrocarbons) or concrete washout areas will not be undertaken within 10m of any retained trees, hedgerows and treelines.
- A qualified arborist will assess the condition of, and advise on any repair works necessary to any trees which are to be retained or that lie outside of the Proposed Development boundary but whose RPA is impacted by the works. Any remedial works required will be carried out by a qualified arborist.
- A buffer zone of at least 5m will be maintained between construction works and retained hedgerows to ensure that the root protection areas are not damaged.

5.6.1.2.3 Preventing spread of non-native invasive plant species

While there were no non-native invasive species recorded in the Proposed Development site, there is potential for species to spread to the site during the interim between the original surveys and commencement of construction following grant of planning permission (if received). A confirmatory pre-construction invasive species survey will be undertaken by a suitably qualified specialist to confirm the absence, presence and/or extent of any Third Schedule non-native invasive species within the Proposed Development site. If the presence of any of these species is confirmed within the Proposed Development site, the implementation of an Invasive Species Management Plan prepared by a suitably qualified professional in line with TII guidelines (2020b) will be required.

5.6.1.3 Badger and Other Protected Mammals

As the usage of the Proposed Development site by badgers and other protected mammals can change over time, a confirmatory pre-construction check of the Proposed Development site for new burrow entrances, resting places and signs will be carried out before commencement of construction immediately prior to construction works commencing to confirm their usage by badger or other potential protected mammals.

Any new badger setts (or resting places) identified will be afforded protection in line with the requirements set out in the National Roads Authority (2005) guidance document as follows:

- Badger setts if encountered will be clearly marked and the extent of bounds prohibited for vehicles clearly marked by fencing and signage.
- In the season June to November, no heavy machinery will be used within 30m of badger setts; lighter machinery (generally wheeled vehicles) will not be used within 20m of a sett entrance; light work, such as digging by hand or scrub clearance will not take place within 10m of sett entrances.
- During the breeding season (December to June inclusive), none of the above works will be undertaken within 50m of active setts, nor blasting or pile driving within 150m of active setts.

- Where works need to be undertaken within these zones, or where works directly affect newly identified badger setts, consultation with an ecologist with relevant badger management experience is required, and could include advanced badger mitigation measures such camera trapping to confirm sett status and sett closure / destruction, which must be undertaken outside the breeding season as per specialist advice, and will all be conducted under the supervision of an ecologist with experience in badger mitigation.
- Any potential new constraints (other protected mammals) identified will also be afforded protection in line with the requirements set out in the TII guidance documents and mitigated in line with the advice and supervision of an experienced ecologist as needed.

5.6.1.4 Bats

Mitigation measures have been proposed in the Bat Mitigation Strategy (Appendix 5-5) with reference to practices outlined in *Bat Mitigation Guidelines for Ireland V2* (Marnell et al. 2022), *Bat Surveys for Professional Ecologists: Good Practice Guidelines (*Collins, 2023) and in *Bats & Bat Boxes: Guidance Notes for Agri-environment Schemes* (Bat Conservation Ireland, 2015). The aims of the mitigation strategy are to avoid disturbance of roosting bats or mortality of bats during the proposed works, and to provide alternative roost sites to offset the loss of known and potential roost sites.

5.6.1.4.1 Supervision of Proposed Works

A suitably qualified / licenced bat specialist (note: or other person as may be stipulated in any subsequent condition by Dún Laoghaire-Rathdown County Council, e.g., an Ecological Clerk of Works), will be engaged by the appointed contractor who will advise the appointed contractor on ecological matters during construction, communicate all findings in a timely manner to the Applicant and statutory authorities, and supervise and direct the ecological measures associated with the proposed development.

The proposed demolition works will be completed within one month (subject to planning consent). The demolition of the building confirmed as a bat roost will occur during the spring or autumn periods, as the risk of accidental death or injury is lower at this time, as it is outside the main maternity season and hibernation season. Bats may use roosts in smaller numbers in winter for hibernation but may nevertheless be present.

The following measures are proposed for demolition of the confirmed roost building (Building 4) and will be conduced under a derogation licence from the NPWS:

- Presence/absence of bats in the building will be determined by suitably qualified, experienced, and licensed ecologist(s) in advance of building demolition. Presence/absence will be determined by roost inspection checks (*e.g.* using an endoscope device) and a combination of dusk emergence and/or dawn re-entry surveys (if weather conditions are suitable).
- Immediately following completion of the above (the next day after dawn/dusk emergence surveys), the roofing will be removed under the supervision of the licenced bat ecologist during daylight hours. The bat worker will inspect the roof materials in advance of removal with a suitable device such as an endoscope.

- The contractor undertaking demolition works will facilitate safe access for the bat worker to the roof area of the building to allow inspection for roosting bats. Safe access may be facilitated via a scaffold, or via a Mobile Elevated Working Platform (MEWP) or similar.
- The demolition works will be conducted under the supervision of the licenced bat ecologist. In the event that bats are encountered during the works, they will be removed by hand, and transferred to a bat box (for specification, refer to Section 5.6.1.4.2), which will be installed on site in advance of works.

Regarding the retention and protection of vegetation, in the event where any of the trees showcasing PRFs (Figure 5-6) require removal, pruning, or cutting, these will need to be checked in advance of pruning to confirm absence of roosting bats. Given the potential for PRFs to host roosting bats, the completion of tree works will be conducted under a derogation licence from the NPWS to disturb a bat or its roost and/or to remove/destroy a bat roost. In general, the checks of PRFs will proceed as follows:

1. PRFs will be inspected at height by an appropriately trained and qualified professional[18] with the use of an endoscope device or similar.
2. Where a PRF can be fully inspected and no evidence of bats is detected, the tree may be felled/pruned/cut immediately or on the same working day during daylight hours. As bats are mobile species and are known to 'roost switch' between different tree PRFs (Andrews, 2018), it is not appropriate to allow a larger passage of time between inspection of a feature and its removal due to the increased risk of occupancy by a bat.
3. Where a PRF can be fully inspected and a bat is identified roosting within the PRF[19], works on that particular tree will be suspended. The licensed ecologist will be engaged to complete a roost emergence and dawn re-entry survey of the PRF. The survey will be completed with equipment including recording bat detectors and night vision aids [e.g. infrared camera(s) or thermal imaging camera(s) of an appropriate specification to detect emerging/returning bats]. Where bats are confirmed to be absent, recommendation 2 (above) will apply. Where a bat roost is confirmed, the bat(s) will be allowed to leave the PRF or will be excluded from the PRF before the feature is removed. This may require multiple roost emergence, dawn re-entry, and roost inspection surveys.
4. Where a PRF cannot be fully inspected or where there is doubt as to whether bats are likely to be present, works will be suspended on that particular tree. A qualified ecologist will be engaged to complete a roost emergence and dawn re-entry survey of the PRF. The survey should be completed with equipment including recording bat detectors and night vision aids [e.g. infrared camera(s) or thermal imaging camera(s) of an appropriate specification to detect emerging/returning bats]. Where bats are confirmed to be absent, recommendation 2 (above) will apply. Where a bat roost is

[18] In general, an appropriately trained and qualified professional will either be i) a tree surgeon who has undergone tree roost inspection training and has a certificate issued by the trainer, or ii) a qualified and experienced bat ecologist who holds a Regulation 54(2)(d) derogation licence for roost disturbance and Wildlife Acts Section 9 & 23(6)(b) and Section 23&34 licences for disturbance of bats in their roosts.

[19] Where a bat is encountered by a tree surgeon, they should withdraw from inspecting said tree immediately in order to avoid triggering disturbance of a bat or its roost.

confirmed, the bat(s) will be allowed to leave the PRF or will be excluded from the PRF before the feature is removed. This may require multiple roost emergence, dawn re-entry, and roost inspection surveys

Any vegetation (including trees, hedgerows or scrub adjacent to, or within, the proposed development boundary) which is to be retained shall be afforded adequate protection during the construction phase in accordance with the Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, During and Post Construction of National Road Schemes (National Roads Authority, 2006a).

Lighting proposals for the construction phase will adhere to the advice provided in Bats and Lighting – Guidance for Planners, Engineers, Architects and Developers (Bat Conservation Ireland 2010), Guidance Note GN08/23 Bats and Artificial Lighting at Night (Institution of Lighting Professionals & Bat Conservation Trust, 2023) and Guidance Note GN01/21 The Reduction of Obtrusive Light (Institute of Lighting Professionals, 2021). Construction stage lighting details will be reviewed by a qualified bat ecologist. If necessary, the bat ecologist will recommend adjustments to directional lighting (e.g. through cowls, shields or louvres) to restrict light spill in sensitive areas.

5.6.1.4.2 Provision of Alternative Roost Facilities On-site During and Post Development Works

As part of the mitigation measures, alternative roosts appropriate to the bat species recorded will be provided nearby within the proposed development site. For soprano pipistrelles these are tree crevice-type boxes, with 25-35mm crevices. Therefore, a combination of two Schwegler type 2F bat boxes and four Schwegler type 1FF flat bat boxes (or similar models) will be installed at a suitable location to be determined by the bat worker/ecologist within the site boundary.

The tree-mounted bat boxes will be installed either by the ecologist or by the contractor under the supervision of the ecologist. It is preferable that each box faces a slightly different aspect from southeast to southwest facing, to provide a range of slightly differing temperature regimes (Bat Conservation Ireland, 2015). All bat boxes will be installed at least 3m above ground level to minimise the risk of interference by humans. The bat boxes will be located away from areas that are subject to artificial light spill. All boxes will be installed prior to the commencement of demolition and construction works.

5.6.1.4.3 Measures for the Unforeseen Discovery of Roosts during Works

In the event of the unforeseen discovery of roosts during the construction of the proposed development all construction activities will cease in proximity to the discovered roost, and the bat specialist/ecologist contacted for advice. The local NPWS ranger will be contacted by the bat specialist/ecologist for an agreed approach.

5.6.1.4.4 Reporting to the NPWS

A report documenting adherence to measures within Section 5.6.1.4 of this report will be produced by the licensed ecologist and forwarded to the NPWS within three months of completion of demolition works. The success of the proposed strategy will be measured by the mortality of any bats during construction, and the provision of alternative roosting sites in the lands during and after construction.

5.6.1.5 Breeding Birds

Where feasible, vegetation (e.g. hedgerows, trees, scrub and grassland) will not be removed, between the 1st of March and the 31st of August, to avoid direct impacts on nesting birds. Where the construction programme does not allow this seasonal restriction to be observed, then these areas will be inspected by a suitably qualified ecologist for the presence of breeding birds prior to clearance. Areas found not to contain nests will be cleared within 3 days of the nest survey, otherwise repeat surveys will be required. Should nesting birds be encountered during surveys, the removal of vegetation will be required to be delayed until after the nesting has finished.

5.6.2 Operational Phase

5.6.2.1 Designated Sites

As set out in Section 5.5.2.1 and the AA Screening Report, which concluded that the Proposed Development is not likely to have a significant effect on any European or Nationally designated sites, mitigation measures intended to avoid or reduce any harmful effects of the Proposed Development on European sites were not required or taken into account.

5.6.2.2 Habitats

As outlined within the landscaping proposals accompanying this application, planting of native tree and shrub species will be implemented within the site during construction. The implementation of the landscape plan will extend into the operational phase, as planting becomes established and continues to mature.

5.6.2.3 Bats

As part of the Bat Mitigation Strategy (Appendix 5-5), alternative roosts appropriate to the bat species recorded will be provided within the proposed development site. These will be installed at a suitable location determined by the bat worker/ecologist prior to the construction phase and will be maintained and monitored throughout the operation phase.

Consideration of light spill has been incorporated into the lighting design being cognisant of lighting impacts on bats. no additional mitigation is necessary as mitigation has been considered in the design

5.6.2.4 Breeding Birds

As an enhancement measure for the loss of nesting habitat and in order to provide additional nesting opportunities for breeding birds, 6 no. 1B Schwegler nest boxes or similar will be installed within the Proposed Development site. The nest boxes will be installed at a minimum of 3m above ground level to ensure against disturbance from humans and domestic animals such as cats. The boxes will be deployed across the site in appropriate locations, as advised by a suitably qualified ecologist.

5.6.3 “Worst Case” Scenario

The assessments carried out under Sections 5.5.1 and 5.5.2 are undertaken based on the design received and in the absence of mitigation. Therefore, this assessment represents the worst-case scenario of the Proposed Development prior to the inclusion of mitigation measures. In a general worst-case scenario for the Proposed Development site, all vegetation would be removed, and fauna would cease to use the lands over the long-term.

5.7 Residual Impacts

5.7.1 Residual Impacts on European Sites

Following an examination, analysis and evaluation of the best available information, and applying the precautionary principle, it can be concluded that the possibility of any significant effects on any European sites, whether arising from the project alone or in combination with

other plans and projects, can be excluded, for the reasons set outlined in 5.5.1.1.1 and 5.5.2.1.1 Sections of this chapter , and in an AA Screening report (Scott Cawley Ltd., 2024) accompanying this application. In reaching this conclusion, the nature of the project and its potential relationship with all European sites within the ZoI, and their conservation objectives, have been fully considered. Therefore, the Proposed Development is not likely to have significant residual effects on any European designated sites.

5.7.2 Residual Impacts on Nationally Designated Sites

The assessment presented in Sections 5.5.1.1.2 and 5.5.2.1.2, concluded that there was no risk of the Proposed Development resulting in a likely significant effect on any nationally designated sites, either alone or in combination with other plans or projects. Therefore, the Proposed Development is not likely to have significant residual effects on any nationally designated sites.

5.7.3 Residual Impacts on Habitats

With regard to the KER habitats identified within the Proposed Development area, there will be a permanent loss of dry meadows and grassy verges GS2 habitat, as well as a loss of sections of treeline habitat. However, the proposed retention of broadleaf woodland and the majority of treelines, the implementation of the landscaping design (including a mixture of semi-mature and multi-stemmed trees) and the mitigation strategy to protect trees to be retained, will minimise the impact of those effects on habitats over the medium to long--term. Although there will be a temporary impact during the construction phase until the proposed landscape planting becomes established, the Proposed Development is not likely to result in long-term effects on habitats and will not result in a likely significant negative residual effect, at any geographic scale.

5.7.4 Residual Impacts on Badger

The potential effects of the Proposed Development are considered in Sections 5.5.1.3 and 5.5.2.3. Significant effects are not predicted with regard to badgers, and therefore residual effects on badgers are not deemed significant.

5.7.5 Residual Impacts on Otter

The potential effects of the Proposed Development are considered in Sections 5.5.1.4 and 5.5.2.4. Significant effects are not predicted with regard to otters, and therefore residual effects on otters are not deemed significant.

5.7.6 Residual Impacts on Other Small Mammals

The potential effects of the Proposed Development are considered in Sections 5.5.1.5 and 5.5.2.5. Significant effects are not predicted with regard to other mammals, and therefore residual effects for other mammals are not deemed significant.

5.7.7 Residual Impacts on Bats

The potential effect of the Proposed Development on bats is documented in Sections 5.5.1.6 and 5.5.2.6. However, assuming the full and successful implementation of the mitigation measures outlined within the Bat Mitigation Strategy (Appendix 5-5), no residual impacts are predicted on bats.

5.7.8 Residual Impacts on Breeding Birds

The potential effect of the Proposed Development on breeding birds is documented in Sections 5.5.1.7 and 5.5.2.7. However, assuming the full and successful implementation of the mitigation measures, no residual significant impacts are predicted on breeding birds at any geographical scale.

5.8 Monitoring

5.8.1 Construction Phase

A suitably experienced and qualified Ecological Clerk of Works (ECoW) will be retained by the appointed contractor. The ECoW will advise the appointed contractor on ecological matters during construction, undertake pre-construction surveys as necessary, communicate all findings in a timely manner to the appointed contractor and statutory authorities, acquire any licenses / consents required to conduct the work, and supervise and direct the ecological measures associated with the Proposed Development.

Pre-construction surveys for badger (Section 5.6.1.3), bats (Section 5.6.1.4) and breeding birds (Section 5.6.1.5) will be carried out as described in the respective sections.

5.8.2 Operational Phase

A landscape monitoring plan will be undertaken for a number of years post implementation to ensure establishment of planting and success of habitat management.

While the success of the proposed Bat Mitigation Strategy will not be measured by occupancy of roosts by bats, it is considered to be best practice and appropriate to implement a monitoring plan to gather information and assess whether the bat population has responded favourably to mitigation measures.

A three-year post-installation monitoring programme will be undertaken. The bat boxes will be checked for presence of bats or signs of bats on a biennial basis between August and September in years 1 and 3 post-installation by an appropriately licensed and qualified ecologist.

The results of the monitoring surveys will be recorded and shared with the local authority and the NPWS.

5.9 Interactions

Biodiversity interacts with several environmental factors including land and soils, hydrology, air quality, climate and microclimate and noise and vibrations, discussed in the relevant Chapters of the EIAR. Changes to these environmental factors could result in significant impacts on biodiversity, outlined in the following sections.

5.9.1 Land and Soils

Interactions between land and soils and biodiversity can occur through the spread of any hazardous material/contaminated land which may occur during the construction stage. The spread of land contaminated with potentially hazardous material could result in habitat degradation of habitats within the Proposed Development site and adjacent/downstream designated sites and their associated QIs. Following the implementation measures outlined within the CEMP, impacts to habitats, flora and fauna from soils and land interactions are not predicted to be significant.

5.9.2 Hydrology

Interactions between hydrology and biodiversity including habitats, flora and fauna can occur through impacts to water quality either arising from an accidental pollution event or increased sedimentation during the construction stage, or an accidental pollution event during the operational stage. This interaction has the potential to result in significant impacts on hydrologically connected habitats and sensitive fauna that rely on these habitats. However, for reasons outlined in the relevant sections (i.e., 5.5.1.1 and 5.5.2.1) impacts to downstream sensitive habitats and fauna are not predicted to be significant.

5.9.3 Air Quality, Climate and Microclimate

Interactions between air quality and flora and fauna in adjacent habitats and designated sites can occur during the construction stage due to dust emissions arising from construction works. This interaction has the potential to result in significant impacts on biodiversity. However, once the dust minimisation measures prescribed in the CEMP are implemented, impacts to flora and fauna are not predicted to be significant.

5.9.4 Noise and Vibrations

Interactions between noise and sensitive fauna, namely birds, bats and badgers can arise from increased noise levels during the construction stage. This interaction has the potential to result in significant impacts and has been assessed when considering disturbance impacts during construction. However, for reasons outlined in the relevant sections (i.e. Sections 5.5.1.3, 5.5.1.4, 5.5.1.5, 5.5.1.6 and 5.5.1.7) impacts to fauna from noise interactions are not predicted to be significant.

5.10 Difficulties Encountered When Compiling

During the bat emergence surveys, the northern sides of the derelict “Rockville” buildings were not fully visible from the exterior due to the dense treeline. The buildings were fully accessed and surveyed during the internal building inspections and no signs indicating the presence of a bat roost were observed. All buildings were surveyed to the fullest practical extent and the results and evaluation reflect an accurate assessment of the structures within the Proposed Development site. A precautionary approach is being taken and the mitigation strategy includes measures for unforeseen discovery of bats.

Habitat surveys were undertaken on the 30th of March, which is earlier than the optimal survey season. However, previous habitat surveys were undertaken in optimal seasons in July 2021

and May 2022 (Enviroguide Consulting, 2024) following methodology described in *Best Practice Guidance for Habitat Survey and Mapping* (Smith *et al.*, 2011) and a site walkover confirming no changes to habitats was undertaken on 13th May 2024. The habitats on site are largely of lower value and as there were no significant changes in ecological conditions this did not impact the findings of this assessment.

Wintering bird surveys were undertaken on 8th of December 2022, 4th of January 2023, 14th of February 2023 and 14th of March 2023. These surveys did not represent a full survey season (October – March). However, this has not impacted the findings of this assessment as wintering bird surveys were undertaken following methodology from the *Bird Monitoring Methods - A Manual of Techniques for Key UK Species* (Gilbert *et al.,* 1998) within the Proposed Development site for a previous application on the 19th of February, 2nd of March 2021, 19th of March 2021, 23rd of November 2021, 20th of December 2021, 19th of January 2022, 22nd of February 2022 and 22nd March 2022 (Enviroguide Consulting, 2022). The surveys span three wintering bird seasons in total at the Proposed Development site. Due to the low numbers of species and individuals recorded and the lack of significant change in ecological conditions or habitats present, this does not impact the assessment of the use of the Proposed Development site by wintering birds.

There were no other limitations associated with surveys undertaken and they were all conducted during the optimal survey seasons.

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