

enviroguide.ie

# Ecological Impact Assessment Report

#### PRESENTED TO

Marshall Yards Development Company Limited Proposed Large-scale Residential Development (LRD) at Cartron, Oranmore, Co. Galway

May 2024

Applicant	Marshall Yards Development Company Limited
Project Title	Proposed Large-scale Residential Development (LRD)
Document Title	Ecological Impact Assessment Report

Revision	Status	Author(s)	Reviewed	Approved	Issue Date
0.0	Draft for internal Review	AC Ecologist	NB Project Ecologist	-	-
1.0	Draft for Client	AC Ecologist	NB Project Ecologist	BL Principal Ecologist	03/05/2024
2.0 Final AC Ecologist		NB Project Ecologist	BL Principal Ecologist	17/05/2024	



#### **REPORT LIMITATIONS**

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

The information contained in this Report is based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested and that such information is accurate. Information obtained by Enviroguide has not been independently verified by Enviroguide, unless otherwise stated in the Report.

The methodology adopted and the sources of information used by Enviroguide in providing its services are outlined in this Report.

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

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

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

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

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

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

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

Copyright © This Report is the copyright of Enviroguide Consulting Ltd. any unauthorised reproduction or usage by any person other than the addressee is strictly prohibited.



#### TABLE OF CONTENTS

RE	REPORT LIMITATIONSII				
LIS	ST OF TA	ABLES		.IV	
LIS	ST OF FI	GURE	5	v	
1	INTR		TION	. 1	
-					
	1.1		TY ASSURANCE AND COMPETENCE	1 2	
	1.2	RELEV	ANT LEGISLATION AND POLICY CONTEXT	Z	
2	DESC	CRIPTI	ON OF THE PROPOSED DEVELOPMENT	4	
	2.1	Site L	DCATION	4	
	2.2	PROP	DSED DEVELOPMENT DESCRIPTION	4	
	2.2.1	L	Drainage and Water Supply	7	
	2.2.2	2	Landscape Plan	7	
	2.2.3	3	Lighting Plan	8	
	2.3	DESCR	IPTION OF THE CONSTRUCTION PHASE	8	
	2.4	DESCR	IPTION OF THE OPERATIONAL PHASE (INDEFINITE)	8	
3	MET	HODO	PLOGY	12	
	3.1	Scope	OF ASSESSMENT	.12	
	3.2	DESK	STUDY	.12	
	3.3	ZONE	OF INFLUENCE	.13	
	3.4	IDENT	FICATION OF RELEVANT DESIGNATED SITES	.13	
	3.5	FIFLD	Surveys	.14	
	3.5.1	1	Habitat Surveys	15	
	3.5.2	,	Invasive Species Surveys	.15	
	353	2	Rat Surveys	15	
	3.5.4	1	Bird Surveys.	.19	
	3 5 5	, 5	Badaer Survey	19	
	356	5	Otter Survey	20	
	357	, 7	Other Fauna	20	
	3.6	Fcou	ICICAL ASSESSMENT	20	
	361		Funduation of Ecological Features	20	
	3.0.1	<u>-</u>	Impact Assessment	20	
	262	- >	Assessment of Cumulative Impacts and Effects	.20	
	2.0.3	1	Assessment of cumulative impacts and Enhancement Measures	.21	
	3.7	LIMIT	Avoidance, Whitgation, compensation and Emancement Weasares	.22	
Л	FCO			22	
-	1 1	Grad		<b></b>	
	4.1 1 2	Dreio	NATED SITES	.∠3 ⊃⊑	
	4.2	DESIG	NATED SITES	.25 25	
	4.2.1	<u>.</u>	europeuri siles – Appropriale Assessment	.25	
	4.2.2	:	ידי	20	
	4.3	HABIT		.31 .24	
	4.4	SPECIE		.54	
	4.4.1	<u>l</u>	F107a	.34	
4.4.2 Bats				.35	
	4.4.3	5	ыгаз	.38	



	4.4.4	Mammals (excl. bats)	.44			
	4.4.5	Amphibians	.45			
	4.4.6	Other Fauna	.45			
	4.4.7	Protected and/or Notable Species Unlikely to Occur at the Site	.46			
	4.5 Ev	ALUATION OF ECOLOGICAL FEATURES	.46			
5	ECOLO	GICAL IMPACT ASSESSMENT	49			
	5.1 N	ITIGATION EMBEDDED IN PROJECT DESIGN	.49			
	5.2 C	DNSTRUCTION PHASE	.49			
	5.2.1	Impacts on Habitats and Flora	.49			
	5.2.2	Impacts on Native Fauna	.50			
	5.3 0	PERATIONAL PHASE	.51			
	5.3.1	Impacts on Habitats and Flora	.51			
	5.3.2	Impacts on Native Fauna	.52			
	5.4 D	D NOTHING IMPACT	.52			
	5.5 P	DTENTIAL FOR IN-COMBINATION EFFECTS	.52			
	5.5.1	Relevant Plans and Policies	.52			
	5.5.2	Existing Planning Permissions	.52			
6	AVOID	ANCE, MITIGATION, COMPENSATION AND ENHANCEMENT MEASURES	53			
	6.1 A	/oidance By Design	.53			
	6.2 C	DNSTRUCTION PHASE	.54			
	6.2.1	Protection of Habitats	.55			
	6.2.2	Protection of Fauna	.57			
	6.3 O	PERATIONAL PHASE	.61			
	6.3.1	Protection of Habitats	.61			
	6.3.2	Protection of Fauna	.61			
	6.3.3	Biodiversity Enhancement Measures	.61			
7	MONIT	ORING	66			
8	RESIDU	IAL IMPACTS	67			
9	CONCL	USION	73			
10	) REFI	RENCES	74			
A	PENDIXI	- LEGISLATION AND POLICY	78			
A	APPENDIX II – VALUE OF ECOLOGICAL RESOURCES					
A	APPENDIX III – EPA IMPACT ASSESSMENT CRITERIA					
A	PENDIXI	/ – SITE PHOTOGRAPHS	89			
A	APPENDIX X – PLANTING SCHEDULE EXTRACTED FROM SRLA (2024A)					

#### LIST OF TABLES

Table 1. Field surveys undertaken at the Proposed Development Site	14
Table 2. Dates, duration and weather conditions during the Breeding bird surveys at the Pr	roposed
Development Site.	19



Table 3. Dates, duration and weather conditions during the Wintering bird surveys at the Proposed
Development Site
Table 4. WFD Risk and Water Body Status    23
Table 5. Designated sites considered with the Source-Pathway-Receptor (S-P-R) method to establish
notable links between the sources of effects arising from the Proposed Development, and any relevant
designated sites. those sites with notable S-P-R links that are further assessed in this report are
highlighted in green (if any)
Table 6. Records of rare or protected flora in the M32S 2km grid square associated with the Site (NBDC)
Table 7. Records of invasive species of flowering plant for the surrounding 2km M32S grid squares
associated with the Site from the NBDC
Table 8. Records of bats for the surrounding 2km grid squares (M32S) associated with the Site from the NBDC
Table 9. Landscape Suitability Index for individual bat species within the 2km Grid Square (Source:
NBDC). Those species that have been recorded in the NBDC database within the M32S grid square
are highlighted in green
Table 10. Details of amber and red listed bird species within the 2km grid square (M32S)
Table 11. Bird species recorded during the breeding bird survey on the 22 <sup>nd</sup> of April 2024
Table 12. Birds recorded at the Proposed Development Site during wintering bird surveys. Those
species that are also SCI species of Inner Galway bay SPA are highlighted in green
Table 13. Records of terrestrial mammals (native and non-native) for the surrounding 2km M32S grid         square associated with the Site from the NBDC.         44
Table 14. Evaluation of Designated Sites, Habitats, Flora and Fauna recorded within the Site and the
surrounding area. Those identified as Key Ecological Receptors (KERs) are highlighted in green 47
Table 15. Embedded desing features and their potential to act to avoid or mitigate negative impacts on
the local ecology and environment
Table 16. Assessment of potential in-combination effects of the Proposed Development and other
developments pending or granted permission in the last 5 years (2019-2024), within 1km or along the
same impact pathway as the Proposed Development53
Table 17. Summary of Best Practice Standards and Mitigation outlined in the Outline Construction and
Environmental Management Plan (DBFL 2023). Where specific details relating to protection of Key
Ecological Receptors is required under these measures, reference is made to the appropriate section
in this report
Table 18 Seasonal restrictions on vegetation removal. Red boxes indicate when clearance / works are
not advised
Table 19. Monitoring and pre-works inspections for the identified mitigation measures during
Construction Phase of the Proposed Development. To be carried out by a suitably qualified Ecologist
or Ecological Clerk of Works (highlihgted in green) or by the development contractor (no highlight). 66
Table 20. Summary of potential impacts on KER(s), mitigation proposed and residual impacts 69

#### LIST OF FIGURES

Figure 1. Site location.	5
Figure 2. Proposed Site Layout extracted from drawing ref. CAR-ZZ-LZZ-DR-JFA-AR-P1100 (JFA	۹,
2024)	6
Figure 3. Proposed surface and foul water drainage for the Site (extratced from drawing no. 23011	-
AKM-XXXXX-XX-DR-C01-300001; AKM, 2024b)	9
Figure 4. Proposed Landscape Plan for the Site extracted from the Landscape Report (Simon Rona	n
Landscape Architects, 2024) 1	0



Figure 5. Proposed Lighting Plan for the Site extracted from the Outdoor Lighting Report (Molloy
Consulting, 2024)
Figure 6. Bat activity transect survey route and roost survey location
Figure 7. Location of designated sites considered with the Source-Pathway-Receptor (S-P-R) method
in relation to the Proposed Development
Figure 8. Map of habitats and invasive species at the Site of the Proposed Development
Figure 9. Bat Landscape Suitability Model (All bats) surrounding the Proposed Development Site
(Adapted from NBDC)
Figure 10. Examples of solitary bee habitat. Extracted from How-to-guide: Creating wild pollinator
nesting habitat (NBDC, 2016)
Figure 11. Examples of suitable amphibian and reptile hibernacula and refugia
Figure 12. Examples of Hedgehog Highways that could be incorporated into the Proposed
Development

#### 1 INTRODUCTION

Enviroguide Consulting was commissioned by Marshall Yards Development Company Limited to undertake an Ecological Impact Assessment (EcIA) in relation to a Proposed Development at Cartron, Oranmore, Co. Galway, hereafter referred to as 'Proposed Development' or 'Site' when referring to the site area of the Proposed Development.

This EcIA assesses the potential effects of the Proposed Development on habitats and species; particularly those protected by national and international legislation or considered to be of particular nature conservation importance on or adjacent to the Site. This report will describe the ecology of the Site, with emphasis on habitats, flora and fauna, and will assesses the potential effects of the Construction and Operational Phases of the Proposed Development on these ecological receptors. The report follows Guidelines for Ecological Impact Assessment in the UK and Ireland, by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2018) and supplemented by the National Roads Authority (2009) guidelines for Assessment of Ecological Impacts of National Road Schemes. The purpose of this EcIA is to:

- Set out the methodologies used to inform the assessment.
- Identify Key Ecological Receptors (KERs) within the Zone of Influence (ZOI).
- Assess the impacts from the Proposed Development on the KERs and the resulting significant effects.
- Set out measures to avoid or mitigate negative impacts.
- Assess the residual effects after the incorporation of agreed avoidance or mitigation measures to ensure legal compliance.
- Set out agreed measures to offset significant residual effects.
- Set out opportunities for ecological enhancement.

#### **1.1 Quality Assurance and Competence**

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

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

All surveying and reporting have been carried out by qualified and experienced ecologists and environmental consultants. AC, Ecologist with Enviroguide authored this report and undertook the desktop research for this Report. AC, BMcC, NB and HR undertook the field surveys for this Report.



AC is an experienced general ecologist; she is an Associate member of CIEEM (ACIEEM) with an MSc in Ecological Management and Conservation Biology from Queen's University, Belfast. AC has a wealth of experience authoring and reviewing Screenings for AA, Natura Impact Statements (NIS), Ecological Impact Assessments (EcIA) and Biodiversity Chapters for Environmental Impact Assessment Reports (EIAR). Subsequently, she is very familiar with the process of ecological assessment and the relevant legislation. She is knowledgeable in a range of survey techniques, including conducting bat, mammal, bird, newt, invasive species and habitat surveys.

BMcC is an Ecologist and experienced Ornithologist with 13 years of bird survey experience. Brian is a longstanding and active member of Bird Watch Ireland and has provided Ornithology survey work for ecological consultancies, e.g., vantage points surveys of gulls, terns, raptors, waders and wildfowl; hinterland surveys of the above as well as riverine species; and breeding waders and country birds. BMcC is highly experienced with all survey methodologies and with surveying all species groups of Irish birds and migrants.

NB is a Project Ecologist with Enviroguide Consulting, with a B.Sc. (Hons) in Microbiology, an M. Sc. (Hons) in Environmental Microbiology from NUI, Galway and an M. Sc. (Hons) in Biodiversity and Conservation from Trinity College, Dublin. NB has extensive experience in mammal, habitat and invasive species surveys, as well as desktop research, including the production of peer reviewed publications, grant proposals, literature reviews and ecological/environmental reports including Invasive Alien Species and Biodiversity Management Plans, Ecological Impact Assessments and Stage 1 and 2 Appropriate Assessment reporting.

YM is an Ecologist and has a B.Sc. in Botany from Tokyo University of Agriculture and a M.Sc. in Botany from Hokkaido University, and has experience in desktop research, reporting and GIS works, as well as practical field experience including flora surveys, rare and protected plant species surveys, phytosociological vegetation surveys, habitat mappings and invasive species surveys. YM has prepared several AA screening reports.

HR has a B.A. (Mod.) in Zoology and a M.Sc. in Biodiversity and Conservation from Trinity College Dublin, and a PgDip in GIS and Remote Sensing from the University of Ulster. HR has a wealth of experience in biodiversity mapping, desktop research, literature review and reporting, as well as practical field experience including habitat mapping, invasive species surveys, and ornithology surveys.

#### **1.2 Relevant Legislation and Policy Context**

An EcIA is a process of identifying, quantifying, and evaluating potential effects of development-related or other actions on habitats, species and ecosystems (CIEEM, 2018). The Proposed Development is sub-threshold for an Environmental Impact Assessment (EIA) under the Planning and Development Regulations 2001-2023, as amended.

When an EcIA is undertaken as part of an EIA process it is subject to the EIA Regulations (under the Planning and Development Regulations 2001-2023). An EcIA is not a statutory requirement, however it is a best practice evaluation process. This EcIA is provided to assist the Competent Authority with its decision making in respect of the Proposed Development.



There are several pieces of legislation, regulations and policies specific to ecology which underpin this assessment. These may be applicable at a European, National or Local level. Legislation at the International level relevant to the Proposed Development are listed below:

- *Council Directive 92/43/EEC* on the Conservation of Natural Habitats and of Wild Fauna and Flora; hereafter the 'Habitats Directive'.
- Directive 2009/147/EEC, hereafter the 'Birds Directive'.
- Directive 2011/92/EU, hereafter the 'EIA Directive'.
- EU Regulation 1143/2014, on Invasive Alien Species.
- Convention on the Conservation of European Wildlife and Natural Habitats 1982, hereafter the 'Bern Convention'
- The Convention on the Conservation of Migratory Species of Wild Animals 1983, hereafter the 'Bonn Convention'.
- Ramsar Convention on Wetlands 1971, hereafter referred to as 'Ramsar'.
- Water Framework Directive 2000/60/EC, hereafter the 'WFD'.

National legislation and policy relevant to the Proposed Development are listed below:

- Wildlife Act 1976, as amended in 2000.
- Flora (Protection) Order 2022.
- The Planning and Development Act 2000.
- National Biodiversity Plan 2023-2030.

Additionally, Natural Heritage Areas (NHAs) are designations under the Wildlife Acts to protect habitats, species, or geology of national importance. The boundaries of many of the NHAs in Ireland overlap with Special Areas of Conservation (SAC) and/or Special Protection Area (SPA) sites. Although many NHA designations are not yet fully in force under this legislation (referred to as 'proposed NHAs' or pNHAs), they are offered protection in the meantime under planning policy which normally requires that planning authorities give recognition to their ecological value.

Local plans and policies relevant to the Proposed Development are listed below:

- Galway County Development Plan 2022-2028.
- Galway County Heritage and Biodiversity Plan 2017-2022 (Present).

Further details on legislation and policy relevant to the Proposed Development are detailed in Appendix I.



#### 2 DESCRIPTION OF THE PROPOSED DEVELOPMENT

#### 2.1 Site Location

The Site is approx. 5.5 ha in size and located at lands to the north of Coast Road in Cartron, just west of the village of Oranmore, Co. Galway, and *c*. 2.6km south of Galway Airport. The area currently comprises agricultural fields used for grazing cattle, bordered by stone walls, hedgerow, and treelines. Part of the Site's redline boundary extends from the residential LRD area along the coast road towards Oranmore to the east. A trainline runs parallel to the Site adjacent to the northern boundary. The wider surrounding landscape comprises mostly similar agricultural fields. Galway Bay lies to the south of the Site, separated by <5m at its closest point. The Proposed Development Site location is illustrated below in Figure 1.

#### 2.2 Proposed Development Description

The Proposed Development will consist of the construction of a large-scale residential development, comprising the demolition of the existing shed and associated structures on site and the construction of 171 no. residential units, 1 no. creche and all associated development works including the provision of pedestrian/cyclist facilities along the R338 public road connecting to Oranmore rail station, 1 no. ESB substation, 1 no. pumping station, the undergrounding of the existing ESB sites traversing the site, footpaths, lighting, parking, drainage, bicycle and bin stores and landscaping/amenity areas at Cartron (townland), Oranmore, Co. Galway. Access will be via a new entrance on the L-71051 to the east.





FIGURE 1. SITE LOCATION.





FIGURE 2. PROPOSED SITE LAYOUT EXTRACTED FROM DRAWING REF. CAR-ZZ-LZZ-DR-JFA-AR-P1100 (JFA, 2024).



#### 2.2.1 Drainage and Water Supply

#### 2.2.1.1 Surface water

It is proposed that all surface water generated at the Site during the Operational Phase will be diverted to infiltrate through the ground. This will be achieved through the use of permeable paving, soakaways, swales, and infiltration trenches, which will run throughout the shared open spaces at the Site. There is no intention to discharge any surface water runoff from the Site into any nearby waterbodies, up to the critical 100-year event with a 30% climate change factor (AKM, 2024a). As per the Infrastructure Report (AKM, 2024c), "*It is proposed that a tiered approach is applied to the management of runoff where initial runoff is intercepted through SuDS components such as soakaways and drainage swales and positive runoff from hardstanding areas in larger storm events is directed to the public network to be stored and infiltrated through a series of infiltration trenches in public open space areas.* 

A series of Hydrobrake flow control systems will be utilised within the site to

maximise slow the flow of runoff from infiltration areas in order to maximise the use of infiltration and attenuation storage higher in the catchment of the site.

Runoff from roofs will be discharged to soakaways in back gardens with overflows to permeable paving under driveways to infiltrate. Runoff from public roads and footpaths will be dealt with through a combination of SUDS measures including infiltrating swales, and a series of infiltration trenches to be constructed under public open spaces to allow runoff to be stored and to infiltrate to ground".

The proposed Site drainage is outlined in full detail in the accompanying Civil Design Statement (AKM, 2024a) and is illustrated below in Figure 3 extracted from the Drainage Layout drawing (AKM, 2024b).

#### 2.2.1.2 Foul Drainage

In order to facilitate foul water drainage from the Site, it is proposed to build a foul rising main within the Site under the Coast Road to connect to the public network. These works will be undertaken by Uisce Éireann. The area in which the Proposed Development is located is served by the Mutton Island Wastewater Treatment Plant (WwTP), located in Galway Bay, *c*. 7km southwest of the Site. According to the most up to date environmental report produced for this WwTP (Uisce Éireann, 2022), this plant is operating under its treatment capacity and thus is not at risk of releasing untreated waste into Galway Bay, even with the connection of the Proposed Development.

#### 2.2.2 Landscape Plan

The proposed landscaping for the Site has been prepared in the Landscaping Plan by Simon Ronan Landscape Architects (2024b). An overview of the Site extracted from the Landscape Masterplan (Simon Ronan Landscape Architects, 2024a) is presented in Figure 4. The landscaping has been designed in accordance with the All-Ireland Pollinator Plan 2021-2025 (NBDC) to incorporate biodiversity into the scheme, through the planting of native tree and hedgerow species which provide foraging habitats for pollinators including bees, birds and bats. Native trees will be sourced from Tree Council approved nurseries, while wildflower seed mix will be purchased from an authentic Irish source. A full list of species proposed for planting at the Site can be found in the accompanying Landscape Report (Simon Ronan Landscape Architects, 2024b).



#### 2.2.3 Lighting Plan

The lighting plan for the Site has been prepared by Molloy Consulting (2024). An overview of the proposed Operational Phase lighting is presented in Figure 5, extracted from the Outdoor Lighting Plan. Bat-friendly lighting measures are incorporated into the lighting design, including use of LED lighting, columns less than 8m in height, and warm lighting (>2700K). Furthermore, light spill outside of the Site's bounds will be minimised and lighting will be directional.

#### 2.3 Description of the Construction Phase

The programme for the Construction Phase of the Proposed Development is approximately 27 months.

Prior to any site works commencing, the Main Contractor will investigate / identify the exact location of and tag all existing services and utilities around and through the site with the assistance of the relevant technical divisions of Galway County Council and utility companies.

Normal site working hours (as set out by Galway County Council) for the Construction Phase of the Proposed Development will be as follows:

- Monday to Friday: 08:00 and 19:00; and,
- Saturdays: 08:00 to 14:00

No works are envisaged to be carried out on Sundays or Bank Holidays.

Should there be a requirement, in exceptional circumstances, for works outside of the normal site working hours a written submission seeking authorisation will be made to Galway County Council. Works will take account of any restrictions identified in the grant of planning.

#### 2.4 Description of the Operational Phase (indefinite).

The Operational Phase of the Proposed Development will see the use of the Site as intended through the occupation of residential dwellings and operation of the associated creche.

It is anticipated that road use (vehicular, cyclists and pedestrian activity) along Coast Road will increase from the existing baseline due to the proposed connection between the Site and Oranmore Train Station (*c.* 200m north) via the designation of a pedestrian and cycle path.





FIGURE 3. PROPOSED SURFACE AND FOUL WATER DRAINAGE FOR THE SITE (EXTRATCED FROM DRAWING NO. 23011-AKM-XXXX-XX-DR-C01-300001; AKM, 2024B)





FIGURE 4. PROPOSED LANDSCAPE PLAN FOR THE SITE EXTRACTED FROM THE LANDSCAPE REPORT (SIMON RONAN LANDSCAPE ARCHITECTS, 2024)





FIGURE 5. PROPOSED LIGHTING PLAN FOR THE SITE EXTRACTED FROM THE OUTDOOR LIGHTING REPORT (MOLLOY CONSULTING, 2024)



#### 3 METHODOLOGY

This EcIA has been undertaken to support and assess the Proposed Development planning application and assesses the potential impacts that the Proposed Development may have on the ecology of the Site and its environs. Where potential for a risk to the environment is identified, mitigation measures are proposed on the basis that by deploying these mitigation measures the risk is eliminated or reduced to an insignificant level.

This section details the steps and methodology employed to undertake an ecological impact assessment of the Proposed Development.

#### 3.1 Scope of Assessment

The specific objectives of the study were to:

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

#### 3.2 Desk Study

A desktop study was carried out to collate and review available information, datasets and documentation sources pertaining to the Site's natural environment. The desk study, completed in April 2024, relied on the following sources:

- Information on species records<sup>1</sup> and distributions, obtained from the National Biodiversity Data Centre (NBDC) at <u>maps.biodiversityireland.ie;</u>
- Information on Floral Protection Order (FPO) Bryophytes database at <u>dahg.maps.arcgis.com</u>;
- Information on waterbodies, catchment areas and hydrological connections obtained from the Environmental Protection Agency (EPA) at <u>gis.epa.ie</u>;
- Information on bedrock, groundwater, aquifers and their statuses, obtained from Geological Survey Ireland (GSI) at <u>www.gsi.ie</u>;
- Information on the network designated conservation sites, site boundaries, qualifying interests and conservation objectives, obtained from the National Parks and Wildlife Service (NPWS) at <u>www.npws.ie</u>;
- Satellite imagery and mapping obtained from various sources and dates including Google, Digital Globe, Bing and Ordnance Survey Ireland;
- Information on the existence of permitted development, or developments awaiting decision, in the vicinity of the Proposed Development from the National Planning Application Database available at:

https://housinggovie.maps.arcgis.com/apps/webappviewer/index.html; and

<sup>&</sup>lt;sup>1</sup> The Site of the Proposed Development lies within the 10km grid square M32 and the 2km grid square M32S. Records from the last 20 years from available datasets are given in the relevant sections of this report.



• Information on the extent, nature and location of the Proposed Development, provided by the applicant and/or their design team.

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

#### 3.3 Zone of Influence

The ZOI for a project is the area over which ecological features may be affected by changes as a result of the Proposed Development and associated activities. This is likely to extend beyond the development site, for example where there are ecological or hydrological links beyond the site boundaries (CIEEM, 2018). The ZOI will vary with different ecological features, depending on their sensitivities to an environmental change.

Furthermore, ZOI in relation to European sites is described as follows in the 'OPR Practice Note PN01 - Appropriate Assessment Screening for Development Management' (OPR, 2021):

"The zone of influence of a proposed development is the geographical area over which it could affect the receiving environment in a way that could have significant effects on the Qualifying Interests of a European site. This should be established on a case-by-case basis using the Source-Pathway-Receptor framework and not by arbitrary distances (such as 15 km)."

#### 3.4 Identification of Relevant Designated Sites

To determine the ZOI of the Proposed Development for designated sites, reference was made to the OPR Practice Note PN01 - Appropriate Assessment Screening for Development Management' (OPR, 2021), a practice note produced by the Office of the Planning Regulator, Dublin. This note was published to provide guidance on screening for AA during the planning process, and although it focuses on the approach a planning authority should take in screening for AA, the methodology is also readily applied in the preparation of EcIA reports such as this to identify all relevant designated sites potentially linked to the Proposed Development.

As noted above, the most recent guidance advises against the use of arbitrary distances that serve as precautionary ZOI (e.g., 15km), and instead recommends the application of the Source-Pathway-Receptor (S-P-R) model in the identification of designated sites, stating that *"This should avoid lengthy descriptions of European sites, regardless of whether they are relevant to the proposed development, and a lack of focus on the relevant European sites and issues of importance"*. Although this statement refers to European sites, it is also applicable to other designated sites.

Thus, the methodology used to identify relevant designated sites comprised the following:

- Identification of potential sources of effects based on the Proposed Development description and details;
- Identification of potential pathways between the Site of the Proposed Development and any designated sites within the ZOI of any of the identified sources of effects.



- Water catchment data from the EPA (<u>www.epa.ie</u>) were used to establish or discount potential hydrological connectivity between the Proposed Development and any designated sites.
- Groundwater and bedrock information used to establish or discount potential hydrogeological connectivity between the Proposed Development and any designated sites.
- Air and land connectivity assessed based on Proposed Development details and proximity to designated sites.
- Consideration of potential indirect pathways, e.g., impacts to flight paths, *exsitu* habitats, etc.
- Review of Ireland's designated sites to identify those sites which could potentially be affected by the Proposed Development in view of the identified pathways, using the following sources;
  - European sites and nationally designated sites (e.g., NHAs and pNHAs) from the NPWS (<u>www.npws.ie</u>);
  - Ramsar sites from the Irish Ramsar Wetland Committee (<u>https://irishwetlands.ie/irish-sites/</u>);
  - Other internationally designated sites e.g., UNESCO Biosphere's; and
- Regional development plans to identify any remaining sites or areas designated for nature conservation at a local level.

#### 3.5 Field Surveys

A summary of the field surveys conducted at the Site to date is given below in Table 1; detailed descriptions of survey methodologies are given in the subsequent sections.

Survey	Surveyor	Dates	
<ul> <li>Walkover survey</li> <li>Habitats and Flora (incl. invasive species)</li> <li>Search for signs of protected species (e.g., non-volant mammals, amphibians, reptiles)</li> <li>Assessment of habitat suitability for protected species</li> <li>Preliminary Bat Roost and Habitat Suitability Assessment</li> </ul>	Enviroguide Consulting (AC)	26 <sup>th</sup> October 2023	
Wintering Bird Surveys	Enviroguide Consulting (BMcC)	20 <sup>th</sup> November 2023 5 <sup>th</sup> January 2024 26 <sup>th</sup> January 2024 20 <sup>th</sup> February 2024 27 <sup>th</sup> March 2024	
Otter Survey	Enviroguide Consulting (AC)	9 <sup>th</sup> April 2024	
Bat Activity & Roost Emergence Surveys	Enviroguide Consulting (NB, YM, BMcC & HR)	22 <sup>nd</sup> April 2024	

TABLE 1. FIELD SURVEYS UNDERTAKEN AT THE PROPOSED DEVELOPMENT SITE.



#### 3.5.1 Habitat Surveys

Habitat surveys of the Site were conducted by Enviroguide on the 26<sup>th</sup> of October 2023 and updated on the 16<sup>th</sup> April 2024. Habitats were categorised according to the Heritage Council's '*A Guide to Habitats in Ireland*' (Fossitt, 2000) to level 3. The habitat mapping exercise had regard to the 'Best Practice Guidance for Habitat Survey and Mapping' (Smith *et al.*, 2010) published by the Heritage Council. Any incidental observations or evidence of rare and/or protected flora were recorded.

In addition, and in conjunction with the above habitat surveys, the Site was searched for invasive flora with a particular focus on those listed on the Third Schedule of SI No. 477/2011, and their location and extent recorded.

#### 3.5.2 Invasive Species Surveys

An invasive species survey was carried out in conjunction with the habitat surveys on the 26<sup>th</sup> of October 2023 and updated on the 16<sup>th</sup> April 2024. This included a detailed search for signs or any invasive flora or fauna, with any incidental observations of evidence for invasive species recorded whenever on Site.

#### 3.5.3 Bat Surveys

#### 3.5.3.1 Preliminary Bat Roost Assessment

A daytime inspection of the Site was undertaken on the 26<sup>th</sup> of October 2023. The aim of the inspection was to search for indication of the presence of roosting bats, and to assess the habitat for its ability to support commuting and foraging bats. Buildings and trees on Site were visually assessed from the ground with the aid of a torch and binoculars. The roost inspection comprised a detailed inspection of structures and trees on Site. These were subject to exterior and interior inspections (where possible) to search for evidence of bat use. This includes live and dead specimens, droppings, feeding remains, oil staining and noise (Collins 2023). Buildings were assessed for cracks and crevices, or entry points to the roof that might support roosting bats, while trees were searched for Potential Roosting Features (PRFs) such as hollow trunks, knot holes, peeling bark, splits, cracks, and crevices (Collins 2023; Andrews 2018). Collins (2023) recommends that structures and trees are assessed for their ability to support roosting bats under separate categorisations using professional judgement and subcategories as presented in Table 4.1 (Collins, 2023):

- Negligible No suitable features observed, however, a small element of uncertainty remain;
- Low A structure with one or more roost features as used by individual bats opportunistically at any time of year;
- Moderate A structure with one or more roost features that could be used by bats on a regular basis or by a larger number of bats; and
- High A structure with one or more roost features that are obviously suitable for use by a larger number of bats on a regular basis, and potentially for longer periods of time. These features have the potential to support high conservation status roosts.

Trees are categorized separately accordingly to Table 4.2 of Collins (2023). These classifications are:



- NONE Either no PRFs in the tree or highly unlikely to be any;
- FAR Further assessment required to establish if PRFs are present in the tree; and
- PRF A tree with at least one PRF present.

Where a tree contains at least one PRF, each PRF is further assessed according to Table 6.2 (Collins 2023). PRF's are scored as either:

- PRF-I PRF is only suitable for individual bats or very small numbers of bats either due to size or lack of suitable surrounding habitats.
- PRF-M PRF is suitable for multiple bats and may therefore be used by a maternity colony.

For trees with PRF-Is only, no further surveys may be required, but appropriate compensation for all PRF-Is must be designed and incorporated in advance of impacts along with a Precautionary Working Method Statement (PWMS). As the Site increases in suitability for roosting bats e.g., PRF-Ms present, the survey effort increases accordingly. A PRF-M will require a detailed inspection, such as aerial inspection, conducted over three survey visits, a minimum of three weeks apart, which should be carried out between May and September with at least two in the period May to August. Where features are inaccessible by ladder, climbing, or MEWP, or too extensive for a PRF inspection, the aerial inspection should be replaced with emergence surveys carried out between May and September with Night Vision Aids (NVA) where possible or otherwise surveyed using Advanced Licence Bat Survey Techniques (ALBST), such as trapping, tagging, and radio-tracking to inform of the importance of a roost.

#### 3.5.3.2 Preliminary Bat Habitat Suitability Assessment

A Bat Habitat Suitability Assessment was carried out in conjunction with the roost assessment on the 23<sup>rd</sup> of October 2023. This assessment evaluated the habitats present on Site and in the wider area for bat foraging and commuting suitability. Habitat suitability is assessed qualitatively from Negligible to High:

- Negligible No suitable foraging or commuting habitats on Site
- Low Suitable but isolated habitats that could be used by small numbers of commuting and/or foraging bats, such as poorly connected gappy hedgerows, lone trees, unvegetated streams, etc.
- Moderate Suitable continuous habitat connected to the wider landscape that could be used by commuting and/or foraging bats, such as treelines, scrub, grassland, water, etc.
- High Continuous high-quality habitat that is well-connected to the wider landscape, and is likely used regularly by commuting and/or foraging bats, such as river valleys, broadleaved woodland, woodland edge, grazed parkland, etc.

#### 3.5.3.3 Bat Landscape Suitability

The Bat Conservation Ireland Landscape Suitability Model (Lundy *et al.*, 2011) provides a habitat suitability index for bat species across Ireland. The model divides the country into 1 km grid squares and ranks the habitat within the squares according to its suitability for various bat species. The scores are divided into five qualitative categories of suitability, namely:

- 0.0000000 13.000000: Low
- 13.000001 21.333300: Low Medium



- 21.333301 28.111099: Medium
- 28.111100 36.444401: Medium High
- 36.444402 58.555599: High

#### 3.5.3.4 Bat Emergence Surveys

The surveys were conducted by experienced surveyors who were situated in locations that provided optimal views of the PRFs identified within the small derelict shed on-Site. The methodology of the emergence/re-entry surveys followed best practice guidelines (Collins, 2023 and Marnell et al., 2022) with dusk surveys commencing 15 minutes before sunset and lasting until approximately 1.5 - 2 hours after sunset. The locations of assessed roost features are presented in Figure 6.

The first emergence survey was conducted on the 22<sup>nd</sup> of April 2024, during dry, warm weather conditions with little wind. The temperature during the survey was 6 degrees Celsius with little cloud cover and a force 3 westerly wind. Sunset was at 21:31; the survey commenced at 21:15 and finished at 23:15.

#### 3.5.3.5 Bat Activity Surveys

The Site was assessed by an experienced ecologist in relation to the potential bat foraging habitat and commuting routes. Currenlty, one survey has been undertaken to best practice guidance (Collins, 2023 and Marnell et al., 2022) during times of dry, warm weather with no rain and little wind, on the 22<sup>nd</sup> of April 2024. The temperature during the survey was 6 degrees Celsius with little cloud cover and a force 3 westerly wind. Sunset was at 21:31; the survey commenced at 22:00 and finished at 00:00.

The surveyors were equipped with a Elekon Batlogger M2 detector and powerful L.E.D. torch and head torches. Surveys continued for 2 hours, along a predesigned transect route with regular point counts, as presented in Figure 6.

#### 3.5.3.6 Data Analysis

Species were identified from recordings using Elekon's BatExplorer software (Version 2.1.10.1). Bat data was analysed, and species assigned to each record with reference to species identification guides such as Russ (2012).

Each record i.e., a sequence of bat calls/pulses, is noted as a bat pass; to indicate the level of bat activity for each species recorded. Each bat pass does not correlate to an individual bat but is representative of bat activity levels. Some bats such as *Pipistrelle* species may continuously fly around a habitat or feature, therefore, it is possible that a series of bat passes within a similar time frame is representative of an individual bat. On the other hand, Leisler's bats (*Nyctalus leisleri*) tend to travel through an area quickly, and as such, an individual sequence or bat pass is more likely to be indicative of individual bats.





FIGURE 6. BAT ACTIVITY TRANSECT SURVEY ROUTE AND ROOST SURVEY LOCATION



#### 3.5.4 Bird Surveys

The survey methodology employed was based on that recommended in standard literature used by, for example, the British Trust for Ornithology (BTO) (Gillings et al, 2007; Bibby et al, 1992 and Gilbert et al, 1998), which has subsequently been adapted into guidelines for ecological consultants by the Bird Survey & Assessment Steering Group. (2022). The Site was walked slowly, approaching all habitat within and adjacent to the Proposed Development and scanning and listening for birds. The locations of birds seen and heard were mapped using standard BTO codes and activity symbols.

#### 3.5.4.1 Breeding Bird Scoping Survey

To inform an evaluation of the on-site habitats for bird species, a breeding bird survey visit was undertaken on the 22<sup>nd</sup> of April 2024. The survey visit to the Site was completed in the early morning, commencing at or near dawn and lasted approximately 2 hours in duration. Transects were walked through the site to record all the species that were present. A final zigzag through the site was walked at the end of the survey to ensure no additional species were missed. Survey dates and weather conditions are presented below in Table 2.

### TABLE 2. DATES, DURATION AND WEATHER CONDITIONS DURING THE BREEDING BIRD SURVEYS AT THE PROPOSED DEVELOPMENT SITE.

Date	Duration (Hrs)	Weather Conditions
22/04/2024	2	Wind - F3. Precipitation - dry. Temp - 12°C. Visibility - 4/4. Cloud cover - <25%

#### 3.5.4.2 Wintering Bird Surveys

To inform an evaluation of the on-site habitats for wintering bird species, 5 survey visits were undertaken on a monthly basis between November 2023 and March 2024. The surveys were carried out in suitable weather conditions and within daylight hours. Each transect lasted up to 3 hours in length. The transect routes were reversed during each visit in order to reduce the potential for time bias. Details of dates, weather conditions and timings are presented below in Table 3.

TABLE 3. DATES, DURATION AND WEATHER CONDITIONS DURING THE WINTERING BIRD SURVEYS AT THE PROPOSED DEVELOPMENT SITE.

Date	Duration (Hrs)	Weather Conditions
20/11/2023	2	Wind - F5. Precipitation - dry. Temp 12°C at the start, 11°C at the end. Visibility 4/4. Cloud cover - 50-75%.
05/01/2024	2.5	Wind - F2. Precipitation - dry. Temp 5-6°C. Visibility - 4/4. Cloud cover - 75%.
26/01/2024	2.5	Wind - F6. Precipitation- dry. Temp - 8°C. Visibility - 4/4. Cloud cover - <25%.
20/02/2024	3	Wind - F4. Precipitation- dry. Temp - 12°C. Visibility - 4/4. Cloud cover - 25-50%.
28/03/2024	2.5	Wind - F2. Precipitation - dry. Temp - 9°C. Visibility - 4/4. Cloud cover - 50-75%.

#### 3.5.5 Badger Survey

A systematic search for signs of badgers (*Meles meles*) was conducted on the 26<sup>th</sup> of October 2023. Furthermore, any incidental observations of evidence for badgers were recorded whenever on Site. The surveys followed standard guidelines (Harris, Cresswell & Jeffries,



1989 and NRA, 2005) and included a thorough search for setts or for signs of badger activity, including tracks, latrines, hairs and snuffle holes.

#### 3.5.6 Otter Survey

Oranmore Bay (located within 150m of the Site) was assessed for the presence of otter (*Lutra lutra*) and for the suitability to support otters. This involved searching for associated field signs, such as spraints, footprints, anal jelly, holts and couches to best practice guidelines (NRA, 2008). A particular focus was placed on identifying the presence of potential breeding holts. This survey was undertaken on the 9<sup>th</sup> of April 2024 by a suitably experienced ecologist.

#### 3.5.7 Other Fauna

A general fauna survey of the Site was carried out in conjunction with the other field surveys on the 2<sup>nd</sup> of February 2023. The habitat types recorded throughout the survey area were used to assist in identifying the fauna considered likely to utilise the area. Furthermore, the Site was searched for tracks and signs of mammals as per Bang and Dahlstrom (2001) and the National Road Authority (NRA, 2005) or evidence of herpetofauna as per guidance outlined by Herpetofauna Groups of Britain and Ireland (HGBI, 1998) and (NRA, 2009b). This survey considers protected or notable fauna that may occur within the Site or in the adjacent lands, but for which no historical records from the relevant grid square(s) exist or no targeted surveys were carried out.

#### 3.6 Ecological Assessment

This EcIA has been undertaken following the methodology set out in Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2018); and with reference to the National Roads Authority 'Guidelines for Assessment of Ecological Impacts of National Road Schemes' (NRA, 2009) and the Environmental Protection Agency (EPA) 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' (EPA, 2022) and BS 42020:2013 Biodiversity: Code of practice for planning and development (BSI, 2013).

The evaluation of significant effects should be based on available scientific evidence. Based on the precautionary principle, if the available information is not sufficient, then a significant effect may be assumed likely to occur.

#### 3.6.1 Evaluation of Ecological Features

The value of the ecological features, i.e., the habitats and species present or potentially present, was determined using the ecological evaluation at different geographical scales (NRA, 2009), presented in Appendix II. This evaluation scheme, with values ranging from locally important to internationally important, seeks to provide value ratings for habitats and species present that are considered ecological receptors of impacts that may ensue from a proposal. Based on best practice (CIEEM, 2018), any features considered to be less than of local value are not assessed within this EcIA.

#### 3.6.2 Impact Assessment

As per the NRA guidelines, impact assessment is only undertaken for Key Ecological Receptors (KERs). The assessment of the potential impact of the Proposed Development on



the identified KERs was carried out with regard to the criteria outlined in the EPA Guideline (EPA, 2022), presented in Appendix III. These guidelines set out a number of parameters that should be considered when determining which elements of the Proposed Development could constitute impact or sources of impacts. These include;

- Positive, neutral or negative effect;
- Significance;
- Extent;
- Probability;
- Duration;
- Timing;
- Frequency; and
- Reversibility.

The impact assessment process considers both direct and indirect impacts: direct ecological impacts are changes that are directly attributable to a defined action, e.g. the physical loss of habitat. Indirect ecological impacts are attributable to an action, but which affect ecological resources through effects on an intermediary ecosystem, process, or feature, e.g., the creation of roads which cause hydrological changes, which, in the absence of mitigation, could lead to an adverse effect of a sensitive habitat.

#### 3.6.3 Assessment of Cumulative Impacts and Effects

Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location. Cumulative effects can occur where a Proposed Development results in individually insignificant impacts that, when considered in combination with impacts of other proposed or permitted plans and projects, can result in significant effects.

Relevant plans and policies (see section 1.2) were reviewed to identify any potential for negative cumulative impacts with the Proposed Development. Additionally, existing planning permissions from the past five years (from 2018 onwards) within the ZOI of the Proposed Development were reviewed, with particular focus on potential cumulative impacts on the identified KERs. Long-term developments were also considered where applicable.

#### 3.6.4 Avoidance, Mitigation, Compensation and Enhancement Measures

Where potentially significant effects have been identified, the mitigation hierarchy has been applied, as recommended in the CIEEM Guidelines. The mitigation hierarchy sets out a sequential approach beginning with the avoidance of impacts where possible, the application of mitigation measures to minimise unavoidable impacts and then compensation for any remaining impacts. Once avoidance and mitigation measures have been applied residual effects are then identified along with any necessary compensation measures, and incorporation of opportunities for enhancement. When seeking mitigation or compensation solutions, efforts should be consistent with the geographical scale at which an effect is significant at a county scale should ensure no net loss of the population at a county scale. The relative geographical scale at which the effect is significant will have a bearing on the required outcome which must be achieved.



It is important for the EcIA to clearly differentiate between avoidance, mitigation, compensation and enhancement and these terms are defined here as follows:

- Avoidance is used where an impact has been avoided, e.g., through changes in scheme design. In practice, avoidance measures are typically implemented during the design stage via discussions and re-design (e.g., avoiding a sensitive habitat by relocating a building). Avoidance measures are therefore rarely reported within an EcIA, which focuses on assessing the final design.
- Mitigation is used to refer to measures to reduce or remedy a specific negative impact in situ.
- Compensation describes measures taken to offset residual effects, i.e. where mitigation in situ is not possible.
- Enhancement is the provision of new benefits for biodiversity that are additional to those provided as part of mitigation or compensation measures, although they can be complementary.

#### 3.7 Limitations

Every effort has been made to provide a comprehensive description of the Site; however, the following specific limitations apply to this assessment:

- An extensive search of available datasets for records of rare and protected species within proximity of the Proposed Development has been undertaken as part of this assessment. However, the records from these datasets do not constitute a complete species list. The absence of species from these datasets does not necessarily confirm an absence of species in the area.
- To date, only one bat roost survey and one bat transect survey have been conducted at the Site which was deemed to be of High roosting potential and Moderate foraging potential. Two additional roost surveys and two additional transect surveys are planned for the Site in summer and autumn 2024.
- Proposed works in relation to pedestrian/cycleway within the redline boundary to the east of the main residential LRD area along the coast road were not assessed during the field surveys due to the later addition of the area. Due to the minor nature of the works and the already hardstanding condition which will be devoid of vegetation as a busy carriageway, the works within this area are not considered to cause any significant adverse effects on the nearby flora and/or fauna.



#### 4 ECOLOGICAL BASELINE CONDITIONS

This section sets out the baseline conditions for the ecological features within the Site using the findings of the desk study and field surveys.

#### 4.1 Geology, Hydrogeology and Hydrology

The Site of the Proposed Development is located within the Galway Bay South East catchment (catchment ID: 29) and the Carrowmoneash [Oranmore]\_SC\_010 subcatchment (subcatchment ID: 29\_6). There are no on-Site or nearby watercourses, with the nearest river being the Carrowmoneash river (IE\_WE\_29C050400), located *c*. 0.48km east of the Site. The Site is located <5m north of Oranmore Bay (IE\_WE\_170\_0500), encompassed within which are the European sites Inner Galway Bay SPA and Galway Bay Complex SAC. Oranmore Bay is a transitional waterbody, with an Unassigned status for the survey period 2016-2021, while a few kilometres downstream lies Inner Galway Bay North coastal waterbody (IE\_WE\_170\_0000), which is classed as being of 'Good' quality for the survey period 2016-2021, which it has retained since 2010-2012.

The Site is situated on the Clarinbridge groundwater body (IE\_WE\_G\_0008), assessed as being of 'Good' quality for the survey period 2016-2021, a status which has been maintained since the 2007-2012 survey period. This groundwater body is *Not at Risk* according to the WFD assessment. The groundwater vulnerability at the Site is *High* in the southern half and *Extreme* in the northern section. The underlying bedrock aquifer is a 'Regionally Important Aquifer – Karstified (conduit)'.

The soils beneath the Site are a well-drained, fine loamy substrate over limestone bedrock, while the subsoils comprise Limestone Till (carboniferous) (TLs). Quaternary sediments also comprise Till derived form Limestones.

The Waterbody Status for water bodies relevant to the Site as recorded by the EPA (2023) in accordance with European Communities (Water Policy) Regulations 2003 (SI no. 722/2003) are provided in Table 4.

Waterbody Name	Waterbody; EU code	Location from Site	Distance from Site (km)	WFD water body status (2016-2021)	WFD 3 <sup>rd</sup> cycle Risk Status	Hydraulic Connection to the Site	
Surface Waterb	odies						
Carrowmonea gh (Oranmore) _010	IE_WE_29C 050400	E	0.48km	Poor	Review	No downstream connection	
Transitional Wa	aterbodies						
Oranmore Bay	IE_WE_170 _0500	S	<5m	Unassigned	Not At Risk	Potential connection via surface water runoff	
Coastal Waterbodies							
Inner Galway Bay North	IE_WE_170 _0000	SW	1.7km	Good	Not At Risk	Potential connection via surface water runoff	

#### TABLE 4. WFD RISK AND WATER BODY STATUS



Waterbody Name	Waterbody; EU code	Location from Site	Distance from Site (km)	WFD water body status (2016-2021)	WFD 3 <sup>rd</sup> cycle Risk Status	Hydraulic Connection to the Site
Groundwater Bodies						
Clarinbridge	IE_WE_G_0 008	N/A	N/A	Good	Not at risk	Underlying groundwater-body



#### 4.2 Designated Sites

All European sites potentially linked to the Site have been identified and fully assessed in the AA Screening Report (Stage 1 AA) and subsequent Natura Impact Statement (NIS) (Stage 2 AA) accompanying this submission under separate cover. A summary of the AA conclusions is given below.

Other nationally or internationally designated sites potentially linked to the Proposed Development are identified in section 4.2.2.

#### 4.2.1 European sites – Appropriate Assessment

The AA Screening identified two European sites to be at risk of potential significant impacts as a result of the Proposed Development, namely Galway Bay Complex SAC (000268) and Inner Galway Bay SPA (004031) located <5m south of the Site. Accordingly, a NIS was prepared to assess the impacts in detail and to provide suitable mitigation measures. The following conclusion is extracted from the NIS accompanying this application under separate cover:

"This Natura Impact Statement details the findings of the Stage 2 Appropriate Assessment conducted to further examine the potential direct and indirect adverse effects of the Proposed Development planning application at Oranmore, Co. Galway, on the following European Sites:

- Inner Galway Bay SPA (004031).
- Galway Bay Complex SAC (000268).

The above sites were identified by a screening exercise that assessed likely significant effects of a range of impacts that have the potential to arise from the Proposed Development. The Appropriate Assessment investigated the potential direct and indirect effects of the proposed works, both during construction/infill and operation, on the integrity and qualifying interests of the above European Site, alone and in combination with other plans and projects, taking into account the site's structure, function and conservation objectives.

Where potentially significant effects were identified, a range of mitigation and avoidance measures have been suggested to avoid them. This NIS has concluded that, once the avoidance and mitigation measures are implemented as proposed, the Proposed Development will not have an adverse effect on the integrity of the above European site(s), individually or in combination with other plans and projects. Where applicable, a suite of monitoring surveys have been proposed to confirm the efficacy of said measures in relation to ensuring no adverse impacts on the habitats of the relevant European sites have occurred.

As a result of the complete, precise and definitive findings in of this NIS, it has been concluded, beyond reasonable scientific doubt, that the Proposed Development will have no significant adverse effects on the QIs, SCIs and on the integrity and extent of Galway Bay Complex SAC or Inner Galway Bay SPA. Accordingly, the Proposed Development will not adversely affect the integrity of any relevant European site".

As such, European sites are not considered further in this report.



#### 4.2.2 Other Designated sites

#### 4.2.2.1 S-P-R links to Designated Sites

Potential impact pathways are discussed in the following sections in the context of the Proposed Development as described in Section 2.

#### 4.2.2.1.1 Direct Pathways

#### 4.2.2.1.1.1 Hydrological pathways

The Site is located <5m from Galway Bay Complex pNHA (000268); the next nearest designated site is Creganna Marsh NHA (000253). These two sites also overlap entirely with European sites (Galway Bay Complex SAC and Creganna Marsh SAC), and thus have been assessed by proxy in the accompanying AA Screening and NIS (Enviroguide, 2024a; Enviroguide, 2024b), and no hydrological pathway for the propagation of significant impacts identified, due to the embedded measures (SuDS) and standardised best practice construction guidance when working near water. There are no additional designated sites within the vicinity of the Proposed Development that are hydrological pathways for the propagation of impacts between the Proposed Development and any designated sites.

#### 4.2.2.1.1.2 Hydrogeological pathways

During groundworks and other construction activities as a result of the Proposed Development, the ground may be exposed and any potential accidental discharges to ground could potentially migrate vertically downward to the underlying bedrock aquifer, to Galway Bay Complex pNHA (000268). This pNHA also overlaps entirely with the associated European site, namely, Galway Bay Complex SAC, and thus has been assessed by proxy in the accompanying AA Screening and NIS (Enviroguide, 2024a; Enviroguide, 2024b), and no hydrogeological pathway for the propagation of significant impacts identified. There are no additional designated sites within the vicinity of the Proposed Development that have a potential hydrogeological pathways for the propagation of impacts between the Proposed Development and any designated sites.

#### 4.2.2.1.1.3 Air and land pathways

The Construction Phase of the Proposed Development could introduce dust noise impacts transferable via air and land pathways, as well as increased lighting and human activity at the Site and in the vicinity of the Site during the Construction and Operational Phases.

Galway Bay Complex pNHA is located <5m from the Proposed Development, and as discussed above has been assessed by proxy in the accompanying AA Screening and NIS (Enviroguide, 2024a; Enviroguide, 2024b), and mitigation recommended for the reduction of noise/visual stimuli reaching Oranmore Bay.

No designated sites are linked to the Site via air or land pathways due to the distance between the Site and the nearest designated site (Creganna Marsh NHA, located *c*. 2km to the S).

#### 4.2.2.1.2 Indirect Pathways

No indirect pathways to any nationally or internationally designated sites (excl. SACs/SPAs) were identified, such as loss of *ex-situ* habitat for birds for which Creganna Marsh NHA is



designated or interruptions to flight paths. This is confirmed by the 2023-2024 wintering bird surveys which did not identify any Greenland white-fronted geese (*Anser albifrons flavirostris*) using the Site.

#### 4.2.2.2 Relevant Designated Sites

A designated site will only be at risk from likely significant effects where an <u>S-P-R link of note</u> exists between the Proposed Development and the designated site. All designated sites considered as part of the S-P-R method (excl. European sites) are listed in Table 5 and shown in Figure 7. Those sites with notable S-P-R links to the Proposed Development are assessed further in this report as KERs of 'National Importance' (pNHAs and NHAs) or 'International Importance' (SACs/SPAs, UNESCO sites, Ramsar sites, etc.).



## TABLE 5. DESIGNATED SITES CONSIDERED WITH THE SOURCE-PATHWAY-RECEPTOR (S-P-R) METHOD TO ESTABLISH NOTABLE LINKS BETWEEN THE SOURCES OF EFFECTS ARISING FROM THE PROPOSED DEVELOPMENT, AND ANY RELEVANT DESIGNATED SITES. THOSE SITES WITH NOTABLE S-P-R LINKS THAT ARE FURTHER ASSESSED IN THIS REPORT ARE HIGHLIGHTED IN GREEN (IF ANY).

Site Name & Code (Receptor)	Distance to Site of Proposed Development	Designation Rationale / Site Description	Potential Pathway to receptors					
Proposed Natural Heritage Areas								
Galway Bay Complex pNHA (000268)	<5m south	<ul> <li>No site description available, assumed to overlap with Galway Bay Complex SAC (000268):</li> <li>Mudflats and sandflats not covered by seawater at low tide [1140]</li> <li>Coastal lagoons [1150]</li> <li>Large shallow inlets and bays [1160]</li> <li>Reefs [1170]</li> <li>Perennial vegetation of stony banks [1220]</li> <li>Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]</li> <li>Salicornia and other annuals colonising mud and sand [1310]</li> <li>Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) [1330]</li> <li>Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410]</li> <li>Turloughs [3180]</li> <li><i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130]</li> <li>Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]</li> <li>Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> [7210]</li> <li>Alkaline fens [7230]</li> <li>Limestone pavements [8240]</li> <li><i>Lutra lutra</i> (Otter) [1355]</li> </ul>	No hydrological or hydrogeological pathways for the propagation of significant impacts. Air/land pathways assessed by proxy in accompanying AA & NIS and mitigation recommended to alleviate any potential significant impacts.					



Site Name & Code (Receptor)	Distance to Site of Proposed Development	Designation Rationale / Site Description	Potential Pathway to receptors			
		Phoca vitulina (Harbour Seal) [1365]				
Natural Heritage Areas						
Cregganna Marsh NHA (000253)	c. 2km south	<ul> <li>No site description available, presumed to overlap with Cregganna Marsh SPA (004142):</li> <li>Greenland White-fronted Goose (Anser albifrons flavirostris) [A395]</li> </ul>	Assessed by proxy in accompanying AA & NIS. No hydrological, hydrogeological or air/land pathways for the propagation of significant impacts.			




FIGURE 7. LOCATION OF DESIGNATED SITES CONSIDERED WITH THE SOURCE-PATHWAY-RECEPTOR (S-P-R) METHOD IN RELATION TO THE PROPOSED DEVELOPMENT.



# 4.3 Habitats

The habitats present within the Site, as recorded in the survey area during the field survey, are described in this section and summarised below. Site photographs of these habitats are included in Appendix IV and a map of the habitats is presented in Figure 8.

The majority of the Site consists of improved agricultural grassland (GA1) habitat. In total, two areas of distinct habitat types and two distinct types of linear habitat were recorded at the Site, as illustrated in the below Figure 8. These are listed below and described in further detail in the subsequent paragraphs.

- Improved agricultural grassland (GA1);
- Scrub (WS1);
- Treeline (WL2);
- Stone Wall (BL1);
- Buildings & Artificial Surfaces (BL3).

# Improved Agricultural Grassland (GA1)

The majority of the Site consists of 'Improved agricultural grassland (GA1)' habitat comprising a number of species including dandelion (*Taraxacum vulgaris*), thistle (*Cirsium* sp.) creeping buttercup (*Ranunculus repens*), dock (*Rumex* sp.), ribwort plantain (*Plantago lanceolata*), Yorkshire fog (*Holcus lanatus*), daisy (*Bellis perennis*), creeping cinquefoil (*Potentilla reptans*), and common nettle (*Urtica dioica*). Along the boundaries of the grassland habitat and the base of the stone walls, additional species are noted including geranium (*Pelargonium* sp.), herb Robert (*Geranium robertanium*), ragwort (*Jacobea vulgaris*) and groundsel (*Senecio vulgaris*).

#### Scrub (WS1)

Small patches of bramble (*Rubus fruticosus*) and common nettle dominated 'Scrub (WS1)' are located in a few different areas to the east of the Site, along the northeastern and eastern boundaries. The patch of scrub in the small treelined area to the southeast corner of the Site is dominated by ivy (*Hedera helix*), among other less frequently occurring species including cow parsley (*Anthriscus sylvestris*) and common nettle. Ground flora in this area comprises pignut (*Conopodium majus*), elder (*Aegopodium podagraria*), dock sp., creeping buttercup, elder (*Sambucus* nigra) and dandelion. A small patch of scrub is located along the southern boundary, comprising a mix of bramble and cotoneaster (*Cotoneaster* sp.), noted has having recently been cut.

#### Treelines (WL2)

A number of linear habitats comprising 'Treelines (WL2)' are situated in the eastern parcel of the Site, composed of species including cypress (*Cupressuis* sp.), sycamore (*Acer pseudoplatanus*), hawthorn (*Crataegus monogyna*) and one mature horse chestnut tree (*Aesculus hippocastanum*). Hawthorn was noted as being the dominant tree species present at the Site. It should be noted that while technically outside the Site boundary, on the opposite side of the western and northern stone wall bounds are a number of tall overhanging hawthorn trees that potentially support suitable nesting habitat for birds and thus are considered within this report.

#### Stone Wall (BL1)

Stone walls bound the Site on all sides, with some areas clear of vegetation, and others overgrown with ivy. A mix of bracken and ivy covers some of the walls along the northern



boundary. Species growing within the stone walls include thistle, geranium, herb Robert, maidenhair spleenwort (*Aspelenium trichomanes*) and field horsetail (*Equisetum arvense*). *Sphagnum* moss growth was also noted on some of the rocks within the stone walls.

#### Buildings and Artificial Surfaces (BL3)

There is a small derelict shed located next to the eastern boundary of the Site. This habitat type is of negligible ecological value. The coast road which is included within the redline boundary to the east of the main residential area has not been taken into account within this report though is of negligible ecological value.

#### Invasive species

Four butterfly bush (*Buddleja davidii*) stands of approx. 1 – 1.5m in height are present along the southern boundary wall on the Coast Roadside. Butterfly bush is a medium impact invasive species (Kelly et al., 2013) and an ornamental garden escape. Its roots grow rapidly and allow it to grow into dense thickets, out-competing and shading native plant species (NBDC). Given the <5m proximity to two European sites, namely, Galway Bay Complex (000268) and Inner Galway Bay SAC (004031), butterfly bush should be appropriately treated prior to the commencement of any works at the Site to prevent its spread and the degradation of QI / SCI habitats.





FIGURE 8. MAP OF HABITATS AND INVASIVE SPECIES AT THE SITE OF THE PROPOSED DEVELOPMENT.



# 4.4 Species and Species Groups

#### 4.4.1 Flora

# 4.4.1.1 Rare and Protected Flora

The Site is located within the M32S 2km grid square from the NBDC online database. Species records from the NBDC online database were studied for the presence of rare and/or protected species within the last 20 years. This database contained no records of protected flora within the last 20 years, however, one regionally near threatened plant species occurred within the M32S 2km grid square, listed in Table 6. The FPO Bryophytes database was also checked for rare and protected flora records within the vicinity of the Proposed Development and no records from within the last 20 years were found.

TABLE 6. RECORDS OF RARE OR PROTECTED FLORA IN THE M32S 2KM GRID SQUARE ASSOCIATED WITH THE SITE (NBDC)

Name	Date of last record	Database	Designation
RARE / PROTECTED FLORA			
Slender Thistle (Carduus tenuiflorus)	31/12/2010	BSBI tetrad data for Ireland	IUCN Red List Status: Near Threatened

# 4.4.1.2 Invasive Species

There is one record of flora considered to be invasive within the M32S 2km grid square which encompasses the Site of the Proposed Development. Details of this record are listed in Table 7.

# TABLE 7. RECORDS OF INVASIVE SPECIES OF FLOWERING PLANT FOR THE SURROUNDING 2KM M32S GRID SQUARES ASSOCIATED WITH THE SITE FROM THE NBDC

Species	Date of last record	Source	Designations
<b>Sycamore</b> (Acer pseudoplatanus)	14/06/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Medium Impact Invasive Species

There is a line of three sycamore (*Acer pseudoplatanus*) trees present within the Site, a medium impact invasive species. It is noted that sycamore is traditionally considered to be an invasive species due to its ability to outcompete native tree species and its supposedly low contribution to local biodiversity by supporting fewer insect species than native tree species (Leslie, 2005). However, sycamore's invasiveness is considered to be more of an issue in some sensitive native woodland settings and not in urban, anthropogenic environments such as the Site in question. Sycamore has also been found to support relatively high numbers of lichen species, including rarer species, when compared to native tree species (Leslie, 2005). Sycamore is therefore not considered to be a negative presence at the Site and in fact provides suitable nesting and foraging habitat for local birds and invertebrate species, and thus can be



viewed as being positive for biodiversity in the context of the urban location of the Site (NBDC, 2022).

#### 4.4.2 Bats

#### 4.4.2.1 Desk Study Results

A minimum of two bat species have been recorded within the 2km (M32S) grid square which encompasses the Site, summarised below in Table 8.

# TABLE 8. RECORDS OF BATS FOR THE SURROUNDING 2KM GRID SQUARES (M32S) ASSOCIATED WITH THE SITE FROM THE NBDC.

Species	Date of last record	Database	Designation
Leisler's Bat ( <i>Nyctalus leisleri</i> )	11/07/2018	National Bat Database of Ireland	<ul> <li>EU Habitats Directive - Annex IV</li> <li>Wildlife Act 1976 (as amended)</li> </ul>
Pipisrelle sp. ( <i>Pipistrellus</i> pipistrellus sensu lato)	06/08/2022	National Bat Database of Ireland	<ul> <li>EU Habitats Directive - Annex IV</li> <li>Wildlife Act 1976 (as amended)</li> </ul>

The suitability index for specific bat species is presented in Table 9. The landscape suitability index is high for four species of bat: soprano Pipistrelle (*Pipistrellus pygmaeus*), brown longeared bat (*Plecotus auritus*), common pipistrelle (*Pipistrellus pipistrellus*), Leisler's bat (*Nyctalus leislerii*) and Natterer's bat (*Myotis nattereri*). The Proposed Development Site (indicated in the black box in Figure 9) is located in an area with an overall Medium-High (33.56) suitability for bats in general.

TABLE 9. LANDSCAPE SUITABILITY INDEX FOR INDIVIDUAL BAT SPECIES WITHIN THE 2KM GRID SQUARE (SOURCE: NBDC). THOSE SPECIES THAT HAVE BEEN RECORDED IN THE NBDC DATABASE WITHIN THE M32S GRID SQUARE ARE HIGHLIGHTED IN GREEN.

Bat Species	Suitability Index (2km Grid Square)
Soprano pipistrelle (Pipistrellus pygmaeus)	47 (High)
Brown Longed-eared bat (Plecotus auritus)	46 (High)
Common pipistrelle (Pipistrellus pipistrellus)	45 (High)
Lesser horseshoe bat (Rhinolophus hipposideros)	7 (Low)
Leisler's bat (Nyctalus leisleri)	50 (High)
Whiskered bat (Myotis mystacinus)	23 (Medium)
Daubenton's bat (Myotis daubentonii)	27 (Medium)
Nathusius' pipistrelle (Pipistrellus nathusii)	19 (Low-Medium)
Natterer's bat (Myotis nattereri)	38 (High)





FIGURE 9. BAT LANDSCAPE SUITABILITY MODEL (ALL BATS) SURROUNDING THE PROPOSED DEVELOPMENT SITE (ADAPTED FROM NBDC)

# 4.4.2.2 Field Survey Results

#### 4.4.2.2.1 Bat Roost Assessment and Habitat Suitability

The ground-based preliminary bat roost assessment identified a potential roost in the form of the small shed near the eastern boundary of the Site, which is shrouded by treelines. Although the shed's windows are missing, potential urine staining was identified on the inner walls of the shed and thus the shed was deemed to be of High roosting potential.

The Site holds suitable linear features for commuting and foraging bats in the form of treeline and hedgerow, particularly to the southeast of the Site where treelines are uninterrupted and may provide access to the wider area to the east. Furthermore, while the stone wall forms the boundaries of the Site to the north and west, there is hawthorn hedging on the other side of the wall which may provide connectivity between the Site and the wider area to the north. Furthermore, given the presence of a potential roost in the shed, the Site was assigned High habitat suitability.

#### 4.4.2.2.2 Bat Activity Survey

One of three bat activity surveys have been carried out to date. A memorandum will be issued on completion of all bat activity surveys to present the results of the completed surveys.



# 4.4.2.2.3 Bat Emergence Survey

One of three bat emergence surveys have been carried out to date. A memorandum will be issued on completion of all bat emergence surveys to present the results.

#### 4.4.2.3 Evaluation

An evaluation of all bat surveys carried out will be provided within a memorandum pending the completion of scheduled bat activity surveys and bat emergence surveys.



# 4.4.3 Birds

# 4.4.3.1 Desk study Results

A total of 35 bird species have been recorded within the M32S 2km grid square. Of these, 27 are amber listed birds and five are red listed birds as identified on the Birds of Conservational Concern in Ireland (BoCCI) (Gilbert et al. 2021). Details of green, amber, red listed species and Annex species are detailed in Table 10.

TABLE 10. DETAILS OF AMBER AND RED LISTED BIRD SPECIES WITHIN THE 2KM GRID SQUARE (M32S)

Species	Date of record	BoCCI Status	Annex Species (if applicable)
Arctic Tern (Sterna paradisaea)	12/09/2012	Amber	Annex I
Barn Swallow ( <i>Hirundo rustica</i> )	01/05/2018	Amber	
Bar-tailed Godwit (Limosa lapponica)	10/09/2012	Amber	Annex I
Black-headed Gull (Larus ridibundus)	05/04/2023	Red	
Black-tailed Godwit ( <i>Limosa limosa</i> )	31/12/2011	Amber	
Brent Goose (Branta bernicla)	05/04/2023	Amber	
Common Goldeneye (Bucephala clangula)	21/02/2016	Amber	
Common Greenshank (Tringa nebularia)	05/04/2023	Amber	
Common Kestrel (Falco tinnunculus)	03/06/2015	Amber	
Common Redshank (Tringa totanus)	31/12/2011	Red	
Common Shelduck (Tadorna tadorna)	09/04/2023	Amber	
Common Starling (Sturnus vulgaris)	31/07/1991	Amber	
Common Swift (Apus apus)	24/07/2023	Amber	
Common Wood Pigeon (Columba palumbus)	31/07/1991	Green	Annex II & III
Eurasian Curlew (Numenius arquata)	05/04/2023	Red	Annex II
Eurasian Oystercatcher (Haematopus ostralegus)	05/04/2023	Amber	
Eurasian Teal (Anas crecca)	21/02/2016	Amber	Annex II
Eurasian Wigeon (Anas penelope)	05/04/2023	Amber	Annex II & III
Gadwall (Anas strepera)	05/04/2023	Amber	Annex II
Great Black-backed Gull (Larus marinus)	14/09/2012	Amber	
Great Cormorant (Phalacrocorax carbo)	05/04/2023	Amber	
Herring Gull (Larus argentatus)	05/04/2023	Red	



House Martin (Delichon urbicum)	31/07/1991	Amber	
House Sparrow (Passer domesticus)	24/02/2023	Amber	
Little Egret (Egretta garzetta)	09/04/2023	Green	Annex I
Mallard (Anas platyrhynchos)	09/04/2023	Amber	Annex II & III
Mew Gull (Larus canus)	14/09/2012	Amber	
Mute Swan (Cygnus olor)	09/04/2023	Amber	
Northern Gannet (Morus bassanus)	31/07/1991	Amber	
Northern Lapwing (Vanellus vanellus)	11/11/2020	Amber	Annex II
Northern Wheatear (Oenanthe oenanthe)	07/10/2013	Amber	
Peregrine Falcon (Falco peregrinus)	02/02/2017		Annex I
Ruff (Philomachus pugnax)	31/12/2011	Amber	Annex I
Sky Lark (Alauda arvensis)	31/07/1991	Amber	
Yellowhammer (Emberiza citrinella)	31/07/1991	Red	

# 4.4.3.2 Field Survey Results

#### 4.4.3.2.1 Bird Scoping Survey

During the breeding bird survey on 22<sup>nd</sup> of April 2024, one red-listed (Gilbert et al. 2021) species was recorded on the Site, namely, meadow pipit (*Anthus pratensis*). As the only meadow pipit recorded on the survey was a bird flying east over the Site, calling, it is not suspected to be breeding on the Site. Three amber-listed birds were recorded exhibiting breeding behaviour at the Site, including goldcrest (*Regulus regulus*), starling (*Sturnus vulgaris*), and willow warbler (*Phylloscopus trochilus*), while two amber-listed birds were non-breeding flyovers, namely, swallow (*Hirundo rustica*) and linnet (*Linaria cannabina*). All birds recorded at the Site during the breeding bird survey on the 22<sup>nd</sup> of April 2024 and their observed behaviours are presented in Table 11.

Species	Scientific name	BoCCI Status	Dates recorded	Breeding Activity
Blackbird	Turdus merula	Green	22 <sup>nd</sup> April 2024	Probable breeding. Pair observed in suitable nesting habitat in breeding season.
Blackcap	Sylvia atricapilla	Green	22 <sup>nd</sup> April 2024	Possible breeder. Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat

TABLE 11. BIRD SPECIES RECORDED DURING THE BREEDING BIRD SURVEY ON THE 22ND OF APRIL 2024



Blue Tit	Cyanistes caeruleus		22 <sup>nd</sup> April 2024	Probable breeding. Pair
		Green		observed in suitable nesting
				habitat in breeding season
Chaffinch	Fringilla coelebs		22 <sup>nd</sup> April 2024	Probable breeding. Pair
		Green		observed in suitable nesting
				habitat in breeding season
Chiffchaff	Phylloscopus		22 <sup>nd</sup> April 2024	Possible breeder. Singing male
	collybita		'	present (or breeding calls heard)
		Green		in breeding season in suitable
				breeding habitat
Dunnock	Prunella modularis		22 <sup>nd</sup> April 2024	Possible breeder. Singing male
			,	present (or breeding calls heard)
		Green		in breeding season in suitable
				breeding habitat
Goldcrest	Reaulus reaulus		22 <sup>nd</sup> April 2024	Possible breeder. Singing male
	····g·····			present (or breeding calls heard)
		Amber		in breeding season in suitable
				breeding habitat
Goldfinch	Carduelis carduelis		22 <sup>nd</sup> April 2024	Probable breeding Pair
Colument		Green		observed in suitable nesting
		Croon		habitat in breeding season
Great Tit	Parus major		22nd April 2024	Possible breeder Singing male
Great In	T arus major		22 April 2024	present (or breeding calls heard)
		Green		in breeding season in suitable
				hreeding babitat
Hooded Crow	Conuce corniv	Groop	22nd April 2024	Non broading Elyover only
Hooded Crow	Linoria connahina	Green	22 <sup>nd</sup> April 2024	Non-breeding. Flyover only.
Linnet Moodow Dipit	Anthun protonoio	And	22 <sup>nd</sup> April 2024	Non-breeding. Flyover only.
	Anunus praterisis	Reu	22 <sup>nd</sup> April 2024	Non-breeding. Flyover only.
Pheasani	Phasianus coicnicus	Unclossified	22 <sup>110</sup> April 2024	Possible breeding. Species
		Unclassified		observed in breeding season in
Diad Wastail	Matasilla alba varralli		22nd April 2024	Suitable nesting habitat
Fieu Wagiali		Creen	22 <sup>110</sup> April 2024	Probable breeding. Fall
		Green		behitet in broading sosson
Dahia				Daskakla husadian Dain
Robin	Erithacus rubecula	0	22 <sup>nd</sup> April 2024	Probable breeding. Pair
		Green		observed in suitable nesting
Deals	O a mana far cuita an ca	0		Napital III breeding season
		Green	22 <sup>nd</sup> April 2024	Non-breeding. Flyover only.
Song Thrush	l urdus philomelos		22 <sup>nd</sup> April 2024	Possible breeder. Singing male
		Green		present (or breeding calls heard)
				In breeding season in suitable
			0074 4 100004	breeding nabitat
Starling	Sturnus vulgaris	Amber	22 <sup>nd</sup> April 2024	Confirmed breeding. Nest with
				young seen or heard
Swallow	Hirundo rustica	Amber	22 <sup>nd</sup> April 2024	Non-breeder. Foraging over the
				Site.
Woodpigeon	Columba palumbus	Green	22 <sup>nd</sup> April 2024	Non-breeding. Flyover only.
Wren	Troglodytes		22 <sup>na</sup> April 2024	Possible breeder. Singing male
	troglodytes	Green		present (or breeding calls heard)
				in breeding season in suitable
				breeding habitat
Willow Warbler	Phylloscopus		22 <sup>nd</sup> April 2024	Possible breeder. Singing male
	trochilus	Amber		present (or breeding calls heard)
				in breeding season in suitable
				breeding habitat



# 4.4.3.2.2 Wintering Bird Surveys

Five wintering bird surveys have been undertaken at the Site between November 2023 and March 2024, as outlined in Table 1 in section 3.5**Error! Reference source not found.**.

In total, 29 species were recorded either on or flying over the Site. 19 species were recorded inside the red-line boundary on the 20<sup>th</sup> of November 2023, 17 were recorded on the 5<sup>th</sup> of January, 20 were recorded on the 26<sup>th</sup> of January, 20 were recorded on the 20<sup>th</sup> of February and 21 on the 28<sup>th</sup> of March 2024. All species recorded at the Site are listed in Table 12 below and those that overlap with SCI species of Inner Galway Bay SPA (004031) are highlighted in green. It is worth noting that while a group of 12 no. curlew were recorded foraging at the Site during the November 2023 survey, they have not been observed using the Site since this initial survey.

# TABLE 12. BIRDS RECORDED AT THE PROPOSED DEVELOPMENT SITE DURING WINTERING BIRD SURVEYS. THOSE SPECIES THAT ARE ALSO SCI SPECIES OF INNER GALWAY BAY SPA ARE HIGHLIGHTED IN GREEN.

Species	Scientific name	BoCCI Status	Dates recorded	Activity
Blackbird	Turdus merula	Green	20 <sup>th</sup> November 2023 5 <sup>th</sup> January 2024 26 <sup>th</sup> January 2024 20 <sup>th</sup> February 2024 28 <sup>th</sup> March 2024	Common.
Black-headed Gull	Larus ridibundus	Amber	20 <sup>th</sup> November 2023 5 <sup>th</sup> January 2024 26 <sup>th</sup> January 2024 20 <sup>th</sup> February 2024	One, adult, flew north over the Site on 20 <sup>th</sup> Nov. Two adults flew over on the 5 <sup>th</sup> Jan.
Blue Tit	Cyanistes caeruleus	Green	20 <sup>th</sup> November 2023 5 <sup>th</sup> January 2024 26 <sup>th</sup> January 2024 20 <sup>th</sup> February 2024 28 <sup>th</sup> March 2024	Common.
Chaffinch	Fringilla coelebs	Green	20 <sup>th</sup> November 2023 5 <sup>th</sup> January 2024 26 <sup>th</sup> January 2024 20 <sup>th</sup> February 2024 28 <sup>th</sup> March 2024	Common but mainly flyovers.
Chiffchaff	Phylloscopus collybita	Green	28 <sup>th</sup> March 2024	One in song.
Common Gull	Larus canus	Amber	20 <sup>th</sup> November 2023 20 <sup>th</sup> February 2024	Eight (six adults, one first- winter and one 2 <sup>nd</sup> winter) flew west over the Site.
Curlew	Numenius arquata	Red	20 <sup>th</sup> November 2023	Twelve foraging on the field, before flying to the field immediately to the south, before returning to the field inside the RLB.
Dunnock	Prunella modularis	Green	20 <sup>th</sup> November 2023 5 <sup>th</sup> January 2024 26 <sup>th</sup> January 2024	Common on Site.



			20th February 2024	
			28th March 2024	
Goldcrest	Regulus regulus	Amber	28 <sup>th</sup> March 2024	One in song
Goldfinch	Carduelis carduelis	Green	28 <sup>th</sup> March 2024	One, flew over, landed
				briefly in a tree and then
				continued on.
Great Black-	Larus marinus	Green	26 <sup>th</sup> January 2024	One flew west over the Site.
backed Gull				
Great Tit	Parus major	Green	26th January 2024	Common on the Site.
			20th February 2024	
			28 <sup>th</sup> March 2024	
Headed Crow	Conus comin	Croon	20th November 2022	Common
HOODED CTOW	Corvus cornix	Green	20 <sup>th</sup> November 2023	Common.
			26th January 2024	
			20 <sup>th</sup> February 2024	
			28 <sup>th</sup> March 2024	
Jackdaw	Corvus monedula	Green	20 <sup>th</sup> November 2023	Common.
			5 <sup>th</sup> January 2024	
			26th January 2024	
			20th February 2024	
			28th March 2024	
			000	
Kestrel	Faico tinnunculus	Red	26 <sup>th</sup> January 2024	One Female, presumed to
			20 <sup>m</sup> February 2024	be the same individual seen
Linnet	Linaria cannahina	Ambor	20th November 2023	Common but mainly
		Amber	5th January 2024	recorded as flyovers
			26 <sup>th</sup> January 2024	recorded as hydrers.
			28 <sup>th</sup> March 2024	
Long-tailed Tit	Aegithalos caudatus	Green	20th November 2023	Small flocks moving
			5 <sup>th</sup> January 2024	through the Site on several
			26th January 2024	dates.
			20th February 2024	
NA		0	Ooth Maximuch are 0000	0
iviagpie	rica pica	Green	20 <sup>th</sup> November 2023	Common.
			26th January 2024	
			20 <sup>th</sup> February 2024	
			28 <sup>th</sup> March 2024	
Meadow Pipit	Anthus pratensis	Red	28 <sup>th</sup> March 2024	One, flyover
Mistle Thrush	Turdus viscivorus	Green	20th November 2023	Common, mainly flyovers.
			5 <sup>th</sup> January 2024	
			26th January 2024	
			20th February 2024	
			28 <sup>th</sup> March 2024	



Redwing	Turdus iliacus	Red	20 <sup>th</sup> November 2023 26 <sup>th</sup> January 2024	One flyover, calling, heading south on two dates.
Robin	Erithacus rubecula	Green	20th November 2023 5th January 2024 26th January 2024 20th February 2024 28th March 2024	Common.
Rook	Corvus frugilegus	Green	20th November 2023 5th January 2024 26th January 2024 20th February 2024 28th March 2024	Common.
Skylark	Alauda arvensis	Amber	20th February 2024 28th March 2024	Singing over the site and occasionally the field on the opposite side of the road on two dates.
Starling	Sturnus vulgaris	Amber	20th November 2023 5th January 2024 26th January 2024 20th February 2024 28th March 2024	Mainly flyovers.
Stonechat	Saxicola rubicola	Green	28th March 2024	Male landed in briefly.
Siskin	Spinus spinus	Green	5 <sup>th</sup> January 2024 20 <sup>th</sup> February 2024	One flew over the Site on two dates.
Woodpigeon	Columba palumbus	Green	20th November 2023 5th January 2024 26th January 2024 20th February 2024 28th March 2024	Common over the Site.
Wren	Troglodytes troglodytes	Green	20 <sup>th</sup> November 2023 5 <sup>th</sup> January 2024 26 <sup>th</sup> January 2024 20 <sup>th</sup> February 2024 28 <sup>th</sup> March 2024	Common.

In order to determine the importance of the bay itself for certain species and given the <5m separation distance from the Site, a species list was also taken of birds present in the bay within 300m of the Site during the Site surveys. These are tabulated in full in Appendix II and show that a number of groups of wintering birds roost within Oranmore Bay and within the potential zone of influence of the Site of the Proposed Development.

#### 4.4.3.3 Evaluation

Considering the variety of bird species recorded both in the historical records and during the various field surveys, as well as the evidence of breeding along majority of the Site, it is



considered that the Site contains resident and regularly occurring, locally important populations of bird species protected under the Wildlife Act.

Furthermore, although the Site is not considered to be of significance as *ex-situ* habitat for wintering birds given its infrequent use and the abundance of similar habitat in the wider area, a range of groups of wintering birds are frequently utilising Oranmore Bay itself, <5m south of the Site. Oranmore Bay is of significance for wintering birds and lies within the potential zone of influence for disturbance / displacement as a result of works at the Site.

# 4.4.4 Mammals (excl. bats)

# 4.4.4.1 Desk Study Results

Records for terrestrial mammals within the M32S 2km grid square were obtained from the NBDC online database. Table 13 lists these species, their date of last record and summarises their protected status/designation. In total, 7 mammal species (six native and one non-native or invasive) were recorded within the grid squares which encompass the Proposed Development Site.

 TABLE 13. RECORDS OF TERRESTRIAL MAMMALS (NATIVE AND NON-NATIVE) FOR THE SURROUNDING 2KM M32S GRID

 SQUARE ASSOCIATED WITH THE SITE FROM THE NBDC.

Species	Date of last record	Source	Designation
NATIVE SPECIES			
Eurasian Badger ( <i>Meles meles</i> )	18/05/2018	Mammals of Ireland 2016-2025	Wildlife Act 1976 (as amended)
Eurasian Red Squirrel ( <i>Sciurus vulgaris</i> )	10/12/2013	Atlas of Mammals in Ireland 2010-2015	• Wildlife Act 1976 (as amended)
European Otter ( <i>Lutra lutra</i> )	05/11/2021	Mammals of Ireland 2016-2025	<ul> <li>Wildlife Act 1976 (as amended)</li> <li>EU Habitats Directive: Annex II &amp; IV</li> </ul>
West European Hedgehog ( <i>Erinaceus europaeus</i> )	29/08/2022	Hedgehogs of Ireland	• Wildlife Act 1976 (as amended)
MARINE MAMMALS			
Common Seal ( <i>Phoca vitulina</i> )	21/09/2023	Explore Your Shore	<ul> <li>Wildlife Act 1976 (as amended)</li> <li>EU Habitats Directive – Annex II &amp; V</li> </ul>
Grey Seal (Halichoerus grypus)	20/08/2011	NPWS Seal Database	<ul> <li>Wildlife Act 1976 (as amended)</li> <li>EU Habitats Directive – Annex II &amp; V</li> </ul>
NON-NATIVE AND INVASI	/E SPECIES		
Brown Rat ( <i>Rattus norvegicus</i> )	08/12/2013	Atlas of Mammals in Ireland 2010-2015	<ul> <li>High Impact Invasive Species</li> <li>Regulation S.I. 477/2011 (Ireland)</li> </ul>



# 4.4.4.2 Field Survey Results

No evidence of native or non-native mammal presence was recorded within the Site during the surveys on 26<sup>th</sup> of October 2023 or the 9<sup>th</sup> of April 2024. The habitats within the Site which are predominantly improved agricultural grassland (GA1) are not considered optimal for the native mammals recorded within the M32S 2km grid square, however, the small patch of trees to the southeast of the Site may be suitable to support western European hedgehog (*Erinaceus europaeus*), although there is poor connectivity between the Site and the wider area as a result of the stone wall boundaries, the train line to the north and the Coast road to the south.

Given that the Site lies <5m north of Oranmore Bay, which overlaps with designated sites selected for otter, an otter survey of the shoreline was undertaken in order to identify potential holts located within a precautionary 150m disturbance distance (NRA, 2008) of the Site. No holts (breeding or non-breeding) were identified as being present within 150m of the Site, nor were any signs of otter presence recorded, such as prints, spraints, lay-ups or slides.

# 4.4.4.3 Evaluation

The Site could potentially support resident and regularly occurring and locally important populations of some of the smaller native mammals, such as hedgehog. Hedgehogs are less likely to be recorded during walkover surveys due to their timid behaviours and small size, however some areas of the Site such as the trees to the southeast provide potentially sufficient suitable habitats (although connectivity with the wider area, as noted above, is poor). No evidence of any other historically recorded mammals was found at the Site and are therefore unlikely to occur at the Site. However, foraging/commuting otter may be present within Oranmore Bay, <5m south of the Site and could be subject to disturbance.

#### 4.4.5 Amphibians

No historical records of common frog (*Rana temporaria*) or smooth newt (*Lissotriton vulgaris*) exist for the M32S 2km grid square within which the Site is encompassed.

No field evidence of common frog or smooth newt was recorded during the Site walkover surveys on the 26<sup>th</sup> of October 2023 or the 9<sup>th</sup> of April 2024. Additionally, there is no habitat within the Site with the potential to support breeding amphibians, such as ponds, drainage ditches or wet grassland.

It is deemed that given the absence of suitable habitat, field signs of presence and historical records, it is unlikely that the Site supports a significant population of breeding amphibians.

#### 4.4.6 Other Fauna

#### 4.4.6.1 Common Lizard

No records of Common Lizard (*Zootoca vivipara*) exist for the M32S 2km grid square. However, there is some suitable habitat for this species within the Site of the Proposed Development, particularly the stone wall boundaries and a few piles of larger boulders to the southeast of the Site. As no targeted surveys for common lizard were carried out, it is assumed under the precautionary principle that a locally important population of this species may be present at the Site.



# 4.4.6.2 Fish

There are no records of notable fish species within the relevant 10km grid square associated with the Site from the NBDC database. Oranmore Bay located to the south of the Site could support notable fish species such as salmonids or lampreys. However, the Site is not hydrologically linked to Oranmore Bay and as such, the fish assemblage within Oranmore Bay will be unaffected by the Proposed Development.

# 4.4.7 Protected and/or Notable Species Unlikely to Occur at the Site

Other notable and/or rare species and species listed on Annex IV of the Habitats Directive that were considered but that are unlikely to occur at the Site include:

- Flora
  - Marsh Saxifrage (*Saxifraga hirculus*) Known populations only in Co. Mayo.
  - Killarney Fern (Vandenboschia speciosa) Nearest known populations in Co.
     Wicklow, not recorded at the Site, no suitably sheltered and/or moist habitats available on site.
  - Slender Naiad (*Najas flexilis*) A clear water, lowland lake species. No suitable habitat available at the Site.
- Fauna
  - White-clawed Crayfish (*Austropotamobius pallipes*) Not present in the vicinity of the Site. No drainage ditches or streams are present on-Site.
  - Freshwater Pearl Mussel (*Margaritifera margaritifera*) Nearest known records from the Owenriff catchment to the northwest of the Site, there is no hydrological connection to this catchment.
  - Natterjack Toad (*Epidalea calamita*) Distribution restricted to few coastal sites.
  - Kerry Slug (Geomalacus maculosus) Distribution restricted to south and west of Ireland.

# 4.5 Evaluation of Ecological Features

Habitats have been evaluated for their conservation importance, based on the NRA evaluation scheme (NRA, 2009b). Those selected as KERs are those which are evaluated to be of at least local importance (higher value).

Fauna that has the potential to utilise the Site and immediate area of the Proposed Development, or for which records exist in the wider area, have been evaluated for their conservation importance. This evaluation follows the Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009b).

The impacts of the Proposed Development on the identified KERs are assessed in section 1. Table 14 below summarises the evaluation rating assigned to each ecological feature and the rationale behind these evaluations is also provided.



# TABLE 14. EVALUATION OF DESIGNATED SITES, HABITATS, FLORA AND FAUNA RECORDED WITHIN THE SITE AND THE SURROUNDING AREA. THOSE IDENTIFIED AS KEY ECOLOGICAL RECEPTORS (KERS) ARE HIGHLIGHTED IN GREEN.

Species / Species Group	Evaluation	Rationale	Key Ecological Receptor (KER)
DESIGNATED SITES			
Galway Bay Complex pNHA	National Importance	Screened out by proxy as per accompanying	No
Cregganna Marsh NHA	National Importance	European sites.	No
HABITATS			
Improved agricultural grassland (GA1)	Local Importance (Lower Value)	Habitat covers majority of Site, is of low species diversity and little ecological value. Used to graze cattle. Entirety will be lost to facilitate Proposed Development.	No
Scrub (WS1)	Local Importance (Lower Value)	Dominated by bramble – of limited ecological value. Likely to provide some foraging and shelter opportunities to small mammals within the Site. Entirety will be lost to facilitate Proposed Development.	No
Treelines (WL2)	Local Importance (Higher Value)	A mix of cypress, sycamore and hawthorn treelines that may provide suitable nesting habitat for birds.	Yes
Hedgerow (WL1)	Local Importance (Higher Value)	Relatively low floral diversity and limited evidence of fauna use of this habitat. May provide suitable foraging and nesting habitat for small mammals or birds. Habitat comprises boundary features and will be retained.	Yes
Stone Wall (BL3)	Local Importance (Lower Value)	Present along the Site's boundaries, uncovered in some places and ivy clad in others. May hold suitability for basking reptiles or reptile refugia.	No
Buildings & Artificial surfaces (BL1)	Local Importance (Lower Value)	Small shed present at the Site of no ecological value.	No
FLORA			
Rare & Protected Flora	Local Importance (Lower Value)	No rare or protected flora were recorded during the field surveys. Unlikely to be present in notable numbers/densities.	No
Invasive Species	Negligible value	Butterfly bush present along the southern boundary that will require removal to prevent spread, and suppression of native species.	Yes
NATIVE FAUNA			
Bat Assemblage	Local Importance (Higher Value)	A rationale will be provided within a memorandum which will be issued pending	Yes



Species / Species Group	Evaluation	Rationale	Key Ecological Receptor (KER)
		the undertaking of future scheduled bat surveys.	
Wintering Bird Assemblage	County Importance	No significant wintering populations recorded within the Site but are present in Oranmore Bay which is within the zone of influence of the Site.	Yes
Potential Breeding Bird Assemblage	Local Importance (Higher Value)	Suitable habitat to support breeding birds in the form of hedgerow / treeline / scrub at the Site. A number of red and amber listed species recorded during breeding bird survey.	Yes
Badger	Local Importance (Lower Value)	Very limited suitable habitat at the Site for these mammals and poor connectivity with the wider area. No field signs of presence. Unlikely to be regularly present.	No
Otter	Local Importance (Higher Value)	No suitable habitat for this mammal at the Site, however, suitable habitat exists <i>c</i> . 30m south of the Site in Oranmore Bay.	Yes
Small mammals (Hedgehog, pygmy shrew, Irish stoat)	Local Importance (Higher Value)	Suitable habitats present for small native mammals at the Site in the form of hedgerow and scrub.	Yes
Amphibians	Local Importance (Lower Value)	No suitable habitats on-Site to support a significant breeding population of amphibians, no evidence of presence recorded.	No
Common Lizard	Local Importance (Higher Value)	Suitable habitats present particularly within stone walls and boulder clusters. Considered highly likely to occur regularly at the Site.	Yes



# 5 ECOLOGICAL IMPACT ASSESSMENT

# 5.1 Mitigation Embedded in Project Design

The Proposed Development includes several embedded design features that may act to avoid or mitigate negative impacts that would likely occur in the absence of these features. However, as opposed to typical mitigation measures, the implementation of these features is integral to the design and completion of the Proposed Development, and as such the impact assessments are performed with consideration of these features as integrated parts of the Proposed Development. All considered embedded design features that may act to mitigate negative impacts on local ecology and environment are listed in Table 15.

 TABLE 15. EMBEDDED DESING FEATURES AND THEIR POTENTIAL TO ACT TO AVOID OR MITIGATE NEGATIVE IMPACTS ON THE

 LOCAL ECOLOGY AND ENVIRONMENT.

Embedded Design Feature	Avoidance / Mitigation Potential
SuDS: • permeable parking; • swales; • green roofs; • tree pits; and • rain gardens	The SuDS features included in the Project Design will ensure that <u>no</u> <u>surface water exits the Site during its operation</u> . All water will be discharged to the ground.
CEMP	Standardised international best practice measures as per the accompanying CEMP will be applied during the Construction Phase.
<ul> <li>Landscape Design:</li> <li>Native planting</li> <li>Planting as per All-Ireland Pollinator Plan 2021-2025</li> </ul>	Will slightly offset the loss of habitats at the Site and aim to provide screening between the Site and Oranmore Bay and provide connectivity between the Site and the wider area during its operational lifetime.
<ul><li>Lighting Design</li><li>Bat-friendly lighting measures.</li></ul>	Lighting has been designed with features that will minimize disruption to bats throughout the operational lifetime of the Proposed Development.

# 5.2 Construction Phase

#### 5.2.1 Impacts on Habitats and Flora

#### 5.2.1.1 Treelines (WL2)

To facilitate the Proposed Development, *c.* 230m of this habitat will be lost. This would constitute a *negative, permanent, slight* impact at the local level, offset by the retention *c.* 40m of treeline at the Site.

There is the potential that retained trees could be damaged by machinery or other Construction Phase plant / vehicles through damage to bark, limbs or roots or compaction of soils. In the absence of suitable mitigation, this would constitute a *negative, short-term,* and *moderate* impact at a local scale.



# 5.2.1.2 Hedgerow (WL1)

There is the potential that retained hedgerows could be damaged by machinery or other Construction Phase plant / vehicles through damage to bark, limbs or roots or compaction of soils. In the absence of suitable mitigation, this would constitute a *negative, short-term,* and *moderate* impact at a local scale.

# 5.2.1.3 Spread of Invasive Species

There are three stands of butterfly bush present along the southern stone wall boundary of the Site. In the absence of appropriate treatment of this invasive species prior to the commencement of works, this could result in *negative, short-term, slight* impacts at the local scale.

#### 5.2.2 Impacts on Native Fauna

# 5.2.2.1 Bats

Impacts on bats will be included in a future memorandum which will be issued pending the completion of all scheduled bat surveys for the Proposed Site. In the absence of a complete data set, a precautionary principle shall be adopted in relation to the proposed mitigation and enhancements to be undertaken on Site.

# 5.2.2.2 Breeding Birds

Birds have been observed exhibiting breeding behaviours at the Site, and considering only one breeding bird survey was undertaken at the Site, the precautionary principle is applied in relation to breeding birds at the Site. As such, vegetation removal to facilitate the Proposed Development result in direct mortality of adult birds, chicks and eggs if undertaken during the breeding bird season (March to August inclusive). This would constitute a *negative, short-term, significant* impact on local breeding birds.

Furthermore, the removal of hedgerow, treeline or scrub to facilitate the Proposed Development will result in a decrease in the available nesting habitat for breeding birds, constituting a *negative, permanent, slight* impact on local breeding birds in the context of the wider area of alternative suitable habitat.

#### 5.2.2.3 Wintering Birds

A range of wintering birds have been observed using Oranmore Bay for roosting and as such lie within the Site's zone of influence for disturbance during particularly noisy events or should machinery/workers enter areas outside of the Site's bounds. In the absence of mitigation, impacts on wintering birds in Oranmore Bay could be *negative, short-term* and *significant* at the county scale.

#### 5.2.2.4 Otter

Similarly to the above, otters are also known to utilise Oranmore Bay, although no holts were identified within 150m of the Site. However, should a breeding holt materialise along the shoreline prior to the commencement of works at the Site, otter and their young could be



subject to displacement as a result of regular disturbance during Construction. This could result in *negative, short-term, significant* impacts on local otter populations.

Furthermore, otters use the shoreline (<5m south) for foraging and in the event of inappropriate light use at the Site during Construction, could be interrupted from their normal foraging patterns and behaviours. This could result in a *negative, temporary, slight* impact on local foraging otter.

Although unlikely, should otter enter the Site during the Construction Phase, there is the potential for entrapment within pipes, wires or other building materials if not properly stored. This could lead to direct mortality of otter in the absence of mitigation, which would constitute a *negative, short-term, significant* impact on local otter populations.

# 5.2.2.5 Small mammals

Furthermore, should hedgehog, Irish stoat or pygmy shrew be utilising the Site during Construction, there is the potential for entrapment within pipes, wires or other building materials if not properly stored. This could lead to direct mortality of species in the absence of mitigation, which would constitute a *negative, short-term, moderate* impact at the local level.

Should vegetation clearance be undertaken during the hibernation season from November to March, there is the potential for direct mortality of species. This could constitute a *negative, short-term* and *moderate* impact on local populations of small mammals.

# 5.2.2.6 Reptiles

Common lizard in Ireland is widespread, utilising stone walls and rocks for basking in sunlight. The Site's boundaries comprise stone walls, while boulder clusters are present to the southeast of the Site, both of which may be used by common lizard for basking or as refugia. This suitable potential lizard habitat will be lost to facilitate the Proposed Development, constituting a *negative, permanent* and *slight* impact on local common lizard populations.

Furthermore, should lizard be utilising the Site during Construction, there is the potential for entrapment within pipes, wires or other building materials if not properly stored. This could lead to direct mortality of species and their young in the absence of mitigation, which would constitute a *negative, short-term, moderate* impact at the local level.

Should vegetation clearance be undertaken during the lizard hibernation season from November to March, there is the potential for direct mortality of species. This could constitute a *negative, short-term* and *moderate* impact on local common lizard populations.

# 5.3 Operational Phase

# 5.3.1 Impacts on Habitats and Flora

No impacts on habitats and flora during the Operational Phase of the Proposed Development are foreseen.



# 5.3.1.1 Spread of Invasive Species

Landscaping with imported soils and flora has the potential to introduce invasive species to the Site and the newly created habitats; these invasive species could spread further within the Site and outward to the surrounding wider area, including Oranmore Bay. This could constitute a *negative, long-term* and *moderate* impact at the local scale.

# 5.3.2 Impacts on Native Fauna

No impacts on native fauna during the Operational Phase of the Proposed Development are foreseen.

# 5.4 Do Nothing Impact

If the Proposed Development was not to go ahead, the Site would likely continue to be used for grazing livestock. The condition of the Site may worsen as a result of invasive species spread. Butterfly bush and ivy growth along the stone walls may destabilise the wall if growing unmanaged. Bramble scrub would continue to grow in the east and southeast of the Site, becoming impassable.

# 5.5 Potential for In-Combination Effects

# 5.5.1 Relevant Plans and Policies

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

- Galway County Development Plan 2022-2028.
- Galway County Heritage and Biodiversity Plan 2017-2022 (Present).

No specific projects or plans within the Galway County Development Plan were identified that could act in-combination with the Proposed Development and cause adverse effects on the KERs identified in this report. Additionally, the CDP has directly addressed the protection, enhancement and incorporation of biodiversity through specific Policies and Objectives, as well as through its Development Management Standards (see Appendix I for details). The Galway County Heritage and Biodiversity Plan 2017-2022 (Present) is set out to protect and improve biodiversity in County Galway, and as such will not result in negative in-combination effects with the Proposed Development.

Therefore, on examination of the above it is considered that there are no means for the Proposed Development to act in-combination with any plans or projects that would cause any likely significant effects to nearby ecological sensitivities.

#### 5.5.2 Existing Planning Permissions

There are several existing planning permissions on record in the area ranging from smallscale extensions and alterations to existing residential properties to some larger-scale developments. The larger existing developments identified within 2km of the Site and along the same impact pathways as the Proposed Development are identified below in Table 16 and



the potential for possible in-combination effects with the Proposed Development are assessed. It is noted that the majority of the few developments within the vicinity of the Site of the Proposed Development are applications for retentions, small scale developments, refusals and applications from before 2017.

#### TABLE 16. ASSESSMENT OF POTENTIAL IN-COMBINATION EFFECTS OF THE PROPOSED DEVELOPMENT AND OTHER DEVELOPMENTS PENDING OR GRANTED PERMISSION IN THE LAST 5 YEARS (2019-2024), WITHIN 1KM OR ALONG THE SAME IMPACT PATHWAY AS THE PROPOSED DEVELOPMENT.

Planning Reference	Planning Authority	Status	Location		
171268	Galway County Council	Conditional (07/06/2019)	<i>c.</i> 0.97km SE		

#### **Development Description**

Permission for development on site which extends to 4.48ha, on the northern side of the old Dublin Road (R338). The proposed development will consist of the following: (1) construction of 76 no. residential units comprising: 9 no. blocks of House Type A (18 no. houses), 3 no. blocks of House Type B (6 no. houses), 5 no. blocks of House Type C (10 no. houses), 2 no. blocks of House Type D (4 no. houses), 5 no. blocks of House Type E(20 no. houses), 2 no. blocks of House Type G (8 no. houses), 1 no. block of House Type G (1 no. houses), 1 no. block of House Type G (1 no. houses), 1 no. block of House Type H (8 no. apartments); (2) provision of shared communal and private open space and site landscaping; (3) onsite and visitor carparking; (4) vehicular and pedestrian access from R338; and (5) all associated site development works (gross floor space 9,079.3sqm).

#### Potential for In-combination effects

This development is accompanied by an AA Screening only and no further ecological reports suggesting no such reports were required for this site to obtain planning permission. The AA report notes that there was no potential for deterioration of water quality as a result of this project, and is sufficiently separated from Oranmore Bay to preclude disturbance. As such, and given the 1.6km separation distance, it is not expected that there will be any in-combination impacts as a result of this project being undertaken simultaneously with the Proposed Development.

The Proposed Development is estimated to provide an increase in both extent and variability of available habitats for local wildlife, offsetting some of the loss accrued by nearby developments (both permitted and planned).

It is considered that there is no potential for the Proposed Development to act in-combination with other permitted developments in the vicinity that could cause likely significant effects on any nearby KERs.

# 6 Avoidance, Mitigation, Compensation and Enhancement Measures

# 6.1 Avoidance By Design

The Proposed Development design does not implement any specific avoidance measures.



# 6.2 Construction Phase

Table 17 gives a summary of the best practice development standards and mitigation measures to be implemented during the Construction Phase of the Proposed Development. The measures listed are outlined in more detail in the Construction and Environmental Management Plan (CEMP) (Enviroguide, 2024c) accompanying this application under separate cover.

TABLE 17. SUMMARY OF BEST PRACTICE STANDARDS AND MITIGATION OUTLINED IN THE OUTLINE CONSTRUCTION AND ENVIRONMENTAL MANAGEMENT PLAN (DBFL 2023). WHERE SPECIFIC DETAILS RELATING TO PROTECTION OF KEY ECOLOGICAL RECEPTORS IS REQUIRED UNDER THESE MEASURES, REFERENCE IS MADE TO THE APPROPRIATE SECTION IN THIS REPORT.

Theme	Best Practice Standards and Mitigation	Ecology Specific Mitigation
Hydrology & Hydrogeology	<ul> <li>Standard best international practice including but not limited to:</li> <li>CIRIA, (2001), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors;</li> <li>Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (C650), 2005;</li> <li>BPGCS005, Oil Storage Guidelines;</li> <li>CIRIA 697, The SUDS Manual, 2007;</li> <li>UK Pollution Prevention Guidelines (PPG) UK Environment Agency, 2004;</li> <li>Construction Industry Research and Information Association CIRIA C648: Control of water pollution from linear construction projects: Technical guidance (Murnane et al. 2006);</li> <li>CIRIA C648: Control of water pollution from linear construction projects: Site guide (Murnane et al. 2006); and</li> <li>Inland Fisheries Ireland (2016). Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters.</li> </ul>	None
	Best practice guidance includes: BS 5228	
Noise & Vibration	(2009 +A1 2014) Code of Practice for Noise and Vibration Control on Construction and Open Sites Parts 1 and 2, It is recommended that continuous construction noise and vibration monitoring be provided, to be maintained on an ongoing basis by the contractor for the duration of the project and reported monthly	Yes – see section 6.2.2.3



Waste Management	All waste contractors will be licensed under the Waste Management Acts 1996 - 2008, the Waste Management (Collection Permit) Regulations 2007(as amended). The appointed Construction Waste Manager will be responsible for conducting waste audits at the site during the C&D phase of the development. Any soil/subsoil that is deemed to be contaminated will be stored separately to the clean and inert soil/subsoil. The material will be appropriately tested and classified as either non-hazardous or hazardous in accordance with the EPA publication 'Waste Classification: List of Waste and Determining if Waste is Hazardous or Non-Hazardous' using the HazWasteOnline application (or similar approved classification method).	Yes – see section 6.2.2.2.
------------------	---	----------------------------

In addition, to ensure the CEMP remains 'fit for purpose' for the duration of the project it should be reviewed and updated by the Project Manager in consultation with the Contractor's Ecologist during the life of the project to ensure that it remains suitable to facilitate efficient and effective delivery of the project's environmental commitments. The Contractor shall also designate a Site Engineer/Manager/Assistant Manager as the Construction Waste Manager and who will have overall responsibility for the implementation of the Project Waste Management Plan (WMP). This Plan will be prepared upon appointment of the Main Contractor.

Additional mitigation measures required for sufficient protection of the KERs identified in this report, and/or details for the specific implementation of the mitigation measures as per the above table are given in the below sections.

#### 6.2.1 Protection of Habitats

# 6.2.1.1 Mitigation 1: Root Protection Zones

An Arborist will oversee works relating to trees, and post-construction tree assessment. The Arborist will demarcate root protection buffer zones around the roots of trees to be retained, <u>prior</u> to the commencement of Construction works at the Site.

#### 6.2.1.2 Mitigation 2: Removal of Butterfly Bush

It is recommended that non-native/invasive flora species recorded at the Site are controlled/removed as per the appropriate best-practice guidelines. Removal and disposal should be carried out in accordance with appropriate guidelines such as TII (formerly NRA) The Management of Invasive Alien Plant Species on National Roads (2020), with consideration given to the prevention of spread of these plants. The following is extracted from TII (2020) for the control of butterfly bush:

#### Chemical control



Foliar application of herbicide is capable of providing control with young plants and small infestations, but should be followed up at six-monthly intervals as regrowth is common.

# Physical control

Removal of the flower heads before seed set (June or even July) is an important control method as it reduces the volume of seeds that are available to spread. Hand-picking of young plants will provide control but it is very tedious and should be undertaken with care to avoid soil disturbance, which can give rise to a flush of new seedling growth. Digging out plants is only practical with relatively minor infestations, at the initial stage of invasion, or where a site is to be excavated for development or road construction purposes. Mowing of young plants does not provide effective control as they re-sprout with vigour. The physical removal of mature stands is not recommended for the same reason. After uprooting, it is essential to plant the ground in order to prevent a flush of new seedling growth. When Buddleia plants are cut, regrowth from the stump can be very vigorous.

# Combined chemical and physical control

Effective control can be achieved by cutting Buddleia plants to a basal stump during active growth (late spring to early summer) and immediately treating the total cut surface with herbicide concentrate. Monitoring will be required and retreatment, as necessary. Do not leave cut stems and branches on the ground as they will re-root and produce new plants."

**Recommended Management**: Physical removal and off-site disposal of butterfly bush is recommended where it occurs within the survey area (3 locations along southern boundary), due to its limited presence on Site.

# 6.2.1.3 Mitigation 3: Biosecurity

The following best practice site hygiene and biosecurity measures will be in place to avoid the potential introduction of invasive floral species at the Site and offsite via movement of materials/staff:

- All soils/materials being introduced to the Site will be sourced from a certified invasive flora-free source site, to ensure no introduction of invasive plant materials to the Site occurs.
- Personnel working on or between sites will ensure their clothing and footwear are cleaned, ensuring they are visually free from soil and organic debris, in order to prevent inadvertent spread of invasive plant material.
- All vehicles entering or leaving the Site will have been suitably checked and pressurewashed to ensure no introduction of invasive flora to and from the Site. Measures such as a drive through hygiene bath or footbaths will be considered where appropriate.
- Material/water left after vehicles have been pressure-washed must be contained, collected and disposed of appropriately.



# 6.2.2 Protection of Fauna

#### 6.2.2.1 Mitigation 4: Vegetation Clearance

Vegetation clearance of the hedgerow, treeline and grassland habitats will need to be cognisant of any potentially present fauna. Table 18 below provides guidance for when vegetation clearance is permissible in relation to wintering, hibernating and breeding fauna. Information sources include British Hedgehog Preservation Society's *Hedgehogs and Development* and *The Wildlife (Amendment) Act, 2000.* 

<u>Vegetation removal avoid the period of March-August inclusive</u>, and the hedgerow and treeline sections marked for removal to facilitate the quarrying extension will be conducted outside of this period. The preferred period for vegetation clearance is within the months of September and October to avoid the main breeding bird season, as well as mammal hibernation (See Table 18); vegetation clearance at the Site should be supervised by an ecologist.

During any works at the Site, should a breeding bird and/or an active nest be found, the nest will be protected through the demarcation of a 5m buffer zone (or appropriate area) around the nest, and no further works will take place in the vicinity of the nest until the young have fledged. Where continuance of works is critical an ecologist will be instructed to survey the vegetation in question and make recommendations on how best to proceed. The area containing the nest would need to be protected with a suitable buffer to minimise disturbance until the ecologist has confirmed the young have fledged.

Ecological Feature	Jan	Feb	March	April	Мау	June	July	Aug	Sept	Oct	Nov	Dec
Breeding Birds	Vegetatic clearanc permissib	on e ble	No clo relev confirm	Nesting bird season arance of vegetation or works to ant structures permitted unless ed to be devoid of nesting birds by an ecologist.				Vegetation clearance permissible				
Hibernating mammals (Hedgehog)	<u>Mammal hibernation</u> <u>season</u> No clearance of vegetation or works to relevant structures permitted unless confirmed to be devoid of hibernating mammals by an ecologist.			Vegetation clearance permise				sible	sible Mammal <u>hibernation</u> <u>season</u> No clearance of vegetation or works to relevant structures permitted unless confirmed to be devoid of			

 TABLE 18 SEASONAL RESTRICTIONS ON VEGETATION REMOVAL. RED BOXES INDICATE WHEN CLEARANCE / WORKS ARE NOT ADVISED.



				mammals by an ecologist.
Common Lizard	<u>Lizard Hibernation Season</u> No habitat clearance permissible	<u>Active period</u> Habitat (scrub, tall sward grass) c permissible	learance	Lizard <u>Hibernation</u> <u>Season</u> No habitat clearance permissible
Bats	Tree fel	ling to be avoided	Preferred period for tree felling	Tree felling to be avoided

Additionally, all vegetation clearance will be carried out in sections working in a consistent direction to prevent entrapment of protected fauna potentially present (e.g., hedgehog). Logs and branches from this vegetation will be utilised for the creation of hibernacula on Site (see section 6.3.3.4 below). A phased cutting approach under the supervision of a suitably qualified ECoW will be used to allow wildlife (e.g. small mammals, reptiles) to move away from any suitable habitat that will be removed:

- Phase 1 Cutting vegetation to 150-200 mm and removing the arisings;
- Phase 2 After a minimum of one hour, hand-searching the cut areas (conducted by an ECoW) and removing any sheltering habitat (e.g. logs or debris) then cutting vegetation to ground level and removing the arisings; and
- Phase 3 Soil scrape.

Similarly to the timing of vegetation clearance, and as the stone wall is suitable to support common lizard, its removal should also be supervised by a suitably qualified ECoW. Should any common lizard be encountered, works will cease until the ECoW has determined the risk of harm to lizard is eliminated.

Should any suitable refugia or day nesting habitats need to be removed, this will be carried out <u>outside the most vulnerable breeding periods for hedgehogs wherever practicable (main hedgehog birthing months June and July) (See Table 18) and will be supervised by the ECoW.</u>

Furthermore, given that trees are to be removed to facilitate the Proposed Development, it is recommended that all felled trees are left to lie on the ground after felling for <u>at least 48 hours</u>, prior to sawing or mulching (as per BCT guidance). This precautionary measure of 'soft felling' will allow any bats to escape should they be present in on-Site trees prior to the commencement of works.



# 6.2.2.2 Mitigation 5: Waste Management

As best-practice all construction-related rubbish on Site e.g., plastic sheeting, netting etc. will be kept in a designated area and kept off ground level so as to prevent small mammals such as hedgehogs from entrapment and death.

Trenches/pits must be either covered at the end of each working day or include a means of escape for any animal falling in e.g., a plank or objects placed in the corner of an excavation (Species such as badgers will continue to use established paths across a site even when construction work has started).

Any temporarily exposed open pipe system will be capped in such a way as to prevent animals gaining access as may happen when contractors are off Site.

# 6.2.2.3 Mitigation 6: Disturbance to Wintering Birds

Waterbirds are particularly susceptible when roosting on mudflats such as those present in Oranmore Bay <5m from the Proposed Development Site and during Construction, there is a combined risk of noise and visual disturbance which can result in an additive disturbance effect and even displacement of birds, wasting energy that would otherwise be used for foraging (Cutts et al., 2013). Mitigation to reduce the effects of noise and visual stimuli posed by the Construction works (including human presence, plant, machinery and vehicles) is outlined below.

- High disturbance works (excluding vegetation removal) should be undertaken between April and September to avoid most sensitive time for wintering birds.
- Minimise working time outside of the designated area within the Proposed Development Site.
- Acoustic barriers should be installed along the entire length of the southern boundary of the Site.
- Acoustic barriers should be opaque so as to additionally reduce visual disturbance.

Acoustic barriers are readily available online and have the benefit of reducing noise levels by up to 43dB.

Noise levels at the Site in conjunction with wintering waterbirds birds present in Oranmore Bay will be monitored regularly by a suitably qualified ornithologist to ensure the effectiveness of the acoustic barriers. Monitoring is discussed in more detail in Section 7.

Where works are occurring outside of the wintering bird sensitive season (April to September), monitoring is not required. Acoustic barriers should remain in place.

#### 6.2.2.4 Mitigation 7: Disturbance to Bats

To minimise potential disturbance to local bats due to lighting during the Construction Phase, construction works will be carried out during normal daylight working hours as follows:

- Monday to Friday: 08:00 and 19:00; and,
- Saturdays: 08:00 to 14:00



• No Sunday work will generally be permitted.

Where night time lighting cannot be avoided due to health and safety concerns, the lighting within the Proposed Development will be designed and installed to minimise the impact on local wildlife and in accordance with the Bat Conservation Trust guidelines on artificial lighting and bats (ILP, 2023):

- There will be no light spill to the boundary habitats.
- All luminaires used will lack UV/IR elements to reduce impact.
- LED luminaires will be used due to the fact that they are highly directional, lower intensity, good colour rendition and dimming capability.
- A warm white spectrum (<2700 Kelvins will be used to reduce the blue light component of the LED spectrum).
- Luminaires will feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats.
- Column heights should be carefully considered to minimise light spill. The shortest column height allowed should be used where possible.
- Only luminaires with an upward light ratio of 0% and with good optical control will be used.
- Luminaires will be mounted on the horizontal, i.e. no upward tilt.
- Any external security lighting will be set on motion-sensors and short (1min) timers.
- As a last resort, accessories such as baffles, hoods or louvres will be used to reduce light spill and direct it only to where it is needed.

# 6.2.2.5 Mitigation 8: Disturbance to Otter

In order to reduce noise and visual disturbance affecting the QI species otter, the following mitigation measures are proposed in relation to lighting and avoidance of breeding holts (natal dens):

- Minimise working time outside of the designated working areas within the Proposed Development Site (e.g. do not approach areas closer to Oranmore Bay than the Site).
- A pre-construction otter survey covering areas of Oranmore Bay within 150m of the Proposed Development will be conducted 3-4 months prior to the commencement of works to ensure that there are no active breeding holts present within this distance of the Site and allow time for derogation licence application if required.
- Should an active breeding holt be identified, works are not to commence until a derogation license has been obtained from NPWS and suitable mitigation for the protection of otters is in place.



- Acoustic barriers as described in the above section **Error! Reference source not f ound.** will also be suitable to reduce noise disturbance to any otter that may be using the area.
- Otters are a nocturnal species that forage at night and are likely to investigate a construction site (CIEEM, 2019). As such, there will be no lighting of the Proposed Development during Construction and works are to be caried out during daylight hours only. If lighting is considered essential to works, the ecologist will be consulted, and directional lighting will be used, in agreement with NPWS.
- A toolbox talk will be delivered to anyone working on-Site prior to the commencement of any works.

# 6.3 Operational Phase

# 6.3.1 Protection of Habitats

# 6.3.1.1 Mitigation 9: Invasive Species Management

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

Despite the measures identified in the accompanying CEMP (Enviroguide, 2024c) for the importation of only clean materials, there is the potential for the inadvertent import of invasive species to the Site. If established, there is a risk of further spread both within and out of the Site.

As such, it is recommended that any newly landscaped areas, particularly where infill materials and soils have been imported for soft landscaping, are assessed during the Operational Phase within the next botanical season for the presence of any inadvertently introduced invasive species, with particular focus on those listed on Schedule III of SI 477 of 2011. If invasive species are detected, an Invasive Species Management Plan will be prepared, agreed with the Local Authority and implemented at the earliest possibility to limit the potential for further spread.

#### 6.3.2 Protection of Fauna

No specific mitigation for the protection of fauna during the Operational Phase is recommended.

# 6.3.3 Biodiversity Enhancement Measures

#### 6.3.3.1 Biodiversity Enhancement by Design

The Landscape Plan incorporates native planting throughout the open green spaces of the Proposed Development. This will take the form of trees, hedgerow, shrubs, grasses and wildflower meadow. The planting schedule is attached in Appendix X and can be found in full



in the Landscape Report, along with specifications for plant material, the requirements of the Landscape Contractor and proposals for monitoring establishment of green spaces. The landscaping will offset habitat loss at the Site to an extent, producing an imperceptible net impact on habitats.

# 6.3.3.2 Enhancement 1: Hedgerow Management

The planted hedgerows at the Site and along the northern boundary, will be managed using a <u>low-intervention approach</u> i.e., in a way that maximises the ecological value they provide, with habitat connectivity maintained along the western, northern and eastern margins of the Site; connecting it with the wider area.

This connectivity is vital for wildlife such as birds, bats, mammals and insect pollinators in a human landscape such as that which will be provided by the Proposed Development. Additionally, by managing hedgerows and woodland in a more natural way, they will provide more in terms of biodiversity; through increased plant diversity, increased provision of food resources and higher quality shelter to wildlife inhabiting and commuting through the area.

A low-intervention management approach may not be appropriate for internal ornamental hedgerows planted within the main residential area of the Proposed Development, due to aesthetics or logistics, however, it is suited to the external hedgerows present along the margins of the Site.

The following measures will be adopted by the Management Company tasked with maintaining the Site's landscaping into the future:

- The hedgerow areas located along the outer boundaries of the Site will, as much as is practicable, be allowed to link up with each other. The provision of an almost continuous vegetative margin around the Site; through planted native hedgerows and trees, will maintain habitat connectivity with the surrounding environment.
- Hedgerows will be maintained with a minimum **natural meadow strip of 1-2m** at their base wherever possible. Hedges with plenty of naturally occurring flowers and grasses at the base support will provide higher quality habitat for local wildlife using the hedges.
- The 1-2m strip at the base of the hedgerow will be cut on a reduced mowing regime to encourage wildflower growth and maximise the value of the hedgerow for pollinators. A two-cut management approach is ideal for suppressing coarse grasses and encouraging wildflowers. Cut the hedgerow basal strip once during February and March (this is before most verge plants flower and it will not disturb groundnesting birds). Cut the verge once again during September and October (this slightly later cutting date allows plants that were cut earlier in the year time to grow and set seed).

N.B. Raising the cutter bar on the back cut will lower the risk to small mammals.

• Where hedgerow, scrub or woodland understorey trimming needs to occur, delay trimming as late as possible – until **January and February** as the surviving berry crop will provide valuable food for wildlife. The earlier this is cut; <u>the less food will</u>



<u>be available</u> to help birds and other wildlife survive through the winter. Any hedgerow/scrub/woodland trimming will be done outside of the nesting season and due consideration of the Wildlife Act 1976 (as amended) must be taken.

- Where possible, cut these outer boundary hedgerows on a minimum **3-year cycle** (cutting annually stops the hedgerow flowering and fruiting), and cut in rotation rather than all at once this will ensure some areas of hedgerow will always flower (Blackthorn in March, Hawthorn in May etc.).
- Where they occur naturally, Bramble and Ivy should be allowed to grow in hedgerows as they provide key nectar and pollen sources in summer and autumn.

#### Methods to Avoid

**Hedgerows and woodland understorey will not be over-managed**. Tightly cut hedges and vegetation mean there are fewer flowers and berries, thus reducing available habitats, feeding sources and suitable nesting sites.

Hedgerows will not be cut between March 1<sup>st</sup> and August 31<sup>st</sup> inclusive. It is both prohibited (except under certain exemptions) and very damaging for birds as this is the period they will have vulnerable nests containing eggs and young birds.

**DO NOT use pesticide/ herbicide sprays or fertilisers at all** as they can have an extremely negative effect on the variety of plants and animals they support.

# 6.3.3.3 Enhancement 2: Pollinator Habitat

Pollinator/insect habitat, as seen in Figure 10, will be created on Site by:

- Creating an earth bank.
- Scraping back some bare earth.
- Leaving some areas to grow wild, and/or
- By drilling holes 10cm deep in unvarnished wood for solitary bees.



FIGURE 10. EXAMPLES OF SOLITARY BEE HABITAT. EXTRACTED FROM HOW-TO-GUIDE: CREATING WILD POLLINATOR NESTING HABITAT (NBDC, 2016).

Large bee or insect hotels will not be installed. Guidance from the All -Ireland Pollinator Plan states "Don't install a large bee or insect hotel. Large bee hotels are attractive to humans, but



not great for pollinators. They can encourage the spread of disease and attract predators. Avoid anything bigger than an average-sized bird box. There are many other ways to provide nesting habitats for pollinators, such as providing wild areas of undisturbed long grass, and scraping back some bare earth. If you want to make a bee hotel, make sure it is small, and position it away from bird feeders so the insects aren't easy targets." A link to a "How-to-guide Creating wild pollinator nesting habitat" is provided for the development management company these habitats https://pollinators.ie/wpput in place: to content/uploads/2022/12/Pollinator-Nesting-How-to-Guide-2022-WEB.pdf. appointed An ecologist will oversee the creation of these habitats.

# 6.3.3.4 Enhancement 3: Reptile Hibernacula

It is recommended to enhance the Site for reptile use by providing suitable refuge and hibernacula to replace stone walls and boulder clusters removed from the Site. It is recommended that two areas of hibernacula are provided at the Site in the areas of open space.

Hibernacula for reptiles is relatively easy to create from rubble, wood and soil, all of which can likely be sourced from the Site during works. Rubble and wood in various sizes should be piled either in a shallow depression in a disorganised way to create nooks and crevices. Larger tree trunks or rocks should be placed so that they will protrude through the final mound to provide open entrances to the mound. This pile should then be covered in soil to allow the inner crevices to maintain a stable temperature through the winter and allow for hibernation. The top can be planted with for example grass and native wildflowers. See Figure 11 below for examples of finished hibernacula.



FIGURE 11. EXAMPLES OF SUITABLE AMPHIBIAN AND REPTILE HIBERNACULA AND REFUGIA.

#### 6.3.3.5 Enhancement 4: Hedgehog Highways

By fencing the boundaries of a Site, the land becomes fragmented and largely inaccessible to species such as hedgehog, which like to roam each night in search of food (garden pests e.g., slugs). This can easily be fixed by ensuring that the boundaries and barriers within and surrounding the Site are permeable for hedgehogs. This will allow hedgehogs to move freely between the Site and adjacent sites.



This can be achieved by:

- Providing 13 x 13 cm holes at ground level at various locations along the external mesh fencing (Hedgehog holes).
- Leaving a sufficient gap beneath gates.
- Leaving brick spaces at the base of brick walls.

Examples of hedgehog 'highways' are provided below in Figure 12.



FIGURE 12. EXAMPLES OF HEDGEHOG HIGHWAYS THAT COULD BE INCORPORATED INTO THE PROPOSED DEVELOPMENT.

The inclusion of hedgehog highways will be considered as part of the landscape design of the Site, specifically the external mesh fencing proposed. A variety of fence suppliers stock specific hedgehog-friendly fencing options, which can be easily incorporated at little or no additional cost. The 13 x 13cm holes can also be cut into mesh fencing on site quite easily. These simple measures will provide habitat connectivity at the Site for hedgehogs and reduce the impact of the land-use change on this species.

# 6.3.3.6 Enhancement 5: Swift Boxes

It is proposed to include a minimum of 16 no. swift bricks as part of the Proposed Development. The bricks should be located in groups, as swifts are a social nesting species. As per best practice, swift bricks will be installed at least 5 metres above the ground, in safe areas where they will not be disturbed, with a clear unobstructed run up to the boxes/bricks. As the bricks tend not to overheat, they can be placed facing in any direction. Care will be taken to ensure no obstacles or plate glass windows are located below the bricks.

Guidelines for the bird box scheme follow the guidelines published by Swift Conservation Ireland, and those published by Birdwatch Ireland entitled "Saving Swifts" (2009/2010). The incorporation of Swift Bricks will help recover the declining swift population, which are now Red Listed in Ireland (Gilbert et al., 2021).

Swifts are a "clean" bird species which remove their own wastes from their nests periodically. As such, <u>Swift bricks do not require any cleaning by the management company</u>.


It is advised to install a **Swift calling system** to attract Swifts and encourage them to take up residence at a new site. A Swift calling system is a small speaker set-up that plays Swift calls during the summer. It should be located close to the brick entrances and has been seen to greatly increase the chances of Swifts using the Swift boxes/bricks. Solar powered options are possible and advised.

An Ecologist will be instructed to set up the Swift calling system once the construction of the Proposed Development is complete.

#### 6.3.3.7 Enhancement 6: Bat Boxes

A minimum of four summer bat boxes (e.g., Woodcrete 1FF Schwegler design) will be erected on suitably sized trees on the eastern boundary of the Site, the placement of which will be determined by a bat ecologist. The boxes will be installed as part of the landscaping works, so as to not delay their deployment and potential positive impacts.

Bat boxes will be sited carefully, and this will be undertaken by a bat specialist. The bat ecologist will erect the bat boxes with assistance from the contractor. Some general points that will be followed include:

- Bat boxes will be erected on trees (or telegraph poles) with no crowding branches or other obstructions for at least 1 metre above and below the bat box.
- Diameter of tree should be wide and strong enough to hold the required number of boxes.
- Locate bat boxes in areas where bats are known to forage or adjacent to suitable foraging areas. Locations will be sheltered from prevailing winds.
- Bat boxes will be erected at a height of 4-5 metres to reduce the potential for vandalism and predation of roosting bats.
- The recommended Woodcrete 1FF design is open at the bottom, allowing the droppings to fall out, and so does not need cleaning.

## 7 MONITORING

Table 19 below provides a summary of the required monitoring and pre-works inspections during the Construction Phase, as well as any surveys that should be completed during the Operational Phase. The monitoring, inspections and surveys will ensure that the identified mitigation measures are implemented and maintained efficiently and have the desired effect of protecting the local ecology from adverse impacts.

 TABLE 19. MONITORING AND PRE-WORKS INSPECTIONS FOR THE IDENTIFIED MITIGATION MEASURES DURING CONSTRUCTION

 PHASE OF THE PROPOSED DEVELOPMENT. TO BE CARRIED OUT BY A SUITABLY QUALIFIED ECOLOGIST OR ECOLOGICAL

 CLERK OF WORKS (HIGHLIHGTED IN GREEN) OR BY THE DEVELOPMENT CONTRACTOR (NO HIGHLIGHT).

Measure	Monitoring
CONSTRUCTION PHASE	
Mitigation 1: Root Protection Zones	Ongoing monitoring by Contractor.
Mitigation 2: Removal of Butterfly Bush	No monitoring required.



Mitigation 3: Biosecurity	Ongoing monitoring by Contractor.
Mitigation 4: Vegetation Clearance	Any Site vegetation clearance within the scrub, hedgerows or grassland habitats subject to supervision by an Ecologist and a phased approach.
Mitigation 5: Waste Management	Ongoing monitoring by Contractor.
Mitigation 6: Disturbance to Wintering Waterbirds	Noise levels reaching the bay to be monitored during October- March by the Contractor to ensure acoustic barriers are fit for purpose. Regular monitoring of the bay during this timeframe to be done by Ornithologist. No monitoring is required outside of October-March.
Mitigation 7: Disturbance to Bats	No monitoring required.
Mitigation 8: Disturbance to Otter	Pre-construction survey of the shoreline for breeding holts to be undertaken by an ecologist prior to the commencement of works.
Enhancement 2: Pollinator Habitat	Installation by certified Landscape Architect. Ongoing monitoring by Contractor.
Enhancement 3: Reptile Hibernacula	The placement and construction of these structures should be carried out under supervision of an Ecologist to ensure they are fit for purpose.
Enhancement 4: Hedgehog Highways	No monitoring required.
Enhancement 5: Swift Boxes	The placement of swift boxes and setup of swift-calling system should be carried out under supervision of an Ecologist to ensure they are fit for purpose.
Enhancement 6: Bat Boxes	The placement of bat boxes should be carried out under supervision of an Ecologist to ensure they are fit for purpose.
OPERATIONAL PHASE	
Mitigation 9: Invasive Species Removal	An Invasive Species Survey will be carried out by a qualified Ecologist during the next botanical season after soft landscaping has been completed.
Enhancement 1: Low intervention hedgerow management	Ongoing monitoring by Management Company.

# 8 **RESIDUAL IMPACTS**

Residual impacts are impacts that remain once mitigation has been implemented or impacts that cannot be mitigated. Table 20 below provides a summary of the impact assessment for the identified KERs and details the nature of the impacts identified, the mitigation measures proposed, and the classification of any residual impacts.

Both standard Construction Phase control measures, and specific mitigation measures, have been outlined to ensure that the Proposed Development does not impact on any species, habitats or designated sites of conservation importance. It is essential that these measures



are complied with, in order to ensure that the Proposed Development complies with National conservation legislation.

Provided all recommended measures are implemented in full and remain effective throughout the lifetime of the Proposed Development, no significant negative residual impacts on the local ecology, or on any designated nature conservation sites, will occur as a result of the Proposed Development.



#### TABLE 20. SUMMARY OF POTENTIAL IMPACTS ON KER(S), MITIGATION PROPOSED AND RESIDUAL IMPACTS.

Кеу	Кеу			Impact W	/ithout Mitigati	on	Proposed Mitigation /	Proposed	Posidual
Ecological Resource	Evaluation Po	Potential Impact	Quality	Magnitude / Extent	Duration	Significance	Mitigating Factors	Enhancements	Impact
DESIGNATED SITE	DESIGNATED SITES								
	No impacts to	o any designated sites will or	ccur as a re	sult of the Prop	oosed Developm	nent and therefore	no mitigation measures ar	e recommended.	
HABITATS									
Treelines (WL2)	Local Importance (Higher Value)	Construction Phase: Loss of habitat Damage to retained trees Operational Phase: None identified.	Negative Negative none	Local Local none	Permanent Short-term none	Slight Moderate none	<b>Mitigation 1:</b> Root protection zones	Biodiversity Enhancement by Design	Negative, Local, Long-term, Slight
Hedgerow (WL1)	Local Importance (Higher Value)	Construction Phase: Damage to retained hedges Operational Phase: None identified.	Negative none	Local none	Short-term none	Moderate none	<b>Mitigation 1:</b> Root protection zones	Biodiversity Enhancement by Design Enhancement 1: Hedgerow management	Imperceptible
All habitats	Local Importance (Higher Value)	Construction Phase: Spread of Invasive Flora Operational Phase: Spread of Invasive Flora	Negative Negative	Local Local	Short-term Short-term	Slight Slight	Mitigation 2: Removal of Butterfly Bush Mitigation 3: Biosecurity	Enhancement 2: Pollinator Habitat	Imperceptible



							Mitigation 9: Invasive Species Management		
FAUNA									
		Construction Phase: Loss of foraging / commuting habitat	Negative	Local	Permanent	Slight	<b>Mitigation 4:</b> Vegetation Clearance	Biodiversity	
Bat Assemblage	Local Importance (Higher	Inappropriate lighting	Negative	Local	Short-term	Significant (precautionary)	<b>Mitigation 7:</b> Disturbance to Bats	Enhancement by Design	Negative, Local, Short- term, Slight (procentionery)
	Value)	<b>Operational Phase:</b> None identified.	none	none	none	none	Lighting Design Plan	Enhancement 6: Bat Boxes	(precautionary)
Wintering Bird Assemblage	County importance	Construction Phase: Disturbance / displacement	Negative	County	Short-term	Significant	<b>Mitigation 6:</b> Disturbance to wintering birds	Biodiversity Enhancement by Design	Negative, County, Short-term, Slight.
		Operational Phase: None identified.	none	none	none	none			Long-term: Imperceptible
Potential Breeding Bird Assemblage	Local Importance (Higher Value)	<b>Construction Phase:</b> Risk of injury or death during vegetation clearance.	Negative	Local	Short-term	Significant	<b>Mitigation 4:</b> Vegetation Clearance	Biodiversity Enhancement by Design.	Negative, Local, Short- term, Slight
		Loss of nesting habitat	Negative	Local	Permanent	Slight			



		Disturbance from noise, dust and/or lighting. <u>Operational Phase:</u> None identified.	Negative none	Local none	Short-term none	Slight none	Best practice measures during Construction as per CEMP.	Enhancement 5: Swift Boxes	
Otter	Local Importance (Higher Value)	Construction Phase: Disturbance / displacement Risk of injury or death via entrapment in construction-related rubbish. Operational Phase: None identified.	Negative Negative none	Local Local none	Short-term Short-term none	Significant Significant none	Mitigation 8: Disturbance to Otter Mitigation 5: Waste Management	Biodiversity Enhancement by Design.	Imperceptible
Small mammals (hedgehog, pygmy shew, Irish stoat)	Local Importance (Higher value)	Construction Phase: Risk of injury or death during vegetation clearance and / or entrapment in construction-related rubbish. Operational Phase: None identified.	Negative	Local none	Short-term none	Significant	Mitigation 4: Vegetation Clearance Mitigation 5: Waste Management	Biodiversity Enhancement by Design. Enhancement 4: Hedgehog Highways	Imperceptible
Common Lizard	Local Importance	Construction Phase: Loss of habitat	Negative Negative	Local Local	Permanent Short-term	Slight Moderate	Mitigation 4: Vegetation Clearance	<b>Enhancement 3:</b> Reptile Hibernacula	Imperceptible



(Higher Value)	Risk of injury or death during vegetation clearance and / or entrapment in construction-related rubbish.					Mitigation 5: Waste Management	
		none	none	none	none		
	<b>Operational Phase:</b>						
	No potential impacts						
	identified						



# 9 CONCLUSION

It is considered that, provided the mitigation measures proposed within this report together with all best practice development standards as outlined in the CEMP are carried out in full, there will be no significant negative impact to any KER habitat, species group or biodiversity as a result of the Proposed Development.

The targeted ecological surveys allowed for the identification of a county significant population of wintering birds present within the ZOI of the Site (Oranmore Bay), and through careful evaluation of the potential impacts it is considered that a proportionate and effective solution to mitigate for potential disturbance or displacement of this species from Oranmore Bay during Construction has been achieved.

Additionally, the Landscaping Plan for the Proposed Development was designed to offset some of the habitat loss that will result from the Proposed Development, while the addition of Reptile Hibernacula, Hedgehog Highways and Swift and Bat Boxes will provide enhancements for smaller fauna that may already be present at the Site, and even further offset the loss of habitats.



## **10 REFERENCES**

AKM (2024a) Civil Design Report for a Proposed Large-scale Residential Development in Carton, Oranmore, Co. Galway.

AKM (2024b) Drainage Layout drawing no. 23011-AKM-XXXX-XX-DR-C01-300001 for a Proposed Large-scale Residential Development in Carton, Oranmore, Co. Galway.

AKM (2024c) Infrastructure Report for a Proposed Large-scale Residential Development in Carton, Oranmore, Co. Galway.

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

Baerwald, E.F., D'Amours, G.H., Klug, B.J. and Barclay, R.M.H. (2008) Barotrauma is a significant cause of bat fatalities at wind turbines, *Current Biology*, (18) 16, P695-696.

Bat Conservation Trust and Institute of Lighting Professionals (2018) Guidance Note 08/18: Bats and artificial lighting in the UK. ILP, Rugby

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

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

Bird Survey & Assessment Steering Group. (2022). Bird Survey Guidelines for assessing ecological impacts, v.1.0.0. <u>https://birdsurveyguidelines.org</u> [Accessed April 2024]

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

British Standards Institution (2013) BS 42020:2013 Biodiversity: Code of practice for planning and project, BSI, London.

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

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

Clements, D.K. & Toft, R.J. (1993). Hedgerow Evaluation and Grading Systems (HEGS) A Methodology for the Ecological Survey, Evaluation and Grading of Hedgerows. Countryside Planning and Management.

Collins, J. (2016). Bat Surveys for Professional Ecologists: Good Practice Guidelines (3<sup>rd</sup> Edition). The Bat Conservation Trust, London.

Collins, J. (2023). Bat Surveys for Professional Ecologists: Good Practice Guidelines (4<sup>th</sup> Edition). The Bat Conservation Trust, London.

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

Devlin, Z. (2014). The Wildflowers of Ireland – A Field Guide. The Collins Press. Cork, Ireland.

Enviroguide (2024a) AA Screening for a Proposed LRD at Cartron, Oranmore, Co. Galway. Enviroguide Consulting, Park West, Dublin 12.



Enviroguide (2024b) NIS for a Proposed LRD at Cartron, Oranmore, Co. Galway. Enviroguide Consulting, Park West, Dublin 12.

Enviroguide (2024c) CEMP for a Proposed LRD at Cartron, Oranmore, Co. Galway. Enviroguide Consulting, Park West, Dublin 12.

EPA. (2022). Guidelines on the information to be contained in Environmental Impact Assessment Reports. Published by the Environmental Protection Agency, Ireland.

EPA, (2024). Environmental Protection Agency Online Mapping [ONLINE] Available at: <a href="http://www.epa.ie/">http://www.epa.ie/</a> [Accessed April 2024]

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

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

Foulkes, N., Fuller, J., Little, D., McCourt, S. and Murphy, P. (2013). Hedgerow Appraisal System - Best Practise Guidance on Hedgerow Survey, Data Collation and Appraisal. Woodlands of Ireland, Dublin. Unpublished Report

Gilbert, G., Gibbons, D.W., and Evans, J. (1998): Bird Monitoring Methods: a manual of techniques for key UK species. Sandy: RSPB.

Gilbert G, Stanbury A and Lewis L (2021) Birds of Conservation Concern in Ireland 2020 –2026. Irish Birds 9: 523—544

Gillings, S., Wilson, A.M., Conway, G.J., Vickery, J.A., Fuller, R.J., Beavan, P., Newson, S.E., Noble, D.G. & Toms, M.P. (2007) Winter Farmland Bird Survey. BTO Research Report No.494.

GSI, (2024). Geological Survey of Ireland website [ONLINE] Available at: <u>http://www.gsi.ie/</u> [Accessed April 2024]

Herpetofauna Groups of Britain and Ireland. (1998). Evaluating Local Mitigation/Translocation Programmes: Maintaining Best Practice and Lawful Standards. HGBI Advisory Notes for Amphibians and Reptile Groups (ARGs). HGBI, c/o Froglife, Halesworth. Unpublished.

Institution of Lighting Professionals (ILP). (2023). Guidance Note 08/23: Bats and artificial lighting in the UK. *Bats and the Built Environment series*. [ONLINE] Available at: https://www.theilp.org.uk/documents/guidance-note-8-bats-and-artificial-lighting/ [Accessed April 2024]

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

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

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

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



Marnell, F., Kelleher, C. & Mullen, E. (2022). Bat mitigation guidelines for Ireland v2. Irish Wildlife Manuals, No. 134. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland

McAney, K. (2008). A Conservation Plan for Irish Vesper Bats. Irish Wildlife Manual No.20. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government.

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

NBDC, (2024). National Biodiversity Data Centre online mapping [ONLINE] Available at: <u>http://maps.biodiversityireland.ie/Map.aspx</u> [Accessed April 2024]

NBDC (2020) The All-Ireland Pollinator Plan 2021-2025. Available at: <u>https://pollinators.ie/wp-content/uploads/2021/03/All-Ireland-Pollinator-Plan-2021-2025-WEB.pdf</u> [Accessed April 2024]

NPWS, (2019). The Status of EU Protected Habitats and Species in Ireland. Habitats Assessments Volume 1, Version 1.0. Unpublished Report, National Parks & Wildlife Services. Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

NPWS, (2024). National Parks and Wildlife Service website [ONLINE] Available at: <u>http://www.npws.ie/en/</u> [Accessed April 2024]

NRA. (2005). Guidelines for the Treatment of Badgers Prior to the Construction of National Road Schemes. National Roads Authority (now Transport Infrastructure Ireland), Dublin.

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

NRA. (2008). Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes. National Roads Authority (now Transport Infrastructure Ireland), Dublin.

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

NRA. (2009a). Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes. National Roads Authority (now Transport Infrastructure Ireland), Dublin.

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

Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes. Environmental Series on Construction Impacts. National Roads Authority (now Transport Infrastructure Ireland), Dublin.

OPR (2021). Office of the Planning Regulator. Appropriate Assessment Screening for Development Management, OPR Practice Note PN01

Russ, J., (2012). British bat calls: a guide to species identification. Pelagic publishing.

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

Stone, E.L., Jones, G., Harris, S. (2012). Conserving energy at a cost to biodiversity? Impacts of LED lighting on bats. Glob. Change Biol. 18, 2458–2465.Simon Ronan Landscape Architects (2024a) Landscape Masterplan for a Proposed Large-scale Residential Development in Carton, Oranmore, Co. Galway.



Simon Ronan Landscape Architects (2024b) Landscape Report for a Proposed Large-scale Residential Development in Carton, Oranmore, Co. Galway

Uisce Éireann (2024) Capacity Register. Available at: <u>https://www.water.ie/connections/developer-services/capacity-registers/wastewater-treatment-capacity-register/galway-city/</u>[Accessed April 2024]



# APPENDIX I – LEGISLATION AND POLICY

### International Legislation

#### EU Birds Directive

The Birds Directive constitutes a level of general protection for all wild birds throughout the European Union. Annex I of the Birds Directive includes a total of 194 bird species that are considered rare, vulnerable to habitat changes or in danger of extinction within the European Union. Article 4 establishes that there should be a sustainable management of hunting of listed species, and that any large scale non-selective killing of birds must be outlawed. The Directive requires the designation of Special Protection Areas (SPAs) for: listed and rare species, regularly occurring migratory species and for wetlands which attract large numbers of birds. There are 25 Annex I species that regularly occur in Ireland.

#### EU Habitats Directive

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

#### Bern and Bonn Convention

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

#### Ramsar Convention

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

#### Water Framework Directive

The EU Water Framework Directive (WFD) 2000/60/EC is an important piece of environmental legislation which aims to protect and improve water quality. It applies to rivers, lakes, groundwater, estuaries, and coastal waters. The Water Framework Directive was agreed by all individual EU member states in 2000, and its first cycle ran from 2009 – 2015. The Directive runs in 6-year cycles; the second cycle ran from 2016 – 2021, and the current (third) cycle runs from 2022-2027. The aim of the WFD is to prevent any deterioration in the existing status of water quality, including the protection of good and high-water quality status where it exists. The WFD requires member states to manage their water resources on an integrated basis to achieve at least 'good' ecological status, through River Basin Management Plans (RBMP), by 2027.



## **National Legislation**

#### Wildlife Act 1976 and amendments

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

The current list of plant species protected by Section 21 of the Wildlife Act, 1976 (and amendments) is set out in the Flora (Protection) Order, 2015 (S.I. No. 356/2015). The Flora (Protection) Order affords protection to several species of plant in Ireland, including 68 vascular plants, 40 mosses, 25 liverworts, 1 stonewort and 1 lichen. This Act makes it illegal for anyone to uproot, cut or damage any of the listed plant species and it also forbids anyone from altering, interfering, or damaging their habitats. This protection is not confined to within designated conservation sites and applies wherever the plants are found.

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

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

Annex IV of the EU Habitats Directive provides protection to a number of listed species, wherever they occur. Under Regulation 23 of the Habitats Directive, any person who, in regard to the listed species, "Deliberately captures or kills any specimen of these species in the wild, deliberately disturbs these species particularly during the period of breeding, rearing, hibernation and migration, deliberately takes or destroys eggs from the wild or damages or destroys a breeding site or resting place of such an animal shall be guilty of an offence."

#### Invasive Species Legislation

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

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

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



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

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

50(1) Save in accordance with a licence, a person shall be guilty of an offence if he or she [...] offers or exposes for sale, transportation, distribution, introduction, or release—

(a) an animal or plant listed in Part 1 or Part 2 of the Third Schedule,

(b) anything from which an animal or plant referred to in subparagraph (a) can be reproduced or propagated, or

(c) a vector material listed in the Third Schedule, in any place in the State specified in the third column of the Third Schedule in relation to such an animal, plant or vector material."

#### National Biodiversity Action Plan 2023-2030

The National Biodiversity Plan (NBAP) 2023-2030, the fourth such plan for Ireland, captures the objectives, targets and actions for biodiversity that will be undertaken by a wide range of government, civil society and private sectors to achieve Ireland's Vision for Biodiversity. The NBAP provides a framework to track and assess progress towards Ireland's Vision for Biodiversity over a seven-year timeframe from 2023 to 2030. To achieve the Vision, five strategic objectives were identified in the new NBAP for 2023-2030. Actions required to achieve the strategic objectives as well as the lead and key partners responsible for their implementation are set out for each of the objectives and their targets (Table A1).

Objective	Target
	Outcome 1A. Governance structures and reporting outputs have
	improved
	Outcome 1B. Organisational capacity and resources for biodiversity
1: Adopt a whole of government	have increased at all levels of Government
1. Adopt a whole-of-government,	Outcome 1C: Responsibility for biodiversity is shared across the
biodiversity	whole of government
biodiversity	Biodiversity Outcome 1D: Biodiversity initiatives are supported across
	the whole of society
	Outcome 1E. The legislative framework for biodiversity conservation
	is robust, clear and enforceable
	Outcome 2A: The protection of existing designated areas and
	protected species is strengthened and conservation and restoration
	within the existing protected area network are enhanced
	Outcome 2B: Biodiversity and ecosystem services in the wider
2: Meet urgent conservation and	countryside are conserved and restored – agriculture & forestry
z. Meet digent conservation and	Outcome 2C: Biodiversity and ecosystem services in the wider
residiation needs	countryside are conserved and restored – peatlands & climate action
	Outcome 2D: Biodiversity and ecosystem services in the marine and
	freshwater environment are conserved and restored
	Outcome 2E: Genetic diversity of wild and domesticated species is
	safeguarded

TABLE A1: OBJECTIVES AND TARGETS OF THE NATIONAL BIODIVERSITY ACTION PLAN 2023-2030



	Outcome 2F: A National Restoration Plan is in place to contribute to
	the ambition of the EU Biodiversity Strategy 2030 and global
	restoration targets
	Outcome 2H: Invasive alien species (IAS) are controlled and
	managed on an all-island basis to reduce the harmful impact they
	have on biodiversity and measures are undertaken to tackle the
	introduction and spread of new IAS to the environment
	Outcome 3A: Ireland's natural heritage and biocultural diversity is
	recognised, valued, enhanced and promoted in policy and practice
	Outcome 3B: The role of biodiversity in supporting wellbeing,
	livelihoods, enterprise and employment is recognised and enhanced
3: Secure nature's contribution to	Outcome 3C: Planning and development will facilitate and secure
people	biodiversity's contributions to people
	Outcome 4C: Long-term monitoring programmes are in place to guide
	conservation and restoration goals
	Outcome 4D: Ireland has prepared national assessments of
	ecosystem services
	Outcome 4A: Research funding bodies will have an improved
4: Enhance the ovidence base for	understanding of the research and skills required to address
4. Enhance the evidence base for	biodiversity research gaps
action on blodiversity	Outcome 4B: Data relevant to biodiversity and ecosystems, including
	conservation needs, is widely accessible and standardised
	Outcome 5A: Science, policy and action on biodiversity conservation
	and restoration is effectively coordinated in an all-island approach
5: Strongthon Iroland's contribution to	Outcome 5B: Ireland takes action internationally to cooperate with
international biodiversity initiatives.	other countries, sectors, disciplines and communities to address the
	biodiversity crisis
	Outcome 5C: Ireland enhances its contributions to the international
	biodiversity data drive

## Galway County Development Plan 2022-2028

Policies and objectives of the Galway County Development Plan 2022 – 2028 that are of relevance to this Report are outlined below extracted from Chapter 10: Natural Heritage, Biodiversity and Green/Blue Infrastructure:

#### NHB 1: Natural Heritage and Biodiversity of Designated Sites, Habitats and Species

Protect and where possible enhance the natural heritage sites designated under EU Legislation and National Legislation (Habitats Directive, Birds Directive, European Communities (Birds and Natural Habitats) Regulations 2011 and Wildlife Acts) and extend to any additions or alterations to sites that may occur during the lifetime of this plan.

Protect and, where possible, enhance the plant and animal species and their habitats that have been identified under European legislation (Habitats and Birds Directive) and protected under national Legislation (European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011), Wildlife Acts 1976-2010 and the Flora Protection Order (SI 94 of 1999).

Support the protection, conservation and enhancement of natural heritage and biodiversity, including the protection of the integrity of European sites, that form part of the Natura 2000 network, the protection of Natural Heritage Areas, proposed Natural



Heritage Areas, Ramsar Sites, Nature Reserves, Wild Fowl Sanctuaries (and other designated sites including any future designations) and the promotion of the development of a green/ ecological network.

#### NHB 4: Ecological Appraisal of Biodiversity

Ensure, where appropriate, the protection and conservation of areas, sites, species and ecological/networks of biodiversity value outside designated sites. Where appropriate require an ecological appraisal, for development not directly connected with or necessary to the management of European Sites, or a proposed European Site and which are likely to have significant effects on that site either individually or cumulatively.

#### • NHB 5: Ecological Connectivity and Corridors

Support the protection and enhancement of biodiversity and ecological connectivity in non-designated sites, including woodlands, trees, hedgerows, semi-natural grass-lands, rivers, streams, natural springs, wetlands, stonewalls, geological and geo-morphological systems, other landscape features and associated wildlife areas where these form part of the ecological network and/or may be considered as ecological corridors in the context of Article 10 of the Habitats Directive.

#### • NHB 7: Mitigation Measures

Require mitigating measures in certain cases where it is evident that biodiversity is likely to be affected. These measures may, in association with other specified requirements, include establishment of wildlife areas/corridors/parks, hedgerow, tree planting, wildflower meadows/marshes and other areas. With regard to residential development, in certain cases, these measures may be carried out in conjunction with the provision of open space and/or play areas

#### • NHB 9: Protection of Bats and Bats Habitats

Seek to protect bats and their roosts, their feeding areas, flight paths and commuting routes. Ensure that development proposals in areas which are potentially important for bats, including areas of woodland, linear features such as hedgerows, stonewalls, watercourses and associated riparian vegetation which may provide migratory/foraging uses shall be subject to suitable assessment for potential impacts on bats. This will include an assessment of the cumulative loss of habitat or the impact on bat populations and activity in the area and may include a specific bat survey. Assessments shall be carried out by a suitably qualified professional and where development is likely to result in significant adverse effects on bat populations or activity in the area, development will be prohibited or require mitigation and/or compensatory measures, as appropriate. The impact of lighting on bats and their roosts and the lighting up of objects of cultural heritage must be adequately assessed in relation to new developments and the upgrading of existing lighting systems.

#### • WTWF 1: Wetland Sites

Protect and conserve the ecological and biodiversity heritage of the wetland sites in the County. Ensure that an appropriate level of assessment is completed in relation to wetland habitats that are subject to proposals which would involve drainage or recla-



mation that might destroy, fragment or degrade any wetland in the county. This includes lakes and ponds, turloughs, watercourses, springs and swamps, marshes, fens, heath, peatlands, some woodlands as well as some coastal and marine habitats. Protect Ramsar sites under The Convention on Wetlands of International Importance (especially as Waterfowl Habitat).

#### • IS 1: Control of Invasive and Alien Invasive Species

It is a policy objective of the Planning Authority to support measures for the prevention and eradication of invasive species.

#### • IS 2: Invasive Species Management Plan

Ensure that proposals for development do not lead to the spread or introduction of invasive species. If developments are proposed on sites where invasive species are currently or were previously present, an invasive species management plan will be required. A landscaping plan will be required for developments near water bodies and such plans must not include alien invasive species.

#### • PO 1: Delivery of All Ireland Pollinator Plan

To facilitate the delivery of the All-Ireland Pollinator Plan where possible.

In the interest of preserving and enhancing biodiversity and working in conjunction with the All Ireland Pollinator Plan - It shall be the policy objective of the Planning Authority to ensure that at least 20% of the green space on all housing estates being built will have to be dedicated, developed and maintained as a pollinator zone. The area dedicated can be confined to one single lot or various lots around the site providing that the total area of the lots meets the minimum requirement of 20%.

The pollinator zones should be planted with a mix of pollinator friendly-bulbs, self seeding annuals and biennials, perennials, shrubs, trees, fruit trees and fruit bushes and the majority of this planting should consist of native plants.

#### • **GBI 1: New Developments**

Require all proposals for large scale development to contribute to the protection, management and enhancement of the existing green/blue infrastructure of the County and the delivery of new green/blue infrastructure, where appropriate by including a green/ blue infrastructure plan as an integral part of any planning application. This plan should identify environmental and ecological assets, constraints and opportunities and shall include proposals which protect, manage, and enhance the development of green infrastructure resources in a sustainable manner.

#### • GBI 2: Green/Blue Infrastructure Network

Facilitate the ongoing development and improvement of a green/blue infrastructure network for urban and rural areas, connecting both natural and semi-natural corridors such as including green spaces, open spaces, green amenities, residual land, rivers and canals. Enhancements along natural features may include the provision of riparian buffers, community food programmes (allotments) and wild areas for pollination thus ensuring the provision of natural areas for the benefit of biodiversity, wildlife and climate adaptation.

• BGP 1: Strategic Greenways/Blueways



Support the delivery of sustainable strategic Greenway/Blueway projects in the County in accordance with the *Strategy for the Future Development of National and Regional Greenways*, enabling legislation, best practice in a manner that is compatible with nature conservation and other environmental policies.

#### • BGP 2: Development of Strategic Greenway Network

Support the development of an integrated Strategic Greenway Network of national and regional routes and maximise connectivity to existing greenways through linkages of cycling and walking infrastructure in a manner that is compatible with nature conservation and other environmental policies. This will include the following:

- National Galway to Dublin Cycleway/ Greenway;
- Connemara Greenway i.e., (Clifden to Oughterard, Galway to Oughterard);
- Oranmore to Bearna Coastal Greenway;
- Athenry to Tuam;
- Clifden to Derrygimlagh;
- Clifden to Letterfrack.

#### Galway County Heritage and Biodiversity Plan 2017-2022

The Galway County Heritage and Biodiversity Plan is set out to protect and improve biodiversity through a list of objectives. These include:

- To increase awareness, appreciation and participation.
- To gather and share knowledge.
- To manage and conserve our heritage, including biodiversity.

## APPENDIX II – VALUE OF ECOLOGICAL RESOURCES

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

Importance	Criteria
International Importance	<ul> <li>'European Site' including Special Area of Conservation (SAC), Site of Community Importance (SCI), Special Protection Area (SPA) or proposed Special Area of Conservation.</li> <li>Proposed Special Protection Area (pSPA) Site that fulfils the criteria for designation as a 'European Site' (see Annex III of the Habitats Directive, as amended).</li> <li>Features essential to maintaining the coherence of the Natura 2000 Network</li> <li>Site containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive.</li> <li>Resident or regularly occurring populations (assessed to be important at the national level) of the following:         <ul> <li>Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and/or</li> </ul> </li> </ul>

 TABLE A2. DESCRIPTION OF VALUES FOR ECOLOGICAL RESOURCES BASED ON GEOGRAPHIC HIERARCHY OF IMPORTANCE (NRA, 2009B).



	<ul> <li>Species of animal and plants listed in Annex II and/or IV of the Habitats</li> </ul>
	Directive
	Barror Site (Convertion on Watlands of International Importance Especially
	- Ramsar Sile (Convention on Wettahus of International Importance Especially
	Waterrowi Habitat 1971).
	- World Heritage Site (Convention for the Protection of World Cultural & Natural
	Heritage, 1972).
	<ul> <li>Biosphere Reserve (UNESCO Man &amp; The Biosphere Programme)</li> </ul>
	- Site hosting significant species populations under the Bonn Convention (Convention on
	the Conservation of Migratory Species of Wild Animals, 1979).
	- Site hosting significant populations under the Berne Convention (Convention on the
	Conservation of European Wildlife and Natural Habitats 1979)
	- Biogenetic Reserve under the Council of Europe
	European Diploma Site under the Council of Europe
	- European Dipionia Site under the Council of European Communities (Quality of
	- Salmonid water designated pursuant to the European Communities (Quality of
	Salmonid Waters) Regulations, 1988, (S.I. No. 293 of 1988).
	- Site designated or proposed as a Natural Heritage Area (NHA).
	- Statutory Nature Reserve.
	<ul> <li>Refuge for Fauna and Flora protected under the Wildlife Acts.</li> </ul>
	- National Park.
	- Undesignated site fulfilling the criteria for designation as a Natural Heritage Area
National	(NHA): Statutory Nature Reserve: Refuge for Fauna and Flora protected under the
Importance	Wildlife Act: and/or a National Park
Importance	Resident or regularly occurring populations (assessed to be important at the national
	- Resident of regulary occurring populations (assessed to be important at the national level) of the following:
	level) of the following.
	<ul> <li>Species protected under the wildlife Acts; and/or</li> </ul>
	• Species listed on the relevant Red Data list.
	<ul> <li>Site containing 'viable areas' of the habitat types listed in Annex I of the</li> </ul>
	Habitats Directive
	- Area of Special Amenity.
	<ul><li>Area of Special Amenity.</li><li>Area subject to a Tree Preservation Order.</li></ul>
	<ul> <li>Area of Special Amenity.</li> <li>Area subject to a Tree Preservation Order.</li> <li>Area of High Amenity, or equivalent, designated under the County Development Plan.</li> </ul>
	<ul> <li>Area of Special Amenity.</li> <li>Area subject to a Tree Preservation Order.</li> <li>Area of High Amenity, or equivalent, designated under the County Development Plan.</li> <li>Resident or regularly occurring populations (assessed to be important at the County</li> </ul>
	<ul> <li>Area of Special Amenity.</li> <li>Area subject to a Tree Preservation Order.</li> <li>Area of High Amenity, or equivalent, designated under the County Development Plan.</li> <li>Resident or regularly occurring populations (assessed to be important at the County level) of the following:</li> </ul>
	<ul> <li>Area of Special Amenity.</li> <li>Area subject to a Tree Preservation Order.</li> <li>Area of High Amenity, or equivalent, designated under the County Development Plan.</li> <li>Resident or regularly occurring populations (assessed to be important at the County level) of the following:         <ul> <li>Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds</li> </ul> </li> </ul>
	<ul> <li>Area of Special Amenity.</li> <li>Area subject to a Tree Preservation Order.</li> <li>Area of High Amenity, or equivalent, designated under the County Development Plan.</li> <li>Resident or regularly occurring populations (assessed to be important at the County level) of the following:         <ul> <li>Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive:</li> </ul> </li> </ul>
	<ul> <li>Area of Special Amenity.</li> <li>Area subject to a Tree Preservation Order.</li> <li>Area of High Amenity, or equivalent, designated under the County Development Plan.</li> <li>Resident or regularly occurring populations (assessed to be important at the County level) of the following:         <ul> <li>Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;</li> <li>Species of animal and plants listed in Annex II and/or IV of the Habitats</li> </ul> </li> </ul>
	<ul> <li>Area of Special Amenity.</li> <li>Area subject to a Tree Preservation Order.</li> <li>Area of High Amenity, or equivalent, designated under the County Development Plan.</li> <li>Resident or regularly occurring populations (assessed to be important at the County level) of the following:         <ul> <li>Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;</li> <li>Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;</li> </ul> </li> </ul>
	<ul> <li>Area of Special Amenity.</li> <li>Area subject to a Tree Preservation Order.</li> <li>Area of High Amenity, or equivalent, designated under the County Development Plan.</li> <li>Resident or regularly occurring populations (assessed to be important at the County level) of the following:         <ul> <li>Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;</li> <li>Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;</li> </ul> </li> </ul>
County	<ul> <li>Area of Special Amenity.</li> <li>Area subject to a Tree Preservation Order.</li> <li>Area of High Amenity, or equivalent, designated under the County Development Plan.</li> <li>Resident or regularly occurring populations (assessed to be important at the County level) of the following:         <ul> <li>Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;</li> <li>Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;</li> <li>Species protected under the Wildlife Acts; and/or</li> </ul> </li> </ul>
County Importance	<ul> <li>Area of Special Amenity.</li> <li>Area subject to a Tree Preservation Order.</li> <li>Area of High Amenity, or equivalent, designated under the County Development Plan.</li> <li>Resident or regularly occurring populations (assessed to be important at the County level) of the following: <ul> <li>Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;</li> <li>Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;</li> <li>Species protected under the Wildlife Acts; and/or</li> <li>Species listed on the relevant Red Data list.</li> </ul> </li> </ul>
County Importance	<ul> <li>Area of Special Amenity.</li> <li>Area subject to a Tree Preservation Order.</li> <li>Area of High Amenity, or equivalent, designated under the County Development Plan.</li> <li>Resident or regularly occurring populations (assessed to be important at the County level) of the following: <ul> <li>Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;</li> <li>Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;</li> <li>Species protected under the Wildlife Acts; and/or</li> <li>Species listed on the relevant Red Data list.</li> <li>Site containing area or areas of the habitat types listed in Annex I of the</li> </ul> </li> </ul>
County Importance	<ul> <li>Area of Special Amenity.</li> <li>Area subject to a Tree Preservation Order.</li> <li>Area of High Amenity, or equivalent, designated under the County Development Plan.</li> <li>Resident or regularly occurring populations (assessed to be important at the County level) of the following:         <ul> <li>Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;</li> <li>Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;</li> <li>Species protected under the Wildlife Acts; and/or</li> <li>Species listed on the relevant Red Data list.</li> <li>Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International and plants for valuation as of International and plants for valuation as of International and plants birective;</li> </ul></li></ul>
County Importance	<ul> <li>Area of Special Amenity.</li> <li>Area subject to a Tree Preservation Order.</li> <li>Area of High Amenity, or equivalent, designated under the County Development Plan.</li> <li>Resident or regularly occurring populations (assessed to be important at the County level) of the following:         <ul> <li>Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;</li> <li>Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;</li> <li>Species protected under the Wildlife Acts; and/or</li> <li>Species listed on the relevant Red Data list.</li> <li>Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.</li> </ul> </li> </ul>
County Importance	<ul> <li>Area of Special Amenity.</li> <li>Area subject to a Tree Preservation Order.</li> <li>Area of High Amenity, or equivalent, designated under the County Development Plan.</li> <li>Resident or regularly occurring populations (assessed to be important at the County level) of the following: <ul> <li>Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;</li> <li>Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;</li> <li>Species protected under the Wildlife Acts; and/or</li> <li>Species listed on the relevant Red Data list.</li> <li>Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.</li> </ul> </li> </ul>
County Importance	<ul> <li>Area of Special Amenity.</li> <li>Area subject to a Tree Preservation Order.</li> <li>Area of High Amenity, or equivalent, designated under the County Development Plan.</li> <li>Resident or regularly occurring populations (assessed to be important at the County level) of the following: <ul> <li>Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;</li> <li>Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;</li> <li>Species protected under the Wildlife Acts; and/or</li> <li>Species listed on the relevant Red Data list.</li> <li>Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.</li> </ul> </li> <li>County important populations of species; or viable areas of semi-natural habitats; or natural heritage features identified in the National or Local BAP; if this has been</li> </ul>
County Importance	<ul> <li>Area of Special Amenity.</li> <li>Area subject to a Tree Preservation Order.</li> <li>Area of High Amenity, or equivalent, designated under the County Development Plan.</li> <li>Resident or regularly occurring populations (assessed to be important at the County level) of the following:         <ul> <li>Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;</li> <li>Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;</li> <li>Species protected under the Wildlife Acts; and/or</li> <li>Species listed on the relevant Red Data list.</li> <li>Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.</li> </ul> </li> <li>County important populations of species; or viable areas of semi-natural habitats; or natural heritage features identified in the National or Local BAP; if this has been prepared.</li> </ul>
County Importance	<ul> <li>Area of Special Amenity.</li> <li>Area subject to a Tree Preservation Order.</li> <li>Area of High Amenity, or equivalent, designated under the County Development Plan.</li> <li>Resident or regularly occurring populations (assessed to be important at the County level) of the following:         <ul> <li>Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;</li> <li>Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;</li> <li>Species protected under the Wildlife Acts; and/or</li> <li>Species listed on the relevant Red Data list.</li> <li>Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.</li> </ul> </li> <li>County important populations of species; or viable areas of semi-natural habitats; or natural heritage features identified in the National or Local BAP; if this has been prepared.</li> <li>Sites containing semi-natural habitat types with high biodiversity in a county context</li> </ul>
County Importance	<ul> <li>Area of Special Amenity.</li> <li>Area subject to a Tree Preservation Order.</li> <li>Area of High Amenity, or equivalent, designated under the County Development Plan.</li> <li>Resident or regularly occurring populations (assessed to be important at the County level) of the following:         <ul> <li>Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;</li> <li>Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;</li> <li>Species protected under the Wildlife Acts; and/or</li> <li>Species listed on the relevant Red Data list.</li> <li>Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.</li> </ul> </li> <li>County important populations of species; or viable areas of semi-natural habitats; or natural heritage features identified in the National or Local BAP; if this has been prepared.</li> <li>Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within</li> </ul>
County Importance	<ul> <li>Area of Special Amenity.</li> <li>Area subject to a Tree Preservation Order.</li> <li>Area of High Amenity, or equivalent, designated under the County Development Plan.</li> <li>Resident or regularly occurring populations (assessed to be important at the County level) of the following: <ul> <li>Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;</li> <li>Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;</li> <li>Species protected under the Wildlife Acts; and/or</li> <li>Species listed on the relevant Red Data list.</li> <li>Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.</li> </ul> </li> <li>County important populations of species; or viable areas of semi-natural habitats; or natural heritage features identified in the National or Local BAP; if this has been prepared.</li> <li>Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county.</li> </ul>
County Importance	<ul> <li>Area of Special Amenity.</li> <li>Area subject to a Tree Preservation Order.</li> <li>Area of High Amenity, or equivalent, designated under the County Development Plan.</li> <li>Resident or regularly occurring populations (assessed to be important at the County level) of the following: <ul> <li>Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;</li> <li>Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;</li> <li>Species protected under the Wildlife Acts; and/or</li> <li>Species protected under the Veral bits.</li> <li>Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.</li> </ul> </li> <li>County important populations of species; or viable areas of semi-natural habitats; or natural heritage features identified in the National or Local BAP; if this has been prepared.</li> <li>Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county.</li> </ul>
County Importance	<ul> <li>Area of Special Amenity.</li> <li>Area subject to a Tree Preservation Order.</li> <li>Area of High Amenity, or equivalent, designated under the County Development Plan.</li> <li>Resident or regularly occurring populations (assessed to be important at the County level) of the following: <ul> <li>Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;</li> <li>Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;</li> <li>Species protected under the Wildlife Acts; and/or</li> <li>Species protected under the Vertication of the Annex I of the Habitats Directive;</li> <li>Species listed on the relevant Red Data list.</li> <li>Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.</li> </ul> </li> <li>County important populations of species; or viable areas of semi-natural habitats; or natural heritage features identified in the National or Local BAP; if this has been prepared.</li> <li>Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county.</li> </ul>
County Importance	<ul> <li>Area of Special Amenity.</li> <li>Area subject to a Tree Preservation Order.</li> <li>Area of High Amenity, or equivalent, designated under the County Development Plan.</li> <li>Resident or regularly occurring populations (assessed to be important at the County level) of the following: <ul> <li>Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;</li> <li>Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;</li> <li>Species protected under the Wildlife Acts; and/or</li> <li>Species protected under the Vildlife Acts; and/or</li> <li>Species listed on the relevant Red Data list.</li> <li>Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.</li> </ul> </li> <li>County important populations of species; or viable areas of semi-natural habitats; or natural heritage features identified in the National or Local BAP; if this has been prepared.</li> <li>Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county.</li> <li>Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.</li> </ul>
County Importance	<ul> <li>Area of Special Amenity.</li> <li>Area subject to a Tree Preservation Order.</li> <li>Area of High Amenity, or equivalent, designated under the County Development Plan.</li> <li>Resident or regularly occurring populations (assessed to be important at the County level) of the following:         <ul> <li>Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;</li> <li>Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;</li> <li>Species protected under the Wildlife Acts; and/or</li> <li>Species listed on the relevant Red Data list.</li> <li>Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.</li> </ul> </li> <li>County important populations of species; or viable areas of semi-natural habitats; or natural heritage features identified in the National or Local BAP; if this has been prepared.</li> <li>Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.</li> <li>Locally important populations of priority species or habitats or natural heritage features identified in the local BAP.</li> </ul>
County Importance	<ul> <li>Area of Special Amenity.</li> <li>Area subject to a Tree Preservation Order.</li> <li>Area of High Amenity, or equivalent, designated under the County Development Plan.</li> <li>Resident or regularly occurring populations (assessed to be important at the County level) of the following: <ul> <li>Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;</li> <li>Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;</li> <li>Species protected under the Wildlife Acts; and/or</li> <li>Species listed on the relevant Red Data list.</li> <li>Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.</li> </ul> </li> <li>County important populations of species; or viable areas of semi-natural habitats; or natural heritage features identified in the National or Local BAP; if this has been prepared.</li> <li>Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county.</li> <li>Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.</li> <li>Locally important populations of priority species or habitats or natural heritage features identified in the species or natural heritage features identified in the Local BAP, if this has been prepared;</li> </ul>
County Importance	<ul> <li>Area of Special Amenity.</li> <li>Area subject to a Tree Preservation Order.</li> <li>Area of High Amenity, or equivalent, designated under the County Development Plan.</li> <li>Resident or regularly occurring populations (assessed to be important at the County level) of the following:         <ul> <li>Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;</li> <li>Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;</li> <li>Species protected under the Wildlife Acts; and/or</li> <li>Species listed on the relevant Red Data list.</li> <li>Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.</li> </ul> </li> <li>County important populations of species; or viable areas of semi-natural habitats; or natural heritage features identified in the National or Local BAP; if this has been prepared.</li> <li>Sites containing aminating and species that are rare or are undergoing a decline in quality or extent at a national level.</li> <li>Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP, if this has been prepared;</li> </ul>
County Importance Local Importance (higher value)	<ul> <li>Area of Special Amenity.</li> <li>Area subject to a Tree Preservation Order.</li> <li>Area of High Amenity, or equivalent, designated under the County Development Plan.</li> <li>Resident or regularly occurring populations (assessed to be important at the County level) of the following:         <ul> <li>Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;</li> <li>Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;</li> <li>Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;</li> <li>Species protected under the Wildlife Acts; and/or</li> <li>Species listed on the relevant Red Data list.</li> <li>Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.</li> </ul> </li> <li>County important populations of species; or viable areas of semi-natural habitats; or natural heritage features identified in the National or Local BAP; if this has been prepared.</li> <li>Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county.</li> <li>Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.</li> <li>Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP, if this has been prepared;</li> <li>Resident or regularly occurring populations (assessed to be important at the Local level) of the following:</li> </ul>
County Importance Local Importance (higher value)	<ul> <li>Area of Special Amenity.</li> <li>Area subject to a Tree Preservation Order.</li> <li>Area of High Amenity, or equivalent, designated under the County Development Plan.</li> <li>Resident or regularly occurring populations (assessed to be important at the County level) of the following:         <ul> <li>Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;</li> <li>Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;</li> <li>Species protected under the Wildlife Acts; and/or</li> <li>Species listed on the relevant Red Data list.</li> <li>Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.</li> </ul> </li> <li>County important populations of species; or viable areas of semi-natural habitats; or natural heritage features identified in the National or Local BAP; if this has been prepared.</li> <li>Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county.</li> <li>Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.</li> <li>Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP, if this has been prepared;</li> <li>Resident or regularly occurring populations (assessed to be important at the Local level) of the following:         <ul> <li>Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds</li> </ul> </li> </ul>



	<ul> <li>Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;</li> </ul>
	<ul> <li>Species protected under the Wildlife Acts; and/or o</li> </ul>
	<ul> <li>Species listed on the relevant Red Data list.</li> </ul>
	<ul> <li>Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality;</li> </ul>
	<ul> <li>Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value.</li> </ul>
Local Importance	<ul> <li>Sites containing small areas of semi-natural habitat that are of some local importance for wildlife;</li> </ul>
(lower value)	<ul> <li>Sites or features containing non-native species that is of some importance in maintaining habitat links.</li> </ul>



# APPENDIX III – EPA IMPACT ASSESSMENT CRITERIA

In line with the draft EPA Guidelines (EPA 2022), the following terms are defined when evaluating and quantifying the quality, significance, extent/context, probability and duration/frequency of effects.

# TABLE A3. DEFINITION OF QUALITY, SIGNIFICANCE, EXTENT/CONTEXT, PROBABILITY AND DURATION/FREQUENCY OF EFFECTS.

Term	Definition
Quality of Effects	
Positive	A change which improves the quality of the environment (for example, by increasing species diversity, or improving the reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).
Neutral	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
Negative/Adverse	A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem, or damaging health or property or by causing nuisance).
Significance of Effects	
Imperceptible	An effect capable of measurement but without significant consequences.
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant	An effect which, by its character, magnitude, duration or intensity, alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration or intensity, significantly alters most of a sensitive aspect of the environment.
Profound	An effect which obliterates sensitive characteristics. No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error
Extent and Context of Effects	
Extent	Describe the size of the area, the number of sites and the proportion of a population affected by an effect.
Context	Describe whether the extent, duration or frequency will conform or contrast with established (baseline) conditions (is it the biggest, longest effect ever?)
Probability of Effects	



Likely	The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.					
Unlikely	The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.					
Duration and Frequency of Effects						
Momentary	Effects lasting from seconds to minutes.					
Brief	Effects lasting less than a day					
Temporary	Effects lasting less than a year.					
Short-term	Effects lasting one to seven years.					
Medium-term Effects	Effects lasting seven to fifteen years.					
Long-term	Effects lasting fifteen to sixty years.					
Permanent	Effects lasting over sixty years.					
Reversible	Effects that can be undone, for example through remediation or restoration.					
Frequency	Describe how often the effect will occur (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually).					



# APPENDIX IV – SITE PHOTOGRAPHS













# APPENDIX X – PLANTING SCHEDULE EXTRACTED FROM SRLA (2024A)

	FLAI	THING - IREES			
	NIAME	TREES	NATING	D	
	NAME	SIZE	NATIVE	Buxus sempervi	
Mg	Liriodenron tulipifera	WRB 18-20cm girth	No	Euonymus fortu	
Qr	Quercus robur	WRB 20-25cm girth	Yes	Lavandula x inte	
Ps	Pinus sylvestris	WRB 200-250cm	Yes	Salvia officinalis	
	SM/	ALL FEATURE TREES			
	NAME	SIZE	NATIVE	Carex elata 'Au	
Agr	Acer griseum	WRB 150-175cm Multi-stem	No	Carex morowii	
Bu	Betula utilis Multistem	WRB 300-350cm Multi-stem	No	Carex 'Red Roo	
bu				Festuca glauca	
Sa	Sorbus aria	8-10cm girth, 3m tall	Yes	Imperata 'Red B	
So	Sorbus aucuparia	8-10cm girth,3m tall	Yes	Molinia caerulea	
Са	Corylus avellana	WRB 200-250cm	Yes	Pennisetum sp.	
Au	Arbutus unedo	WRB 300-350cm Multi-stem	Yes	Pennisetum gol	
Cb	Carpinus betulus	Pleached tree	Yes	Pennisetum rub	
Cm	Crataegus monogyna	8-10cm girth,3m tall	Yes	Stipa tenuissima	
				Ajuga reptans	
				Echinaces purp	
		HEDGE	_	Hedera helix	
	NAME	SIZE	NATIVE	Hosta sp.	
			NATIVE.	Pachvsandra te	
	Eagua autoration		X	Phormium 'Firel	
	Fagus sylvatica		Yes	Phlox subulata	
	MIX				
	NAME	SIZE	NATIVE	Tradescantia pa	
La	Corylus aveilana	WRB 200-250cm	Yes	Verbena honari	
Psp	Prunus spinosa	8-10cm girth,3m tall	Yes	Verbena bonan	
Cm	Crataegus monogyna	8-10cm girth,3m tall	Yes	Allium enhaores	
lq	llex aquifolium	8-10cm girth,3m tall	Yes	Allium 'Europeat'	
Sn	Sambucus nigra	8-10cm girth,3m tall	Yes	Allium Everest	
Rc	Rosa canina	8-10cm girth,3m tall	Yes	Allium Globerna	
		CLIMBERS		Allium Purple S	
	NAME	SIZE	NATIVE	Crocus sp.	
	Clematis 'Blue Eclipse'	3Lt	No	Crocus tommas	
	Hedera helix	3Lt	Yes	Narcissus Petre	
				Erythronium Pag	
				Gaulthonia cana	
				Oil-ih-fi	

Buxus sempervirens	21.+	No
Euonymus fortunei 'Emerald 'n' Gold'	21.t	No
Lavandula x intermedia 'Provence'	21+	Yes
Salvia officinalis	211	Yes
GRASSES	220	
Carex elata 'Aurea'	2Lt	Yes
Carex morowii	2Lt	No
Carex 'Red Rooster'	2Lt	No
Festuca glauca	2Lt	No
Imperata 'Red Baron'	2Lt	No
Molinia caerulea 'Karl Forester'	2Lt	Yes
Pennisetum sp.	2Lt	No
Pennisetum golden	2Lt	No
Pennisetum rubrum	2Lt	No
Stipa tenuissima	2Lt	No
PERENNIALS & GROUND	COVERS	
Ajuga reptans	2Lt	Yes
Echinaces purpurea 'Rubinstern'	2Lt	No
Hedera helix	2Lt	Yes
Hosta sp.		No
Pachysandra terminalis		No
Phormium 'Firebird'		No
Phlox subulata		No
Rudbeckia maxima		No
Tradescantia pallida	2Lt	No
Verbena bonariensis	2Lt	No
BULBS		
Allium sphaerocephalon	2Lt	
Allium 'Everest'	2Lt	
Allium Globernaster	2Lt	
Allium Purple Sensation	2Lt	
Crocus sp.	2Lt	
Crocus tommasinianus 'Whitewell Purple'	2Lt	
Narcissus Petrel		
Erythronium Pagoda		
Gaulthonia canadensis		
Camssia leichtinii	-	
Tulipa sp.		

NAME	SIZE	NATIVE
ALL-IRELAND POLLINATOR PLAN WILDFLOWER MIX	TURE SE	ED MIX
Birdsfoot Trefoil, Black Meddick, Cowslip, Devil's Bit Scabious, Meadow Buttercup, Field Scabious, Hemp Agrimony, Kidney Vetch, Lady's Bedstraw, Lady's Ann lace, Lesser Knapweed, Meadowsweet, Mullein, Ox-eye Daisy, Purple Loosestrife, Ragged Robin, Red Campion, Red Clover, Ribwort Plantain, Rough Hawksbit, Sorrel, St Johnswort, Wild Angelica, Wild Carrot, Yarrow, Yellow Agrimony, Yellow Rattle, Teasel and more. Also includes 35% annuals: Corn Marigold, Corn Poppy, Corncockle, Cornflower, Scented Mayweed,	Seed Mix	Yes
PERENNIALS		
Echinaces purpurea Rubinstern	2Lt	No
Reuchera lireworks	2Lt	INO No.
Rudbeckia maxima	2Lt	NO
Verbena bonariensis	2Lt	NO
SHRUBS		
Lavandula x intermedia 'Provence'	2Lt	Yes
Salvia officinalis	2Lt	Yes
GRASSES		
Carex elata 'Aurea'	2Lt	Yes
Pennisetum sp.	2Lt	No
BULBS		
Alium giganteum		No
Crocosmia 'Lucifer'		No
Ciocosinia Eucliei		No
Crocosmia 'Paul's Best Yellow'		









Head Office 3D, Core C, Block 71, The Plaza, Park West, Dublin 12, D12F9TN, Ireland. Tel: +353 1 565 4730 Email: info@enviroguide.ie

South West Regional Office 19 Henry Street, Kenmare, County Kerry, V93 CVH0, Ireland. Tel: +353 646 641932 Email: info@enviroguide.ie

South East Regional Office M10 Wexford Enterprise Centre, Strandfield Business Park, Rosslare Rd, Strandfield, Kerlogue, Co. Wexford, Y35 W5RD, Ireland. Tel: +353 1 565 4730 Email: info@enviroguide.ie