BALLYMASTONE PHASE 2 LRD

ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAR) VOLUME 2: MAIN TEXT

BSM Est. 1968
Brady Shipman Martin
Built. Environment.

Environmental Assessment **Built Environment**

Client: Glenveagh Living Limited

Date: 29 April 2024

DOCUMENT CONTROL SHEET

6884_RPEIA02_Environmental Impact Assessment Report (EIAR) Volume 2: Main Text

Project No.	6884
Client:	Glenveagh Living Limited
Project Name:	Ballymastone Phase 2 LRD
Report Name:	Environmental Impact Assessment Report (EIAR) Volume 2: Main Text
Document No.	RPEIA02
Issue No.	01
Date:	29/04/2024

This document has been issued and amended as follows:

Issue	Status	Date	Prepared	Checked
01	Draft	29 Apr 2024	NK; Various	TB

CONTENTS

1 Introduction

1.1 Overview

This Environmental Impact Assessment Report (EIAR) provides a statement of the effects that the proposed Large-scale Residential Development (LRD) at Ballymastone in Donabate, Co. Dublin ('the proposed development'), if carried out, would have on the environment. It has been prepared in accordance with the provisions of the Planning and Development Act 2000 – 2023 ('PDA 2000'), the Planning and Development Regulations 2001 – 2023 ('PDR 2001') and the relevant guidance documents, as detailed herein.

1.2 The Applicant

The Applicant is Glenveagh Living Limited.

1.3 The Proposed Development

1.3.1 Site of the Proposed Development

The proposed development site, which has a stated area of 13.74Ha is situated in the coastal town of Donabate, c. 20 km north-east of Dublin City and 10km north-east of Dublin Airport, on the northern margin of the Dublin Metropolitan Area. The site is situated in the administrative area of Fingal County Council, in the townlands of Ballalease North, Portraine Demesne, Ballymastone and Ballisk.

The site, which is situated on the eastern margin of Donabate town, is predominantly comprised of disused agricultural land, criss-crossed by hedgerows and drainage ditches. The site is bounded to the west and north by existing residential development. The Donabate burial grounds are to the north-west of the site. **Figures 1.1** and **1.2**, below, illustrate the location of the proposed development site. The site is also bound immediately to the south and south-east by lands that form part of a Large-scale Residential Development (LRD) comprising 432 residential units and all associated site works, permitted by An Bord Pleanàla on the 28 March 2023 (FCC Ref. LRD0008/S3 & ABP Ref. 315288). The site is also bound by Recreational Hub (Part 8 – approved) to the east of the site.

The subject lands are undeveloped and greenfield in nature and situated to the west of the Donabate Distributer Road (DDR). St Patrick's GAA complex and a permitted recreational hub at Ballymastone (undeveloped) lie on the opposite side of the DDR and in proximity to the site. Further undeveloped lands which will potentially form Phase 3 of the Ballymastone development lie to the north. Extant development within the settlement of Donabate lies to the west and comprises the residential estates of The Links, while Priory Wood, Willowbrook.

1.3.2 Overview of the Proposed Development

The proposed development will consist of the construction of a residential development, which represents Phase 2 of a wider development of the Ballymastone Lands (as identified in the Donabate Local Area Plan 2016 (as extended)) and is a continuation of Phase 1 of the Masterplan lands (permitted under LRD0008/S3). The proposed development ranges in height from 2 to 6 storeys to accommodate 364 residential dwellings (including a mix of apartments, duplexes and houses), and public open space. The site will accommodate car parking spaces, bicycle parking spaces, storage, services, new

pedestrian/cycle links, road improvements and plant areas. Landscaping will include communal amenity areas, and a significant public open space provision.

Chapter 5 provides a detailed description of the proposed development.

Figure 1.1 Location of the proposed development

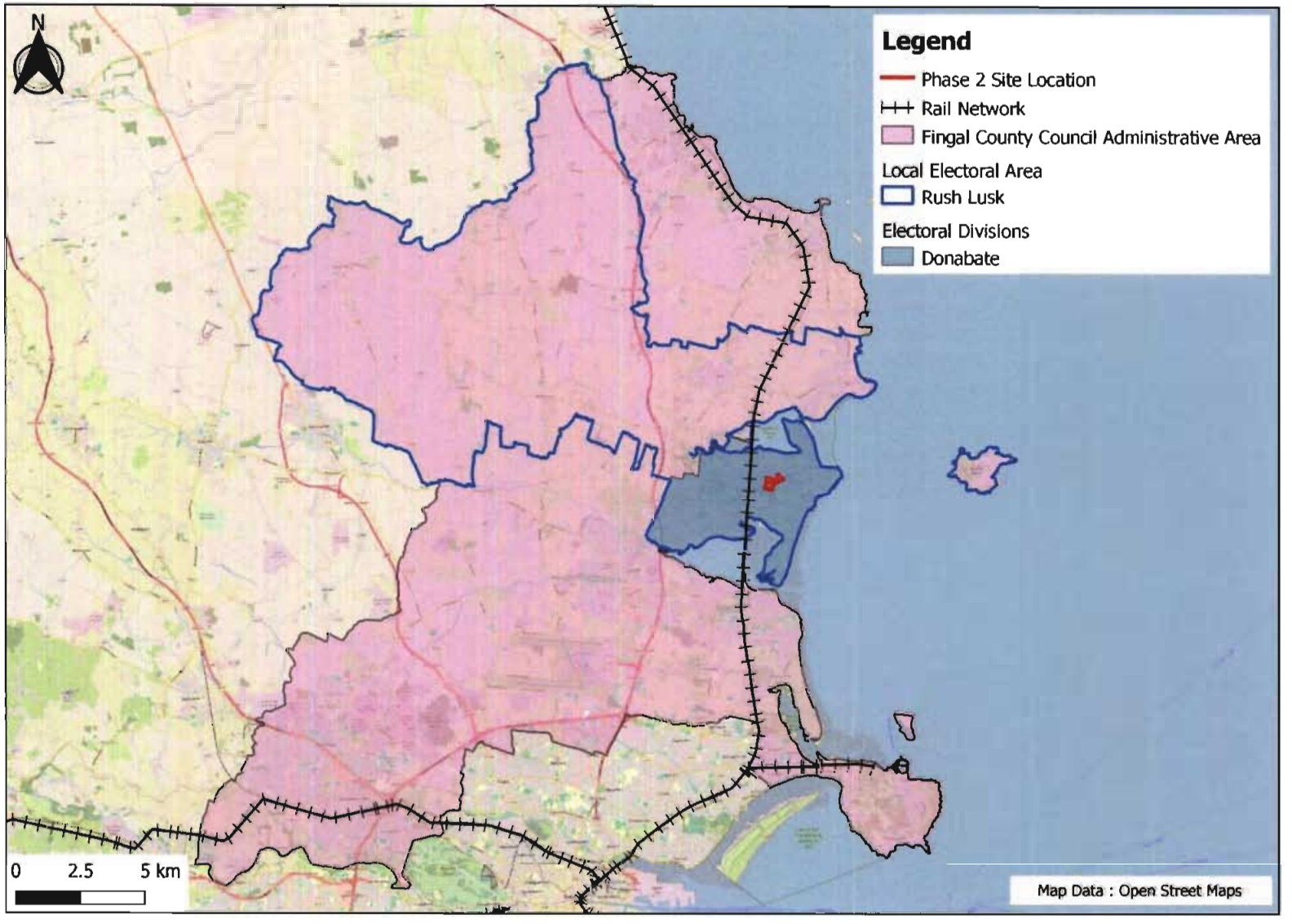


Figure 1.2 Site of the proposed development

1.4 Environmental Impact Assessment

Environmental Impact Assessment (EIA) is the *"process of examining the anticipated environmental effects of proposed project – from consideration of environmental aspects at design stage, through consultation and preparation of an Environmental Impact Assessment Report (EIAR), evaluation of the EIAR by a competent authority, the subsequent decision as to whether the project should be permitted to proceed, encompassing public response to that decision"*, as defined in the Environmental Protection Agency (EPA)'s 2022 *Guidelines on the information to be contained in Environmental Impact Assessment Reports* (Appendices, p. 73) ('the EPA guidelines'). The EIAR provides a statement of the effects, if any, which a proposed development, if carried out, would have on the environment.

An overview of the EIA process and steps involved is provided in **Table 1.1**. A detailed discussion of the EIA process is provided in Chapter 2.

Table 1.1 Overview of the EIA process

Stage	Description	Status
Screening	*Is an EIA required?*	Yes: Completed
Scoping	The process of identifying the significant issues which should be addressed in the EIAR, as well as the methods of carrying out the assessment	Completed
EIAR	This stage includes: ▪ Collection of baseline information ▪ Analysis of the proposed development ▪ Assessment of impacts ▪ Identifying appropriate mitigation and monitoring measures	**Current stage**
Review & Decision	The EIAR accompanies the planning application to the planning authority (Fingal City Council) for determination of the application	Next stage
Monitoring	Implementation of the proposed mitigation and monitoring measures	Implemented in case of development consent

1.5 Format & Structure of the Environmental Impact Assessment Report

This EIAR has been completed in accordance with the requirements as set out in the EIA Directive, (2011/92/EU), as amended by Directive 2014/52/EU and relevant guidelines and documentation. The composition of this EIAR is in accordance with EPA Guidelines (2022) which requires that information contained within an EIAR should be in accordance with Article 3(1), Article 5(1) and any additional information specified under Annex IV under the Directive 2014/52/EU. Refer to **Table 1.2** below for the structure of this EIAR.

Table 1.2 Structure of the EIAR

Section	Description
Volume 1:	**Non-technical Summary (NTS)**
A summary of the EIAR in non-technical language	
Volume 2:	**Main Report**
Chapter 1	Introduction
Chapter 2	The EIA Process

Section	Description
Chapter 3	Planning & Development Context
Chapter 4	Consideration of Alternatives
Chapter 5	Description of the Proposed Development
Chapter 6	Consultation
Chapter 7	Population & Human Health
Chapter 8	Biodiversity (Flora & Fauna)
Chapter 9	Land, Soils, Geology & Hydrogeology
Chapter 10	Hydrology
Chapter 11	Air Quality
Chapter 12	Climate
Chapter 13	Noise & Vibration
Chapter 14	Landscape & Visual Impact
Chapter 15	Cultural Heritage, Archaeology & Architectural Heritage
Chapter 16	Microclimate – Daylight & Sunlight
Chapter 17	Microclimate – Wind
Chapter 18	Traffic & Transportation
Chapter 19	Material Assets – Waste
Chapter 20	Material Assets – Services
Chapter 21	Interactions
Chapter 22	Cumulative Impacts
Chapter 23	Mitigation Measures & Monitoring
Volume 3:	**Appendices**
Technical reference material supporting the EIAR chapters	

Article 5(1) and Annex IV of the EIA Directive provides detail on the information to be included in an EIAR. **Table 1.3** provides a checklist of the information referred to in Article 5(1) with a confirmation of where the relevant information is contained within the EIAR.

Table 1.3 Information required under EIA Directive Annex IV

Information Referred to in EIA Directive Article 5(1)	EIAR Section
1.Description of the project, including in particular:	
(a) a description of the location of the project;	Volume 2, Chapter 1
(b) a description of the physical characteristics of the whole project, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases;	Volume 2, Chapter 5
(c) a description of the main characteristics of the operational phase of the project (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used;	Volume 2, Chapter 5
(d) an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation) and quantities and types of waste produced during the construction and operation phases.	Volume 2, Chapter 5 Volume 2, Chapter 7 to 20
2. A description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.	Volume 2, Chapter 4

Information Referred to in EIA Directive Article 5(1)	EIAR Section
3. A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the project as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.	Volume 2, Chapter 1, Chapter 4, Chapter 7 to 20
4. A description of the factors specified in Article 3(1) likely to be significantly affected by the project: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape.	Volume 2, Chapter 7 to 23
5. A description of the likely significant effects of the project on the environment resulting from, inter alia:	
(a) the construction and existence of the project, including, where relevant, demolition works;	Volume 2, Chapter 7 to 23
(b) the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources;	Volume 2, Chapter 7 to 23
(c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste;	Volume 2, Chapter 7 to 23
(d) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters)	Volume 2, Chapter 7, Chapter 15, Chapter 2 (Section 2.5.1)
(e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;	Volume 2, Chapter 22
(f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change;	Volume 2, Chapter 7 to 23
(g) the technologies and the substances used.	Volume 2, Chapter 5
The description of the likely significant effects on the factors specified in Article 3(1) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the project. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the project.	Volume 2, Chapter 7 to 23
6. A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.	Volume 2, Chapter 7 to 23
7. A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases.	Volume 2, Chapter 7 to 23
8. A description of the expected significant adverse effects of the project on the environment deriving from the vulnerability of the project to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to Union legislation such as Directive 2012/18/EU of the European Parliament and of the Council (*) or Council Directive 2009/71/Euratom (**)	Volume 2, Chapter 2 (Section 2.5.1), Chapter 7 to 23

Information Referred to in EIA Directive Article 5(1)	EIAR Section
or relevant assessments carried out pursuant to national legislation may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.	
9. A non-technical summary of the information provided under points 1 to 8.	Volume 1
10. A reference list detailing the sources used for the descriptions and assessments included in the report.	Volume 2, Chapter 7 to 23

1.5.1 EIAR Chapters Structure

Each of the topic chapters in Volume 2 of this EIAR, will be generally presented under the following headings:

Introduction

This section of each chapter provides an overview of aims and objectives of the chapter in assessing the proposed development and outlines the scope of the assessment.

Method

This section of each chapter provides detail on the guidelines and methodologies used to describe the baseline environmental conditions and to predict likely effects on the environment of the proposed development during both the construction and operational phase. The data and survey requirements along with the study area for each chapter vary depending on the environmental topic and have been chosen by each specialist based on relevant legislation, best practise guidance, policy requirements, and professional judgement.

Baseline Environment

Each chapter provides a description of the existing environmental conditions, focusing on aspects of the project relevant to the individual assessment. This section describes the findings of the desktop assessment, field surveys and information gained through any consultations carried out.

Predicted Impacts

The main purpose of the EIAR is to identify, describe and evaluate the likely significant impacts of the proposed development on the environment both during construction and operational phase. Each specialist reviewed the details of the proposed development and along with the baseline information collected, predicted the impacts of the proposed development on the environment.

The EPA Guidance (2022) provides guidance on impact assessment methodology and has been describe further in **Section 1.6**.

Mitigation Measures

Each chapter provides a description of any specific mitigation measures envisaged to avoid, prevent, reduce or, if possible, offset any significant adverse effects on the environment identified under the assessment of potential impacts described above. Furthermore, Chapter 23 of the EIAR collates and summarises the mitigation measures that have been identified in the individual chapters.

Residual Impacts

The residual effects are the final predicted or intended effects which occur after the proposed mitigation measures have been implemented. Each chapter includes a section describing significant residual impacts that will continue to exist after mitigation has been implemented.

Monitoring

Each chapter includes a description (if any) of the proposed monitoring of effects on the environment which might be necessary, covering the monitoring methods and the agencies responsible for their implementation. Furthermore, Chapter 23 of the EIAR collates and summarises the monitoring measures that have been identified in the individual chapters.

Interactions

Each chapter of the EIAR provides a description of the key interactions and inter-relationships identified between the topics addressed within this EIAR. Chapter 21 of the EIAR provides an overview of the key interactions identified and addressed in the foregoing chapters of the EIAR.

Cumulative Impacts

Chapter 22 of the EIAR discusses the potential for cumulative impacts to arise as a result of the proposed development in combination with other projects. Each of the specialist contributors to this EIAR have considered the potential for cumulative impacts to arise, with particular reference to the projects listed in Chapter 22.

Difficulties Encountered

This section includes any limitations that may affect the reliability of baseline data and include the availability, completeness, accuracy, age and accessibility of data.

References

Each chapter provides a list of documents and information used to inform the assessment.

1.5.2 The Environmental Impact Assessment Team

The EIAR was coordinated by Brady Shipman Martin (BSM). Various environmental specialists were commissioned to complete the specialist chapters of the EIAR, as required by Directive 2014/52/EU on the assessment of the effects of certain public and private projects on the environment:

> *"Experts involved in the preparation of environmental impact assessment reports should be qualified and competent. Sufficient expertise, in the relevant field of the project concerned, is required for the purpose of its examination by the competent authorities in order to ensure that the information provided by the developer is complete and of a high level of quality."*

A description of experts who have contributed to this EIAR, their qualifications, experience and any other relevant credentials is provided in **Table 1.4.**

Table 1.4 EIAR contributors

Name	Company	Role / input	Qualifications
Pauline Byrne	BSM	Project Manager	**BSc Mgmt., Adv. Dip. Marketing, MA Regional & Urban Planning** ▪ Head of Planning ▪ Member of Royal Town Planning Institute (MRTPI) ▪ Member of Irish Planning Institute (MIPI) ▪ Over 20 years of experience
Thomas Burns	BSM	EIAR technical review	**B.Agr.Sc. (Land.) Dip. EIA Mgmt., Adv. Dip. Plan. & Env. Law** ▪ Environmental Planner and Landscape Architect ▪ Member of Irish Landscape Institute & Irish Environmental Law Association ▪ Over 30 years of experience in EIA and LVIA
Namrata Kaile	BSM	EIAR Co-ordinator; Background chapters; Population & Human Health	**BSc Life Sciences, MSc Env. Sciences** ▪ Environmental Consultant & Ecologist ▪ Associate Member CIEEM ▪ Over 4 years of experience
Matthew Hague	BSM	Biodiversity; Appropriate Assessment Screening & Natura Impact Statement	**BSc, MSc, Adv. Dip. Plan. & Env. Law** ▪ Associate & Senior Ecologist ▪ Chartered Environmentalist – CEnv ▪ MCIEEM ▪ Member of Irish Environmental Law Association ▪ Over 20 years of experience
Laura Giffney	BSM	Planning & Development Context	**BSc Spatial Planning** ▪ Graduate Planner ▪ Member of Royal Town Planning Institute (MRTPI) ▪ Member of Irish Planning Institute (MIPI) ▪ Over 1 year of experience
Chloe Richards	AWN Consulting	Land, Soils, Geology & Hydrogeology; Hydrology	**BSc in Analytical Science and a PhD in Environmental Chemistry** ▪ Senior Environmental Consultant ▪ Member of the International Association of Hydrogeologists

Name	Company	Role / input	Qualifications
			▪ Worked on a wide of range of projects including multi-aspect environmental investigations, geo-environmental impact assessments, environmental impact assessment reports, hydrological and hydrogeological risk assessments, flood risk assessments and ArcGIS mapping.
Luke Maguire	AWN Consulting	WFD Assessment & HRA Assessment	**B.Sc. in Geoscience from Trinity College Dublin** ▪ Environmental Consultant at AWN with over 2 years of experience ▪ Worked on a range of developments including pharmaceutical plants, medical device facilities, ICT facilities and energy projects. ▪ Experience in contaminated soil sampling and analysis, basement impact assessments and largescale dewatering processes.
Teri Hayes	AWN Consulting	Land, Soils, Geology & Hydrogeology; Hydrology	**BSc MSc PGeol EurGeol, Dip Planning & Environmental Law** ▪ Director and Senior Hydrogeologist with AWN Consulting with 25 years of experience in water resource management, environmental assessment and environmental licensing. ▪ Former President of The International Association of Hydrogeologists (IAH, Irish Group) and is a professional member of the Institute of Geologists of Ireland (IGI) and European Federation of Geologists (EurGeol). ▪ She has qualified as a competent person for contaminated land assessment as required by the IGI and EPA. ▪ Project experience includes managing Environmental Impact Statements, Environmental Licences and environmental reports for Industry, Infrastructure and residential developments. Teri has written and provided technical review and training on environmental programmes for both the public and private sector and has considerable experience in public presentations, stakeholder liaison and acting as a legal witness.
Aisling Cashell	AWN Consulting	Air Quality & Climate	**BA, MAI in Civil, Structural and Environmental Engineering from Trinity College Dublin** ▪ Environmental Consultant

Name	Company	Role / input	Qualifications
			▪ She is a Member of the Institute of Engineer's Ireland and has 1 year of experience specialising in the fields of air quality, climate, EIA, and air dispersion modelling.
Jovanna Arndt	AWN Consulting	Air Quality & Climate	**BSc in Environmental Science from University College Cork, PhD in Atmospheric Chemistry from University College Cork.** ▪ Senior Environmental Consultant ▪ She is an Associate Member of the Institute of Air Quality Management and the Institute of Environmental Sciences. She has 7 years of experience specialising in the fields of air quality, climate, EIA, and air dispersion modelling.
Chonaill Bradley	AWN Consulting	Material Assets - Waste	**Bsc ENV,PG Dip Circ Econ** ▪ Principal Environmental Consultant ▪ AssocCIWM ▪ 9+ Years of experience
Mike Simms	AWN Consulting	Noise and Vibration	**BE and MEngSc in Mechanical Engineering, University College Dublin** ▪ Principal Acoustic Consultant ▪ Institute of Acoustic Diploma in Acoustics and Noise Control. Corporate Member of the Institute of Acoustics ▪ Mike has worked in the field of acoustics for over 20 years. He has extensive experience in all aspects of environmental surveying, noise modelling and impact assessment for various sectors including, wind energy, industrial, commercial and residential.
Declan O'Leary	Cunnane Stratton Reynolds	Landscape & Visual	**B.Agr Sc. Land. Hort., Dip LA** ▪ Managing Director ▪ CLI, MILI ▪ Declan has over 30 years' experience in the design and analysis of landscape and the impacts of change, including the preparation of landscape and visual impact assessments for Environmental Impact Assessment Reports.
Prithvi Gowda	Cunnane Stratton Reynolds	Landscape & Visual	**B.Arch., MScUD&P, CPM.Dip** ▪ Assistant Urban Designer & Landscape Architect

Name	Company	Role / input	Qualifications
			▪ Prithvi Gowda has over 5 years' experience working in a multi-disciplinary role within landscape and planning teams and has been involved in the preparation of numerous landscape and visual impact assessments over that period.
Ciaran McGuinness	Archer Heritage	Cultural Heritage, Archaeology & Architectural Heritage	BA ▪ Archaeologist ▪ Member Institute of Archaeologists of Ireland ▪ Over 20 years of experience
Aidan O'Connell	Archer Heritage	Cultural Heritage, Archaeology & Architectural Heritage	CPA, MBA, Cert. Proj Mgm ▪ Role – Project manager ▪ IOSH ▪ Over 26 years in archaeological consultancy
William O'Donnell	IN2 Engineering	Microclimate – Daylight & Sunlight	▪ BSc (Eng.) (Hons) C.Eng. MIEI, MCIBSE ▪ Associate Director, Environmental and Sustainability Engineering ▪ Specialist in building simulation, and daylight and sunlight analysis with over 17 years' experience. ▪ Chartered Engineer ▪ Member of Engineers Ireland (IEI) ▪ Member of Chartered Institute of Building Services Engineers (CIBSE) ▪ Director, Board of Irish Green Building Council (IGBC)
Seulgi Lee	IN2 Engineering	Microclimate – Daylight & Sunlight	BSc (Arch/ Int. Des) PG MA (Arch/ Int. Des.) ▪ Environmental Engineer, with over 7 years' experience, now specialising in daylight and sunlight analysis. ▪ Member of Engineers Ireland (IEI)
Dr. Cristina Paduano	B-Fluid	Microclimate - Wind	M.Eng and B.Eng in Aerospace Engineering, PhD in Mechanical Engineering ▪ Director ▪ Chartered Engineer (CEng) ▪ 18 years in construction industry
Dr. Patrick Okolo	B-Fluid	Microclimate - Wind	M.Sc. and B.Sc. in Mechanical Engineering

Name	Company	Role / input	Qualifications
			▪ Director ▪ Chartered Engineer (CEng) ▪ Urban environment and wind tunnel measurements
Dr. Guido Lupieri	B-Fluid	Microclimate - Wind	**M.Sc in Physics, PhD in Applied Geophysics and Hydraulics** ▪ CFD modelling specialist ▪ 20 years in fluid mechanics
Aimee Dunne	DBFL Consulting Engineers	Traffic & Transportation	**Civil & Environmental Engineering (MEng) Heriot-Watt University Edinburgh (2010) Cili Engineering Technology (BEngTech) DIT (2007)** ▪ Chartered Transport Engineer ▪ CEng MEng BengTech MIEI MIHE ▪ 12 years' experience
Susan Cormican	Ethos	Material Assets - Services	**MSc Building Services Engineering Brunel University B.Eng Exeter University** ▪ Group Director Ethos Engineering ▪ Chartered Engineer, Chartered Member of CIBSE ▪ Susan's relevant project experience includes Residential schemes including Ballymun Regeneration, Stepaside Residential Development, Kevin St, Naas Road & Grand Canal Harbour. EIAR input on schemes such as DAA Visual Control Tower, National Maternity Hospital
Brendan Curran	DBFL Consulting Engineers	Material Assets - Services	**BEng (Hons) Civil, Structural and Environmental Engineering, University College Cork, 2018** ▪ Civil Engineer ▪ Chartered Engineer (2023) ▪ 5+ years post college work experience

1.6 Impact Assessment Methodology

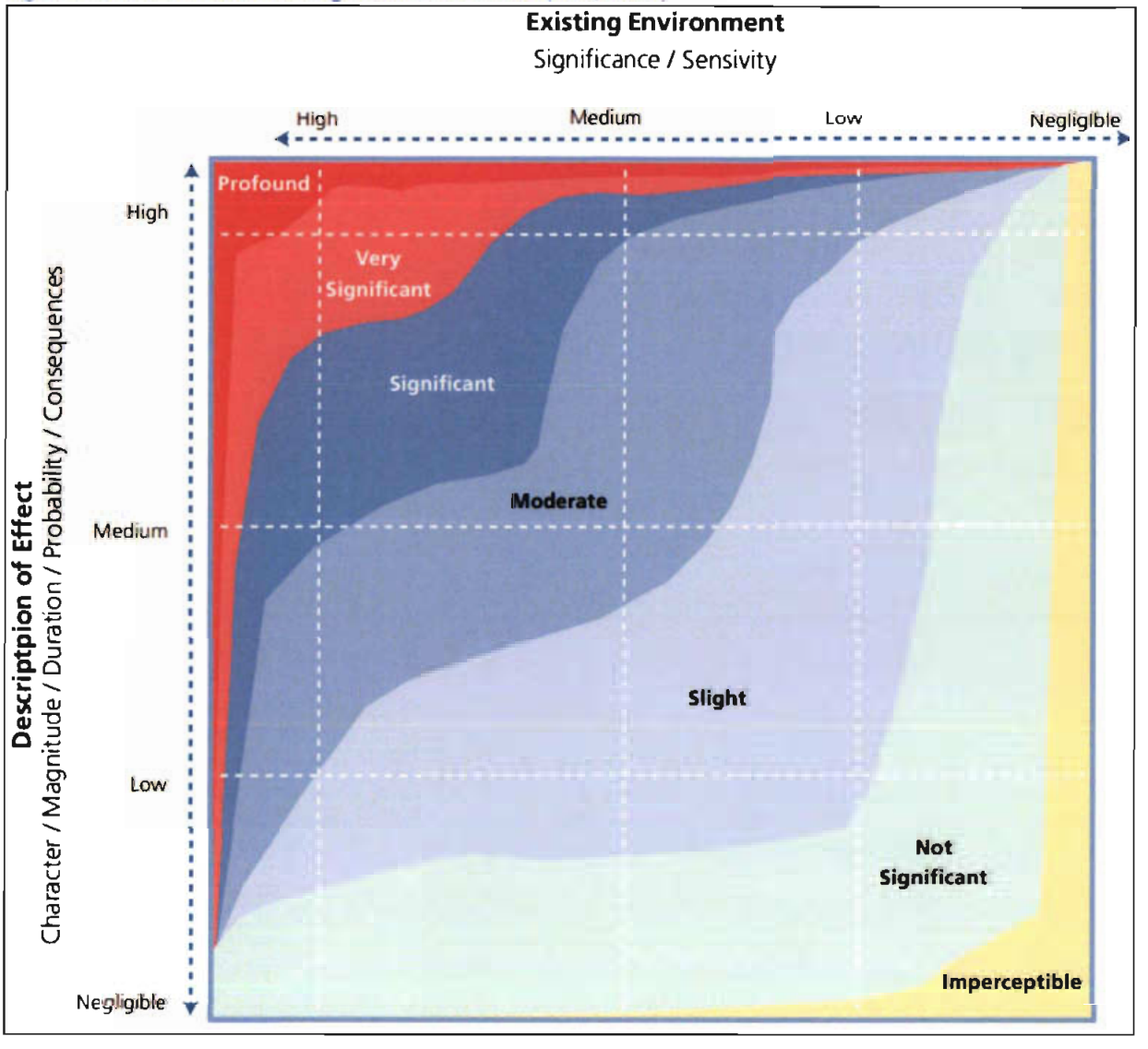
The impact assessment methodology is detailed in the respect of the various environmental topics in the respective chapters herein. The assessment of impacts is based on the source-pathway-receptor model, which dictates that, for an environmental impact to occur, there must be a source, a receptor which is sensitive to the effect in question, and a pathway by which the effect can reach the receptor. Unless otherwise stated, the criteria for effect / impact characterisation are as per the EPA guidelines (as set out in **Table 1.5**). The significance of an impact is determined through comparison of the character of the predicted effect to the sensitivity of the environment / receptor in question (**Figure 1.3**).

Table 1.5 Description of effects (adapted from EPA, 2022)

Criteria	Definition
Quality of Effects	
Positive	A change that improves the quality of the environment (for example, by increasing species diversity, improving reproductive capacity of an ecosystem, 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 that reduces the quality of the environment (for example, lessening species diversity, diminishing the reproductive capacity of an ecosystem, damaging health / property or causing nuisance).
Significance of Effects	
Imperceptible	An effect capable of measurement but without significant consequences.
Not significant	An effect that causes noticeable changes in the character of the environment but without significant consequences.
Slight	An effect that 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 that, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
Very significant	An effect that, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
Profound	An effect that obliterates sensitive characteristics.
Extent and Context of Effects	
Extent	The size of the area, number of sites, or proportion of a population affected by an effect.
Context	Describes whether the extent, duration, or frequency will conform or contrast with established (baseline) conditions (i.e. *is it the biggest, longest effect ever?*)
Probability of Effects	
Likely	The effects that can reasonably be expected to occur because of a proposed development if all mitigation measures are properly implemented.
Unlikely	The effects that can reasonably be expected not to occur because of a proposed development if all mitigation measures are properly implemented.
Duration, Reversibility & Frequency	
Momentary	Effects lasting from seconds to minutes.
Brief	Effects lasting less than a day.
Temporary	Effects lasting less than a year.

Criteria	Definition
Short-term	Effects lasting one to seven years.
Medium-term	Effects lasting seven to fifteen years.
Long-term	Effects lasting fifteen to sixty years.
Permanent	Effects lasting over sixty years.
Reversible	Effects that can be undone (for example, through remediation or restoration).
Frequency	How often the effect will occur (e.g. once, rarely, occasionally, frequently, constantly, hourly, daily, weekly, monthly, annually, etc.).
Type of Effects	
Indirect / secondary	Impacts that are not a direct result of a proposed development, often produced away from the site or because of a complex pathway.
Cumulative	The addition of many minor or significant effects, including effects of other plans and / or projects, to create larger, more significant effects.
Do-nothing	The environment as it would be in the future should the proposed development not be carried out.
Worst-case	The effects arising from a proposed development in the case where mitigation measures substantially fail.
Indeterminable	When the full consequences of a change in the environment cannot be described.
Irreversible	When the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost.
Residual	The effect that will occur after the proposed mitigation measures have been implemented.
Synergistic	Where the resultant effect is of greater significance than the sum of its constituents (e.g. combination of SO_x and NO_x to produce smog).

Figure 1.3 Determination of significance of effect (EPA, 2022)



2 The Environmental Impact Assessment (EIA) Process

2.1 Legislation

The EIA Directive is the cornerstone of EIA legislation. It aims to ensure a high level of protection for the environment and human health, and provides for public participation in relation to development consent and environmental matters. It requires that an assessment of the 'likely significant effects' a proposed development will have on the environment is carried out, where relevant, before development consent is given.

The EIA Directive entered into force in 1985 (Directive 85/337/EEC). It was amended three times (in 1997, 2003 and 2009) and subsequently codified by Directive 2011/92/EU, which was itself amended in 2014 by Directive 2014/52/EU ('the amended Directive'). The EIA Directive is transposed into Irish legislation by the PDA 2000, the PDR 2001 and the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018.

2.2 Guidelines

This EIAR has been prepared in accordance with the aforementioned legislative provisions and the following guidelines, among others, as specified in the various specialist EIAR chapters:

- EPA (2022). *Guidelines on the information to be contained in Environmental Impact Assessment Reports;*
- EC (2017). *Environmental Impact Assessment of Projects. Guidance on the preparation of Environmental Impact Assessment Report*;
- EC (2017). *Environmental Impact Assessment of Projects. Guidance on Scoping*;
- EC (2017). *Environmental Impact Assessment of Projects. Guidance on Screening*;
- Department of Housing, Planning and Local Government (DHPLG) (2018). *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment;*
- DHPLG (2017). Circular letter PL 1/2017 – Advice on Administrative Provisions in Advance of Transposition;
- European Commission (EC) (1999). *Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions;*
- EC (2013). *Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment.*

2.3 The EIA Process

EIA is a process for anticipating the effects on the environment of a proposed development. It is defined in the amended Directive 2014/52/EU as follows:

> *"Environmental impact assessment means a process consisting of:*
>
> *(i) the preparation of an environmental impact assessment report by the developer, as referred to in Article 5(1) and (2);*
>
> *(ii) the carrying out of consultations as referred to in Article 6 and, where relevant, Article 7;*
>
> *(iii) the examination by the competent authority of the information presented in the environmental impact assessment report and any supplementary information provided,*

where necessary, by the developer in accordance with Article 5(3), and any relevant information received through the consultations under Articles 6 and 7;

(iv) the reasoned conclusion by the competent authority on the significant effects of the project on the environment, taking into account the results of the examination referred to in point (iii) and, where appropriate, its own supplementary examination; and

(v) the integration of the competent authority's reasoned conclusion into any of the decisions referred to in Article 8a."

In this case, 'the developer' refers to the Applicant, and 'the competent authority' refers to the planning authority, i.e. Fingal County Council in this instance. It is important to emphasise that 'EIA' refers to the overall process of Environmental Impact Assessment, as defined above and illustrated in **Figure 2.1**, below; while the Environmental Impact Assessment Report (EIAR) is the document on which the competent authority's assessment is based. It provides a statement of the effects, if any, which proposed development, if carried out, would have on the environment.

The EIAR is prepared by the Applicant and submitted to the competent authority as part of the development consent process, i.e. as part of the planning application. The competent authority uses the information provided in the EIAR as the basis of an assessment of the environmental effects of the proposed development and, in the context of other considerations, to help determine whether development consent should be granted.

The EIAR entails a systematic analysis and assessment of the potential environmental effects of a proposed development on its receiving environment. Article 3(1) of the amended Directive prescribes a range of environmental topics that must be addressed in the EIAR, as follows:

"The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors:

(a) population and human health;

(b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC[1] and Directive 2009/147/EC[2];

(c) land, soil, water, air and climate;

(d) material assets, cultural heritage and the landscape;

(e) the interaction between the factors referred to in points (a) to (d)[3]."

Article 5(1) provides a non-exhaustive list of information that the EIAR shall contain, as follows:

"... the developer shall include at least:

(a) a description of the project comprising information on the site, design, size and other relevant features of the project;

(b) a description of the likely significant effects of the project on the environment;

[1] Directive 92/43/EEC on the conservation of natural habitats and wild fauna and flora ('the Habitats Directive')
[2] Directive 2009/147/EC on the conservation of wild birds ('the Birds Directive')
[3] Refer to Chapter 19 (Interactions)

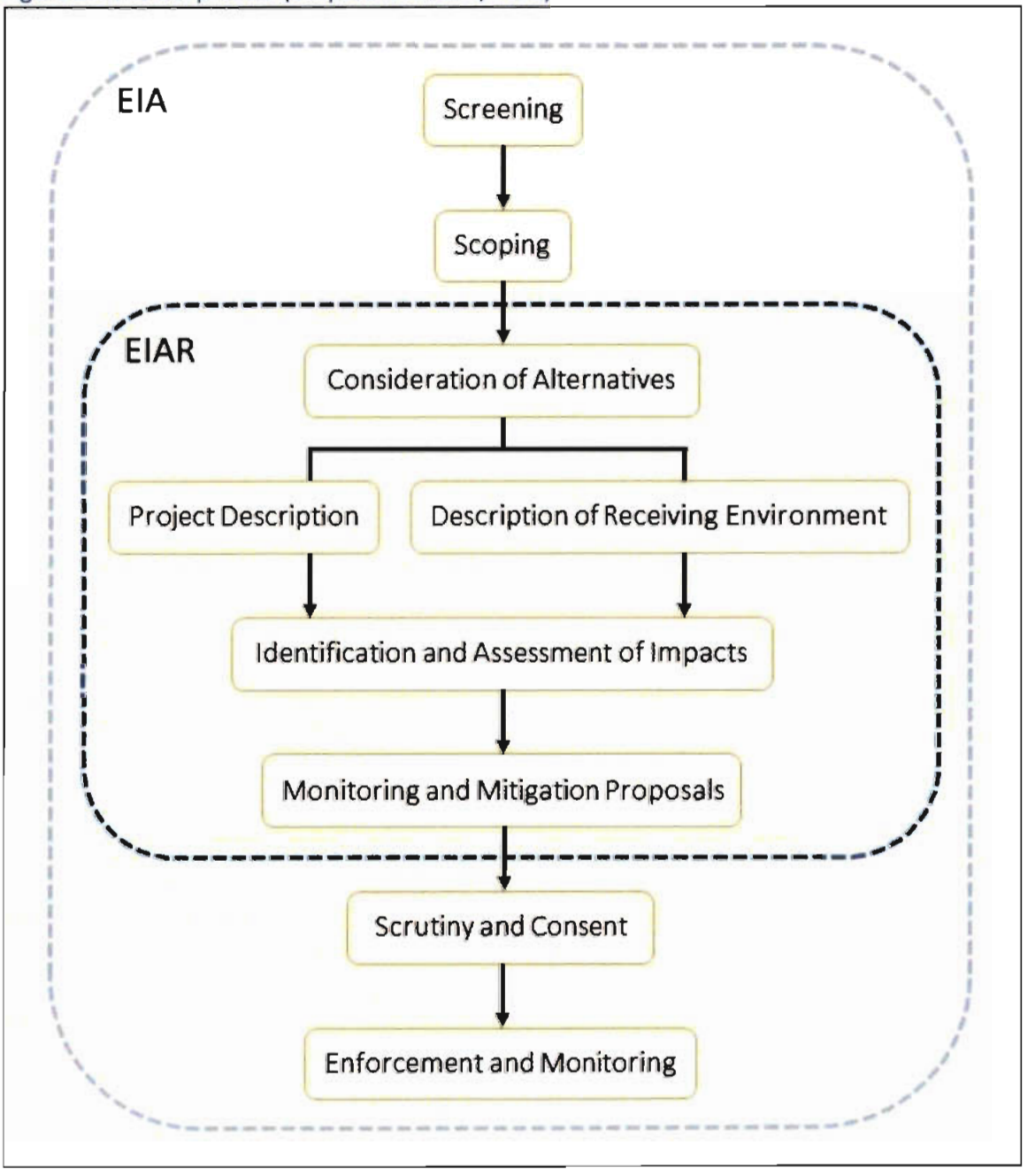
(c) a description of the features of the project and/or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment;

(d) a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment;

(e) a non-technical summary of the information referred to in points (a) to (d); and

(f) any additional information specified in Annex IV relevant to the specific characteristics of a particular project or type of project and to the environmental features likely to be affected."

Figure 2.1 The EIA process (adapted from EPA, 2022)



Where significant effects (as per the definition provided in **Table 1.5**) are identified during the preparation of an EIAR, it may be possible for these to be avoided or minimised through design changes ('mitigation by design') or through the identification of mitigation measures.

The EIA process may be summarised as follows:

- **Screening:** The process of determining whether a proposed development should be subject to EIA;
- **Scoping:** The process of identifying the topics that should be addressed in the EIAR as well as the methods to do so;
- **Description of the receiving environment:** This stage aims to establish a robust baseline (a description of the environmental characteristics of the receiving environment plus any relevant trends in status), utilising a review of existing available information and undertaking surveys and analyses, where appropriate;
- **Impact assessment:** The primary purpose of the EIAR is to identify, describe[4] and present an assessment of the likely significant impacts of a proposed development on the environment;
- **Mitigation:** Where appropriate, mitigation measures are identified to avoid, prevent, reduce or offset any likely significant negative effects identified; as well as any proposed monitoring arrangements;
- **Consultation:** With statutory bodies, the public and other stakeholders, as appropriate;
- **Decision:** The competent authority (Fingal County Council, in this case) decides, in the context of other considerations (including the outcomes of the consultation process), whether development consent should be granted;
- **Implementation / enforcement of conditions of development consent:** Assuming the development is permitted, the schedule of environmental commitments (including the mitigation and monitoring measures set out in the EIAR and any additional environmental conditions of the development consent) needs to be implemented.

2.4 EIA Screening

Screening is the initial stage in the EIA process, where a decision is made as to whether an EIA is required for the development in question.

The amended Directive specifies the classes of project for which an EIA is required by default. In accordance with Article 4(1), all projects listed in Annex I are considered as having significant effects on the environment and shall be subject to EIA. For projects listed in Annex II of the Directive, the Member States may determine whether an EIA is needed, either on the basis of thresholds / criteria or case-by-case examinations. These Annexes have been transposed into Irish law by the provisions of the PDA 2000 and the PDR 2001.

Parts 1 and 2 of Schedule 5 of the PDR 2001 list the classes of development for which EIA is required by default. In Part 1, major project classes (including industrial, chemical, energy, waste, infrastructural and intensive agricultural projects) are identified for the purposes of mandatory EIA. In Part 2, specific thresholds are cited; EIA is a requirement for projects of a class listed here that also meet or exceed the corresponding threshold (e.g. wind farms *"with more than 5 turbines or having a total output greater than 5 megawatts"*).

[4] In accordance with the criteria set out in **Table 1.5** of this EIAR / Table 3.4 of the EPA guidelines

The proposed development is the second of three planned phases (Phase 2) of development planned on the wider Masterplan site under the ownership of the Applicant at Ballymastone.

The proposed development is not of a class of development listed in Part 1 of Schedule 5 of the PDR 2001 and, therefore, EIA is not a statutory requirement under this provision. However, the proposed development (Phase 2) does correspond with the classes of development listed in paragraphs 10(b)(i) and 10(b)(iv) of Part 2 of Schedule 5 of the PDR 2001. When considered together, the gross quantum of development proposed for Ballymastone Phase 1 (permitted under FCC Ref.: LRD0008/S3 & ABP Ref. 315288) and Ballymastone Phase 2 ('proposed development') exceeds the thresholds specified in relation to these classes of development, as detailed in **Table 2.1**, below.

Table 2.1 Statutory requirement for EIA under Part 2 of Schedule 5 of the PDR 2001

Provision (Part 2 of Schedule 5 of PDR 2001)	Proposed Development (Phase 2)	Previously permitted development (Phase 1)
Paragraph 10(b)(i): *"Construction of more than 500 dwelling units."*	c. 364 units	432 residential units permitted by An Bord Pleanàla (FCC Ref. LRD0008/S3 & ABP Ref. 315288).
Paragraph 10(b)(iv): *"Urban development which would involve an area greater than 2 hectares in the case of a business district, 10 hectares in the case of other parts of a built-up area and 20 hectares elsewhere."*[5]	Total site area c. 13.74Ha	c. 15.02 Ha

Therefore, under the provisions of the PDR 2001, EIA is a statutory requirement for the proposed development, and the Applicant is required to prepare an Environmental Impact Assessment Report.

2.5 EIA Scoping

The scoping stage of the EIAR is a process of determining the content and extent of the matters which should be covered in the environmental information to be submitted in the EIAR. Scoping requires the consideration of the nature and likely scale of the potential environmental impacts likely to arise from a proposed development or project. It is an iterative process that is ongoing throughout the development of the EIAR. The following topics, which include those stipulated in the amended Directive, have been scoped in for this assessment:

- Population and Human Health;
- Biodiversity;
- Land, Soils, Geology and Hydrogeology;
- Hydrology;
- Air Quality;
- Climate;
- Noise and Vibration;
- Landscape and Visual;
- Cultural Heritage, Archaeology and Architectural Heritage;

[5] Where 'business district' refers to a district within a city or town in which the predominant land use is retail or commercial use.

- Microclimate - Daylight and Sunlight;
- Microclimate - Wind
- Traffic and Transportation;
- Material Assets - Waste;
- Material Assets - Services; and
- Interactions between the above-listed topics.

2.5.1 Major Accidents & Disasters

Article 3 of the amended Directive requires that the EIAR *"shall include the expected effects deriving from the vulnerability of the project to risks of major accidents and/or disasters that are relevant to the project concerned"*. The objective of this requirement is to ensure appropriate risk management in this case of proposals which *"...because of their vulnerability to major accidents and/or natural disasters (such as flooding, sea level rise, or earthquakes), are likely to have significant adverse effects on the environment"*.

In the absence of national guidance on the assessment of impacts in relation to major accidents and disasters (MADs), the 2020 Institute of Environmental Management and Assessment (IEMA) document, *Major Accidents and Disasters in EIA: A Primer*, is referred to. In relation to scoping, the document states that *"A major accidents and/or disasters assessment will be relevant to some developments more than others, and for many developments it is likely to be scoped out of the assessment"* (p. 11). It is further stated that the topic may be scoped out in the event that:

1. There is no source-pathway-receptor linkage of a hazard that could trigger a major accident[6] and / or disaster[7], or potential for the proposed development to lead to a significant environmental effect; or
2. All possible MADs are adequately considered elsewhere in the assessment or covered by existing design measures or compliance with legislation and best practice.

The MADs impact assessment typically includes an assessment of the potential effects in relation to 'Seveso sites', i.e. major industrial establishments, which, because of the presence of certain dangerous substances in sufficient quantities, are regulated under Directive 2012/18/EU (the 'SEVESO III Directive') on the control of major-accident hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EC (the 'SEVESO II Directive'). The SEVESO III Directive has been transposed into Irish legislation through the Chemicals Act (Control of Major Accident Hazards Involving Dangerous Substances) Regulations 2015 (S.I. No. 209/2015) ('the COMAH Regulations').

The SEVESO III Directive provides that appropriate consultation distances must be put in place for Seveso sites, indicating the area that is liable to be affected by a major accident at the establishment in question; and that technical advice is available to planning authorities in respect of relevant establishments. The Health & Safety Authority (HSA) is the Central Competent Authority responsible for providing such advice, where appropriate, in respect of planning applications that fall within consultation distances of SEVESO sites.

---

[6] An event *"... that threaten immediate or delayed serious environmental effects to human health, welfare and/ar the environment and require the use of resources beyond those of the client or its appointed representatives to manage"* (IEMA, 2020, p. 4).

[7] A*"... natural hazard (e.g. earthquake) or a man-made/external hazard (e.g. act of terrorism) with the potential to cause an event or situation that meets the definition of a major accident"* (ibid.).

In identifying the locations of Seveso sites in the receiving environment, regard has been had to the *Fingal Development Plan 2023 – 2029*, which show the locations of Seveso sites in the administrative area on their zoning maps. These sites, listed in **Table 2.2**, below, are predominantly clustered at Damastown / Mulhuddart. There are no Seveso sites situated in close proximity to the proposed development, and the proposed development does not fall within the consultation distance of any such site. Therefore, there is no real likelihood of the proposed development being affected by a MAD associated with any such site. Nor is it likely that the construction or operation of the proposed development would cause or exacerbate a MAD at any such site. Potential impacts related to Seveso sites are, therefore, discounted from further consideration.

Table 2.2 Seveso sites in the Fingal County Council administrative area

Tier	Establishment	Consultation distance[8]	Distance from proposed development
Upper	Barclay Chemicals Manufacturing Ltd (t/a Barclay Crop Protection) Damastown Way, Damastown Industrial Park, Mulhuddart, Dublin 15	1,000 m	c. 19.5km
	Chemco (Ireland) Limited (t/a Chemsource Logistics) Macetown North, Damastown Industrial Estate, Dublin 15	700 m	c. 19.3km
	Contract & General Warehousing Ltd Westpoint Business Park, Navan Rd. Mulhuddart, Dublin 15	700 m	c. 20.2km
	Guerbet Ireland ULC Damastown, Mulhuddart, Dublin 15	1,000 m	c. 20.6km
Lower	Astellas Ireland Co., Ltd Damastown Road, Damastown Industrial Park, Mulhuddart, Dublin 15	1,000 m	c. 20.2km
	Clarochem Ireland Limited Damastown, Mulhuddart, Dublin 15	1,000 m	c. 20.6km
	Exolum Aviation Ireland Ltd (formerly CLH) Corballis Road, Dublin Airport, Co. Dublin	500 m	c. 9.4km
	Gensys Power Ltd. Huntstown Power Station, Huntstown Quarry, Dublin 11	300 m	c. 14.9km
	SK Biotek Watery Lane, Swords, Co. Dublin	1,000 m	c. 6km

Considering the nature of the proposed development and its receiving environment, there is no source-pathway-receptor linkage of a hazard that could trigger an event constituting a MAD. As such, an assessment of impacts specifically in relation to MADs has been scoped out of this Environmental Impact Assessment Report. However, the risks of feasible accidents and natural events are addressed, where relevant, in the various specialist chapters herein. Flood risk, for instance, is addressed in Chapter 10 (Hydrology) and geohazards are addressed in Chapter 9 (Land, Soils, Geology & Hydrogeology).

2.6 Other Assessments

2.6.1 Appropriate Assessment

European Sites, also known as 'Natura 2000' sites, include Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). These are a network of sites designated for nature conservation under Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (the 'Habitats Directive') and Directive 2009/147/EC on the conservation of wild birds (the 'Birds Directive').

[8] From site perimeter

The requirements for Appropriate Assessment (AA) are set out under Article 6 of the Habitats Directive, transposed into Irish law by the European Union (Birds and Natural Habitats) Regulations 2011 (as amended) (the 'Birds and Natural Habitats Regulations') and the PDA 2000.

Article 6(3) of the Habitats Directive states that:

> *"Any plan or project not directly connected with or necessary to the management of the site but likely to have significant effect thereon, either individually or in combination with other plans or projects, shall be subject to Appropriate Assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public."*

The first test is to establish whether, in relation to a particular plan or project, AA is required. Sections 177U of the PDA 2000 requires that the AA screening test must be applied to a proposed development, as follows:

- To assess, in view of best scientific knowledge, if the development, individually or in combination with another plan or project is likely to have a significant effect on the European site; and
- AA is required if it cannot be excluded, on the basis of objective information, that the development, individually or in combination with other plans or projects, will have a significant effect on a European Site.

A Natura Impact Statement has been prepared by BSM in respect of the proposed development, in accordance with the requirements of the Habitats Directive and the Birds Directive, and the PDA 2000.

The Natura Impact Statement has considered the potential impacts of a proposal by Glenveagh Living Ltd for a residential development at Ballymastone, Donabate, Co. Dublin on the integrity of European sites. This report concludes on the best scientific evidence that it can be clearly demonstrated that no elements of the project will result in any impact on the integrity or Qualifying Interests/Special Conservation Interests of any relevant European site, either on their own or in-combination with other plans or projects, in light of their conservation objectives.

It is considered that the Natura Impact Statement provides sufficient relevant information to allow the Competent Authority (Fingal County Council) to carry out an Appropriate Assessment, and to reach a determination that the proposed development will not affect the integrity of any of the relevant European sites under Article 6 of the Habitats Directive (92/43/EEC) in light of their conservation objectives.

Please refer to Natura Impact Statement (BSM, 2024), submitted under separate cover as part of the planning application.

2.6.2 Site Specific Flood Risk Assessment

A Site Specific Risk Assessment (SSFRA) has been prepared in respect of the proposed development by DBFL Consulting Engineers (2024), in accordance with the OPW guidelines *The Planning System and Flood Risk Management – Guidelines for Planning Authorities* (2009). The key findings and conclusions of the SSFRA are summarised as follows:

"Following the flood risk assessment stages, it was determined that the Site is within Flood Zone C as defined by the Guidelines.

It is concluded that the;

- *Residential development proposed is appropriate for the Site's flood zone category.*
- *Planning System and Flood Risk Management Guidelines Sequential Approach is met and the 'Avoid' principal achieved.*

The development was concluded as having a good level of flood protection up to the 100-year return event. For pluvial floods exceeding the 100-year capacity of the drainage system then proposed flood routing mitigation measures are recommended."

Please refer to the SSFRA (DBFL Consulting Engineers, 2024) submitted under separate cover as part of the planning application. Refer also to Chapter 10 (Hydrology).

2.6.3 Water Framework Directive (WFD)

A WFD screening has been undertaken by AWN Consulting Limited (2024), in respect of the proposed development in response to the requirements of the Water Framework Directive. Refer to **Appendix 10.2**, Volume 3 of the EIAR. The screening assessment concludes:

"The WFD assessment indicates that, based on the current understanding of the proposed development, there is no potential for adverse or minor temporary/ long-term or localised effects on the Rogerstown Estuary transitional waterbody. Therefore, it has been assessed that the proposed development will not cause any significant deterioration or change in water body status or prevent attainment, or potential to achieve, future good status or to meet the requirements and/or objectives in the second RBMP 2018-2021 (River Basin Management Plan) and draft third RBMP 2022-2027.

The WFD assessment indicates that there is no potential for adverse or minor temporary or localised effects on the Swords groundwater body. Therefore, it has been assessed that it is unlikely that the proposed development will cause any significant deterioration or change on its water body status or prevent attainment, or potential to achieve the WFD objectives or to meet the requirements and/or objectives in the second RBMP 2018-2021 (River Basin Management Plan) and draft third RBMP 2022-2027.

No further assessment of WFD is recommended given that no significant deterioration or change in water body status is expected based on the current understanding of the proposed development during construction and operation."

3 Planning & Development Context

3.1 Introduction

This Chapter sets out the policy in relation to proper planning and sustainable development in the context of the proposed development. It has been prepared by Laura Giffney, Graduate Planner at Brady Shipman Martin (BSM). A technical review was completed by Thomas Burns, Partner at BSM and Namrata Kaile, Environmental Consultant at BSM. Refer to **Table 1.4** in Chapter 1 (introduction) for qualifications of authors and reviewers.

The following policy document of relevance are discussed in relation to the proposed development herein:

International

- United Nations Sustainable Development Goals (2015)

European

- Environmental Impact Assessment Directive (consolidated 2011/92/EU and 2014/52/EU);
- Birds (2009/147/EC) and Habitats Directive (92/43/EEC);
- EU Water Framework Directive (2000).

National

- Project Ireland 2040 – National Planning Framework and National Development Plan (2018);
- Sustainable Urban Housing: Design Standards for New Apartments (July 2023);
- Urban Development and Building Heights – Guidelines for Planning Authorities (2018);
- Design Manual for Urban Roads and Streets (2019);
- Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities (2009);
- Sustainable Residential Development and Compact Settlements Guidelines for Planning Authorities (2024);
- The Planning System and Flood Risk Management – Guidelines for Planning Authorities (2009);
- Climate Action Plan (2024);
- Childcare Facilities – Guidelines for Planning Authorities (2001);
- Housing for All – A New Housing Plan for Ireland (2021);
- Cycle Design Manual (2023);
- National Sustainable Mobility Policy (2022).

Regional

- Eastern & Midland Regional Assembly Regional Spatial & Economic Strategy 2019 – 2031;
- Fingal Development Plan 2023 – 2029;
- Transport Strategy for the Greater Dublin Area 2022 – 2042.

Local

- Donabate Local Area Plan (2016-2021, as extended to 2026);
- Ballymastone, Donabate Framework Plan (2018);
- Donabate Urban Framework Plan (2024).

Topic-specific policies are addressed, where appropriate, in the relevant specialist chapters of this EIAR.

3.2 International Policy Context

3.2.1 United Nations Sustainable Development Goals (2015)

The United Nations' (UN) 17 Sustainable Development Goals (SDGs) provide a *"shared blueprint for peace and prosperity for people and the planet, now and into the future"* (**Figure 3.1**). They were adopted by the UN Member States – including Ireland – in 2015, as part of the adoption of the *2030 Agenda far Sustainable Development*. These high-level goals frame and inform Irish national agendas and policies to 2030, including (but not limited to) *Project Ireland 2040* (*National Planning Framework* and *National Development Plan*) and the Eastern and Midland Regional Assembly's *Regional Spatial and Economic Strategy*, discussed below.

Figure 3.1 United Nations sustainable development goals (SDGs)

3.3 European Policy Context

3.3.1 Environmental Impact Assessment Directive (consolidated 2011/92/EU and 2014/52/EU)

Environmental Impact Assessment (EIA) is a procedure under the terms of European Directives on the assessment of the effects of certain public and private projects on the environment. The EIA Directive (2014/52/EU) became applicable in Ireland from May 16th, 2017, and amends Directive 2011/92/EU. The EIA Directive(s) have been transposed into Irish legislation by the PDA 2000 and the PDR 2001. The most recent 2014 EIA Directive has been transposed into Irish Legislation, through the European Union (Planning and Development) (Environmental Impact Assessment) Regulations (S.I. 296 of 2018) which came into effect on 1 September 2018 and the EIAR has been prepared in accordance with these Regulations. Projects for which an EIA is mandatory under Annex I of the Directive have been listed under Part 1 of Schedule 5 of the PDR 2001. Similarly, Part 2 of Schedule 5 outlines thresholds for other projects which also require EIA, as per Annex II of the Directive. In addition, a 'sub-threshold' EIA may be required, if the Planning Authority determines that the development would be likely to have significant effects on the environment. Schedule 7 of the Regulations details the criteria for determining whether a development would or would not be likely to have significant effects on the environment

considering the characteristics of the proposed development, its location and characteristics of potential impacts.

As detailed in Section 2 of this EIAR, the proposed development is not of a class of development listed in Part 1 of Schedule 5 of the PDR 2001 and, therefore, EIA is not a statutory requirement under this provision. However, the proposed development (Phase 2) does correspond with the classes of development listed in paragraphs 10(b)(i) and 10(b)(iv) of Part 2 of Schedule 5 of the PDR 2001. When considered together, the gross quantum of development proposed for Ballymastone Phase 1 (permitted under FCC Ref.: LRD0008/S3 & ABP Ref. 315288) and Ballymastone Phase 2 ('proposed development') exceeds the thresholds specified in relation to these classes of development. Therefore, under the provisions of the Part 2 of Schedule 5 of the PDR 2001, EIA is a statutory requirement for the proposed development.

3.3.2 Birds (2009/147/EC) and Habitats Directive (92/43/EEC)

Adopted in 1992, the Council Habitats Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora aims to promote the maintenance of biodiversity, taking account of economic, social, cultural and regional requirements. It forms the cornerstone of Europe's nature conservation policy with the Birds Directive 2009/147/EC and establishes the EU wide Natura 2000 ecological network of protected areas, safeguarded against potentially damaging developments.

Please refer to Section 2.6.1 and the Natura Impact Statement (BSM, 2024), submitted under separate cover as part of the planning application, for full details.

3.3.3 EU Water Framework Directive (2000/60/EC)

The Water Framework Directive (WFD) established a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater with the objective to protect and improve water quality in all waters to achieve good ecological status by 2027 at the latest.

Specifically, the WFD aims to:

- Prevent further deterioration and protect and enhance the status of aquatic ecosystems and, with regard to their water needs, terrestrial ecosystems and wetlands directly depending on the aquatic ecosystems;
- Promote sustainable water use based on a long-term protection of available water resources;
- Enhanced protection and improvement of the aquatic environment, through specific measures for the progressive reduction of discharges, emissions and losses of priority substances and the cessation or phasing-out of discharges, emissions and losses of priority hazardous substances;
- Ensure the progressive reduction of pollution of groundwater and prevents its further pollution; and
- Contribute to mitigating the effects of floods and droughts

The Water Framework Directive is linked to a number of other EU directives in several ways. These include Directives relating to the protection of biodiversity (Birds and Habitats Directives), directives related to specific uses of waters (drinking water, bathing waters and urban wastewater directives) and to directives concerned with the regulation of activities undertaken in the environment (Industrial Emissions and Environmental Impact Assessment directives). More recent directives on topics such as Floods and the Marine Strategy Framework have significant linkages with the WFD which is also supplemented by the Priority Substances Directive and the Groundwater Directive.

EU member states are required to implement the WFD through River Basin Management Plans (RBMPs). Ireland's approach to water quality management has developed over the first and second RBMPs and will continue to evolve into the third cycle RBMP 2022 – 2027 to protect and improve water quality nationally and locally. The Minister for Housing, Local Government and Heritage, published the draft River Basin Management Plan for Ireland 2022-2027 for public consultation. A final RBMP will be published later in 2024.

The proposed development has considered the current water status of all relevant water bodies, and potential impacts have been considered in Chapter 9 Land, Soils, Geology and Hydrogeology and Chapter 10 Hydrology of this EIAR.

A Water Framework Directive (WFD) Screening Assessment (**Appendix 10.2**, Volume 3 of the EIAR) has also been prepared by AWN which confirms that "*there is no potential for adverse or minor temporary/ long-term or localised effects on the Rogerstown Estuary transitional waterbody and that there is no potential for adverse or minor temporary or localised effects on the Swords groundwater body. Therefore, it has been assessed that it is unlikely that the proposed development will cause any significant deterioration or change on both of these water body statuses' or prevent attainment, or potential to achieve the WFD objectives or to meet the requirements and/or objectives in the second RBMP 2018-2021 (River Basin Management Plan) and draft third RBMP 2022-2027.*"

The WFD concludes that "*No further assessment of WFD is recommended given that no significant deterioration or change in water body status is expected based on the current understanding of the proposed development during construction and operation.*"

A Hydrological Risk Assessment (HRA) (**Appendix 10.3**, Volume 3 of the EIAR) was undertaken by AWN in respect of the proposed development. The HRA proposes that- "*appropriate and mitigation measures will be included in the construction design, management of construction programme and during the operational phase of the proposed development. With regard to the construction phase, adequate mitigation measures will be incorporated in the Construction Environmental Management Plan (CEMP). These specific measures will provide further protection to the receiving soil and water environments.*"

Refer to the WFD Screening Assessment and HRA submitted as **Appendix 10.2 & 10.3**, Volume 3 of the EIAR, respectively.

3.4 National Policy Context

3.4.1 Project Ireland 2040

Project Ireland 2040 is the Government's overarching planning and development policy for the country to 2040. It constitutes a "*strategy to make Ireland a better country for all of its people*" by setting public investment policy at a high level. It comprises two documents: the National Planning Framework (NPF), which details the strategy for development to 2040; and the National Development Plan (NDP), which outlines the public expenditure required to implement this strategy and identifies priority future projects.

The NPF is the Government's high-level strategic plan for shaping the future growth and development of Ireland to 2040. It is a framework to guide public and private investment to create and promote opportunities, and to protect and enhance the environment. At its core are ten National Strategic Outcomes (NSOs), "*a shared set of goals for every community across the country*" (p. 10), which the

plan aims to deliver. With a view to achieving these NSOs, the NPF identifies a suite of National Policy Objectives (NPOs). The ten NSOs are as follows:

1. Compact Growth
2. Enhanced Regional Accessibility
3. Strengthen Rural Economies and Communities
4. Sustainable Mobility
5. A Strong Economy, supported by Enterprise, Innovation and Skills
6. High-Quality International Connectivity
7. Enhanced Amenity and Heritage
8. Transition to a Low Carbon and Climate Resilient Society
9. Sustainable Management of Water and other Environmental Resources
10. Access to Quality Childcare, Education and Health Services

The objectives of the NPF seek to address ongoing negative development trends, including sprawling peri-urban growth, stagnation of inner-city and old suburban areas, and loss of farmland and habitats to greenfield development. In particular, one of the key objectives of the NPF, compact growth, seeks to carefully manage the sustainable growth of compact cities, towns and villages and to add value and create more attractive places in which people can live and work. The NPF specifies that housing developments should be based on employment growth, higher densities, access to amenities and sustainable transport modes, in order to avoid long-distance commuting patterns and quality of life impacts within these areas.

The NPF identifies that, by 2040, it is expected that an additional one million people will live in Ireland. The Government predicts that there will be a need for at least half a million additional homes by 2040. In accordance with the policy of compact growth, the NPF aims to prioritise the provision of new homes in cities and larger towns, targeting 40% of housing development within and close to the existing footprint of built-up areas.

The Government's long-term vision for Ireland's housing future aims to balance the provision of good quality housing that meets the needs of a diverse population, in a way that makes our cities, towns, villages and rural areas good places to live now and in the future. The NPF sets out national core principles to guide the delivery of future housing at all levels of governance, as follows (p. 91):

- *Ensure a high standard quality of life to future residents as well as environmentally and socially sustainable housing and place-making through integrated planning and consistently excellent design.*
- *Allow for choice in housing location, type, tenure and accommodation in responding to need.*
- *Prioritise the location of new housing provision in existing settlements as a means to maximising a better quality of life for people through accessing services, ensuring a more efficient use of land and allowing for greater integration with existing infrastructure.*
- *Tailor the scale and nature of future housing provision to the size and type of settlement where it is planned to be located.*
- *Integrate housing strategies where settlements straddle boundaries (county and / or regional).*
- *Utilise existing housing stock as a means to meeting future demand.*

The NPF requires homes to be located in places that can support sustainable development; i.e. places that are served by existing infrastructure and a range of local services; and which can encourage the use of public transport, walking and cycling, in order to promote more efficient and low-carbon development. It is noted that Ireland's future homes will "*still be located in our smaller towns, villages and rural areas, including the countryside, but at an appropriate scale that does not detract from the capacity of our larger towns and cities to deliver homes more sustainably*" (p. 92).

In the Eastern and Midland region, the NPF targets population growth of 490,000 – 540,000 additional people by 2040. In order to delivery compact, smart and sustainable growth, the NPF intends for 50% of new housing development in the region to be delivered in the existing footprint of Dublin City and suburbs, with an additional 30% delivered elsewhere, within existing urban footprints.

The NPF notes that (p. 32):

> "*One of the most significant spatial development changes in recent years has been driven by the rising economic strength of Dublin, rapidly improving transport connectivity and issues such as housing cost. This has given rise to more intensive interactions between Dublin and various towns along the key road and rail routes, including the Dublin-Belfast corridor and settlements along it that function like a linear urban network, as well as wider rural areas, creating both self-sustaining economic and overspill commuter driven development.*" Future planning, development and place-making policy priorities for the region are identified in the NPF, including the following of pertinence to the proposed development (p. 35):

- Enabling the complementary development of large and county towns in the wider Greater Dublin Area and Midland areas on the key strategic and public transport routes in a regionally co-ordinated manner, with an enhanced emphasis on measures to promote self-sustaining economic and employment based development opportunities to match and catch-up on rapid phases of housing delivery in recent years.
- A focused approach to compact, sequential and sustainable development of the larger urban areas along the Dublin – Belfast economic and transport corridor, along which there are settlements with significant populations such as Dundalk and Drogheda.

The NPF identifies a number of key future growth enablers for Dublin City, including "*Delivering the key rail projects set out in the Transport Strategy for the Greater Dublin Area including Metro Link, DART expansion and the Luas green line link to Metro Link*" and "*Delivery of the metropolitan cycle network set out in the Greater Dublin Area Cycle Network Plan inclusive of key commuter routes and urban greenways on the canal, river and coastal corridors*" (p. 37), the delivery of which would further improve cyclist and public transport connectivity between Donabate and Dublin City.

The proposed development is broadly consistent with the objectives of the NPF in that it will deliver a high-quality residential development on an underutilised site, contributing to the natural urban extension of a rapidly growing suburban town within the Dublin Metropolitan area. While the proposed development will be delivered on a greenfield site, it is contiguous with the existing settlement at Donabate, which is served by high-capacity public transport infrastructure in the form of the Dublin-Belfast railway line. Furthermore, the site is situated on lands that have been earmarked by the local authority for residential development of this nature.

The Planning Report and Statement of Consistency for the proposed development, prepared by BSM and submitted under separate cover as part of the planning application, details the consistency of the proposed development with the NPOs.

3.4.2 Sustainable Urban Housing: Design Standards for New Apartments (July 2023)

The Design Standards for New Apartments were published by the Minister for Housing, Planning & Local Government in March 2018, as an update of the Sustainable Urban Housing: Design Standards for New Apartments Guidelines, published in 2015. They were subsequently updated in December 2020, December 2022 and in July 2023. These Guidelines aim to ensure that the design and layout of new built apartments are appropriate, providing for different types and sizes of housing.

The Guidelines note that the ESRI projects a need for a minimum of 600,000 new homes to 2040, at least half of which are targeted for provision in Ireland's five cities and of particular relevance to this site. NPF notes a shift in Government policy towards securing more compact and sustainable urban development, to enable people to live nearer to where jobs and services are located, which requires at least half of new homes within Ireland's cities to be provided within the current built-up area of each, i.e. on sites within the existing urban 'envelope'.

Since the publication of the Guidelines in 2015, the Guidelines were subsequently amended in 2018 and 2020, particularly with regard to design quality safeguards such as internal space standards for 1, 2, or 3 bedroom apartments, floor to ceiling height, internal storage and amenity space and shared accommodation/co-living. A key update as a result of these amendments is the ability to reduce car parking standards. A further update was made in December 2022 which included significant changes in respect of Build to Rent (BTR) developments. Whilst not removing it completely, BTR is now no longer considered to be a distinct development type and all design standards must be in accordance with Appendix 1 of the Guidelines, as per all standard apartment development. The most recent amendment of these Guidelines, published in July 2023, included reference in relation to certain Transitional Arrangements for Build-to-Rent developments.

In order to give effect to their objectives, the Guidelines set out specific planning policy requirements (SPPRs), to which planning authorities must have regard; notwithstanding objectives and requirements of development plans, local area plans and Strategic Development Zone (SDZ) planning schemes. The Guidelines set out requirements in relation to various apartment design parameters, including locational considerations, unit mix, internal dimensions, dual aspect ratios, amenity spaces, community facilities and parking, among others.

The Guidelines identify intermediate urban locations, generally suitable for smaller-scale, higher density development that may wholly comprise apartments, or alternatively, medium-high density residential development of any scale that includes apartments to some extent, including:

1. Sites within or close to, i.e. within reasonable walking distance (i.e. up to 10 minutes or 800 – 1,000 m), of principal town or suburban centres or employment locations, that may include hospitals and third level institutions;

2. Sites within walking distance (i.e. between 10 – 15 minutes or 1,000 – 1,500 m) of high capacity urban public transport stops (such as DART, commuter rail or Luas) or within reasonable walking distance (i.e. between 5 – 10 minutes or up to 1,000 m) of high frequency (i.e. min. 10 minute peak hour frequency) urban bus services or where such services can be provided;

3. Sites within easy walking distance (i.e. up to 5 minutes or 400 – 500 m) of reasonably frequent (min. 15 minute peak hour frequency) urban bus services.

It is noted that "*The range of locations is not exhaustive and will require local assessment that further considers these and other relevant planning factors*". The site of the proposed development corresponds with the second location above, being situated within 1500m of Donabate train station (which is served by DART services).

The Planning Report and Statement of Consistency for the proposed development, prepared by BSM and submitted under separate cover as part of the planning application, details the consistency of the proposed development with the SPPRs of the Guidelines.

3.4.3 Urban Development and Building Heights – Guidelines for Planning Authorities (2018)

The Urban Building Height Guidelines were published in December 2018 by the Minster for Housing, Planning & Local Government. They have been published to support the objectives of the NPF, by securing a more compact and sustainable manner of development in urban areas.

The Ministers forward to the Guidelines sets out the Government policy on urban building heights, characterising the traditional settlement pattern of *"constantly expanding low-rise suburban residential areas resulting in ever longer commutes, more and more congestion, empty suburbs by day and report to empty city and town cores by night"* as *"completely unsustainable"*. The Guidelines support a departure from this trend, stating that *"our cities and towns must grow upwards, not just outwards"*

The Guidelines reference NPO 13 (from the NPF) which states:

'In urban areas, planning and related standards, including in particular building height and car parking will be based on performance criteria that seek to achieve well-designed high-quality outcomes in order to ochieve targeted growth. These standards will be subject to a range of tolerance that enables alternative solutions to be proposed to achieve stated outcomes, provided public safety is not compromised and the environment is suitably protected'.

It recognises that in meeting the challenge set out above new approaches to urban planning and development are required and that securing an effective mix of uses within urban centres is critical. To bring about this increased density and increased residential development in urban centres the Guidelines state that 'significant increases in the building heights and overall density of development is not only facilitated but actively sought out and brought forward by our planning processes and particularly so at local authority and An Bord Pleanála levels'.

As identified in the Urban Development and Building Height Guidelines, *"newer housing developments outside city and town centres and inner suburbs, i.e. the suburban edges of towns and cities, typically now include town-houses (2-3 storeys), duplexes (3-4 storeys) and apartments (4 storeys upwards). Such developments deliver medium densities, in the range of 35-50 dwellings per hectare net. Such developments also address the need for more 1 and 2 bedroom units in line with wider demographic and household formation trends, while at the same time providing for the larger 3, 4 or more bedroom homes across a variety of building typology and tenure options, enabling households to meet changing accommodation requirements over longer periods of time without necessitating relocation'.* The

Guidelines identify that development proposals for more mixed heights can provide for a more attractive streetscape and should move away from 2-storey dominated approaches.

SPPR 4 in this regard states:

> *It is a specific planning policy requirement that in planning the future development of greenfield or edge of city/town locations for housing purposes, planning authorities must secure:*
>
> *1. the minimum densities for such locations set out in the Guidelines issued by the Minister under Section 28 of the Planning and Development Act 2000 (as amended), titled "Sustainable Residential Development in Urban Areas (2007)" or any amending or replacement Guidelines;*
>
> *2. A greater mix of building heights and typologies in planning for the future development of suburban locations; and*
>
> *3. Avoid mono-type building typologies (e.g. two storey or own-door houses only), particularly, but not exclusively so in any one development of 100 units or more.*

The scheme's density reflects the site's size and proximity to the Donabate Train Station. The gross site area is c. 13.74ha with a net site area of c. 8.14ha resulting in an overall net density of c. 44.7uph. This proposed density both, including permitted Ballymastone Phase 1 (43.6 uph) and the overall proposed master plan density, reflects National Guidelines for increased density in proximity to public transport, and in line with the Sustainable Residential Development and Compact Settlement Guidelines (2024), set out above.

The Planning Report and Statement of Consistency for the proposed development, prepared by BSM and submitted under separate cover as part of the planning application, details the consistency of the proposed development with these Guidelines.

3.4.4 Design Manual for Urban Roads and Streets (DMURS)

The Design Manual for Urban Roads and Streets (DMURS), was adopted by the Department of Transport and the Department of Environment in 2013 and was updated in 2019. In June 2022, National Guidelines and Standards (NGS) Circular 1 of 2022 issued updates in relation to Advice Note 2 on Materials and Specifications. DMURS sets out design guidance and standards for new / reconfigured urban roads and streets in Ireland. It also outlines practical design measures to encourage more sustainable travel patterns in urban areas.

The DMURS Design Statement, prepared by DBFL and submitted under separate cover as part of the planning application, provides further detail in respect of the compliance of the proposed project with DMURS.

3.4.5 Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities

The Natura 2000 network is a pan-European Union network which provides for the protection of sites that are of particular importance for rare, endangered or vulnerable habitats and species. The Natura 2000 network in Ireland is comprised of Special Areas of Conservation (SAC) and Special Protection Areas (SPA). SAC are selected for the conservation and protection of habitats listed on Annex I and species (other than birds) listed on Annex II of Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora ('the Habitats Directive'), and their habitats. SPA are sites that have

been selected and notified for the conservation and protection of bird species listed on Annex I of Directive 2009/147/EC on the conservation of wild birds ('the Birds Directive') and regularly occurring migratory species, and their habitats, particularly wetlands.

Appropriate Assessment (AA) examines the direct and indirect impacts that a plan or project might have, on its own or in combination with other plans and projects, on one or more Natura 2000 sites in view of their conservation objectives. The obligation to undertake AA derives from Articles 6(3) and 6(4) of the Habitats Directive. The requirements of the Habitats Directive in relation to AA are similar in many respects to those associated with EIA. However, the focus of AA is targeted specifically on Natura 2000 sites and their conservation objectives. Additionally, Articles 6(3) and 6(4) place strict legal obligations on Member States, with the outcome of AA fundamentally affecting the decision of whether or not to grant development consent.

The Ministerial Guidelines in relation to AA of plans and projects were published by the Minister for Environment, Heritage and Local Government in December 2009, and subsequently revised in February 2010. Their purpose is to assist and guide local and planning authorities in the application of Articles 6(3) and 6(4) of the Habitats Directive insofar as it relates to their roles, functions and responsibilities in the undertaking of AA of plans and projects.

A Natura Impact Statement has been prepared by BSM in respect of the proposed development, in accordance with the requirements of the Habitats Directive and the Birds Directive, the European Union (Birds and Natural Habitats) Regulations 2011 (as amended) and the PDA 2000.

Please refer to Section 2.6.1 and the Natura Impact Statement, submitted under separate cover as part of the planning application, for full details.

3.4.6 Sustainable Residential Development and Compact Settlement Guidelines for Planning Authorities (2024)

These new Guidelines replace the *Sustainable Residential Development in Urban Areas Guidelines for Planning Authorities* (2009) which in turn replaced the replaced the *Residential Density Guidelines* in 1999. The Guidelines set out policy and guidance in relation to the planning and development of urban and rural settlements, with a focus on sustainable residential development and the creation of compact settlements.

Since the publication of the Residential Density Guidelines 1999 and subsequent 2009 Guidelines, planning authorities have been recommended to promote increased residential densities at appropriate locations. The Guidelines noted that '*given the NPF priorities for compact growth [...] , the Government considers that it is necessary to expand on the number of density bands contained in the 2009 Guidelines in order to ensure that densities are efficient while, at the same time, tailored to settlement context*.'

Within these Guidelines, area and density ranges are set out as applicable to maximise the return on public transport investment. The Guidelines further identify the importance of delivering the densities based on site accessibility. A total density of c.44.7 units per hectare (uph) is provided across the site in accordance with the Guidelines and is further discussed below in Section 6.4.

The Guidelines reinforce that the planning authority '*is required to have regard to the polices and objective of the Guidelines and to apply the specific planning policy requirements (SPPRs)*'. Alignment with the following 4 no. SPPRs in relation to separation distances (SPPR 1), minimum private open space

standards for houses (SPPR 2), car parking (SPPR 3) and cycle parking and storage (SPPR 4) is discussed in Section 6 of this Report.

For further details on site accessibility with reference to these Guidelines, please refer to the Traffic and Transportation Assessment (standalone document) prepared by DBFL Consulting Engineers.

Please refer to the Planning Report and Statement of Consistency for the proposed development, prepared by BSM and submitted under separate cover as part of the planning application for further details.

3.4.7 The Planning System and Flood Risk Management – Guidelines for Planning Authorities (2009)

The *Planning System and Flood Risk Management – Guidelines for Planning Authorities* was published by the Office of Public Works (OPW) and Department of Environment, Heritage and Local Government in 2009. The Guidelines introduce comprehensive mechanisms for the incorporation of flood risk identification, assessment and management into the planning process. They aim to, among other things; avoid inappropriate development in areas at risk of flooding, and avoid new developments increasing flood risk elsewhere. They mandate the preparation of Site Specific Flood Risk Assessments (SSFRA) for development applications which relate to areas at risk of flooding, and stipulate the content and level of detail to be presented therein.

It is noted that, in accordance with the findings of the Strategic Flood Risk Assessment carried out in respect of the Fingal Development Plan 2023 – 2029, it is an objective of the Development Plan (Objective IUO17- Strategic Flood Risk Assessment, p. 421) to:

> *"Implement and comply fully with the recommendations of the Strategic Flood Risk Assessment prepared as part of the Fingal Development Plan 2023–2029."*

A SSFRA was undertaken in respect of the proposed development by DBFL (2024), in accordance with the OPW Guidelines. An SSFRA report has been produced, the objective of which is to inform the planning authority in relation to flood risk associated with the proposed development. This section presents a summary of the key findings of that report.

The general topography of the site is flat with a high point in the middle of the site adjacent to the DDR with fall from north to south. A network of hedgerows and drainage ditches are located throughout the site.

Under the OPW Guidelines, residential development is classed as 'highly vulnerable' in terms of flood risk, and should be located in Flood Zone C, where the probability of fluvial flooding is low. Where it is proposed to locate a highly vulnerable development in Flood Zones A or B, a justification test is required. A desk study of available information found no evidence of flood risk at the proposed development site. There are no recorded historic flood events at the site, although previous flood events have been recorded within 2.5 km of the site. The Strategic Flood Risk Assessment (SFRA) completed in respect of the Fingal Development Plan 2023-2029 did not identify any flooding within the site. The Donabate Local Area Plan 2016 (as extended) identified the site of the proposed development as being in Flood Zone C, where there is a low probability of flooding.

The Stage 1 Flood Risk Identification identified flood risks as follows – a low risk of fluvial flood risk from the existing ditch and pluvial flood risk following development.

The Stage 2 Initial Flood Risk Assessment Stage assessed the aforementioned flood risks. The Preliminary Flood Risk Assessment (PFRA) flood extents map identified no risk of fluvial flooding on the subject site up to the 1% AEP (Annual Exceedance Probability) event. The Donabate Local Area Plan, 2016 - Strategic Flood Risk Assessment indicate the subject site is in Flood Zone C (Low risk). The Source-Pathway-Receptor model identified that there could be potential for pluvial flood risk within the LAP lands related to future drainage networks to serve the proposed development. These have potential to cause local flooding unless they are designed in accordance with the regulations e.g., GDSDS and to take account of flood exceedance e.g., for storms return periods over 1% AEP. The Source-Pathway-Receptor model also identified that the proper operation and maintenance of the drainage system is necessary to reduce the risk of human or mechanical error causing pluvial flood risk from blockages etc.

The Stage 3 Detailed Flood Risk Assessment considered pluvial flood risk in relation to proposed surface water management measures, flood exceedance, impact of proposals on flood risk to adjacent areas, effects of climate change, sustainable urban structure, residual risks and effectiveness of any flood mitigation measures.

The proposed storm-water drainage design for the development is generally a standard gully and pipe-work collection system combined with SUDs features such as swales and tree pits with an attenuated outfall and associated attenuation storage. The new drainage system reduces discharge flows to equivalent green-field run-off rates in accordance with the GDSDS and attenuation storage is provided in accordance with the GDSDS. The SUDS proposals for the development include- underground geo-cellular attenuation system, above ground attenuation basins, permeable paving for on-street parking under the control of a management company, green roofs on all apartment blocks, hydrobrake and associated storage to limit outflows to greenfield run-off rates, rain gardens and swales.

Proposed road levels all fall towards the surface water drainage outfalls. This will ensure that the proposed residential units are protected from flooding when the drainage network may be exceeded. Lowest building floor levels are set a minimum of 0.5m above the top water level in the corresponding attenuation facility in accordance with recommended minimum freeboards. Adjacent areas will not be impacted by the development for up to the 1% AEP flood event, however if larger storms >1% AEP exceed the capacity of the development's drainage system then overland flood routes may be directed towards the surface water drainage outfalls. Pluvial flood risk - drainage system and attenuation storage design allow for a 20% increase in rainfall intensities, as recommended by the GDSDS. The proposed development and its essential infrastructure such as roads, is in flood zone C. Additionally, based on relevant fluvial flood information from PFRA and the Donabate LAP, it is anticipated that for a 0.1% AEP flood event, the development can be safely accessed and exited through the proposed vehicular entrances from the DDR and via the Links access road.

Remaining residual flood risks, following the detailed assessment include the following;

- Pluvial flooding from the private drainage system related to a pipe blockage or from flood exceedance.
- Pluvial flooding from the development's drainage system for storms in excess of the design capacity.

Proposed mitigation measures to address residual flood risks are summarized below;

- M1. Proposed drainage system to be maintained on a regular basis to reduce the risk of a blockage.
- M2. In the event of storms exceeding the 100-year design capacity of the drainage system, then possible flooding is directed towards green areas or the drainage outfalls

It is considered that the flood risk mitigation measures if implemented are sufficient to provide a suitable level of protection to the proposed development. A regularly maintained drainage system will ensure that it remains effective and in good working order should a large pluvial storm occur. Should extreme pluvial flooding occur that is in excess of the development's drainage capacity i.e., probability less than 1% AEP, then proposed flood routing mitigation measures are recommended.

For further information, refer to standalone SSFRA report (DBFL, 2024), submitted under separate cover. Refer also to Chapter 10 (Hydrology).

3.4.8 Guidelines for Planning Authorities on Childcare Facilities (2001)

The *Childcore Facilities – Guidelines for Plonning Authorities* were published by the Government in 2001. They provide a framework to guide both local authorities in preparing development plans and assessing applications for planning permission, and developers and childcare providers in formulating development proposals. They state the Government policy on childcare provision, which is "*to increose the number of childcare places and facilities ovailoble and to improve the quolity of childcare services for the community*" (p. 3).

The Guidelines indicate that Development Plans should facilitate the provision of childcare facilities in appropriate locations. These include larger new housing estates, where planning authorities should require the provision of a minimum of one childcare facility (with 20 places) for every 75 dwellings.

However, the *Sustainable Urbon Housing: Design Standards for New Aportments* (Department of Housing, Local Government and Heritage, 2023) state that:

> *"Notwithstanding the Planning Guidelines for Childcore Facilities (2001), in respect of which o review is to be progressed, and which recommend the provision of one child-core facility (equivalent to a minimum of 20 child places) for every 75 dwelling units, the threshold for provision of any such facilities in apartment schemes should be established having regard to the scale and unit mix of the proposed development and the existing geographical distribution of childcare facilities and the emerging demographic profile of the area. One-bedroom or studio type units should not generally be considered to contribute to a requirement for any childcare provision and subject to location, this may also apply in part or whole, to units with two or more bedrooms."* (p.20 & 21)

A creche of c. 185 childcare spaces was permitted in Phase 1 (FCC Reg. Ref LRD0008/S3 & ABP Reg. Ref 315288) of this scheme and it is proposed under the Masterplan that an additional childcare facility will be provided as part of Phase 3, which will also service the proposed development at Phase 2.

A Community & Social Infrastructure Report and Schools Demand & Childcare Facilities Assessment Report has been prepared by BSM (2024) and is submitted as part of the planning application under separate cover. It has assessed existing and permitted social and community infrastructure in the area in light of the proposed development.

3.4.9 Housing for All – A New Housing Plan for Ireland (2021)

Housing for All, published in September 2021 by the Department of Housing, Local Government and Heritage, is the Government's new housing plan which aims to improve the housing delivery system for people with all different housing needs in Ireland through embedding environmental, economic and social sustainability in our housing system to 2030. It provides an overview of the existing housing scenario as follows:

- There are not enough houses to buy or rent in the private sector.
- There are not enough houses being built by the State for those who need social housing.
- Housing has become increasingly unaffordable for the 'squeezed middle' who would once have expected to be able to purchase their own home.
- Too many people are experiencing homelessness or are unable to access appropriate housing.
- The cost of building housing is too high.
- Too much vacant housing stock remains unused.
- Our housing stock needs to be more environmentally friendly.

The overarching aim of the Housing for All plan is that "*Everyone in the State should have access to a home to purchase or rent at an affordable price, built to a high standard and in the right place, offering a high quality of life*" (p. 17). With a view to achieving this aim, the plan sets out four overarching housing policy objectives as follows:

1. Supporting homeownership and increasing affordability;
2. Eradicating homelessness, increasing social housing delivery and supporting social inclusion;
3. Increasing new housing supply; and
4. Addressing vacancy and efficient use of existing stock.

A suite of actions are set out under the four above-listed headings. The Housing for All plan allocates a housing budget of in excess of €20 bn through the Exchequer, the Land Development Agency (LDA) and the Housing Finance Agency over the next five years. According to the plan, this constitutes the largest housing budget in the history of the State.

The plan provides for the following key targets / actions, among others:

- Increased supply of new housing overall, up to an average of at least 33,000 per year to 2030
- An average of 6,000 affordable homes to be made available every year for purchase or for rent
- Provision of more than 10,000 social homes each year, with an average 9,500 new-build Social Housing Homes to 2026
- Increased contribution by developers under Part V, up from 10% to 20%, to include affordable housing and cost rental housing

The estimates of housing demand which form the basis of the Housing for All plan's targets have been developed by the Department of Housing, Local Government and Heritage (DHLGH)'s Housing Need and Demand Assessment (HNDA) model, which has been adapted from the Scottish HNDA. The HNDA tool has been used to project the future need for housing in Ireland by tenure type (**Table 3.1**).

Table 3.1 DHLGH HNDA annual housing demand projections to 2030

Tenure Type	Annual Need
New private ownership	11,800
New private rental	6,500
New affordable ownership	4,100
New social housing	10,300
Total	*32,700*

The plan seeks to ensure that new housing is delivered in an environmentally sustainable manner, with a greater proportion of residential development in the existing built-up footprint of towns and cities,

and all new homes being built to Nearly Zero Energy Building (NZEB) standards, as well as a policy of retrofitting existing housing stock.

The proposed development is consistent with the Government's New Housing for All plan, in that it will provide approx. 364 no. new, high-quality homes on appropriately zoned lands in accordance with Government housing policy, the units will be of a range of tenure and housing types, including social housing and affordable housing distributed throughout the proposed development.

The Planning Report and Statement of Consistency for the proposed development, prepared by BSM and submitted under separate cover as part of the planning application, details the consistency of the proposed development with these Guidelines.

3.4.10 Cycle Design Manual (2023)

The Cycle Design Manual has been prepared by the National Transport Authority (NTA) and overseen by the Department of Transport. The Cycle Design Manual replaces the previous National Cycle Manual, published by the NTA in 2011.

This manual draws on the experience of delivering cycling infrastructure across Ireland over the last decade, as well as learning from international best practice, and has been guided by the need to deliver safe cycle facilities for people of all ages and abilities. This manual provides guidance on the design of both on-road and off-road cycle facilities for both urban and rural locations. The manual details on the requirements for cycle-friendly infrastructure, key design principles, types of cycle vehicles, types of cycle links, choosing appropriate facilities and widths. The manual also discusses planning, design and implementation and maintenance of cycling and cycling infrastructure and cycle parking.

As detailed in the Traffic & Transportation Assessment, a segregated cycle track and footpath is provided on both sides of the Donabate Distributor Road (DDR) in the vicinity of the subject site, with street lighting provided on one side of the carriageway. Donabate currently has limited dedicated cycling facilities but has potential to become a cycling town. The Greater Dublin Area Cycle Network Plan currently proposes a number of cycle route networks within Donabate. These include an inter-urban route, an urban/town network and a greenway. The proposed development will provide cycle access along with vehicular access from The Links (western boundary of site), Donabate Distributor Road and Ballisk Residential Development. There are several additional pedestrian/cyclist access points located along the DDR offering connectivity to/from the pedestrian and cycle facilities along the DDR.

Along the western edge of the development, several pedestrian/cyclist connections are proposed to The Links which will be delivered as part of the Phase 1 development. These will provide links westwards to Donabate village and key services such as Donabate Train Station. Furthermore, they will provide east-west permeability for people travelling between the village (to the west) and the Recreational Hub (to the east).

A total of 1,457 no. cycle parking spaces are proposed as part of the Phase 2 subject Ballymastone Development proposals, comprising 1,353 no. 'long term' (residents) bicycle parking spaces and 104 no. 'short term' (visitor) cycle spaces. For further information in this regard, refer to the Traffic & Transportation Assessment and DMURS Design Statement prepared by DBFL Consulting Engineers (2024) and submitted under separate cover as part of the planning application.

3.4.11 National Sustainable Mobility Policy (2022)

The National Sustainable Mobility Policy was published in April 2022 by the Department of Transport and replaces Smarter Travel - A Sustainable Transport Future 2009 – 2020. This policy sets out a strategic framework to 2030 for active travel and public transport to support Ireland's overall requirement to achieve a 51% reduction in carbon emissions.

The Policy aims to improve the delivery of sustainable mobility by –

- *Implementing the accompanying action plan to 2025 and a reviewed and updated action plan for 2026 to 2030.*
- *Establishing a Leadership Group to oversee and drive implementation of the Policy and delivery of the action plan, and agree a programme of "pathfinder" projects at local level.*
- *Introducing a new annual National Household Travel Survey to measure progress against the Policy's targets.*
- *Convening a new National Sustainable Mobility Forum to provide a platform for collaborative engagement with national, regional and local stakeholders.*
- *Increasing public engagement around the benefits of sustainable mobility and raising awareness of the availability of alternative options to the private car.*
- *Establishing a new National Transport Authority Advisory Council to engage with the NTA around the discharge of its functions.*
- *Developing a transport research network to support existing research programmes and draw on the sustainable mobility expertise available across academia and industry, both in Ireland and internationally.*

The Policy is guided by three key principles which are underpinned by 10 high-level goals:

Principle 1 : Safe and Green Mobility

1. *Improve mobility safety.*
2. *Decarbonise public transport.*
3. *Expand availability of sustainable mobility in metropolitan areas.*
4. *Expand availability of sustainable mobility in regional and rural areas.*
5. *Encourage people to choose sustainable mobility over the private car.*

Principle 2 : People Focused Mobility

6. *Take a whole of journey approach to mobility, promoting inclusive access for all.*
7. *Design infrastructure according to Universal Design Principles and the Hierarchy of Road Users model.*
8. *Promote sustainable mobility through research and citizen engagement.*

Principle 3 : Better Integrated Mobility

9. *Better integrate land use and transport planning at all levels.*
10. *Promote smart and integrated mobility through innovative technologies and development of appropriate regulation.*

The policy is accompanied by an Action Plan with a total 91 actions organised by goal to be completed by 2025.

- **National Sustainable Mobility Policy Action Plan 2022-2025**: The action plan to 2025 contains actions to improve and expand sustainable mobility options across the country by providing safe, green, accessible and efficient alternatives to car journeys. It also includes demand management and behavioural change measures to manage daily travel demand more efficiently and to reduce the journeys taken by private car.

Various aspects of the design of the proposed development (e.g. provision of secure bike stores for residents and external stands for visitors, electric vehicle charging points and dedicated pedestrian and cycle routes) will facilitate walking and cycling among residents and visitors. The design of the internal road and street layout is consistent with the DMURS and Cycle Design Manual.

The proposed development is situated in the rapidly growing suburban coastal town of Donabate, Co. Dublin. Relative to more centrally located urban residential development (e.g. in Dublin City centre), the proposed development may be expected to rely on a higher proportion of private car use, particularly for commutes to-and- from workplaces. However, it should be noted that the site is well serviced by accessible, high- capacity public transport infrastructure, in the form of the rail and bus services which connect the town of Donabate directly to Dublin City Centre and surrounding suburbs.

The subject Phase 2 development site is between 850m-1,500m from Donabate Railway Station. Donabate train station is served by the Dublin-Dundalk commuter and DART and Dublin commuter lines, which provide regular trains travelling northbound to Drogheda / Dundalk and southbound to Dublin Connolly.

Dublin Bus operate route numbers 33d and 33e and GoAhead operate route number 33b (daily) and 33t (Monday – Friday) that serve the subject site locale. The nearest bus interchange opportunities to the subject site are located on Portrane Road (situated approx. 350m north of the site) and on Main Street (situated approx. 550m west of the site). All four bus routes that serve the bus stops are between 4-7 minutes walking distance from the site.

For further information, refer to the Planning Report and Statement of Consistency, prepared by BSM and Traffic and Transportation Assessment, prepared by DBFL Consulting Engineers and submitted as part of the planning application under separate cover.

3.4.12 Climate Action Plan (2024)

The Climate Action Plan 2024 (CAP24) is the third annual update to Ireland's Climate Action Plan 2019. Climate Action Plan 2024 was approved on 20 December 2023 and builds upon last year's Plan by refining and updating the measures and actions required to deliver the carbon budgets and sectoral emissions ceilings. The Plan provides a roadmap for taking decisive action to halve Ireland's emissions by 2030 and reach net zero by no later than 2050, as committed to in the Climate Action and Low Carbon Development (Amendment) Act 2021.

A supplementary Climate Action Plan 2024 Annex of Actions was approved and published which sets out the measures and actions that will support the delivery of Ireland's climate action ambition. These actions are set across a range of chapters and disciplines.

The proposed development has been designed to assist in achieving actions and policies as set out in the Climate Action Plan 2024 (CAP24) and is set out in documents supporting this LRD application including the Chapter 12 Climate of this EIAR.

3.5 Regional Policy Context

3.5.1 Eastern and Midland Regional Spatial and Economic Strategy 2019-2031 (RSES)

There are three administrative Regions in Ireland: the Northern and Western Region, the Southern Region, and the Eastern and Midland Region and under national policy, Regional Assemblies are tasked with drafting Regional Spatial and Economic Strategies (RSESs). The primary statutory objective of the Strategy is to support implementation of Project Ireland 2040 and its accompanying documents- National Planning Framework and National Development Plan to provide a long-term strategic planning and economic framework for the Region to 2031. The proposed development is situated in the Eastern and Midland Region, which takes in Counties Longford, Westmeath, Offaly, Laois, Louth, Meath, Kildare, Wicklow and Dublin. The Region is the smallest in terms of land area but the largest in population size and is identified as the *"economic engine of the state"* because it contains the capital city (p. 14).

The current RSES for the Region was published in 2019. The RSES' vision statement for the Region is as follows:

> *"To create a sustainable and competitive Region that supports the health and wellbeing of our people and places, from urban to rural, with access to quality housing, travel and employment opportunities for all."* (p. 6)

The RSES is based on three key principles:

1. **Healthy Placemaking:** To promote people's quality of life through the creation of healthy and attractive places to live, work, visit and study in;
2. **Climate Action**: The need to enhance climate resilience and to accelerate a transition to a low carbon economy recognising the role of natural capital and ecosystem services in achieving this;
3. **Economic Opportunity**: To create the right conditions and opportunities for the region to realise sustained economic growth and employment that ensures good living standards for all.

Under the headings of these three principles, the RSES sets out 16 Regional Strategic Outcomes (RSOs), which are closely aligned with the NPF's NSOs and the United Nations' SDGs. With a view to realising the RSOs, the RSES sets out a suite of Regional Policy Objectives (RPOs) to guide the development of the Region.

Healthy Placemaking

- Sustainable Settlement Patterns;
- Compact Growth & Urban Regeneration;
- Rural Communities;
- Healthy Communities;
- Creative Places.

Climate Action

- Integrated Transport & Land Use;

- Sustainable Management of Water, Waste and other Environmental Resources;
- Build Climate Resilience;
- Support the Transition to Low Carbon and Clean Energy;
- Enhanced Green Infrastructure;
- Biodiversity & Natural Heritage.

Economic Opportunity

- A Strong Economy supported by Enterprise & Innovation;
- Improve Education, Skills & Social Inclusion;
- Global City Region;
- Enhanced Regional Connectivity;
- Collaboration Platform.

The RSES subdivides the Region into 'functional urban areas' (FUA) based on commuting patterns, as follows:

- The Dublin Metropolitan Area (DMA);
- The Core Region; and
- The Gateway Region.

The site of the proposed development is situated on the north-eastern margin of the DMA, which is defined as the continuous built-up city area and a number of highly urbanised surrounding settlements within a polycentric metropolitan area. The RSES contains a Metropolitan Area Strategic Plan (MASP) for the DMA, which is discussed in relation to the proposed development below.

The RSES contains a Growth Strategy for the Region, which supports *"the continued growth of Dublin as our national economic engine"* (p. 26) and is supported by a Settlement Strategy and Economic Strategy. A key challenge in terms of housing provision in the Region is identified as *"the continued growth rates of household formation coupled with a severe slowdown in the development of new housing stock during the economic recession, resulting in housing supply and affordability pressures in both sale and rental markets, particularly in Dublin and urban areas but affecting all of the Region"* (p. 17).

The RSES strategy of compact growth is reflected in RPO 3.2, which states that *"Local authorities, in their core strategies shall set out measures to achieve compact urban development targets of at least 50% of all new homes within or contiguous to the built up area of Dublin city and suburbs and a target of at least 30% for other urban areas"* (p. 39).

The Settlement Strategy of the RSES is based on a settlement typology comprised of Dublin City and suburbs, Regional Growth Centres (Drogheda, Athlone and Dundalk), Key Towns (including Bray, Maynooth and Swords); and Self-Sustaining Growth Towns, Self-Sustaining Towns, Towns and Villages and Rural areas (the latter of which are all to be defined under the scope of Local Authority Development Plans). The Fingal Development Plan 2023 – 2029 identifies Donabate as a 'Self-Sustaining Growth Town', which is defined in the RSES as a town "*with a moderate level of jobs and services – includes sub-caunty market towns and commuter towns with good transport links and capacity for continued commensurate growth to become more self-sustaining*" (p. 44). In relation to Self-Sustaining Growth Towns, it is noted that "*Towns in the Dublin Metropolitan Area and Core Regian tend to have experienced strang commuter facussed growth but some of these towns affer potential far increased residential densities at high quality public transport hubs and can*

accommodate average or above average growth to provide for natural increase, service and/or employment growth where appropriate, to be set out in the core strategies of county development plans." (p. 93).

The RSES states that the policy response in respect of Self-Sustaining Growth Towns and Self-Sustaining Towns shall be *"Consolidation coupled with targeted investment where required to improve local employment, services and sustainable transport options and to become more self-sustaining settlements*" (p. 47). This policy response is to be translated under the scope of the Core Strategies of the respective Development Plans. **Section 3.5.2**, below, outlines the policies and objectives of the Fingal Development Plan 2023 – 2029 insofar as they relate to the proposed development.

The RSES places an emphasis on the development of the Dublin – Belfast Economic Corridor, which constitutes the largest economic agglomeration on the island of Ireland:

> *"The Eastern Seaboard has seen the highest growth and highest internal migration of our population. The Corridor links the two largest cities and the large towns of Drogheda, Dundalk and Newry on the island by high capacity road and national rail links and plays a critical role in supporting economic growth and competitiveness."*

Donabate is situated on the Corridor, and benefits from accessibility to the Dublin – Belfast railway line. The RSES identifies growth enablers for the Corridor, which include improving "*accessibility and service by rail, road and communication between Dublin and Belfast*" (p. 36). The RSES aims to "*Support the effective planning and development of large centres of population and employment along the main economic corridor, in particular Drogheda and Dundalk*" (RPO 6.3, p. 135).

In relation to travel patterns in the Region, the RSES notes that:

> *"The commuter catchment of the Dublin Metropolitan Area now extends into parts of the Midlonds, Louth and south into Wexford. While Dublin has higher rates of sustainable transport, private vehicles remain the primary mode of travel to work or education across the whole of the region. Long distance car-based commuting is a key challenge that is leading to congestion of transport networks and negative impacts on people's quality of life and on the environment."*

The RSES sets out guiding principles for the integration of land use and transport, including the following (p. 187):

- *"For urban-generated development, the development of lands within or contiguous with existing urban areas should be prioritised over development in less accessible locotions. Residential development should be carried out sequentially, whereby lands which are, or will be, most accessible by walking, cycling and public transport – including infill and brownfield sites – are prioritised."*
- *"Planning at the local level should prioritise walking, cycling and public transport by maximising the number of people living within walking and cycling distance of their neighbourhood or district centres, public transport services, and other services at the local level such as schools."*
- *"Support the '10 minute' settlement concept, whereby a range of community facilities and services are accessible in short walking and cycling timeframes from homes or accessible by high quality public tronsport to these services in larger settlements."*

The RSES identifies public transport projects for delivery in the Region, including electrification of the DART lines to Drogheda; a feasibility study of high-speed rail between Belfast, Dublin and Cork; construction of the Metrolink from Swords to Sandyford; and BusConnects.

The RSES identifies strategic natural, cultural and green infrastructure assets in the Region, including Donabate Beach and Donabate itself, as a maritime town. The RSES aims to protect and enhance green infrastructure assets in the Region.

The role of the built environment in decarbonisation and climate adaptation is also highlighted in the RSES, which aims to *"Promote sustainable settlement patterns to achieve compact urban development and low energy buildings"*. The Metropolitan Area Strategic Plan (MASP) provides a 12 to 20-year strategic planning and investment framework for the Dublin Metropolitan Area (DMA) that is aligned with the RSOs of the RSES. The site of the proposed development at Donabate is situated on the Donabate-Portrane peninsula which forms the north-easternmost section of the DMA. The vision for the DMA set out in the MASP is as follows:

> *"Over the years to 2031 and with a 2040 horizon, the Dublin metropolitan area will build on our strengths to become a smart, climate resilient and global city region, expanding access to social and economic opportunities and improved housing choice, travel options and quality of life for people who live, work, study in or visit the metropolitan area." (p. 100)*

This high-level vision is underpinned by a spatial framework that supports the overall Settlement Strategy of the RSES, and sets out an integrated land use and transportation strategy for the sequential development of the metropolitan area, focussed on:

- Consolidation of Dublin City and suburbs;
- Key Towns of Swords, Maynooth and Bray; and
- Planned development of strategic development areas in Donabate, Dunboyne, Leixlip and Greystones.

The MASP sets out guiding principles for the sustainable development of the DMA, which include focussing growth along existing and proposed high-quality public transport corridors, including DART, and nodes on the expanding public transport network. In order to achieve the compact development targets of the RSES (i.e. at least 50% of all new homes within or contiguous to the existing built up area in Dublin and 30% in other settlements), the MASP identifies strategic residential and employment development corridors, as follows:

- City Centre within the M50 (Multi-modal);
- North-South Corridor (DART Expansion);
- North-West Corridor (Maynooth / Dunboyne Line and DART Expansion);
- South-West Corridor (Kildare Line, DART Expansion and Luas Red Line); and
- Metrolink – Luas Corridor (Metrolink, Luas Green Line Upgrades).

The location of the proposed development at Donabate is situated on the North-South Corridor, where the MASP targets population growth of 51,000. In relation to the corridor, the MASP states that "*The DART Expansion Programme, to be delivered by 2027 will increase capacity on the northern commuter line and support ongoing large-scale urban expansion of the North Fringe lands and Donabate*" (p. 102). Specifically in relation to Donabate, the MASP states that there is "*significant residential capacity in this strategically located rapidly growing coastal village*" (p. 104). Phasing / enabling infrastructure is identified for Donabate, including DART expansion, the Donabate Distributor Road and railway bridge, social infrastructure, and local area water network and storage upgrades.

The proposed development will contribute to the achievement of the population growth targets in the RSES, by providing a high-quality new residential development on lands zoned for this purpose by the Local Authority (Fingal County Council).

The proposed project is consistent with the RSES and the Dublin MASP in that it will deliver high-quality residential development in an area explicitly earmarked for this purpose. By virtue of their proximity to a high-capacity public transport corridor, the landbank at Donabate (including the site of the proposed project), have been identified as being of strategic importance for meeting the housing needs of the regional population in the short-term and beyond to 2031. For further information, please also refer to the Planning Report and Statement of Consistency, prepared by BSM and submitted as part of the planning application under separate cover.

3.5.2 Fingal Development Plan 2023- 2029

The Fingal Development Plan 2023-2029 sets out an overall strategy for the proper planning and sustainable development of the functional areas of Fingal over a 6-year period.

The Development Plan sets out a Strategic Vision for Fingal having regard to the National Strategic Outcomes of the National Planning Framework, the Regional Strategic Outcomes of the Regional Spatial and Economic Strategy, the UN Sustainable Development Goals and the Fingal Corporate Plan 2019–2024. It states that- "*... This Plan will ensure the continued growth of the County in a sustainable way and ensure the County continues to develop as a series of well-serviced, well-connected towns, villages and communities and a low carbon economy....*"

The Plan is underpinned by five key cross cutting themes; climate action, healthy place-making and sustainable development, social inclusion, high-quality design and resilience; and a number of interlinked strategic objectives. Section 1.4 of the Development Plans sets out the 13 no. Strategic Objectives delivering the sustainable approach of the Development Plan. The following strategic objectives are of direct relevance to the future development of the subject lands:

- *Continue the development of a network of well-serviced, well-connected, sustainable neighbourhoods which have a range of facilities, a choice of tenure and universally designed adaptable house types, promote social inclusion and integration of all minority communities.*
- *Ensure new residential development is of the highest quality, endorsing the principles of healthy placemaking, enabling life cycle choices and physical, community, recreation and amenity infrastructure are provided in tandem, to create sustainable, healthy, inclusive and resilient communities.*
- *Ensure the highest quality of public realm and urban design principles are applied to all new developments, ensuring developments contribute to a positive sense of place and local distinctiveness of an area and facilitate the universal design approach into all developments.*

The proposed development supports the achievement of these objectives through the delivery of a new residential community which is of a high-quality design, which is well-connected, provides high quality public and private open space and links to existing community uses, which will contribute to a sustainable community, and which fits within an overall framework plan approach for Glenveagh Living Ltd lands, prepared by Brady Shipman Martin and submitted as part of this LRD Planning Application.

Chapter 2 sets out the Core Strategy for the Plan and the key objective of the Core Strategy is to ensure that the quantum and location of development is consistent with National and Regional policy. The Plan

states- *'It is Fingal's priority, and has been for a significant period of time and over successive Development Plans, to form effective and innovative approaches to mobilise development to create housing and quality urban neighbourhoods.' (p.50).* This is further reflected by Policy CSP1- Core Strategy- '*Promote and facilitate housing and population growth in accordance with the overarching Core Strategy to meet the needs of current and future citizens of Fingal.*' The Core Strategy sets out a spatial settlement strategy for the County which is consistent with the Housing Strategy, the National Planning Framework (NPF), the Regional Spatial and Economic Strategy (RSES), Specific Planning Policy Requirements (SPPRs) and Transport Strategy for Greater Dublin Area.

The subject lands are located within the settlement boundary of Donabate. Donabate has been identified as a '*Self Sustaining Growth Town*' within Fingal and functions as part of the Dublin Metropolitan Area. As highlighted within the Development Plan, such towns will play a role in offering '*potential for increased residential densities at high quality public transport hubs and can accommodate average or above average growth to provide for natural increase, service and/or employment growth where appropriate*' (p. 83). In this regard, Policy CSP19- Compact, Sequential and Sustainable Urban Growth states- '*Promote compact, sequential and sustainable urban growth to realise targets of at least 50% of all new homes to be built, within or contiguous to the existing built-up area of Dublin city and suburbs and a target of at least 30% for other metropolitan settlements, with a focus on healthy placemaking and improved quality of life.*'

Table 2.14 sets out the Core Strategy figures stating that the estimated population growth of Donabate during the Development Plan period to 2029 is 3,039 people which equates to a projected housing demand of 1,643 units.

It is highlighted within the plan that undeveloped residential zoned land remains to the east and south of the town of Donabate (i.e. the location of the subject lands). An expansion to the DART service, which is to be delivered by 2027, will increase capacity on the northern commuter line, will support ongoing large-scale urban expansion of Donabate and will further support and strengthen connectivity within and around the surrounding area. In regard, Objective SPQHO10 – New Residential Development states – 'Focus *new residential development on appropriately zoned lands within the County, within appropriate locations proximate to existing settlement centres where infrastructural capacity is readily available, and along existing or proposed high quality public transport corridors and active travel infrastructure in a phased manner, alongside the delivery of appropriate physical and social infrastructure*'.

The Development Plan sets out a number of specific policies and objectives for Donabate town, including the following:

- Policy CSP31 – MASP Strategic Development Areas – '*Deliver strategic development areas identified in the MASP, located at key nodes along high-quality public transport corridors in tandem with the delivery of infrastructure and enabling services to ensure a steady supply of serviced sites and to support accelerated delivery of housing.*'
- Policy CSP32 – Donabate LAP states '*Facilitate development on zoned residential lands within the settlement boundary of Donabate as prescribed in the Donabate LAP. Support the provision of the necessary social and community infrastructure including recreational facilities and strengthen and enhance the public realm, providing improved levels of connectivity and permeability.*'

- Policy CSP33 – Consolidate Development and Protect Unique Identity of Donabate states – '*Consolidate the development and protect the unique identity of Donabate*'.
- Objective CSO48 – Pedestrian and Cycleways in Donabate – '*Provide for a comprehensive network of pedestrian and cycle ways linking residential areas to one another, to the town centre, schools, the recreational campus at Ballymastone and the railway station.*'
- Objective CSO47- Donabate Peninsula – '*Develop a continuous network of signed pathways and cycleways as appropriate, around Donabate Peninsula linking Portrane and Donabate to Malahide and Rush via the Rogerstown and Malahide Estuaries whilst ensuring the protection of designated sites and avoiding any routing along the northern boundary of Malahide Inner Estuary by virtue of its ecological sensitivity.*'

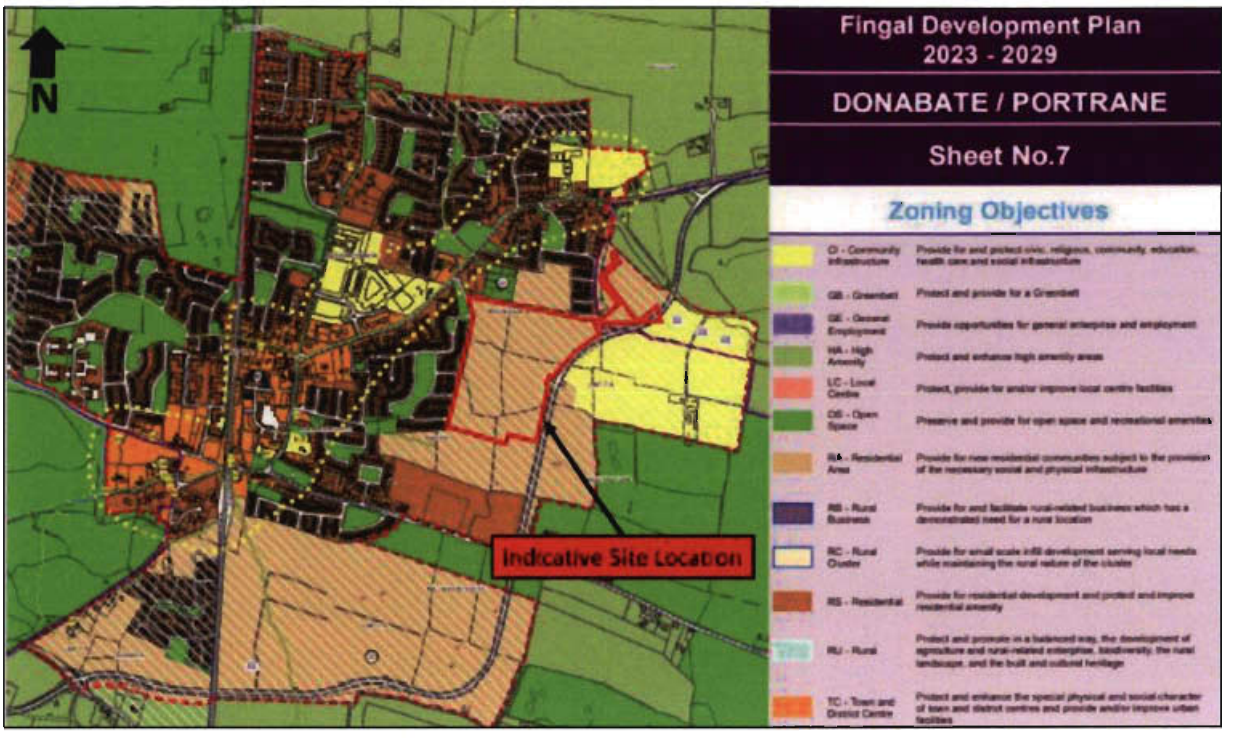
The proposed development site is primarily zoned (i) RA 'Residential Area', for which the corresponding objective is to *"Provide for new residential communities subject to the provision of the necessary social and physical infrastructure".* Within the north-eastern boundary of the site a small strip of land is zoned (ii) CI – 'Community Infrastructure', for which the corresponding objective is to *"Preserve and provide for open space and recreational amenities"*.

The surrounding land to the west is zoned as RS 'Residential' and 'CI' Community Infrastructure, to the east and north is zoned as RS 'Residential' and to the south as RA 'Residential Area'. The GDA cycle network plan also runs to the immediate east of the site along the Dublin Distributor Road (DDR) and also along the Portrane Road to the north-west. The site is also located within 'Coastal Character Type' landscape which is categorised as having an exceptional landscape value. Furthermore, a small portion of land within the northeastern boundary of the subject site is partially located within the boundary of Portrane – St. Ita's Hospital Complex Architectural Conservation Area. To the north of the site, there is a local objective (22) located within Donabate Cemetery which aims to - *"Provide for a proposed Cemetery Improvement and Extension Scheme (with new designated car parking area) on FCC owned lands to the east/south of the existing Donabate Cemetery, to be designed and brought forward for tender purposes for delivery."* Refer to **Figure 3.2**.

The site of the proposed development is also subject to a Local Area Plan objective (LAP 7.A). Refer to **Figure 3.2**. The Donabate Local Area Plan is discussed in relation to the proposed development in **Section 3.6.1**, below.

Through the current zoning objective, the subject site represents a sustainable location for new housing development which is serviced and well connected to a wide range of facilities, amenities and transport hubs in Donabate.

Figure 3.2 Land use zoning at the location of the proposed development (*Fingal Development Plan 2023 – 2029)*



3.5.3 Greater Dublin Area Transport Strategy 2022-2042

The Greater Dublin Area Transport Strategy 2022-2042 prepared by the National Transport Authority (NTA) sets out the framework for investment in transport infrastructure and services over next two decades to 2042.

The overall aim of the Transport Strategy states- *"To provide a sustainable, accessible and effective transport system for the Greater Dublin Area which meets the region's climate change requirements, serves the needs of urban and rural communities, and supports the regional economy."* A key focus of the strategy is to enable increased use of other transport modes to meet environmental, economic and social objectives related to emissions, congestion and car dependency.

The strategy also provides the following strategy objectives:

- An enhanced natural and built environment;
- Connected communities and better quality of life;
- A strong sustainable economy;
- An inclusive transport system.

The Transport Strategy also includes the following measures for planning for sustainable modes:

- Consolidation of development, to ensure more people live close to services and public transport, and to minimise urban sprawl and long distance commuting;
- Transit-oriented development to guide the growth of our cities and towns on the basis of accessibility;
- Mixed use development, to minimise travel distances between homes and local services, and to ensure vibrancy of urban areas;

- Filtered Permeability so that people can move about more easily by walking and cycling than by car;
- Development of schools to support sustainable transport use for the majority of trips, through appropriate location selection, site design and transport network development; and
- The prioritisation of walking, cycling and public transport in urban street networks, in tandem with high quality public urban spaces, through the Area Based Transport Assessment (ABTA) process.

Major projects provided for in the strategy for 2022-2030 included:

- BusConnects New Dublin Area Bus Network
- BusConnects Core Bus Corridors
- Next Generation Ticketing
- DART+
- Luas Green Line Upgrade
- City Centre Management Measures
- Commence Park & Ride
- GDA Cycle Network
- Climate Action Management Measures

As per Section 8.4, the Strategy states that- *"Facilitating the delivery of large numbers of new housing units of high quality and diversity, in locations which maximise the number and the range of households who can travel by public transport, walking and cycling, is a critical aspect of integrated transport and land use planning in the GDA."*

The proposed development is broadly consistent with the principles of the Transport Strategy, in that it will deliver residential development at a location proximate to the town centre at Donabate and high-capacity public transport, in the form of the DART line and Dublin Bus Service. The proposed development is fully permeable for pedestrians and cyclists, and contains cycle infrastructure that will promote and facilitate cycling as an alternative to private car use. The pedestrian/ cyclist access arrangements will provide links westwards to Donabate village and key services such as Donabate Train Station. Furthermore, they will provide east-west permeability for people travelling between the village (to the west) and the Recreational Hub (to the east).

Given its peripheral location in the context of the Dublin Metropolitan Area (DMA), the proposed development is likely to entail a relatively high modal share of private car use for commuting compared with more central urban locations in the DMA. This fact notwithstanding, the proposed development is strategically located in terms of its proximity to the DART line (which provides regular services to and from Dublin City) and the accessibility of a range of social infrastructure locally in Donabate town centre.

Refer to the Traffic and Transportation Assessment, prepared by DBFL Consulting Engineers (2024) and submitted as part of the planning application under separate cover.

3.6 Local Policy Context

3.6.1 Donabate Local Area Plan 2016-2021 (as extended to 2026)

The site of the proposed development is subject to Fingal County Council's Donabate Local Area Plan 2016 – 2021 (Extended to 2026) ('the LAP'). In March 2021, the Council resolved to extend the LAP until

March 2026. The development objectives set out in the LAP are long-standing, but have been revised in line with contextual developments, e.g. policy changes and completion of new infrastructure.

The LAP lands comprise approx. 138 hectares (340 acres) in four land parcels at Corballis (c. 65 ha), Ballymastone (c. 50.2 ha), Rahillion (c. 5.5 ha) and at Turvey (c. 16 ha), zoned 'RA' (to "*Provide for new residential communities in accordance with approved local area plans and subject to the provision of the necessary social and physical infrastructure*") under the Development Plan. The LAP establishes a framework for the planned, co-ordinated and sustainable development of these lands that is informed by the objectives of the Development Plan. It identifies the quantum, location and phasing of development for the plan period, in accordance with the population targets established under the RSES and the Core Strategy of the Development Plan.

The LAP's stated vision for the development lands at Donabate is:

> *"...to provide for the structured development of the identified new residential areas of Donabate such that they integrate into the established village and support the continued growth of a vibrant and attractive town for existing and future residents. New development will be accompanied by the required community, educational, transport, drainage and recreational infrastructure to ensure the protection and enhancement of local amenities and the continued growth of local services in Donabate."* (p. 1)

In support of this vision, the LAP sets out four strategic aims, as follows:

- *Provide a framework for a growing population with phased development of new housing delivered in tandem with supporting community and physical infrastructure.*
- *Support Donabate Village as the primary location for commercial, retail, community and cultural development serving the town and peninsula generally.*
- *Provide infrastructural investment to address traffic, pedestrian safety and movement challenges including the early delivery by Fingal County Council of a new road and bridge providing an alternative access to Donabate and Portrane.*
- *Protect and enhance the existing natural amenities of Donabate and improve access to established local amenity areas through the creation of a network of designated green routes.*

A 'key aim' of the LAP is to "*ensure integration between the new LAP areas and the existing community, in an effort to create a network of inter-connected areas and to strengthen and enhance the Village core as the primary focus in Donabate*" (p. 2).

The LAP states that the subject development lands have the capacity to accommodate c. 1,000 new residential units, with an envisaged overall density of approximately 35 units per hectare.

The site of the proposed development is situated within the 'Ballymastone' development lands as identified in the LAP. It is envisaged that development of these c. 50.2 ha lands (Inc. part of the Donabate Distributor Road that runs through the site, existing football clubs of St Pats and St Ita's) will deliver a mix of housing, educational and recreational uses. The vision for the Ballymastone development lands set out in the LAP is as follows:

> *"The Ballymastone development lands include approximately 38.3ha (taking into account the existing football club facilities and the land-take for the Distributor Road) and therefore have the capacity to provide for approximately 1,000 no. residential units, based on an average density of 35 units per hectare. The residential character of development on these lands will*

comprise a mix of units, predominantly two-storey in height and serving both public and private housing needs.

The residentiolly zoned londs immediately south and east of the existing residentiol estate ot The Links represent an appropriate locotion for the plonned incremental growth of the Village. These lands will be developed for residentiol purposes in the initial phases of development, in tandem with the required infrastructure. These development lands olso provide an opportunity to create excellent pedestrian /cycle links westwards to the Village." (p. 83)

Each of the four LAP areas are divided into smaller neighbourhoods by internal streets and green networks. Within the Ballymastone lands, two neighbourhoods – Spires East and Ballymastone – are identified. A location in the southern section of the Ballymastone development lands, which falls within the site of the proposed development, is earmarked for the delivery of a primary school (see **Figure 3.3**, below).

Table 3.2 lists the objectives of the LAP that relate directly to the Ballymastone development lands. It is noted that many (if not all) of the objectives in the LAP bear some relation to the Ballymastone development lands, in that they relate to development at Donabate more broadly. As such, this list is non-exhaustive, but is intended to identify the most relevant objectives of the LAP. Contents and objectives of the LAP that relate to specific EIA topics shall also be addressed, where appropriate, under the corresponding EIAR chapters herein.

Table 3.2 Relevant objectives of the Donabate Local Area Plan 2016-2021 (as extended to 2026)

No.	Objective
3.1	Provide a network of pedestrian and cycle access routes to Donabate Train Station from the new development lands.
4.7	To provide a large multi-functional playground at Ballymastone with a range of facilities to cater for a variety of age-groups (toddlers to teens).
6.2	Provide an education, sporting, recreation and community development in a campus environment at Ballymastone which supports the consolidation of existing sporting facilities and includes an All-Weather pitch, a full sized running track, new school development together with shared supporting infrastructure, in line with an agreed Masterplan.
6.3	To support the provision of a new Church and Community Facility on lands at Ballymastone.
6.8	Require development in Ballymastone and Corballis neighbourhoods to provide flexible 'live & work' residential units at appropriate locations. These units shall be capable of conversion in part to appropriate commercial use in tandem with residential use and to permit appropriate home-based economic activities that do not result in loss of amenity in terms of traffic generation, residential amenity, noise levels and visual amenity.
8.2	Prepare a Campus Masterplan to support the creation of an Educational and Recreational hub at Ballymastone to include the consolidation of existing sporting facilities in this area and to co-locate new recreational amenities adjacent to new school site facilities, supporting the Fingal Schools Model. The entrance gates and setting together with the old tree-lined avenue leading to Ballymastone which forms the original right-of-way to Portrane Demesne shall be preserved in any development in this area. The Masterplan, including any new development, shall take account of the Architectural Conservation Area at Portrane Demesne (St Ita's Hospital) where these lands adjoin this sensitive landscape.
8.18	Ensure that the interface between the proposed Donabate Distributor Road and all development abutting the road comprises only best practice urban design led solutions. In this regard no backing on of houses or house rear boundary walls will be permitted along the entire road alignment.

Newbridge Demesne will be of benefit to the new and established communities in Donabate. Under the scope of its 'Open Space Hierarchy', the LAP proposes (among other amenities), an Educational and Recreational Hub at Ballymastone, and a nature park at Corballis. The proposed nature park is intended to promote biodiversity conservation and to provide a protective buffer between the planned residential development at Donabate and the habitats associated with the Malahide Estuary. In the intervening years, the Recreational Hub project has been progressed by Fingal County Council, which obtained Part 8 permission for the proposal on lands to the east of the proposed development site in September 2021 (for further details, refer to Chapter 22 – Cumulative Impacts).

It is set out in the LAP that the development of the lands will be delivered in a sequential manner, with three phases extending outwards from the existing urban centre, in tandem with supporting infrastructural provision. The site of the proposed development is situated on the Spires East and Ballymastone areas, as identified in the LAP map:

- Phase 1 – lands at Turvey, Rahillion and Corballis West;
- Phase 2 – lands at Corballis West, Corballis East and Spires East; and
- Phase 3 – Corballis East and Ballymastone.

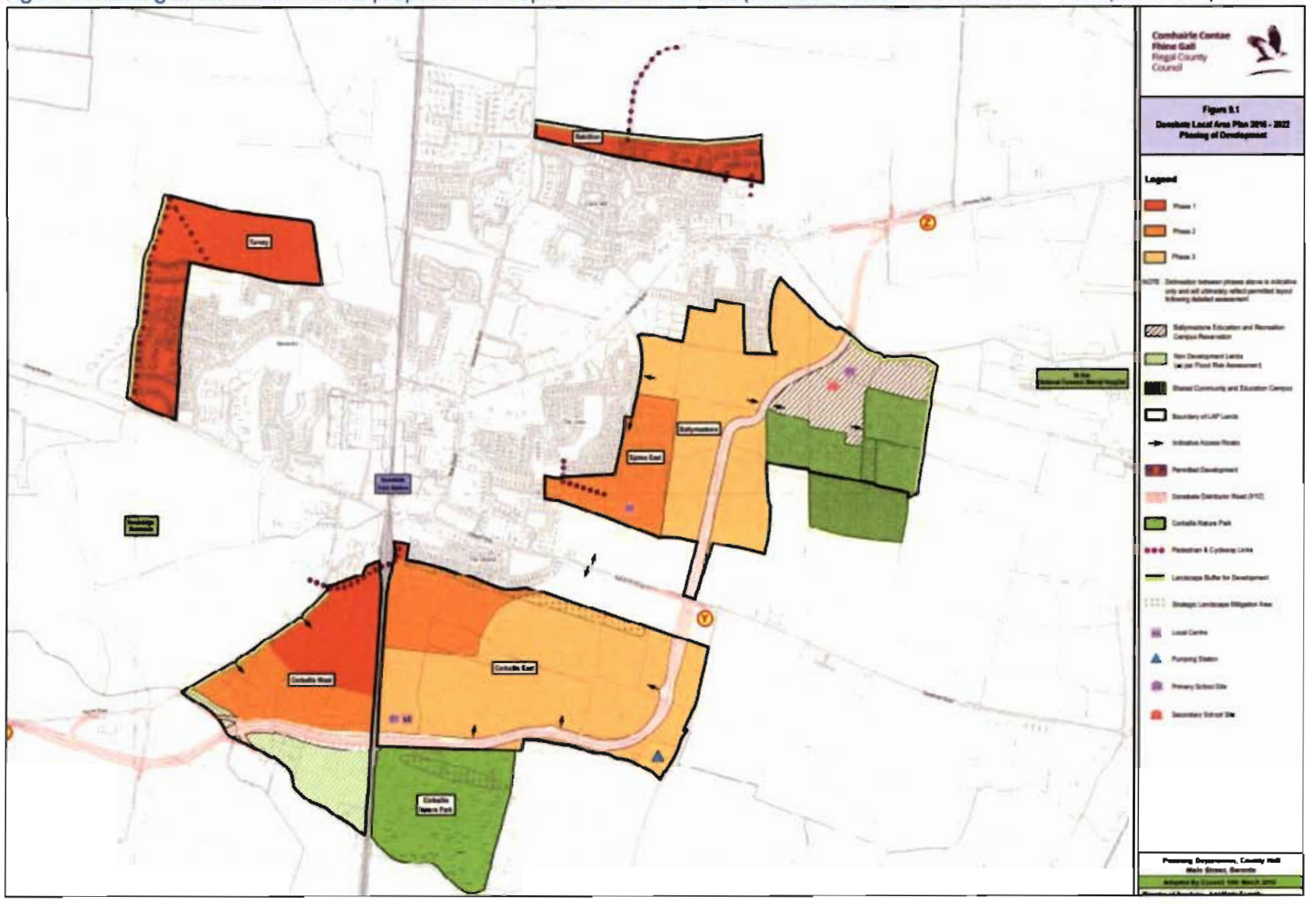
In relation to Phase 2 – and specifically, the Spires East element – it is stated that:

> *"Phase 2 will enable housing to be developed along the western side of the Ballymastone LAP lands, in the area adjoining the existing 'The Spires' and 'The Links' housing estates – c.300 dwellings). The development of the 'Spires East' will be supported by existing road and drainage network infrastructure at this location. The construction of a pedestrian and cycleway connection from the LAP lands at Spires East ta the existing open space in 'The Links' estate is a requirement for any development on these lands. The construction and operation of a local road to connect 'The Links' south to Balcarrick Road, through the Spires East lands is also a requirement for this phase of development."* (p. 95)

In relation to Phase 3, it is stated that the *"final phase of development will be predicated on the completion and operation of the DDR infrastructure and the geographical growth of the settlement"* (p. 95). It is further stated that *"A detailed Masterplan for the Ballymastone Educational and Recreational Hub shall be prepared prior to development of Phase 3 lands at Ballymastone"* (ibid.).

The proposed development has been designed in accordance with the requirements set out in the Donabate LAP, as outlined above. For further information, refer to the Planning Report and Statement of Consistency, prepared by BSM and submitted as part of the planning application under separate cover.

Figure 3.3 Zoning at the location of the proposed development and wider area (Donabate Local Area Plan 2016 – 2021, extended)



3.6.2 Ballymastone, Donabate Framework Plan (2018)

Following the preparation of the Donabate LAP, the Ballymastone Framework Plan was completed by Fingal County Council in February 2018. The Ballymastone Framework Plan sets out the strategy for the sustainable development of the lands within the Donabate LAP 2016 ensuring proper sustainable development of the area in tandem with the continued development of Donabate as a growing town centre in North County Dublin.

The Ballymastone Framework Plan provides the broad design principles and outlines Guidelines for development of the lands. The Framework sets out the first step in the design process in line with the objectives of the Donabate Local Area Plan.

In line with the Donabate LAP, this Framework Plan identified the inclusion of 1 no. post-primary school and 2 no. primary schools to be consolidated as part of the Education and Recreational Hub. As part of the approval of the Part XI for the Recreational Hub a masterplan for the wider educational lands was included. The proposed development responds to the intent of the Donabate Local Area Plan and the Ballymastone Framework Plan.

3.6.3 Donabate Framework Plan (2024)

Fingal County Council (FCC) has prepared a Donabate Framework Plan to guide careful urban improvement and to plan for appropriate future growth in the Donabate town centre area. The Framework Plan will guide future development within the Donabate town centre area to create a vibrant and sustainable town core which will support and encourage economic, social and cultural development and provide an attractive, high-quality environment for existing and future residents. Building on this overall approach, the primary aims of the Donabate Framework Plan are to

- Repair and improve the townscape
- Provide for new civic and social activities; and
- Improve accessibility and permeability within the area.

The study area for the Urban Framework Plan takes place in four principle character areas namely;

- The area adjacent to Donabate Train Station;
- The area adjacent to Newbridge Demesne;
- The area along Main Street; and
- The area north of Main Street (Ballisk)

The Donabate Framework Plan does not extend into the Ballymastone development lands.

4 Consideration of Alternatives

4.1 Introduction

Consideration of alternatives is an important step in the EIA process, which is necessary to evaluate the likely environmental consequences of a range of development strategies for the delivery of the proposed development. This chapter provides an overview of the alternatives that have been considered for the proposed development.

4.2 Legislation

Article 5(1) of the amended Directive requires the consideration of reasonable alternatives that are relevant to the proposed development, taking into account the effects of the proposed development on the environment. Article 5(1)(d) states that the information contained in the EIAR shall include:

> *"... a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment."*

Further, Annex IV(2) states that the information for the EIAR shall include:

> *"A description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects."*

Part 1(d) of Schedule 6 of the PDR 2001 transposes this requirement, stating that an EIAR shall include:

> *"A description of the reasonable alternatives studied by the person or persons who prepared the EIAR, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the proposed development on the environment."*

4.3 Method

In accordance with the EIAR guidelines, different classes of alternatives may be considered at key stages during the process. As environmental issues emerge during the preparation of the EIAR, alternative designs may need to be considered early on in the process, or alternative mitigation options may need to be considered towards the end of the process. The EPA guidelines state that:

> *"The objective is for the developer to present a representative range of the practicable alternatives considered. The alternatives should be described with 'an indication of the main reasons for selecting the chosen option'. It is generally sufficient to provide a broad description of each main alternative and the key issues associated with each, showing how environmental considerations were taken into account in deciding on the selected option. A detailed assessment (or 'mini-EIA') of each alternative is not required."* (p. 33)

The EPA Guidelines indicate that alternatives should be considered under the following headings:

1. 'Do-Nothing' Alternative;
2. Alternative Locations;

3. Alternative Layouts;
4. Alternative Designs;
5. Alternative Processes; and
6. Alternative Mitigation Measures

4.4 Do-Nothing Alternative

The 'Do-Nothing' alternative considers the likely scenario that would arise, assuming the proposed development were not progressed, i.e. if nothing were done. Note that this chapter discusses the Do-Nothing scenario in terms of development (or lack thereof) in the absence of the proposed development. The likely impacts of a Do-Nothing scenario in relation to the various environmental topics (e.g. architectural heritage, biodiversity, traffic and so on) are discussed in the respective chapters of this EIAR.

In this case, the Do-Nothing scenario might feasibly entail:

(a) A continuation of the existing status and use of the lands (predominantly disused agricultural land); or

(b) Development (likely residential) under the scope of a separate proposal and application at some point in the future.

The latter scenario (b) is considered somewhat more likely, taking into consideration the policy context (including the zoning and development objectives for the lands under the Fingal Development Plan 2023-2029 and Donabate Local Area Plan (LAP) 2016-2021 (as extended)) and significant demand for housing in the area. In the context of the ongoing housing crisis in the Dublin Metropolitan Area, the former scenario (a) is considered to represent an inefficient, uneconomical and socially suboptimal use of the Ballymastone development lands. The opportunity cost, in this scenario, would include the 364no. residential units proposed and the accommodation that these would otherwise provide.

The proposed development site is zoned as *'RA- Residential Area'* under the Fingal Development Plan 2023-2029. The LAP lands are zoned as *'RA-Residential Area'* as per the Development Plan and the LAP aims to provide for a structured development of the identified new residential areas of Donabate. The site of the proposed development is situated within the 'Ballymastone' development lands as identified in the LAP.

A 'do-nothing' alternative for these zoned lands would mean that these residential zoned lands would not be developed in accordance with the objectives of the County Council Development Plan and would be contrary to the Councils objective to promote residential land use at this site.

The cumulative projects which have been proposed, permitted and/or are under construction are detailed in Chapter 22 of this EIAR and have been taken into account as part of this assessment.

4.5 Alternative Locations

The proposed development site is zoned as *'RA- Residential Area'* with the corresponding zoning objective to *'Provide for new residential communities subject to the provision of the necessary social and physical infrastructure'*, under the Fingal Development Plan 2023-2029 and the proposed development is consistent with the core strategy of the Development Plan. Taking into account the Local Authority zoning and development objectives, it is concluded that the site is suitable for the proposed development, which has been tailored to deliver site-specific development objectives.

As stated in the EPA guidelines that:

> *"Some locations have more inherent environmental sensitivities than others. Depending on the type of project and the range of alternatives which the developer can realistically consider, it may be possible to avoid such sites in favour of sites which have fewer constraints and more capacity to sustainably assimilate the project. It can be useful to ensure that a range of options, that may reasonably be available, are included in the evaluation."* (p. 35)
>
> *[...]*
>
> *"Clearly in some instances some of the alternatives described below will not be applicable – e.g. there may be no relevant 'alternative location'..."* (p. 33)

At this location, the proposed development will deliver additional dwellings in a range of house types along with public and private open spaces and links to existing community facilities. The subject lands will gain benefit from existing transport, social and community infrastructure. It is considered that the site is entirely suitable for the nature of the proposed development, and it is not necessary to consider alternative locations or sites.

4.6 Alternative Layouts & Design

The evolution of the design and layout for the proposed development has been an iterative process which involved the entire design team. The design has undergone rigorous appraisal, which has led to a final layout that responds appropriately to the site characteristics, opportunities and constraints. The final layout is presented in the Architectural Drawings and the Architectural Design Statement (McCauley Daye O'Connell Architects, 2024), which have been submitted under separate cover and should be read in conjunction with this chapter.

The subject application (Phase 2) forms part of a wider Masterplan for lands within the Ballisk, Ballymastone, Ballalease North & Portrane Demesne Townlands and is a follow on application to Pl Ref LRD0008-S3 which represents the permitted Phase 1 of the Masterplan. The overall scheme also builds on the Framework Plan for the Ballymastone development lands commissioned by Fingal County Council and prepared by Reddy Architecture (2018).

This section sets out the intermediate design progressions of the proposed development, includes figures showing the proposed layout at each stage of this process, and summarises the main considerations that have influenced the progression of the design.

4.6.1 Alternative Layout 1

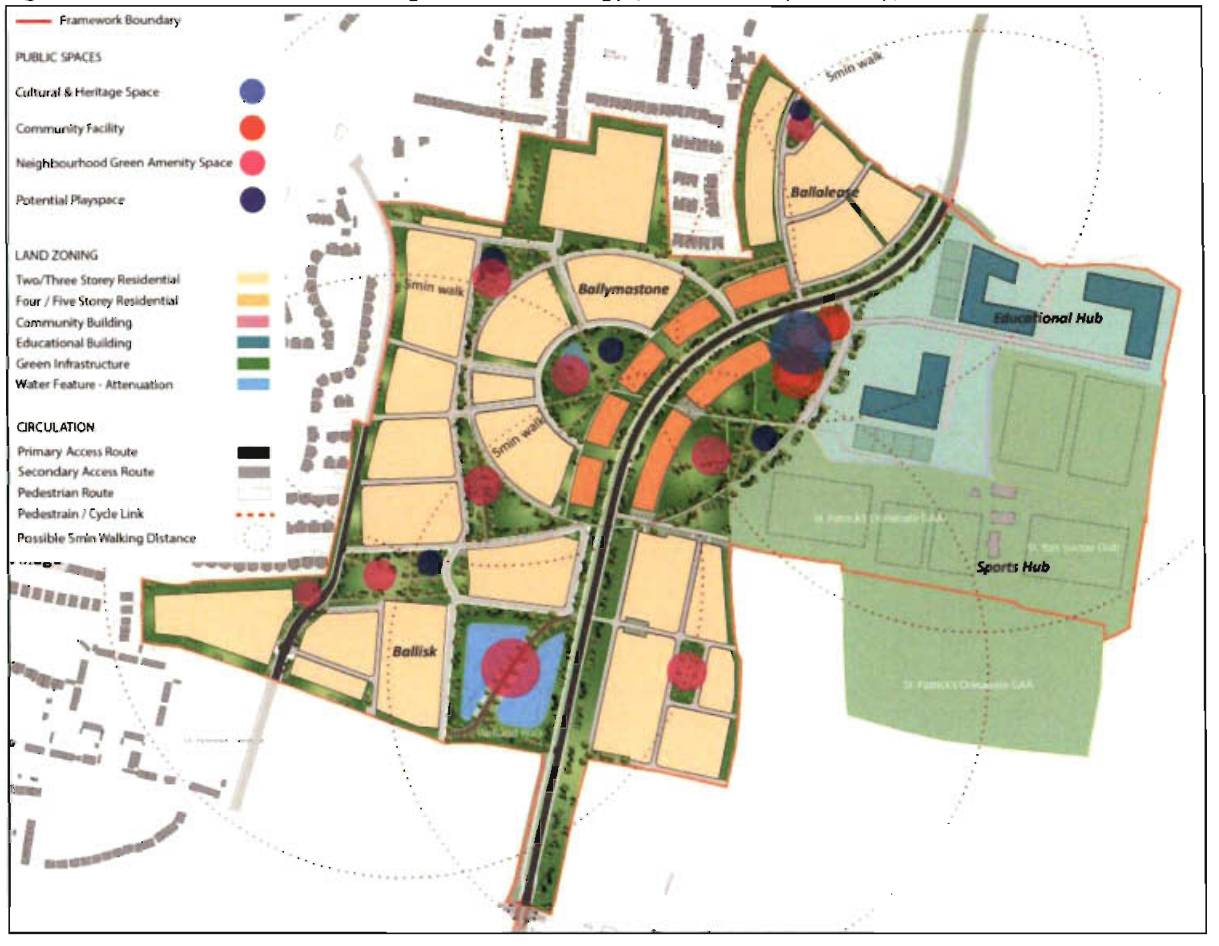
A Framework Plan for the Ballymastone development lands was commissioned by Fingal County Council and prepared by Reddy Architecture. The massing and site strategy for the development lands as set out in the Framework Plan is shown in **Figure 4.1**, below. The area included the lands to the north-east, where Fingal County Council have permission to deliver their Ballymastone Recreational Hub.

The proposal outlined in the Framework Plan included a number of principle elements to be included in the scheme:

- **Character areas and neighbourhoods**: Division of the Masterplan area into three principle character areas: Ballisk, Ballymastone and Ballalease.
- **Vehicular links**: Continuation of the Links Road to connect to the east-west road south of the site.

- **Pedestrian / cycle links**: Facilitate east-west desire lines from Donabate to the proposed educational and sports hubs.
- **Density**: Focussing of higher density (shown in orange in **Figure 4.1**) along the Donabate Distributor Road (DDR). Lower density would adjoin existing lower density residential areas.

Figure 4.1 Framework Plan Massing and Site Strategy (Indicative layout only)



4.6.2 Alternative Layout 2

The initial design approach by McCauley Daye O'Connell Architects (MDO) attempted to build on the Masterplan as set out in the Framework Plan. However, due to the varied boundary, changes would have to occur.

The following points are illustrated (with corresponding numbers) on **Figure 4.2**, below.

1. **Character areas and neighbourhoods**:
   The Masterplan area was divided into three principle character areas, as per the Framework Plan: Ballisk, Ballymastone and Ballalease. At this stage, it was envisaged that parks would form a key feature of the scheme, building on the Recreational Hub to create a larger northern park, as well as a number of internal parks. However, the bisection of the large northern park by the DDR (which is anticipated to expand to dual carriageway in the future) called into question its viability as a large, single space.
2. **Vehicular links**:
   It was planned to continue the Links Road to connect to the east-west road south of the site (now connecting with another proposed development). Progression of the design for the (then

planned) DDR by Fingal County Council resulted in the inclusion of an attenuation pond within the scheme. At this stage, further consideration was needed in relation to the primary access points to the DDR and internal street hierarchy.

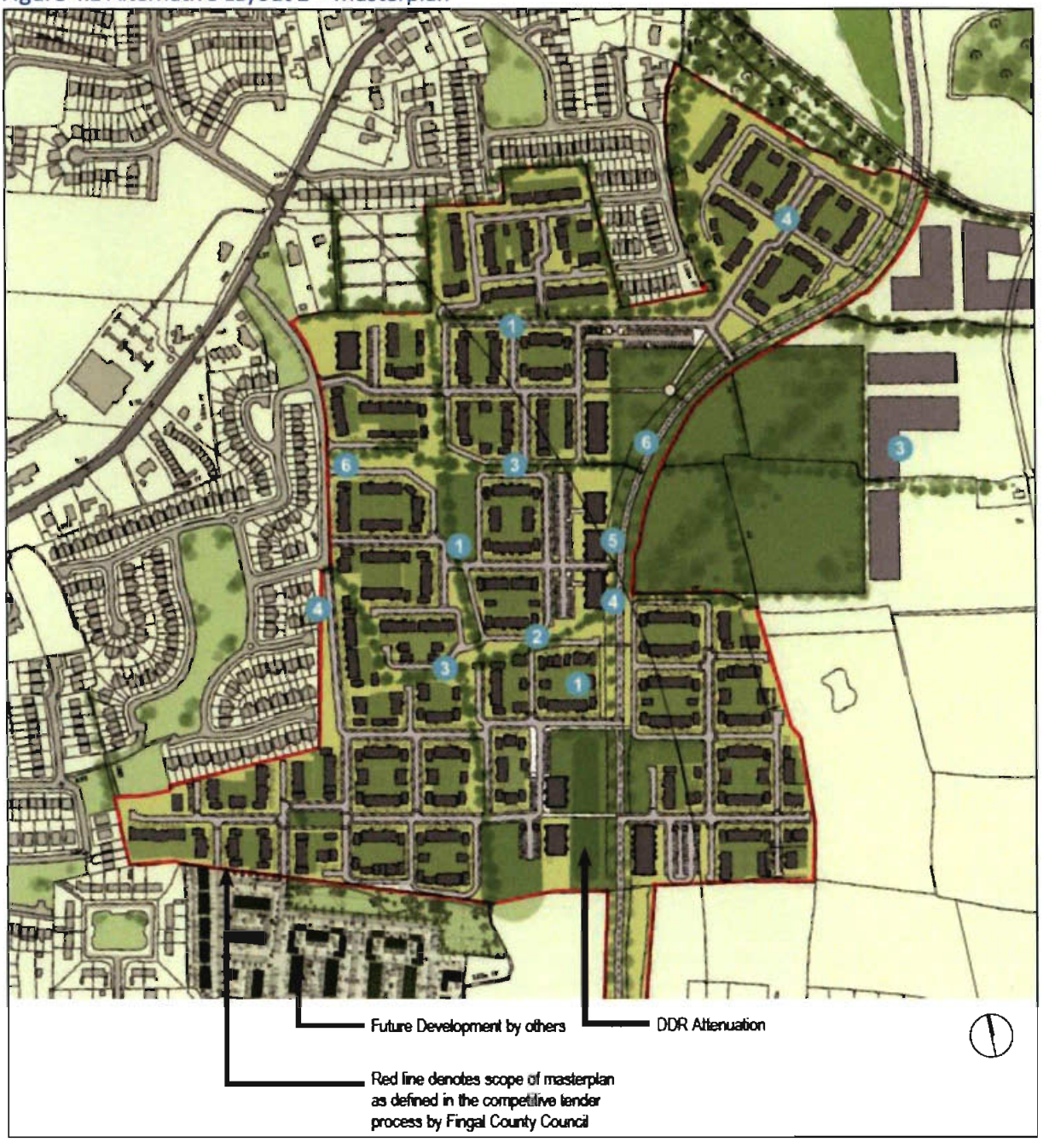
3. **Pedestrian / cycle links**:
   The initial design sought to facilitate east-west desire lines from Donabate to the proposed educational and sports hubs to the east. Further consideration was needed in relation to provision of passive surveillance and natural features along these routes.

4. **Density**:
   The distribution of residential density across the Masterplan area was consistent with the Framework Plan – with higher densities concentrated along the DDR and lower densities adjoining existing residential development. The northern corner of the Masterplan site was identified as a gateway point that could accommodate a larger, landmark building. Further consideration was needed at this stage of the scheme's legibility as a whole, along with access to the train station, as well as the concentration of density in proximity to the train station.

5. **Daylight**:
   It was decided that apartment buildings would be north-south oriented to ensure no north-facing units. As a greenfield site 50% dual aspect would be required in addition to meeting all internal daylight requirements.

6. **Natural features and archaeology**:
   The key environmental site constraints identified were the existing mature hedgerows and archaeological features. It was determined that tree surveys and archaeological site investigations would be required to establish the baseline and develop strategies for protection, retention and incorporation, insofar as practicable.

Figure 4.2 Alternative Layout 2 – Masterplan



4.6.3 Alternative Layout 3

During the first dialogue session with Fingal County Council of the competitive tender process, the design for the Masterplan area began to evolve into a more complete scheme (**Figure 4.3**).

1. **Character areas and neighbourhoods**:
   Three central parks were developed to serve each character area, with the principal massing placed along the DDR. Further consideration was needed at this stage as to how each character area would translate to the neighbourhood level.

2. **Vehicular links**:

Further progression of the DDR design back then by Fingal County Council established the primary access point to the scheme, with one access to be permitted north of this, and none south of this, where the DDR may become a dual carriageway in the future.

3. **Pedestrian / cycle links**:

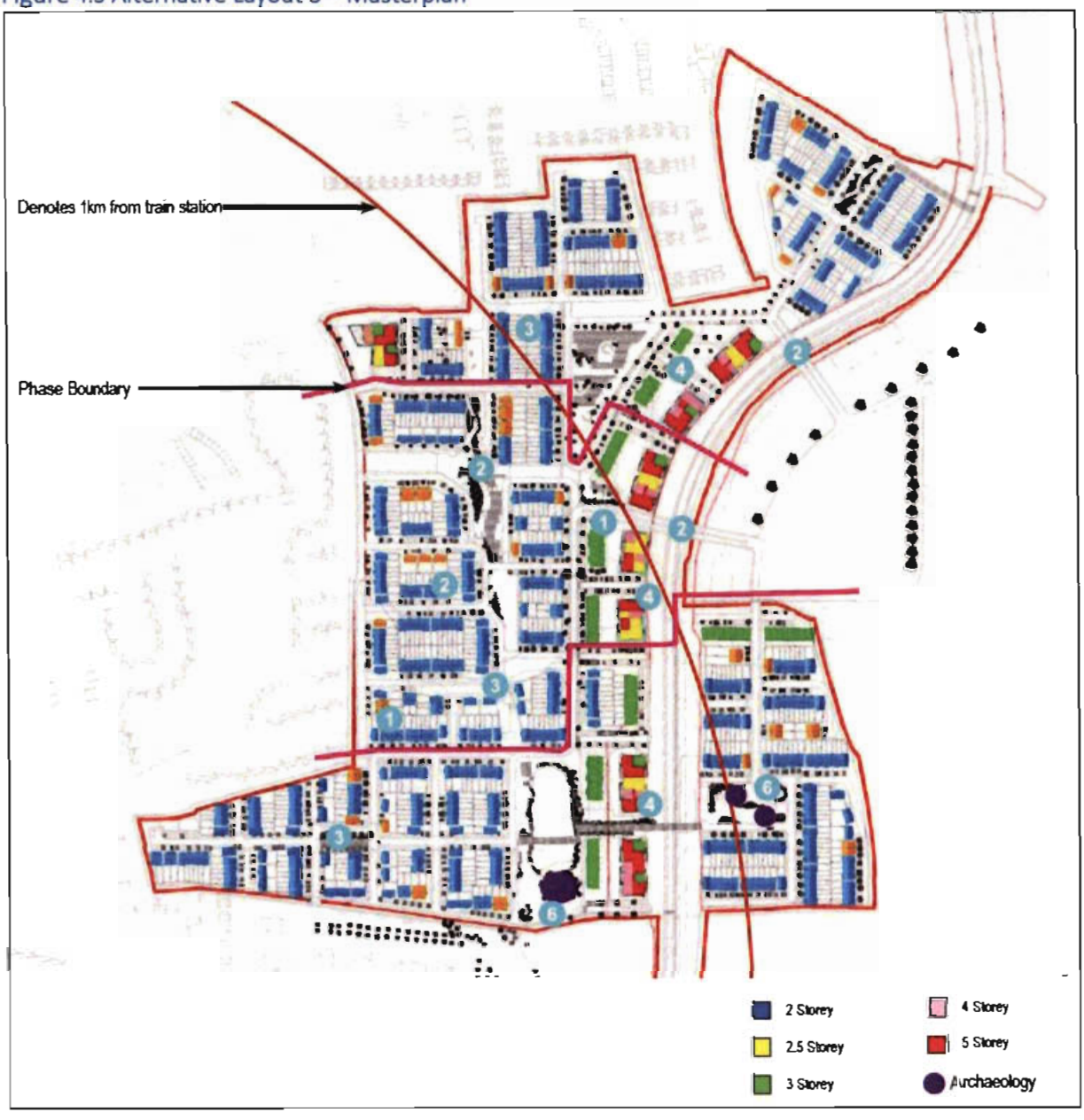
   These routes were developed along existing east-west and north-south tree lines, creating defined green routes through the scheme. A direct west-to-east link was also created from the existing Links Park to the proposed Baile Uisce Park, with a pocket park placed along the route. Further consideration was needed at this stage for passive surveillance along these routes.

4. **Density**:
   It was decided that apartment blocks would now fully front the DDR, paired with duplex units, to allow a transition in scale from the Regional Road to the interior of the scheme. Planning decisions at this time indicated that a 45 units / hectare density would be required within 1 km of Donabate train station. Further consideration was needed at this stage in relation to landmark / wayfinding buildings throughout the Masterplan area as a whole.

5. **Daylight**:
   Massing and aspect of buildings continued to be reviewed with regard to daylight and overshadowing.

6. **Natural features and archaeology**:
   Many tree lines / hedgerows were incorporated into the proposed green routes and parks, along with the archaeological features, to be retained *in situ*.

Figure 4.3 Alternative Layout 3 – Masterplan



4.6.4 Alternative Layout 4

At the completion of the competitive tender process, the scheme had been developed into a Masterplan with a high level of development (**Figure 4.4**).

1. **Character areas and neighbourhoods**:
   The principle of three primary character areas was agreed at this stage; however, further consideration was needed as to how each character area would translate to the neighbourhood level.

2. **Vehicular links**:
   Further progression of the DDR design by Fingal County Council established the primary access point to the scheme, with one access to be permitted north of this, and none south of this, where the DDR may become a dual carriageway in the future. It was determined that the

attenuation pond proposed as part of the DDR would be integrated into the Masterplan, with a view to creating a larger public open space with wetland / pond area.

3. **Pedestrian / cycle links**:
   These routes were developed along existing east-west and north-south tree lines, creating defined green routes through the scheme. The scheme was laid out to ensure continuous passive surveillance of all parks. Further consideration was needed at this stage on where garden walls could be reduced and active façades increased.

4. **Density**:
   In accordance with the shift to the 45 units / hectare, the height of apartment blocks was increased and an additional apartment block was located to the east of the DDR. This resulted in the creation of a disjointed façade to the DDR in an area cut off from the main body of the site. Additional duplexes were incorporated, some of these located at key junctions as wayfinding elements.

5. **Daylight**:
   Massing and aspect of buildings continued to be reviewed with regard to daylight and overshadowing.

6. **Natural features and archaeology**:
   Many tree lines / hedgerows were incorporated into the proposed green routes and parks, along with the archaeological features, to be retained *in situ*. Building and road lines were removed from root protection areas and archaeological buffer areas. SUDS features designed to protect and incorporate these elements.

Figure 4.4 Alternative Layout 4 – Masterplan

Figure 4.5 Alternative Layout 4 -Phase 2

4.6.5 Alternative Layout 5

Following the competitive tender process, the scheme was reviewed to consider efficiencies.

1. **Character areas and neighbourhoods**:
   The character areas now well defined, the scheme was reviewed in terms of improving houses backing onto existing residential areas, and identifying where smaller interventions could be made in terms of neighbourhood place-making, passive security and reducing garden walls exposure.

2. **Vehicular links**:
   At this stage, smaller scale items were considered, e.g. a circular drop-off area to the crèche (now in permitted Phase 1) which was considered desirable for access and egress.

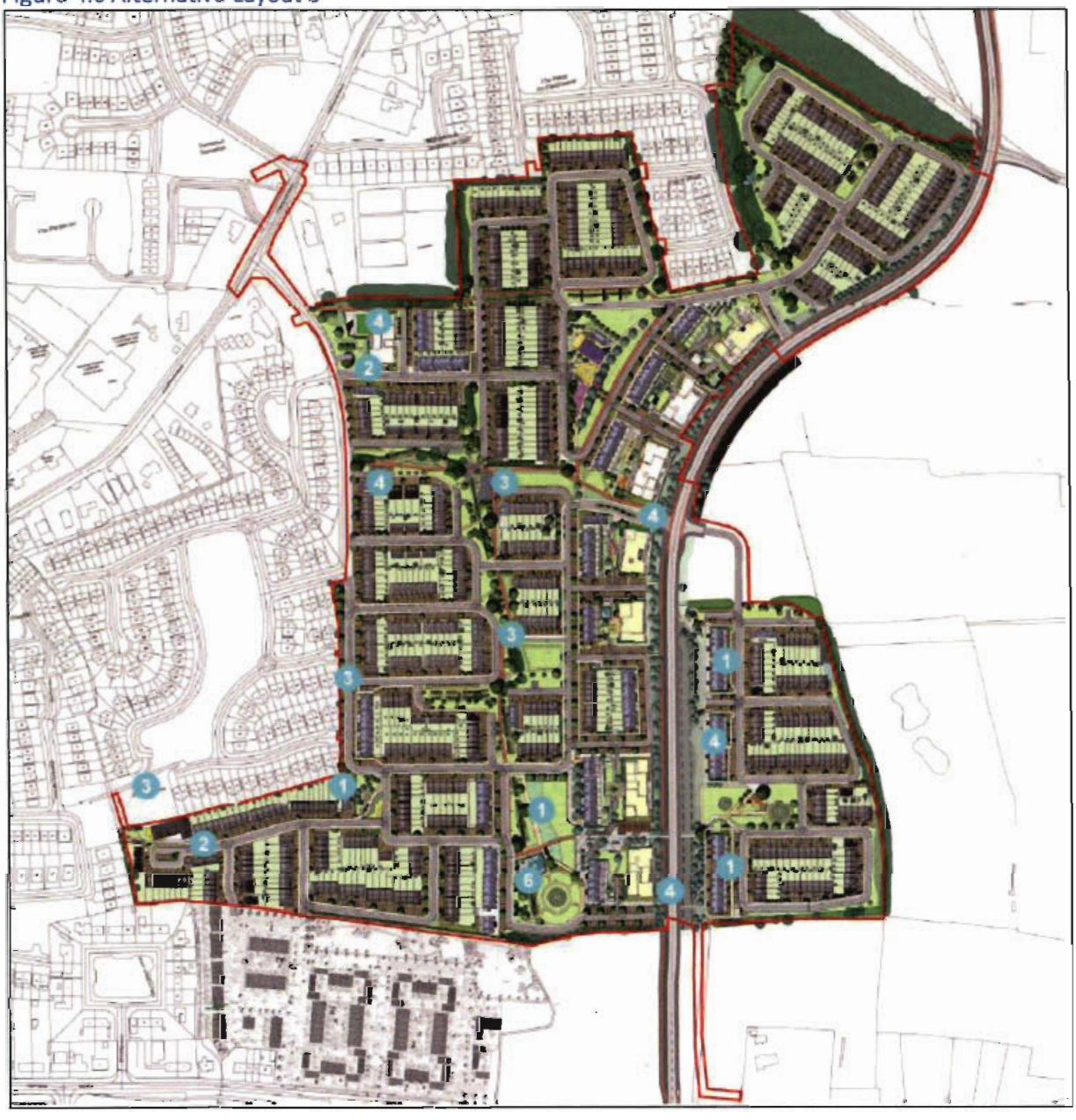
3. **Pedestrian / cycle links**:
   The revision to houses backing onto residential areas in the western portion of the site resulted in the removal of the direct route and line of sight from the crèche / western pedestrian entrance to Baile Uisce Park – this would be reviewed. The crèche as proposed at this stage also created more division / reduced the planned integration with the existing Links Park.

4. **Density**:
   At this stage, an apartment block was removed from the area east of the DDR. Density of 45 units / hectare could be maintained with this change. Smaller wayfinding buildings were introduced at strategic locations to supplement this. These changes allowed for a more regular and consistent massing of the scheme in the area to the east of the DDR, as opposed to the house-apartment block-duplex block façade presented to the DDR prior to this.

5. **Daylight**:
   Massing and aspect of buildings continued to be reviewed with regard to daylight and overshadowing.

6. **Natural features and archaeology**:
   Archaeological zones and root protection areas continued to be maintained at this stage.

Figure 4.6 Alternative Layout 5



4.6.6 Final Layout

1. **Character areas and neighbourhoods**:
   Three distinct character areas were proposed with consideration given to the creation of smaller neighbourhood areas. The Phase 2 application contains within it 4 neighbourhoods; neighbourhoods B, D, E & G. The overall development is still considered on a masterplan basis, though individual Character Areas unction as standalone elements. Communal Amenity facilities were increased. Refer to **Figure 4.7** below.

2. **Vehicular links**:
   The Links Road Extension is to be completed as part of Phase 1 that serves Phase 2, in addition to the creation of the main avenue and junction to the DDR. The Links Extension was necessary

in terms of 2 access points to the scheme for fire tender access. Construction of the development to the south (a potential third vehicular access point) remains out of Applicant's control / uncertain.

3. **Pedestrian / cycle links**:
   A number of shared pedestrian and cycle routes were created as follows:

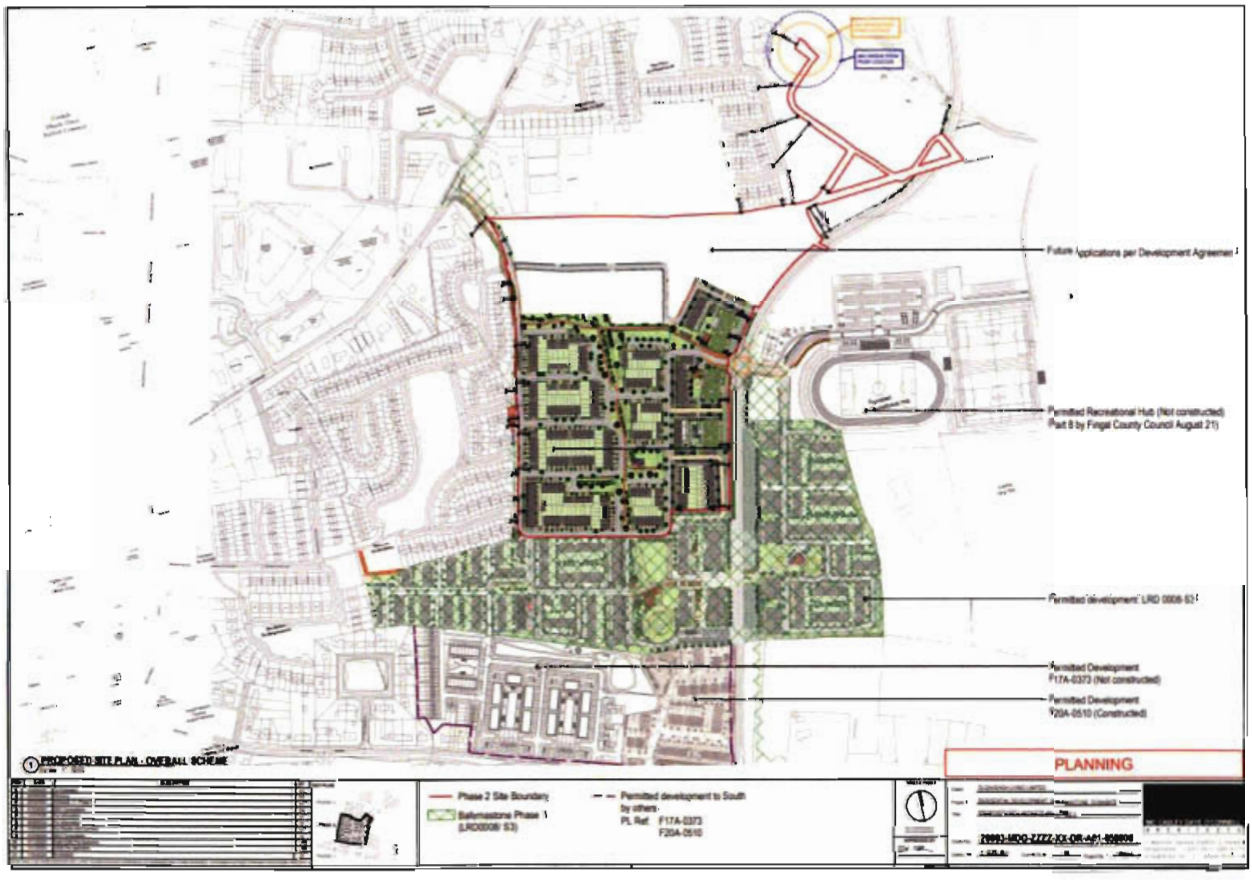
a) Along the Links Road (north-south)
b) From the western most point of phase 2 across to the DDR
c) The East-West route to the recreation hub

This provides good interconnectivity and front loads a number of service requirements that would be integrated into Phase 2. The straight line from the west to Baile Uisce was also restored.

4. **Density**:
   Density results at 44.7 Units per NET hectare.

5. **Daylight**:
   Apartments and Duplex comply with the latest regulations. Overshadowing analysis was also undertaken.

Figure 4.7 Final / current layout



4.7 Alternative Processes

Having regard to the nature of the proposed development, this is not considered a relevant class of alternatives in this case.

However, the residential units will be detailed designed to comply with building regulations framework and the requirement to achieve Nearly Zero Energy Building (NZEB) standard for new developments.

4.8 Alternative Mitigation Measures

Where appropriate, alternative mitigation measures will be considered by the relevant specialist contributors to the EIAR.

5 Description of the Proposed Development

5.1 Introduction

This chapter provides a description of the proposed development in accordance with Article 5(1)(a) of the 2011 EIA Directive, as amended by Directive 2014/52/EU, the description should comprise *"...information on the site, design, size and other relevant features"*. It provides the basis against which the specialist assessments are undertaken. Note that specific details of the proposed development that are of relevance to particular specialist topics are also set out, where relevant, in the corresponding EIAR chapters.

5.2 Site of the Proposed Development

The proposed development site, which has a stated area of 13.74Ha is situated in the coastal town of Donabate, c. 20 km north-east of Dublin City and 10km north-east of Dublin Airport, on the northern margin of the Dublin Metropolitan Area. The site is situated in the administrative area of Fingal County Council, in the townlands of Ballalease North, Portraine Demesne, Ballymastone and Ballisk.

The site, which is situated on the eastern margin of Donabate town, is predominantly comprised of disused agricultural land, criss-crossed by hedgerows and drainage ditches. The site is bounded to the west and north by existing residential development. The Donabate burial grounds are to the north-west of the site. The site is also bound immediately to the south and south-east by lands that form part of a Large-scale Residential Development (LRD) comprising 432 residential units and all associated site works, permitted by An Bord Pleanàla on the 28 March 2023 (FCC Ref. LRD0008/S3 & ABP Ref. 315288). The site is also bound by Recreational Hub (Part 8 – approved) to the east of the site.

The subject lands are undeveloped and greenfield in nature and situated to the west of the Donabate Distributer Road (DDR). St Patrick's GAA complex and a permitted recreational hub at Ballymastone (undeveloped) lie on the opposite side of the DDR and in proximity to the site. Further undeveloped lands which will potentially form Phase 3 of the Ballymastone development lie to the north. Extant development within the settlement of Donabate lies to the west and comprises the residential estates of The Links, while Priory Wood, Willowbrook.

Refer to **Figure 1.1** and **Figure 1.2** in Chapter 1 (Introduction).

5.3 Need for the Proposed Development

The need for the proposed development is set out under national, regional and local policy documents, as detailed in **Chapter 3** (Planning & Development Context), above. In summary:

- The Government's *National Planning Framework* (NPF) (2018) predicts that there will be a need for at least half a million additional homes in Ireland by 2040, in order to meet the needs of our growing population. In order to promote sustainable development, the NPF sets out a policy of compact growth, targeting 40% of new housing development within and close to the existing footprint of built-up areas;

- More recently (2021), the Government's housing plan, *Housing for All*, targets increased supply of new housing (an average of at least 33,000 per year to 2030) coupled with greater provision of affordable and social housing;

- The *Eastern & Midland Regional Assembly Regional Spatial & Economic Strategy 2019 – 2031* (RSES) targets the delivery of at least 50% of all new homes within or contiguous to the built up area of Dublin City and suburbs, with at least an additional 30% being delivered in other urban areas in the Region – which takes in Counties Longford, Westmeath, Offaly, Laois, Louth, Meath, Kildare, Wicklow and Dublin. The proposed development will contribute to the achievement of the population growth targets in the RSES, by providing a high-quality new residential development on lands zoned for this purpose by the Local Authority (Fingal County Council);

- Under the *Fingal Development Plan 2023 – 2029* the subject lands are located within the settlement boundary of Donabate. Donabate has been identified as a *'Self Sustaining Growth Town'* within Fingal and functions as part of the Dublin Metropolitan Area. As highlighted within the Development Plan, such towns will play a role in offering *'potential for increased residential densities at high quality public transport hubs and can accommodate average or above average growth to provide for natural increase, service and/or employment growth where appropriate'* (p. 83).

- The policies and objectives as stated in the *Fingal Development Plan 2023 – 2029* for Donabate town highlights the compact, sequential, sustainable growth of the area at appropriately identified locations. The Plan ensures the future development of Donabate in a sustainable manner to provide a high quality living environment for the existing and future population;

- Under the Development Plan, the site of the proposed development is predominantly zoned as 'RA – Residential Area' with the corresponding zoning objective to *"Provide for new residential communities subject to the provision of the necessary social and physical infrastructure"*;

- Under the Donabate Local Area Plan 2016-2021 (as extended to 2026), the site of the proposed development falls under the LAP lands. The LAP lands comprise approx. 138 hectares (340 acres) in four land parcels at Corballis (c. 65 ha), Ballymastone (c. 50.2 ha), Rahillion (c. 5.5 ha) and at Turvey (c. 16 ha), zoned 'RA' (to *"Provide for new residential communities in accordance with approved local area plans and subject to the provision of the necessary social and physical infrastructure"*) under the Development Plan. The LAP establishes a framework for the planned, co-ordinated and sustainable development of these lands that is informed by the objectives of the Development Plan. It identifies the quantum, location and phasing of development for the plan period, in accordance with the population targets established under the RSES and the Core Strategy of the Development Plan.

5.4 Characteristics of the Proposed Development

5.4.1 Overview

The proposed development will consist of the construction of a residential development, which represents Phase 2 of a wider development of the Ballymastone Lands (as identified in the Donabate Local Area Plan 2016 (as extended)) and is a continuation of Phase 1 of the Masterplan lands (permitted

under LRD0008/S3). The proposed development ranges in height from 2 to 6 storeys to accommodate 364 residential dwellings (including a mix of apartments, duplexes and houses), and public open space. The site will accommodate car parking spaces, bicycle parking spaces, storage, services, new pedestrian/cycle links, road improvements and plant areas. Landscaping will include communal amenity areas, and a significant public open space provision.

The overall site layout for the proposed development is shown in **Figure 5.1**, below.

5.4.2 Detailed Development Description

The application site, with a gross site area of c.13.74ha and a net site area of c. 8.14ha, is bounded by existing residential development of The Priory, Donabate Burial Ground and wider undeveloped Ballymastone lands to the north, the Donabate Distributor Road (DDR) and permitted Ballymastone Recreational Hub to the east (PARTXI/004/21), permitted Ballymastone Phase 1 (FCC. Ref. LRD0008/S3 & ABP Ref. 315288) to the south and existing residential development of The Links, and the Links Road, to the east.

The proposed development will consist of the construction of a residential development, which is a continuation of permitted Ballymastone Phase 1 lands (FCC Ref. LRD0008/S3 & ABP Ref. 315288) and represents Phase 2 of the wider development of the Ballymastone Lands (as identified in the Donabate Local Area Plan 2016 (as extended)), ranging in height from 2 to 6 storeys to accommodate 364 no. residential dwellings (158 no. houses, 82 no. duplex units and 124 no. apartments) and public open space. The site will accommodate 278 total no. car parking spaces, 1,457 total no. cycle parking spaces, new pedestrian/ cycle links, road connectivity enhancements, storage, services and plant areas. Landscaping will include significant public open space provision and communal amenity areas. The proposed development is set out as follows:

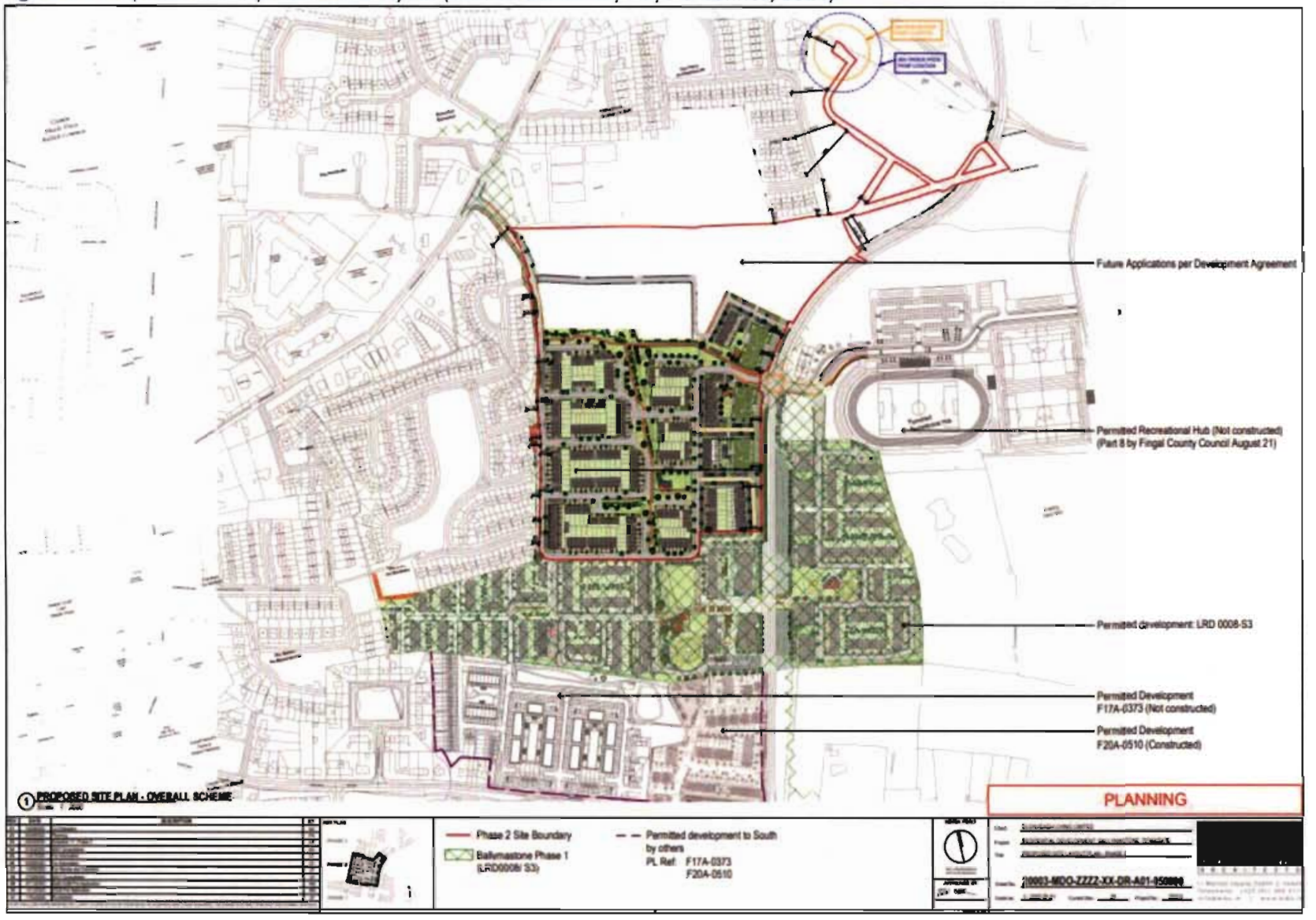
- The construction of 364 no. new residential dwellings consisting of 158 no. houses, 82 no. duplex units and 124 no. apartment units set out follows:
  - Construction of 158 no. 2-storey houses (54 no. 2-beds, 99 no. 3-beds, 5 no. 4-beds).
  - Construction of 82 no. 2 to 3 storey duplex units (8 no. 1-beds, 33 no. 2-beds, 41 no. 3-beds), with balconies on all elevations.
  - Construction of 3 no. apartment blocks, ranging from 3 to 6 storeys in height, with balconies on all elevations, green roofs, and external amenity courtyards, providing a total of 124 no. apartment units (48 no. 1-beds, 66 no. 2-beds, 10 no. 3-beds).
- The scheme provides c. 17% public open space of the net site area comprising 2 no. small parks and 1 no. pocket park which total c. 13,646 sq.m. These parks are located centrally within the site providing a series of north-south linear spaces linking to permitted Ballymastone Phase 1 (FCC Ref. LRD0008/S3 & ABP Ref. 315288) to the south.
- A total of 278 no. car parking spaces are provided (combination of in-curtilage and on-street and communal car parking areas).
- A total of 1,457 no. cycle spaces are provided for residential units (comprising 1,353 long-stay/ resident spaces and 104 no. short-stay/ visitor spaces).
- The development provides for vehicular access from The Links Road, Donabate Distributor Road (DDR) and permitted Ballymastone Phase 1 (FCC Ref. LRD0008/S3 & ABP Ref. 315288).
- A north-south pedestrian/ cycle route is proposed within the site connecting permitted Ballymastone Phase 1 (FCC Ref. LRD0008/S3 & ABP Ref. 315288) and future development lands to

the north. A series of east-west pedestrian/ cycle routes are proposed connecting the site to permitted Ballymastone Recreational Hub to the east (PARTXI/004/21).

- Proposed new foul pump station located to the north-east of the site.
- The proposed application includes all site enabling and site development works, infrastructure and utilities, landscaping works, PV panels, bin stores, plant, boundary treatments, ESB Substations, lighting, servicing, signage, surface water attenuation facilities and all site development works above and below ground.

For a full development description please refer to the Planning Report & Statement of Consistency prepared by Brady Shipman Martin.

Figure 5.1 Proposed development – site layout (Source: Mc Cauley Daye O'Connell, 2024)



5.4.3 Water Infrastructure

For a detailed description of the proposed water infrastructure, refer to **Infrastructure Design Report** prepared by **DBFL Consulting Engineers (2024)** and submitted under separate cover as part of the planning application.

5.4.3.1 Water Supply

The proposed water supply network has been designed in accordance with *Irish Water's Code of Practice for Water Infrastructure* and *Water Infrastructure Standard Details*. There is an existing 400mm diameter water main in DDR and a 225mm diameter watermain also exists within the Links Road to the north-west of the site. Primarily the 400mm watermain on the DDR will be utilised to serve the Phase 2 development.

The connection to the public water main will include sluice valves in accordance with the Irish Water's requirements. Each of the apartment blocks will have their own connections to the distribution main via service connections and the type of meters to suit Irish Water specifications. The average water demand is estimated to be 2.14/s. The peak demand for sizing of the pipe network (5 times the average day, peak week demand) is calculated as 10.69l/s.

A Statement of Design Acceptance was received from Uisce Éireann on 15 April 2024, stating that Uisce Éireann has no objection to the proposed connections.

5.4.3.2 Surface Water Drainage

The site of the proposed development is predominantly greenfield in nature. Currently the site is drained by a network of drainage ditches which traverses the site and feed into the Beaverstown stream catchment and Portrane Canal catchment. Surface water runoff from the existing DDR is collected via road gullies into existing carrier drains running along the road and transferred into 5 attenuation ponds along the length of the DDR.

Surface water run-off from the site will be attenuated to greenfield run-off rates in accordance with the Greater Dublin Strategic Drainage Study (GDSDS). Surface water storage; sustainable drainage systems (SuDS) features, including swales, permeable paving, rain gardens, tree pits, surrounding soft landscape, green roof, underground storage in the form of geocellular units or similar approved systems, detention / infiltration basins, infiltration blanket, bio-swales with filter drain and petrol interceptors are proposed.

The Phase 2 site crosses 2 surface water catchments included within the overall masterplan area. The overall masterplan area was divided into 5 catchments to best utilise the available surface water discharge points. Parts of catchment 4 and 5 are within the Phase 2 site boundary. Catchment 4 is separated into sub catchments with attenuation provided closer to source within the sub-catchments. Catchment 4 discharges to the existing 1350mm surface water culvert to the north-west of the site which eventually discharges to the Rogerstown Estuary to the north. Utilising the 1350mm surface water culvert for the Ballymastone masterplan area is in line with the Donabate LAP. Catchment 5 discharge to the existing ditches which eventually flow to the Portrane Canal and onto the Rogerstown Estuary to the north. A lot of the drainage infrastructure required for Phase 2 will be constructed as part of Phase 1 of the works permitted under FCC Reg. Ref. LRD0008/S3, specifically the connection to the 1350mm culvert and the majority of the attenuation associated with Catchment 4.

It is proposed to store runoff for a 1% AEP (Annual Exceedance Probability) storm event plus 20% allowance for climate. Runoff from roads and other hard surfaces such as paths and cycle paths will be directed to swales, tree pits and rain gardens / bio retention areas where possible.

Surface water management for the proposed development is designed to comply with the Greater Dublin Strategic Drainage Study (GDSDS) policies and guidelines and the requirements of Fingal County Council. The incorporation of the above SuDS elements will provide a sustainable manner in which to disperse surface water from the site, encourage groundwater recharge and provide treatment of run-off and subsequent improvement of discharge quality.

A Site-Specific Flood Risk Assessment (SSFRA) was carried out by DBFL (2024) and is submitted with this planning application. The key findings and conclusions of the SSFRA are summarised in Chapter 2 (EIA Process) - **Section 2.7 - Other Assessments**. Refer also to Chapter 10 (Hydrology).

5.4.3.3 Foul Water Drainage

The site of the proposed development is predominantly greenfield in nature, with no existing buildings. The proposed foul drainage system will have 4 different connection points to existing networks, please refer to the engineering drawings for further information. There is a new Irish Water Foul pumping station recently constructed to the south of the development which will serve the southern side of the proposed Phase 2 development. The pump station is fed by a gravity foul sewer falling north to south along the DDR. A rising main takes flow from the pump station to the northern end of the DDR where it is discharged to another gravity sewer.

The vast majority of the Phase 2 development will discharge to a new proposed Foul Pump Station which is proposed to be located in the north-west of the masterplan site. Due to the level of the existing gravity foul lines within the DDR it was not feasible to connect a lot of the site to these via gravity sewers without unrealistic amounts of build-up of the existing ground levels. The north-west corner of the site was chosen as the most feasible location for the pump station as the ground levels are lowest here so the depth of the pump station could be minimised. This pump station will serve the majority of both phases 2 & 3 of the development. The rising main from the pump station will discharge to the existing gravity sewer flowing north within the DDR. A small portion of the Phase 2 development will utilise the existing gravity sewer within the DDR. These units are located in the south-west of the Phase 2 development.

The proposed foul water drainage network has been designed in accordance with the Building Regulations and specifically in accordance with the principles and methods set out in the DOE '*Recommendations for Site Development Works for Housing Areas*', IS EN752 (2008), BS8301: 1985, IS EN12056: Part 2 (2000) and the recommendations of the '*Greater Dublin Strategic Drainage Study*', (GDSDS) and the Irish Water Connection and Developer Services, '*Code of Practice for Wastewater Connections*'.

A pre-connection enquiry was made to Uisce Éireann and a Confirmation of Feasibility letter (October 2023) has been received. This letter is included as an appendix to the Infrastructure Design Report, prepared by DBFL Consulting Engineers and submitted separately. A Statement of Design Acceptance was received from Uisce Éireann on 15 April 2024, stating that Uisce Éireann has no objection to the proposed connections.

5.5 Construction Phase

5.5.1 Construction Sequence

The construction phase of the proposed development will include the following elements:

- Site enabling works;
- Sub-structure and superstructure works;
- Infrastructure works;
- Reinstatement.

Standard best practice site management protocols, including good housekeeping and efficient materials management, will be implemented.

5.5.1.1 Site Enabling Works

It is envisaged that the site enabling works will include (but not necessarily be limited to) the following:

- Securing of site boundary and erecting of fencing or hoarding as required;
- Service terminations and positive identification of any services on the site by the utility providers;
- Provision of temporary power, lighting and water services;
- Set up of site accommodation and welfare facilities;
- Archaeological monitoring in accordance with the recommendations of the Archaeological Assessment;
- Identification of the trees that are required to be removed and the removal of these along with scrub and vegetation, in consultation with the appointed Arborist and the recommendations of the tree survey report;
- Identification of the trees that are required to be protected and the protection of these in consultation with the appointed Arborist and the recommendations of the tree survey report;
- Identification of any hazardous materials on site or in the structures that are required to be removed from the site during the course of the construction;
- Identification of watercourses in the vicinity of the site and measures to be put in place to minimise contamination of same;
- Measures as set in the Hydrology chapter (Chapter 10), Biodiversity (Chapter 8), CEMP and NIS to be undertaken in full to ensure the protection of water quality as well as measures to ensure no impact occurs outside the working area and in particular on the sensitive habitats;
- All works in the vicinity of ESB Networks infrastructure will be carried out in ongoing consultation with ESB Networks and will be in compliance with Health & Safety Authority (HSA) Code of Practice for Avoiding Danger from Underground Services (2016), and the ESB Networks & Health and Safety Authority Code of Practice for Avoiding Danger from Overhead Electricity Lines (2019).
- Excavation and reuse of soil / subsoil on site;
- Construction of a temporary haul road to provide for construction traffic access to the site from Donabate Distributor Road (DDR); and
- Temporary power and water services will be arranged for the site accommodation and welfare facilities along with the provision of temporary surface water and foul water management measures for the construction phase.
- Lime Stabilisation will be undertaken on the site as follows:
    - Site will be stripped by Excavators to sub formation level;

- Topsoil Layer will be stripped first followed by subsoil, both being stockpiled separately in designated storage area;
- Exposed ground will be rolled;
- Subsoil material will be placed in layers followed by the proposed lime/cement addition being placed across the top. This will then be pulverised and mixed in place;
- Each layer is rolled with a number of passes by rollers;
- Plate tests will be utilised to ensure the required CBR value is achieved at each layer;
- Potential Impacts and mitigation measures are discussed in the further individual chapters and the Construction Environmental Management Plan (DBFL Consulting Engineers, 2024).

5.5.1.2 Sub-structure and Superstructure Works

It is envisaged that the sub-structure and superstructure works will include (but not necessarily be limited to) the following:

- Excavation of foundations;
- Excavate, lay and test underground drainage;
- Coordinate and install all incoming services;
- Construction of floor slabs;
- Construction of superstructures and roofs;
- Fit out of the residential units will use traditional fit out techniques and finishing trades;
- Gardens, communal open space and public open space areas will be landscaped and planted in accordance with the landscaping proposals for the scheme.

5.5.1.3 Infrastructure Works

The site infrastructure works include the provision of the permanent entrance to the site and the permanent connection of all the utilities and services required for the site, including the foul outfall sewer for the site.

All works are to be carried out in accordance with Irish Water's Code of Practice for Water and Wastewater and the contractor is to liaise with Uisce Éireann for the duration of the construction phase which is anticipated to last approximately 30 months.

Engagement with the service and utility providers will be entered into early in the design stage to allow for adequate planning of utility infrastructure. Provision of the permanent infrastructure to the site will be carried out as early as possible in the programmed works to incorporate the temporary site requirements with the permanent requirements. The existing GNI gas network and ESB network on site is proposed to be diverted and the diversion will be undertaken in consultation with the service providers.

It is the aspiration of the applicant to minimise disruption of existing services and public roads and pathways in the providing of services to the site, this will be done in consultation with the service providers and Fingal County Council.

5.5.1.4 Reinstatement

The temporary construction haul route will be reinstated using topsoil stripped at the construction of the haul route. This will meet the design criteria presented in the detailed design stage of the project. All fill material used will be clean and graded to engineers' specifications.

5.5.2 Construction Phasing & Duration

The envisaged duration of the construction phase is 2.5 years (30 months). The duration of the construction phase is, therefore, assumed to be 'short-term', as per the EPA criteria set out in **Table 1.4** (EPA, 2022). The construction phase of the proposed development is expected to be carried out in three sub-phases (as shown in **Figure 5.2**, below).

5.5.3 Construction Materials

The overall materiality for the proposed development will include standard construction material for any residential scheme (concrete, timber, stone etc).

5.5.4 Earthworks

The site of the proposed development is predominantly greenfield in nature. In order to facilitate the construction of the proposed development, soil stripping, earthworks and the storage and handling of excavated material will be required.

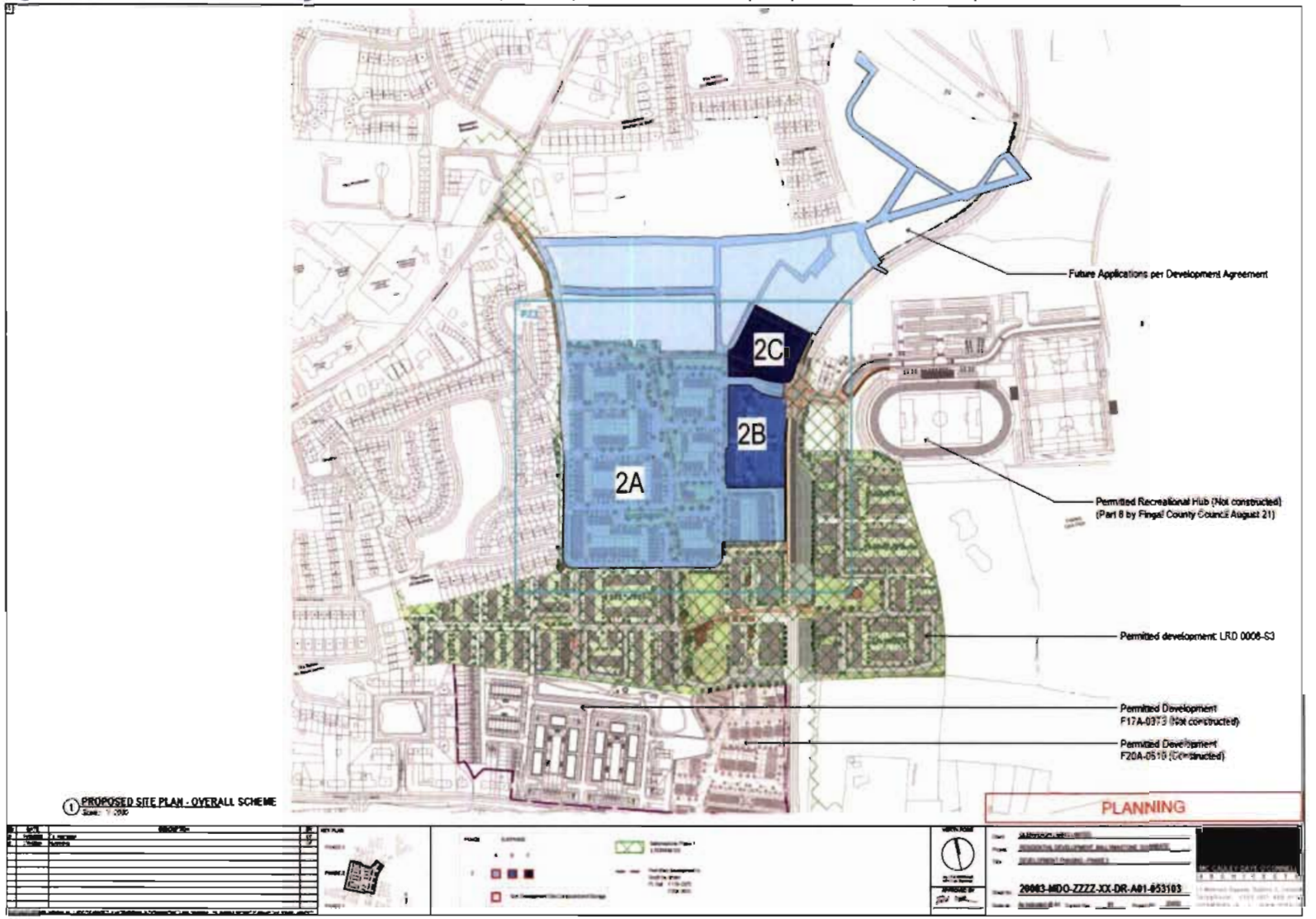
In order to minimize the volume of material being exported off-site, excavated material will be reused on-site (e.g. as fill material) where feasible. All topsoil is planned to be reused on-site, however where excess topsoil arises it will be removed from site to a suitably licenced facility or where suitable to another site for reuse under Article 27. It is envisaged that a certain volume of excavated subsoil will be unnecessary for on-site use and will need to be disposed of at an appropriately licensed facility. If any of the material (topsoil and/or sub-soil) is to be reused at another site it will be treated as By-product (and not as a waste), this will be done in accordance with Regulation 27 (By-products), as amended, European Union (Waste Directive) Regulations 2011-2020. Site Investigation (SI), Waste Acceptance Criteria Testing (WAC testing) and Soil Analysis will be used to classify and determine the suitability of soil and EPA approval will be obtained prior to moving material as a By-product. If the site requires an importation of material (topsoil/sub-soil) this will be done under Article 27 (By-product) notification to the EPA. A log of all By-Product material movements in/out of site will be recorded and maintained. Any soil (topsoil & sub soil) identified as 'contaminated' or not equivalent to virgin greenfield for by-product soil and stone, will be treated as waste and will be segregated on-site, stored in skips or other suitable receptacles in designated areas and will be removed from site to a suitable waste facility by a registered waste contractor. All waste leaving the site will be transported by suitably permitted contractors and taken to suitably registered, permitted or licenced facilities. A log of all waste leaving site will be recorded and maintained. Indicative earthworks figures are as follows:

- Volume of earthworks – excavated soil / subsoil: 41,000m^3;
- Volume of earthworks – reuse on site: 41,000m^3;
- Volume of earthworks – fill required on site (imported): 16,500 m^3;
- Maximum depth of excavation: 6.7m.

5.5.5 Hazardous Substances

During the construction phase, hazardous substances typical of construction sites of this nature and scale will be present on-site, including concrete / cementitious materials, oils, fuels, paints and other chemicals. Hydrocarbons, solvents and other such hazardous substances will be stored in secure, bunded hardstanding areas. Re-fuelling and servicing of construction plant and machinery will only be permitted at suitably located, designated hardstanding areas. Spill kits will be present on-site at all times.

Figure 5.2 Construction Phasing for Phase 2 development (Source: Mc Cauley Daye O'Connell, 2024)



5.5.6 Construction Traffic

A development of this type and scale is anticipated to require an overall average of c. 130 operatives across the programme with a peak of c. 265, subsequently generating, on average, no more than c. 33 two-way vehicle trips during the peak AM and PM periods over the period of the phased construction works. The peak requirement of c. 265 operatives on site is expected to occur over a relatively short period of the programme, potentially generating up to c. 66 two-way vehicle movements in the peak AM and PM periods.

In terms of HGV vehicle movements, typically these are not expected to exceed 4 vehicle movements per hour. This may increase slightly to 6-8 HGV vehicle movements per hour during the busiest period of construction activity.

All construction HGV traffic for the required works will enter the site via construction site access from the Donabate Distributor Road (DDR) with temporary haulage roads provided within the site for access to various areas, refer to **Figure 5.3**. Warning signage will be provided at both haul route locations for pedestrians and other road users on all approaches in accordance with Chapter 8 of the Traffic Signs Manual and the Contractor's Traffic Management Plan.

All construction activities on-site will be governed by the traffic management measures outlined in the Construction & Environmental Management Plan (CEMP) prepared by DBFL Consulting Engineers (2024) and submitted under a separate cover as part of the planning application. The mitigation measures detailed in the CEMP, submitted as part of the planning application, will be implemented through a Construction Traffic Management Plan (CTMP), the details of which will include haul routes, working times etc. This plan will be prepared in consultation with Fingal County Council and agreed in full with the Council prior to commencement of construction activities on site, in order to reach full agreement upon the traffic management mitigation measures and monitoring measures to be adopted during the entire programme of construction activities on-site.

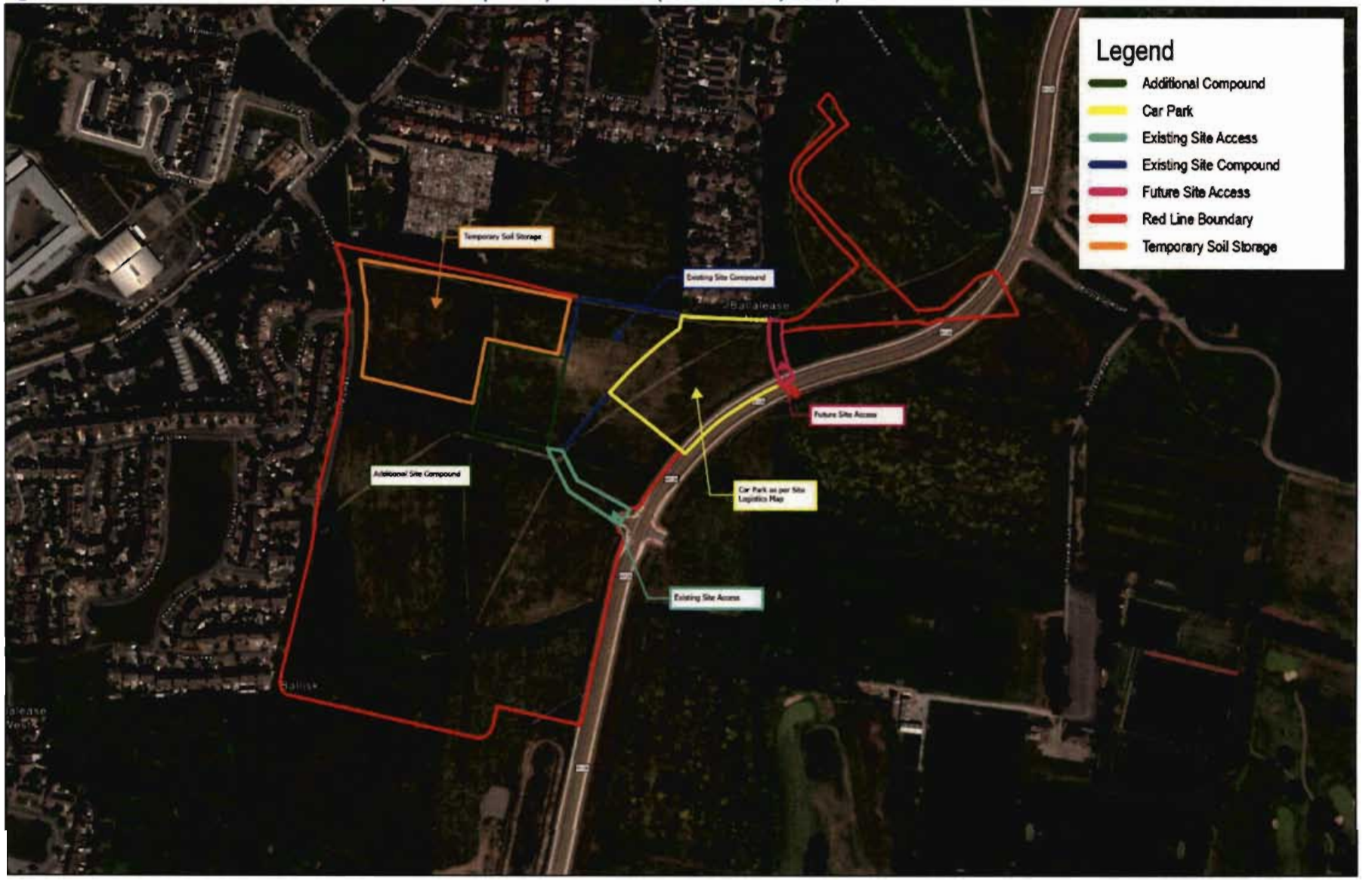
5.5.7 Site Compound and Haul Route

It is envisaged that one construction site compound will be required for the purposes of the proposed development. The precise location of this will be agreed with Fingal County Council prior to the commencement of works, however it will be within the application site. An indicative location for the site compound, proposed haul route and associated soil storage features are illustrated in **Figure 5.3**, below. The construction compound will contain facilities for construction personnel (including parking, welfare facilities and canteen) and waste segregation area.

Surface water and foul water discharge from site will be managed and controlled for the duration of the construction works until the permanent drainage infrastructure is complete.

Please refer to the accompanying Construction Environmental Management Plan prepared by DBFL Consulting Engineers (2024) for further detail.

Figure 5.3 Indicative construction site compound and primary haul route (Source: DBFL, 2024)



5.5.8 Working Hours

Envisaged working hours are as follows:

- Monday – Friday: 07:00 – 18:00;
- Saturday: 08:00 – 14:00;
- Weekends / Bank Holidays: No works.

Works outside of these hours will be subject to prior agreement with Fingal County Council.

5.5.9 Construction Phase Plans

5.5.9.1 Construction and Environmental Management Plan

A Construction & Environmental Management Plan (CEMP) has been prepared in respect of the proposed development by DBFL Consulting Engineers (refer to standalone document submitted under separate cover). It contains best practice measures and protocols to be implemented during the construction phase of the proposed development to avoid / minimise environmental impacts. In the preparation of this Environmental Impact Assessment Report, regard has been had to the mitigation measures and protocols proposed in the CEMP.

The appointed contractor will be responsible for the implementation of the CEMP. The contractor will appoint a suitably qualified Site Environmental Manager (SEM) with responsibility for overseeing the implementation of the CEMP (and all construction phase environmental commitments).

To ensure the CEMP remains fit for purpose, it will be maintained as a live document. The appointed contractor will be responsible for updating the CEMP, as required; e.g. to reflect the publication of relevant new or revised guidelines and / or new statutory requirements. The full schedule of environmental commitments (i.e. all mitigation measures set out in the CEMP and Environmental Impact Assessment Report as part of the planning application, as well as any applicable conditions of development consent) will be included in the CEMP by the appointed contractor.

5.5.9.2 Dust Management

Dust Management measures have been provided in Chapter 11 Air Quality prepared by AWN Consulting Ltd. for the construction phase of the proposed development, the implementation of which will provide for the proactive control of fugitive dust. The main contractor will be responsible for the coordination, implementation and ongoing monitoring of the Dust Management Protocol.

5.5.9.3 Arboricultural Method Statement

An Arboricultural Impact Assessment & Method Statement has been prepared in respect of the proposed development by John Morris Arboricultural Consultancy Ltd. (2024) and submitted under separate cover as part of the planning application. It contains an Arboricultural Method Statement and general recommendations in relation to tree protection on construction sites. The method statement and recommendations contained in the Tree Survey Report shall be integrated into the final CEMP, and implemented in full during the proposed construction works.

5.5.9.4 Construction Traffic Management Plan

Prior to works commencing on-site, a Construction Traffic Management Plan will be prepared by the appointed contractor in accordance with the following guidance documents:

- Department of Transport, Tourism and Sport (DTTS) (2019). Chapter 8: Temporary Traffic Measures and Signs for Roadworks, in Traffic Signs Manual;
- DTTS (2013). Design Manual for Urban Roads & Streets ('DMURS');
- Department of Transport (2010). Guidance for the Control and Management of Traffic at Road Works (Second Edition);
- NRA (2015). Design Manual for Roads and Bridges ('DMRB').

5.5.9.5 Resource and Waste Management Plan (RWMP)

A Resource & Construction Waste Management Plan (prepared by AWN Consulting Ltd., 2024) will be implemented during the construction phase, and is submitted as part of the planning application. This document shall be finalised by the appointed contractor, in agreement with Fingal County Council, prior to the commencement of the proposed works. For further information, refer to Chapter 19 (Material Assets – Waste & **Appendix 19.1** RWMP).

5.6 Operational Phase

5.6.1 Operational Phase Plans

During the operational phase, it is proposed to implement the following plans of pertinence to the Environmental Impact Assessment Report:

5.6.1.1 Mobility Management Plan

A Mobility Management Plan (MMP) has been prepared by DBFL Consulting Engineers (2024) for the operational phase of the proposed development (refer to standalone document submitted under separate cover), to promote sustainable mobility among the residents of the proposed development through a range of measures. The appointed Mobility Manager of the site during the operational phase will be responsible for ensuring – allocating personnel and resources, as needed – the ongoing implementation of the MMP. This is intended to be a live document, to be updated by the Applicant / Operator, where appropriate, e.g. to ensure the Plan remains fit for purpose and up-to-date with relevant policy.

5.6.1.2 Operational Waste Management Plan

An Operational Waste Management Plan (OWMP) has been prepared by AWN Consulting Ltd. (submitted as part of the planning application – **Appendix 19.2**), containing measures to promote operational phase waste management in accordance with the waste hierarchy, i.e. high rates of reuse, recycling and recovery. The Operator / Facilities Management of the site during the operational phase will be responsible for ensuring – allocating personnel and resources, as needed – the ongoing implementation of this OWMP. This is intended to be a live document, to be updated by the Applicant / Operator, where appropriate, e.g. to ensure the Plan remains fit for purpose and up-to-date with relevant policy.

6 Consultation

6.1 Introduction

Consultation is a key element in the EIA process. The *"carrying out of consultations"* is included in the definition of EIA as set out in Article 1(a) of the amended EIA Directive. Consultation at various stages of the EIA process provides for timely and proportionate consideration of potential significant effects, early identification of stakeholder concerns, and facilitates public participation in the development consent process. Consultations may be statutory (i.e. required by law) or non-statutory / informal. Consultations may be undertaken by the Applicant or the Competent Authority, as appropriate and as required.

The United Nations Economic Commission for Europe (UNECE) *Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters* (the Aarhus Convention), which came into force in October 2001, establishes a number of rights of the public with regard to the environment, including the right to access to environmental information and the right to access to public participation in environmental decision-making.

The non-technical summary (NTS) (**Volume 1**) is particularly important in disseminating the information contained in the EIAR to the wider public and facilitating public participation in the development consent process. As stated in the EPA guidelines:

> *"Compliance with the Aarhus Convention requires that the structure, presentation and the non-technical summary of the EIAR, as well as the arrangements for public access, all facilitate the dissemination of the information contained in the EIAR. The core objective of public consultation is to ensure that the public is made as fully aware as possible of the likely environmental impacts of projects prior to a decision being made by the CA [Competent Authority]."*

In addition, where required specialists have consulted relevant Departments and Bodies in order to acquire additional information to undertake the assessment.

6.2 The LRD Process

On 17 December 2021, the Large-scale Residential Development (LRD) planning process came into effect under the Planning and Development (Amendment) (Large-scale Residential Development) Act 2021, thereby replacing the previous Strategic Housing Development (SHD) process. The reform of the dedicated planning process for larger residential developments is intended to continue to expedite the delivery of housing, while restoring decision-making powers to Local Authorities. Certain elements of the previous SHD process, such as mandatory pre-application consultation with the Local Authority and mandatory decision timelines, have been retained; while others have been reformed.

In the Irish planning system, 'Large-scale Residential Development' refers to the following classes of development:

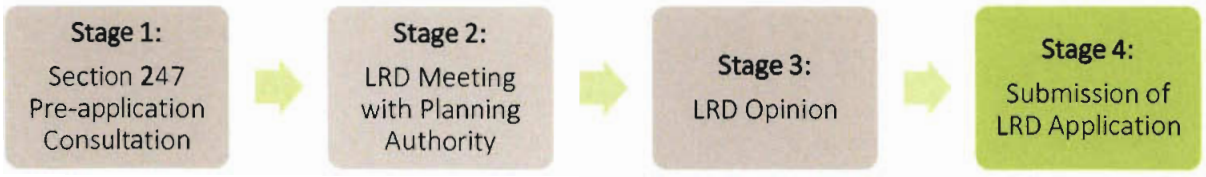
- Housing development of 100 or more units;
- Student accommodation development comprising 200 or more beds; or
- A combination of the two where the threshold is met for either element.

LRD applications are restricted to residential zoned lands and do not apply to lands designated as Strategic Development Zones (SDZ). Any other proposed uses within an LRD are required to be

compliant with the land use zoning objectives designated under the Local Authority Development Plan. Non-residential elements proposed within an LRD are restricted to 30% of the total floor area.

The stages in the LRD application process are outlined in **Figure 6.1**, below.

Figure 6.1 Overview of LRD application process



6.3 Stage 1: Section 247 Pre-application Consultation

As the first stage in the LRD process, prospective LRD applicants are required to engage in standard pre-application consultation with the Local Authority under Section 247 of the PDA 2000. The purpose of this stage is to afford prospective applicants with an opportunity to seek advice from a Local Authority on any planning matters that may have a bearing on the application.

The Stage 1 Section 247 pre-application consultation meeting for the proposed development was held on 24 October 2023 via Microsoft Teams between the Applicant, design team representatives and Fingal County Council (**Table 6.1**). Matters raised by Fingal County Council during the meeting have been taken into consideration in the development of the design for the proposed development.

Under the Section 247 process, an addendum meeting with FCC Transportation Department was held on 14 November 2023.

Table 6.1 Stage 1 Section 247 pre-application consultation meeting (24 October 2023) – attendees

	Attendees
Fingal County Council	▪ Malachy Bradley – Senior Planner ▪ Patricia Cadogan – Senior Executive Planner ▪ Sarah Lowther – Executive Planner ▪ Cormac McGee – Staff Officer LRD Developments ▪ Linda Lally – Senior Executive Engineer – Transport ▪ James Johnson – Executive Engineer – Transport ▪ Gemma Carr – Senior Executive Parks & Landscape Officer ▪ Aoife Dunne – Staff Officer – Part V ▪ Rian Glynn – Staff Officer – Part V ▪ Philip Grobler – Executive Engineer – Water Services
Applicant (Glenveagh Living Limited)	▪ Justin Farrelly ▪ Anthony Perrin
Design Team	▪ Pauline Byrne – Brady Shipman Martin ▪ Hannah Millar – Brady Shipman Martin ▪ Brendan Curran – DBFL Consulting Engineers ▪ Brendan Manning - DBFL Consulting Engineers ▪ Aimee Dunne – DBFL Consulting Engineers ▪ Daniel Garvey - DBFL Consulting Engineers

	Attendees
	▪ David O'Brien – MDO Architects ▪ Caroline Flynn - MDO Architects ▪ Kate Monahan - MDO Architects ▪ Declan O'Leary – CSR Landscape Architects ▪ Nikita Mane Awaghade – CSR Landscape Architects

6.4 Stage 2: LRD Meeting

After the Section 247 Pre-application Consultation meeting has taken place, the prospective LRD applicant may request an 'LRD Meeting' – all LRD proposals are required to undertake an LRD Meeting with the relevant Planning Authority, for the purposes of receiving an 'LRD Opinion' as to whether the proposal constitutes a reasonable basis for submitting an LRD planning application under Section 32(D) of the PDA 2000.

The Stage 2 LRD Meeting for the proposed development was held on 24 January 2024 between the Applicant, design team representatives and Fingal County Council (**Table 6.2**).

Table 6.2 Stage 2 LRD Meeting (24 January 2024) – attendees

	Attendees
Fingal County Council	▪ Deirdre Fallon – Senior Planner ▪ Patricia Cadogan – Senior Executive Planner ▪ Cormac McGee – Staff Officer LRD Developments ▪ Philip Grobler – Executive Engineer – Water Services ▪ James Johnson – Executive Engineer – Transport Planning ▪ Gemma Carr – Senior Executive Parks & Landscape Officer ▪ Ellen Giffney – Graduate Parks & Landscape Officer ▪ Christine Baker – Heritage Officer ▪ Aoife Dunne – Staff Officer – Part V
The Applicant (Glenveagh Living Limited)	▪ Justin Farrelly ▪ Anthony Perrin
Design team	▪ Pauline Byrne – Brady Shipman Martin ▪ Hannah Millar – Brady Shipman Martin ▪ Brendan Manning – DBFL Consulting Engineers ▪ Aimee Dunne – DBFL Consulting Engineers ▪ Daniel Garvey - DBFL Consulting Engineers ▪ David O'Brien – MDO Architects ▪ David O'Connell – MDO Architects ▪ Caroline Flynn - MDO Architects ▪ Kate Monahan - MDO Architects ▪ Declan O'Leary – CSR Landscape Architects ▪ Nikita Mane Awaghade – CSR Landscape Architects

6.5 Stage 3: LRD Opinion

Following the LRD Meeting, an LRD Opinion was issued by Fingal County Council in February 2024, stating that –

'Fingal County Council has considered the documentation submitted with the consultation request under Section 32B of the Planning and Development Act 2000, as amended, and is of the opinion that the documentation submitted constitutes a reasonable basis on which to make an application for permission for the proposed LRD.'

Pursuant to Article 16A(7) of the PDR 2001, the Opinion set out a list of specific information that should be submitted with the planning application. Reference was made to several items of relevance to the Environmental Impact Assessment Report, including the water services and drainage infrastructure, road hierarchy and pedestrian permeability, cycling infrastructure, road safety audit, assessment of potential impacts on the archaeological landscape, architectural and cultural heritage, design and layout, educational audit, community and social infrastructure audit, climate action energy statement, phasing plan, housing quality assessment, building lifecycle report, construction environmental management plan, sunlight and daylight analysis, parks and green infrastructure and play provision. Regard has been had in the preparation of this Environmental Impact Assessment Report to the matters raised in the LRD Opinion.

6.6 Stage 4: Submission of LRD Application

The Stage 4 of the LRD application process, the submission of the planning application to the Planning Authority (Fingal County Council), will allow for public consultation. The Applicant will make copies of the application documents (including this Environmental Impact Assessment Report) available for public viewing on a dedicated website, www.ballymastonelrd2.ie. Members of the public, Prescribed Bodies and elected Council members may submit observations on the proposed development within five weeks from the date when the application was registered.

Planning Authority decisions on LRD applications may be appealed directly to An Bord Pleanála within four weeks of decision, by Applicants and parties that have submitted observations / submissions at Stage 4.

7 Population & Human Health

7.1 Introduction

This Chapter presents an assessment of the likely impacts of the proposed development on the local population during the construction and operational phases.

The proposed development is described in Chapter 5, and these details are reiterated in this chapter only insofar as is relevant to population and human health.

This chapter has been prepared by Namrata Kaile, Ecologist & Environmental Consultant at Brady Shipman Martin. A technical review was completed by Thomas Burns, Partner at Brady Shipman Martin. Refer to **Table 1.4** in Chapter 1 (Introduction) for qualifications of authors and reviewers.

7.2 Method

The amended Directive updated the list of topics to be addressed in an EIAR and has replaced '*human beings*' with '*population and human health*'. The term '*human health*' is not defined in the amended Directive; however, the European Commission *Guidance on the Preparation of the Environmental Impact Assessment Report* states that:

> *"Human health is a very broad factor that would be highly Project dependent. The notion of human health should be considered in the context of other factors in Article 3(1) of the EIA Directive and thus environmentally related health issues (such as health effects caused by the release of toxic substances to the environment, health risks arising from major hazards associated with the Project, effects caused by changes in disease vectors caused by the Project, changes in living conditions, effects on vulnerable groups, exposure to traffic noise or air pollutants) are obvious aspects to study. In additian, these would concern the commissioning, operation, and decommissioning of a Project in relation to workers on the Project and surrounding population" (p. 37).*

The EPA guidelines state that:

> *"In an EIAR, the assessment of impacts on population and human health should refer to the assessments of those factors under which human health effects might occur, as addressed elsewhere in this EIAR e.g. under the environmental factors of air, water, soil etc.." (p. 28).*

The EPA guidelines advise that the topics of employment, human health, baseline population and amenity should be addressed in this chapter of the EIAR. It is noted that "*The transposing legislation does not require assessment of land-use planning, demographic issues or detailed socio-economic analysis*" *(p. 28).*

There is significant potential for interactions between population and human health and other topics addressed in the EIAR, since impacts on the local population may arise due to effects in relation to traffic and transportation, air quality and climate, noise and vibration, landscape and visual amenity, microclimate, material assets, and flood risk, among others. These interactions are addressed in this chapter and, where appropriate, in the relevant other specialist chapters.

The EPA guidelines also state that:

> *"Assessment of other health & safety issues are carried out under other EU Directives, as relevant. These may include reports prepared under the Industrial Emissions, Waste Framework, Landfill, Strategic Environmental Assessment, Seveso III, Floods or Nuclear Safety Directives. In keeping with the requirement of the amended Directive, an EIAR should take account of the results of such assessments without duplicating them." (p. 28).*

This chapter has been prepared with reference to the following guidance documents:

- EPA (2022). *Guidelines on the information to be contained in Environmental Impact Assessment Reports* ('the EPA guidelines');
- IEMA (2022). *Effective Scoping of Human Health in Environmental Impact Assessment;*
- IEMA (2022). *Determining Significance for Human Health in Environmental Impact Assessment*;
- IEMA (2017). *Health in Environmental Impact Assessment: A Primer for a Praportionate Approach*;
- Institute of Public Health (2021). *Health Impact Assessment Guidance: A Manual. Standalone Health Impact Assessment and health in environmental assessment.*

A desk study was carried out to develop a description of the receiving environment (baseline) in relation to population and human health. The following sources were referred to, among others:

- Central Statistics Office (CSO) census data from 2011, 2016 and 2022;
- Fingal County Council (2023). *Fingal Develapment Plan 2023 – 2029*;
- Fingal County Council (2016). *Donabate Local Area Plan 2016-2021* (as extended);
- Department of Housing, Planning & Local Government (DHPLG) (2024). *My Plan Map Viewer*;
- Department of Health (2024). *Health in Ireland – Key Trends 2023*;
- Department of Health (2019). *Healthy Ireland Framework 2019-2025*;
- AIRO Census Mapping;
- Eastern and Midlands Regional Assembly (2019). *Regional Spatial and Economic Strategy 2019-2031.*

Effects have been characterised in accordance with the EPA guidelines (refer to **Section 1.6** in Chapter 1).

7.3 Baseline Environment

The proposed development site is situated in the coastal town of Donabate, c. 20 km north-east of Dublin City, in the administrative area of Fingal County Council. The site is situated in the administrative area of Fingal County Council, in the townlands of Ballalease North, Portraine Demesne, Ballymastone and Ballisk. The site, which is situated on the eastern margin of Donabate town, is predominantly comprised of disused agricultural land, criss-crossed by hedgerows and drainage ditches. The site is bounded to the west and north by existing residential development. The Donabate burial grounds are to the north-west of the site. The site is also bound immediately to the south and south-east by lands that form part of a Large-scale Residential Development (LRD) comprising 432 residential units and all associated site works, permitted by An Bord Pleanàla on the 28 March 2023 (FCC Ref. LRD0008/S3 & ABP Ref. 315288). The site is also bound by Recreational Hub (Part 8 – approved) to the east of the site.

The site is bounded to the west and north by existing residential development. The subject lands are undeveloped and greenfield in nature and situated to the west of the Donabate Distributer Road (DDR). St Patrick's GAA complex and a permitted recreational hub at Ballymastone (undeveloped) lie on the opposite side of the DDR and in proximity to the site. Further undeveloped lands which will potentially

form Phase 3 of the Ballymastone development lie to the north. Extant development within the settlement of Donabate lies to the west and comprises the residential estates of The Links, while Priory Wood, Willowbrook.

Figures 1.1 and **1.2** in Chapter 1 (Introduction) illustrate the location of the proposed development site.

Development objectives applicable to the location of the proposed development are discussed in Chapter 3 (Planning & Development Context).

7.3.1 Population

Donabate is situated on the Donabate-Portrane peninsula between the Rogerstown and Malahide (Broadmeadow) estuaries. A small town until recently, Donabate has experienced significant population growth in recent years, on account of its proximity to Dublin City centre, and its location on the Dublin-Belfast railway line.

The CSO provides data on population and socio-economic aspects of the population at different levels from the State, county level, Local Electoral Area (LEA), individual Electoral Districts (ED) to Small Areas (SA) within each County. The 2016 Census undertaken by CSO provides detailed results and reports. Most recent census was undertaken in April 2022. CSO published preliminary results for 'Census of Population 2022' on 23 June 2022 (updated September 2022) which have been superseded by the main results published from May 2023 onwards. A series of themed reports, Small Area Population Statistics (SAPS) and Place of Work, School, College - Census of Anonymised Records (POWSCAR) and their detailed statistical tables have been provided as per the schedule set by CSO for May 2023 to December 2023. This chapter uses the most up to date and detailed statistical data that is available at the time of writing this chapter.

The CSO data illustrates that the population of the Irish State increased between 2011 and 2016 by 3.8%, and further increased by 8.1% between 2016 and 2022, bringing the total population of the Irish State to c. 5.1 million in April 2022 (see **Table 7.1**, below), which is the highest population recorded in a census since 1841.

The rate of growth has increased from 3.8 % to 8.1% as compared to the previous census, with the largest inward migration to Dublin. The economy has recovered since the last census with consequent population growth predominantly attributed to natural increase, greater economic activity, increased job opportunities and continued immigration. The summary results for 2022 census states that Fingal is one of the highest growing counties with a population increase of 11.6% between Census 2016 and Census 2022.

Table 7.1 Population change in the State, LEA and ED Level 2011 – 2022 (CSO 2011, 2016 and 2022 Census Data)

Area	Number of Persons			
	2011	2016	2022	Change
Ireland – State	4,588,252	4,761,865	5,149,139	**+3.8%** (2011-2016) **+8.1%** (2016-2022)
Fingal County Council Administrative Area	273,991	296,020	330,506	**+8.0%** (2011-2016) **+11.6%** (2016-2022)
Donabate ED	8,733	9,399	11,783	**+7.6%** (2011-2016) **+25.4%** (2016-2022)

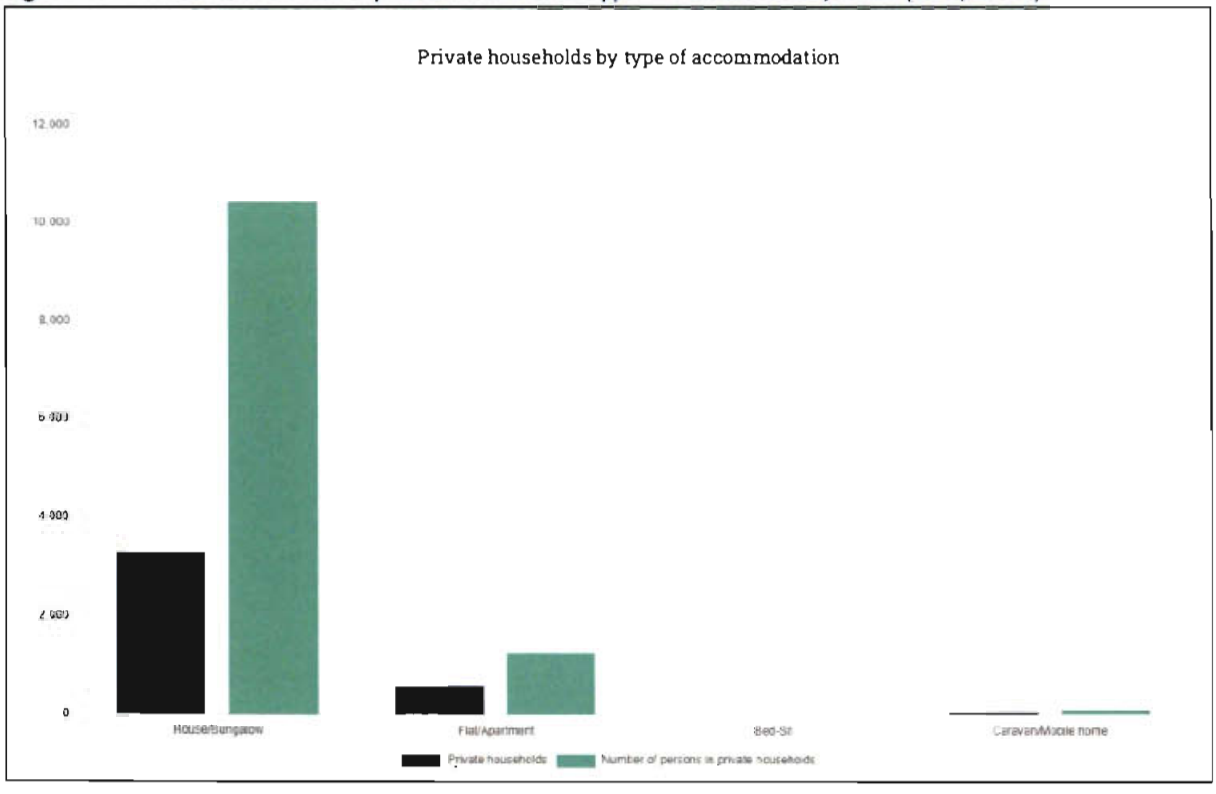
In the period between 2016 and 2022, the population in the administrative area of Fingal County Council (FCC) increased by 11.6% as compared to the previous increase of 8% between 2011 and 2016. The site of the proposed development is located in the LEA of 'Rush-Lusk' and the ED of 'Donabate'. The population statistics indicate that growth at the level of the ED between 2016 and 2022 has been significantly more that the growth between 2011 and 2016, and over three times the rate of growth that occurred at the national level.

A review of the Fingal County Council planning portal indicates significant residential development in the pipeline for Donabate, with numerous medium- to large-scale developments permitted or proposed, as detailed in Chapter 22 (Cumulative Impacts).

7.3.2 Land Use and Settlement Patterns

The site of the proposed development is situated in Donabate, a rapidly growing commuter town on the northern fringe of the Dublin Metropolitan Area, served by the DART / Dublin – Belfast railway line. Land use in Donabate is a mix of low-rise residential, agricultural, transport infrastructure and scattered retail / commercial / community infrastructure. Residential development in this area is predominantly comprised of housing estates (**Figure 7.1**), with a number of large-scale residential developments under construction or permitted, and with scattered apartment developments also represented.

Figure 7.1 Private households by accommodation type – Donabate ED, 2022 (CSO, 2023)



Donabate is situated in the administrative area of Fingal County Council and, as such, is subject to the *Fingal Development Plan 2023 – 2029* ('the Development Plan') and the *Donabate Local Area Plan 2016 – 2021* ('the LAP').

Under the Development Plan, the site of the proposed development corresponds with a landbank earmarked for residential development at Donabate. The proposed development site is primarily zoned (i) RA 'Residential Area', for which the corresponding objective is to *"Provide far new residential communities subject to the provision of the necessary social and physical infrastructure"*. Within the

north-eastern boundary of the site a small strip of land is zoned (ii) CI – 'Community Infrastructure', for which the corresponding objective is to *"Preserve and provide for open space and recreational amenities"*.

The surrounding land to the west is zoned as RS 'Residential' and 'CI' Community Infrastructure, to the east and north is zoned as RS 'Residential' and to the south as RA 'Residential Area'. The GDA cycle network plan also runs to the immediate east of the site along the Dublin Distributor Road (DDR) and also along the Portrane Road to the north-west and New Road to the south. Furthermore, a small portion of land within the north-eastern boundary of the subject site is partially located within the boundary of Portrane – St. Ita's Hospital Complex Architectural Conservation Area. To the north of the site, there is a local objective (22) located within Donabate Cemetery which aims to - *"Provide for a proposed Cemetery Improvement and Extension Scheme (with new designated car parking area) on FCC owned lands to the east/south of the existing Donabate Cemetery, to be designed and brought forward for tender purposes for delivery."*

Under the Development Plan, Donabate is identified as a 'Self Sustaining Growth Town' (as per the Settlement Strategy of the RSES) with *"and is strategically located, benefiting from its position on the North-South Strategic Corridor"* (p. 84). Regarding Donabate, Plan further states that- *"There is significant residential capacity in this strategically located rapidly growing coastal village. The DART Expansion Programme will support ongoing large-scale urban expansion of Donabate and it is envisioned that there will be consolidation of the economic and service base in tandem with population growth in this area."* (p. 267).

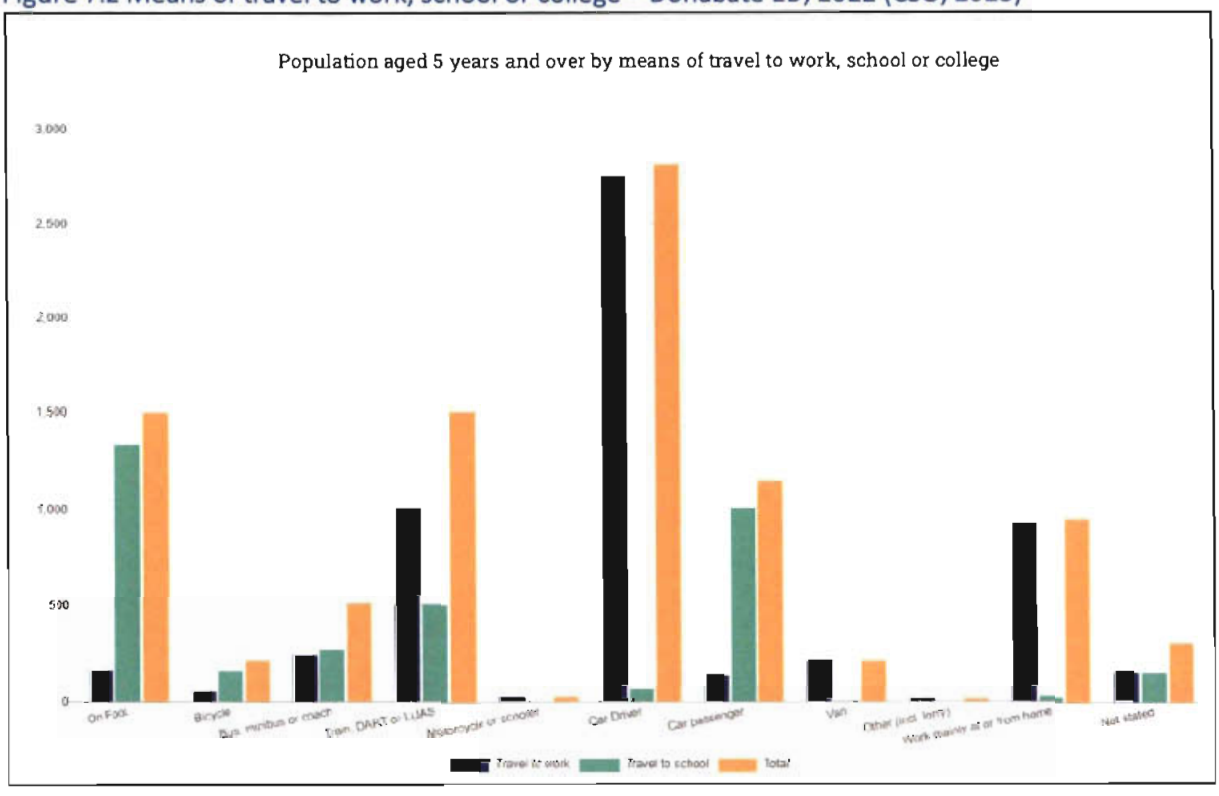
The lands that are the subject of the LAP comprise approx. 138 hectares (340 acres) in four land parcels at Corballis (c. 65 ha), Ballymastone (c. 50.2 ha), Rahillion (c. 5.5 ha) and at Turvey (c. 16 ha), zoned 'RA' (to *"Provide for new residential communities in accordance with approved local area plans and subject to the provision of the necessary social and physical infrastructure"*) under the Development Plan.

The site of the proposed development is situated within the Ballymastone land parcel, as identified in the Donabate LAP. For further information in relation to the LAP development objectives for the site, refer to Chapter 3 (Planning & Development Context).

Donabate is served by high-capacity public transport infrastructure, in the form of the Dublin – Belfast railways line, served by DART services, providing access to Dublin City Centre (southbound) and Drogheda (northbound). There are also a number of public bus routes serving the town (Dublin Bus routes 33d and 33e and GoAhead route number 33b). Chapter 18 (Traffic & Transportation) details the existing transport infrastructure at the location of the proposed development.

Figure 7.2 illustrates the census data for the primary means of travel to work, school or college in the ED in 2022. It shows that private car use (~45%) is the principal mode for commuting in the Donabate area, followed by public transport (bus or train) (~ 26%).

Figure 7.2 Means of travel to work, school or college – Donabate ED, 2022 (CSO, 2023)



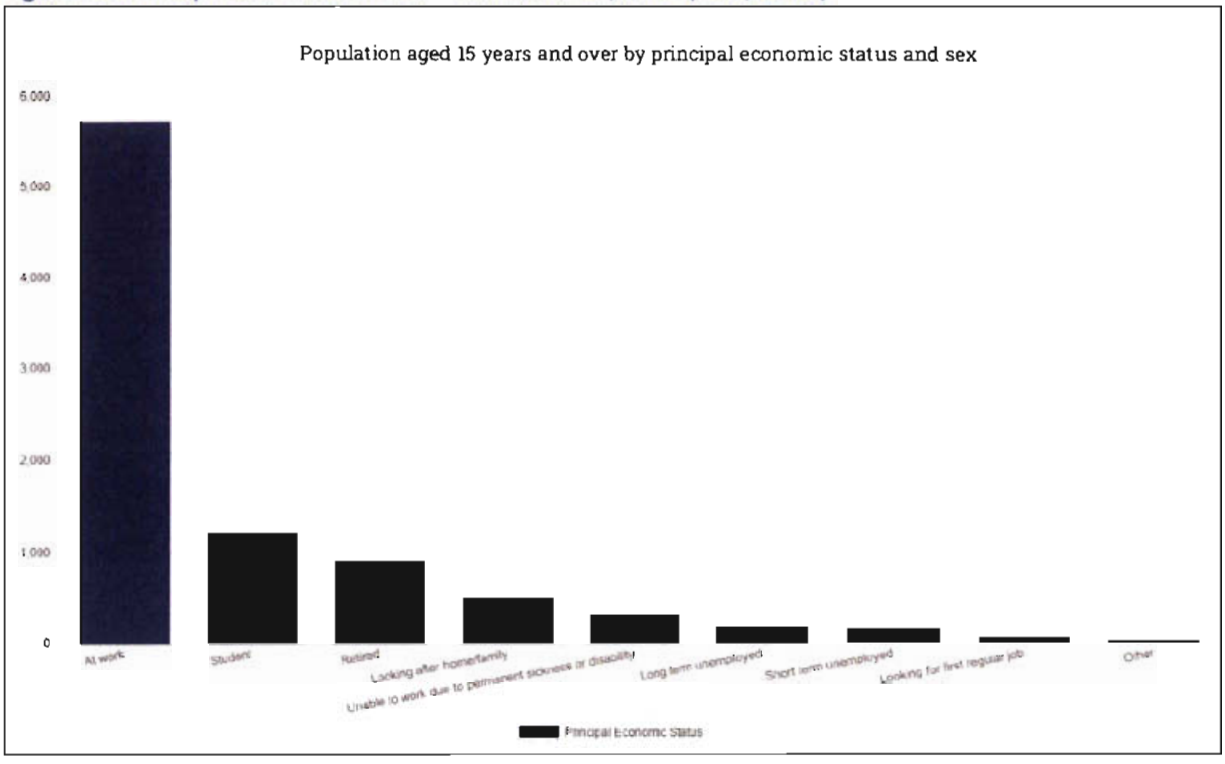
7.3.3 Economic Activity and Employment

Donabate is a commuter town, which does not support high levels of employment. Dublin City Centre, Swords and Dublin Airport are the primary employment hubs in the wider area. CSO census data for 2022 indicate a high rate of employment among residents in the ED, at the time of the 2022 census (**Figure 7.3**).

It is noted in the Development Plan that-

"The labour force unemployment rate in Fingal in 2016 was 6.9% compared to the national rate of 8.4%. Following an increase in unemployment during the Covid pandemic, the national unemployment rate has reduced to 4.3% (as of February 2023), with Fingal likely to have mirrored this trend." (p.27).

Figure 7.3 Principal economic status – Donabate ED, 2022 (CSO, 2023)



7.3.4 Tourism & Amenity

Generally speaking, the location of the proposed development is not an important area in terms of tourism or tourist accommodation. However, Donabate contains a number of recreational amenities and attractions, including Newbridge House (an 18th century Georgian mansion house and demesne, owned and managed by Fingal County Council as a public park, playground and model farm) and Donabate Beach, a popular destination for walking, surfing and canoeing. Given these and other recreational amenities in the area, the Donabate LAP notes that there is an opportunity to promote the town as a visitor destination.

7.3.5 Community Infrastructure

For the purposes of the proposed development, Brady Shipman Martin (BSM, 2024) has prepared a Community & Social Infrastructure Report and Schools Demand & Childcare Facilities Assessment Report. These have been submitted under separate cover as part of the planning application.

The Childcare Facilities Assessment Report (BSM, 2024) has determined that within the 2km catchment area there are 13no. childcare facilities, within which 10 no. of the facilities fall within a 1km radius from the site. Furthermore, there are 4no. primary schools (Gaelscoil Na Mara, Scoil Phadraic Cailini National School, Donabate Portrane Educate Together National School and St. Patrick's Boy's National School) within the 2km catchment area and 3 no. secondary schools (Donabate Community College, St. Joseph's Secondary School and Lusk Community College) within the 5km radius. The development generates the need for approximately 112 no. primary school places and 86 no. secondary school places which can be sufficiently met by the existing primary and secondary school provision within a 2km and 5km radius of the subject site.

The Community & Social Infrastructure Report (BSM, 2024) states that the proposed development is located in close proximity to Donabate village and Donabate Rail Station (c. 1km) and has approximately

23 no. community facilities to avail of, within the 5km catchment area with 6 no. facilities within 1km of the subject site, catering for all age groups. Within 1km from the subject site there are 2 no. community centres, Donabate Portrane Community Centre and Donabate Parish Hall, both of which are situated along Donabate Main Street. The Donabate Portrane Public Library is c. 350 metres from the subject site. The **Table 7.2** below provides an overview of the community infrastructure in the area. Healthcare facilities are addressed in the following section.

Table 7.2 Overview of community facilities in the vicinity of the proposed development site

Type	Name	Distance
Community Centre	Donabate Portrane Community Centre	c.0.35km
	Donabate Parish Hall	c. 0.77km
Post office	Donabate Post Office	c. 0.68km
Bank	Bank of Ireland (Malahide)	c. 4.22km
	Bank of Ireland (Swords)	c. 6.2km
ATM	AIB ATM Donabate Town Centre	c. 0.52km
Library	Donabate Portrane Public Library	c. 0.35km
Credit Union	Malahide & District Credit Union Limited	c.4.25km
Open Space & Recreation	Links Park	c. 0.24km
	Newbridge House & Farm	c. 2.0km
	Donabate-Portrane Cliff Walk	c. 1.9km
	Donabate Beach Walk (Balcarrick Beach)	c. 1.9km
	Portrane Beach	c. 2.12km

7.3.6 Human Health

The Department of Health's 2024 report, *Health in Ireland – Key Trends 2023*, provides summary statistics on health and health care in Ireland over the past ten years. The report highlights the following key trends:

- Ireland has the highest self-perceived health status in the EU, with 80.0% of people rating their health as good or very good;
- The population in Ireland in 2023 is estimated to be 5.15 million, an increase of 2.6% on Census 2022 and the largest change was seen in the over 65 age group which increased by 34% since 2014;
- The mortality rates have declined by 10.3% over the past decade. The mortality rates due to cancer, circulatory system diseases, ischaemic heart diseases and respiratory diseases have declined by 11.4%, 25.1%, 33.4% and 24.5%, respectively between 2013 and 2022;
- Life expectancy has improved in Ireland since the past decade, however the rate of increase of life expectancy has been declining;
- Over the past decade, both cigarette and alcohol consumption has declined. The alcohol consumption has declined at a slower rate than cigarette consumption.

At the national level, population health presents a picture of decreasing mortality rates and high self-perceived health over the past ten years. Ireland has the highest self-perceived health status in the EU, with 80% of people rating their health as good or very good. In 2022, 80.1% of males and 79.9% females rated their health as being good or very good. However, health status reflects income inequality, people in higher income brackets tend to report better health than those in lower income brackets.

Infant mortality, measured as deaths per 1,000 live births, has also decreased by 8.5% since 2012, but increased by 14.1% between 2019 and 2021, so Ireland is now equal to the EU average. In 2022, the number of live births has decreased by 5% since the previous year. Overall, the number of live births has fallen each year between 2012 and 2020 and increased from 2020 to 2021. The 'Total Fertility Rate' for Ireland was at 1.78 in 2021 and has decreased in the recent years.

The age-standardised mortality rates have declined for all causes over the past decade by 10.3%. This decrease is particularly strong for mortality rates from suicide (-26.1%), Transport accidents (-52.4%), pneumonia (-41.0%) and stroke (-39.9%). Provisional data for 2021 shows a slight decrease of 3.4% in the overall mortality rate over the previous year. The three-year average for suicide mortality in Ireland was below the EU average up to 2020 (the latest year for which EU data is available). Both the male and female three-year average have fluctuated slightly between 2019 and 2020, with no major movement in either direction. However, improvements in mortality rates and high levels of self-rated health can mask variations between regions, age groups and other population subgroups. Rates of cigarette smoking have decreased since 2002, and alcohol consumption has also decreased over the same period, although not as dramatically.

Human health has the potential to be affected by exposure to toxic substances or pathogens in environmental media, such as air, water and soil. Human health impacts can also arise due to anthropogenic or naturally occurring accidents or disasters; such as landslides, flooding or structural failures. Nuisance and negative psychosocial impacts can also arise as a direct result of environmental factors; e.g. as a result of noise, dust, unsafe environments and / or crime; or indirectly, e.g. as a result of economic hardship. Occupational health and safety risks to construction site personnel are also inherent where demolition and construction works are proposed.

The baseline environments in terms of air, surface water and groundwater / soil are detailed in Chapter 11 (Air Quality), Chapter 12 (Climate), Chapter 10 (Hydrology), Chapter 9 (Land, Soils, Geology & Hydrogeology), and Chapter 16 (Microclimate: Daylight and Sunlight) respectively. The risks of accidents and disasters are addressed, where relevant, in the various specialist chapters herein. Flood risk, for instance, is addressed in Chapter 10 (Hydrology); while geohazards are addressed in Chapter 9 (Land, Soils, Geology & Hydrogeology). Potential health risks associated with industrial hazards are addressed below.

Healthcare within the study area is provided by a range of different organisations including public, voluntary and private agencies. The Health Services Executive is the primary agency responsible for delivering health and personal social services in Ireland. In recent years, primary care has been identified as the most effective and cost-efficient way to treat patients. This offsets dependence on the hospital system, allowing most patient care to take place at local, community locations which feature multi-disciplinary teams of healthcare professionals working together.

There are a range of healthcare facilities in the vicinity of the proposed development, Donabate Family Medical is the closest healthcare facility to the subject site which is located c. 0.53km to the north and

is located beside Donabate Pharmacy. **Table 7.3** lists healthcare facilities in the vicinity of the proposed development site.

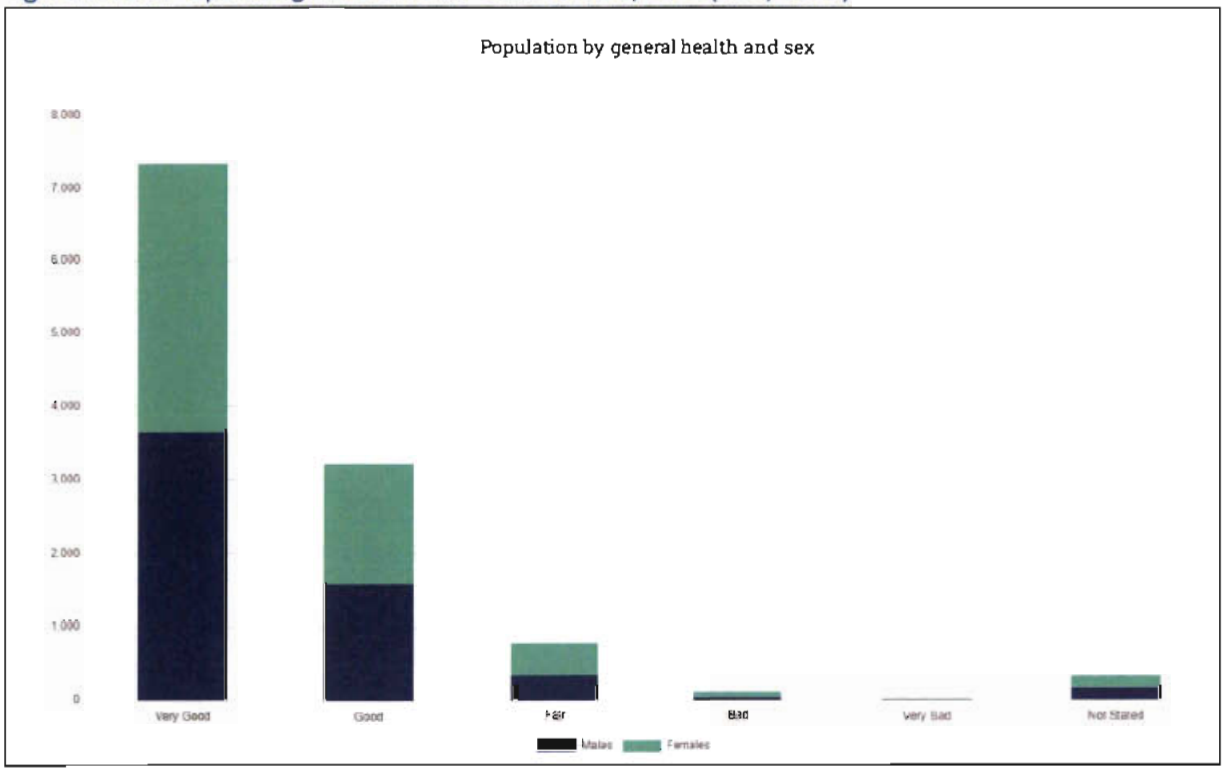
Table 7.3 Healthcare facilities in the vicinity of the proposed development site

Type	Name	Distance
Pharmacy	Donabate Pharmacy	c. 0.54km
	Brennan's Life Pharmacy	c. 0.64km
	Tobin's Pharmacy	c.0.65km
Physiotherapy	Donabate Physiotherapy	c. 0.48km
	Functional Patterns Dublin	c. 0.52km
Dental Clinic	Denture Clinic	c. 0.50km
	Dr Tom Hughes B Dent Sc Dental Surgery	c. 0.76km
Medical Centre	Donabate Family Medical Centre	c. 0.53km
	Donabate Clinic	c. 0.66km
	Donabate Health Centre	c. 0.66km
	Marine Court Medical	c. 4.09km
Hospital	HSE Special Care Hospital Portrane (NFMHS Portrane Campus).	c.1.11km

Figure 7.4 presents the self-reported health status of the population in Donabate ED, as reported in the 2022 Census. While the data are self-reported and, therefore, do not provide an entirely accurate picture of the health profile of the area, they do indicate a relatively high level of individual wellbeing in the area.

As detailed in **Section 2.5.1** (Major Accidents and Disasters), neither the construction nor the operation of the proposed development is likely to contribute to the occurrence of a major accident or disaster at a SEVESO III site (or any other industrial site in the area). Relative to existing residential development in the area, the proposed development is not especially susceptible to the effects of such an event. The operators of SEVESO III sites have operational protocols in place, such that residents will be informed of potential hazards, in the event of a major accident.

Figure 7.4 Self-reported general health- Donabate ED, 2022 (CSO, 2023)



7.4 Predicted Impacts of the Proposed Development

7.4.1 Do-Nothing Impact

The 'Do-Nothing' alternative considers the likely scenario that would arise, assuming the proposed development were not progressed, i.e. if nothing were done. In this case, the Do-Nothing scenario might entail:

(a) A continuation of the existing status and use of the lands (predominantly disused agricultural land); or

(b) Development (likely residential as per the Fingal Development Plan 2023-2029 zoning objectives) under the scope of a separate proposal and application at some point in the future.

Under scenario (a), no significant impacts would arise in relation to population and human health locally. In the context of the ongoing housing crisis in the Dublin Metropolitan Area (DMA), this scenario is considered to represent a socially suboptimal use of the Ballymastone development lands. The opportunity cost, in this scenario, would include the 364no. residential units proposed and the accommodation that these would otherwise provide.

The latter scenario (b) is considered more likely, taking into account the location of the lands, the policy context (including the zoning and development objectives for the lands under the Development Plan and Local Area Plan) and significant demand for housing in the DMA. The impacts of scenario (b) would depend on the nature of the proposal in question but, given that there are specific development objectives and standards for the site (e.g. under the scope of the Development Plan), would likely be similar to those of the proposed development, as described below.

7.4.2 Construction Phase

The duration of the construction phase is anticipated to be in the range of c. 30 months. As such, associated effects are expected to be short-term in duration, at worst. During this time, there will be no community severance, loss of rights of way or amenities as a result of the proposed development.

As part of this assessment, the other specialist chapters of the Environmental Impact Assessment Report have been reviewed to identify potential interactions. In the absence of standard good construction practice and mitigation measures, the following potential impacts have been identified during the construction phase:

- Nuisance / health impacts related to exposure to dust;
- Impacts due to greenhouse gas emissions and climate vulnerability;
- Nuisance / disturbance related to elevated noise levels;
- Impacts on traffic / parking due to presence of construction traffic;
- Potential negative impacts on landscape and visual amenity due to presence of construction site and effects of construction activities (e.g. dust, dirt, stockpiling of soils, removal of vegetation, etc.);
- Health impacts related to improper waste management;
- Health impacts related to improper safety protocols, e.g. related to diversions of gas / power lines;
- Nuisance / impacts on residential amenity due to potential service / power outages;
- Impacts due to changes to daylight and sunlight availability on the receiving environment;
- Economic impacts related to construction employment / increased demand for goods and services.

These are considered in the following sections.

7.4.2.1 Air Quality & Climate

Dust-generating activities during the proposed works may create nuisance and human health impacts for local residents, workers and passers-by in the immediate vicinity of the site.

The German TA-Luft standard for dust deposition (non-hazardous dust) (German VDI, 2002) sets a maximum permissible emission level for dust deposition of 350 mg/(m^2*day) averaged over a one month period at any receptors outside the site boundary. Recommendations from the Department of the Environment, Health & Local Government (DoEHLG, 2004) apply the Bergerhoff limit value of 350 mg/(m^2*day) to the site boundary of quarries.

The extent of dust generation is dependent on the type of dust; the nature of construction activities; and meteorological factors, such as rainfall, wind speed and wind direction. As such, the degree and severity of dust generation is expected to fluctuate across the duration of the proposed works. However, dust generation of some degree may be anticipated throughout.

Chapter 11 (Air Quality) has rated the sensitivity of the area to dust soiling is considered high and the sensitivity of the area to human health is considered low. Chapter 11 (Air Quality) states that there is an overall high risk of dust soiling impacts and a low risk of dust-related human health impacts as a result of the proposed construction phase (earthworks, construction and trackout) in the absence of mitigation. There is also the potential for traffic emissions to affect air quality in the short-term over the construction phase, particularly due to the increase in HGVs accessing the site. The movements of construction vehicles on the site and off-site shall also generate wind-blown dust emissions. Furthermore, construction traffic to and from the site shall result in a short-term increase in the volume

of diesel fuelled HGVs along the local road network, which will generate additional hydrocarbon and particulate emissions from the vehicle exhausts.

In the absence of mitigation, it has predicted a **negative, slight, short-term and localised impact** on population and human health, resulting from the air quality effects of the construction phase.

There is the potential for release of a number of greenhouse gas emissions to atmosphere during the construction of the proposed development. As detailed in Chapter 12 Climate, the impact of the proposed development in relation to GHG emissions prior to mitigation measures being put in place is considered **long-term, negative and slight.** There is also potential for impacts due to climate change on the proposed development. As detailed in Chapter 12, in relation to climate change vulnerability, as the construction phase is not within the timescale where the worst of climate change is proposed to have occurred. The impact of the proposed development in relation to construction phase climate vulnerability emissions is therefore considered **long-term, negative and imperceptible.**

Corresponding mitigation measures have been set out in Chapter 11 and 12, and are discussed further below.

7.4.2.2 Noise and Vibration

Chapter 13 (Noise & Vibration) has assessed the potential noise and vibration impacts of the proposed development during the construction phase in relation to construction activities, plant and equipment, and construction traffic.

The closest NSLs to the proposed development are residential dwellings of Priory Wood residential estate and Donabate Burial Grounds to the north, The Links residential estate to the west, the Donabate Distributor Road to the east and the Ballymastone Phase 1 site to the south, currently under construction.

For the purposes of the noise impact assessment, 'Category A' noise threshold level with threshold value of 65 dB(A) will be applied to the nearest noise sensitive locations. In the absence of mitigation, the construction phase activities such as site clearance, excavation and road works will have be **negative, significant and short-term** for residential noise sensitive locations immediately within 15 m to 30 m of the site boundary. At all other sensitive receptors, the noise impact will be **negative, not significant and short-term**.

In relation to construction vibration, the assessment has determined that the low vibration levels at very close distances to the piling rigs, vibration levels at the nearest buildings are not expected to pose any significance in terms of cosmetic or structural damage. In addition, the range of vibration levels is typically below a level which would cause any disturbance to occupants of nearby buildings. Accordingly, the predicted vibration impact during the construction phase is **short-term, neutral and imperceptible**.

All construction HGV traffic for the required works will enter the site via a haul route accessed from Donabate Distributor Road (DDR). The Traffic and Transport consultants have confirmed that HGV vehicle movements are not expected to exceed four vehicles per hour during the majority of the construction phase; during the busiest period of construction works this may increase to 6 to 8 HGV vehicle movements per hour. As per the noise impact assessment in Chapter 13, the noise impact of construction traffic is, therefore, determined to be **neutral**, **short-term** and **imperceptible**.

7.4.2.3 Traffic

Additional traffic on the road network as a result of the proposed construction works has the potential to cause or exacerbate congestion, resulting in impacts on journey characteristics (i.e. duration and / or length) for local residents, workers and road users.

There will be traffic generated from deliveries of construction materials and equipment. It should be pointed out that construction traffic generated during the development works tends to be off-peak. Such trips would generally be spread out over the full working day and are unlikely to be higher than the peak hour predicted for the operational stage. Construction traffic access will be via the DDR that runs from north-south to the east of the proposed development. Construction traffic will continue to enter the site via the DDR for the remaining construction phases of the development with construction traffic diverted to internal, temporary haul roads to access construction areas. The construction compound will be located within the extents of the subject site (refer to **Figure 5.3**). Warning signage will be provided at both haul route locations for pedestrians and other road users on all approaches in accordance with Chapter 8 of the Traffic Signs Manual and the Contractor's Traffic Management Plan.

Chapter 18 (Traffic & Transportation) has assessed the potential impacts of the proposed development in this regard as **negative, slight and short term**, and concluded that following the implementation of an appropriately detailed Construction Traffic Management Plan construction traffic will **not give rise to any significant** traffic concerns or impede the operational performance of the local road network, including junctions.

7.4.2.4 Landscape and Visual Impacts

The transformation of the existing site into a substantial construction site for the duration of the proposed works will result in negative impacts in terms of landscape and visual amenity, which will be felt wherever the proposed works are visible, but worst on the site and in the immediate vicinity. Site hoarding, machinery, plant and buildings at various stages of completion (i.e. standard features of construction sites) will be visible in the vicinity of the site. Construction activities themselves will also generate environmental effects that have the potential to negatively affect landscape and visual amenity, including generation of dust and dirt and removal of vegetation.

Chapter 14 (Landscape & Visual) has assessed the impacts of the proposed development in this regard. It states that potential landscape and visual impacts from the construction phase are associated with:

- The removal of some hedgerows and trees and the protection of retained hedgerows and trees on site, where applicable – See Arboricultural Impact Assessment & Method Statement by John Morris April 2024;
- The temporary movement and stockpiling of earth and materials;
- The temporary movement of machinery in and out of the site; and
- All engineering, building and landscape works required with associated site infrastructure, fencing and plant.

Chapter 14 has concluded that, in the absence of mitigation, the worst-case impacts in this regard are predicted to **significant, negative, short-term**. Corresponding mitigation measures have been set out, and are discussed below.

7.4.2.5 Waste Management

Incorrect management of waste material during the construction phase can result in littering, presence of vermin and / or pollution, with associated potential for negative impacts on human health and residential amenity. Chapter 19 (Material Assets – Waste) assesses the impacts of the proposed development in this regard. In the absence of proper waste management procedures (e.g. littering or use of non-permitted waste contractors / facilities), a **negative, significant and short-term to long-term impact** is predicted. Corresponding mitigation measures have been proposed in Chapter 19, and are discussed in Section 7.5, below.

7.4.2.6 Interruptions to Services

As detailed in Chapter 20, works to existing utilities infrastructure will be required during the construction phase to provide connections to the proposed development. Such works have the potential to result in interruptions to supply / services in neighbouring areas, e.g. power outages. All works will be carried out in a strictly controlled and coordinated manner, in accordance with the relevant standards and codes of the respective service providers / authorities (i.e. Uisce Éireann, ESB, GNI, Eir, Virgin Media), in order to avoid / minimise interruptions insofar as practicable. In the absence of mitigation measures the worst-case impacts in this regard are predicted to **negative, slight to moderate and short-term impacts** are predicted in relation to built services or infrastructure during the construction phase.

7.4.2.7 Daylight and Sunlight

The daylight and sunlight impacts of the construction phase of the proposed development are likely to be, initially, lesser than those of the completed proposed development. It is noted that temporary structures and machinery (e.g. hoarding, scaffolding, cranes, etc.) have the potential to result in changes to sunlight access in buildings, although any additional impacts arising in this regard will be **brief** to **short-term** and **not significant**.

7.4.2.8 Economic Impacts

It is likely that several hundred construction site personnel will be needed over the course of the proposed works. This job creation will result in a **positive, local to regional, moderate, short-term** socio-economic impact. The presence of site personnel in the area during the construction phase will create additional demand in the area for services, particularly for food from local shops, restaurants and cafés. There will also be economic benefits for providers of construction materials and other supporting services, e.g. quarries. This is predicted to result in a **positive, local to regional, indirect, slight to significant, short-term** socioeconomic impact.

Significant negative economic impacts are not expected to occur as a result of the proposed works, considering that there are relatively few commercial businesses in areas immediately adjacent to the site, standard best practice measures (including good housekeeping) will be implemented throughout.

7.4.3 Operational Phase

The duration of the operational phase of the proposed development is assumed to be long-term in duration, as per the definitions in the EPA guidelines.

In the absence of mitigation, potential impacts on population and human health as a result of the operational phase of the proposed development may be summarised as follows:

- Potential impacts due to greenhouse gas emissions and climate vulnerability;
- Potential negative impacts on journey characteristics due to additional operational phase traffic generated by the proposed development;
- Positive impacts on journey characteristics due to enhanced permeability across the site;
- Potential visual impacts due to completion of proposed development, establishing substantial new residential development;
- Health impacts related to improper waste management;
- Potential impacts due to daylight and sunlight availability for the proposed development;
- Potential socio-economic impacts due to demand for goods and services locally;
- Positive socio-economic impacts due to provision of significant additional housing.

These are discussed and characterised, where relevant, in the following sections

7.4.3.1 Air Quality and Climate

During the operational phase, Chapter 11 Air Quality identifies that potential effect of the proposed development on ambient air quality, and human health will **be direct, long-term, negative and not significant.**

The proposed development is committing to reducing climate impacts, where feasible, and the development will comply with the Do-Minimum standards set through regulation – many of which are embedded design mitigations. The impact of the proposed development in relation to GHG emissions prior to mitigation measures being put in place is considered **long-term, negative and slight.**

Furthermore, Chapter 12 Climate has considered the following climate hazards in the context of the proposed development: flooding (coastal, pluvial, fluvial); extreme heat; extreme cold; wildfire; drought; extreme wind; lightning, hail, landslides and fog. It has been assessed that there is a medium risk as a result of future climate change hazards. However, the above accounts for embedded design mitigation being put in place. Without this mitigation in place, the impact of the proposed development in relation to climate vulnerability emissions is considered **long-term, negative and imperceptible.**

In addition, the proposed development has been designed to reduce the impact to climate where possible (see the project Residential Climate Action Energy Statement prepared by Ethos Engineering (2024) for full details).

7.4.3.2 Noise and Vibration

During the operational phase, the proposed development will generate noise typical of a development of this nature and scale. The main potential noise impact associated with the proposed development is considered therefore to relate to the generation of additional traffic to and from the site as a result of the new residential element. The predicted increase in AADT traffic levels associated with the development are between +0.1 to +0.4 dB(A) in the vicinity of the roads assessed for the Opening Year and between +0.1 to +0.7 dB(A) during the Future Design Year. The increase in the Opening Year is **neutral, imperceptible and short-term**. The increases in the Future Design Year are **neutral, imperceptible and long-term**. In summary, the predicted increase in noise levels associated with vehicles at road junctions in the vicinity of the proposed development during the operational phase constitutes a **long-term, imperceptible impact**.

Plant items and their location will be selected at the detailed design stage to ensure that noise emissions to sensitive receivers both external and within the development itself will be within the relevant criteria set out above. The resultant effects are considered **negative, not significant and long-term**.

Once operational, there are no vibration sources associated with the development site.

It is noted that the site lies outside the DAA Airport Noise Zones. The site is approximately 2 km from the edge of the outermost airport noise zone, Zone D, therefore noise incident on the site from aircraft movements at Dublin Airport is screened out of this assessment. The EPA Round 4 Noise Maps[9], present noise levels for the overall day / evening / night period in terms of L_{den} and the night-time period in terms of L_{night}. . The predicted noise levels across the site are outside the 55 dB L_{den} and 55 dB L_{night} contours. Therefore, an inward noise impact assessment has been screened out.

7.4.3.3 Traffic

Additional traffic generated by the residents of the proposed development has the potential to create or exacerbate congestion on the local road network, resulting in negative impacts on journey characteristics (i.e. amenity, duration and length) for other road users.

Chapter 18 (Traffic & Transportation) has assessed the potential impacts of the proposed development in this regard, taking account of future trip generation of other committed residential developments in the locality; namely the Semple Woods residential development (reg. ref: F17A/0113), New Road residential development (reg. ref.: F17A/0373), Ballalease residential development (reg. ref.: F20A/0510), Ballymastone Phase 1 (reg. ref: LRD0008/S3/ABP-315288-22), Ballymastone Recreational Hub (Part 8), South of Main Street (Aledo) residential development (F20A/0204), Corballis East (Glenveagh) residential development (reg. ref: F22A/0527), Corballis East (Aledo) residential Development (reg. ref: LRD0017/S3)

Traffic modelling was carried out of the impacts of operational traffic flows on the eight key junctions on the surrounding road network, as detailed in Chapter 18. Six out of the eight junctions were analysed to be within capacity during the Design Year (2026) as well as the Future Design Years (2041). Prior to mitigation during the operational phase, impacts are considered in the range of **slight, negative and long-term.**

7.4.3.4 Landscape and Visual Impacts

During the operational phase, there will be impacts on landscape and visual amenity due to completion of proposed development, which will establish a substantial new residential, with associated residential community.

Chapter 14 (Landscape & Visual) has assessed the impacts of the proposed development in this regard. It states that potential landscape and visual impacts from the operational phase are associated with change of the site from open agricultural landscape to a new residential and urban neighbourhood. Locally, some trees and hedgerows will be affected; however, the proposed development has been laid out to incorporate many of these existing landscape 'green infrastructure' features within its landscape structure of open spaces and networks.

[9] https://gis.epa.ie/EPAMaps/

Upon operation and into the future, the development would have a **low to significant** (depending on proximity) and **neutral to beneficial** effect the immediate and wider landscape resource of Phase 2 and the wider context.

7.4.3.5 Waste Management

Incorrect management of waste material during the operation phase can result in littering, presence of vermin and / or pollution, with associated potential for negative impacts on human health and residential amenity. Chapter 19 (Material Assets – Waste) assesses the impacts of the proposed development in this regard. In the absence of proper waste management procedures (e.g. littering or use of non-permitted waste contractors / facilities), a **negative, significant and long-term impact** is predicted. Corresponding mitigation measures have been proposed in Chapter 19, and are discussed in Section 7.5, below.

7.4.3.6 Daylight and Sunlight

The unit types that include shared access, such as Apartments and Duplexes, are required to be assessed for internal daylight and sunlight. The analysis determined that 99.8% of rooms assessed were in excess of the BRE Guidelines for Spatial Daylight Autonomy (SDA).

The 2023 Apartment Guidelines advise that "Where an applicant cannot fully meet all of the requirements of the daylight provisions above [per the BRE Guide], this must be clearly identified and a rationale for any alternative, compensatory design solutions must be set out, which planning authorities should apply their discretion in accepting taking account of its assessment". The daylight results indicate a 99.8% compliance rate across the entire scheme, one room in block BZ03 was found to be marginally non-compliant with the BRE Guide recommendation. Compensatory measures were provided for this room. Therefore, it can be concluded that a 99.8% compliance rate for daylighting performance has been demonstrated for the proposed development.

Most rooms comply with the BRE Guide recommendations, with only one room being marginally non-compliant. As a result, the impact on the proposed development during its operational phase is determined to be **permanently negative**. However, the **impact is not significant** since there is only one room that does not comply with the BRE Guide, and even then, the non-compliance is only marginal.

It has been determined that there is no impact on the current daylight received with regards to existing neighbouring buildings during the operational phase. This has been determined to be **neutral**, with no effects within the normal bounds of variation.

Annual sunlight availability was analysed for the public and communal open spaces of the proposed development, calculating the extent of each area that can receive at least 2 hours of potential sunlight on 21st March. The proposed public open space was found to receive excellent overall sunlight availability. The results demonstrate each of the amenity open spaces easily achieve compliance with the BRE guidance, with 100% of amenity open space across the site receiving two hours or more of sunlight on 21st March. As with the determined impact on daylight for operational phase, effect due to sunlight exposure to the proposed development has been demonstrated to be **neutral**, with **no impact** to neighbouring dwellings.

An analysis was undertaken for Apartments and Duplexes of the proposed development to assess the exposure to sunlight that each unit can receive based on the BRE guidelines. The assessment determined that 100% of the assessed units would exceed the minimum guideline recommendations.

No significant negative impacts are predicted during the operational phase. The overall impact in this regard is predicted to be **permanent**, **neutral** and **imperceptible**.

In conjunction that there has determined to be **no impact** to current sunlight received with regards to existing neighbouring gardens and neighbouring solar panels during its operational phase has been determined to be **neutral**, with **no effects** within normal bounds of variation.

7.4.3.7 Economic Impacts

By creating additional demand for goods and services, population growth contributes positively to the local economy and creates critical mass that supports the viability of further community infrastructure. This is expected to result in a **positive, moderate, long-term** socioeconomic impact.

Additionally, the proposed development is expected to increase the local population by the order c. 856 persons[10], creating additional demand for goods and services in the local area, benefitting local businesses and resulting in a **positive, moderate and long-term** socioeconomic impact.

A total of 364 no. units are proposed as part of Phase 2, of which 72 no. units (c. 20%) will be delivered for social housing as part of the Part V provision and 73 no. affordable housing units (c. 20%). In the context of an ongoing housing crisis in Dublin, the predicted impact is **moderate to significant and positive** at the scale of the metropolitan area.

At the same time, a substantial new residential population can place strain on the capacity of existing infrastructure, goods, services and amenities in an area. In this regard, Community & Social Infrastructure and Schools Demand and Childcare Facilities Assessment reports have been prepared and submitted under separate cover as part of the planning application. The assessment concluded that there is sufficient infrastructure in the area to meet the resultant demand for school places and community amenities. **Significant negative impacts are not predicted** in this regard.

7.5 Mitigation Measures

Mitigation measures have been prescribed elsewhere in this EIAR in order to avoid / minimise the predicted impacts detailed above. In order to avoid, where possible, and in other cases minimise, negative impacts on population and human health, it is imperative that all of the mitigation measures set out in this EIAR are properly implemented in full. These mitigation measures (set out elsewhere in this EIAR) are summarised as follows, insofar as they relate to population and human health.

7.5.1 Construction Phase

- A Construction and Environmental Management Plan (CEMP) has been prepared in respect of the proposed development by DBFL Consulting Engineers (2024) (refer to document submitted under separate cover). The CEMP will remain a 'live document' and will be further updated by the Contractor (subject to planning approval) in advance of the proposed works, in agreement with Fingal County Council. The CEMP will be fully implemented throughout the proposed works. It will set out the measures to be implemented during the proposed works to mitigate potential impacts on the environment and local population, e.g. measures in relation to good housekeeping, site hoarding and security, traffic management, pollution control and safety;

[10] Assuming occupancy rates of 1.5 persons per 1-bed or 2-bed unit, and 3.5 persons per 3-bed or 4-bed unit.

- A Community Liaison Officer (CLO) will be appointed by the contractor for the duration of the construction phase. They will be responsible for keeping the local community and businesses informed of the timing and duration of potentially disruptive works, and for receiving and addressing concerns of local residents and businesses in relation to the proposed works;

- Chapter 11 (Air Quality) & Chapter 12 (Climate) includes a suite of mitigation measures to minimise air quality (including dust) impacts during the construction phase. Dust minimisations measures are included in Chapter 11 and shall be finalised by the appointed contractor in agreement with Fingal County Council, and implemented during the proposed works. Other mitigation measures are included in relation to community liaison, site management, maintenance of site, control of construction machinery, waste management especially earthworks and measures specific to trackout ;

- Chapter 13 (Noise & Vibration) includes a suite of mitigation measures to minimise noise impacts during the construction phase. Mitigation measures are included in relation to selection of quiet plant, noise control at source, screening, adherence to noise limits, community liaison and project programme / phasing;

- Chapter 14 (Landscape & Visual) includes a number of mitigation measures to minimise the impacts of the proposed works on landscape and visual amenity. These include measures in relation to visual impact of construction works, landscape character and existing vegetation;

- Chapter 18 (Traffic & Transportation) includes a suite of measures in relation to construction traffic and parking management to minimise the impacts of construction traffic on the local community and the operation of the existing road network in the area. It requires the implementation of a Construction Traffic Management Plan, to be prepared by the appointed contractor during pre-construction phase in agreement with Fingal County Council;

- Chapter 19 (Material Assets - Waste) includes a suite of measures in relation to management of construction waste to minimise the impacts of all site construction activities. A Resource and Waste Management Plan (**Appendix 19.1**) prepared as part of the application shall be implemented throughout the construction phase of the proposed development;

- Chapter 20 (Material Assets – Services) includes a suite of measures in relation to management of services in the vicinity of the works and regard shall be had to the Gas Networks Ireland *Guidelines for Designers and Builders – Industrial and Commercial (Non-Domestic) Sites (2018),* the Health & Safety Authority (HSA) *Code of Practice for Avoiding Danger from Underground Services (2016),* and the ESB Networks & Health and Safety Authority *Code of Practice for Avoiding Danger from Overhead Electricity Lines (2019).*

7.5.2 Operational Phase

- Chapter 18 (Traffic & Transportation) includes a suite of measures in relation to mobility management and car parking management during the operational phase. It requires the implementation of a Mobility Management Plan, to encourage sustainable travel patterns among residents of the proposed development;

- Chapter 14 (Landscape & Visual) includes a number of mitigation measures to minimise the impacts of the proposed works on landscape and visual amenity. These include measures in relation to good quality architectural design, provision of open spaces, retention, enhancement and management of existing hedgerows, enhanced and additional tree planting etc;

- Chapter 11 (Air Quality) & Chapter 12 (Climate) includes a suite of mitigation measures to minimise future climate change impacts during the operational phase. These measures have been incorporated into the design of the development to mitigate against the impacts of future climate change. For example, adequate attenuation and drainage have been incorporated into the design of the development to avoid potential flooding impacts as a result of increased rainfall events in future years. The proposed development has been designed to reduce the impact on climate as a result of energy usage during operation;

- Chapter 19 (Material Assets- Waste) includes a suite of measures in relation to management of operational phase waste to minimise the impacts of the operational phase of the proposed development. An Operational Waste Management Plan (**Appendix 19.2**) prepared as part of the application shall be implemented throughout the operational phase of the proposed development;

- Chapter 16 (Microclimate – Daylight & Sunlight) includes compensatory measures for one room (in block BZ03) which does not comply with the BRE Guide recommendation for daylight and these measures assess daylight adjacency, sunlight, dual aspect, aspect, unit size and communal open space.

7.6 Residual Impacts

Assuming the proper and full implementation of the mitigation measures in this Environmental Impact Assessment Report (summarised above in relation to population and human health), there will be ***no likely significant effects*** related to population and human health.

7.7 Indirect and /or Secondary Impacts

It is not envisaged that there will be any indirect and/or secondary impacts outside of the items covered in this chapter.

7.8 Monitoring

Monitoring and maintenance recommended in Chapters 11 (Air Quality), 13 (Noise & Vibration), 14 (Landscape & Visual), 18 (Traffic & Transportation), 19 (Material Assets - Waste) and 20 (Material Assets – Services) shall be implemented in full during the construction and / or operational phases of the proposed development, as specified in those respective chapters. Beyond that which has been recommended elsewhere in this EIAR, no additional monitoring is considered necessary in respect of population and human health.

7.9 Interactions

Population and human health is an EIA topic which tends to interact with numerous other environmental topics addressed elsewhere in the EIAR. Where the potential for impacts on population and human health has been identified as a result of such interactions, these have been addressed comprehensively above.

The noteworthy interactions with population and human health and other topics are summarised below. All of these interactions have been addressed above and, where feasible, appropriate mitigation measures have been prescribed in the corresponding specialist chapter.

Air Quality (Chapter 11)

There is potential for nuisance impacts on the local receptors due to dust-generating activities of proposed development during construction phase. With appropriate mitigation measures in place the interaction will be **negative, not significant and short-term impact.** During operation phase of the proposed development the predicted impact on population and health due to air quality and climate will be **long-term, not significant and negative**.

Noise & Vibration (Chapter 13)

The interaction between population and human health and noise and vibration during construction phase is due to potential nuisance and disturbance due to noisy construction activities, plant and equipment and construction traffic noise. Appropriate mitigation measures will be implemented in this regard. The predicted impact will be **negative, significant and short-term** at the closest noise sensitive locations and will reduce to **negative, not significant and short-term** at receptors greater than 30m.

During the operational phase there is no potential for significant nuisance and potential disturbance due to additional operational phase traffic. With appropriate mitigation measures in place, **no significant impacts** are predicted in relation to this interactions.

Landscape & Visual (Chapter 14)

During the construction phase there is potential for interaction between population and human health and landscape and visual due to negative impacts due to presence of construction site and effects of construction activities (e.g. dust, dirt, stockpiling of soils, removal of vegetation, etc.). The predicted impact will be **slight to moderate, negative and short-term**.

The operational phase will result in positive contribution to the emerging residential community of the wider area, as well as enhancing green infrastructure and green space connectivity. The predicted impact will be **neutral to beneficial, low to significant** as the landscape (including replacement tree planting) matures and the views become more residential.

Traffic & Transportation (Chapter 18)

There is potential for impacts on population and human health during the construction phase due to negative impacts on journey characteristics due to additional (construction) traffic on road network and the potential for nuisance and disturbance due to construction traffic noise. With appropriate mitigation measures in place such as warning signage and designated haul route for HGVs the predicted impact will be **negative, not significant**, over the **short term**.

During the operational phase there is potential for negative impacts on population and human health due to journey characteristics and additional traffic on road network during the operational phase.

However, the development will create additional road network and enhance connectivity in the area with the provision of active travel measures. With appropriate mitigation measures in place the predicted impact will be **positive, slight and long-term**.

Microclimate- Daylight & Sunlight (Chapter 16)

There is potential impacts due to changes to daylight and sunlight availability on the population and human health e.g. overshadowing of neighbouring buildings, can negatively or positively affect residential amenity in the receiving environment. Following the BRE Guide's recommendations for essential daylight and sunlight, internal daylighting is required to meet more than 50% of the targeted illuminance in lux throughout the year. As detailed above, 99.8% of rooms assessed were in excess of the BRE Guide recommendation for daylight and 100% of the assessed units exceeded the minimum guideline recommendation. In terms of sunlight, each unit needs to receive over 1.5 hours of sunlight on March 21st. The results demonstrate each of the amenity open spaces easily achieve compliance with the BRE guidance, with 100% of amenity open space across the site receiving two hours or more of sunlight on 21st March and the shared residential amenity spaces for the Apartment and Duplexes were all fully compliant. **No significant impacts** to neighbouring residential areas are predicted, and the proposed development itself will provide well-lit homes and amenity areas.

Microclimate – Wind (Chapter 17)

There is a potential interaction between Chapter 7 (Population & Human Health) and Chapter 17 (Microclimate – Wind), since the wind conditions at the proposed development site can affect the amenity and safety of residents and visitors. The proposed development will deliver a wind microclimate that is either suitable for all intended pedestrian uses, or calmer than required for the intended uses. In a number of instances, the proposed development will result in an improved (i.e., calmer) wind microclimate relative to the baseline scenario. Therefore, **no significant impacts** on population and human health are predicted as a result of the wind effects of the proposed development.

Material Assets- Waste (Chapter 19)

During the construction and operational phase there is potential for impacts on human beings in relation to the generation of waste and if wastes are not managed correctly and in accordance with the RWMP or the OWMP could result in fly-tipping, littering and reduced recycling, and re-use opportunities which could cause a nuisance to the public and attract vermin. The implementation of the RWMP and the OWMP, will ensure appropriate the impact of waste arisings are impacts on the local population and human health are **neutral, imperceptible and long-term**.

Material Assets- Services (Chapter 20)

In worst-case scenarios (e.g. where works are not carried out safely or in accordance with the applicable codes and standards), accidents during works (e.g. contact with live powerline or gas explosions) or water quality impacts resulting from works to utilities infrastructure, have the potential to result in human health impacts. Service outages resulting from works can temporarily affect the residential amenity of local residents and / or the operation of local businesses. The mitigation measures that will be put in place at the proposed development will ensure that the impact of the proposed development complies with all the specifications and guidelines of the relevant service providers. Therefore, the predicted impact **no likely significant impact** is envisaged with respect to population and human health during construction or operational phase.

7.10 Cumulative Impacts

The potential for cumulative impacts to arise as a result of the proposed development in combination with other existing / proposed plans and projects, as listed in **Table 22.1** in Chapter 22 (Cumulative Impacts) in respect of the EIA topics and environmental media of relevance to population and human health, has been discussed in the respective EIAR chapters – refer to Chapters 11 (Air Quality) & 12 (Climate), 13 (Noise & Vibration), 14 (Landscape & Visual), 16 (Microclimate- Daylight and Sunlight) and 18 (Traffic & Transportation).

It is considered that the potential impacts of the proposed development on population and human health have been mitigated by the design of the proposed development, and mitigation measures set out herein, such that significant negative cumulative impacts on population and human health are not likely to occur as a result of the proposed development in combination with one or more of the plans / projects set out in Chapter 22 (Cumulative Impacts).

7.11 Difficulties Encountered

No difficulties were encountered in the preparation of this chapter.

7.12 References

- CSO (2012). 2011 Census Data
- CSO (2017). 2016 Census Data.
- CSO (2022). 2022 Summary Census Data.
- Department of Housing, Planning & Local Government (2023). My Plan Map Viewer.
- EPA (2022). Guidelines on the information to be contained in Environmental Impact Assessment
- Reports.
- Fingal County Council (2016). Donabate Local Area Plan 2016 – 2021.
- Fingal County Council (2023). Fingal Development Plan 2023 – 20239.
- Government of Ireland (2024). Health in Ireland- Key Trends 2023.
- IEMA (2022). Effective Scoping of Human Health in Environmental Impact Assessment.
- IEMA (2022). Determining Significance for Human Health in Environmental Impact Assessment.
- IEMA (2017). Health in Environmental Impact Assessment: A Primer for a Proportionate Approach.

8 Biodiversity

8.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) comprises an appraisal of the likely effects on biodiversity (flora and fauna) of the proposed development at Ballymastone, Phase 2 in Donabate, Co. Dublin.

The potential for any impacts on sites designated as European (Natura 2000) sites, under Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora ('the Habitats Directive') and Directive 2009/147/EC on the conservation of wild birds ('the Birds Directive') was also appraised, and the results of that study are presented in a separate report (Appropriate Assessment Screening report and Natura Impact Statement).

Brady Shipman Martin was commissioned to prepare this chapter of the EIAR on behalf of Glenveagh Living Limited. It was written by Ecologist and Environmental Consultant Namrata Kaile and Associate and Senior Ecologist Matthew Hague CEnv MCIEEM. Additional ecological surveys were undertaken by bat and large mammal specialist, Brian Keeley; breeding and wintering bird specialist, John Fox; and botanist and habitat specialist, Alexis FitzGerald. The bat survey report is included at **Appendix 8.1**, bird survey report at **Appendix 8.2** and botanical survey report at **Appendix 8.3** in Volume 3 of this EIAR.

Matthew Hague BSc MSc Adv. Dip. Plan. & Env. Law CEnv MCIEEM, is a highly experienced and qualified ecologist, with a master's degree in Ecosystem Conservation and Landscape Management. He has over 20 years of experience in ecological and environmental consultancy, across a wide range of sectors. He has prepared numerous reports for AA Screening as well as Natura Impact Statements, for projects of all scales, from small residential developments to nationally important infrastructure projects. Matthew is a Chartered Environmentalist (CEnv) and a full member of the Chartered Institute of Ecology and Environmental Management (MCIEEM). Matthew has also completed an Advanced Diploma in Planning and Environmental Law, at King's Inns and is a member of the Irish Environmental Law Association (IELA).

8.2 Methodology

A comprehensive desk-based assessment has been undertaken, and site visits have been carried out by the authors at the site, as detailed in the following sections.

8.2.1 Desk Study

This report has been prepared in accordance with the following **publications**:

- EPA Guidelines on the Information to be Contained in Environmental Impact Assessment reports (EPA, 2022);
- Environmental Impact Assessment of Projects – Guidance on Screening (European Commission, 2017);
- OPR Practice Note PN02: Environmental Impact Assessment Screening (Office of the Planning Regulator (OPR) (2021);
- Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment (European Commission, 2013);

- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Local Government and Heritage, August 2018);
- Guidelines for Assessment of Ecological Impacts of National Road Schemes (Transport Infrastructure Ireland (formerly the National Roads Authority, 2009);
- Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland: Terrestrial, Freshwater, Coastal and Marine ('the CIEEM Guidelines') published by the Chartered Institute of Ecology and Environmental Management (CIEEM), September 2018, updated in September 2019 (V1.1), further updated in April 2022 (V1.2).

The proposed development complies with the following **legislative instruments**:

- The Planning and Development Act 2000 as amended (the "Planning Acts");
- The Wildlife Act 1976 to 2021 and the Wildlife (Amendment) Act 2000;
- Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (the "Habitats Directive");
- Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (the "Birds Directive");
- European Communities (Birds and Natural Habitats) Regulations as amended;
- Flora (Protection) Order 2022;
- Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment;
- European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018).

The report has regard to the following **policies and plans**:

- Ireland's 4th National Biodiversity Plan 2023 – 2030 (Department of Housing, Local Government and, Heritage, 2024);
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (Inland Fisheries Ireland, 2016);
- Planning for Watercourses in the Urban Environment (Inland Fisheries Ireland, 2020);
- All-Ireland Pollinator Plan 2021-2025 (National Biodiversity Data Centre);
- Fingal County Development Plan 2023-2029, including the associated Natura Impact Report.

In addition, information collated from the sources listed below was reviewed:

- Data on rare and protected plant and animal species contained in the following databases:
  - The National Parks and Wildlife Service (NPWS) of the Department of Housing, Local Government and Heritage (www.npws.ie);
  - The National Biodiversity Data Centre (NBDC) (www.biodiversityireland.ie);
  - Birdwatch Ireland (www.birdwatchireland.ie);
  - Bat Conservation Ireland (www.batconservationireland.org);
- Recent aerial photography and photographs taken at the site;
- Recent and historic ordnance survey mapping (www.geohive.ie);
- Information on protected areas, as well as watercourses, catchments and water quality in the area available from EPA, https://gis.epa.ie/EPAMaps/;
- Information on soils, geology and hydrogeology in the area available from GSI, www.gsi.ie;

- The NPWS Article 17 Reports: -
  - The Status of EU Protected Habitats and Species in Ireland – Volume 1 (NPWS, 2019a);
  - The Status of EU Protected Habitats and Species in Ireland – Volume 2 (Habitat Assessments) (NPWS, 2019b);
  - The Status of EU Protected Habitats and Species in Ireland – Volume 3 (Species Assessments) (NPWS, 2019c);
- Information on land-use zoning from the online mapping of the Department of the Environment, Community and Local Government, http://www.myplan.ie/en/index.html.

The report takes full account of the design of the proposed development and a detailed examination of all relevant elements of the proposed development was undertaken.

8.2.2 Field Study

A significant amount of field-based research has been undertaken by the authors as well as other qualified and experienced ecologists at the site.

Site walkover surveys have been undertaken at the site by the author and other specialist ecologists on numerous occasions between 2020 and 2024, both in the preparation of the current planning application and as part of the previous, permitted development to the immediate south and south-east of the site (Ballymastone Phase 1- permitted under FCC Ref. LRD0008/S3 & ABP Ref. 315288).

The baseline surveys covered the following elements and where relevant the results are included in this document:

- Habitat surveys and mapping, including hedgerow survey.
- Rare plant surveys and surveys for invasive alien plants.
- Large mammal surveys.
- Bat activity and roosting surveys.
- Bird surveys.
- Appraisal of site suitability for lepidoptera, amphibians and reptiles.

The surveys were all carried out by specialist ecologists, as follows (dates refer to surveys carried out in preparation of the current application):

- Bat and large mammal ecologist Brian Keeley (Wildlife Surveys Ireland): 13/14 June 2023, 13 and 14 June 2023 and 16 and 17 April 2024. The Bat Survey is included at **Appendix 8.1;**
- Ornithologist John Fox: 5 visits between 10 April and 3 August 2023 and 2 visits between 21 March and 9 April 2024. The Bird Survey Report is included at **Appendix 8.2**;
- Botanist Alexis Fitzgerald: 2 visits: 12 April 2024 (habitats) and 12/13 April 2024 (hedgerows). The Botanical Survey Report is included at **Appendix 8.3**;
- In addition to the ecological surveys undertaken, specialist tree surveys have been undertaken by arborist John Morris (John Morris Arboricultural Consultancy) on several occasions in the preparation of this planning application. The tree survey documentation including Arboricultural Report is submitted separately.

A final site survey was undertaken by Matt Hague of Brady Shipman Martin on 22 February 2024.

8.2.2.1 Habitats and hedgerows

During the course of the site visits, the habitats were identified, described and mapped with the final survey, by Mr Alexis FitzGerald, taking place on 12 and 13 April 2024. Habitats were surveyed using the guidelines of Smith *et al*[11]. (2011) and were classified using *A Guide to Habitats in Ireland*[12] (Fossitt, 2000). Vascular plant nomenclature follows that of the *New Flora of the British Isles*, 4th Edition (Stace, 2019).

The hedgerow survey was carried out according to the methodology of Kelleher Ecology Services 2021[13], adapted from Foulkes *et al*, 2013[14].

8.2.2.2 Bats

The first bat surveys of the entire Ballymastone landholding were carried out in 2021, by the bat specialist Mr Brian Keeley. Mr Keeley undertook multiple additional site visits at the site up until 2022. In preparation for the current application Mr Keeley and his team carried out new survey work at Ballymastone, on the following dates:

- 13 and 14 July 2023;
- 16 and 17 August 2024.

The site was examined for evidence of bat activity (roosting as well as commuting and foraging), by multiple surveyors using a combination of static and handheld bat detectors (full details of the survey methodologies are included in Appendix 8.1)

8.2.2.3 Large mammals

As with all ecological receptors, large mammal surveys have taken place at the site on multiple occasions since 2020. All hedgerows, tree lines, field edges and ditches have been searched for any evidence of badgers, such as setts, commuting routes, territorial marking, latrines or feeding signs as well as paw prints, snagged hairs and piles of bedding material.

In tandem with the badger surveys, examinations of the streams and drainage ditches in the wider area were undertaken to search for evidence of otters, such as tracks, slides, spraints (droppings), feeding signs and holts.

Mammal surveys followed the methodologies contained in the NRA *Guidelines for the Treatment of Badgers Prior to the Construction of National Road Schemes*[15] and the *Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes*[16].

8.2.2.4 Birds

Bird activity surveys (winter and summer) were undertaken at Ballymastone on multiple occasions between 2021 and 2022. In addition to these, new, updated surveys were carried out, specifically for the purpose of preparing this current planning application for Ballymastone Phase 2. These surveys

[11] https://biodiversityireland.ie/app/uploads/2021/04/Habitat_Survey_Guidance_Heritage_Council_2011_2.pdf
[12] https://www.npws.ie/sites/default/files/publications/pdf/A%20Guide%20to%20Habitats%20in%20Ireland%20-%20Fossitt.pdf
[13] https://www.ardarostigplanning.ie/custom/public/files/ardarostig-residential-hedge-vegetation-appraisal-rev-1-final.pdf
[14] https://hedgerows.ie/wp-content/uploads/2019/11/HAS-Publication-Final-March-2013.pdf
[15] https://www.tii.ie/tii-library/environment/construction-guidelines/Guidelines-for-the-Treatment-of-Badgers-prior-to-the-Construction-of-a-National-Road-Scheme.pdf
[16] https://www.tii.ie/tii-library/environment/construction-guidelines/Guidelines-for-the-Treatment-of-Otters-prior-to-the-Construction-of-National-Road-Schemes.pdf

took place on seven separate occasions (five visits between 10 April and 3 August 2023 and two visits between 21 March and 9 April 2024).

The seven visits were undertaken in the early morning. During each visit the lands were walked slowly over a two-to-three-hour period. The route walked focused primarily on existing hedge rows, areas of scrub and areas with mature trees. Bird Species that were heard or seen were recorded, their position noted, and a breeding status assigned to them according to observed behaviour.

8.2.2.5 Other Species

During the course of the walkover surveys the site was evaluated for the presence of and suitability for lepidoptera (butterflies and moths), amphibians (common frog and smooth newt) and reptiles (common/viviparous lizard).

8.2.2.6 Watercourses

A visual appraisal of ditches in the vicinity of the Ballymastone Phase 2 site was undertaken. Biological kick-sampling, a method of assessing the ecological quality of a watercourse, was not carried out, due to the unsuitable substrate of the drainage ditches within the site, the flow regime and general overall condition.

8.2.3 Evaluation of Ecological Features

The methodologies used to determine the value of ecological resources, to characterise impacts of the proposed development, and to assess the significance of impacts and any residual effects are consistent with the EPA *Guidelines on the information to be contained in Environmental Impact Assessment Reports* (2022) (the 'EPA Guidelines') and are in accordance with the NRA *Guidelines for Assessment of Ecological Impacts of National Road Schemes* (2009) (the 'NRA Guidelines')[17]. This methodology is in turn consistent with the CIEEM *Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland – Terrestrial, Freshwater, Coastal and Marine (Version 1.2)* (2018, updated 2022) (the 'CIEEM Guidelines'). The methodology allows the baseline to be comprehensively evaluated. This then makes it possible to assess the potential impacts (including cumulative impacts) of the proposed development, to set out appropriate mitigation measures and to assess the residual impacts of the proposed development.

In accordance with the NRA Guidelines, impact assessment is undertaken of sensitive ecological receptors ('Key Ecological Receptors') within the Zone of Influence of a proposed development. According to the NRA Guidelines, the Zone of Influence is the 'effect area' over which change resulting from the proposed development is likely to occur, and the Key Ecological Receptors are defined as features of sufficient value as to be material in the decision-making process for which potential impacts are likely. In the context of the proposed development, a Key Ecological Receptor is defined as any feature valued as follows:

- International Importance;
- National Importance;
- County Importance;
- Local Importance (Higher Value).

[17] The NRA Guidelines, while originally developed for roads projects, provide clear, comprehensive and logical methods for evaluating the potential impacts of significant projects of all kinds in Ireland. The methodologies presented in the Guidelines are reproducible and reliable and are thus appropriate to the proposed development.

Features of local importance (Lower Value) and features of no ecological value are not considered to be Key Ecological Receptors, in accordance with the NRA Guidelines.

8.3 Baseline Environment

8.3.1 General Description of the Existing Environment

The site of the proposed development at Ballymastone Phase 2 is located in the coastal town of Donabate, c. 20 km north-east of Dublin City, in the administrative area of Fingal County Council. The site is situated in the townlands of Ballisk Common, Ballisk, Ballalease North, Ballymastone and Ballalease West. The site, on the eastern margin of the town, predominantly comprises of disused agricultural land (a mix of arable and pastoral), criss-crossed by hedgerows and drainage ditches. The Donabate Distributor Road (DDR) is located to the east, and the permitted Ballymastone Phase 1 development, now under construction, is to the immediate south. The site is bounded to the west and north by existing residential development.

The Ballymastone Phase 2 site is centred around former agricultural farmland in north Co. Dublin, with six large fields and adjoining boundary treeline features present, particularly along the northern and eastern boundaries of the site. To the immediate south of the current study area is the Ballymastone Phase 1 site, for which the permitted construction phase is already fully active.

The general topography of the site is flat with a high point in the middle of the site adjacent to the DDR (R126) with a slight fall. The surrounding area is new suburban development comprising a mix of uses from residential, to education and commercial. Rogerstown Estuary is c. 1km north of the site.

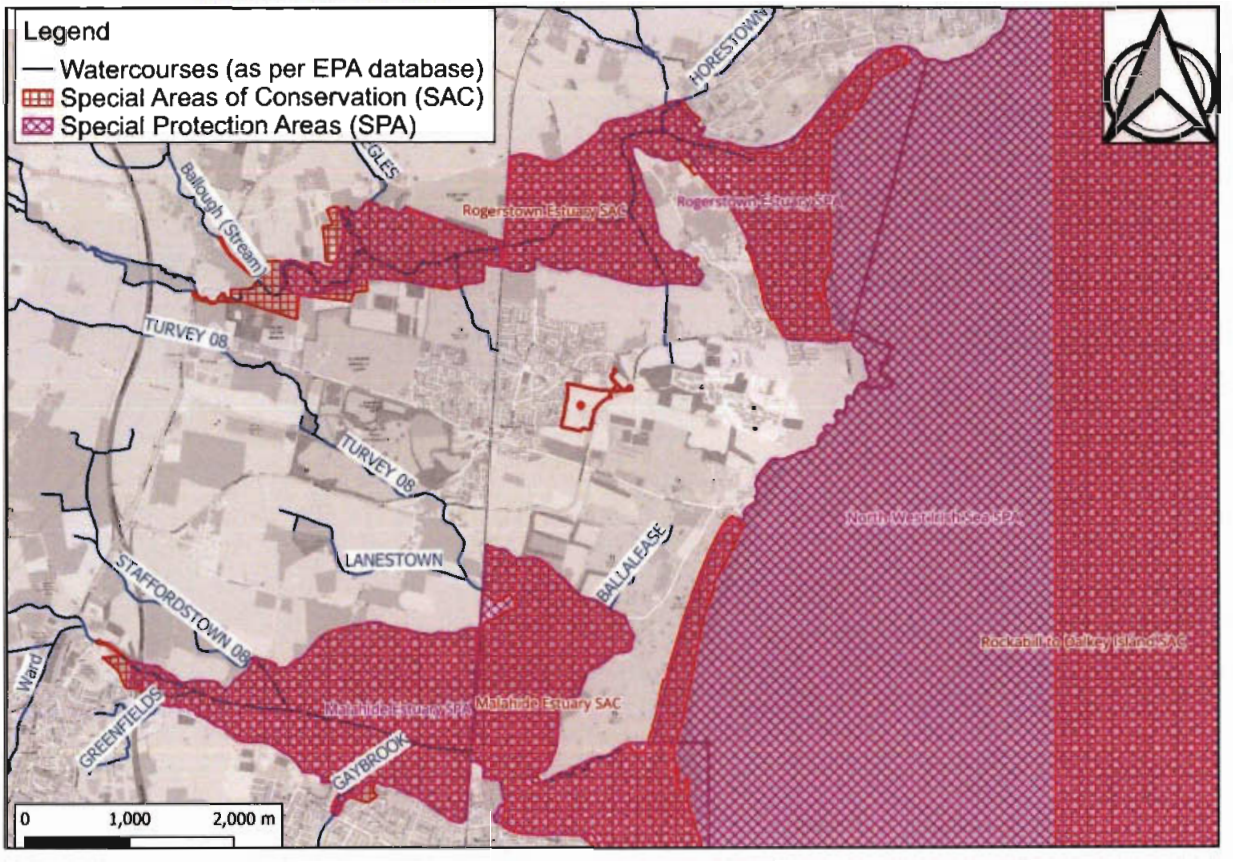
The site of the proposed development is within the 'Nanny-Delvin' (08) catchment, and the 'Ballough[Stream]_SC_010' sub-catchment. There are no mapped water features on the site; however, it is located approximately midway between both Rogerstown Estuary (to the north) and Malahide Estuary (to the south). The Beaverstown stream (EPA name: 'Rahillion', WFD name: 'Ballyboghil_010', EPA code: 08R23) flows approximately 750m to the north-west of the site, and the Portrane stream (Portrane Canal) (EPA name: 'Ballalease North', WFD name: 'Ballyboghil_010', EPA code: 08B45) flows approximately 850m to the north-east. Both of these streams discharge into Rogerstown Estuary, which is approximately 1km north of the proposed development site.

As discussed in the Infrastructure Design Report prepared by DBFL Consulting Engineers and submitted under separate cover as part of this application (and shown in Figure 6 (Masterplan Surface Water Catchment plan) of the Infrastructure Design Report), the site is drained by a network of drainage ditches which traverse the site and feed into the Beaverstown stream catchment and Portrane Canal catchments. The overall Ballymastone masterplan area was divided into five catchments to best utilise available surface water discharge points. The Ballymastone Phase 2 lands are located within parts of catchments 4 and 5. Catchment 4 discharges to the existing 1350mm surface water culvert to the northwest of the site. This in turn discharges to Rogerstown Estuary to the north. Catchment 5 discharges to the existing ditches which eventually flow to the Portrane Canal and then onto the Rogerstown Estuary to the north.

In summary, surface water arising within the Ballymastone Phase 2 area discharges to Rogerstown Estuary via the Beaverstown stream and Portrane Canal catchments.

Refer to **Figure 8.1**, below.

Figure 8.1 Location of the proposed development, with European sites and EPA-mapped watercourses shown



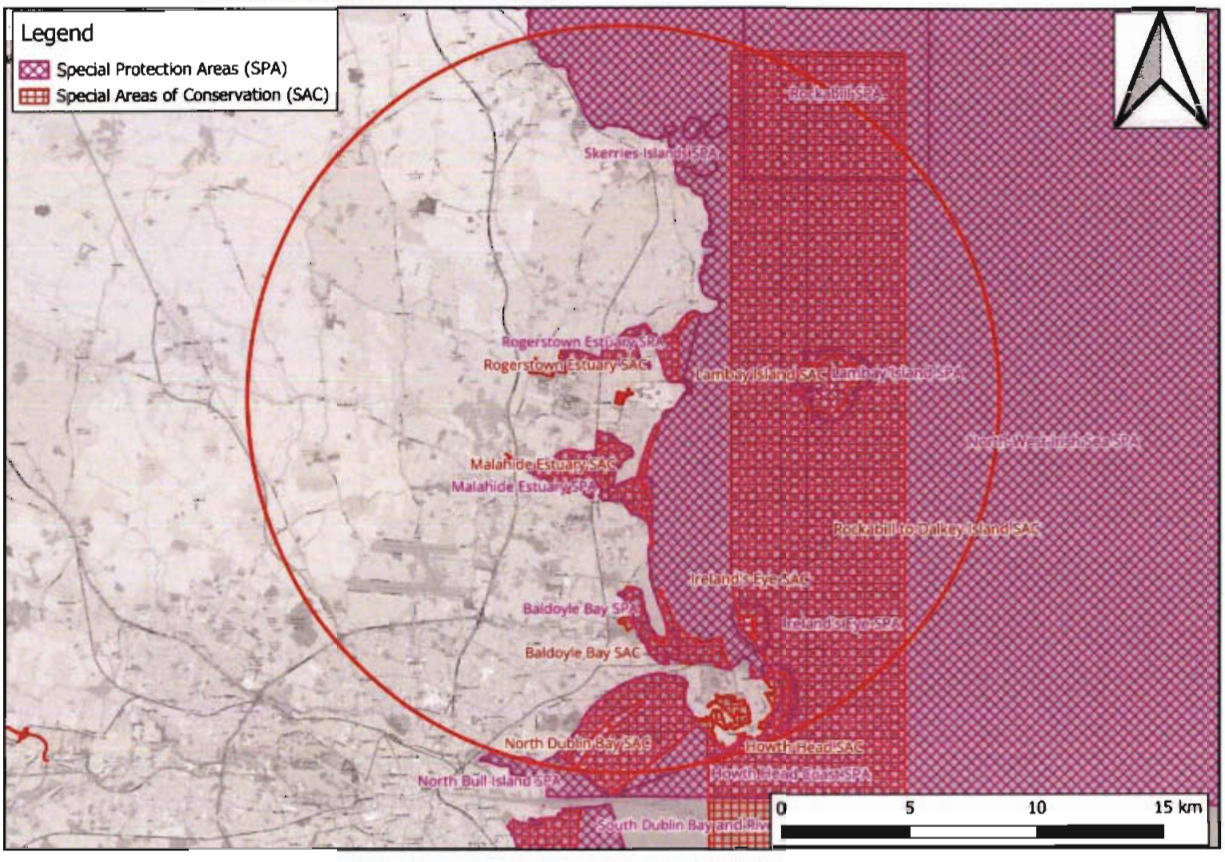
8.3.2 Designated Conservation Areas

A number of sites are located within the potential Zone of Influence of the proposed development site at Ballymastone Phase 2. The European sites are listed in **Table 8.1** and shown in **Figure 8.2**, below. **Figure 8.1** (above) also shows the European sites in close proximity to the site.

Table 8.1 European sites within potential Zone of Influence

European Site (site code)	Location (closest straight-line distance from the development site at Ballymastone)
Special Areas of Conservation (SAC)	
Rogerstown Estuary SAC (site code 000208)	c. 1km to the north
Malahide Estuary SAC (site code 000205)	c. 1.6km to the south
Rockabill to Dalkey Island SAC (site code 003000)	c. 4.3km to the east
Lambay Island SAC (site code 000204)	c. 6.6km to the east
Baldoyle Bay SAC (site code 000199)	c. 7.6km to the south
Ireland's Eye SAC (site code 002193)	c. 9.9km to the south-east
North Dublin Bay SAC (site code 000206)	c. 11.2km to the south
Howth Head SAC (site code 000202)	c. 12.0 km to the south-east
South Dublin Bay SAC (site code 000210)	c. 16.6km to the south
Special Protection Areas (SPA)	
Rogerstown Estuary SPA (site code 004015)	c. 1km to the north
Malahide Estuary SPA (site code 004025)	c. 1.6km to the south
North-West Irish Sea SPA (site code 004236)	c.1.7km to the east
Lambay Island SPA (site code 004069)	c. 6.6km to the east
Baldoyle Bay SPA (site code 004016)	c. 7.7km to the south
Skerries Island SPA (site code 004122)	c. 9.3km to the north
Ireland's Eye SPA (site code 004117)	c. 9.5km to the south-east
Rockabill SPA (site code 004014)	c. 9.9km to the north-east
North Bull Island SPA (site code 004006)	c. 11.2km to the south
Howth Head Coast SPA (site code 004113)	c. 12.2 km to the south-east
South Dublin Bay and River Tolka Estuary SPA (site code 004024)	c. 14.6km to the south

Figure 8.2 European sites within potential Zone of Influence of the proposed development. A 15km radius is shown for scale.



According to the Guidance published by the European Commission (*Managing Natura 2000 sites: The Provisions of Article 6 of the Habitats Directive 92/43/EEC*, 2019) the *"integrity of a site"* relates to the site's conservation objectives. For example, it is possible that a plan or project will adversely affect the site only in a visual sense or only affect habitat types or species other than those listed in Annex I or Annex II. In such cases, the effects do not amount to an adverse effect for the purposes of Article 6(3) of the Habitats Directive. If none of the habitat types or species for which the site has been designated is significantly affected, then the site's integrity cannot be considered to be adversely affected.

In addition, plans or projects or applications for developments which have "*no appreciable effect*" on the protected site are excluded from the requirement to proceed to appropriate assessment[18] (Opinion of Advocate General Sharpston in *Sweetman*, para. 48). In other words, if, following Screening, there is a possibility of there being a significant effect on a European site, this will generate the need for an appropriate assessment for the purposes of Article 6(3) of the Habitats Directive.

Given the location of the proposed development at Ballymastone, Donabate, Co. Dublin; as well as its nature and scale, and connections to services including water supply and surface water / foul infrastructure, it is possible to rule out potential significant adverse effects arising out of the proposed development on the following European sites.

- Rockabill to Dalkey Island SAC;
- Lambay Island SAC;

[18] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A62011CC0258

- Lambay Island SPA;
- Baldoyle Bay SAC;
- Ireland's Eye SAC;
- North Dublin Bay SAC;
- Howth Head SAC;
- South Dublin Bay SAC;
- North-West Irish Sea SPA;
- Baldoyle Bay SPA;
- Ireland's Eye SPA;
- Skerries Islands SPA;
- Rockabill SPA;
- North Bull Island SPA;
- Howth Head Coast SPA;
- South Dublin Bay and River Tolka Estuary SPA;
- River Nanny Estuary and Shore SPA;
- Dalkey Islands SPA.

These sites have been screened out at Stage 1 Appropriate Assessment Screening because they are at such a distance from the proposed development site that there would not be any significant effects on them as a result of:

- Habitat loss and/or fragmentation;
- Impacts to habitat structure;
- Disturbance to species of conservation concern;
- Mortality to species (such as roadkill);
- Noise pollution;
- Emissions to air;
- Emissions to water.

However, due to close proximity and a potential connection via surface water, the proposed development at Ballymastone, Co. Dublin; individually or in combination with another plan or project, has potential to have significant effects on the following European sites in immediate vicinity and downstream:

- Rogerstown Estuary SAC;
- Rogerstown Estuary SPA;
- Malahide Estuary SAC;
- Malahide Estuary SPA.

Therefore, the proposed development is subject to Appropriate Assessment and an Appropriate Assessment Screening report (AASR) and Natura Impact Statement (NIS) have been prepared and are submitted with the planning application under separate cover.

Designated sites other than European sites (i.e. proposed Natural Heritage Areas (pNHA) and designated Natural Heritage Areas (NHA)) within the potential Zone of Influence have been included in this assessment. They are as follows:

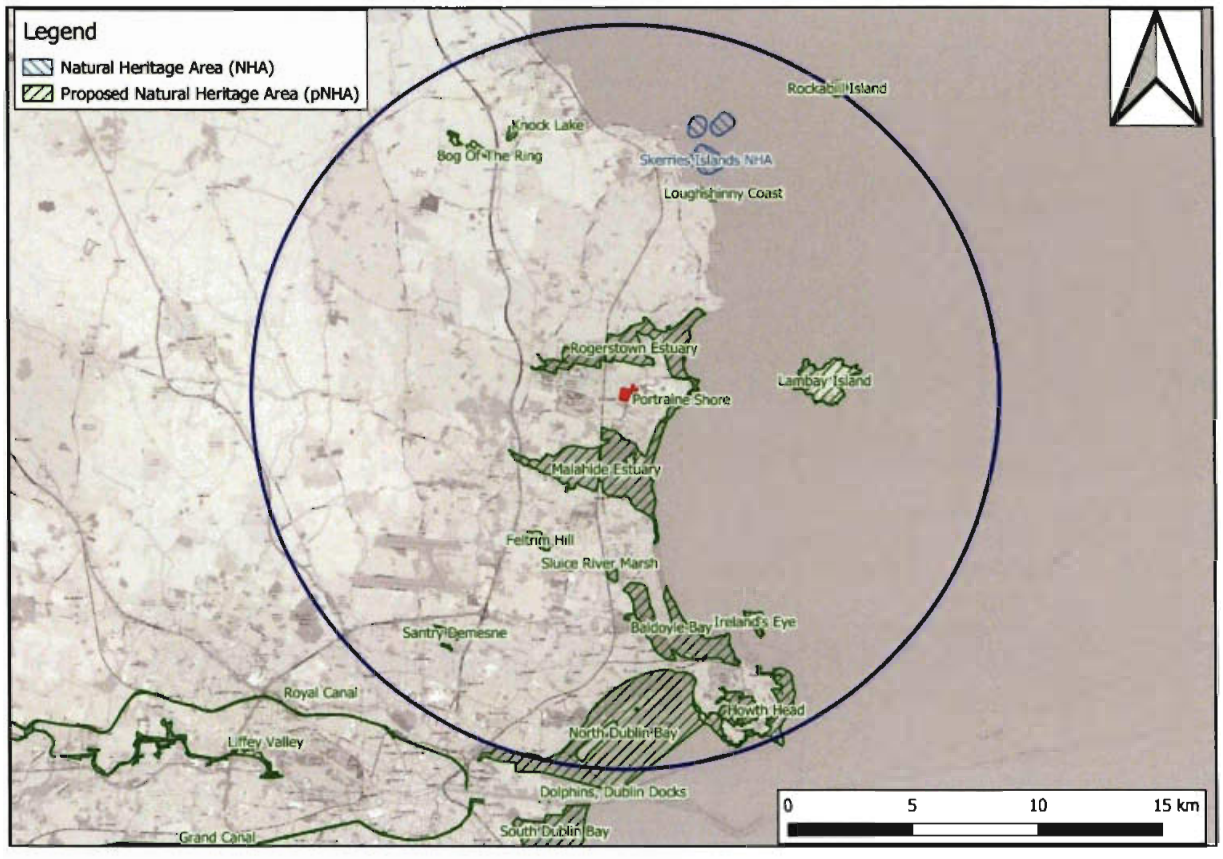
- Natural Heritage Areas (NHA)
  - Skerries Island NHA (site code 001218), c. 9.4km north-east;

- Proposed Natural Heritage Areas (pNHA)
  - Rogerstown Estaury pNHA (site code 000208), c. 1km north;
  - Portraine Shore pNHA (site code 001215), c. 1.6km east;
  - Malahide Estuary pNHA (site code 000205), c. 1.2km south;
  - Lambay Island pNHA (site code 000204), c. 6.7km east;
  - Feltrim Hill pNHA (site code 001208), c. 6.2km south-west;
  - Sluice River Marsh pNHA (site code 001763), c. 6.7km south;
  - Baldoyle Bay pNHA (site code 000199), c. 7.3km south;
  - Ireland's Eye pNHA (site code 000203), c. 9.7km south-east;
  - Loughshinny Coast pNHA (site code 002000), c. 8.7km north-east; and
  - Howth Head pNHA (site code 000202), c. 12.3km south-east.

Note that the above-listed distances are linear (i.e. 'as the crow flies'). **Figure 8.3** illustrates all of the NHA and pNHA within the potential Zone of Influence (including those which overlap with European sites).

The Rogerstown Nature Reserve is c. 1.0km to the north of the site and Baldoyle Bay Ramsar site and Baldoyle Estuary Nature Reserve is c. 8.7km to the south. Malahide shellfish waters (EPA code IEPA2_0057) are 4km to the east of the site in the north Western Irish Sea (HA 08).

Figure 8.3 NHA and pNHA within potential Zone of Influence of the proposed development. A 15km radius is shown for scale.



8.3.3 Rare and Protected Species, and invasive plant species

The National Biodiversity Data Centre (NBDC) database was consulted with regard to rare species (Curtis & McGough, 1988) and species protected under the Flora Protection Order (2022). There are no records of any protected species within the 1km grid squares (O2350 and O2349) that cover the proposed development site. No protected plants were recorded during any of the field surveys undertaken.

No plant species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 (as amended) were recorded during the field surveys, including in 2024. Eleven species of non-native/introduced plant species (not listed on the Third Schedule) were recorded across the study area: Persian speedwell (*Veronica persica*, beech (*Fagus sylvatica*), sycamore (*Acer pseudoplatanus*), Monterey cypress (*Cupressus macrocarpa*), spruce (*Picea* sp., horse chestnut (*Aesculus hipposcastanum*, tulip (*Tulipa* sp.), box honeysuckle (*Lonicera nitida*), bristly oxtongue (*Helminthotheca echioides*), cherry laurel (*Prunus lauracerasus*), and *Viburnum* sp.

8.3.4 Habitats

All habitats present on the proposed development site are described in this section and are shown in **Figure 8.4.**

The habitat types (and/or mosaics) recorded within the study area are defined according to the Heritage Council classification system (Fossitt, 2000). Detailed habitat descriptions and photographs, and full plant species lists (with percentage abundance estimates for each species) for each recorded habitat are presented in **Appendix 8.3** of this EIAR.

The following habitat types (and/or mosaics) were recorded within the study area during the field survey in 2023 and 2024 (see Figure 8.4):

8.3.4.1 Drainage ditches (FW4)

Drainage ditches (FW4) habitat is found widely across the site, mostly running parallel along the base of treelines. In combination with the wet grassland (GS4) that dominates the north-eastern end of the site, these habitats show that the site has the ability to retain a lot of water and was likely much wetter in the past prior to drainage. Hairy willowherb (*Epilobium hirsutum*) and common duckweed (*Lemna minor*) were recorded in this habitat but they are very species-poor otherwise. Nevertheless, this is a valuable wetland habitat locally and is considered to be of **Local importance (higher value)**.

8.3.4.2 (Mixed) broadleaved woodland (WD1)

A long strip of (Mixed) broadleaved woodland (WD1) habitat runs along the Ballymastone site boundary at the north-eastern end of the site. The canopy is dominated by sycamore and ash with lesser amounts of oak and elm (*Ulmus* sp.). There are other tree species present in small amounts such as rusty willow (*Salix cinerea* subsp. *Oleifolia*), horse chestnut and spruce. The understorey of the woodlands on site is vegetated by such shrubs as bramble (*Rubus fruticosus* agg.), ivy (*Hedera helix*), and blackthorn (*Prunus spinosa*). The herbaceous species occurring here include lesser celandine (*Ficaria verna*), cleavers (*Galium aparine*), herb-Robert (*Geranium robertianum*), Germander speedwell (*Veronica chamaedrys*) and nettle (*Urtica dioica*). This habitat is considered to be of **Local importance (higher value)**, due to its relatively well-developed and diverse woodland vegetation and the potential for the woodland to become more species diverse (with a native tree species canopy) over time.

8.3.4.3 Wet grassland (GS4)

Wet grassland (GS4) is the dominant habitat at the north-eastern end of the site. This habitat is characterised by having an increased influx of freshwater near the soil surface relative to GS2/GS1 grassland, which allows this grassland type to support some wetland plant species. As a result, the habitat within the site is dominated by such grass species as creeping bent (*Agrostis stolonifera*), Yorkshire fog (*Holcus lanatus*), and sweetgrass (*Glyceria* sp). alongside such rush species as soft rush (*Juncus effusus*), jointed rush (*Juncus articulatus*) and hard rush (*Juncus inflexus*). Occasional species in this habitat include bulrush (*Typha latifolia*), creeping buttercup (*Ranunculus repens*), brown sedge (*Carex disticha*) and meadow buttercup (*Ranunculus* acris). This habitat is considered to be of **Local importance (higher value)**, due to its relatively high species diversity and due to the scarcity of wetland habitats in the vicinity.

8.3.4.4 Hedgerows (WL1)

A small stretch of recently planted hedgerow (WL1) was recorded along the eastern site boundary. This new hedgerow was planted with a mix of native and non-native tree species such as hawthorn (*Crataegus monogyna*), hazel (*Corylus avellana*), cherry laurel, holly (*Ilex aquifolium*), and *Viburnum* sp. This habitat is considered to be of **Local importance (higher value)**, as it forms part of the wider linear habitat network in the area.

8.3.4.5 Local Importance (Lower Value) Habitats

Spoil and bare ground (ED2) and an area of Buildings and artificial surfaces/spoil and bare ground (BL3/ED2) mosaic have been recorded on site during the field surveys in 2024 and are mapped in **Figure**

8.4. These habitats cover the greatest surface area within the site boundary compared to all other habitat types. All of these habitats are considered to be of **Local importance (lower value)** due to their low species diversity, poor habitat potential and lack of species at a local level.

8.3.4.6 Negligible Habitats

Buildings and artificial surfaces (BL3) habitat was recorded on site during the field surveys. These areas consist of the roadway through 'The Links' housing estate that runs along the western site boundary, as well as the R126 on the western end of the site, and the construction compound for the Phase 1 lands. This habitat is considered to be of **Negligible importance** due to its very low species diversity and very poor habitat potential.

8.3.4.7 Hedgerows (WL1) and Treelines (WL2)

In the course of carrying out the habitat survey, a comprehensive hedgerow appraisal of the field boundaries was undertaken. This is an ecological appraisal, carried out by botanist Mr Alexis FitzGerald, as distinct from the arboricultural survey and tree assessment undertaken by John Morris Arboricultural Consultancy Limited (included separately as part of this planning submission) and submitted separately.

Detailed descriptions of each of the hedgerows and tree lines are included in **Appendix 8.3**. The site is divided into a total of five hedgerow sections (see **Figure 8.5**) as discussed in the following sections.

Hedgerow 1

Hedgerow 1 is a townland boundary hedgerow, identifiable as such on the 2nd edition OS maps. It occurs along the southern end of the site and runs initially at a north-west to south-east direction and then turns east along the remainder of its length. While this habitat classifies as a treeline (WL2) according to Fossitt (2000), such treelines are also included by Foulkes *et al.* (2013) for assessment and are therefore considered here. This treeline is dominated by hawthorn along the majority of its length, with tall sycamore and ash also present. This hedge has recently been topped with the exception of some of the taller ash trees. A large portion of the western extent of the hedge has been removed entirely as part of the Phase 1 permission. Ivy and bramble make up the shrub layer and the ground layer of the hedgerow contains the high nutrient indicator species nettle and cleavers.

This hedge has grown into a treeline, having been managed in the lower sections but has grown upwards at the top. It appears on the 2nd edition OS maps, but it is only visible as a field boundary on the 1st edition. It is a hedgerow with large gaps present; however, it is considered to be of **Local importance (higher value),** given its mature status as a townland boundary and the fact that it is part of the wider linear habitat network in the area.

Hedgerow 2

Hedgerow 2 runs approximately south to north bisecting the southern end of the site. While this habitat classifies as a treeline (WL2) according to Fossitt (2000), such treelines are also included by Foulkes *et al.* (2013) for assessment and are therefore considered here. This is a top-heavy hedgerow that has grown into a treeline with a drain running along the southern portion. Ash is the dominant tree species, with hawthorn dominating the shrub layer with lesser amounts of bramble and ivy. Cleavers, nettles, spear thistle (*Cirsium arvense*), and spiny sow-thistle (*Sonchus asper*) were recorded in the ground layer.

This hedgerow has been lightly flailed recently along the lower half; the taller ash trees have been left untouched. Some holes have been created in this hedge due to physical damage relating to fencing

installation and a large c. 20m wide gap has been created in the central section of the hedge (to facilitate a permitted road). Hedgerow 2 is considered to be of **Local importance (higher value),** given its mature status as part of the wider linear habitat network in the area, directly connecting to townland boundary hedgerows.

Hedgerow 3

Hedgerow 3 runs approximately north-west to south-east through the centre of the site. While this habitat classifies as a treeline (WL2) according to Fossitt (2000), such treelines are also included by Foulkes *et al.* (2013) for assessment and are therefore considered here. A large proportion of the central extent of this hedgerow has been removed for the permitted construction of Phase 1. Although now divided, the hedge is still considered as one hedge for the purposes of the hedgerow surveys. Heras fencing is present along the south-eastern surviving length but is absent along the western length. Like the previously discussed hedgerows, this hedge was recently flailed along its lower sections and was also topped, with the exception of some taller ash trees. Ash is the dominant tree species. The shrub layer is composed of ivy and bramble, with only a small proportion made up of hawthorn. Cleavers, nettle, and spear thistle were recorded in the ground layer. Hedgerow 3 is considered to be of **Local importance (higher value)**, given its mature status as part of the wider linear habitat network in the area.

Hedgerow 4

Hedgerow 4 is a site boundary hedgerow located at the north-western end of the site. It runs approximately north-west to south-east in direction. While this habitat classifies as a treeline (WL2) according to Fossitt (2000), such treelines are also included by Foulkes *et al.* (2013) for assessment and are therefore considered here. A medium-sized wet drain runs along this treeline, between 0.5m to 1m wide. Monterey cypress is the dominant tree species in this treeline with lesser amounts of ash. Bramble and ivy are abundant in the shrub layer, along with hawthorn and elder (*Sambucus nigra*) in lesser quantities. The ground layer of this treeline contains cleavers, nettle, spear thistle and spiny sow-thistle. It is evident that the row of mature Monterey cypress was planted along the north side of the hedgerow along the edge of the adjacent cemetery in the past, and this species now overshadows the native hedgerow vegetation on the south side. This, along with the dense cover of bramble in the shrub layer and the presence of the wet shallow ditch have all contributed to the reduced herb layer diversity along the length of the hedgerow.

This is a top-heavy hedgerow, having been recently flailed along its lower half to facilitate heras fencing installation. There is dense shrub cover in the undergrowth along most of its length, except at the eastern end of the hedge. It is considered to be of **Local importance (higher value),** given its mature status as part of the wider linear habitat network in the area.

Hedgerow 5

Hedgerow 5 is situated along the northern site boundary running approximately north-west to south-east. Like all of the previous hedgerows discussed, this habitat classifies as a treeline (WL2) according to Fossitt (2000), however, such treelines are also included by Foulkes *et al.* (2013) for assessment and are therefore considered here. Hawthorn is the dominant shrub interspersed with sycamore trees. Bramble and ivy are also very abundant in the shrub layer with lesser quantities of dog rose (*Rosa canina* agg.) The nutrient rich indicator species cleavers and nettle are found in the ground layer. A medium-

sized wet drain runs along the base of this hedge. This hedgerow is considered to be of **Local importance (higher value)**, as it acts as a linear habitat network between the adjacent treelines at the site.

Figure 8.4 Habitat map for the Ballymastone Phase 2 site

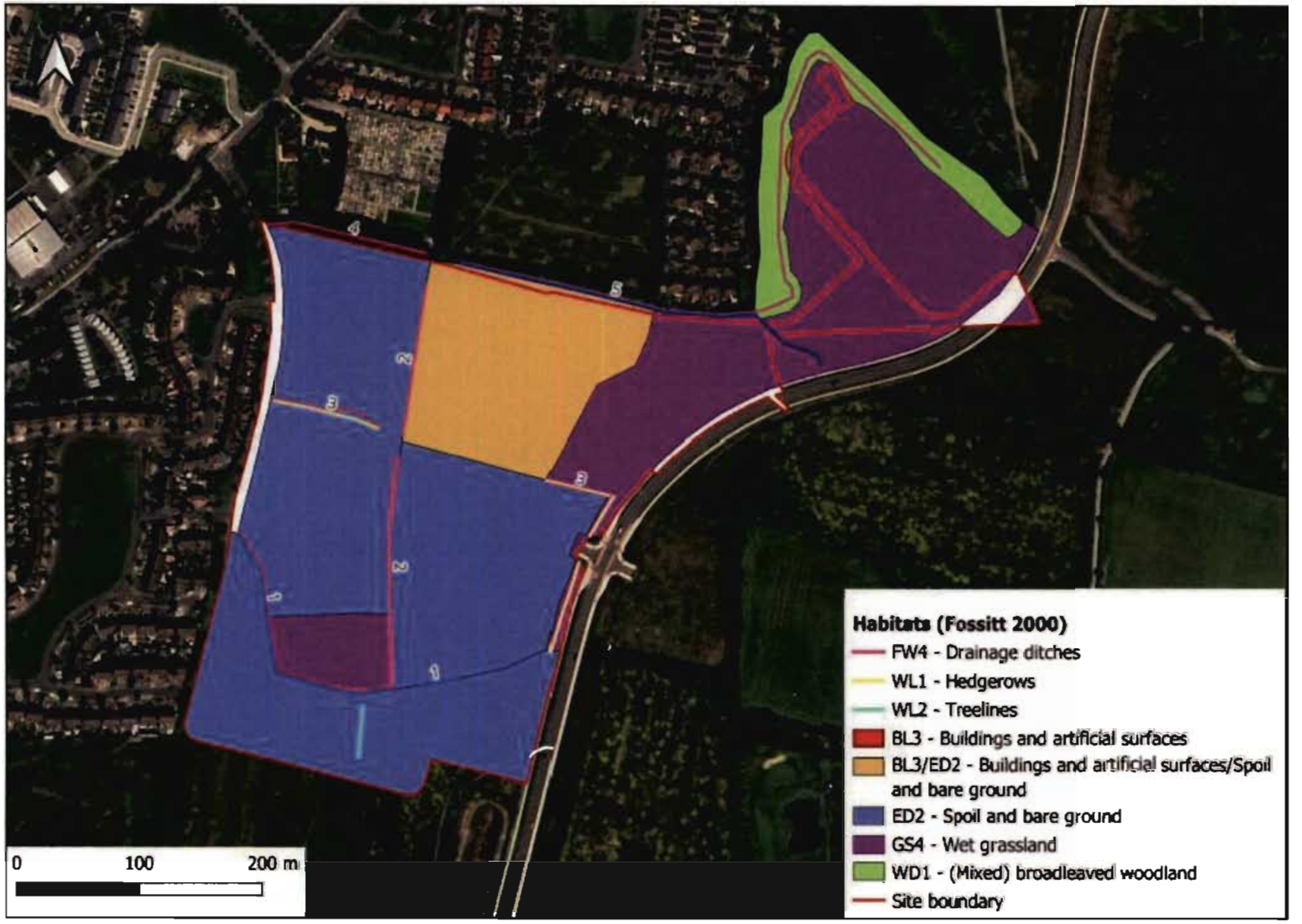


Figure 8.5 Hedgerows on the site, showing the sample transects

8.3.5 Fauna

8.3.5.1 Badgers

There is evidence of use of the wider area in Donabate (beyond Ballymastone Phase 2) by badgers (protected under the Wildlife Act, 1976). Outside the Ballymastone lands, to the east, there are two setts within the grounds of St. Ita's. These were recorded as active during assessments undertaken in 2019/2020 by Mr Keeley and colleagues as part of a separate development.

There are no badger setts within the boundary of the Ballymastone Phase 2 development. During the preparation of the planning application for Ballymastone Phase 1 two badger setts were recorded in a hedgerow in the centre of the Phase 1 site (to the south of Phase 2) and a third, single-entrance sett was recorded just outside the eastern site boundary of the Phase 1 lands, east of the DDR, near the boundary with the Ballymastone Recreational Hub. The northernmost of the setts within the Phase 1 lands contained four entrances and, while it was not serving as a main sett in 2021 or 2022, it had the potential to function as a main sett. It had initially been the intention to temporarily close the four-entrance sett in the Phase 1 lands for the duration of the construction phase and to reopen it post-construction. Given the level of badger activity at the sett (and the fact that it is not a breeding sett) closure of the sett was not in fact necessary, it has been left open, and is currently fenced off (within the tree protection fencing required to protect the retained hedgerows) and protected from the Phase 1 development works.

The setts in the Phase 1 lands were subject to damage, by persons unknown, (including burning and digging) in early 2023 (prior to the commencement of the permitted construction works). Localised damage took place, however despite the high level of disturbance, three badger encounters were noted during a nighttime assessment of the setts; in June 2023.

Survey work undertaken in June 2023 and in March 2024, including an analysis of footage from an infrared camera placed near the sett in the Phase 1 lands, indicates that at least one badger has been entering the site at night and accessing the area where the badger sett is located within the Phase 1 lands. Although badgers are active at the site it is not confirmed that the sett itself is in use. This level of activity is consistent with the level of badger activity observed at the Ballymastone lands and in the wider area since the site was first visited in 2020.

8.3.5.2 Bats

All Irish bat species are protected under the Wildlife Act (1976) and subsequent amendments, and under Annex IV of the Habitats Directive[19], via the European Communities (Birds and Natural Habitats) Regulations, as amended.

Bat activity

According to the available databases of Bat Conservation Ireland (BCI), there are no records of bats within the study area boundary. During the surveys undertaken in 2023 and 2024 a total of five bat species were recorded within and around the site (common pipistrelle, soprano pipistrelle and Leisler's bat were recorded feeding within the site, with Daubenton's bat and brown long-eared bat briefly recorded, near the graveyard to the north west of the site).

[19] With lesser horseshoe bat, not found on the east coast of Ireland, being further protected under Annex II of the Habitats Directive

In June 2023, there was a relatively high level of pipistrelle activity along the main hedges of the site and pipistrelle activity throughout the site (always linked to the hedgerow). Bat activity was noted at the northwestern area close to the graveyard and it was highly probable that bats were entering the site from the direction of the housing to the north or northwest.

The only other species noted on a repeat basis was Leisler's bat. This species was less common in 2023 than previously and less common again in 2024 (this may have been due to the early date of the survey in 2024). One bat pass each was noted for Daubenton's bat and Brown long-eared bat on the edge of the site (at the southeastern corner of the graveyard) in June 2023. The Daubenton's bat was at 23.09 hours and the long-eared bat at 00.14 hours. Daubenton's bats feed over water primarily and this bat may have been moving between feeding areas and roosts. There are roosts of brown long-eared bats within Newbridge House and within St. Ita's, Portrane.

The overall site at Ballymastone has undergone considerable alterations since the initial surveys and even since the 2023 survey, as a consequence of the construction of the permitted phase 1 development.

Little activity was recorded throughout the survey in April 2024, with bat activity only occurring in the sunset survey. Activity was sporadic commencing at 21:17 hours with a single common pipistrelle pass in the corner of the southeastern quarter of the site. Leisler's bat activity was recorded along the eastern roadside, as one Leisler's bat was observed feeding along the lit lamps on the roadside. The primary area of bat feeding activity was the northeastern quarter of the field. This was likely to have been due to the tree cover on three sides of the field which acted as a wind barrier in an otherwise exposed site.

Bat roosting

No bats were recorded roosting within the proposed development site.

8.3.5.3 Non-volant Mammals (other than badgers)

Other than rabbit (seen in daylight and recorded on the infrared camera in the Phase 1 lands) and occasional fox, no evidence of other large mammals has been recorded. While signs of otter (protected under the Wildlife Act (1976) and subsequent amendments, and under Annex II of the Habitats Directive, via the European Communities (Birds and Natural Habitats) Regulations, 2011-2015) and hare were searched for, none were found. The presence of otters is considered unlikely given the absence of a watercourse within the site and the presence of suitable watercourses and coastal habitats nearby. There is otter potential within the Newbridge House Demesne (c. 2km west of the proposed site) and an otter was noted on a motion-activated camera at the Kilcrea gate at Newbridge Demesne on January 29 2021.

The NBDC database 1km grid square (O2350) has a record of European hedgehog (*Erinaceus europaeus)* and common frog *(Rana temporaria)* sighting on the south west corner of the proposed development site, close to the residential development of 'the Links'; however, no evidence was recorded during the site surveys.

8.3.5.4 Birds

A total of 35 bird species were recorded on the lands during the surveys undertaken in 2023 and 2024. These surveys covered the full Ballymastone area, including the proposed development site at Phase 2.

Two species of high conservation concern[20], meadow pipit and yellowhammer, were recorded on the site. Meadow pipit was confirmed as a breeding species on the lands. Yellowhammer however was identified only as a possible breeding species.

Eight species of medium conservation concern were observed of which only two, goldcrest and linnet were confirmed as breeding on the lands. Skylark was identified as a probable breeding species and two other species were observed as possible breeders (starling and house sparrow). Three additional species were observed which were non-breeding on the lands (herring gull, swallow and house martin).

An additional 25 species of least concern were observed of which fourteen were confirmed breeding. Woodpigeon, wren, dunnock, robin, stonechat, blackbird, song thrush, blackcap, willow warbler, great tit, blue tit, chaffinch and goldfinch were all confirmed breeding on the survey lands. Buzzard was confirmed as breeding outside the survey lands close to the north-eastern boundary of the site. Three species were observed as probable breeders, collared dove, mistle thrush, and long-tailed tit. Four species were observed on or over the lands as non-breeding (mallard, great black-backed gull, jackdaw and rook).

The site is probably used by the nonbreeding species for foraging or hunting. No nocturnal species were detected on the lands.

The site also supported wintering species including some already mentioned and others not commonly found in Ireland during the breeding season. These include waterbirds such as Snipe, however, the site at Ballymastone Phase 2 is unsuitable for use by grazing light-bellied Brent geese and other SCI species in Malahide Estuary SPA, Rogerstown Estuary SPA or any other SPAs) and none were found on the lands.

Table 8.2 Bird species identified, conservation status, breeding status and numbers present during the breeding survey undertaken in 2021 on Ballymastone lands.

Common Name	Species	Conservation Status	Breeding Status
Mallard	*Anas platyrhynchos*	Green	Non-breeding
Buzzard	*Buteo butea*	Green	Breeding nearby
Pheasant	*Phasianus colchicus*	Green	Possible Breeding
Herring Gull	*Larus argentatus*	Amber	Non-Breeding
Gt Black-backed Gull	*Larus marinus*	Green	Non-breeding
Woodpigeon	*Columba palmubus*	Green	Confirmed Breeding
Collared Dove	*Streptopelia decaocto*	Green	Probable Breeding
Skylark	*Alauda arvensis*	Amber	Probable Breeding
Barn Swallow	*Hirunda rustica*	Amber	Non-Breeding
House Martin	*Delichan urbicua*	Amber	Non-Breeding
Meadow Pipit	*Anthus pratensis*	Red	Confirmed Breeding
Wren	*Trogladytes trogladytes*	Green	Confirmed Breeding
Dunnock	*Prunella modularis*	Green	Confirmed Breeding
Robin	*Erithacus rubecula*	Green	Confirmed Breeding
Stonechat	*Saxicola tarquatus*	Green	Confirmed Breeding

[20] *Birds of Conservatian Concern in Irelond 4: 2020-2026* (Gilbert *et al.* 2021)

Common Name	Species	Conservation Status	Breeding Status
Song Thrush	*Turdus philomelos*	Green	Confirmed Breeding
Mistle Thrush	*Turdus pilaris*	Green	Probable Breeding
Blackbird	*Turdus merula*	Green	Confirmed Breeding
Blackcap	*Sylvia atricapilla*	Green	Confirmed Breeding
Willow Warbler	*Phylloscopus trochilus*	Green	Confirmed Breeding
Goldcrest	*Regulus regulus*	Amber	Confirmed Breeding
Great Tit	*Parus major*	Green	Confirmed Breeding
Blue Tit	*Parus caeruleus*	Green	Confirmed Breeding
Long-tailed Tit	*Aegithalos caudatus*	Green	Probable Breeding
Magpie	*Pica pica*	Green	Possible Breeding
Jackdaw	*Corvus monedula*	Green	Non-breeding
Rook	*Corvus frugilegus*	Green	Non-breeding
Hooded Crow	*Corvus corone cornix*	Green	Possible Breeding
Starling	*Sturnus vulgaris*	Amber	Possible Breeding
House Sparrow	*Passer domesticus*	Amber	Possible Breeding
Chaffinch	*Fringilla coelebs*	Green	Confirmed Breeding
Linnet	*Carduelis cannabina*	Amber	Confirmed Breeding
Goldfinch	*Carduelis carduelis*	Green	Confirmed Breeding
Bullfinch	*Pyrrhula pyrrhula*	Green	Possible Breeding
Yellowhammer	*Emberiza citrinella*	Red	Possible Breeding

8.3.6 Overall Evaluation of the Proposed Development Site

The proposed development site is not under any wildlife or conservation designation. Furthermore, no rare, threatened or legally protected plant species, as listed in the *Irish Red Data Book 1 – Vascular Plants* (Curtis & McGough, 1988), the Flora Protection Order, 2022, or the Habitats Directive, are known to occur within the site and none were recorded.

No rare habitats or habitats of particularly high ecological value (i.e. International, National or County) are present at the site. The majority of the hedgerows, however, remain of Local (Higher Value) Importance.

The hedgerows are of ecological value for their ecological/habitat connectivity and for nesting birds as well as commuting and foraging bats. The mature hedgerows and trees within the site are of greatest importance as they are relatively diverse and act as significant ecological corridors.

All the hedgerows on site represent 'Heritage Hedgerows' and are of high historical importance. In terms of condition assessment of the hedgerows, all the hedgerows assessed can be considered as hedgerows in 'Unfavourable Condition'.

Despite the ongoing construction activity associated with Phase 1, and the vandalism of the badger setts (located in the Phase 1 development site, to the south of Phase 2) that took place prior to the

commencement of construction of Phase 1, there is evidence of some use of the area by badgers on the site. Meadow pipit and yellowhammer were recorded on the lands.

Overall, the site is of **Local Importance (Higher Value)** in accordance with the ecological resource valuations presented in the NRA Guidelines.

Full details of the European sites of the Rogerstown Estuary and Malahide Estuary and further afield protected sites are addressed in the NIS, which accompanies the application under separate cover.

8.4 Predicted Impacts of the Proposed Development

8.4.1 Do-Nothing Impact

As noted above, the proposed development site is of local (higher value) ecological importance. Should the Ballymastone Phase 2 site remain undeveloped, no significant changes to the biodiversity value of the site can be expected. Formally disturbed areas and areas that have been left unmanaged are being recolonised by vegetation. The general pattern of succession that is from recolonising bare ground to patches of grassland to woodland would be expected to continue.

However the area is zoned for residential development, and construction of Ballymastone Phase 1 (and more in the wider area) is already well under way. As such, development is highly likely to take place at the site, sooner or later. Should the site be re-developed at a later stage, it is reasonable to expect that any potential impacts would be similar to those predicted to arise as a result of the proposed development.

8.4.2 Construction Phase

The following potential impacts have been identified in relation to biodiversity during the construction phase:

8.4.2.1 Water Quality, Dust and Other Emissions

The proposed development site is located midway between both the Rogerstown Estuary (to the north) and Malahide Estuary (to the south). The Beaverstown stream (EPA name: 'Rahillion', WFD name: 'Ballyboghil_010', EPA code: 08R23) flows approximately 750m to the north-west of the site and the Portrane stream (EPA name: 'Ballalease North', WFD name: 'Ballyboghil_010', EPA code: 08B45) flows approximately 850m to the north-east. Both these streams discharge into the Rogerstown Estuary, which is approximately 1km north of the proposed development site.

Estuaries and coastal sites such as the Rogerstown and Malahide Estuaries rely on large quantities of sediment to function. Regardless, all construction activities pose a potential risk to watercourses as surface water arising at any site may contain contaminants. The main contaminants arising from construction, demolition and site clearance activities may include suspended solids, hydrocarbons and concrete/cement products. If not properly managed, such pollutants could pose a temporary risk to surface water quality in local watercourses during the site clearance and construction phases. Also, during the construction phase there is potential for an increase in run-off due to compaction of the soil which will in turn reduce the infiltration capacity and increase the rate and volume of surface water run-off. This can increase surface water run-off and sediment loading which has potential to impact the local drainage and in turn the Rogerstown Estuary downstream.

In addition, there is a potential risk to flora and fauna arising from dust deposition, which in extreme cases can inhibit photosynthesis in plants and can increase turbidity in watercourses. As per Chapter 11 (Air Quality), construction dust tends to be deposited within 350 m of a construction site, with the majority of the deposition occurring within the first 50 m. The extent of any dust generation depends on the nature of the dust (soils, peat, sands, gravels, silts, etc.) and the nature of the construction activity. Due to the overall site area and scale of the development involved at Ballymastone Phase 2, there is the potential for significant dust soiling 100 m from the source. There is also the potential for traffic emissions to impact air quality in the short-term over the construction phase, particularly due to the increase in HGVs accessing the site.

Given the nature, scale and duration of the construction phase of the proposed development there is potential for **short-term, moderate, negative** impacts on water and air quality, in the context of biodiversity, during the construction phase of the proposed development.

8.4.2.2 Disturbance via Noise, Vibration and Visual Impacts

The species of Rogerstown Estuary SPA and SAC and Malahide Estuary SPA and SAC are sensitive to noise, vibration and visual disturbance. These factors may for example reduce feeding times or cause birds to temporarily avoid certain areas. This can potentially occur during site clearance and construction operations associated with any proposed development. However at c.1km the proposed development site is not in close proximity to any of the European sites. There is no possibility of noise, vibration, visual or any other kind of disturbance arising during construction and affecting the species associated with the European sites. There is, further, no possibility of any *ex-situ* effects (effects on birds roosting or feeding outside any of the designated sites). As set out in the AA Screening Report and the Natura Impact Statement the bird fauna recorded on the site is as expected for such a site and there is no habitat on the site suitable for use, even on a very occasional basis, by any overwintering birds, such as light-bellied Brent goose, or any other protected bird species listed as a Special Conservation Interest (SCI) in any European site within the Zone of Influence. No such species, and no evidence of such species (e.g. droppings), was recorded during any of the surveys undertaken.

Given the nature, location, scale and duration of the construction phase for the proposed development there will be **no likely impacts** via disturbance on Rogerstown Estuary SPA and SAC and Malahide Estuary SPA and SAC.

Noise, vibration and visual disturbance may impact on local fauna of the site, for example by reducing feeding time or causing birds / bats / badgers to temporarily avoid certain areas. This could potentially occur during site clearance and construction operations associated with the proposed development.

Given the nature, scale and duration of the construction phase for the proposed development there is the potential for **short-term, moderate, negative** impacts on ecological receptors in the vicinity of the proposed development.

8.4.2.3 Lighting

Lighting during the construction phase will be limited to the site compound and residential development areas only. It is not expected that there will be any impacts on bats or any other protected species. Again, given the location of this feature there will be **no likely impacts** on the bird species of the SPA, bats or on any other biodiversity receptors.

8.4.2.4 Loss of, or Disturbance to Habitat within the Site, including Impacts on Badgers

The proposed development will involve the removal of much of the existing area of the site and its replacement with residential development, open space and infrastructure including landscaping.

The majority of the hedgerows internal to the Ballymastone Phase 2 site will be retained and managed within the proposed landscape and biodiversity network, and will be subject to management and enhancement, as set out in detail in the Landscape Strategy and Design Statement prepared by Cunnane Stratton Reynolds and submitted separately. Some sections of hedgerow will be removed in order to facilitate the development.

In the absence of mitigation the habitat loss will result in a **permanent to long-term moderate negative** impact at a site level.

The proposed development has the potential to impact on breeding birds, bats and badgers due to loss of foraging areas, breeding habitat and commuting pathways. No roosting bat species were identified within the site boundary and no impacts on roosting bats are expected.

There are no badger setts within the Phase 2 site. There is however an active badger sett close by (see Section 8.3.5.1), to the south of the Phase 2 lands, located in a section of the existing hedgerow that is being retained, managed and enhanced as part of the landscape and open space strategy for the proposed development. This hedgerow is located within a new local park (Baile Uisce Park).

In the EIAR submitted with the Ballymastone Phase 1 application the assessment of the impacts upon badgers was as follows:

"*The two badger setts within the centre of the site are located in a section of the existing hedgerow that is to be retained, managed, and enhanced as part of the landscape and open-space strategy for the proposed development. This hedgerow will be located within a new local park (Baile Uisce Park), and it is therefore proposed to retain the setts intact within the development. Similarly, the sett on the eastern boundary is to be retained as part of the development. Although the intention is to retain the badger setts, the proposed development under the current planning application will nevertheless result in potential disturbance to the setts due to the proximity of the proposed construction areas. There is therefore the potential for impacts on badgers in the area during the construction phase*".

As set out in Section 8.3.5.1 it was initially intended to close the active badger sett on a temporary basis in order to facilitate construction of Ballymastone Phase 1, and to reopen it once construction works were completed. This has not been necessary, and the sett has been fenced off from the ongoing construction works associated with Ballymastone Phase 1. Monitoring has confirmed that there is some regular badger activity at the site.

Although the intention remains to retain the active badger sett in the Phase 1 lands, and it is currently protected by fencing and is monitored, the proposed development under the current planning application (Phase 2) has the potential to result in disturbance to the sett due to the proximity of the proposed construction areas. There is, therefore, the potential for impacts on badgers in the area during the construction elements of Ballymastone Phase 2. During construction there is the potential for impacts on badgers due to death or injury to badgers within the setts, as well as destruction of setts, loss of foraging habitats or disturbance to foraging areas. Construction works in close proximity to breeding setts can cause serious disturbance to badgers and cubs.

Based on the level of activity recorded over several years the active sett to the south of Phase 2 is not a main breeding sett, and there is significant badger activity and evidence of setts in the wider area. Nevertheless, given the nature, scale and duration of the construction phase for the proposed development there is the potential for **long-term, moderate, negative** impacts on the local fauna within the site and in close proximity, including on badgers.

8.4.3 Operational Phase

The following potential impacts have been identified in relation to biodiversity during the operational phase:

8.4.3.1 Loss of, or Disturbance to Habitat within the Site

As noted in **Section 8.4.2.4**, the proposed development will involve the removal of much of the existing vegetation on the site and its replacement with residential development, open space, landscaping and infrastructure. This includes the removal of fields and a proportion of the hedgerow and tree lines within the site. However, significant sections of the existing field boundaries, hedgerows and trees within the site will be retained (and managed and enhanced) within the proposed open space areas.

The proposed development site is of no importance as a feeding site for the bird species (the Special Conservation Interests) associated with Rogerstown / Malahide Estuary SPA. However, the areas of meadow, scrub, mature trees and hedgerows are habitats of importance for the breeding birds present on the site.

The loss of existing vegetation from the site may also affect commuting bats, by removing cover that allows commuting along the unlit field boundaries. It may also affect feeding for bats by reducing the habitat for their invertebrate prey.

The loss of existing vegetation will also reduce commuting and feeding opportunities for badgers via the removal of the existing fields and the introduction of roads, hard surfaces and buildings. Therefore, the loss of vegetation and feeding area has the potential to have a **long-term, moderate to minor, negative impact** on the bat and badger populations at the site.

Given the nature, scale and duration of the operational phase for the proposed development, there is the potential for **permanent** to **long-term, moderate, negative** impacts on the local fauna due to change of land use.

The proposed development will comprise houses and duplexes ranging from 2-3 storeys in height. There will also be three apartment blocks, ranging from height from 3-6 storeys. The risk that migrating birds could collide with these buildings is **negligible**, as migrating swans and geese fly much higher (up to 2,500 feet as per Irish Aviation Authority, 2020[21]). Similarly, birds flying at lower altitude such as those flying between feeding grounds on the east coast, will fly above or around the proposed development, which comprises brick and rendered facades and will not be made of reflective glass.

8.4.3.2 Lighting

Lighting can affect different species to varying degrees and within species there is also a range of responses to introduced light ranging from minimal effects to complete avoidance. Badgers in urban areas can become very tolerant to light but in rural areas are typically most comfortable in and confined

[21] http://iaip.iaa.ie/iaip/Published%20Files/AIP%20Files/ENR/EI_ENR_5_6_EN.pdf

to unlit areas. Bats may actively avoid artificial lighting, especially if it is shining upon a roost site. In this instance, there would be one oak tree roost (outside of the proposed development site to the north-east) that could be illuminated unintentionally by the proposed housing and street lighting. Lighting is not a critical feature for badgers as they will adjust to increased lighting once they have an opportunity to pass through it unnoticed.

Therefore, lighting from the proposed development during the operational phase may have a **long-term** to **permanent, moderate, negative** impact upon bats and a **long-term** to **permanent, slight, negative** impact upon badgers.

8.4.3.3 Surface Water Quality

Once operational, attenuated surface water arising at the proposed development site will discharge, via the Portrane Canal and the existing 1350mm culvert (located to the north west of the site), to Rogerstown Estuary to the north.

The proposed development could have impacts on water quality, as there is potential for surface water runoff to contain contaminants such as petrol and oil from vehicles and other contamination. Any change to surface water quality associated with the development may affect the habitats and species of the Rogerstown Estuary SAC and SPA. However, the proposed development will be in full compliance with all legislative requirements and best practice guidance. Contamination of water from foul water, hydrocarbons, silt or other pollutants will not be allowed. Provided that site facilities are correctly designed and proper working procedures are strictly adhered to, **no significant impacts** on existing watercourses are expected during the operation of the proposed development.

8.4.3.4 Foul Water

As per the Infrastructure Design Report prepared by DBFL Consulting Engineers and submitted under separate cover as part of the planning application, there is a 300mm foul sewer running along the Donabate Distributor Road, however the subject site has no foul loading at present and a new foul network will be constructed. A Confirmation of Feasibility form and Statement of Design Acceptance have been received from Uisce Éireann (and included as an appendix to the Infrastructure Design Report), indicating that a wastewater connection can be facilitated.

As noted in the Infrastructure Design Report the proposed foul drainage system will have 4 different connection points to existing networks. There is a new Irish Water Foul pumping station recently constructed to the south of the development which will serve the southern side of the proposed Phase 2 development. The pump station is fed by a gravity foul sewer falling North to South along the DDR. A rising main takes flow from the pump station to the northern end of the DDR where it is discharged to another gravity sewer. Due to site levels and the invert levels of the gravity sewer in the DDR, the existing gravity sewer in the DDR is only suitable to serve a small portion of the Phase 2 development. To utilise the new Irish Water pump station, a new deeper gravity sewer is proposed to run from the development to the new pump station within the DDR road reservation to the east of the DDR. The majority of this network will be constructed as part of Phase 1 with a small remainder left to be constructed during the Phase 2 works.

A small portion of the Phase 2 development will utilise the existing gravity sewer within the DDR. These units are located in the south west of the Phase 2 development. The vast majority of the Phase 2 development will discharge to a new proposed Foul Pump Station which is proposed to be located in

the North West of the masterplan site. Due to the level of the existing gravity foul lines within the DDR it was not feasible to connect a lot of the site to these via gravity sewers without unrealistic amounts of build-up of the existing ground levels. The northwest corner of the site was chosen as the most feasible location for the pump station as the ground levels are lowest here so the depth of the pump station could be minimised. This pump station will serve the majority of both phases 2 & 3 of the development. The rising main from the pump station will discharge to the existing gravity sewer flowing North within the DDR

Wastewater will ultimately discharge to the existing Portrane Wastewater Treatment Plant (WwTP), which in turn discharges treated effluent to the Irish Sea offshore of the Donabate-Portrane peninsula.

The capacity available at the Portrane WwTP is sufficient to accommodate the inflow arising from the proposed development and it will, therefore, be possible to maintain the unpolluted status of the waters of the Irish Sea.

Significant effects related to foul water management, arising as a result of the operation of the proposed development, on European sites or otherwise, can therefore be excluded and hence no mitigation is required. A full, detailed foul water management strategy for the proposed development is included in the Infrastructure Design Report by DBFL Consulting Engineers, submitted under separate cover as part of the planning application.

8.5 Mitigation Measures

8.5.1 Construction Phase

8.5.1.1 Designated Conservation Areas

Specific mitigation measures for the European sites are contained within the accompanying Natura Impact Statement (prepared by Brady Shipman Martin) and the Construction and Environmental Management Plan (CEMP) (prepared by DBFL Consulting Engineers) for the proposed development. These include strict measures to ensure the protection of water quality as well as measures to ensure no impact occurs outside the working area and in particular on the habitats and bird species that are the Qualifying Interests and Special Conservation Interests of the Rogerstown Estuary SAC / SPA and Malahide Estuary SAC / SPA.

8.5.1.2 Water Quality, Dust and Other Emissions

Section 5 (Soils and Geology), Section 6 (Water) and Section 11 (Air, Dust and Climate Factors) of the CEMP and Chapter 9 (Lands, Soils, Geology & Hydrogeology), Chapter 10 (Hydrology) and Chapter 11 (Air Quality) of this EIAR all address the proposed erosion and sediment control measures. The following measures will be implemented for stripping of topsoil, excavation of subsoil layers, surface water runoff, dust suppression and accidental spills and leaks:

- Measures shall be implemented to capture and treat sediment laden surface water runoff within additional sediment retention ponds where waters are not directed to the Phase 1 permitted attenuation ponds.
- Surface water runoff from areas stripped of topsoil and rainwater collected in excavations shall be directed to on-site settlement ponds/settlement tanks where measures will be implemented to capture and treat sediment laden runoff prior to discharge of surface water at a controlled rate.

- Groundwater pumped from excavations is to be directed to on-site settlement ponds/ distilling tanks.
- Discharge from any vehicle wheel wash areas is to be directed to on-site settlement ponds/ distilling tanks.
- On-site settlement ponds are to include geotextile liners and riprapped inlets and outlets to prevent scour and erosion.
- Surface water discharge points during the construction phase are to be agreed with Fingal County Council's Environment Section prior to commencing works on site.
- Weather conditions and seasonal weather variations shall also be taken account of when planning stripping of topsoil and excavations, with an objective of minimizing soil erosion.
- All oils, fuels, paints and other chemicals will be stored in a secure bunded hardstand area.
- Refuelling and servicing of construction machinery shall take place in a designated hardstand area which is also remote from any surface water inlets (when not possible to carry out such activities off site).
- Discharge from any vehicle wheel wash areas is to be directed to on-site settlement ponds.
- A response procedure shall be put in place to deal with any accidental pollution events and spillage kits shall be available and construction staff will be familiar with the emergency procedures and use of the equipment.
- Concrete batching will take place off site, wash down and wash out of concrete trucks will take place off site and any excess concrete is not to be disposed on site.
- Pumped concrete will be monitored to ensure there is no accidental discharge.
- Mixer washings are not to be discharged into surface water drains.

8.5.1.3 Noise, Vibration and Visual Effects

As per the CEMP and EIAR, the following measures will be implemented:

- Noise and vibration during the construction phase will be controlled with reference to the best practice control measures within *BS 5228 (2009 +A1 2014) Code of Practice for Noise and Vibration Control on Construction and Open Sites Parts 1 and 2*. The contractor will ensure that all best practice noise and vibration control methods will be used as necessary in order to ensure impacts to nearby noise sensitive locations are not significant. This will be particularly important during site preparation works and piling works.
- The best means practicable, including proper maintenance of plant, will be employed to minimise the noise produced by on site operations. All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract.
- Existing trees and woodlands to be retained and are shown in the Landscape Design Report prepared by Cunnane Stratton Reynolds (CSR) (included separately as part of this planning submission) and arboricultural drawings and report prepared by John Morris Arboricultural Consultancy Limited (included separately as part of this planning submission). All tree protection measures as set out in the Arboricultural Impact Assessment & Method Statement will be implemented in full.

8.5.1.4 Lighting

As noted in **Section 8.4**, increased artificial lighting has the potential to impact on bat feeding and commuting behaviour, as well as on badgers. The proposed lighting for the proposed development (prepared by Ethos Engineering), has been designed in accordance with the following guidelines:

- Bats and Lighting – Guidance Notes for Planners, Engineers, Architects and Developers (Bat Conservation Ireland, 2010)[22];
- Bats and Artificial Lighting at Night, Institute of Lighting Professionals, 2023[23];
- Guidance Notes for the Reduction of Obtrusive Light GN01-21 (Institute of Lighting Professionals, 2021)[24];
- Dark Sky Ireland's Environmentally Friendly Lighting Guide[25].

The proposed lighting will have the following characteristics:

- The minimum level of lighting will be provided within the developed areas, within the lux level criteria required by Fingal County Council.
- The light temperature of all fittings will comply with the specifications required by FCC.
- No flood lighting will be provided within the proposed development and all light fittings will be LED and are designed to shine downwards and will avoid sky glow and light spill.
- Lighting will be directed onto the roadways and paths – and away from the retained hedgerows and open space network.

8.5.1.5 Badgers

There are no badger setts within the Ballymastone Phase 2 site area, and the retained sett in the park in Phase 1 is not a breeding sett. Nevertheless, badgers are known to be present in the wider site and all works relating to badgers and badger setts will be carried out in accordance with the NRA *Guidelines for the Treatment of Badgers Prior to the Construction of National Road Schemes* (n.d.).

Prior to the commencement of any construction works a pre-construction badger survey will be carried out by a suitably qualified badger specialist in order to establish the current status of the badger setts in the wider area. Should any setts be found, within the Phase 2 area, a badger specialist will prepare a construction phase badger management plan to be agreed with NPWS.

The tree protection fencing will be retained in situ for the duration of the construction phase and extensive new planting of tree and shrub species, including holly, blackthorn, hawthorn and other species, will take place – the planting of these species within the landscaped areas will benefit the badgers in the wider area and will also provide pollinator-friendly habitat.

Additionally, the following mitigation measures are proposed for the general protection of badgers:

- Day-to-day measures to ensure the welfare of badgers is maintained will be implemented as follows:
  - Good house-keeping measures will be maintained and no loose netting, fencing or other materials that could trap badgers will be left out on site;
  - Food waste will be secured so as not to attract badgers to the construction site at night;

[22] https://www.batconservationireland.org/wp-content/uploads/2013/09/BCIrelandGuidelines_Lighting.pdf
[23] https://theilp.org.uk/publication/guidance-note-8-bats-and-artificial-lighting/
[24] https://theilp.org.uk/publication/guidance-note-1-for-the-reduction-of-obtrusive-light-2021/
[25] https://www.darksky.ie/lighting-documents/#guidelines

- Ramps will be included in any excavation deeper than 500mm to allow animals to escape if necessary.

8.5.1.6 Other Measures

- No bat roosts will be removed as part of the proposed development and it will not be necessary to apply for a derogation licence under Regulation 54 or 55 of the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended). Nevertheless, bats are mobile creatures, and the absence of bat roosts at the time of surveys does not preclude the presence of future bat roosts at the site. Therefore, as a precautionary measure, any trees to be removed shall be examined for the presence of bats prior to felling.
- The high value hedgerows / treelines will be retained and protected where feasible. In particular all of the retained hedgerows will be treated in accordance with British Standard *BS5837:2012 Trees in Relation to Design, Demolition and Construction – Recommendations*, with protective fencing being installed prior to commencement of development.
- All site clearance and landscaping works will comply with current legislative requirements and best practice. The clearance of any vegetation that may be suitable for use by nesting birds will be undertaken outside the bird nesting season (avoiding the period 1 March to 31 August). Should the construction programme require vegetation clearance between March and August, and this is unavoidable, bird nesting surveys will be undertaken by suitably qualified ecologists. If no active nests are recorded, vegetation clearance will take place within 24 hours. In the event that active nests are observed, an appropriately sized buffer zone (up to 5 m radius around the nest) will be maintained around the nest until such time as all the eggs have hatched and the birds have fledged – a period that may be three weeks from the date of the survey. Once it is confirmed that the birds have fledged and no further nests have been built or occupied, vegetation clearance may take place immediately;
- The planting proposed for the development will, wherever possible, comprise an appropriate mixture of native trees and shrubs, preferably of local provenance. The planting will also incorporate a range of species that will attract feeding invertebrates, including moths, butterflies and bees. It will take account of and implement the relevant objectives of the All-Ireland Pollinator Plan 2021-2025.
- Species listed on Schedule 3 of the Birds and Habitats Regulations, 2011-2015, such as Japanese knotweed and giant hogweed, have not been recorded on the site. Nevertheless, appropriate biosecurity measures will be implemented during the construction phase of the proposed development to ensure that no invasive species are introduced, either deliberately or inadvertently, to the site.
- The following recommendations from Inland Fisheries Ireland 'Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters' (2016) will be implemented as necessary:
  - No direct discharges be made to waters where there is potential for cement or residues in discharge.
  - The pH of any and all discharges made from and during construction works shall be in the range of 6.0 – 9.0 units and not alter the pH of any receiving fisheries waters by more than+/- 0.5 pH units.

- The level of suspended solids in any discharges to fisheries waters as a consequence of construction works shall not exceed 25 mg/l, nor result in the deposition of silts on gravels or any element of the aquatic flora or fauna.

8.5.2 Operational Phase

8.5.2.1 Loss of, or Disturbance to Habitat within the Site

- As detailed in the Landscape Strategy and Design Statement (prepared by CSR and submitted under separate cover as part of this application), it is intended to retain a significant proportion of the hedgerows as ecological features within the open space network, verges and / or site boundaries. While the removal of trees, groups of trees and hedgerow sections is unavoidable, it is proposed to provide new planting of new, high quality trees and shrubs as part of the landscape strategy. This new planting will include a diverse mix of native species as set out in the accompanying Cunnane Stratton Reynolds drawings;
- Replacement trees and hedgerows shall be of appropriate age, structure and species to provide an immediate positive impact, and in the long term offer significant benefits that see an improvement upon the pre-development baseline.
- Although not necessary in order to mitigate roost loss (no bat roosts will be lost) a total of 6 x 2FN Schwegler bat boxes or equivalent are proposed for erection on suitable trees or poles or alternatively the provision of access for bats to elements of buildings. This may be by purpose-built incorporated bat boxes or by providing appropriate access gaps. If this option is chosen rather than specific boxes, a bat specialist shall provide advice on access options. All boxes or access points shall be away from illumination.
- Bird boxes and insect hotels will be provided throughout the proposed development site. A total of 10 no. assorted wooden or woodcrete bird boxes and 5 no. wooden insect hotels (to be located within the proposed parks) will be included.
- Where possible, it is also proposed to install small openings (in the order of 130mm square) at the base of property boundaries within the proposed development in order to facilitate the movement of wildlife, including hedgehogs, between gardens and to connect them to the wider countryside.

8.5.2.2 Surface Water Quality

The proposed development is designed in accordance with the principles of SuDS as embodied in the recommendations of the GDSDS, which addresses the issue of sustainability by requiring designs to comply with a set of drainage criteria that aim to minimise the impact of urbanization, by replicating the run-off characteristics of the greenfield site. The criteria provide a consistent approach to addressing the increase in both rate and volume of run-off, as well as ensuring the environment is protected from any pollution from roads and buildings. Therefore, beyond that which is already proposed under the scope of the design for the proposed development, no further mitigation is required in this regard.

8.5.2.3 Foul Water

There will be no impacts on foul water treatment capacity at the Portrane WwTP as a result of the proposed development, as detailed in **Section 8.4.3**. No mitigation measures are required in this regard.

8.6 Residual Impacts

Overall, while the proposed development may have some **temporary negative** impacts at the **local level**, these impacts will in general be fully mitigated over time to be rendered **negligible**.

8.6.1 Water Quality, Dust and Other Emissions

With the implementation of proposed mitigation measures in place for the protection of surface water and air quality, the residual impact of the construction phase in this regard is assessed to be **short-term, imperceptible** and **negative**.

8.6.2 Noise, Vibration and Visual Effects

With the implementation of proposed mitigation measures in place in relation to noise, vibration and visual effects, the residual impact of the construction phase in this regard is assessed to be **short-term, imperceptible** and **negative**.

8.6.3 Loss of, or Disturbance to Habitat

There will be a limited loss of foraging habitat within the site for bats, badgers and birds, and a loss of nesting areas for birds. Vegetation will establish over time and these losses will be reduced considerably. There will still be less cover for birds relative to the baseline following the implementation of all mitigation.

There is the potential for slightly less bat activity within the area where the cover is reduced by tree removal and lighting has increased. Bats will avail of bat boxes or other modifications within the site to roost over a period of time once the siting, lighting and absence of disturbance is observed.

The residual impact of the proposed development in this regard is assessed to be **long-term, imperceptible** and **negative**.

There will be a **slight, negative, long-term** residual impact upon badgers within the site due to the overall reduction in the suitability of the area for badgers.

8.7 Indirect and /or Secondary Impacts

As set out in Section 8.4.2.1, given the nature, scale and duration of the construction phase of the proposed development there is potential for impacts on Rogerstown Estuary. This issue is fully addressed in the NIS that accompanies the planning application. There are no other indirect and/or secondary impacts as a result of the proposed development.

8.8 Monitoring

A suitably experienced Project Ecologist will be appointed for the duration of the construction phase and regular monitoring of all related works will take place to ensure the correct and full implementation of all mitigation measures. The Project Ecologist will ensure that all construction works take place in accordance with planning conditions, the project CEMP and the mitigation measures set out in this EIAR and the NIS.

The active badger sett located within the Phase 1 lands, which, despite the ongoing construction of Ballymastone Phase 1 and evidence of vandalism (fire damage) that took place prior to the commencement of construction of Phase 1, is still active, will continue to require monitored protection, in accordance with the parameters set out in best practice guidance including the NRA *Guidelines for*

the Treatment of Badgers Prior to the Construction of National Road Schemes, for the entire duration of the construction phase. Should any additional badger setts be discovered within the site (e.g. that establish at a later stage but prior to construction), it may be necessary to exclude and close these setts, in consultation with NPWS.

As noted in **Section 8.5**, vegetation clearance will only be permitted outside the bird-nesting season. Should vegetation clearance be required during the bird nesting season, and should this work be unavoidable, such clearance will take place only after the Project Ecologist has undertaken a survey to ensure that no active bird nests or recently fledged birds are present. Pre-construction surveys will be required to ensure that any necessary tree felling or works to buildings continue to have no impact on roosting bats.

Monitoring of construction dust deposition along the site boundary to nearby sensitive receptors during the construction phase of the proposed development is recommended to ensure mitigation measures are working satisfactorily.

Monitoring of all fuel / oil storage areas will also be undertaken to ensure that all related mitigation measures are being implemented effectively.

No long-term ecological monitoring is required, other than post-construction monitoring of the bat and bird boxes, insect hotels and artificial setts installed. The bat and bird boxes, and insect hotels installed on the site will be checked annually for a period of two years post-completion of the works, to ensure that they continue to be accessible to these species. If necessary, they will be repositioned within the site.

On completion of construction, the lighting installed will be reviewed by the Project Ecologist and a bat specialist, to ensure that it is operating according to the approved specifications. The landscape architect will similarly ensure that all works undertaken are in full compliance with the landscape specification. The arborist will ensure that all hedgerow and tree management measures are fully implemented. All monitoring tasks will be recorded and logged for inspection by the site manager.

8.9 Reinstatement

No reinstatement will be required of the agricultural fields, and while a significant proportion of the existing hedgerow network on the site will be retained and protected, there will be a need for reinstatement of some hedgerows, as set out in the Landscape Design Reports prepared by Cunnane Stratton Reynolds. See also the Green Infrastructure Plan for the proposed development (CSR Drawing number 19164-C-2-102). It will therefore be possible to maintain habitat connectivity between the proposed development site and the wider area. It is not appropriate or feasible to replace the lengths of hedgerow that will be removed to facilitate development, however the mitigation measures set out in this EIAR and in the landscape design prepared by CSR will be implemented, including the extensive planting of ecologically diverse habitats, where appropriate, within the open space.

8.10 Interactions

Where the potential for impacts on biodiversity has been identified as a result of interactions with other EIA topics, these have been addressed comprehensively in Chapter 8 (Biodiversity) and / or the corresponding other specialist chapter. In respect of the proposed development, the noteworthy

interactions between biodiversity and other topics, in the absence of mitigation, may be summarised as follows:

Land, Soils, Geology & Hydrogeology (Chapter 9)

Effects and impacts in relation to the geological and hydrogeological environment have the potential to negatively affect biodiversity. For example, soil stripping and excavations on the site will result in the loss of existing habitats. There is also the potential for negative impacts on aquatic ecology due to discharge of sediment-laden run-off and / or groundwater pollution during the proposed works. With the mitigation measures in place, the predicted impact during construction phase due to this interaction will be **negative, imperceptible and short-term.** This is further addressed in the Natura Impact Statement that accompanies the planning application.

There are no potentially significant interactions identified between Land, Soils and Hydrogeology, and Biodiversity during the operational phase.

Hydrology (Chapter 10)

Effects and impacts in relation to surface water have the potential to negatively affect biodiversity. For example, unmitigated water quality impacts may result in negative impacts on aquatic ecology. With the mitigation measures in place, the predicted impact during construction phase due to this interaction will be **negative, imperceptible and short-term.** This is further addressed in the Natura Impact Statement that accompanies the planning application.

There are no potentially significant interactions identified between Hydrology, and Biodiversity during the operational phase.

Air Quality (Chapter 11)

Dust emissions from construction works have the potential to impact vegetation in the vicinity of the site. Vehicular emissions during construction and operation also have the potential to impact vegetation as a result of NOx emissions leading to nitrogen deposition. With the mitigation measures in place, the predicted impact during construction phase due to this interaction will be **neutral, imperceptible and short-term.**

There are no potentially significant interactions identified between Air Quality and Biodiversity during the operational phase.

Landscape & Visual (Chapter 14)

The landscape design for the proposed development takes into account the requirements to maximise the benefits to biodiversity, both locally and within the wider landscape. The landscape scheme, prepared by Bernard Seymour Landscape Architects and submitted as part of this application under separate cover) proposes significant ecologically sensitive planting to provide for potentially diverse habitats. With the mitigation measures in place, the predicted impact during construction phase due to this interaction will be **negative, slight and short-term** and during operational phase will be **neutral to positive over time, slight and long term.**

8.11 Cumulative Impacts

A description of relevant developments within the area which have a potential to produce in-combination environmental impacts with the proposed development during the construction and operational phase are listed in Chapter 22 (Cumulative Impacts) of this EIAR.

Each of the plans and projects under review in Chapter 22 of the document have been required to take nature conservation into account, and an iterative approach to the preparation of each plan and project has been undertaken, with a view to coordinating the plans and projects for maximum overall benefit and minimum impact. Each has been separately subject to stringent appraisal, both for their potential impacts on European sites and their Qualifying Interests / Special Conservation Interests as well as on non-European sites and ecological receptors. In each case it has been reasonably concluded, based on the best available scientific evidence, that there will be no significant effects on designated sites, habitats, species or water quality, either alone or in-combination with other plans or projects.

The *Fingal County Development Plan 2023-2029* has a series of objectives intended to protect and enhance the natural environment. For example, the Development Plan includes policies for the protection of the county's flood plains, to prevent development in flood plains not satisfying the appropriate justification test and to require the use of sustainable drainage systems (SuDS) to minimise and limit the extent of hard surfacing and paving in order to reduce the potential impact of existing and predicted flooding risks. The objectives of the Development Plan have themselves been subject to Appropriate Assessment, which has concluded that their implementation would not adversely affect the integrity of European sites. The proposed development along with other developments in the vicinity will have to incorporate SuDS measures to protect surface water quality and hence, cumulative impacts on surface water quality are considered to be **neutral** and **imperceptible**.

Further, the capacity available at Portrane WwTP is sufficient to accommodate the inflow arising from the proposed development and it will, therefore, be possible to maintain the unpolluted status of the waters of the Irish Sea. An Irish Water Feedback form was received in October 2023 (included in Appendix F of the Infrastructure Design Report), outlining that a wastewater connection can be facilitated for the proposed development.

8.12 Difficulties Encountered

No difficulties were encountered in compiling the Biodiversity Chapter of the EIA Report. All surveys were undertaken to an appropriate level given the nature of the site and the proposed development. The report is based on biodiversity surveys undertaken over multiple seasons across multiple receptors.

8.13 References

- Bats and Artificial Lighting at Night, Institute of Lighting Professionals, 2023[26];
- Bat Conservation Ireland (2010). Bats and Lighting – Guidance Notes for Planners, Engineers, Architects and Developers
- CIEEM (2022). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management, Winchester, United Kingdom (V1.2)
- Council Directive 79/409/EEC on the Conservation of Wild Birds. (The EU Birds Directive)

[26] https://theilp.org.uk/publication/guidance-note-8-bats-and-artificial-lighting/

- Council Directive 92/43/EEC of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora. (The EU Habitats Directive)
- Council Directive 2000/60/EC of the European Parliament and of the Council establishing a Framework for the Community Action in the Field of Water Policy (The Water Framework Directive)
- Dark Sky Ireland's Environmentally Friendly Lighting Guide[27].
- Ireland's 4th National Biodiversity Plan 2023 – 2030 (Department of Housing, Local Government and Heritage).
- DG Environment (2003). Interpretation Manual of European Union Habitats. European Commission.
- Doogue D., Nash D., Parnell J., Reynolds S., & Wyse Jackson P. (1998). Flora of County Dublin. The Dublin Naturalists' Field Club
- FCC (2023). Fingal Development Plan 2023-2029
- EPA (2022). Guidelines on the information to be contained in Environmental Impact Assessment Reports.
- Fossitt J. (2000). A Guide to Habitats in Ireland. Heritage Council
- Hayden T. & Harrington R. (2001). Exploring Irish Mammals. Town House Dublin
- Kelleher, C. and Marnell, F. (2006). Bat Mitigation Guidelines for Ireland. Irish Wildlife Manuals, no. 25. NPWS, Department of Culture, Heritage and the Gaeltacht
- NPWS (2019a). The Status of EU Protected Habitats and Species in Ireland – Volume 1. NPWS, Department of Culture, Heritage and the Gaeltacht.
- NPWS (2019b). The Status of EU Protected Habitats and Species in Ireland – Volume 2 (Habitat Assessments). NPWS, Department of Culture, Heritage and the Gaeltacht.
- NPWS (2019c). The Status of EU Protected Habitats and Species in Ireland – Volume 3 (Species Assessments). NPWS, Department of Culture, Heritage and the Gaeltacht.
- NRA (2009). Guidelines for Assessment of Ecological Impacts of National Road Schemes.
- NRA (n.d.). Guidelines for the Treatment of Badgers Prior to the Construction of National Road Schemes.
- Smith G. F., O'Donoghue P., O'Hora K. and Delaney E. (2011). Best Practice Guidance for Habitat Survey and Mapping. Heritage Council
- Stace, C. (2019). New Flora of the British Isles, 4th Edition. Cambridge University Press
- Webb D.A., Parnell J. & Doogue D. (1996). An Irish Flora. Dundalgan Press

[27] https://www.darksky.ie/lighting-documents/#guidelines

9 Land, Soils, Geology & Hydrogeology

9.1 Introduction

This chapter assesses and evaluates the potential impacts of the proposed development on the land, soil, geological and hydrogeological aspects of the site and surrounding area. In assessing likely potential and predicted effects, account is taken of both the importance of the attributes and the predicted scale and duration of the likely effects.

A description of the proposed development is provided in Chapter 5 (Description of the Proposed Development). Particulars of the proposed development are reiterated herein only insofar as they relate to the assessment of potential impacts on land soil and groundwater in the receiving environment.

9.2 Method

9.2.1 Criteria for Rating Effects

This chapter evaluates the effects, if any, that the proposed development will have on land, soils, geology and hydrogeology as defined in the Environmental Protection Agency (EPA) 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (EPA, 2022). In addition, the document entitled 'Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' by the National Roads Authority (NRA/TII, 2009) is also applied, where appropriate.

The rating of potential environmental effects on the geological / hydrogeological environment is based on the standard EIAR impact predictions included in Table 1.5 in Chapter 1 (Introduction), which takes account of the quality, significance, duration and type of effect characteristic identified (in accordance with impact assessment criteria provided in the EPA Guidelines (2022) publication).

The principal attributes (and effects) to be assessed include the following:

- Geological heritage sites in the vicinity of the perimeter of the subject site;
- Landfills, industrial sites in the vicinity of the site and the potential risk of encountering contaminated ground;
- The quality, drainage characteristics and range of agricultural uses of soil around the site;
- Quarries or mines in the vicinity, the potential implications (if any) for existing activities and extractable reserves;
- The extent of topsoil and subsoil cover and the potential use of this material on site as well or requirement to remove it off-site as waste for disposal or recovery;
- High-yielding water supply springs/ wells in the vicinity of the site to within a 2km radius and the potential for increased risk presented by the proposed development;
- Classification (regionally important, locally important etc.) and extent of aquifers underlying the site perimeter area and increased risks presented to them by the proposed development associated with aspects such as for example removal of subsoil cover, removal of aquifer (in whole or part), drawdown in water levels, alteration in established flow regimes, change in groundwater quality;
- Natural hydrogeological/karst features in the area and potential for increased risk presented by the activities at the site; and

- Groundwater-fed ecosystems and the increased risk presented by operations both spatially and temporally.

9.2.2 Sources of Information

Desk-based geological information on the substrata (both Quaternary deposits and bedrock geology) underlying the extent of the site was obtained through accessing databases and other archives where available. Data was sourced from the following:

- Geological Survey of Ireland (GSI) - on-line mapping, Geo-hazard Database, Geological Heritage Sites & Sites of Special Scientific Interest, Bedrock Memoirs and 1: 100,000 mapping;
- Teagasc soil and subsoil database;
- Ordnance Survey Ireland - aerial photographs and historical mapping;
- Environmental Protection Agency (EPA) – website mapping and database information;
- National Parks and Wildlife Services (NPWS) – Protected Site Register; and
- Fingal County Council - illegal landfill information.

Site specific data was derived from the following sources:

- Infrastructure Design Report by DBFL Consulting Engineers, 2024;
- Preliminary Construction Environmental Management Plan (DBFL, 2024);
- The proposed development design site plans and drawings;
- Consultation with the project design engineers;
- EPA (2024). EPA Maps; and
- GSI (2024). GSI Map Viewer.

9.3 Baseline Environment

The receiving environment is discussed in terms of; land geology, soils, hydrogeology, and site history including potential for existing and historical contamination.

The proposed development site is c. 13.74 hectares gross site area which is located at Ballymastone, Donabate, Co. Dublin. The development site is a large greenfield site to the east of Donabate Village. The site is currently in agricultural use with the recently constructed Donabate Distributor Road (DDR) to the east of the site. The site is bound to the west by The Links development with the Ballymastone masterplan lands and Willowbrook and The Priory developments to the north. Donabate Golf Club and St. Ita's Demesne are located to the east of the subject site. A network of hedgerows and drainage ditches are located throughout the site.

The lands fall within Fingal County Council's Development Plan, 2023 – 2029. They are primarily zoned as 'RA', Residential Area, to 'provide for new residential communities subject to the provision of the necessary social and physical infrastructure'. The Ballymastone area is one of the main development areas within the Donabate Local Area Plan 2016 (as extended). **Figure 9.1** presents the site location.

Figure 9.1 Site Location

A site investigation (S.I) was carried out by Grounds Investigations Ireland Ltd. (GII), between February and July 2022 which included the area of the proposed development.

The site investigations were split into six areas (1 – 6) taking in the overall Masterplan area (**Figure 9.2 – Figure 9.5**), with only areas 2, 3, 4 and 5 applicable to Phase 2 of the works. The ground investigation works carried out included the following:

- Excavation of 321 no. trial pits (TP) with depths of up to 3.7 m below ground level (mbgl) across the overall Masterplan site area to examine soil conditions and if any infill or foreign material is present across the site;
- The excavation of 11 no. soakaways to determine the soil infiltration value to BRE digest 365;
- Carrying out 383 no. dynamic probes to determine soil strength/density characteristics;
- Carrying out 98 no. plate bearing tests to ascertain the subgrade modulus;
- Drilling of 6 no. cable percussion boreholes (CP; 200 mm diameter, depths up to 6.10mbgl);
- Installation of 6 no. groundwater monitoring wells;
- Carrying out 6 no. rotary core boreholes to a maximum depth of 14.7mbgl;
- Logging of the arisings from each trial pit in accordance with BS5930:2015, noting any field evidence of potential impact by hazardous substances;
- All samples were sent for laboratory analysis focusing on potential contamination and the classification of the materials for waste disposal purposes.

The site investigations applicable to Phase 2 of the development (Area 2, 3, 4 and 5) are appended to the Infrastructure Design Report prepared by DBFL Consulting Engineers (March 2024).

The baseline is described based on desk study assessment and site-specific data derived from site investigation (S.I). The SI locations undertaken for Phase 2 works is presented below (**Figure 9.2 – Figure 9.5**). Relevant borehole logs are included in **Appendix 9.2**.

Figure 9.2 Ground Investigations – Area 2 (Source GII report, 2022)

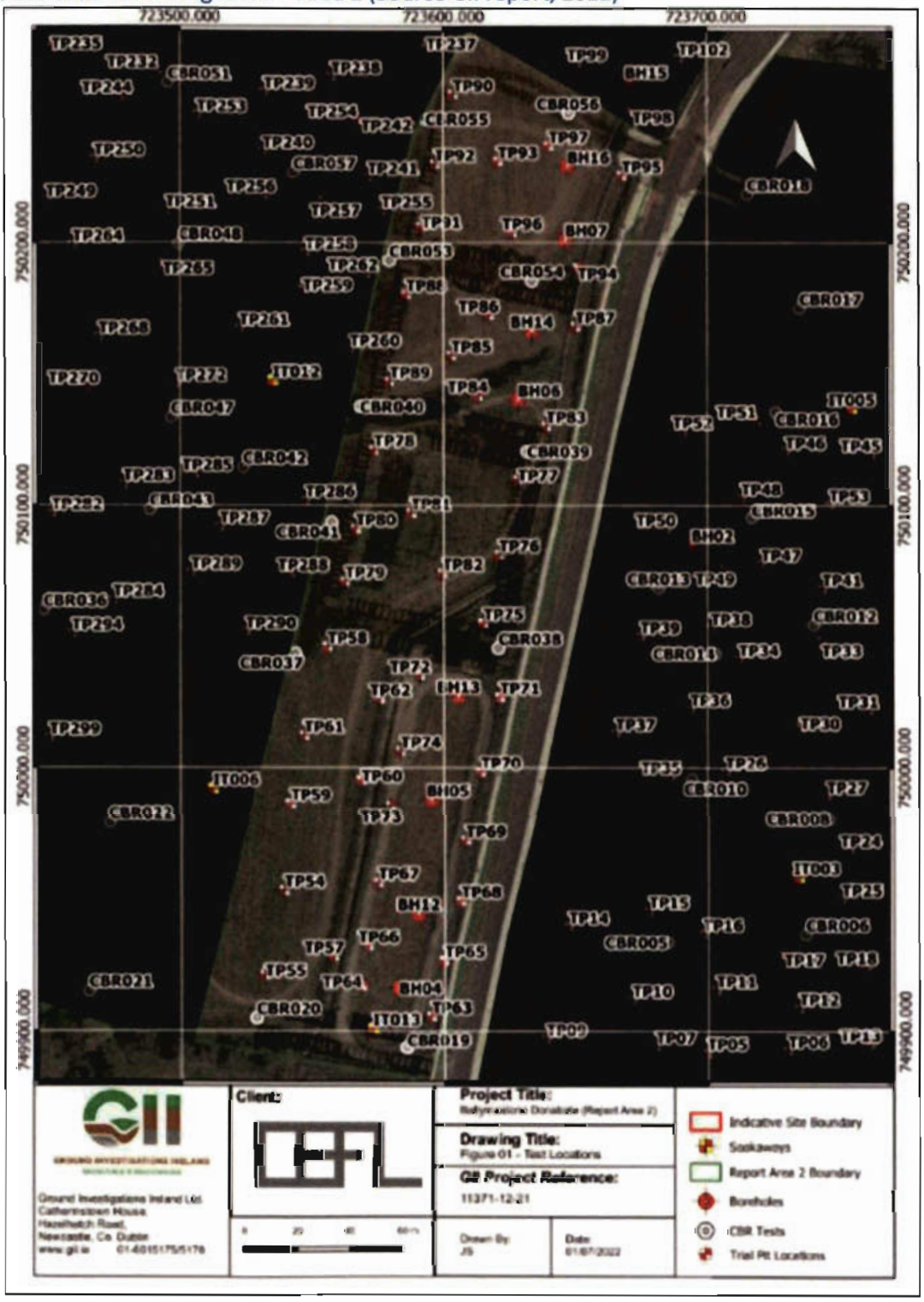


Figure 9.3 Ground Investigations – Area 3 (Source GII report, 2022)

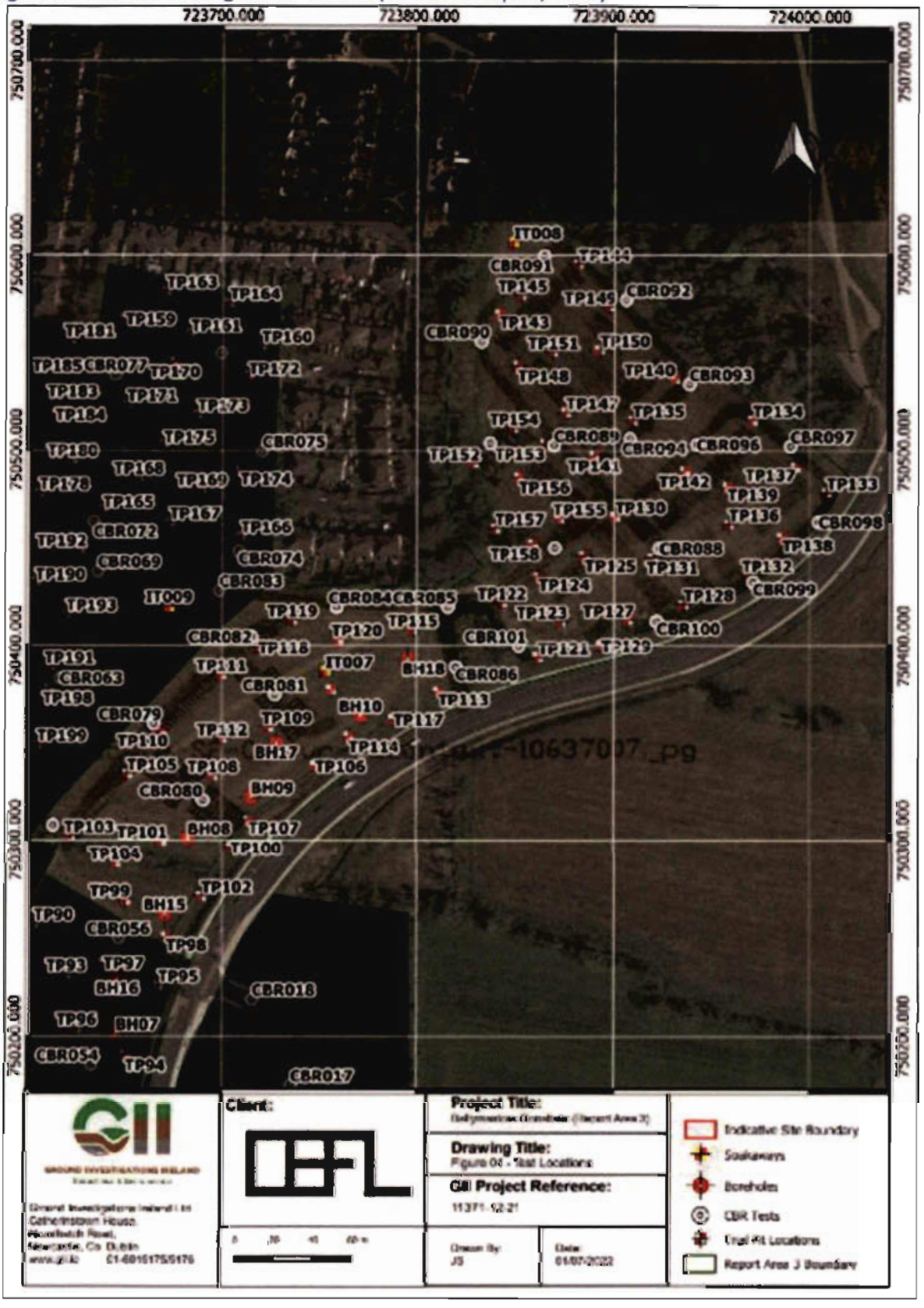


Figure 9.4 Ground Investigations – Area 4 (Source GII report, 2022)

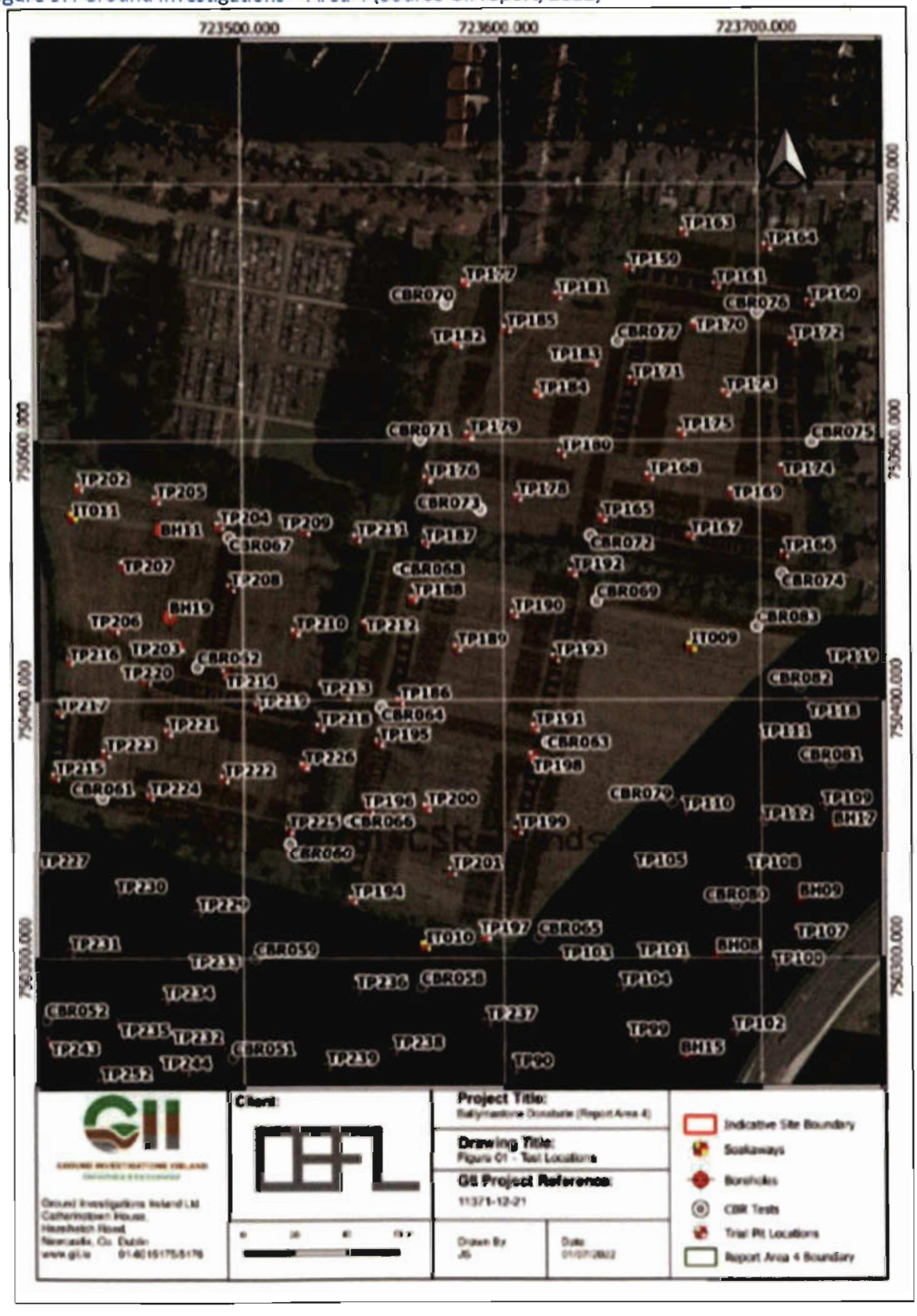


Figure 9.5 Ground Investigations – Area 5 (Source GII report, 2022)

9.3.1 Topography and Setting

The topography of the site is flat with a high point in the middle of the site, with a fall from North to South. The recently constructed Donabate Distributor Road (DDR) lies immediately east of the subject site. A network of hedgerows and drainage ditches are located throughout the site.

9.3.2 Areas of Geological Interest, Historic & Current Land-Use

A review of the GSI online data base confirmed that no geological heritage site has been identified in the vicinity of the proposed development site. Portrane Shore (c. 1.7km) (Site Code: DF001) and Malahide Point (c. 4.8 km) (Site Code: DF020) are the closest audited sites to the proposed development. The proposed development will have no interaction with locations due to the separation distance and source pathway linkage.

The majority of the site is currently in use for arable agricultural activities, with the exception of the newly constructed extension to the R126 (DDR), which is located immediately east of the site on the boundary allowing traffic to bypass Donabate village. The site is bound to the west by The Links development with the Ballymastone masterplan lands and Willowbrook and The Priory developments to the north. Donabate Golf Club and St. Ita's Demesne are located to the east of the subject site. Phase 1 of the development is currently under construction to the south of the proposed site (LRD0008/S3/ABP-315288-22). Further developments in the vicinity of the proposed site are located south of Phase 1 which are mainly large-scale residential developments. An underground wastewater pump station (F19A/0243/ABP-307657-20) is being constructed south of the Phase 1 development.

There nearest Integrated Pollution Prevention and Control (IPPC) facility (Evode Industries Limited, P0083) is located c. 5km south-west of the site at Newtown, Swords, Co. Dublin. The nearest Industrial Emissions Directive (IE) licenced facility (Balleally Landfill, W0009) is located 1.98km north-west of the site at Balleally, Lusk, Co. Dublin. The proposed development will have no interaction with these licensed facilities due to the separation distance.

Consultation with Fingal County Council has confirmed that there are no known illegal / historic landfills within 500 m of the site.

Historical Ordnance Survey (OSi) maps were examined. OSi maps were available from 1830 (the historic 6" maps) and 1900 from the historic 25" maps. The historic maps indicate that the subject site was greenfield up to the present day. No evidence was noted to indicate quarrying etc have been undertaken on the subject site.

9.3.3 Soil Type

Figure 9.6 Soils Map for the Proposed Development site (boundary indicated in red) (Source: www.gsi.ie) presents the soil cover at the site and surrounding area. This presents the soil type predominantly covering the site area; this is classified as BminPD – which is a mineral poorly drained soil, and BminDW, which is a deep well drained mineral soil. Review of information available on the GSI online mapping service (Teagasc Soils and Subsoils Map) shows that the majority of the site's topsoil layer consists of a *'mineral poorly drained (mainly basic)'* and *'deep well drained mineral (mainly basic)'*.

Figure 9.6 Soils Map (boundary indicated in red) (Source: www.gsi.ie)

The Quaternary geological period extends from around 1.5 million years ago to the present day. This can be further sub-divided into the Pleistocene Epoch, which covers the Ice Age period, and which extended up to 10,000 years ago and the Holocene Epoch, which extends from that time to the present day.

Figure 9.7 illustrates the subsoil types found surrounding the site. The subsoil type located at the proposed development is predominately classified as TLs – Till type subsoil comprising Limestone till (Carboniferous of variable texture).

Ground investigations carried out by GII for areas 2, 3, 4 and 5 (Phase 2) indicates that the subsoil material comprises soil derived from mainly calcareous parent material that includes surface water gleys/groundwater gleys and soil derived from mainly calcareous parent materials that includes grey brown podzolics and brown earths. A minor region in the site is covered by soil that is mainly derived from calcareous parent materials that includes peaty gleys.

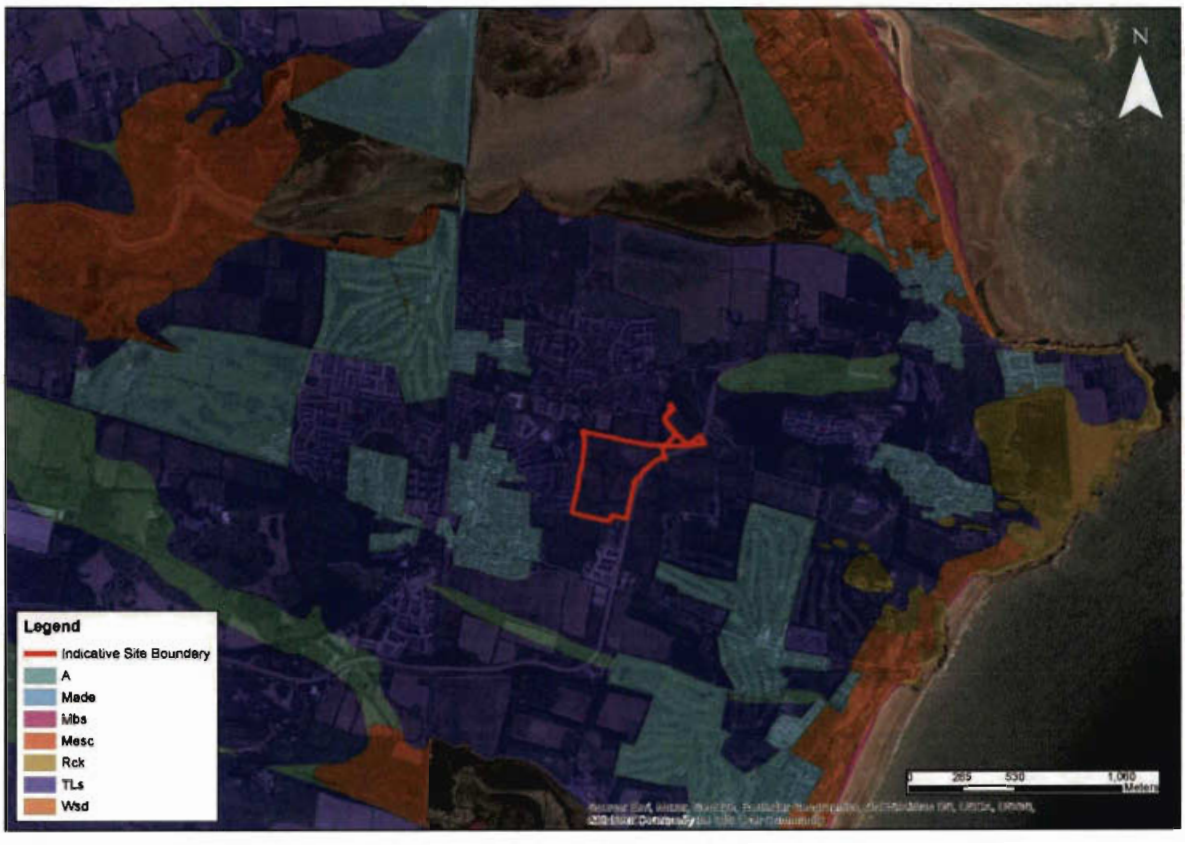
As mentioned above, GII undertook an environmental site investigation from February to July 2022 at the subject site to establish the soil conditions. Phase 2 of the site investigation comprised areas 2, 3, 4 and 5. The sequence of strata encountered were consistent across the site and are generally composed of:

- **Top Soil**: Top soil was encountered in all the exploratory holes and was present to a maximum depth of 0.50mbgl.
- **Made Ground**: Made ground was encountered in Areas 2 and 3 (GII Report, 2022) beneath the topsoil, present to a depth of 1.30mbgl to 1.50mbgl, and was typically described as brown grey slightly sandy slightly gravelly Clay.

- **Cohesive Deposits**: Cohesive deposits were encountered beneath the made ground or topsoil and were described typically as light brown slightly sandy slightly gravelly CLAY with occasional cobbles and boulders overlying a brown mottled grey slightly sandy slightly gravelly CLAY with occasional cobbles and boulders overlying dark grey slightly sandy slightly gravelly CLAY with occasional cobbles and boulders. The secondary sand and gravel constituents varied across the site and with depth, with granular lenses occasionally present in the cohesive till matrix.
- **Granular Deposits**: Granular deposits were encountered below the cohesive deposits and are typically described as grey, brown to reddish brown slightly gravelly clayey fine to coarse sand with occasional cobbles and rare boulders or a reddish brown or grey brown slightly clayey sandy angular to sub-angular fine to coarse gravel.
- **Weathered Bedrock**: In the majority of the exploratory holes weathered bedrock was encountered at depths of 0.6m to 1.2m below the top of the granular deposits. The material was typically comprising angular gravel and cobbles of limestone/mudstone or sandstone/conglomerate; however, there was some variability in the fracture spacing. Some clay and sand were also present with the rock mass either from weathering or as infilling to fractures, which were opened upon excavation. Holes were terminated once more competent bedrock was encountered.
- **Bedrock**: Bedrock was encountered at depths of 1.5m to 3.50mbgl in Area 2 (south of the site). The majority of excavation holes in Areas 3, 4 and 5 did not encounter bedrock and experienced deeper subsoils. Where bedrock was encountered, the rotary core boreholes recovered strong massive reddish grey fine grain lithicarkose sandstone with quartz cementations and veining overlying a strong massive reddish grey fine to coarse grain lithicarkose conglomerate with quartz cementation and veining. This is typical of the Donabate Formation.

Groundwater influxes (perched water) within the overburden strata were encountered across the site in numerous trial pits, with Areas 3, 4 and 5 (GII Report, 2022) experiencing the most influx of groundwater within the overburden strata, and a reduction in the frequency of bedrock encountered in the excavation holes, as mentioned above.

Figure 9.7 Subsoils Map for the Proposed Development site (boundary indicated in red) (Source: www.gsi.ie)



9.3.4 Soil Quality and Analysis

The assessment follows a source-pathway-receptor linkage format as outlined in the EPA Guidance on the management of contaminated land (2013). The risk-based approach in this guidance is considered best practice for the assessment and remediation of contaminated land and groundwater at EPA licensed sites. This report used the following documents in the investigation of this site:

- BS5930:2015 British Standard Institution, Code of Practice for Site Investigations.
- BS 10175:2011+A2:2017 British Standard Institution, Code of Practice for potentially Contaminated Sites.

9.3.4.1 Soil Guidelines

Representative soil results were compared to the Generic Assessment Criteria (GAC) (The LQM/CIEH S4ULs for Human Health Risk Assessment, 2015) concentrations. There are no legislated threshold values for soils in Ireland. As such soil samples were compared to a Generic Assessment Criteria (GAC) derived to be protective of human health, water bodies (including groundwater) and ecology for a residential end use.

Generic Assessment Criteria in the UK has been derived using the Contaminated Land Exposure Assessment (CLEA) model to be protective of human health for multiple different land uses. LQM (Land Quality Management) and the CIEH (Chartered Institute of Environmental Health) developed a document in July 2009 detailing their own research and derivation of their own 'LQM GACs'. LQM GACs were derived for a total of 82 substances including many organic substances for the standard land uses of residential, commercial/industrial and allotments. This was updated in 2015 following further

research and the derived results are now called LQM/CIEH Suitable 4 Use Level (S4UL). The LQM/CIEH S4ULs are intended for use in assessing the potential risks posed to human health by contaminants in soil and as transparently derived and cautious "trigger values" above which further assessment of the risks or remedial action may be needed. For each contaminant S4Uls have been derived for six land use scenarios based on assessing exposure pathways in each planning scenario. In this instance the commercial scenario has been considered. Soil type and soil organic matter (SOM) has an influence on the behaviour of contaminants. S4Uls have been derived for three SOM contents (1%, 2.5% and 6%) to cover the likely range in soils. A prudent approach has been taken by considering the lower 1% SOM content. At this lowest 1% SOM content lower S4AL "trigger values" are presented, as there is less potential for remediation of contaminants through microorganisms and humic substances associated with SOM.

The UK values do not have any legal standing within the Republic of Ireland and no statutory guidance for assessing the significance of soil contamination currently exists. However, the values do provide a means of placing the data within context when considering magnitude of risk and have been used in that capacity for this assessment.

9.3.4.2 Soil Quality

In line with the use of the site for agriculture, there was no evidence of contamination noted during site investigation. In total, 51 No. soil samples were collected throughout the trial pitting exercise that were within the proposed developments red boundary line.

Soil samples were analysed for the following parameters:

- Diesel Range Organics (DRO);
- Mineral Oil;
- Total Petroleum Hydrocarbons Criteria Working Group (TPH CWG);
- Metals (As, Cd, Cr, Pb, Se, Cu, Ni, and Zn);
- Polychlorinated Biphenyls (PCB);
- Volatile Organic Compounds (VOC);
- Semi Volatile Organic Compounds (SVOC); and
- Waste Acceptance Criteria (WAC) for inert waste landfills in accordance with the 2002 European Landfill Directive (2002/33/EC). This suite of parameters includes the following:
  - Mineral oil;
  - Polycyclic aromatic hydrocarbons (PAHs);
  - Polychlorinated biphenyls (PCBs);
  - BTEX compounds (benzene, toluene, ethylbenzene, and xylenes);
  - and methyl tert-butyl ether (MTBE);
  - Total organic carbon (TOC); Leachable component of a range of organic and inorganic parameters

The soil quality was compared to GAC derived to be protective of human health and ecology for a residential end use, as detailed in above soil guidelines section above.

9.3.4.3 Summary of Soil Analysis

Heavy Metals

All heavy metal parameter concentrations recorded in the soil samples are below the most conservative threshold value for the LQM/CIEH for HHRA (Human Health Risk Assessment) Residential Threshold at 1% SOM.

Total Petroleum Hydrocarbons Criteria Working Group (TPH CWG)

All parameters recorded below the laboratory's limit of detection (LOD) for all soil samples collected across the subject site. Therefore, there are no exceedances recorded when these concentrations were compared to the most conservative threshold i.e. LQM/CIEH for HHRA Residential Threshold at 1% SOM.

Polychlorinated Biphenyls (PCBs)

All parameters recorded below the laboratory's LOD for all samples collected across the subject site.

Polycyclic Aromatic Hydrocarbons (PAHs)

All parameters recorded below the laboratory's LOD for all samples collected across the subject site. Therefore, there are no exceedances recorded when these concentrations were compared to the most conservative threshold i.e. LQM/CIEH for HHRA Residential Threshold at 1% SOM.

Waste Acceptance Criteria (WAC) Analysis

All (100) samples were analysed and compared against WAC set out by the adopted EU Council Decision 2003/33/EC. There was no fill material noted during trial pit excavations with all samples being recorded as gravel, made ground or original clay subsoil.

The WAC analysis determined that the representative samples are suitable for classification as Category A – Inert; Category B1 – Inert Landfill or Category B2 – Inert Landfill. Based on the laboratory results and parametric concentrations obtained from the site investigation, material from the sample locations would be acceptable at inert waste facilities. It should be noted that waste facilities develop facility specific criteria also and this should be considered should any soil/ material to be removed from site in the future.

Asbestos

There were no asbestos containing materials (ACM) identified in any of the trial pit or stockpile samples taken.

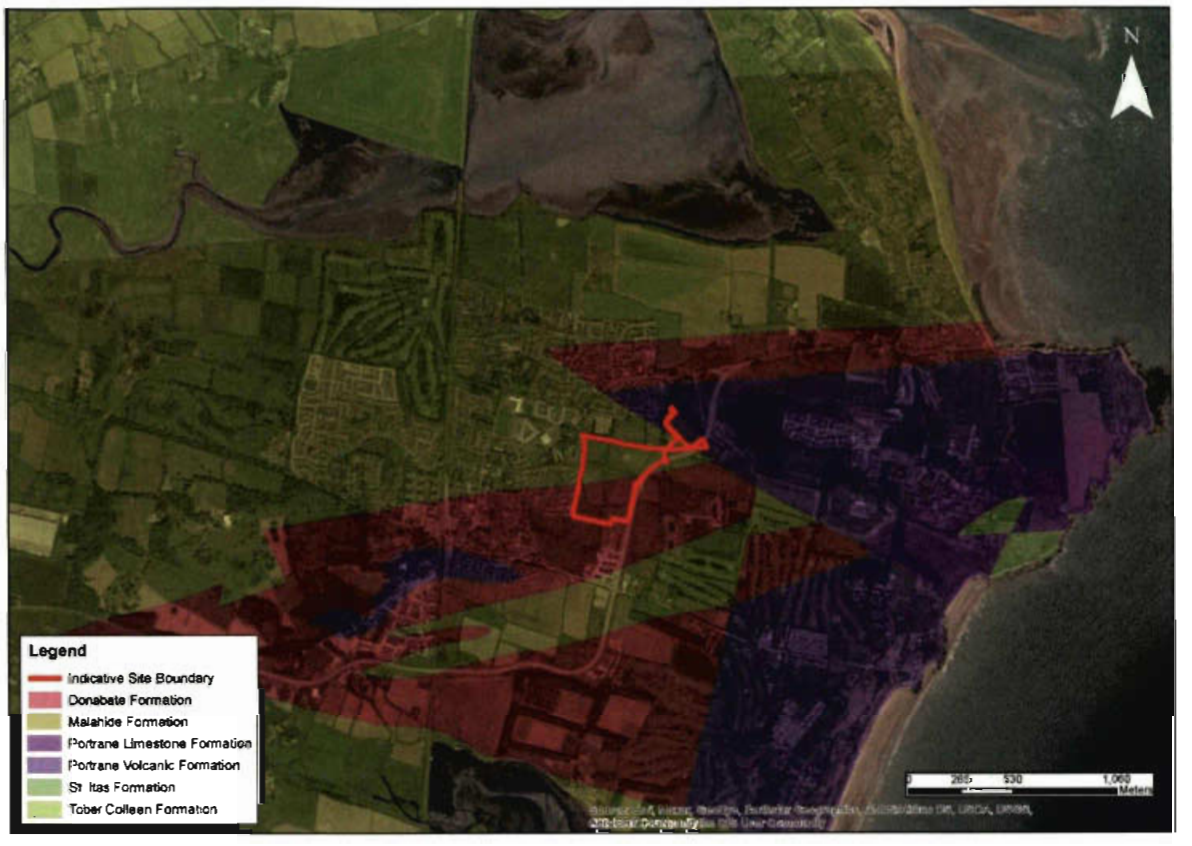
9.3.5 Regional Geology

Inspection of the available GSI (2024) records and online mapping database shows that the bedrock geology of the site and the surrounding area is dominated by rocks from the Ordovician to the upper Devonian age. The northern and central parts of the site are located over calcareous shales, siltstones and sandstones, and occasional thin limestones at its base referred to as the Malahide Formation (rock unit code: ML). While the southern and mid-section overlies red coarse-grained lithic sandstone and quartz pebble conglomerate referred to as the Donabate Formation (rock unit code: DE). This is also evident from the Ground Investigation Reports (**Appendix 9.2**), which describe the bedrock as angular gravel and cobbles of limestone/mudstone or sandstone/conglomerate.

The regional area is highly geologically variable. GSI maps show the site as overlying the Donabate and Malahide formations. Due to this variability, the GSI (2024) bedrock geology map (100K structural database) indicates a number of faults in the study area with two traversing the site in the north-east.

During the ground investigations carried out by GII, bedrock was encountered at depths of 1.5m to 10.50mbgl. Strong massive reddish grey fine grain lithicarkose sandstone with quartz cementations and veining, overlying a strong massive reddish grey fine to coarse grain lithicarkose conglomerate with quartz cementation and veining, was recovered from the coring samples. This is typical of the Donabate Formation.

Figure 9.8 Bedrock Geology Map (Source: www.gsi.ie)



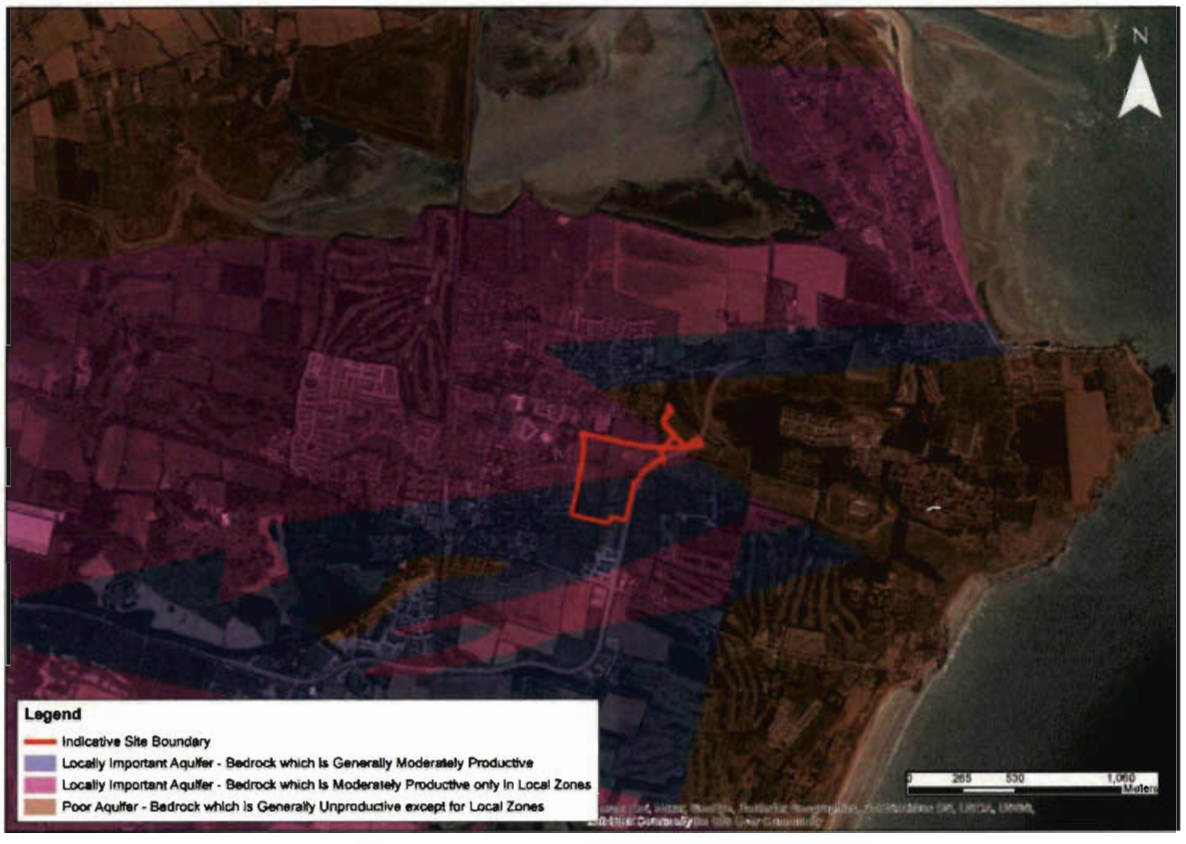
9.3.6 Hydrogeology

9.3.6.1 Description of Water Body

The GSI has devised a system for classifying the bedrock aquifers in Ireland. The aquifer classification for bedrock depends on a number of parameters including, the area extent of the aquifer (km^2), well yield (m^3/d), specific capacity ($m^3/d/m$) and groundwater throughput (mm^3/d). There are three main classifications: regionally important, locally important, and poor aquifers. Where an aquifer has been classified as regionally important, it is further subdivided according to the main groundwater flow regime within it. This sub-division includes regionally important fissured aquifers (Rf) and regionally important karstified aquifers (Rk). Locally important aquifers are sub-divided into those that are generally moderately productive (Lm) and those that are generally moderately productive only in local zones (Ll). Similarly, poor aquifers are classed as either generally unproductive except for local zones (Pl) or generally unproductive (Pu).

The bedrock aquifers underlying the site according to the GSI (www.gsi.ie/mapping) National Bedrock Aquifer Map is classified as (LI) Locally Important Aquifer, i.e., bedrock aquifer which is moderately productive only in local zones. **Figure 9.9** below presents the current bedrock aquifer map for the area surrounding the site.

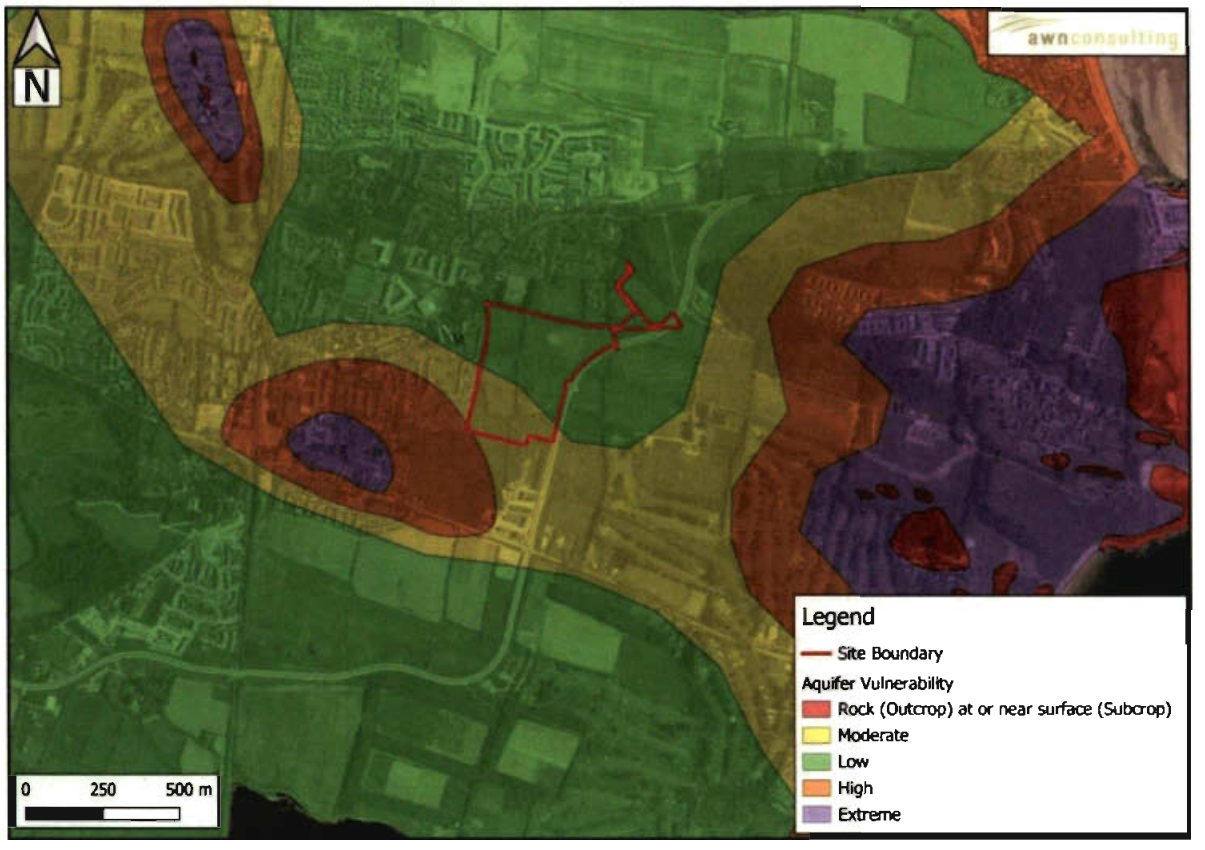
Figure 9.9 Aquifer Classification Map (Source : www.gsi.ie)



Aquifer vulnerability is a term used to represent the intrinsic geological and hydrogeological characteristics that determine the ease with which groundwater may be contaminated generally by human activities. Due to the nature of the flow of groundwater through bedrock in Ireland, which is almost completely through fissures/ fractures, the main feature that protects groundwater from contamination, and therefore the most important feature in the protection of groundwater, is the subsoil (which can consist solely of/ or of mixtures of peat, sand, gravel, glacial till, clays, or silts).

The GSI currently classifies the aquifer vulnerability in the region as being moderate (M) through the central and southern portion of the site. The Northern portion of the site is classified with a low (L) vulnerability (see **Figure 9.10**). Site investigation has shown that in the south of the site depth to bedrock indicates a high vulnerability in places.

Figure 9.10 Aquifer Vulnerability Map (Source: www.gsi.ie)



9.3.6.2 Groundwater Wells and Flow Direction

The GSI Well Card Index is a record of wells drilled in Ireland, water supply and site investigation boreholes. It is noted that this record is not comprehensive as licensing of wells is not currently a requirement in the Republic of Ireland. This current index shows a number of groundwater monitoring and abstraction wells within a 3 km radius of the site; the abstraction wells generally supply a mix of use ranging from domestic to public to industrial use. This current index does not show any wells drilled or springs at the site or surrounding area. **Figure 9.11** below presents the GSI well search for the area surrounding the site.

Figure 9.11 GSI Well Search (GSI, 2024)

Table 9.1 GSI Well Card Index (Source: GSI, 2024)

GSI Name	Depth (m)	Depth to Bedrock (m)	Townland	County	Use	Yield Class	Yield m^3/day
2923NEW044	15.2		SEATOWN EAST	Dublin	Agri & domestic use	Good	218
2923NEW045	33.5		SEATOWN EAST	Dublin	Agri & domestic use	Good	381
2923NEW063			LISSENHALL LITTLE	Dublin			
2925SEW021	76.2	14	COLDWINTERS	Dublin	Agri & domestic use	Good	218
2925SEW027	32.3		CORDUFF	Dublin	Agri & domestic use	Good	218
3223NWW010			PORTRAINE DEMESNE	Dublin			
3225SWW020	54.8	13.7	RUSH	Dublin	Agri & domestic use	Good	120
3225SWW022	91.4	11.3	RUSH	Dublin	Agri & domestic use	Moderate	98.2
3225SWW025	73.2	14.6	RUSH	Dublin	Agri & domestic use	Good	109
3225SWW027			BURROW	Dublin			
3225SWW038			PORTRAINE DEMESNE	Dublin			
3223NWW001	41.1		DONABATE	Dublin	Agri & domestic use	Good	130

GSI Name	Depth (m)	Depth to Bedrock (m)	Townland	County	Use	Yield Class	Yield m^3/day
3225SWW005	32.3		CORDUFF	Dublin	Agri & domestic use	Good	218
3225SWW026	23.7	23.7	BALLEALLY	Dublin	Other		
3225SWW011	30.5	7.9	LUSK	Dublin	Agri & domestic use	Moderate	54.5

9.3.6.3 Groundwater Quality

The Water Framework Directive (WFD) Directive 2000/60/EC was adopted in 2000 as a single piece of legislation covering rivers, lakes, groundwater and transitional (estuarine) and coastal waters. In addition to protecting said waters, its objectives include the attainment of 'good status' in water bodies that are of lesser status at present and retaining 'good status' or better where such status exists at present. 'Good status' was to be achieved in all waters by 2027, as well as maintaining 'high status' where the status already exists. 'Good status' means / indicates both 'Good Ecological Status' and 'Good Chemical Status'. In 2009 the first River Basin Management Plan (RBMP) 2009-2015 was published. The second cycle river basin management plan was carried out between 2018-2021 with the previous management districts now merged into one Ireland River Basin District (Ireland RBD). The third cycle (2022-2027) is currently being undertaken. The EPA coordinates the activities of the River Basin Districts, local authorities and state agencies in implementing the WFD, and operates a groundwater quality monitoring programme undertaking surveys and studies across the Republic of Ireland.

Presently, the groundwater body in the region of the site (Swords GWB) is classified under the WFD Risk Score system (EPA, 2021) as 'Not at Risk'. The Swords GWB was given a classification of 'Good' for the last WFD cycle (2016-2021).

During the GII site investigation, 4 no. groundwater wells were constructed for future monitoring purposes. Currently, there is no laboratory data recorded from site-specific ground investigations carried out on site to display the groundwater quality on the subject site.

A standalone Water Framework Directive (WFD) assessment and Hydrological and Hydrogeological Risk (HRA) assessment report has been prepared as part of the EIAR submission.

The WFD assessment indicated that, based on the current understanding of the proposed development, there is no potential for adverse or minor temporary/ long-term or localised effects on the Rogerstown Estuary transitional waterbody. Therefore, it has been assessed that the proposed development will not cause any significant deterioration or change in water body status or prevent attainment, or potential to achieve, future good status or to meet the requirements and/or objectives in the second RBMP 2018-2021 (River Basin Management Plan) and draft third RBMP 2022-2027. There is no potential for adverse or minor temporary or localised effects on the Swords groundwater body. Therefore, it has been assessed that it is unlikely that the proposed development will cause any significant deterioration or change on its water body status or prevent attainment, or potential to achieve the WFD objectives or to meet the requirements and/or objectives in the second RBMP 2018-2021 (River Basin Management Plan) and draft third RBMP 2022-2027.

No further assessment of WFD is recommended given that no significant deterioration or change in water body status is expected based on the current understanding of the proposed development during construction and operation.

The HRA concluded that there is a low source pathway pollutant linkage as a result of the construction or operation of the Proposed Development which could result in a water quality impact which could alter the habitat requirements of the Natura 2000 sites within Rogerstown Estuary.

9.3.7 Radon

According to the EPA (now incorporating the Radiological Protection Institute of Ireland) the site location in Ballymastone, Donabate is within a low radon area, where is it estimated that less than 1% of dwellings will exceed the reference level of 200 Bq/m^3. This is the lowest of the five radon categories that are used by the EPA.

9.3.8 Geohazards

Much of the Earth's surface is covered by unconsolidated sediments which can be especially prone to instability. Water often plays a key role in lubricating slope failure. Instability is often significantly increased by man's activities in building houses, roads, drainage, and agricultural changes. Landslides, mud flows, bog bursts (in Ireland) and debris flows are a result. In general, Ireland suffers few landslides. Landslides are more common in unconsolidated material than in bedrock, and where the sea constantly erodes the material at the base of a cliff and leads to recession of the cliffs.

The GSI landslide database was consulted and the nearest landslide to the proposed development was c. 20.5 km to the southwest of the site, referred to as the 'Diswellstown 1990' event, which occurred on 24th December 1994. There have been no recorded landslide events at the site or in the immediate vicinity. Due to the local topography and the underlying strata, there is a negligible risk of a landslide event occurring at the site.

In Ireland, seismic activity is recorded by the Irish National Seismic Network operated by the Geophysics Section of the School of Cosmic Physics at the Dublin Institute for Advanced Studies (DIAS) which has been recording seismic events in Ireland since 1978. The station configuration has varied over the years. However, currently there are five permanent broadband seismic recording stations in Ireland operated by DIAS.

The seismic data from the stations comes into DIAS in real-time and is studied for local and regional events. Records since 1980 show that the nearest seismic activity to the proposed location was in the Irish Sea (1.0 – 2.0 Ml magnitude) and ~50 km to the south in the Wicklow Mountains. There is a very low risk of seismic activity to the proposed development site.

There are no active volcanoes in Ireland so there is no risk from volcanic activity.

9.3.9 Land take

There will be a loss of land available for greenfield/agricultural use due to the development. However, the area of development is relatively small in the context of agricultural land available in the overall region. This change of land use has already been established for the permitted zone of residential development.

9.3.10 Attribute Rating

Based on the TII criteria for rating the importance of geological features (2009) (see **Appendix 9.1** in Volume 3 of this EIAR), bedrock and soil features at this site are rated as being of 'low importance' with low quality or value on a local scale. This is due to the site's current and historical use as a greenfield site with no other prior uses other than agricultural. There are no pathway linkages to areas of geological heritage etc.

According to the NPWS (2024) online database there are no protected conservation areas on or within the immediate vicinity of the proposed development site. There are no groundwater fed ecosystems encountered in the vicinity of the site. The closest European listed sites are as follows;

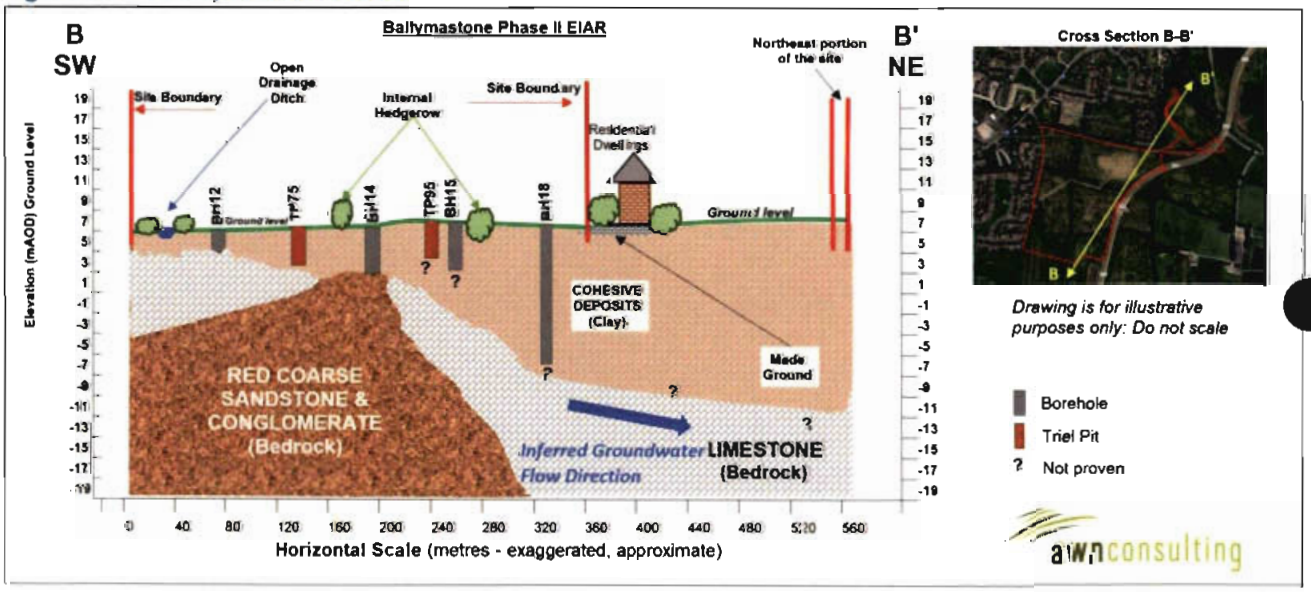
- Rogerstown Estuary SPA (Site Code: 004015) c. 0.8 km North of the site;
- Rogerstown Estuary SAC (Site Code: 000208) c. 0.8 km North of the site;
- Malahide Estuary SAC (Site Code: 000205) c. 1.2 km South of the site;
- Malahide Estuary SPA (Site Code: 004025) c.1.2 km South of the site

Based on the TII criteria for rating the importance of hydrogeological features (2009) (**Appendix 9.1**), the importance of the hydrogeological features at this site are rated as 'high importance' as the aquifer discharges to Rogerstown Estuary and Malahide Estuary (SAC, SPA and NHA's) Areas of Conservation.

9.3.11 Conceptual Site Model

Figure 9.12 presents a representative cross sections through the site to show the local hydrogeology conceptual site model (CSM) which is as follows:

Figure 9.12 Conceptual Site Model



Subsoils across the whole subject site comprise Irish Sea Till, made up of glacial clays, which are less permeable than alluvium subsoils. The aquifer vulnerability is high-moderate through the southern portion of the site and low through the northern portion of the site. This cover protects the underlying locally Important Aquifer.

There is a hydrogeological connection through the underlying aquifer to the Rogerstown Estuary and Malahide Estuary. However, based on the presence of soil cover providing attenuation and low fracture

connectivity within the aquifer there is no likely potential impact during construction or operation on groundwater quality discharging to the estuary.

A review of the hydrogeology and geology in the surrounding region indicates that there no Council Water Supplies/ Group Water Schemes, known well supplies or geological heritage sites which could be impacted by the proposed development.

There is no evidence of disposal of waste material identified in the area proposed for excavation. Collection and analysis of representative soil samples for a wide range of parameters shows no evidence of contamination on site.

9.4 Predicted Impacts of the Proposed Development

9.4.1 Construction Phase

This section details the potential impacts to land, soil and groundwater associated with the proposed development. As outlined below the activities required for the construction phase of the proposed development represents the greatest risk of potential impact on the land, geological and hydrogeological environment. These activities primarily pertain to the site preparation, excavation and infilling activities required to facilitate construction of the proposed development.

9.4.1.1 Excavation & Infilling

Levelling of the ground and excavation for foundations (c. 41,000 m^3) for the main buildings will require the excavation of topsoil, subsoil and potentially bedrock (if encountered). The expected depth of bedrock ranges from 1.5-3.5 mbgl in the south of the site to an unknown depth in the north of the site. Excavated material will be reused on site for infilling and landscaping works, where possible. Import of c. 16,500 m^3 of fill will be required.

Lime stabilization is due to be undertaken on the site as part of construction phase. This is a ground improvement technique / process that involves adding hydrated lime to the soil to improve its properties and subsequently reduce plasticity, shrinkage, and swelling potential and increase the bearing capacity and resistance to erosion. Stabilization is achieved when a precise quantity of lime is added to a reactive soil and exchange of ions occurs with the Clay minerals. While this may result a temporary increase in alkaline saturate run-off during the initial phase of stabilisation, all drainage will be attenuated with settlement of solids and dilution in the stormwater attenuation ponds permitted and constructed as part of the Phase 1 development.

The risk of contaminated soils being present on-site is low based on previous site use and confirmed by on-site soil sampling and analysis. Material that is exported from site, if not correctly managed or handled, could impact negatively on human beings (on-site and off-site) as well as water and soil environments.

There is no requirement for any significant groundwater dewatering during construction.

9.4.1.2 Accidental Spills & Leaks

As with all construction projects, there is potential for water (rainfall and/or groundwater) to become contaminated with pollutants associated with construction activity. Contaminated water arising from construction sites can pose a significant short-term risk to groundwater quality for the duration of the construction, if contaminated water is allowed percolate to the aquifer.

During the construction of the proposed development, there is a risk of accidental pollution incidences from the following sources:

- Suspended solids (muddy water with increase turbidity) – arising from excavation and ground disturbance;
- Cement/concrete (increase turbidity and pH) – arising from construction materials;
- Hydrocarbons (ecotoxic) – accidental spillages from construction plant or onsite storage; and
- Wastewater (nutrient and microbial rich) – arising from accidental discharge from on-site toilets and washrooms.

Accidental spillages that are not mitigated may result in localised contamination of soils and groundwater underlying the site, should contaminants migrate through the subsoils and impact the underlying groundwater. Groundwater vulnerability at the site is currently classified as high -moderate in the southern section of the site, and low throughout the northern portion of the site. Any soil stripping will further reduce the thickness of subsoil and the natural protection they provide to the underlying aquifer.

9.4.1.3 Loss of Agricultural Land

There will be a local loss of agricultural soil; however the area of development is small in the context of the overall agricultural land available in the region. The entire site is zoned for development. Within the overall context of Ireland's available farmland, the loss is negligible. There will be no impact to mineral resources in the area as a result of the proposed development.

9.4.1.4 Source pathway linkage with Rogerstown estuary

There are no source pathway linkages with any ground water dependent ecosystems. However, the groundwater body underlying the proposed development does discharge to the estuary. No likely exceedance of groundwater threshold concentrations at the estuary is likely based on the loading, pathway (over burden thickness and type and low fracture connectivity within the aquifer) together with attenuation and dilution within the pathway prior to discharge to the estuary.

9.4.1.5 Overall Impact of Construction Phase

Without the consideration of mitigation measures, the construction phase of the proposed development will likely have a **neutral**, **short-term**, **slight** impact without mitigation in place.

9.4.2 Operational Phase

There will be no direct discharges to the ground or abstractions from the bedrock aquifer during the operation of the development. The potential impacts of the development post development in relation to land soils and environment have been assessed under the following headings:

- Reduction in local recharge to ground;

Increase in hardstanding area will result in a localised reduction in recharge to the aquifer. This provides protection to the underlying aquifer but also reduces local recharge in this area of the aquifer. As the area of aquifer is large this reduction in local recharge will have no significant change in the natural hydrogeological regime. SUDS features such as green roofs, and the inclusion of permeable paving, tree pits and swales will provide a surface water treatment train and promote source control

throughout the development while also providing attenuation storage at source and recharge to ground.

- Localised and Minor Accidental Emissions to Ground from a car leak/delivery truck;

Any accidental release of hydrocarbons from trafficked areas will discharge through oil interceptors on the stormwater drains rather than to ground. In the absence of mitigation measures, the operational phase of the proposed development will likely have a **neutral, long-term, imperceptible** impact on land, soils, geology and hydrogeology in the receiving environment.

9.4.3 Do-Nothing Impact

There are no predicted impacts should the proposed development not proceed. If the proposed development were not to go ahead (i.e., in the Do-Nothing scenario) there would be no excavation or construction or operational impact at this site. There would, therefore, be a **neutral** effect on the land, geological and hydrological environment.

The site is zoned for residential development, and it is likely that in the absence of this subject proposal, that a development of a similar nature would be progressed on the site that accords with national and regional policies and, therefore, the likely effects would be similar to this proposal, as described in the following sections.

9.5 Mitigation Measures

This section outlines the measures that will be employed in order to minimise the impact on land, soils, and groundwater of the proposed development.

9.5.1 Construction Phase

In order to reduce impacts on the land, soils and geology environment, a number of mitigation measures will be adopted as part of the construction works on site.

9.5.1.1 Construction Environment Management Plan

A Construction & Environmental Management Plan (CEMP) has been prepared in respect of the proposed development by DBFL Consulting Engineers (refer to standalone document submitted under separate cover). It contains best practice measures and protocols to be implemented during the construction phase of the proposed development to avoid / minimise environmental impacts.

To ensure the CEMP remains fit for purpose, it will be regarded as a live document. The appointed contractor will be responsible for updating the CEMP, as required; e.g. to reflect the publication of relevant new or revised guidelines and / or new statutory requirements. The full schedule of environmental commitments (i.e. all mitigation measures set out in the CEMP, Environmental Impact Assessment Report and Natura Impact Statement submitted as part of the planning application, as well as any applicable conditions of development consent) will be included in the CEMP by the appointed contractor.

The CEMP was formulated in accordance with best international practice including but not limited to:

- CIRIA, (2001), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors;
- Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (C650), 2005;

- BPGCS005, Oil Storage Guidelines;
- Eastern Regional Fisheries Board, (2006), Fisheries Protection Guidelines: Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites;
- CIRIA 697, The SUDS Manual, 2007; and
- UK Pollution Prevention Guidelines (PPG) UK Environment Agency, 2004.

9.5.1.2 Control of Soil Excavation

Site preparation, excavations and levelling works required to facilitate construction of foundations, access roads and the installation of services will require imported material.

- Suitable soils will be reused on site as backfill in the grassed areas, where possible.
- Contractors shall be required to submit and adhere to a method statement indicating the extent of areas likely to be affected and demonstrating that this is the minimum disturbance necessary to achieve the required works.
- Temporary storage of soil will be carefully managed in such a way as to prevent any potential negative impact on the receiving environment and the material will be stored away from any open surface water drains. No soil storing will be allowed within 30 m of the open water where sufficient working areas are available within the site boundaries, which is in line with Inland Fisheries Ireland guidelines.
- Movement of material will be minimised in order to reduce degradation of soil structure and generation of dust.
- Although there is no evidence of historical contamination in the proposed development area, all excavated materials will be visually assessed for signs of possible contamination such as staining or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of possible contaminants in order to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be disposed of by a licensed waste disposal contractor.
- Stockpiles have the potential to cause negative impacts on air and water quality. Stockpiles will be formed within the proposed development site boundary and the contractor will ensure that there are no direct links or pathways from stockpiles to any surface water body.
- Overburden material will be protected from exposure to wind by storing the material in sheltered parts of the site, where possible.

9.5.1.3 Sources of Fill & Aggregates

- All fill and aggregate for the proposed development will be sourced from reputable suppliers. All suppliers will be vetted for:
  - Aggregate compliance certificates/declarations of conformity for the classes of material specified for the proposed development;
  - Environmental management status; and
  - Regulatory and legal compliance status of the company.

9.5.1.4 Fuel & Chemical Handling

- To minimise any impact on the underlying subsurface strata from material spillages, all oils, solvents and paints used during construction will be stored within temporary bunded areas. Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be bunded to a volume of

110% of the capacity of the largest tank/container within the bunded area(s) (plus an allowance of 30 mm for rainwater ingress). Drainage from the bunded area(s) shall be diverted for collection and safe disposal.

- Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area (or, where possible, off the site) that will be away from surface water gullies or drains. In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in this area. All relevant personnel will be fully trained in the use of this equipment. Guidelines such as 'Control of Water Pollution from Construction Sites: Guidance for Consultants and Contractors' (CIRIA 532, 2001) will be complied with.
- Where feasible, all ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out, which will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to the underlying subsoil. Wash down and washout of concrete transporting vehicles will take place at an appropriate facility off-site.
- In the case of drummed fuel or other chemical which may be used during construction, containers should be stored in a dedicated internally bunded chemical storage cabinet and labelled clearly to allow appropriate remedial action in the event of a spillage.
- Emergency response procedures will be outlined in the CEMP. All personnel working on the site will be suitably trained in the implementation of the procedures.

9.5.1.5 Control of Water during Construction

- Care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts.
- Should any discharge of construction water be required during the construction phase, discharge will be to foul sewer. Pre-treatment and silt reduction measures on site will include a combination of silt fencing, settlement measures (silt traps, 20 m buffer zone between machinery and watercourses, refuelling of machinery off-site) and hydrocarbon interceptors (as per Fingal Development Plan, 2023 – 2029).
- Any minor ingress of groundwater and collected rainfall in the excavation will be pumped out during construction. It is estimated that the inflow rate of groundwater will be low. Water be discharged via the existing stormwater sewer network following attenuation within the permitted attenuation pond for the Phase 1 development.
- The use of additional slit traps will be adopted if the monitoring indicates the requirements for the same with no silt or contaminated water permitted to discharge to the sewer.

9.5.2 Operational Phase

The proposed development does not include for any bulk chemical storage including fuel storage. As the site will be paved and drained, any fuel spills from cars will drain to the hydrocarbon interceptors on the stormwater drainage system. All stormwater drainage is through the permitted attenuation pond. No further mitigation measures are required during the operational phase.

9.6 Residual Impacts

9.6.1 Construction Phase

The implementation of mitigation measures outlined above (**Section 9.5**) will ensure that the predicted impacts on the soil, geological and hydrogeological environment do not occur during the construction phase and that the residual impact will be **short-term-imperceptible-neutral**. Following the TII criteria (refer to **Appendix 9.1**) for rating the magnitude and significance of impacts on the geological and hydrogeological related attributes, the magnitude of impact is considered **negligible**.

9.6.2 Operational

The implementation of mitigation measures highlighted above (**Section 9.6**) will ensure that the predicted impacts on the geological and hydrogeological environment do not occur during the operational phase and that the residual impact will be **long-term-imperceptible-neutral**. Following the TII criteria (refer to **Appendix 9.1**) for rating the magnitude and significance of impacts on the geological and hydrogeological related attributes, the magnitude of impact is considered **negligible**.

9.7 Indirect and /or Secondary Impacts

There are no indirect and/or secondary impacts as a result of the proposed development. Although there is a hydrological and hydrogeological pathway to the Estuary, no source pathway linkage has been identified which could result in exceedance of groundwater thresholds (S.I. No 366/2016) at the point of aquifer discharge to the estuary.

9.8 Monitoring and Reinstatement

The management of land, soils and ground water during the construction phase will be monitored by the Contractor to ensure compliance with above-listed mitigation measures, and relevant waste management legislation and local authority requirements.

9.8.1 Construction Phase

During construction phase the following monitoring measures will be implemented:

- Regular inspection of surface water run-off and sediments controls (e.g., discharge from permitted attenuation pond silt traps);
- Soil sampling to confirm disposal options for excavated soils in order to avoid contaminated run-off; and
- Regular inspection of construction / mitigation measures (e.g., concrete pouring, refuelling, etc).

9.8.2 Operational Phase

Maintenance of the surface water drainage system, including hydrocarbon interceptors, and foul sewers as per normal urban developments is recommended to minimise any accidental discharges to soil or groundwater.

9.9 Interactions

This section discusses interactions between this Chapter and other specialist environmental topics considered in this EIAR. The main interactions of importance to land, soils, geology, and hydrogeology relate to Biodiversity (Chapter 8), Hydrology (Chapter 10), and Air Quality (Chapter 11) as follows.

9.9.1 Hydrology

As mentioned above, there is a close inter-relationship between soils, geology, hydrogeology and Chapter 10 - Hydrology. Therefore, all mitigation measures discussed are considered applicable to both components. Adherence to the mitigation measures presented above and in Chapter 10 – Hydrology will ensure the effect is **negative, imperceptible and short-term.**

There are no potentially significant interactions identified between land, soils, geology and hydrogeology, and Hydrology during the operational phase

9.9.2 Waste management

Chapter 19 - Material Assets – Waste is also considered as an interaction in some sections. During the construction phase, excavated topsoil and subsoil (c. 41,000 m^3) will be generated from the excavations required to facilitate site levelling and construction of new foundations). It is anticipated that all excavated topsoil material and subsoil material will be reused on site. Where material has to be taken off-site, it will be taken for reuse or recovery, where practical, with disposal as a last resort. Adherence to the mitigation measures presented above and the requirements of the RWMP (Chapter 19 – Material Assets, **Appendix 19.1**), will ensure the effect is **negative, imperceptible and short-term.**

There are no potentially significant interactions identified between land, soils, geology and hydrogeology, and waste during the operational phase.

9.9.3 Air Quality & Climate

There is a risk of dust impacts associated with the proposed development. The dust mitigation measures outlined in Section 11.8 of Chapter 11 will be applied during the construction phase which will avoid significant cumulative impacts on air quality. With appropriate mitigation measures in place, the predicted cumulative impacts on air quality associated with the proposed development and the permitted cumulative developments are deemed **negative, imperceptible,** and **short-term.**

There are no potentially significant interactions identified between land, soils, geology and hydrogeology, and air quality and climate during the operational phase.

9.9.4 Cultural Heritage, Archaeology & Architectural Heritage

There is an interaction with Chapter 15 - Cultural Heritage, Archaeology & Architectural Heritage. Earthworks, i.e. topsoil stripping and subsoil excavations, have the potential to interfere with subsurface archaeology. However, no subsurface archaeology has been identified. As stated in Chapter 15 – Cultural Heritage, Archaeology & Architectural Heritage, should archaeological material be recorded in the course of monitoring, this may necessitate areas being left open to the elements for a period in order to facilitate consultation with DHLGH, processing of licences and/or full excavation/preservation-by-record of archaeological features. Consequently, in this scenario, during the construction phase there could be **slight, short-term** and **negative effects** on land and soils (Chapter 9 – Land, Soils, Geology & Hydrogeology). These would be confined in extent to the putative new archaeological area. During the operational phase of the proposed development, adherence to the mitigation measures set out in Chapter 15 will ensure the effect is **negative, imperceptible** and **short-term**.

9.9.5 Biodiversity

A hydrological connection exists between the site and Natura sites (Rogerstown Estuary SAC/SPA and Malahide Estuary SAC/SPA). With the mitigation measures in place, the predicted impact during

construction phase due to this interaction will be **negative, imperceptible** and **short-term**. There are no potentially significant interactions identified between land, soils, geology and hydrogeology and Biodiversity during the operational phase.

9.10 Cumulative Impacts

Chapter 22 provides a description of relevant developments within the area which have the potential to produce environmental impacts during their operational and/or construction phases which, when combined with the predicted impacts for this proposed development may give rise to cumulative impacts. The nature of these developments is mainly residential; however, they include the development of the Glenveagh wastewater pumping station (Planning Ref: F19A/0472) located c. 300 m to the south of the site and the development of Irish Water wastewater infrastructure that comprises the construction of underground wastewater pump, emergency storage tank, water tank, valve and flowmeter chambers, chemical dosing facility for odour control, kiosks, landscaping, fencing and access off Balcarrick Road, and all associated site works (Planning Ref: F19A/02243).

As has been identified in the receiving environment section, all developments that are already built and in operation contribute to the characterisation of the baseline environment. As such any further environmental impacts that the proposed development may have in addition to these already constructed and operational cumulative developments has been assessed in the preceding sections of this chapter.

No likely significant cumulative impacts are predicted in relation to the soil, geological and hydrogeological environment as a result of the proposed development in combination with other existing, permitted or proposed developments.

The following permitted or proposed developments (as described in Chapter 22 – Cumulative Impacts) could potentially overlap with the construction phase of the proposed development: See **Table 9.2** below.

Table 9.2 Potential Overlapping Developments (Construction Phase)

Ref.	Applicant	Location	Status
F19A/0243/ ABP-307657-20	Irish Water	Balcarrick Road, Ballymastone, Donabate, Co. Dublin.	Permission granted by An Bord Pleanàla on 23 November 2020.
LRD0008/S3/ ABP-315288-22	Glenveagh Living Limited	Ballymastone, Donabate, Co. Dublin	Permission granted by An Bord Pleanàla on 28 March 2023.
LRD0017/S3	Aledo Donabate Ltd	Corballis East, Donabate, Co Dublin	Permission granted by Fingal County Council on 23 February 2024.
F22A/0527	Glenveagh Homes Limited	Corballis East, Donabate, Co Dublin	Permission granted by Fingal County Council on 30 August 2023.

Ref.	Applicant	Location	Status
F20A/0510/ ABP-311447-21	Cairn Homes Properties Ltd	Lands at Ballymastone, Donabate, Co Dublin	Permission granted by An Bord Pleanàla on 11 February 2022.
F20A/0204/ ABP-308446-20	Aledo Donabate Limited	Lands to the South of Main Street, Corballis East, Donabate, Co Dublin	Permission granted by An Bord Pleanàla on 6 September 2021.
F17A/0373	Tilberry Limited	Lands at New Road, Ballisk, Donabate, Co. Dublin.	Permission granted by An Bord Pleanàla on 17 April 2019.
F23A/0134	St Patrick's GAA Clubhouse Donabate	On lands at, Robbie Farrell Park, Ballymastone, Donabate, Co Dublin	Permission granted by Fingal County Council on 05 July 2023.
YA06F.304624	Fingal County Council	Malahide Demesne, Kilcrea, Newbridge Demesne, Donabate, Fingal, County Dublin	Permission granted by An Bord Pleanàla on 19 April 2020.
Not available (Part 8)	Fingal County Council	Ballymastone, Donabate, Co. Dublin	Approved on 14 September 2021.
F22A/0165	Glenveagh Homes Limited	Hearse Road, Donabate, Co Dublin	Permission granted by Fingal County Council on 24 August 2022.
F21A/0113	Glenveagh Homes Limited	Semple Woods, Off Hearse Road, Donabate, Co. Dublin	Permission granted by Fingal County Council on 02 February 2022.
F21A/0056	Glenveagh Homes Limited	Semple Woods, Hearse Road, Donabate, Dublin	Retention permission and planning permission granted by Fingal County Council on 31 August 2021
F17A/0113	McGarrell Reilly Homes	Lands at Hearse Road, Donabate, Co. Dublin	Permission granted by Fingal county Council on 15 January 2018.
TA06F.306794	Elchoir Construction Limited	Lands adjacent to the existing residential development known as 'The Gallery', Turvey Walk, off Turvey Avenue, To the west of Donabate Train Station, Donabate, Co. Dublin	Permission granted by An Bord Pleanàla on 10th August 2020.
F20A/0630	Drumargh Ltd	Lands at Turvey Walk, fronting Turvey Avenue, adjacent to Donabate Train Station, and the	Permission granted by Fingal County Council on 09 June 2021.

Ref.	Applicant	Location	Status
		residential development of The Gallery, Donabate, Co Dublin	
F21A/0257	Loughglynn Developments Limited	Beresford, Donabate, Co. Dublin	Permission granted by Fingal County Council on 05 August 2021.
F24A/0169	Marshall Yards Development Company Limited	Corballis East, Donabate, Co Dublin	Lodged on 29 February 2024

9.10.1 Construction Phase

The other developments abovementioned will also have to incorporate measures to protect soil and water quality in compliance with legislative standards for receiving water quality (European Communities Environmental Objectives (Groundwater) Regulations (S.I. 9 of 2010 and S.I. 266 of 2016). As a result, there will be minimal cumulative potential for change in soil quality or the natural groundwater regime. The likely cumulative impact is considered to be **short-term, neutral** and **imperceptible**.

9.10.2 Operational Phase

All developments are required to manage groundwater discharges in accordance with S.I. 9 of 2010 and S.I. 266 of 2016 amendments. As such, there will be no cumulative impact to groundwater quality and, therefore, there will be no cumulative impact on the Groundwater Body Status. The operation of the proposed development is concluded to have a **long-term, imperceptible significance** with a **neutral** impact on soil and water in combination with other developments in the surrounding area.

9.11 Difficulties Encountered

There were no significant difficulties encountered in compiling the specified information for this EIAR Chapter.

9.12 Conclusion

There will be **no long-term residual impact** on land soil geology and hydrogeological receptors, either within or in the vicinity of the proposed development as a result of the proposed development.

9.13 References

- Ground Investigation Report, July 2022 - (Ground Investigations Ireland "GII", 2022);
- Infrastructure Design Report by DBFL Consulting Engineers, 2024
- Preliminary Construction Environmental Management Plan (DBFL, 2024);
- Environmental Protection Agency Act 1992 as amended.
- European Commission, Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (2017).
- Forum for the Construction Industry – Recycling of Construction and Demolition Waste.

- Department of Communications, Climate Action, and Environment (DCCAE), Waste Action Plan for the Circular Economy - Ireland's National Waste Policy 2020-2025 (Sept 2020).
- FÁS and the Construction Industry Federation (CIF), Construction and Demolition Waste Management – a handbook for Contractors and site Managers (2002).
- Fingal County Council (FCC), Fingal Development Plan 2023-2029 (2022).
- FCC, Fingal County Council Segregation, Storage and Presentation of Household and Commercial Waste Bye-Laws (2020).
- BS 5906:2005 Waste Management in Buildings – Code of Practice.
- Planning and Development Act 2000 (No. 30 of 2000) as amended.
- CIRIA (2005). Environmental Good Practice on Site (C650).
- CIRIA (2007). CIRIA 697: The SUDS Manual.
- Enterprise Ireland (n.d.). Best Practice Guide BPGCS005: Oil Storage Guidelines.
- EPA (2022). Guidelines on the Information to be Contained in Environmental Impact Assessment Reports.
- EPA (2024). EPA Maps.
- GSI (2024). GSI Map Viewer.
- Institute of Geologists of Ireland (2013). Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements.
- NPWS (2024). Designations Viewer.
- NRA (2009). Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes.
- OPW (2024). Flood Maps.
- OPW (2009). The Planning System and Flood Risk Management: Guidelines for Planning Authorities.
- Institute of Geologists of Ireland (2013). Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements.
- Teagasc (2024). Teagasc Map Viewer.
- National Roads Authority (NRA) (2009). Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes.

10 Hydrology

10.1 Introduction

This chapter assesses and evaluates the likely significant effects of the development on the hydrological aspects of the site and surrounding area. In assessing likely potential and predicted effects, account is taken of both the importance of the attributes and the predicted scale and duration of the likely effects.

The detailed description of the proposed development is provided in Chapter 5 (Description of the Proposed Development). Particulars of the proposed development are reiterated herein only insofar as they relate to the assessment of potential impacts on surface water in the receiving environment.

10.1.1 Criteria for rating of effects

This chapter evaluates the effects, if any, which the development has had or will have on Hydrology as defined in the Environmental Protection Agency (EPA) '*Guidelines on the Information to be contained in Environmental Impact Assessment Reports*' (EPA, 2022) as well as in line with Article 94 and Schedule 6 of the Planning and Development Regulations 2001 (as amended) and Article 5 and Annex IV of the EIA Directive (2011/92/EU, as amended).

The document entitled '*Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes*' by the Transport Infrastructure Ireland (TII) formerly National Roads Authority (NRA) (TII, 2009) is referenced where the methodology for assessment of impact is appropriate. Furthermore, in line with this TII Guidelines, an assessment of the attribute importance has been undertaken in order to provide a basis for the assessment of impact provided. The attribute importance considers the potential as well as the existing use of the surface water features as a water resource (i.e., water supply, fisheries and other uses) as well as ecological habitat requirements.

The quality, significance, and duration of the potential impacts, residual effects, and cumulative effects are described using standard EIA descriptive terminology set out in **Table 1.4**, Chapter 1 of this EIAR.

The principal attributes (and effects) to be assessed include the following:

- Water Framework Directive (WFD) Status and potential for increased risk of deterioration of this status due to the activities of the site;
- Surface watercourses near the site and potential impact on surface water quality arising from proposed development related works including any discharge of surface water run-off;
- Localised flooding (potential increase or reduction) and floodplains including benefitting lands and drainage districts (if any); and
- Surface water features within the area of the site.

10.1.2 Sources of Information

Desk-based hydrological information in the vicinity of the site was obtained through accessing databases and other archives where available. Data was sourced from the following:

- Environmental Protection Agency (EPA) – website mapping and database information. Envision water quality monitoring data for watercourses in the area;
- River Basin Management Plan for Ireland 2022-2027 (draft);
- Fingal Development Plan 2023-2029;

- The Planning System and Flood Risk Management, Guidelines for Planning Authorities (Department of the Environment, Heritage and Local Government (DoEHLG) and the Office of Public Works (OPW));
- Office of Public Works (OPW) flood mapping data (www.floodmaps.ie);
- Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors' (CIRIA 532, 2001); and
- National Parks and Wildlife Services (NPWS) – Protected Site Register.

Site specific data was derived from the following sources:

- Infrastructure Design Report, Ballymastone, Donabate Phase 2, DBFL Consulting Engineers, March 2024;
- Preliminary Construction Environmental Management Plan, Ballymastone Phase 2, DBFL Consulting Engineers, Dec 2024;
- Annual Environmental Report 2022, Portrane, Donabate, Rush, Lusk (D0114-02), Uisce Éireann, (Irish Water);
- Site Specific Flood Risk Assessment, Ballymastone Phase 2, DBFL Consulting Engineers, 2024;
- Ground Investigation Report (Ground Investigations Ireland "GII", July 2022);
- The proposed development design site plans and drawings; and
- Consultation with the project design engineers.

10.2 Baseline Environment

The receiving environment is discussed in terms of surface water and hydrology including potential for existing and historical contamination. The proposed development gross site area extends to 13.74 of greenfield lands to the east of Donabate Village. The site is currently in agricultural use with the recently constructed Donabate Distributor Road (DDR) located to the east of the site. The site is bound to the west by The Links development with the Ballymastone masterplan lands and Willowbrook and The Priory developments to the north. Donabate Golf Club and St. Ita's Demesne are located to the east of the proposed site. A network of hedgerows and drainage ditches are located throughout the site.

The lands are within the jurisdiction of Fingal County Council's Development Plan, 2023 – 2029. They are primarily zoned 'RA', Residential Area, to '*provide for new residential communities subject to the provision of the necessary social and physical infrastructure*'. The Ballymastone area is one of the main development areas within the Donabate Local Area Plan 2016 (as extended). Phase 1 of the overall development is currently under construction. Phase 2 of the development will utilise infrastructure that is being constructed as part of Ballymastone Phase 1 permitted under FCC Reg. Ref. LRD0008/S3.

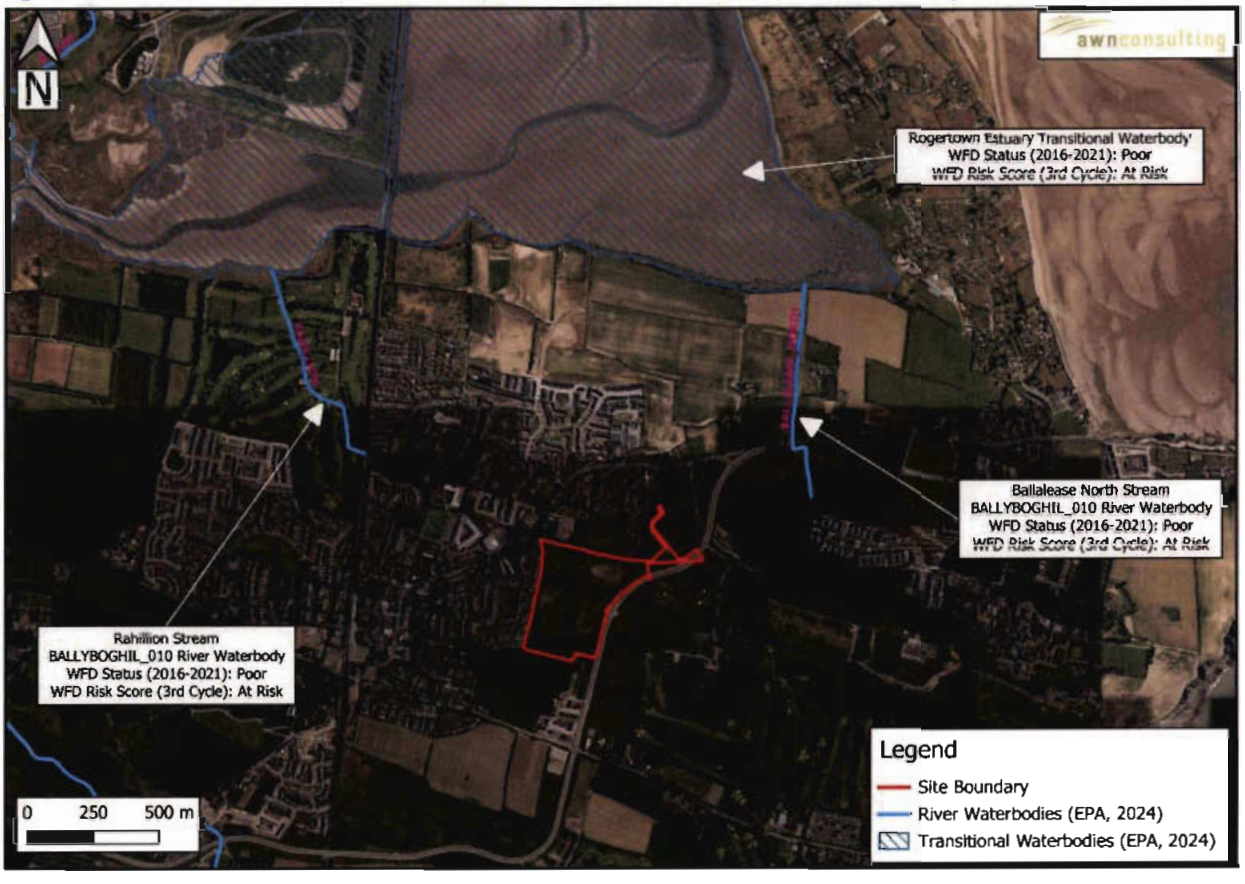
10.2.1 Hydrology

The subject site is located within the former Eastern River Basin District (ERBD, now the Irish River Basin District), as defined under the European Communities Directive 2000/60/EC, establishing a framework for community action in the field of water policy – this is commonly known as the Water Framework Directive (WFD).

According to EPA Maps, the proposed development site lies within the Nanny-Delvin Catchment (Catchment ID: 08) and the Ballough Stream sub-catchment (Ballough[Stream]_SC_10 WFD Sub-Catchment). The current EPA watercourse mapping does not include any existing streams within the subject site boundaries, a review of the historical mapping records provided within the GeoHive website

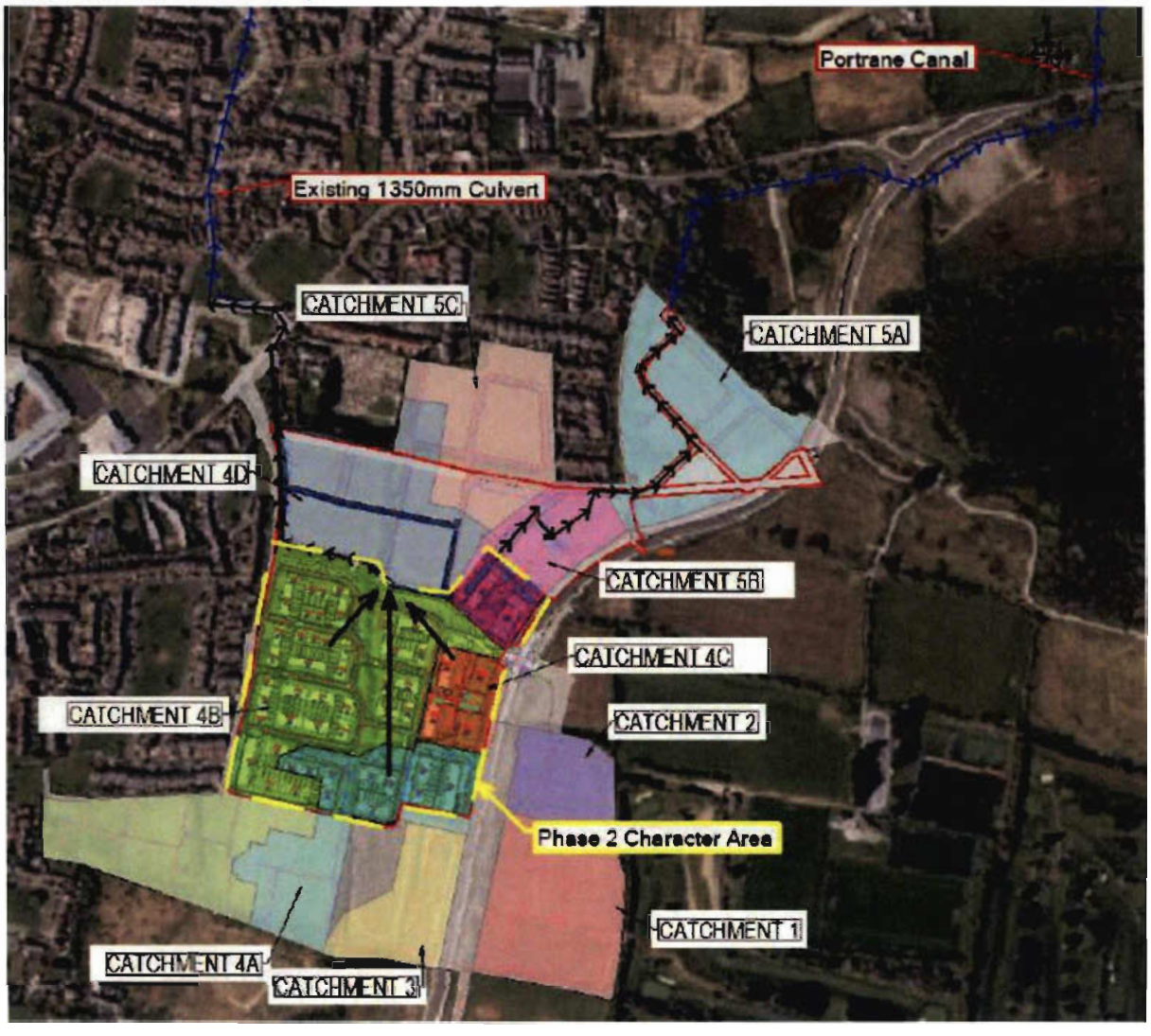
do not indicate any notable watercourses within the site. The nearest watercourses to the site are the Rahillion River which resides c. 790m to the west / north-west of the site and the Ballalease North which resides c. 445m to the north-east of the site. Both watercourses are hydrologically connected to the Rogerstown Estuary transitional waterbody, which hosts Natura 2000 sites (Rogerstown Estuary SAC/SPA, 0.8 km north of the site) – See **Figure 10.1** below.

Figure 10.1 Site Location and Surrounding River Waterbodies (Source: EPA, 2024)



The site is a large greenfield site to the east of Donabate Village. The site is currently in agricultural use with the Donabate Distributor Road (DDR) recently constructed to the east of the site, and the topography of the site is generally flat with a high point in the middle of the site with a slight fall from north to south. Currently, the site is drained by a network of drainage ditches which traverses the site and feed into the Beaverstown stream (EPA name "Rahillion", WFD name "Ballyboghil_010" EPA Code:08R23) which flows c. 790m to the north-west of the site and the Portrane stream (Portrane Canal) (EPA name: "Ballalease North", WFD name: "Ballyboghil_010", EPA code:08B45) catchment to c. 445m north of the site. (**Figure 10.2 below**). Both of these catchments then discharge to the Rogerstown Estuary to the north of the site (c. 1km).

Figure 10.2 Masterplan Surface Water Catchment Plan (Source: Figure 6, Infrastructure Design Report Phase 2, DBFL, March 2024)



Surface water runoff from the existing DDR is collected via road gullies into existing carrier drains running along the road and transferred into five attenuation ponds along the length of the DDR. The Phase 2 site (this application area) crosses 2 surface water catchments included within the overall masterplan area. The permitted discharge (including attenuation pond) for the Phase 1 lands will be in place prior to commencement of construction for the proposed Phase 2 development and is designed with adequate capacity for the Phase 2 development.

The overall Ballymastone masterplan area was divided into five catchments to best utilise available surface water discharge points. The Ballymastone Phase 2 lands are located within parts of catchments 4 and 5. Catchment 4 discharges to the existing 1350mm surface water culvert to the northwest of the site. This in turn discharges to Rogerstown Estuary to the north. Catchment 5 discharges to the existing ditches (following attenuation) which eventually flow to the Portrane Canal and then onto the Rogerstown Estuary to the north.

This drainage strategy has been discussed in principle with Fingal County Council's drainage department through the Section 247 Pre-Planning and Stage 2 processes.

Refer to the Infrastructure Design Report (Ballymastone, Donabate Phase 2, DBFL Consulting Engineers, March 2024) for further details.

10.2.2 Surface Water Quality

The Water Framework Directive (WFD) Directive 2000/60/EC was adopted in 2000 as a single piece of legislation covering rivers, lakes, groundwater and transitional (estuarine) and coastal waters. In addition to protecting said waters, its objectives include the attainment of 'Good Status' in water bodies that are of lesser status at present and retaining 'Good Status' or better where such status exists at present.

The WFD requires 'Good Water Status' for all European waters to be achieved through a system of river basin management planning and extensive monitoring by 2015 or, at the least, by 2027. 'Good status' means / indicates both 'Good Ecological Status' and 'Good Chemical Status'. In 2009 the first River Basin Management Plan (RBMP) 2009-2015 was published. The second cycle river basin management plan was carried out between 2018-2021 with the previous management districts now merged into one Ireland River Basin District (Ireland RBD). The third cycle (2022-2027) is currently being undertaken.

The primary aim of the plan is that Water bodies identified as being 'At Risk' of not achieving their environmental objectives need to have targeted measures implemented to achieve objectives under this Plan. 190 Areas for Action were identified across the 5 Local Authority regions. Within these 190 areas, a total of 726 water bodies were selected for initial actions during this RBMP cycle. There are 832 water bodies identified as being 'At Risk' of not achieving their environmental objectives under this Plan that have not been included in the Areas for Action. For most of these water bodies, targeted actions will be undertaken in the third cycle RBMP from 2022-2027. The draft third cycle RBMP has been reviewed in the context of ensuring mitigation measures comply with current and expected future measures required to be implemented for protection of water body status within the context of the proposed development.

The strategies and objectives of the WFD in Ireland have influenced a range of national legislation and regulations. These include the following:

- European Communities (Water Policy) Regulations, 2003 (S.I. No. 722 of 2003);
- European Communities (Drinking Water) Regulations 2014 (S.I. 122 of 2014);
- European Communities Environmental Objectives (Surface Waters); Regulations, 2009 (S.I. No. 272 of 2009 as amended SI No. 77 of 2019)
- European Communities Environmental Objectives (Groundwater) Regulations, 2010 (S.I. No. 9 of 2010 S.I. No. 366 of 2016);
- European Communities (Good Agricultural Practice for Protection of Waters) Regulations, 2010 (S.I. No. 610 of 2010); and European Communities (Good Agricultural Practice for Protection of Waters) Regulations, 2022 (S.I. No. 113 of 2022); and
- European Communities (Technical Specifications for the Chemical Analysis and Monitoring of Water Status) Regulations, 2011 (S.I. No. 489 of 2011)
- Statutory Instrument (SI) No. 293 of 1988 European Communities (Quality of Salmonid Waters) Regulations 1988
- Local Government (Water Pollution) Acts 1977-1990
- SI No. 258 of 1988 Water Quality Standards for Phosphorus Regulations 1998

- CIRIA (2001). Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors.
- CIRIA (2005). Environmental Good Practice on Site (C650).
- CIRIA (2007). CIRIA 697: The SUDS Manual.
- NRA (2009). Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes.

The Ballalease North/ Ballyboghil (north-east, c. 445m from the site) and Rahillion streams are hydrologically connected to Rogerstown Estuary c. 1km north-west of the site, both streams belong to the Ballyboghil surface waterbody. In regards to the Rogerstown Estuary, the EPA currently classifies this transitional water body with a 'Poor' status and is 'At risk of not achieving good status'. The 'Poor' status assigned to the Ballyboghil stream (EPA Name: Ballyboghil_010) is due to nutrient conditions and was scored with a 'High' status for "*Other determinant for oxygenation conditions*".

Surface water quality is monitored periodically by the EPA at various regional locations along with principal and other smaller watercourses. The EPA assesses the water quality of rivers and streams across Ireland using a biological assessment method, which is regarded as a representative indicator of the status of such waters and reflects the overall trend in conditions of the watercourse. The biological indicators range from Q5 - Q1. Level Q5 denotes a watercourse with good water quality and high community diversity, whereas Level Q1 denotes very low community diversity and bad water quality – See **Table 10.1** below.

Table 10.1 EPA Biological Q Ratings

Quality Ratings	Quality Class	Pollution Status	Condition
Q5, Q4-5, Q4	Class A	Unpolluted	Satisfactory
Q3-4	Class B	Slightly Polluted	Unsatisfactory
Q3, Q2-3	Class C	Moderately Polluted	Unsatisfactory
Q2, Q1-2, Q1	Class D	Seriously Polluted	Unsatisfactory

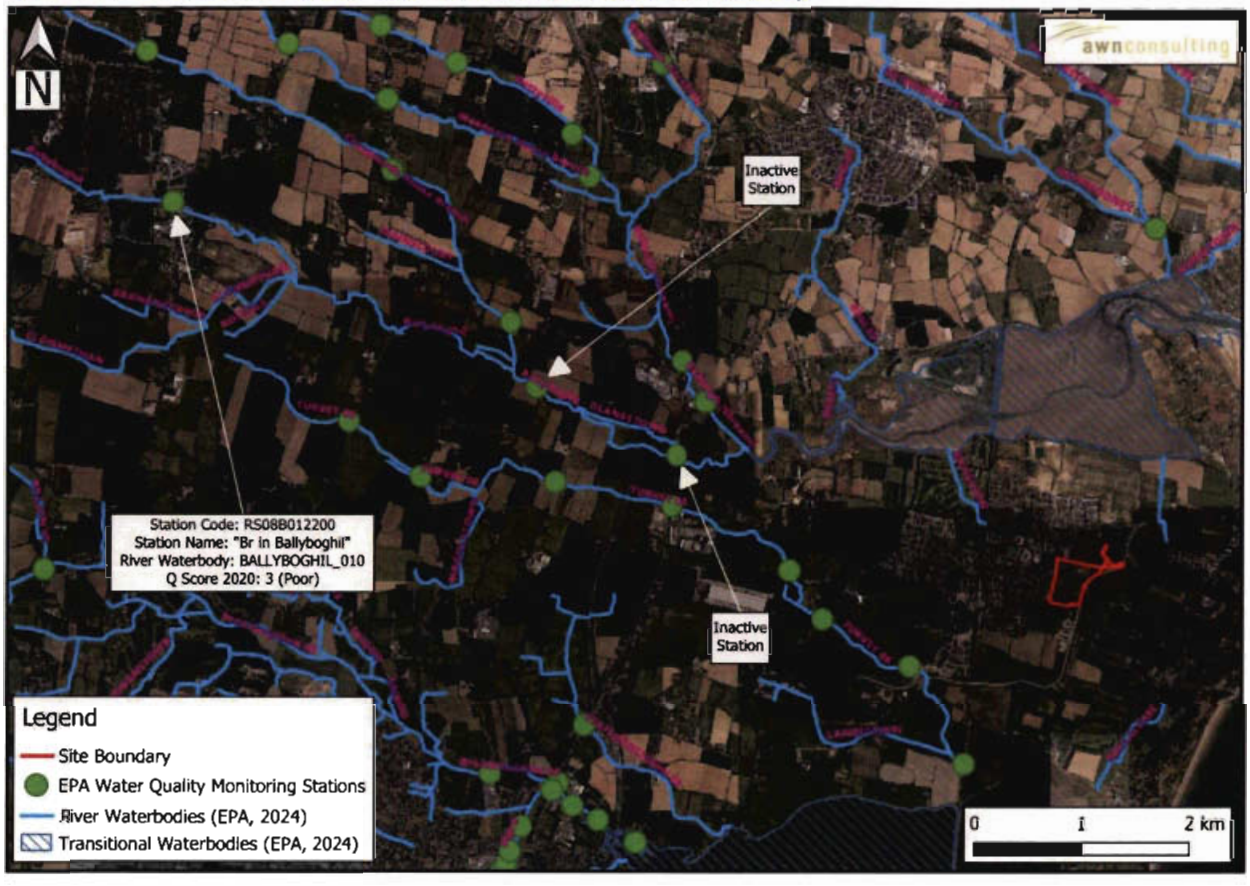
In relation to the subject site, there are no EPA monitoring stations located in the immediate vicinity of the site. With reference to the site setting, the nearest active EPA surface waterbody monitoring station along the BALLYBOGHIL_010 river waterbody (IE_EA_08B012200) is situated along the Ballyboghil River, upstream of the proposed development ('Br' in Ballyboghil; EPA Code: RS08B012200). This station is located at the bridge over the Ballyboghil River along the Naul Road Regional Route (R108) and adjacent to its junction with the R129, c. 370m (hydrological distance) upstream (west) of the Ballyboghil Wastewater Treatment Plant and c. 9.1km northwest of the subject development site (linear distance).

The most recent status recorded by the EPA in the water quality monitoring station ('Br' in Ballyboghil; EPA Code: RS08B012200, c. 9.1km north-west) located on the Ballough Stream mentioned above is classified as Q3 – 'Poor' Status (2016-2021), indicating a moderately polluted waterbody.

The nearest watercourses to the site are the Rahillion River residing c. 790m west of the site and the Ballalease North which resides c. 445m northeast of the site are part of "Ballyboghil_010" WFD waterbody.

Figure 10.3 below presents this EPA quality monitoring point in the context of the site and other regional drainage settings.

Figure 10.3 EPA Surface Water Quality Stations, (Source: EPA, 2024).



Foul Wastewater

The site has no existing foul loading as it is mainly greenfield. There is an existing 300mm foul sewer running through the recently constructed DDR.

A full, detailed foul water management strategy for the proposed development is included in the Infrastructure Design Report by DBFL Consulting Engineers, submitted under separate cover as part of the planning application.

It is proposed that the foul infrastructure within the access roads from the DDR and the links road from the Phase 1 development will have been constructed and the majority of Phase 2 will discharge here.

The foul discharge from the site will join the public sewer and will be treated at the Portrane Water Wastewater Treatment Plant (WWTP, D0114-02) prior to subsequent discharge to Rogerstown Estuary. A Confirmation of Feasibility form and Statement of Design Acceptance have been received from Uisce Éireann (and included as an appendix to the Infrastructure Design Report), indicating that a wastewater connection can be facilitated. This WWTP is required to operate under an EPA licence and meet environmental legislative requirements as set out in its licence prior to discharge to the Irish Sea off shore of the Donabate – Portrane peninsula.

It should be noted that the peak effluent discharge, calculated for the proposed development as 5.631 l/s would equate to 1.039% of the licensed discharge at Portrane WWTP [peak hydraulic capacity]. The WWTP has adequate capacity and therefore there would be no measurable impact on the overall water quality.

Water Supply and Distribution

There is an existing 400m diameter watermain in DDR and a 225mm diameter watermain also exists within the Links Road to the northwest of the site. The 400mm watermain on the DDR will be used in the Phase 2 development.

All of phase 2 of the development will be served from the main 225mm watermain that will be constructed as part of Phase 1 of the works. From this a series of 160mm and 110mm pipes will be provided along the local streets to supply the development with water. The connection to the public water main will include sluice valves in accordance with the Uisce Éireann (UÉ) requirements. Each of the apartment blocks will have their own connections to the distribution main via service connections and the type of meters to suit Irish Water specifications.

The average water demand is estimated to be 2.14/s. The peak demand for sizing of the pipe network (5 times the average day, peak week demand) is calculated as 10.69l/s.

Surface Water Drainage

The existing site is predominantly greenfield excluding the existing DDR, and the topography of the site is generally flat with a high point in the middle of the site adjacent to the DDR with a slight fall from the east to the west. Currently, the site is drained by a network of drainage ditches which traverses the site and feed into the Beaverstown stream catchment and Portrane Canal catchment. Surface water runoff from the existing DDR is collected via road gullies into existing carrier drains running along the road and transferred into 5 attenuation ponds along the length of the DDR.

A surface water drainage strategy for the Phase 2 site has been developed by DBFL and is in line with an overall surface water drainage strategy for the Ballymastone masterplan lands which has also been developed by DBFL Consulting Engineers. Surface water runoff from the development will be attenuated to greenfield runoff rates (Qbar) in accordance with the Greater Dublin Strategic Drainage Study (GDSDS).

The attenuation systems are designed to accommodate the 100-year critical storm event. Attenuation storage is provided through a combination of above ground and underground attenuation systems. A balance of underground and overground storage is required considering the urban nature of the development and density / open space requirements. SUDS features such as green roofs and the inclusions of permeable paving, tree pits and swales will provide a surface water treatment train and promote source control throughout the development while also providing attenuation storage at source. In some locations the proposed layout has also managed to include over edge road drainage with surface water flowing directly under drained swales providing treatment and storage at source.

The Phase 2 site (this application area) crosses 2 surface water catchments included within the overall masterplan area. The overall masterplan area was divided into 5 catchments to best utilise the available surface water discharge points. Parts of catchment 4 and 5 are within the Phase 2 site boundary. Catchment 4 is separated into sub catchments with attenuation provided closer to source within the sub-catchments. Catchment 4 discharges to the existing 1350mm surface water culvert to the northwest of the site which eventually discharges to the Rogerstown Estuary to the north. Utilising the 1350mm surface water culvert for the Ballymastone masterplan area is in line with the Donabate LAP. Catchment 5 discharge to the existing ditches which eventually flow to the Portrane Canal and onto the Rogerstown Estuary to the north. A lot of the drainage infrastructure required for Phase 2 will be

constructed as part of Phase 1 of the works permitted under FCC Reg. Ref. LRD0008/S3, specifically the connection to the 1350mm culvert and the majority of the attenuation associated with Catchment 4.

This drainage strategy has been discussed in principle with Fingal County Council's drainage department through the Section 247 Pre-Planning and Stage 2 processes. Due to existing site levels some areas to the south require levels to be raised to provide cover to the drainage network. In general terms attenuation locations avoid the raised areas and generally the underside of attenuations are located on or below existing ground thereby maximising any existing infiltration properties. It is important to note that the attenuation ponds installed during Phase 1 of the development have sufficient capacity for the proposed drainage strategy. Refer to the Infrastructure Design Report (DBFL, March 2024) for further information.

10.2.5 Flood Risk Assessment

A Flood Risk Assessment (FRA) was carried out by DBFL Consulting Engineers in 2024 for the proposed development. The proposed development site is located entirely within Flood Zone C i.e., the probability of flooding is low (less than 0.1% AEP or in 1 in 1000 year) for Fluvial and Coastal flooding.

According to the FRA conducted by DBFL Consulting Engineers (2024) there is no risk anticipated for the proposed development regarding fluvial flooding on the subject site up to the 1% AEP (Annual Exceedance Probability) event.

The proposed development was concluded to have a good level of flood protection up to the 100-year return event. For pluvial floods exceeding the 100-year capacity of the drainage system then proposed flood routing mitigation measures are recommended.

10.2.6 Areas of Conservation

According to the NPWS (2024) on-line database there are no protected conservation areas on or within the immediate vicinity of the proposed development site. The closest European listed sites are as follows;

- Rogerstown Estuary SPA (Site Code: 004015) c.0.8 km North of the site;
- Rogerstown Estuary SAC (Site Code: 000208) c. 0.8 km North of the site;
- Malahide Estuary SAC (Site Code: 000205) c. 1.2 km South of the site;
- Malahide Estuary SPA (Site Code: 004025) c. 1.2 km South of the site;
- Rogerstown Estuary pNHA (Site Code 000208), c. 0.8km North of the site;
- Malahide Estuary pNHA (Site Code: 000205) c. 1.2 km South of the site;
- Portraine Shore pNHA (Site Code: 001215) c. 1.8 km East of the site.

The site has hydrological connection with Rogerstown Estuary SPA/SAC via the surface water network.

Figure 10.4 below presents the location of these protected areas in the context of the proposed development site.

Figure 10.4 Natura 2000 conservation areas in the context of the subject site, (Source: EPA, 2024).

10.2.7 Rating of Importance of Hydrological Attributes

Based on the TII methodology (2009) (**Appendix 10.1**), the hydrological features at this site (drainage on site) are rated as 'Low importance' based on the assessment that the attribute has a low quality significance or value on a local scale. However, consideration of the hydrological connectivity with the Rogerstown Estuary SPA (c. 1 km) and Rogerstown Estuary SAC and close proximity to Malahide Estuary SAC and Malahide Estuary SPA (c. 1.2km south) the rating of the off site rivers is considered to be of *High -Very High* Importance.

10.3 Predicted Impacts of the Proposed Development

An analysis of the potential impacts of the proposed development on the hydrological environment during the construction and operation is outlined below. Due to the inter-relationship between soils, geology and hydrogeology and surface water the following impacts discussed will be considered applicable to both Chapter 9 (Land, Soils, Geology & Hydrogeology) and 10 (Hydrology) of the EIAR. Mitigation measures included in the design of the proposed development to address these potential impacts are presented in Section 10.6 below.

There is surface water and groundwater source pathway linkage between the proposed development site and the Rogerstown Estuary SPA (c. 1 km) and Rogerstown Estuary SAC. As such the assessment has considered potential impacts from run-off and accidental discharge to ground and receiving surface waters during construction and operation. The potential hydrogeological impacts are assessed in Chapter 9. These potential links and effects are also addressed in the AA Screening Report and Natura Impact Statement (NIS) submitted under separate cover with the application, prepared by BSM 2024.

Most of the drainage will discharge during construction through the permitted attenuation pond designed for the Phase 1 development. The remainder will be attenuated prior to discharge to existing hedgerows until final infrastructure is completed.

The construction activities pose a potential risk to watercourses as surface water arising at any site may contain suspended solids, hydrocarbons and concrete/cement products. In the absence of mitigation measures, such pollutants could pose a temporary risk to surface water quality in local watercourses during the site clearance and construction phases if not adequately attenuated and treated.

As attenuation will be in place as part of the permitted phase 1 development, there is a very low risk of any accidental discharge of potential contaminant being present which would not be attenuated, diluted and dispersed below statutory guidelines (i.e., S.I. European Communities Environmental Objectives Regulations, 2009 [S.I. No. 272 of 2009 as amended by SI No. 77 of 2019]) by the time water reaches off site protected habitats.

A standalone Water Framework Directive (WFD) assessment report has been included with the EIAR. The WFD assessment indicates that, based on the current understanding of the proposed development, there is no potential for adverse or minor temporary/ long-term or localised effects on the Rogerstown Estuary transitional waterbody. Therefore, it has been assessed that the proposed development will not cause any significant deterioration or change in water body status or prevent attainment, or potential to achieve, future good status or to meet the requirements and/or objectives in the second RBMP 2018-2021 (River Basin Management Plan) and draft third RBMP 2022-2027.

The WFD assessment indicates that there is no potential for adverse or minor temporary or localised effects on the Swords groundwater body. Therefore, it has been assessed that it is unlikely that the proposed development will cause any significant deterioration or change on its water body status or prevent attainment, or potential to achieve the WFD objectives or to meet the requirements and/or objectives in the second RBMP 2018-2021 (River Basin Management Plan) and draft third RBMP 2022-2027. No further assessment of WFD is recommended given that no significant deterioration or change in water body status is expected based on the current understanding of the proposed development during construction and operation.

10.3.1 Do-nothing Impact

If the proposed development were not to go ahead (i.e., in the Do-Nothing scenario) there would be no excavation or construction or operational impact at this site. There would, therefore, be a **neutral effect** on the environment. The site is zoned for residential development, and it is likely that in the absence of this subject proposal, that a development of a similar nature would be progressed on the site that accords with national and regional policies and, therefore, the likely effects would be similar to this proposal, as described in the following sections.

10.3.2 Construction Phase

10.3.2.1 Increased Sediment Loading in Run-off

Surface water runoff during the construction phase may contain increased silt levels or become polluted from construction activities. Runoff containing large amounts of silt can cause damage to surface water systems and receiving watercourses. Silt water can arise from dewatering excavations, exposed ground, stockpiles and access roads.

During the construction phase at this site there is potential for an increase in run-off due to the compaction of soils. If not adequately impacted this could potentially impact local drainage. To note most drainage will be to the permitted attenuation pond and interceptor constructed as part of the Phase 1 development.

10.3.2.2 Accidental Spills and Leaks

As with all construction projects there is potential for water (rainfall and/or groundwater) to become contaminated with pollutants associated with construction activity. Contaminated water which arises from construction sites can pose a significant short-term risk to groundwater quality for the duration of the construction if contaminated water is allowed percolate to the aquifer.

During the construction of the proposed development, there is a risk of accidental pollution incidences from the following sources:

- Cement/concrete (increase turbidity and pH) – arising from construction materials;
- Hydrocarbons (ecotoxic) – accidental spillages from construction plant or onsite storage; and
- Wastewater (nutrient and microbial rich) – arising from accidental discharge from on-site toilets and washrooms.

Machinery activities on site during the construction phase may result in contamination of runoff/surface water. Potential impacts could arise from accidental spillage of fuels, oils, paints, etc. which could impact surface water if allowed to infiltrate to runoff to surface water systems and/or receiving watercourses. However, implementation of the mitigation measures detailed below will ensure that this does not occur.

Concreting operations carried out near surface water drainage points during construction activities could lead to discharges to a watercourse. Concrete (specifically, the cement component) is highly alkaline and any spillage to a local watercourse would be detrimental to water quality and local fauna and flora. However, employment of the mitigation measures highlighted below will ensure that any impact will be mitigated.

Without the consideration of design and mitigation measures the construction phase of the proposed development will likely have a **Negative, Short Term, Not Significant impact**.

10.3.3 Operational Phase

There are no discharges to any open water courses without adequate attenuation included in the design. The surface water network has been designed to provide sufficient capacity to contain and convey all surface water runoff associated with the 1 in 100 year event to the attenuation basins without any overland flooding including an additional allowance of 20% in rainfall intensities due to climate change. Discharge flow will be restricted to the greenfield equivalent runoff for the catchment area.

The development will be fully serviced with separate foul and stormwater public sewers which will have adequate capacity for the facility and discharge limits as required by Irish Water licencing requirements. Discharge from the site to the public foul sewer will be sewage and grey water only due to the nature of the proposed development. The foul discharge from the site will join the public sewer and will be treated at the Portrane Water Wastewater Treatment Plant (WWTP) prior to subsequent discharge to the Irish Sea. This WWTP is required to operate under an EPA licence and meet environmental legislative requirements as set out in its licence.

There is no bulk chemical (including fuel) planned for the development. The proposed development site includes car parking area at the site. Leakage of petrol/ diesel fuel may occur from these areas; run-off may contain a worst-case scenario of 70 litres/car for example. However, in the event of an accidental leakage of oil from the parking areas, this will be intercepted by the drainage infrastructure proposed and any releases to drainage will be mitigated through hydrocarbon interceptors.

Without the consideration of mitigation measures the operation phase of the proposed development will likely have a **Neutral, Long Term, Imperceptible** impact.

10.4 Mitigation Measures

The design has taken account of the potential impacts of the development on the hydrological environment local to the area where construction is taking place and containment of contaminant sources during operation. Measures have been incorporated in the design to mitigate the potential effects on the surrounding water bodies.

10.4.1 Construction Phase

A Construction Environmental Management Plan (CEMP) has been prepared in respect of the proposed development by DBFL Consulting Engineers (2024) (refer to standalone document submitted under separate cover). It contains best practice measures and protocols to be implemented during the construction phase of the proposed development to avoid / minimise environmental impacts, including in relation to surface water.

To ensure the CEMP remains fit for purpose, it will be regarded as a live document. The appointed contractor will be responsible for updating the CEMP, as required; e.g. to reflect the publication of relevant new or revised guidelines and / or new statutory requirements. The full schedule of environmental commitments (i.e. all mitigation measures set out in the CEMP, Environmental Impact Assessment Report and Natura Impact Statement submitted as part of the planning application, as well as any applicable conditions of development consent) will be included in the CEMP by the appointed contractor.

The CEMP was formulated in accordance with best international practice including but not limited to:

- CIRIA, (2001), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors, (C532) Construction Industry Research and Information Association;
- CIRIA (2002) Control of water pollution from construction sites: guidance for consultants and contractors (SPI56) Construction Industry Research and Information Association
- CIRIA (2005), Environmental Good Practice on Site (C650); Construction Industry Research and Information Association
- BPGCS005, Oil Storage Guidelines;
- Eastern Regional Fisheries Board, (2006), Fisheries Protection Guidelines: Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites;
- CIRIA 697, The SUDS Manual, 2007; and
- UK Pollution Prevention Guidelines (PPG) UK Environment Agency, 2004.

The following mitigation measures will be implemented during the construction phase:

Suspended solids management

Run off may contain sediment and accidental hydrocarbon leakage for contractor vehicles, however there is no likely discharge from the site (without settlement and treatment) as most drainage is directed to the permitted attenuation pond and interceptor installed during the Phase 1 development. The following additional mitigation measures will be implemented during the construction phase.

- Measures shall be implemented to capture and treat sediment laden surface water runoff within additional sediment retention ponds where waters are not directed to the Phase 1 permitted attenuation ponds.
- During earthworks and excavation works care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts.
- Run-off water containing silt will be contained on site via settlement tanks and treated to ensure adequate silt removal.
- Silt reduction measures on site will include a combination of silt fencing and settlement measures (silt traps, silt sacks and settlement tanks/ponds).
- Any hard surface site roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only.
- A power washing facility or wheel cleaning facility will be installed near to the site compound for use by vehicles exiting the site when appropriate.
- A stabilised entranceway consisting of an aggregate on a filter cloth base that is located at any entry or exit point of the construction site.
- Aggregate will be established at the site entrance points from the construction site boundary extending for at least 10 m.
- The temporary storage of soil will be carefully managed. Stockpiles will be tightly compacted to reduce runoff and graded to aid in runoff collection.
- Aggregate materials such as sands and gravels will be stored in clearly marked receptacles within a secure compound area to prevent contamination.
- Movement of material will be minimised to reduce the degradation of soil structure and generation of dust.
- Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise the potential for water ingress into excavations.
- Weather conditions will be considered when planning construction activities to minimise the risk of run-off from the site.
- Any surface water run-off collecting in excavations will likely contain a high sediment load. This will not be allowed to directly discharge directly to the stormwater sewer.

Cement/concrete works

Where feasible all ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to the underlying subsoil.

No wash-down or wash-out of ready-mix concrete vehicles during the construction works will be carried out at the site within 10 metres of an existing surface water drainage point. Washouts will only be

allowed to take place in designated areas with an impervious surface where all wash water is contained and removed from site by road tanker or discharged to foul sewer submit to agreement with UÉ

The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.

Hydrocarbons and other construction chemicals

The following mitigation measures will be implemented during the construction phase in order to prevent any spillages to ground of fuels and other construction chemicals and prevent any resulting to surface water and groundwater systems:

- Designation of bunded refuelling areas on the Site.
- Provision of spill kit facilities across the Site.
- Where mobile fuel bowsers are used, the following measures will be taken:
  - Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use.
  - The pump or valve will be fitted with a lock and will be secured when not in use.
  - All bowsers to carry a spill kit and operatives must have spill response training.
  - Portable generators or similar fuel containing equipment will be placed on suitable drip trays.

In the case of drummed fuel or other potentially polluting substances which may be used during the construction phase, the following measures will be adopted:

- Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded area;
- Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be stored within temporary bunded areas, doubled skinned tanks or bunded containers to a volume of 110% of the capacity of the largest tank/container. Drainage from the bunded area(s) shall be diverted for collection and safe disposal.
- Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage.
- All drums to be quality approved and manufactured to a recognised standard.
- If drums are to be moved around the Site, they will be secured and on spill pallets; and
- Drums will be loaded and unloaded by competent and trained personnel using appropriate equipment.

Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area or within the construction compound. In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in this area. All relevant personnel will be fully trained in the use of this equipment. Guidelines such as "Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors" (CIRIA 532, 2001) will be complied with.

The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.

Surface Water Runoff

As set out in the CEMP prepared by DBFL Consulting Engineers the following surface water runoff mitigation measures will be implemented:

- Rainfall and all stormwater at the construction site will be managed and controlled for the duration of the construction works. The discharge of this treated water will occur to the storm water network and eventually to the Rogerstown Estuary.
- Surface water runoff from areas stripped of topsoil and surface water collected in excavations will be directed to on-site settlement ponds/ distilling tanks where measures will be implemented to capture and treat sediment laden runoff prior to discharge of surface water at a controlled rate. Monitoring of these sediment control measures will be undertaken throughout the construction phase.
- Discharge from any vehicle wheel wash areas is to be directed to on-site settlement ponds/distilling tanks.
- On-site settlement ponds are to include geotextile liners and riprapped inlets and outlets to prevent scour and erosion.
- Concrete batching will take place off site, wash down and wash out of concrete trucks will take place off site and any excess concrete is not to be disposed on site.
- Surface water discharge points (not directed to the Phase 1 permitted attenuation pond) during the construction phase are to be agreed with Fingal County Council's Environment Section prior to commencing works on site.

Water Pumped from Excavation

According to in the CEMP produced by DBFL Consulting Engineers the following mitigation measures will be implemented:

- Rainwater pumped from excavations is to be directed to on-site settlement ponds / distilling tanks.
- Groundwater pumped from excavations is to be directed to on-site settlement ponds / distilling tanks.
- On-site settlement ponds are to include geotextile liners and riprapped inlets and outlets to prevent scour and erosion. Monitoring of same will be undertaken.
- Surface water discharge points during the construction phase are subject to agreement with Fingal County Council's Environment Section prior to commencing works on site.

Wastewater Management

Foul wastewater discharge from the site will be managed and controlled for the duration of the construction works.

Site welfare facilities will be established to provide sanitary facilities for construction workers on site. The main contractor will ensure that sufficient facilities are available at all times to accommodate the number of employees on site. Foul water from the offices and welfare facilities on the site will discharge into the existing sewer on site (the cabins may initially need to have the foul water collected by a licensed waste sewerage contractor before connection to the sewer line can be made).

The construction contractor will implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.

10.4.2 Operational Phase

The proposed development stormwater drainage network design includes sustainable drainage systems (SuDS) these measures by design ensure the stormwater leaving the site is to be attenuated and treated within the new development site boundary to ensure suitable quality, before discharging to the existing public surface water network which subsequently outfalls to the Rogerstown Estuary.

The purpose of the proposed design is to:

- Treat runoff and remove pollutants to improve quality
- Restrict outflow and to control quantity
- Increase amenity value

The layout of the proposed surface water drainage network is shown on the DBFL Consulting Engineers Drawing Set included with this Application. It is proposed to separate the surface water and wastewater drainage networks, which will serve the proposed development, and provide independent connections to the local public surface water and wastewater sewer networks respectively. Waste water will be discharged in accordance with the UÉ licence requirements,

10.5 Residual Impacts

10.5.1 Construction Phase

The implementation of mitigation measures outlined above (Section 10.4) will ensure that the predicted impacts on the hydrological environment do not occur during the construction phase and that the residual impact will be **short-term-imperceptible-neutral**. Following the TII criteria (see **Appendix 10.1**) for rating the magnitude and significance of impacts on the hydrological related attributes, the magnitude of impact is considered **negligible.**

10.5.2 Operational Phase

The implementation of mitigation measures highlighted above (Section 10.4) will ensure that the predicted impacts on the hydrological environment do not occur during the operational phase and that the residual impact will be **long-term-imperceptible-neutral**. Following the TII criteria for rating the magnitude and significance of impacts on the hydrological related attributes, the magnitude of impact is considered negligible.

10.6 Indirect and /or Secondary Impacts

There are no indirect and/or secondary impacts as a result of the proposed development. *Although there is a hydrological and hydrogeological pathway to the Estuary, no source pathway linkage has been identified which could result in exceedance of groundwater thresholds (S.I. No 366/2016) at the point of aquifer discharge to the estuary.*

10.7 Monitoring or Reinstatement

10.7.1 Construction Phase

During construction phase the following monitoring measures will be implemented:

- Regular inspection of surface water run-off and sediments controls e.g. silt traps will be carried during the construction phase.

- Soil sampling to confirm disposal options for excavated soils in order to avoid contaminated run-off.
- Regular inspection of construction/mitigation measures will be undertaken e.g. concrete pouring, refuelling etc.

10.7.2 Operational Phase

Maintenance of the surface water drainage system, including hydrocarbon interceptors, and foul sewers as per normal urban developments is recommended to minimise any accidental discharges to surface water.

10.7.3 Reinstatement

This section is not applicable to this chapter.

10.8 Interactions

This section discusses interactions between this Chapter and other specialist environmental topics considered in this EIAR. The main interactions of importance to Hydrology relate to Biodiversity (Chapter 8), Hydrogeology (Chapter 9), Material Assets - Waste (Chapter 19) and dust (Air Quality) (Chapter 11) as follows;

10.8.1 Biodiversity

Effects and impacts in relation to surface water have the potential to negatively affect biodiversity. For example, unmitigated water quality impacts may result in negative impacts on aquatic ecology. With the mitigation measures in place, the predicted impact during construction phase due to this interaction will be **negative, imperceptible and short-term.**

There are no potentially significant interactions identified between Hydrology, and Biodiversity during the operational phase.

10.8.2 Hydrogeology

Discharge of any collected perched water during construction has the potential to impact on receiving water quality in terms of suspended solids content. Adherence to the mitigation measures presented in section 10.4 will ensure the effect is **negative, imperceptible and short-term during construction.**

There are no potentially significant interactions identified between Hydrology, and Hydrogeology during the operational phase.

10.8.3 Material Assets – Waste

During the construction phase, excavated topsoil and subsoil (c. 41,000 m^3) will be generated from the excavations required to facilitate site levelling and construction of new foundations). It is anticipated that all excavated topsoil material and subsoil material will be reused on site. During construction stockpiling of material may result in runoff water being sediment laden. Adherence to the mitigation measures presented above and the requirements of the RWMP (Chapter 19 – Material Assets, **Appendix 19.1**), will ensure the effect is **negative, imperceptible and short-term.**

There are no potentially significant interactions identified between Hydrology, and Waste during the operational phase.

10.8.4 Air – Dust

There is a risk of dust impacts associated with the proposed development. With the appropriate mitigation measures for dust as described in Section 11.8, to prevent fugitive dust emissions, it is predicted that there will be a **negative, imperceptible and short-term.**

There are no potentially significant interactions identified between Hydrology, and Air during the operational phase.

10.9 Cumulative Impacts

Chapter 22 provides a description of relevant cumulative developments within the area which have the potential to produce environmental impacts during their operational and/or construction phases which, when combined with the predicted impacts for this proposed development may give rise to cumulative impacts. The nature of these developments is mainly residential; however, they included the development of an underground wastewater pumping station located c. 300 m to the south of the site and the development of Irish Water wastewater infrastructure that comprises the construction of underground wastewater pump, emergency storage tank, water tank, valve and flowmeter chambers, chemical dosing facility for odour control, kiosks, landscaping, fencing and access off Balcarrick Road, and all associated site works.

As has been identified in the receiving environment section all cumulative developments that are already built and in operation contribute to the characterisation of the baseline environment. As such any further environmental impacts that the proposed development may have in addition to these already constructed and operational cumulative developments has been assessed in the preceding sections of this chapter. The following permitted or proposed developments outlined in **Table 10.2** (Chapter 22 – Cumulative Impacts) could potentially overlap with the construction phase of the proposed development:

Table 10.2. Potential Overlapping Developments (Construction Phase)

Ref.	Applicant	Location	Status
F19A/0243/ ABP-307657-20	Irish Water	Balcarrick Road, Ballymastone, Donabate, Co. Dublin.	Permission granted by An Bord Pleanàla on 23 November 2020.
LRD0008/S3/ ABP-315288-22	Glenveagh Living Limited	Ballymastone, Donabate, Co. Dublin	Permission granted by An Bord Pleanàla on 28 March 2023.
LRD0017/S3	Aledo Donabate Ltd	Corballis East, Donabate, Co Dublin	Permission granted by Fingal County Council on 23 February 2024.
F22A/0527	Glenveagh Homes Limited	Corballis East, Donabate, Co Dublin	Permission granted by Fingal County Council on 30 August 2023.
F20A/0510/ ABP-311447-21	Cairn Homes Properties Ltd	Lands at Ballymastone, Donabate, Co Dublin	Permission granted by An Bord Pleanàla on 11 February 2022.

Ref.	Applicant	Location	Status
F20A/0204/ ABP-308446-20	Aledo Donabate Limited	Lands to the South of Main Street, Corballis East, Donabate, Co Dublin	Permission granted by An Bord Pleanàla on 6 September 2021.
F17A/0373	Tilberry Limited	Lands at New Road, Ballisk, Donabate, Co. Dublin.	Permission granted by An Bord Pleanàla on 17 April 2019.
F23A/0134	St Patrick's GAA Clubhouse Donabate	On lands at, Robbie Farrell Park, Ballymastone, Donabate, Co Dublin	Permission granted by Fingal County Council on 05 July 2023.
YA06F.304624	Fingal County Council	Malahide Demesne, Kilcrea, Newbridge Demesne, Donabate, Fingal, County Dublin	Permission granted by An Bord Pleanàla on 19 April 2020.
Not available (Part 8)	Fingal County Council	Ballymastone, Donabate, Co. Dublin	Approved on 14 September 2021.
F22A/0165	Glenveagh Homes Limited	Hearse Road, Donabate, Co Dublin	Permission granted by Fingal County Council on 24 August 2022.
F21A/0113	Glenveagh Homes Limited	Semple Woods, Off Hearse Road, Donabate, Co. Dublin	Permission granted by Fingal County Council on 02 February 2022.
F21A/0056	Glenveagh Homes Limited	Semple Woods, Hearse Road, Donabate, Dublin	Retention permission and planning permission granted by Fingal County Council on 31 August 2021
F17A/0113	McGarrell Reilly Homes	Lands at Hearse Road, Donabate, Co. Dublin	Permission granted by Fingal county Council on 15 January 2018.
TA06F.306794	Elchoir Construction Limited	Lands adjacent to the existing residential development known as 'The Gallery', Turvey Walk, off Turvey Avenue, To the west of Donabate Train Station, Donabate, Co. Dublin	Permission granted by An Bord Pleanàla on 10th August 2020.
F20A/0630	Drumargh Ltd	Lands at Turvey Walk, fronting Turvey Avenue, adjacent to Donabate Train Station, and the residential development of The Gallery, Donabate, Co Dublin	Permission granted by Fingal County Council on 09 June 2021.

Ref.	Applicant	Location	Status
F21A/0257	Loughglynn Developments Limited	Beresford, Donabate, Co. Dublin	Permission granted by Fingal County Council on 05 August 2021.
F24A/0169	Marshall Yards Development Company Limited	Corballis East, Donabate, Co Dublin	Lodged on 29 February 2024

Assuming the full and proper implementation of the mitigation measures set out in this EIAR, **no significant negative cumulative impacts are likely to arise** during the construction or operational phases of the proposed development.

10.9.1 Construction Phase

The other developments abovementioned will also have to incorporate SuDS measures to protect water quality in compliance with legislative standards for receiving water quality (European Communities Environmental Objectives (Surface Water) Regulations (S.I. 272 of 2009 and S.I. 77 of 2019). As a result, there will be minimal cumulative potential for change in the natural hydrological regime. The cumulative impact is considered to be **neutral** and **imperceptible and short-term.**

10.9.2 Operational Phase

All the operational cumulative developments are required to manage discharges in accordance with S.I 272/2009 and 77/2019 amendments. As such there will be no cumulative impact to surface water quality and therefore there will be no cumulative impact on the Surface Waterbody Status. The operation of the proposed development is concluded to have a **long-term**, **imperceptible** significance with a **neutral** impact on surface water quality.

10.10 Difficulties Encountered

There were no difficulties encountered during the preparation of this report.

10.11 Conclusion

There will be **no long-term residual impact** on hydrological receptors, either within or in the vicinity of the proposed development as a result of the proposed development.

10.12 References

- CIRIA (2001). Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors.
- CIRIA (2005). Environmental Good Practice on Site (C650).
- CIRIA (2007). CIRIA 697: The SUDS Manual.
- Department of Housing, Planning & Local Government (2018). River Basin Management Plan for Ireland 2018 – 2021.
- Eastern Regional Fisheries Board (2006). Fisheries Protection Guidelines: Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites.
- Enterprise Ireland (n.d.). Best Practice Guide BPGCS005: Oil Storage Guidelines.

- EPA (2023a). Guidelines on the Information to be Contained in Environmental Impact Assessment Reports.
- EPA (2024). EPA Maps.
- GSI (2024). GSI Map Viewer.
- Institute of Geologists of Ireland (2013). Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements.
- NPWS (2024). Designations Viewer.
- NRA (2009). Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes.
- OPW (2024). Flood Maps.
- OPW (2009). The Planning System and Flood Risk Management: Guidelines for Planning Authorities.
- Teagasc (2024). Teagasc Map Viewer.
- National Roads Authority (NRA) (2009). Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes.

11 Air Quality

11.1 Introduction

This chapter of the EIAR was prepared to assess the potential significant effects of the proposed development on air quality associated with the proposed development at Ballymastone, Co. Dublin.

It should be read in conjunction with Ch. 18 Traffic and Transportation and the standalone Traffic and Transportation Assessment (DBFL Consulting Engineers, 2024) submitted as part of the planning application.

11.2 Expertise & Qualifications

This chapter was completed by Aisling Cashell, an Environmental Consultant in the air quality section of AWN Consulting Ltd. She holds a BA and an MAI in Civil, Structural and Environmental Engineering from Trinity College Dublin. She is a member of Engineers Ireland. She has been specialising in the area of air quality, climate and sustainability for 1 year and has prepared air quality and climate assessments for inclusion within EIARs for residential and commercial developments such as Twenties Lane (Planning Application Ref: 22713), Cherrywood T13 (Planning Application Ref: DZ23A/0028), Corballis Donabate LRD (Planning Application Ref: LRD0017/S3), The Paddocks (Planning Application Ref: 2360349), and Dublin Airport Authority.

This chapter was also prepared and reviewed Dr. Jovanna Arndt, a Senior Environmental Consultant in the air quality and climate section of AWN Consulting. She has been specialising in the area of air quality and climate over 7 years and has prepared air quality and climate assessments for inclusion within EIARs for residential developments such as Twenties Lane (Planning Application Ref: 22713), Cherrywood T13 (Planning Application Ref: DZ23A/0028), Corballis Donabate LRD (Planning Application Ref: LRD0017/S3), commercial and industrial developments by Dublin Airport Authority, Zoetis, Ipsen, Merck Millipore, Greener Ideas Limited and Abbvie, as well as renewable energy developments such as Codling Wind Park and the Cúil Na Móna Anaerobic Digestion Facility. She also specialises in assessing air quality impacts using air dispersion modelling of transportation schemes such as BusConnects Dublin, major Highways England Road schemes and major rail infrastructure in the form of High Speed 2 (HS2 in the UK). She has prepared air dispersion modelling assessments of emissions from data centres, energy centres and the chemical industry as part of EPA Industrial Emissions Licences for Microsoft, Greener Ideas Limited, Merck Millipore, Lilly Limerick, Chemifloc, Takeda, Kingspan and Kilshane Energy. She has also provided Air Quality Action Plan (AQAP) and Air Quality Management Area (AQMA) support to several UK councils and assessed the air quality impacts of potential Clean Air Zones in the UK.

11.3 Proposed Development

A detailed description of the proposed development is provided in Chapter 5 of this Environmental Impact Assessment Report (EIAR).

The proposed development will consist of the construction of a residential development, which represents Phase 2 of a wider development of the Ballymastone Lands (as identified in the Donabate Local Area Plan 2016 (as extended)) and is a continuation of Phase 1 of the Masterplan lands (permitted under LRD0008/S3). The proposed development ranges in height from 2 to 6 storeys to accommodate

364 residential dwellings (including a mix of apartments, duplexes and houses), and public open space. The site will accommodate car parking spaces, bicycle parking spaces, storage, services, new pedestrian/cycle links, road improvements and plant areas. Landscaping will include communal amenity areas, and a significant public open space provision.

11.3.1 Aspects Relevant to this Assessment

During the construction phase construction dust emission have the potential to affect air quality. Dust emissions will primarily occur as a result of site preparation works, earthworks and the movement of trucks on site and exiting the site. There is also the potential for engine emissions from site vehicles and machinery to affect air quality. Construction phase impacts will be short-term in duration.

Engine emissions from vehicles accessing the site have the potential to affect air quality during the operational phase of the development through the release of NO2, PM10 and PM2.5. Operational phase effects will be long-term in duration.

11.4 Method

11.4.1 Relevant Legislation & Guidance

The principal guidance and best practice documents used to inform the assessment of potential impacts on Air Quality is summarised below.

- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning & Local Government, 2018);
- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017);
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (hereafter referred to as the Environmental Protection Agency (EPA) Guidelines) (EPA, 2022);
- Guidance on the Assessment of Dust from Demolition and Construction Version 2.2 (Institute of Air Quality Management (IAQM), 2024);
- A Guide To The Assessment Of Air Quality Impacts On Designated Nature Conservation Sites (Version 1.1) (IAQM, 2020);
- TII Guidance Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106 (TII, 2022a) and TII Road Emissions Model (REM) online calculator tool (TII, 2022b); and
- TII Road Emissions Model (REM): Model Development Report – GE-ENV-01107 (TII, 2022b).

11.4.1.1 Ambient Air Quality Standards

In order to reduce the risk to health from poor air quality, National and European statutory bodies, the Department of the Environment, Heritage and Local Government in Ireland (DEHLG, 2004) and the European Parliament and Council of the European Union, have set limit values in ambient air for a range of air pollutants. These limit values or "Air Quality Standards" are health or environmental-based levels for which additional factors may be considered. For example, natural background levels, environmental conditions and socio-economic factors may all play a part in the limit value which is set.

Air quality significance criteria are assessed based on compliance with the appropriate standards or limit values. The applicable standards in Ireland include the Air Quality Standards Regulations 2022, which incorporate European Commission Directive 2008/50/EC, which has set limit values for numerous pollutants with the limit values for NO_2, PM_{10}, and $PM_{2.5}$ being relevant to this assessment.

Council Directive 2008/50/EC combines the previous Air Quality Framework Directive (96/62/EC) and its subsequent daughter directives (including 1999/30/EC and 2000/69/EC) and includes ambient limit values relating to $PM_{2.5}$. The applicable limit values for NO_2, PM_{10}, and $PM_{2.5}$ are set out in **Table 11.1**.

Table 11.1 Ambient Air Quality Standards & TA Luft

Pollutant	Regulation [Note1]	Limit Type	Value
Dust Deposition	TA Luft (German VDI, 2002)	Annual average limit for nuisance dust	350 $mg/m^2/day$
Nitrogen Dioxide	2008/50/EC	Hourly limit for protection of human health - not to be exceeded more than 18 times/year	200 $\mu g/m^3$
		Annual limit for protection of human health	40 $\mu g/m^3$
Particulate Matter (as PM_{10})	2008/50/EC	24-hour limit for protection of human health - not to be exceeded more than 35 times/year	50 $\mu g/m^3$ PM_{10}
		Annual limit for protection of human health	40 $\mu g/m^3$ PM_{10}
Particulate Matter (as $PM_{2.5}$) – Stage 1	2008/50/EC	Annual limit for protection of human health	25 $\mu g/m^3$ $PM_{2.5}$
Particulate Matter (as $PM_{2.5}$) – Stage 2 [Note 2]	2008/50/EC	Annual limit for protection of human health	20 $\mu g/m^3$ $PM_{2.5}$

Note 1 EU 2008/50/EC – Clean Air For Europe (CAFÉ) Directive replaces the previous Air Framework Directive (1996/30/EC) and daughter directives 1999/30/EC and 2000/69/EC

Note 1 Stage 2 indicative limit value for $PM_{2.5}$ to be applied from 1 January 2020 after review by the European Commission

In April 2023, the Government of Ireland published the Clean Air Strategy for Ireland (Government of Ireland, 2023), which provides a high-level strategic policy framework needed to reduce air pollution. The strategy commits Ireland to achieving the 2021 WHO Air Quality Guidelines Interim Target 3 (IT3) by 2026, the IT4 targets by 2030 and the final targets by 2040 (shown in **Table 11.2**). The strategy notes that a significant number of EPA monitoring stations observed air pollution levels in 2021 above the WHO targets; 80% of these stations would fail to meet the final $PM_{2.5}$ target of 5 $\mu g/m^3$. The strategy also acknowledges that *"meeting the WHO targets will be challenging and will require legislative and societal change, especially with regard to both $PM_{2.5}$ and NO_2"*. Ireland will revise its air quality legislation in line with the proposed EU revisions to the CAFE Directive, which will set interim 2030 air quality standards and align the EU more closely with the WHO targets.

Table 11.2 WHO Air Quality Guidelines

Pollutant	Regulation	Limit Type	IT3 (2026)	IT4 (2030)	Final Target (2040)
NO_2	WHO Air Quality Guidelines	24-hour limit for protection of human health	50$\mu g/m^3$ NO_2	50$\mu g/m^3$ NO_2	25$\mu g/m^3$ NO_2
		Annual limit for protection of human health	30$\mu g/m^3$ NO_2	20$\mu g/m^3$ NO_2	10$\mu g/m^3$ NO_2
PM (as PM_{10})		24-hour limit for protection of human health	75$\mu g/m^3$ PM_{10}	50$\mu g/m^3$ PM_{10}	45$\mu g/m^3$ PM_{10}

Pollutant	Regulation	Limit Type	IT3 (2026)	IT4 (2030)	Final Target (2040)
PM (as $PM_{2.5}$)		Annual limit for protection of human health	30µg/ m^3 PM_{10}	20µg/ m^3 PM_{10}	15µg/m^3 PM_{10}
		24-hour limit for protection of human health	37.5µg/m^3 $PM_{2.5}$	25µg/m^3 $PM_{2.5}$	15µg/m^3 $PM_{2.5}$
		Annual limit for protection of human health	15µg/m^3 $PM_{2.5}$	10µg/m^3 $PM_{2.5}$	5µg/m^3 $PM_{2.5}$

11.4.1.2 Dust Deposition Guidelines

The concern from a health perspective is focused on particles of dust, which are less than 10 microns, and the EU ambient air quality standards outlined in Section 11.4.1.1 have set ambient air quality limit values for PM_{10} and $PM_{2.5}$.

With regard to larger dust particles that can give rise to nuisance dust, there are no statutory guidelines regarding the maximum dust deposition levels that may be generated during the construction phase of a development in Ireland.

However, guidelines for dust deposition, the German TA-Luft standard for dust deposition (non-hazardous dust) (German VDI, 2002) sets a maximum permissible emission level for dust deposition of 350 mg/m^2/day averaged over a one-year period at any receptors outside the site boundary. The TA-Luft standard has been applied for the purpose of this assessment based on recommendations from the EPA in Ireland in the document titled 'Environmental Management Guidelines - Environmental Management in the Extractive Industry (Non-Scheduled Minerals) (EPA, 2006). The document recommends that the TA-Luft limit of 350 mg/m^2/day be applied to the site boundary of quarries. This limit value can be implemented with regard to dust effects from construction of the Proposed Development.

11.4.1.3 Air Quality and Traffic Impact Significance Criteria

The TII document *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022a) details a methodology for determining air quality impact significance criteria for road schemes which can be applied to any project that causes a change in traffic. The degree of impact is determined based on the percentage change in pollutant concentrations relative to the 'Do Nothing' scenario. The TII significance criteria are outlined in Table 4.9 of *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022a) and reproduced in **Table 11.3** below. These criteria have been adopted for the proposed development to predict the effect of NO_2 and PM_{10} emissions as a result of the proposed development.

Table 11.3 Air Quality Significance Criteria

Long Term Average Concentration at Receptor in Assessment Year	% Change in Concentration Relative to Air Quality Limit Value (AQLV)			
	1%	2-5%	6-10%	>10%
75% or less of AQLV	Neutral	Neutral	Slight	Moderate
76 – 94% of AQLV	Neutral	Slight	Moderate	Moderate
95 – 102% of AQLV	Slight	Moderate	Moderate	Substantial
103 – 109% of AQLV	Moderate	Moderate	Substantial	Substantial
110% or more of AQLV	Moderate	Substantial	Substantial	Substantial

Source TII (TII, 2022a) Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106

11.4.2 Site Surveys/Investigations

No on-site surveys were required for the air quality assessment. The baseline air quality environment was established using available long-term EPA monitoring data for representative locations.

11.4.3 Construction Phase Methodology

11.4.3.1 Construction Traffic Assessment

Construction phase traffic also has the potential to affect air quality. The TII guidance *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022a), states that road links meeting one or more of the following criteria can be defined as being 'affected' by a proposed development and should be included in the local air quality assessment. While the guidance is specific to infrastructure projects the approach can be applied to any development that causes a change in traffic.

- Annual average daily traffic (AADT) changes by 1,000 or more;
- Heavy duty vehicle (HDV) AADT changes by 200 or more;
- Daily average speed change by 10 kph or more;
- Peak hour speed change by 20 kph or more;
- A change in road alignment by 5m or greater.

The construction stage traffic will not increase by 1,000 AADT or 200 HDV AADT and therefore does not meet the above scoping criteria. In addition, there are no proposed changes to the traffic speeds or road alignment. As a result a detailed air assessment of construction stage traffic emissions has been scoped out from any further assessment as there is no potential for significant impacts to air quality.

11.4.3.2 Construction Dust Assessment

The Institute of Air Quality Management in the UK (IAQM) guidance document 'Guidance on the Assessment of Dust from Demolition and Construction' (IAQM, 2024) outlines an assessment method for predicting the effect of dust emissions from construction activities based on the scale and nature of the works and the sensitivity of the area to dust impacts. The IAQM methodology has been applied to the construction phase of this development in order to predict the likely risk of dust impacts in the absence of mitigation measures and to determine the level of site-specific mitigation required. The use of UK guidance is recommended by Transport Infrastructure Ireland in their guidance document *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022a).

The major dust generating activities are divided into four types within the IAQM guidance (IAQM, 2024) to reflect their different potential effects. These are:

- Demolition;
- Earthworks;
- Construction; and
- Trackout (transport of dust and dirt from the construction site onto the public road network).

The magnitude of each of the four categories is divided into Large, Medium or Small scale depending on the nature of the activities involved. The magnitude of each activity is combined with the overall sensitivity of the area to determine the risk of dust impacts from site activities. This allows the level of site-specific mitigation to be determined.

11.4.4 Operational Phase Methodology

Operational phase traffic has the potential to affect local air quality as a result of increased vehicle movements associated with the proposed development. The TII scoping criteria detailed in Section 11.4.3.1 were used to determine if any road links are affected by the proposed development and require inclusion in a detailed air quality modelling assessment. The proposed development will result in the operational phase traffic increasing by more than 1,000 AADT on one road link. Therefore, a detailed air quality modelling assessment of operational phase traffic emissions was conducted.

The TII guidance (TII, 2022a) states that modelling should be conducted for NO_2, PM_{10} and $PM_{2.5}$ for the Base, Opening and Design Years for both the Do Minimum (Do Nothing) and Do Something scenarios. Modelling of operational NO_2, PM_{10} and $PM_{2.5}$ concentrations has been conducted for the Do Nothing and Do Something scenarios using the TII Road Emissions Model (REM) online calculator tool (TII, 2022b).

The following inputs are required for the REM tool: receptor locations, light duty vehicle (LDV) annual average daily traffic movements (AADT), annual average daily heavy duty vehicles (HDV AADT), annual average traffic speeds, road link lengths, road type, project county location and pollutant background concentrations. The *Default* fleet mix option was selected along with the *Intermediate Case* fleet data base selection, as per TII Guidance (TII, 2022b). The *Intermediate Case* assumes a linear interpolation between the *Business as Usual* case – where current trends in vehicle ownership continue and the *Climate Action Plan (CAP)* case – where adoption of low emission light duty vehicles occurs.

Using this input data, the model predicts the road traffic contribution to ambient ground level concentrations at the identified sensitive receptors using generic meteorological data. The TII REM uses county-based Irish fleet composition for different road types, for different European emission standards from pre-Euro to Euro 6/VI with scaling factors to reflect improvements in fuel quality, retrofitting, and technology conversions. The TII REM also includes emission factors for PM_{10} emissions associated with brake and tire wear (TII, 2022b). The predicted road contributions are then added to the existing background concentrations to give the predicted ambient concentrations. The ambient concentrations are then compared with the relevant ambient air quality standards to assess the compliance of the proposed development with these ambient air quality standards.

The TII document *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022a) states that impacts to sensitive ecology as a result of traffic emissions should be considered. Consideration should be given to designated sites within 2 km of the proposed development; however, a detailed assessment is only required at a local level, where there is a designated site within 200 m of affected road links. The following European sensitive designated site are within 2 km of the proposed development:

- Rogerstown Estuary SPA / SAC / pNHA – c. 0.9km to the north;
- Malahide Estuary SPA / SAC / pNHA – c. 1.3km to the south;
- North-west Irish Sea SPA – c. 1.8km to the east; and
- Portraine Shore pNHA – c. 1.8km to the east.

The TII guidance (TII, 2022a) notes that only sites that are sensitive to nitrogen and acid deposition need to be included in the assessment, it is not necessary to include sites for example that have been designated as a geological feature or water course. None of the designated sites identified are within 200m of an impacted road link. A detailed assessment of NO_x concentrations and nitrogen deposition has been screened out as there is no potential for significant effects to the designated sites as a result of changes in air quality.

11.4.4.1 Traffic Data used in Modelling Assessment

Traffic flow information was obtained from DBFL Consulting Engineers (2024) for the purposes of this assessment. Data for the Base Year 2023 and the Do Nothing and Do Something scenarios for the Opening Year 2026 and Design Year 2041 were provided. In order to assess the full cumulative impact of the development, the traffic data has included specific cumulative developments within the area (see Traffic and Transportation Assessment for further details).

The traffic data are detailed in **Table 11.4**. Only road links that met the TII scoping criteria and that were within 200 m of receptors were included in the modelling assessment. Background concentrations have been included as per Section 11.5 of this chapter based on available EPA background monitoring data (EPA, 2023). **Figure 11.1** shows the location of sensitive receptors used in the operational phase air quality assessment.

Figure 11.1 Approximate Location of Receptors used in Local Air Quality Modelling Assessment

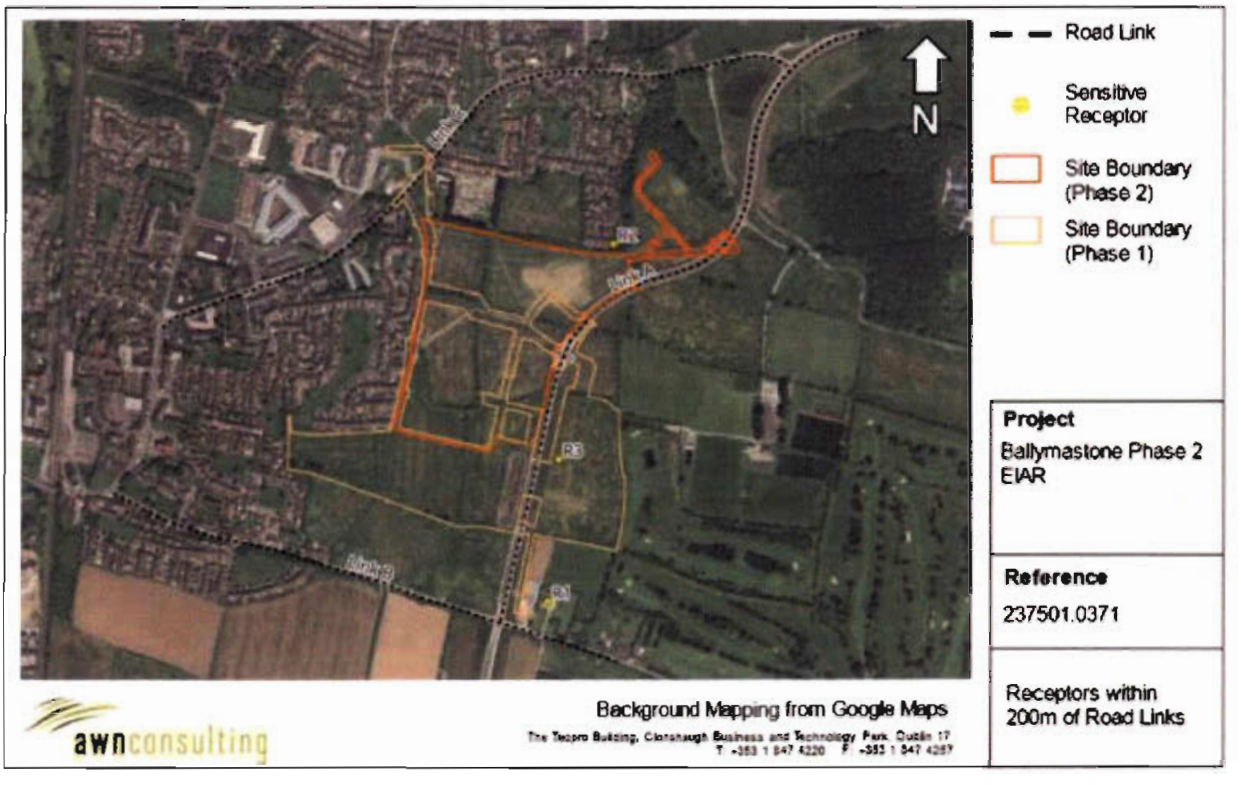


Table 11.4 Traffic Data Used in Air & Climate Modelling Assessments

Road Name	Speed (kph)	Base Year 2023	Opening Year 2026		Design Year 2041	
			Do Minimum	Do Something	Do Minimum	Do Something
		LDV AADT (HDV AADT)	LDV AADT (HDV AADT)	LDV AADT (HDV AADT)	LDV AADT (HDV AADT)	LDV AADT (HDV AADT)
Donabate Distributor Road	60	4945 (247)	8051 (279)	8791 (277)	8824 (276)	10435 (273)

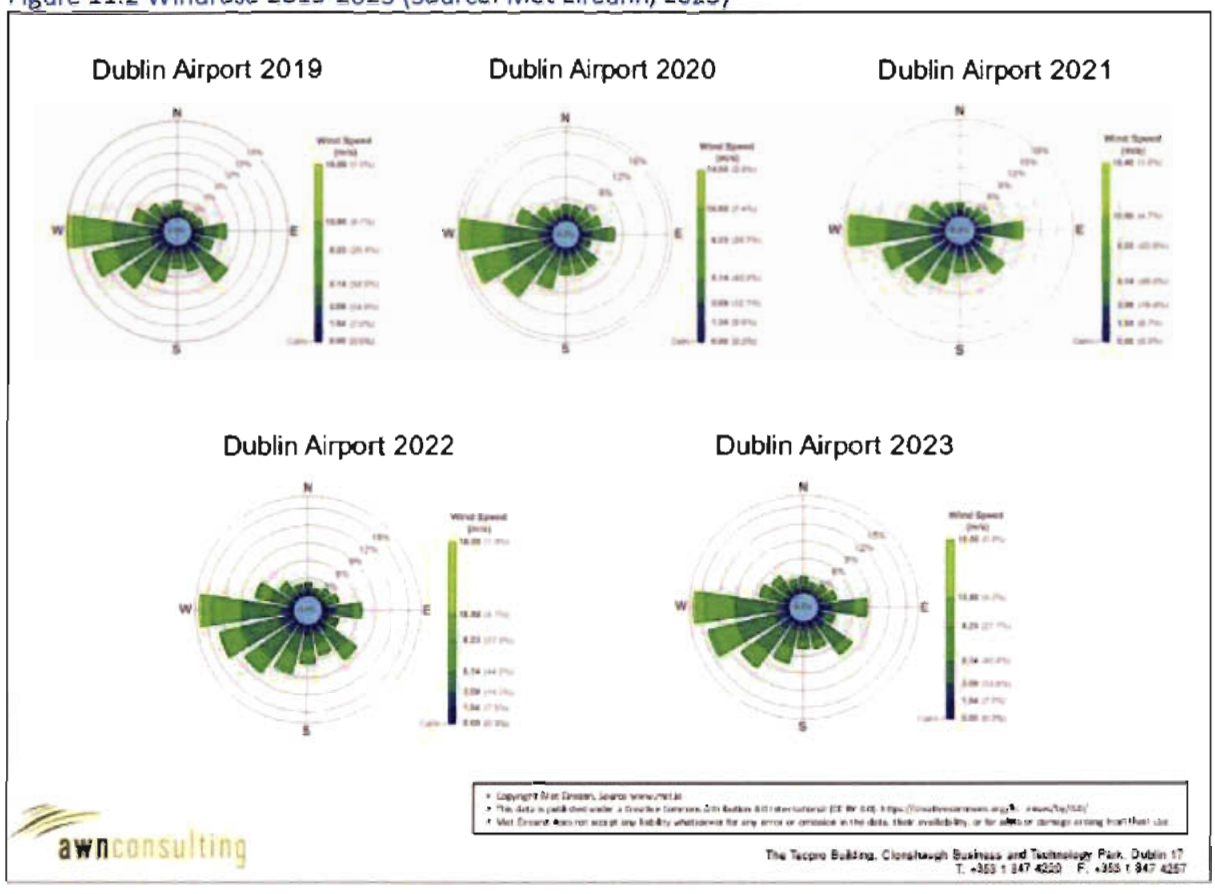
11.5 Baseline Environment

11.5.1 Meteorological Data

A key factor in assessing temporal and spatial variations in air quality is the prevailing meteorological conditions. Depending on wind speed and direction, individual receptors may experience very significant variations in pollutant levels under the same source strength (i.e. traffic levels) (WHO, 2006). Wind is of key importance in dispersing air pollutants and for ground level sources, such as traffic emissions, pollutant concentrations are generally inversely related to wind speed. Thus, concentrations of pollutants derived from traffic sources will generally be greatest under very calm conditions and low wind speeds when the movement of air is restricted. In relation to PM_{10}, the situation is more complex due to the range of sources of this pollutant. Smaller particles (less than $PM_{2.5}$) from traffic sources will be dispersed more rapidly at higher wind speeds. However, fugitive emissions of coarse particles ($PM_{2.5}$ - PM_{10}) will actually increase at higher wind speeds. Thus, measured levels of PM_{10} will be a non-linear function of wind speed.

The nearest representative weather station collating detailed weather records is Dublin Airport meteorological station, which is located approximately 10 km south-west of the site. Dublin Airport meteorological data has been examined to identify the prevailing wind direction and average wind speeds over a five-year period (see **Figure 11.2**). For data collated during five representative years (2018 – 2022), the predominant wind direction is westerly to south-westerly with a mean wind speed of 5.4 m/s over the 30-year period 1991–- 2020 (Met Éireann, 2023).

Figure 11.2 Windrose 2019-2023 (Source: Met Éireann, 2023)



11.5.2 Baseline Air Quality

Air quality monitoring programs have been undertaken in recent years by the EPA. The most recent annual report on air quality in Ireland is *"Air Quality In Ireland 2022"* (EPA, 2023). The EPA website details the range and scope of monitoring undertaken throughout Ireland and provides both monitoring data and the results of previous air quality assessments (EPA, 2022).

As part of the implementation of the Framework Directive on Air Quality (1996/62/EC, four air quality zones have been defined in Ireland for air quality management and assessment purposes (EPA, 2022). Dublin is defined as Zone A and Cork as Zone B. Zone C is composed of 23 towns with a population of greater than 15,000. The remainder of the country, which represents rural Ireland but also includes all towns with a population of less than 15,000, is defined as Zone D.

In terms of air monitoring and assessment, the proposed development site is within Zone D (EPA, 2023). The long-term monitoring data has been used to determine background concentrations for the key pollutants in the region of the proposed development. The background concentration accounts for all non-traffic derived emissions (e.g. natural sources, industry, home heating etc.).

11.5.2.1 NO_2

Long-term NO_2 monitoring was carried out at the Zone D suburban background locations of Castlebar and Edenderry which are considered representative of the area of the proposed development for the period 2018 – 2022 (EPA, 2023).

The NO_2 annual average in 2022 for both suburban background locations, Castlebar and Edenderry, was 8 $\mu g/m^3$ and 7 $\mu g/m^3$, respectively. Therefore long-term average concentrations measured at all

locations were significantly lower than the annual average limit value of 40 µg/m³. Sufficient data is available for Castlebar to observe the long-term trend over the period 2018 – 2022, with annual average results ranging from 6 – 8 µg/m³ (**Table 11.5**). A conservative estimate of the background NO_2 concentration, for the region of the proposed development is therefore 8 µg/m³, as derived from these long-term trends.

Table 11.5 Trends in Air Quality – Nitrogen Dioxide (NO_2)

Station	Averaging Period Note 1	Year				
		2018	2019	2020	2021	2022
Castlebar	Annual Mean NO_2 (µg/m³)	8	8	6	6	8
Edenderry	Annual Mean NO_2 (µg/m³)	-	-	-	9	7

Note 1 Annual average limit value - 40 µg/m³ (EU Council Directive 2008/50/EC & S.I. No. 739 of 2022). 1-hour limit value - 200 µg/m³ (EU Council Directive 2008/50/EC & S.I. No. 739 of 2022).

11.5.2.2 PM_{10}

Long-term PM_{10} monitoring was carried out at the Zone D suburban background locations of Castlebar, Cavan Town, Cobh Carrignafoy, Cobh Cork Harbour, Edenderry, Enniscorthy, Macroom, Roscommon Town and Tipperary Town which are considered representative of the area of the proposed development for the period 2018 – 2022 (EPA, 2023).

The PM_{10} annual average in 2022 for suburban background locations Castlebar, Cavan Town, Cobh Carrignafoy, Cobh Cork Harbour, Edenderry, Enniscorthy, Macroom, Roscommon Town and Tipperary Town ranged from 11 µg/m³ to 18 µg/m³. Therefore long-term average concentrations measured at all locations were significantly lower than the annual average limit value of 40 µg/m³. In addition, there were at most 14 exceedances (in Enniscorthy) of the 24-hour limit value of 50 µg/m³ in 2019, albeit 35 exceedances are permitted per year (EPA, 2023). Sufficient data is available for Castlebar, Cobh Cork Harbour and Roscommon Town to observe the long-term trend over the period 2018 – 2022, with annual average results ranging from 10 – 16 µg/m³ (**Table 11.6**). A conservative estimate of the background PM_{10} concentration, for the region of the proposed development is therefore 16 µg/m³, as derived from these long-term trends.

Table 11.6 Trends in Air Quality – PM_{10}

Station	Averaging Period Note 1	Year				
		2018	2019	2020	2021	2022
Castlebar	Annual Mean PM_{10} (µg/m³)	11	16	14	14	11
	24-hr Mean > 50 µg/m³ (days)	0	1	2	1	0
Cavan Town	Annual Mean PM_{10} (µg/m³)	-	-	9	11	11
	24-hr Mean > 50 µg/m³ (days)	-	-	0	0	2
Cobh Carrignafoy	Annual Mean PM_{10} (µg/m³)	-	-	-	-	13
	24-hr Mean > 50 µg/m³ (days)	-	-	-	-	0
Cobh Cork Harbour	Annual Mean PM_{10} (µg/m³)	15	13	13	13	14
	24-hr Mean > 50 µg/m³ (days)	0	0	0	1	1
Edenderry	Annual Mean PM_{10} (µg/m³)	-	-	-	18	18

Station	Averaging Period Note 1	Year				
		2018	2019	2020	2021	2022
	24-hr Mean > 50 µg/m³ (days)	-	-	-	4	10
Enniscorthy	Annual Mean PM_{10} (µg/m³)	-	18	15	14	15
	24-hr Mean > 50 µg/m³ (days)	-	14	5	1	5
Macroom	Annual Mean PM_{10} (µg/m³)	-	28	15	15	16
	24-hr Mean > 50 µg/m³ (days)	-	2	6	2	7
Roscommon Town	Annual Mean PM_{10} (µg/m³)	12	12	10.5	10	11
	24-hr Mean > 50 µg/m³ (days)	0	2	0	0	0
Tipperary Town	Annual Mean PM_{10} (µg/m³)	-	9	12	13	14
	24-hr Mean > 50 µg/m³ (days)	-	1	1	3	2

Note1 Annual average limit value - 40 µg/m³ (EU Council Directive 2008/50/EC & S.I. No. 739 of 2022). Daily limit value - 50 µg/m³ (EU Council Directive 2008/50/EC & S.I. No. 739 of 2022).

11.5.2.3 $PM_{2.5}$

Long-term $PM_{2.5}$ monitoring was carried out at the Zone D suburban background locations of Cavan Town, Cobh Carrignafoy, Edenderry, Enniscorthy, Macroom, Roscommon Town and Tipperary Town which are considered representative of the area of the proposed development for the period 2018 – 2022 (EPA, 2023).

The $PM_{2.5}$ annual average in 2022 for suburban background locations Cavan Town, Cobh Carrignafoy, Edenderry, Enniscorthy, Macroom, Roscommon Town and Tipperary Town ranged from 7.3 µg/m³ to 13.4 µg/m³. Therefore long-term average concentrations measured at all locations were significantly lower than the annual average limit value of 25 µg/m³. Sufficient data is available for Cobh Carrignafoy, Enniscorthy and Roscommon Town to observe the long-term trend over the period 2018 – 2022, with annual average results ranging from 7.1 – 14.0 µg/m³ (**Table 11.7**). A conservative estimate of the background $PM_{2.5}$ concentration, for the region of the proposed development is therefore 14 µg/m³, as derived from these long-term trends.

Table 11.7 Trends in Air Quality – $PM_{2.5}$

Station	Averaging Period Note 1	Year				
		2018	2019	2020	2021	2022
Cavan Town	Annual Mean $PM_{2.5}$ ($\mu g/m^3$)	-	-	6.0	7.4	7.3
Cobh Carrignafoy	Annual Mean $PM_{2.5}$ ($\mu g/m^3$)	10.0	8.0	8.0	7.4	7.6
Edenderry	Annual Mean $PM_{2.5}$ ($\mu g/m^3$)	-	-	-	17.8	13.4
Enniscorthy	Annual Mean $PM_{2.5}$ ($\mu g/m^3$)	13.0	14.0	12.3	9.8	10.2
Macroom	Annual Mean $PM_{2.5}$ ($\mu g/m^3$)	-	15.0	11.0	10.1	11.0
Roscommon Town	Annual Mean $PM_{2.5}$ ($\mu g/m^3$)	9.0	9.0	7.1	7.1	7.6
Tipperary Town	Annual Mean $PM_{2.5}$ ($\mu g/m^3$)	-	6.0	7.9	8.6	9.1

Note1 Annual average limit value - 25 $\mu g/m^3$ (EU Council Directive 2008/50/EC & S.I. No. 739 of 2022).

The current background concentrations have been used in the operational phase air quality assessment for both the Opening Year and Design Year as a conservative approach in order to predict pollutant concentrations in future years. This is in line with the TII methodology (TII, 2022a).

Based on the above information the air quality in Zone D locations, such as the Donabate area is generally good, with concentrations of the key pollutants generally well below the relevant limit values. However, the EPA have indicated that road transport emissions are contributing to increased levels of NO_2 with the potential for breaches in the annual NO_2 limit value in future years at locations within urban centres and roadside locations. In addition, burning of solid fuels for home heating is contributing to increased levels of particulate matter (PM_{10} and $PM_{2.5}$). The EPA predict that exceedances in the particulate matter limit values are likely in future years if burning of solid fuels for residential heating continues (EPA, 2023).

11.5.3 Sensitivity of the Receiving Environment

11.5.3.1 Construction Phase

In line with the UK Institute of Air Quality Management (IAQM) guidance document '*Guidance on the Assessment of Dust from Demolition and Construction*' (IAQM, 2024) prior to assessing the impact of dust from a Proposed Development the sensitivity of the area must first be assessed as outlined below. Both receptor sensitivity and proximity to proposed works areas are taken into consideration. For the purposes of this assessment, high sensitivity receptors are regarded as residential properties where people are likely to spend the majority of their time, schools and hospitals.

In terms of receptor sensitivity to dust soiling, there are a number of high sensitivity residential properties within 20m of the site boundary (see **Figure 11.3**). There are approximately 30 residential properties within 20m of the site boundary, taking the adjacent Phase 1 committed residential development into account. Therefore, the overall sensitivity of the area to dust soiling impacts is considered **high** based on the IAQM criteria outlined in **Table 11.8.**

Table 11.8 Sensitivity of the Area to Dust Soiling Effects on People and Property

Receptor Sensitivity	Number of Receptors	Distance from Source (m)			
		<20	<50	<100	<250
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Source (IAQM, 2024) Guidance on the Assessment of Dust from Demolition and Construction

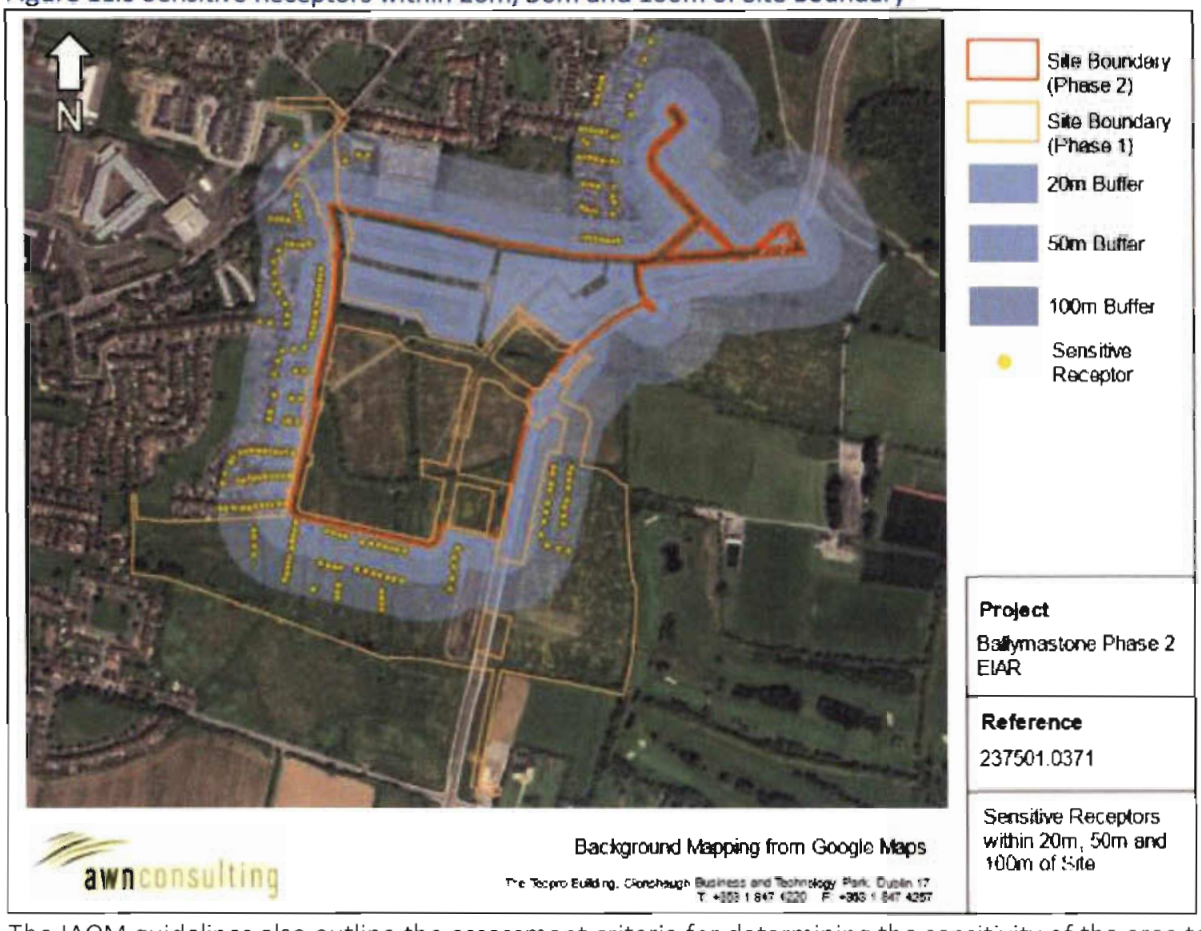
In addition to sensitivity to dust soiling, the IAQM guidelines also outline the assessment criteria for determining the sensitivity of the area to human health effects. The criteria take into consideration the current annual mean PM_{10} concentration, receptor sensitivity based on type (residential receptors are classified as high sensitivity) and the number of receptors affected within various distance bands from the construction works. A conservative estimate of the current annual mean PM_{10} concentration in the vicinity of the Proposed Development is 16 $\mu g/m^3$ and there are approximately 30 no. high sensitivity receptor within 20m of the Proposed Development boundary (see **Figure 11.3**). Based on the IAQM criteria outlined in **Table 11.9**, the worst-case sensitivity of the area to human health is considered **low**.

Table 11.9 Sensitivity of the Area to Dust Related Human Health Impacts

Receptor Sensitivity	Annual Mean PM_{10} Concentration	Number of Receptors	Distance from Source (m)				
			<20	<50	<100	<200	<250
High	< 24 $\mu g/m^3$	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	< 24 $\mu g/m^3$	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Low	< 24 $\mu g/m^3$	>1	Low	Low	Low	Low	Low

Source (IAQM, 2024) Guidance on the Assessment of Dust from Demolition and Construction

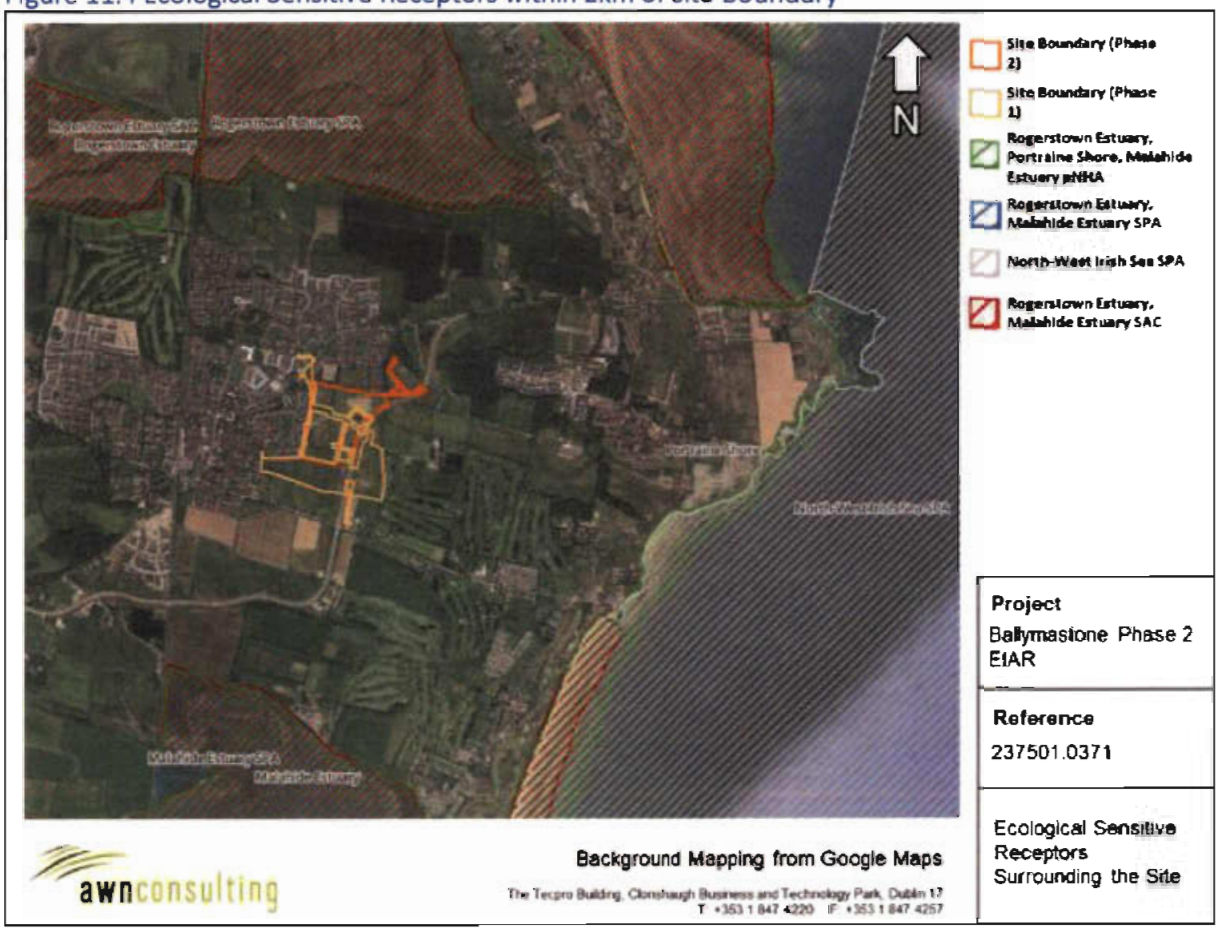
Figure 11.3 Sensitive Receptors within 20m, 50m and 100m of Site Boundary



The IAQM guidelines also outline the assessment criteria for determining the sensitivity of the area to dust-related ecological effects. Dust emissions can coat vegetation leading to a reduction in the photosynthesising ability of the plant as well as other effects. The guidance states that dust impacts to vegetation can occur up to 50m from the site and 50m from site access roads, up to 500m for the site entrance. The sensitivity of the area is determined based on the distance to the source, the designation of the site, (European, National or local designation) and the potential dust sensitivity of the ecologically important species present.

Rogerstown Estuary SAC, SPA, pNHA are approximately 1km to the north of the site. The North-West Irish Sea SPA, Portraine Shore pNHA are approximately 2km to the east of the site. Malahide Estuary SAC, SPA, pNHA are 1km to the south of the site. High sensitivity ecological receptors are sites with European or National designation with particularly dust sensitive species present. These designated areas will be unaffected by dust emissions due to the distance from the works. The designated sites are all more than 50m away from the proposed development which is the area of potential impact as per IAQM guidelines (IAQM, 2024).

Figure 11.4 Ecological Sensitive Receptors within 2km of Site Boundary



11.5.3.2 Operational Phase

The impact to air quality as a result of changes in traffic is assessed at sensitive receptors in the vicinity of affected roads. The TII guidance (TII, 2022a) states a proportionate number of representative receptors which are located in areas which will experience the highest concentrations or greatest improvements as a result of the proposed development are to be included in the modelling. The TII criteria state that receptors within 200m of affected road links should be assessed; roads which are greater than 200m from receptors will not affect pollutant concentrations at that receptor. The TII guidance (TII, 2022a) defines sensitive receptor locations as: residential housing, schools, hospitals, places of worship, sports centers and shopping areas, i.e., locations where members of the public are likely to be regularly present. A total of 3 no. high sensitivity residential receptors (R1, R2, R3) were included in the modelling assessment. Receptors R1 and R2 represent existing developments and receptor R3 represents the future development of Ballymastone Phase 1 (currently under construction, permitted under LRD0008/S3).

11.6 Do-Nothing Impact

Under the 'Do Nothing' Scenario the proposed development will not be constructed, no construction works associated with the proposed development will take place and the previously identified effects of fugitive dust and particulate matter emissions and emissions from equipment and machinery will not occur. As the site is zoned for development, in the absence of the proposed development it is likely that a development of a similar nature would be constructed in the future in line with national policy and

the development plan objectives. Therefore, the construction and operational phase impacts outlined in this assessment are likely to occur in the future even in the absence of the proposed development.

11.7 Predicted Impacts of the Proposed Development

11.7.1 Construction Phase

11.7.1.1 Construction Dust Assessment

The greatest potential impact on air quality during the construction phase of the Proposed Development is from construction dust emissions and the potential for nuisance dust. While construction dust tends to be deposited within 350m of a construction site, the majority of the deposition occurs within the first 50 m. The extent of any dust generation depends on the nature of the dust (soils, peat, sands, gravels, silts etc.) and the nature of the construction activity. In addition, the potential for dust dispersion and deposition depends on local meteorological factors such as rainfall, wind speed and wind direction. A review of Dublin Airport meteorological data indicates that the prevailing wind direction is westerly to south-westerly and wind speeds are generally moderate in nature (see Section 11.5.1). In addition, dust generation is considered negligible on days where rainfall is greater than 0.2 mm. A review of historical 30 year average data for Dublin Airport meteorological station indicates that on average 200 days per year have rainfall over 0.2 mm (Met Éireann, 2023) and therefore it can be determined that 54% of the time dust generation will be reduced.

In order to determine the level of dust mitigation required during the proposed works, the potential dust emission magnitude for each dust generating activity needs to be taken into account, in conjunction with the previously established sensitivity of the area (see Section 11.5.3). As per Section 11.4.3, the major dust generating activities are divided into four types within the IAQM guidance to reflect their different potential impacts. These are:

- Demolition;
- Earthworks;
- Construction; and
- Trackout (transport of dust and dirt from the construction site onto the public road network).

11.7.1.1.1 Demolition

There are no demolition activities associated with the Proposed Development. Therefore, there is no demolition impact predicted as a result of the works.

11.7.1.1.2 Earthworks

Earthworks primarily involve excavating material, loading and unloading of materials, tipping and stockpiling activities. Activities such as levelling the site and landscaping works are also considered under this category. The dust emission magnitude from earthworks can be classified as small, medium or large based on the definitions from the IAQM guidance as transcribed below:

- **Large** Total site area > 110,000m^2, potentially dusty soil type (e.g. clay which will be prone to suspension when dry due to small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds > 6m in height;
- **Medium** Total site area 18,000m^2 – 110,000m^2, moderately dusty soil type (e.g. silt), 5 - 10 heavy earth moving vehicles active at any one time, formation of bunds 3m – 6m in height;

- **Small** Total site area < 18,000m^2, soil type with large grain size (e.g. sand), < 5 heavy earth moving vehicles active at any one time, formation of bunds < 3m in height.

The dust emission magnitude for the proposed earthwork activities can be classified as **large** as the total site area is greater than 110,000m^2. Additionally the process of lime stabilisation will be undertaken, which will involve pulverising and mixing in a layer of proposed lime/cement which has been placed over subsoil layered into excavated areas. This is considered a potentially dusty soil type under the above **large** category.

The sensitivity of the area, as determined in Section 11.5.3, is combined with the dust emission magnitude for each dust generating activity to define the risk of dust impacts in the absence of mitigation. As outlined in **Table 11.10** and **Table 11.11**, combining the large dust emission magnitude with a high sensitivity to dust soiling and low sensitivity to human health impacts results in a high risk of dust soiling impacts and a low risk of dust-related human health impacts. This is as a result of the proposed earthworks activities in the absence of mitigation.

Table 11.10 Criteria for Rating Risk of Dust Impacts – Earthworks (IAQM, 2024)

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 11.11 Risk of Dust Impacts – Earthworks

Receptor	Receptor Sensitivity	Dust Emission Magnitude – Earthworks	Risk of Dust-Related Impacts
Dust Soiling	High	Large	High Risk
Human Health	Low		Low Risk

11.7.1.1.3 Construction

Dust emission magnitude from construction can be classified as small, medium or large based on the definitions from the IAQM guidance as transcribed below:

- **Large** Total building volume > 75,000 m^3, on-site concrete batching, sandblasting;
- **Medium** Total building volume 12,000m^3 – 75,000 m^3, potentially dusty construction material (e.g. concrete), on-site concrete batching;
- **Small** Total building volume < 12,000m^3, construction material with low potential for dust release (e.g. metal cladding or timber).

The dust emission magnitude for the proposed construction activities can be classified as **large** as the total building volume is more than 75,000 m^3. As outlined in

Table 11.12 and **Table 11.13**, combining the large dust emission magnitude with a high sensitivity to dust soiling and low sensitivity to human health impacts results in a high risk of dust soiling impacts and a low risk of dust-related human health impacts. This is as a result of the proposed construction activities in the absence of mitigation.

Table 11.12 Criteria for Rating of Risk of Dust Impacts – Construction (IAQM, 2024)

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 11.13 Risk of Dust Impacts – Construction

Receptor	Receptor Sensitivity	Dust Emission Magnitude – Construction	Risk of Dust-Related Impacts
Dust Soiling	High	Large	High Risk
Human Health	Low		Low Risk

11.7.1.1.4 Trackout

Factors which determine the dust emission magnitude are vehicle size, vehicle speed, number of vehicles, road surface material and duration of movement. Dust emission magnitude from trackout can be classified as small, medium or large based on the definitions from the IAQM guidance as transcribed below:

- **Large** > 50 HGV (> 3.5 t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length > 100 m;
- **Medium** 20 - 50 HGV (> 3.5 t) outward movements in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50 - 100 m;
- **Small** < 20 HGV (> 3.5 t) outward movements in any one day, surface material with low potential for dust release, unpaved road length < 50 m.

The dust emission magnitude for the proposed trackout can be classified as **large**, as at worst-case peak periods there will be more than 50 outward HGV movements per day. As outlined in **Table 11.14** and **Table 11.15**, combining the large dust emission magnitude with a high sensitivity to dust soiling and low sensitivity to human health impacts results in an overall medium risk of dust soiling impacts and a low risk of dust-related human health impacts. This is as a result of the proposed trackout activities in the absence of mitigation.

Table 11.14 Criteria for Rating of Risk of Dust Impacts – Trackout (IAQM, 2024)

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 11.15 Risk of Dust Impacts – Trackout

Receptor	Receptor Sensitivity	Dust Emission Magnitude – Trackout	Risk of Dust-Related Impacts
Dust Soiling	High	Large	High Risk
Human Health	Low		Low Risk

11.7.1.1.5 Summary of Dust Emission Risks

The risk of dust impacts as a result of the Proposed Development are summarised in **Table 11.16** for each activity. The magnitude of risk determined is used to prescribe the level of site-specific mitigation required for each activity in order to prevent significant impacts occurring.

There is at most a high risk of dust soiling and at most a low risk human health impacts associated with the proposed works. Best practice dust mitigation measures will be implemented to ensure there are no significant impacts at nearby sensitive receptors. In the absence of mitigation, dust impacts are predicted to be **direct, short-term, negative and slight**, which is overall not significant in EIA terms.

Table 11.16 Summary of Dust Impact Risk used to Define Site-Specific Mitigation

Potential Impact	Dust Emission Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Emission Magnitude	N/A	Large	Large	Large
Dust Soiling Risk	N/A	High Risk	High Risk	High Risk
Human Health Risk	N/A	Low Risk	Low Risk	Low Risk

11.7.1.2 Construction Traffic Assessment

There is also the potential for traffic emissions to affect air quality in the short-term over the construction phase, particularly due to the increase in HGVs accessing the site. The construction stage traffic has been reviewed and a detailed air quality assessment has been scoped out as none of the road links affected by the Proposed Development satisfy the TII scoping assessment criteria in Section 11.4.3.

It can therefore be determined that the construction stage traffic will have a **direct, short-term, negative** and **imperceptible** impact on air quality, which is overall not significant in EIA terms.

11.7.2 Operational Phase

11.7.2.1 Operational Phase Traffic Assessment

The potential effects of the proposed development has been assessed by modelling emissions from the traffic generated as a result of the development using the TII Road Emissions Model (TII, 2022b). The traffic data includes the Do Nothing and Do Something scenarios. The impact of NO2, PM10 and PM2.5 emissions for the modelled Opening Year and Design Year was predicted at the nearest sensitive receptors to the development. This assessment allows the significance of the development, with respect to both relative and absolute impacts, to be determined.

The TII guidance PE-ENV-01106 (TII, 2022a) details a methodology for determining air quality impact significance criteria for TII road schemes and infrastructure projects. However, this significance criteria can be applied to any development that causes a change in traffic. The degree of impact is determined based on both the absolute and relative effects of the proposed development. Results are compared

against the 'Do-Nothing' scenario, which assumes that the proposed development is not in place in future years, to determine the degree of impact.

11.7.2.1.1 NO_2

The results of the assessment of the effects of the proposed development on NO2 in the Opening Year 2026 and Design Year 2041 are shown in **Table 11.17**. The annual average concentration is in compliance with the limit value at the worst-case receptors in the year 2026 and 2041. Concentrations of NO2 are at most 23% of the annual limit value in 2026 and 21% of the annual limit value in 2041. In addition, the TII guidance (TII, 2022a) states that the hourly limit value for NO2 of 200 µg/m3 is unlikely to be exceeded at roadside locations unless the annual mean is above 60 µg/m3. As predicted NO2 concentrations are significantly below 60 µg/m3. It can be concluded that the short-term NO2 limit value will be complied with at all receptor locations.

The effects of the proposed development on annual mean NO2 concentrations can be assessed relative to "Do Nothing (DN)" levels. NO2 concentrations at the receptors assessed will increase as a result of the proposed development when compared with the Do-Nothing scenario. There will be at most an increase of 0.020 µg/m3 at receptor R3, which is a 0.50% change when compared with the ambient air quality limit value of 40 µg/m3. Where the predicted annual mean concentrations in the Opening Year without the proposed scheme are less than 75% of the air quality standard (see **Table 11.1**) and there is a less than 5% change in concentrations compared with the annual mean ambient air quality standard, then, the impact is considered neutral as per the TII significance criteria (see Table **11.3**). Therefore, the effect of the proposed development on NO2 concentrations according to the TII guidance (TII, 2022a) is neutral.

Table 11.17 Predicted Annual Mean NO_2 Concentrations (µg/m³)

Receptor	Impact Opening Year						
	DM	% of AQLV	DS	% of AQLV	DS-DM	% Change of AQLV	Description
R1	8.4	21%	8.5	21%	0.07	0.18%	Neutral
R2	8.5	21%	8.6	21%	0.09	0.23%	Neutral
R3	9.1	23%	9.3	23%	0.20	0.50%	Neutral
Receptor	**Impact Design Year**						
	DM	% of AQLV	DS	% of AQLV	DS-DM	% Change of AQLV	Description
R1	8.2	20%	8.2	20%	0.01	0.02%	Neutral
R2	8.2	20%	8.2	21%	0.02	0.05%	Neutral
R3	8.4	21%	8.5	21%	0.03	0.07%	Neutral

11.7.2.1.2 PM_{10}

In relation to changes in PM10 concentrations as a result of the proposed development, the results of the assessment can be seen in **Table 11.18** for the Opening Year 2026 and Design Year 2041. The annual average concentration is in compliance with the limit value at the worst-case receptors in the year 2026 and 2041. Concentrations of PM10 are at most 43% of the annual limit value in 2026 and 42% of the

annual limit value in 2041. In addition, the proposed development will not result in any exceedances of the daily PM10 limit value of 50 µg/m^3. The effects of the proposed development on annual mean PM10 concentrations can be assessed relative to "Do Nothing (DN)" levels. PM10 concentrations at the receptors assessed will increase as a result of the proposed development when compared with the Do-Nothing scenario. There will be at most an increase of 0.16 µg/m^3 at receptor R3, this is a 0.40% increase when compared with the ambient air quality limit value of 40 µg/m^3. As with NO2, where the predicted annual mean concentrations in the Opening Year without the proposed scheme are less than 75% of the air quality standard (see **Table 11.1**) and there is a less than 5% change in concentrations compared with the annual mean ambient air quality standard, then, the impact is considered neutral as per the TII significance criteria (see **Table 11.3**). Therefore, the impact of the proposed development on PM10 concentrations according to the TII guidance (TII, 2022a) is neutral.

Table 11.18 Predicted Annual Mean PM_{10} Concentrations (µg/m^3)

Receptor	Impact Opening Year						
	DM	% of AQLV	DS	% of AQLV	DS-DM	% Change of AQLV	Description
R1	16.4	41%	16.4	41%	0.06	0.15%	Neutral
R2	16.4	41%	16.5	41%	0.07	0.18%	Neutral
R3	17.0	43%	17.2	43%	0.16	0.40%	Neutral
Receptor	**Impact Design Year**						
	DM	% of AQLV	DS	% of AQLV	DS-DM	% Change of AQLV	Description
R1	16.3	41%	16.4	41%	0.02	0.05%	Neutral
R2	16.4	41%	16.4	41%	0.03	0.08%	Neutral
R3	16.9	42%	17.0	42%	0.07	0.17%	Neutral

11.7.2.1.3 $PM_{2.5}$

In relation to changes in PM2.5 concentrations as a result of the proposed development, the results of the assessment can be seen in **Table 11.19** for the modelled Opening Year 2026 and Design Year 2041. The annual average concentration is in compliance with the limit value at the worst-case receptors in the year 2026 and 2041. Concentrations of PM2.5 are at most 59% of the annual limit value in 2026 and 58% in 2041. The effect of the proposed development on annual mean PM2.5 concentrations can be assessed relative to "Do Nothing (DN)" levels. PM2.5 concentrations at the receptors assessed will increase as a result of the proposed development when compared with the Do-Nothing scenario. There will be at most an increase of 0.09 µg/m3 at receptor R3, this is a 0.23% change when compared with the ambient air quality limit value of 25 µg/m3. As with NO2, where the predicted annual mean concentrations in the Opening Year without the proposed scheme are less than 75% of the air quality standard (see **Table 11.1**) and there is a less than 5% change in concentrations compared with the annual mean ambient air quality standard, then, the impact is considered neutral as per the TII significance criteria (see **Table 11.3**). Therefore, the impact of the proposed development on PM2.5 concentrations according to the TII guidance (TII, 2022a) is neutral.

Table 11.19 Predicted Annual Mean $PM_{2.5}$ Concentrations ($\mu g/m^3$)

Receptor	Impact Opening Year						
	DM	% of AQLV	DS	% of AQLV	DS-DM	% Change of AQLV	Description
R1	14.2	57%	14.2	57%	0.03	0.08%	Neutral
R2	14.3	57%	14.3	57%	0.03	0.07%	Neutral
R3	14.6	58%	14.7	59%	0.09	0.23%	Neutral
Receptor	**Impact Design Year**						
	DM	**% of AQLV**	**DS**	**% of AQLV**	**DS-DM**	**% Change of AQLV**	**Description**
R1	14.2	57%	14.2	57%	0.01	0.02%	Neutral
R2	14.2	57%	14.2	57%	0.01	0.02%	Neutral
R3	14.5	58%	14.5	58%	0.04	0.10%	Neutral

Overall, the TII significance criteria have identified neutral impacts due to increases in NO2, PM10 and PM2.5 annual mean concentrations which are less than 5% of the annual mean ambient air quality standards (and the annual mean concentrations are less than 75% of the air quality standard). This equates to a potential effect of the proposed development on ambient air quality, and human health, in the operational stage according to the EPA guidelines (EPA, 2022) which is considered **direct, long-term, negative** and **not significant,** which is overall not significant in EIA terms.

11.8 Mitigation Measures

11.8.1 Construction Phase

The proposed development has been assessed as having a high risk of dust soiling impacts and a low risk of dust related human health impacts during the construction phase as a result of earthworks, construction and trackout activities (see Section 11.5.3). Therefore, the following dust mitigation measures shall be implemented during the construction phase of the proposed development. These measures are appropriate for sites with a high risk of dust impacts and aim to ensure that no significant nuisance occurs at nearby sensitive receptors. The mitigation measures draw on best practice guidance from Ireland, *Air Quality Monitoring and Noise Control Unit's Good Practice Guide for Construction and Demolition* (DCC, 2018), the UK, *Guidance on the Assessment of Dust from Demolition and Construction Version 2.2* (IAQM, 2024), *Controlling Particles, Vapours & Noise Pollution from Construction Sites* (BRE, 2003), *Planning Advice Note PAN50 Annex B: Controlling The Environmental Effects Of Surface Mineral Workings Annex B: The Control of Dust at Surface Mineral Workings* (The Scottish Office, 1996), *Controlling the Environmental Effects of Recycled and Secondary Aggregates Production Good Practice Guidance* (ODPM, 2002)) and the USA, *Fugitive Dust Technical Informatian Document for the Best Available Control Measures* (USEPA, 1997). These measures will be incorporated into the overall Construction Environmental Management Plan (CEMP) prepared for the site. The measures are divided into different categories for different activities.

Communications

- Develop and implement a stakeholder communications plan that includes community engagement before works commence on site. Community engagement includes explaining the nature and duration of the works to local residents and businesses.
- The name and contact details of a person to contact regarding air quality and dust issues shall be displayed on the site boundary, this notice board should also include head/regional office contact details.

Site Management

- During working hours, dust control methods will be monitored as appropriate, depending on the prevailing meteorological conditions. Dry and windy conditions are favourable to dust suspension therefore mitigations must be implemented if undertaking dust generating activities during these weather conditions.
- A complaints register will be kept on site detailing all telephone calls and letters of complaint received in connection with dust nuisance or air quality concerns, together with details of any remedial actions carried out. Make the complaints log available to the local authority when asked.
- Record any exceptional incidents that cause dust and/or air emissions, either on- or off-site, and the action taken to resolve the situation in the log book.
- Hold regular liaison meetings with other high risk construction sites within 250 m of the site boundary where feasible, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes.

Preparing and Maintaining the Site

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- Avoid site runoff of water or mud.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
- Cover, seed or fence stockpiles to prevent wind whipping.

Operating Vehicles / Machinery and Sustainable Travel

- Ensure all vehicles switch off engines when stationary - no idling vehicles.
- Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.
- Impose and signpost a maximum-speed-limit of 15 kph haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
- Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing)

Operations

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g., suitable local exhaust ventilation systems.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Waste Management

- Avoid bonfires and burning of waste materials.

Measures Specific to Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
- Use Hessian, mulches or tackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
- Only remove the cover in small areas during work and not all at once.
- During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser will operate to ensure moisture content is high enough to increase the stability of the soil and thus suppress dust.

Measures Specific to Construction

- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
- For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.

Measures Specific to Trackout

- A speed restriction of 15 kph will be applied as an effective control measure for dust for on-site vehicles.
- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- Record all inspections of haul routes and any subsequent action in a site log book.

- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
- Access gates to be located at least 10 m from receptors where possible.

Monitoring

- Undertake daily on-site and off-site inspections, where receptors (including roads) are nearby, to monitor dust, record inspection results in the site inspection log. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of site boundary, with cleaning to be provided if necessary. Carry out regular site inspections to monitor compliance with the CEMP, record inspection results, and make an inspection log available to the local authority when asked.
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
- Agree dust deposition monitoring locations with Fingal County Council. Where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. Refer to Section 11.14.1 for more detail on this monitoring.

11.8.2 Operational Phase

There is no mitigation required for the operational phase of the development as effects on air quality are predicted to be **direct, long-term, negative** and **not significant**, which is overall not significant in EIA terms.

11.9 Residual Impacts

11.9.1 Construction Phase

In order to minimise dust emissions during construction, a series of mitigation measures have been prepared. Once the dust minimisation measures outlined in Section 11.8 are implemented, the effect of the proposed development in terms of dust soiling will be **direct, short-term, negative** and **not significant**, which is overall not significant in EIA terms.

Best practice mitigation measures are proposed for the construction phase of the proposed development, which will focus on the proactive control of dust and other air pollutants, to minimise generation of emissions at source. The mitigation measures that will be put in place during construction will ensure that the impact complies with all EU ambient air quality legislative limit values, which are based on the protection of human health (see **Table 11.1**). Therefore, the predicted residual, dust-related, human health impact of the construction phase of the proposed development is **direct, short-term, negative** and **not significant**, which is overall not significant in EIA terms.

A detailed air quality assessment of the construction stage traffic has been scoped out (as per Section 11.4.3.1) and it can therefore be determined that the construction stage traffic will have a **direct, short-term, negative** and **not significant** impact on air quality, which is overall not significant in EIA terms.

11.9.2 Operational Phase

Assessment of traffic emissions at sensitive receptors in proximity to impacted road links during the operational phase indicate pollutant emissions will be in compliance with the relevant air quality standards. Therefore, the residual effect of the operational phase on air quality as a result of increased traffic is **direct, long-term, negative** and **not significant**, which is overall not significant in EIA terms.

Emissions of air pollutants during the operational phase are predicted to be significantly below the ambient air quality standards, which are based on the protection of human health. Therefore, residual impacts to human health related to air quality will be **direct, long-term, negative** and **not significant**, which is overall not significant in EIA terms.

11.9.3 Cumulative Residual Effects

11.9.3.1 Construction Phase

According to the IAQM guidance (IAQM, 2024) should the construction phase of the proposed development coincide with the construction phase of any other development within 500m then there is the potential for cumulative construction dust impacts. A review of relevant planning applications and projects listed in Ch 22. Cumulative Developments of the EIAR within 500m of the site was conducted in order to identify sites with the potential for cumulative impacts. There were 7 no. sites identified which may have coinciding construction phases with that of the proposed development, these include:

- Aledo Donabate Corballis East Residential Development Ref: LRD0017/S3;
- Tilberry Limited Ballisk Development Ref: F17A/0373;
- Cairn Homes Properties Balcarrick Road Residential Development Ref: F20A/0510;
- Glenveagh Living Limited Ballymastone Lands Development Phase 1 Ref: LRD0008/S3;
- Irish Water Underground Wastewater Pump Station Ref: F19A/0243;
- St Patrick's GAA Clubhouse Donabate F23A/0134; and
- Fingal County Council Ballymastone Recreational Hub (Part 8).

The proposed development has been assessed as having at most a high risk of dust soiling and a low risk of human health impacts during the construction phase. A number of mitigation measures have been proposed in order to ensure significant dust impacts do not occur. However, provided the mitigation measures outlined in Section 11.8, are implemented throughout the construction phase of the proposed development significant cumulative dust impacts are not predicted. Impacts are predicted to be **direct, short-term, negative** and **not significant**, which is overall not significant in EIA terms.

11.9.3.2 Operational Phase

The cumulative impact is included within the operational stage impact for the proposed development, which has assessed operational road traffic emissions generated by the proposed development and committed developments. The significance of the effect on air quality due to the cumulative operational phase impact of the proposed development will be **direct, long-term, negative** and **not significant**, which is overall not significant in EIA terms.

11.10 Indirect and /or Secondary Impacts

The direct impacts on air quality have been assessed in Section 11.7. There are no additional indirect and/or secondary impacts on air quality which are not a direct result of the proposed development, often produced away from (the site) or as a result of a complex pathway (EPA, 2022).

11.11 Risk to Human Health

Dust emissions from the construction phase of the proposed development have the potential to affect human health through the release of PM_{10} and $PM_{2.5}$ emissions. As per Section 11.5.3, the surrounding area is of low sensitivity to dust related human health impacts. It was determined that there is an overall low risk of dust related human health effects as a result of the construction phase of the proposed development.

Best practice mitigation measures are proposed for the construction phase of the proposed development which will focus on the pro-active control of dust and other air pollutants to minimise generation of emissions at source. The mitigation measures that will be put in place during construction of the proposed development will ensure that the impact of the development complies with all EU ambient air quality legislative limit values which are based on the protection of human health. Therefore, the residual effect of the construction phase of the proposed development is likely to be **direct, short-term, negative** and **not significant** with respect to human health, which is overall not significant in EIA terms.

Traffic related air emissions have the potential to affect air quality which can affect human health. As the operational phase assessment has shown that emissions of air pollutants are significantly below the ambient air quality standards which are based on the protection of human health. Therefore, the effects on human health are **direct, long-term, negative** and **not significant**, which is overall not significant in EIA terms.

11.12 Risk of Major Accidents or Disasters

There are no likely risks of major accidents and disasters in relation to air quality associated with the proposed development and the masterplan development due to the nature and scale of the development. The proposed development is residential in nature and will not require large scale quantities of hazardous materials or fuels.

11.13 Worst Case Scenario

Worst case estimates have been used as part of this assessment. As a result, Section 11.7 details the worst case residual effect of the proposed development.

11.14 Monitoring

11.14.1 Construction Phase

During working hours, dust control methods will be monitored as appropriate depending on the prevailing meteorological conditions as outlined in Section 11.8.

Monitoring of construction dust deposition at nearby sensitive receptors during the construction phase of the proposed development will be carried out to ensure mitigation measures are working satisfactorily. This will be done using the Bergerhoff method in accordance with the requirements of

the German Standard VDI 2119. The Bergerhoff Gauge consists of a collecting vessel and a stand with a protecting gauge. The collecting vessel is secured to the stand with the opening of the collecting vessel located approximately 2m above ground level. Dust deposition monitoring will be carried out on a monthly basis (between 28 - 32 days) for at least one month (ideally three months) in order to capture baseline conditions pre enabling works, as well as for the duration of the enabling works and construction period. An independent contractor will be appointed to carry out this monitoring. The TA Luft limit value is 350 mg/m^2/day during this monitoring period. Following the laboratory analysis of the monthly monitoring samples (typically 15 day turnaround), results will be reported on a monthly basis. If requested by Fingal County Council this monitoring report will be made available. If dust deposition rates exceed 350 mg/m^2/day, Fingal County Council will be notified of any exceedance within 24 hours. In the event of an exceedance the procedures, site activities and appropriate application of dust mitigation measures will be reviewed in consultation with Fingal County Council and improved to achieve a level below 350 mg/m^2/day in future monitoring.

11.14.2 Operational Phase

There is no proposed monitoring during the operational phase.

11.15 Interactions

11.15.1 Population and Human Health

Air quality does not have a significant number of interactions with other topics. The most significant interactions are between population and human health (Ch.07 Population & Human Health) and air quality. An adverse impact due to air quality in either the construction or operational phase has the potential to cause health and dust nuisance issues. The mitigation measures that will be put in place by the proposed development will ensure that the effects of the proposed development complies with all ambient air quality legislative limits. Therefore, the predicted effect is **direct, short-term, negative** and **not significant** with respect to population and human health during the construction phase and **direct, long-term, negative** and **not significant** during the operational phase, which is overall not significant in EIA terms.

11.15.2 Traffic and Transportation

Interactions between air quality and traffic (Ch.18 Traffic & Transportation) can be significant. With increased traffic movements and reduced engine efficiency, i.e. due to congestion, the emissions of vehicles increase. The effects of the proposed development on air quality are assessed by reviewing the change in annual average daily traffic on roads close to the site. In this assessment, the effects of the interactions between traffic and air quality are considered to be **direct, long-term, negative** and **not significant**, which is overall not significant in EIA terms.

11.15.3 Climate

Air quality and climate have interactions due to the emissions from the burning of fossil fuels during the construction and operational phases generating both air quality and climate effects. Air quality modelling outputs are utilised within Chapter 12 (Ch. 12 Climate). There is no impact on climate due to air quality however the sources of impacts on air quality and climate are strongly linked.

11.15.4 Land, Soils and Geology

Construction phase activities such as land clearing, excavations, stockpiling of materials etc. have the potential for interactions between air quality and land and soils in the form of dust emissions. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that there will be **no significant** interactions between air quality and land, soils and geology (Ch. 09 Land, Soils, Geology & Hydrogeology.

11.15.5 Biodiversity

There is the potential for interactions between air quality and biodiversity (Ch. 08 Biodiversity). Dust generation can occur during extended dry weather periods as a result of construction traffic. Dust suppression measures (e.g. dampening down) will be implemented as necessary during dry periods and vehicle wheel washes will be installed, for example. The works involve stripping of topsoil and excavations, which will remove some vegetation such as trees and scrub. It will also generate dust and potentially effect on the air quality in the locality. However, the generation of dust will be temporary during construction phase and is not anticipated to have a significant effect on biodiversity. Once the mitigation measures outlined within Section 11.8 are implemented dust related effects are predicted to be **direct, short-term, negative** and **imperceptible**, which is overall not significant in EIA terms.

11.16 Difficulties Encountered

There were no difficulties encountered in compiling this assessment.

11.17 References

- BRE (2003) Controlling Particles, Vapours & Noise Pollution from Construction Sites
- Department of Housing, Planning & Local Government (DHPLG) (2018) Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment
- Department of the Environment Heritage and Local Government (DEHLG) (2004) Quarries and Ancillary Activities, Guidelines for Planning Authorities
- Dublin City Council (DCC) (2018) Air Quality Monitoring and Noise Control Unit's Good Practice Guide for Construction and Demolition
- Environmental Protection Agency (2006) Environmental Management Guidelines - Environmental Management in the Extractive Industry (Non-Scheduled Minerals)
- Environmental Protection Agency (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports
- Environmental Protection Agency (2023) Air Quality Monitoring Report 2022 (& previous annual reports)
- European Commission (2017) Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report
- German VDI (2002) Technical Guidelines on Air Quality Control – TA Luft
- Government of Ireland (2023) Clean Air Strategy for Ireland
- Institute of Air Quality Management (IAQM) (2020) A Guide To The Assessment Of Air Quality Impacts On Designated Nature Conservation Sites (Version 1.1)
- Institute of Air Quality Management (IAQM) (2024) Guidance on the Assessment of Dust from Demolition and Construction Version 2.2
- Met Éireann (2023) Met Éireann website: https://www.met.ie/

- The Scottish Office (1996) Planning Advice Note PAN50 Annex B: Controlling The Environmental Effects Of Surface Mineral Workings Annex B: The Control of Dust at Surface Mineral Workings
- Transport Infrastructure Ireland (2022a) Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106
- Transport Infrastructure Ireland (2022b) TII Road Emissions Model (REM): Model Development Report – GE-ENV-01107
- UK Office of Deputy Prime Minister (ODPM) (2002) Controlling the Environmental Effects of Recycled and Secondary Aggregates Production Good Practice Guidance
- USEPA (1997) Fugitive Dust Technical Information Document for the Best Available Control Measures
- World Health Organisation (2006) Air Quality Guidelines - Global Update 2005 (and previous Air Quality Guideline Reports 1999 & 2000)

12 Climate

12.1 Introduction

This chapter of the EIAR was prepared to assess the potential significant effects of the proposed development on climate as a result of the proposed development at Ballymastone, Co. Dublin.

It should be read in conjunction with Ch. 11 Air Quality, Ch. 18 Traffic and Transportation and the Traffic and Transportation Assessment (DBFL, 2024), Ch. 19 Material Assets – Waste, as well as the Residential Climate Action Energy Statement (Ethos Engineering, 2024), Life Cycle Report (McCauley Daye O'Connell Architects Ltd., 2024) and Site-Specific Flood Risk Assessment (DBFL, 2024) submitted with the planning application.

12.2 Expertise & Qualifications

This chapter was completed by Aisling Cashell, an Environmental Consultant in the air quality section of AWN Consulting Ltd. She holds a BA and an MAI in Civil, Structural and Environmental Engineering from Trinity College Dublin. She is a member of Engineers Ireland. She has been specialising in the area of air quality, climate and sustainability for 1 year and has prepared air quality and climate assessments for inclusion within EIARs for residential and commercial developments such as Twenties Lane (Planning Application Ref: 22713), Cherrywood T13 (Planning Application Ref: DZ23A/0028), Corballis Donabate LRD (Planning Application Ref: LRD0017/S3), The Paddocks (Planning Application Ref: 2360349), and Dublin Airport Authority.

This chapter was also prepared and reviewed Dr. Jovanna Arndt, a Senior Environmental Consultant in the Air Quality & Climate section of AWN Consulting. She has been specialising in the area of air quality and climate over 7 years and has prepared air quality and climate assessments for inclusion within EIARs for residential developments such as Twenties Lane (Planning Application Ref: 22713), Cherrywood T13 (Planning Application Ref: DZ23A/0028), Corballis Donabate LRD (Planning Application Ref: LRD0017/S3), commercial and industrial developments by Dublin Airport Authority, Zoetis, Ipsen, Merck Millipore, Greener Ideas Limited and Abbvie, as well as renewable energy developments such as Codling Wind Park and the Cúil Na Móna Anaerobic Digestion Facility. She also specialises in assessing air quality impacts using air dispersion modelling of transportation schemes such as BusConnects Dublin, major Highways England Road schemes and major rail infrastructure in the form of High Speed 2 (HS2 in the UK). She has prepared air dispersion modelling assessments of emissions from data centres, energy centres and the chemical industry as part of EPA Industrial Emissions Licences for Microsoft, Greener Ideas Limited, Merck Millipore, Lilly Limerick, Chemifloc, Takeda, Kingspan and Kilshane Energy. She has also provided Air Quality Action Plan (AQAP) and Air Quality Management Area (AQMA) support to several UK councils and assessed the air quality impacts of potential Clean Air Zones in the UK.

12.3 Proposed Development

The proposed development consists of a large-scale residential development on an overall site of approx. 13.74ha (c. 8.14ha net site area) within a total masterplan land area of c. 32ha at Ballymastone, Donabate, Co. Dublin. Phase 1 of the Masterplan lands (FCC Ref. LRD0008/S3 & ABP Ref. 315288) was granted permission by An Bord Pleanála on 28th March 2023. The full description of the development

is available in Chapter 5 (Description of the Proposed Development) of this EIAR. Impacts to climate can occur during both the construction and operational stages. The following describes the primary sources of potential climate impacts which have been assessed as part of this EIAR.

12.3.1 Aspects Relevant to this Assessment

During the construction phase engine emissions from site vehicles and machinery have the potential to impact climate through the release of CO_2 and to a lesser extent, other greenhouse gases (GHGs). Embodied carbon of materials used in the construction of the development along with site activities will impact climate. Impacts to climate are assessed against Ireland's obligations under the EU 2030 GHG targets and sectoral emissions ceilings.

Engine emissions from vehicles accessing the site have the potential to impact climate during the operational phase of the development through the release of CO_2. Operational phase impacts will be long-term in duration. In addition, the vulnerability of the proposed development in relation to future climate change must be considered during the operational phase.

The climate assessment is divided into two distinct sections – a greenhouse gas assessment (GHGA) and a climate change risk assessment (CCRA).

- Greenhouse Gas Emissions Assessment (GHGA) – Quantifies the GHG emissions from a project over its lifetime. The assessment compares these emissions to relevant carbon budgets, targets and policy to contextualise magnitude; and
- Climate Change Risk Assessment (CCRA) – Identifies the impact of a changing climate on a project and receiving environment. The assessment considers a projects vulnerability to climate change and identifies adaptation measures to increase project resilience.

12.4 Methodology

12.4.1 Relevant Legislation, Policy & Guidance

The assessment of potential impacts on climate has been prepared taking the relevant legislation, policy and guidance described in the following sections into consideration.

12.4.1.1 Legislation

In 2015, the Climate Action and Low Carbon Development Act 2015 (No. 46 of 2015) (Government of Ireland, 2015) was enacted (the 2015 Climate Act). The purpose of the Act was to enable Ireland "to pursue, and achieve, the transition to a low carbon, climate resilient and environmentally sustainable economy by the end of the year 2050" (3.(1) of No. 46 of 2015). This is referred to in the 2015 Climate Act as the *"National Transition Objective"*. The 2015 Climate Act made provision for a national low carbon transition and mitigation plan (now known as a Climate Action Plan), and a national adaptation framework. In addition, the 2015 Climate Act provided for the establishment of the Climate Change Advisory Council with the function to advise and make recommendations on the preparation of the national mitigation and adaptation plans and compliance with existing climate obligations.

The first Climate Action Plan (CAP) was published by the Irish Government in June 2019 (Government of Ireland, 2019). The Climate Action Plan 2019 (CAP19) outlined the current status across key sectors including Electricity, Transport, Built Environment, Industry and Agriculture and outlined the various broadscale measures required for each sector to achieve ambitious decarbonisation targets. The 2019 CAP also detailed the required governance arrangements for implementation including carbon-

proofing of policies, establishment of carbon budgets, a strengthened Climate Change Advisory Council and greater accountability to the Oireachtas. The current Climate Action Plan is CAP24, published in December 2022 (DECC, 2023a).

Following on from Ireland declaring a climate and biodiversity emergency in May 2019, and the European Parliament approving a resolution declaring a climate and environment emergency in Europe in November 2019, the Government published the Climate Action and Low Carbon Development (Amendment) Act 2021 (hereafter referred to as the 2021 Climate Act) in March 2021 (Government of Ireland, 2021). The Climate Act was signed into Law on the 23rd July 2021, giving statutory effect to the core objectives stated within the first Climate Action Plan.

The purpose of the 2021 Climate Act is to provide for the approval of plans *"to reduce the extent of further global warming, pursue and achieve, by no later than the end of the year 2050, the transition to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy"*. This is known as the *"national climate objective"*, which supersedes the 2015 Climate Act *"national transition objective"*. The 2021 Climate Act will also *"provide for carbon budgets and a decarbonisation target range for certain sectors of the economy"*. The 2021 Climate Act defines the carbon budget as *"the total amount of greenhouse gas emissions that are permitted during the budget period"*.

In relation to carbon budgets, the 2021 Climate Action and Low Carbon Development (Amendment) Act states *"A carbon budget, consistent with furthering the achievement of the national climate objective, shall be proposed by the Climate Change Advisory Council, finalised by the Minister and approved by the Government for the period of 5 years commencing on the 1 January 2021 and ending on 31 December 2025 and for each subsequent period of 5 years (in this Act referred to as a 'budget period')"*. The carbon budget is to be produced for 3 sequential budget periods, as shown in **Table 12.1**. The carbon budget can be revised where new obligations are imposed under the law of the European Union or international agreements or where there are significant developments in scientific knowledge in relation to climate change. In relation to the sectoral emissions ceiling, the Minister for the Environment, Climate and Communications (the Minister for the Environment) shall prepare and submit to government the maximum amount of Greenhouse Gas (GHG) emissions that are permitted in different sectors of the economy during a budget period and different ceilings may apply to different sectors. The sectorial emission ceilings for 2030 were published in the Climate Action Plan 2024 (CAP24) (DECC, 2023a) and are shown in **Table 12.2**. Industry and Buildings (Residential) have a 35% and 40% reduction requirement respectively and a 2030 emission ceiling of 4 Mt CO_2e[28].

Table 12.1 5-Year Carbon Budgets 2021-2025, 2026-2030 and 2031-2025 (DECC, 2023a)

Budget Period	Carbon Budget	Reduction Required
2021-2025	295 Mt CO_2e	Reduction in emissions of 4.8% per annum for the first budget period.
2026-2030	200 Mt CO_2e	Reduction in emissions of 8.3% per annum for the second budget period.
2031-2035	151 Mt CO_2e	Reduction in emissions of 3.5% per annum for the third provisional budget.

28 Mt CO2e denotes million tonnes carbon dioxide equivalent.

Table 12.2 Sectoral Emission Ceilings 2030 (DECC, 2023a)

Sector	Baseline ($MtCO_2e$)	Carbon Budgets ($MtCO_2e$)		2030 Emissions ($MtCO_2e$)	Indicative Emissions % Reduction in Final Year of 2025- 2030 Period (Compared to 2018)
	2018	2021-2025	2026-2030		
Electricity	10	40	20	3	75
Transport	12	54	37	6	50
Built Environment - Residential	7	29	23	4	40
Built Environment - Commercial	2	7	5	1	45
Industry	7	30	24	4	35
Agriculture	23	106	96	17.25	25
Other (F-gases, waste, petroleum refining)	2	9	8	1	50
Land Use, Land-use Change and Forestry (LULUCF)	5	Reflecting the continued volatility for LULUCF baseline emissions to 2030 and beyond, CAP24 puts in place ambitious activity targets for the sector reflecting an EU-type approach.			
Total	**68**				
Unallocated Savings	-	-	26	-5.25	-
Legally Binding Carbon Budgets and 2030 Emission Reduction Targets	-	**295**	**200**	-	**51**

12.4.1.2 Policy

In December 2023 the current Climate Action Plan, CAP24, was published (Government of Ireland, 2023). This CAP builds on the progress of CAP23, which first published carbon budgets and sectoral emissions ceilings, and it aims to implement the required changes to achieve a 51% reduction in carbon emissions by 2030 and 2050 net zero goal. The CAP has six vital high impact sectors where the biggest savings can be made: renewable energy, energy efficiency of buildings, transport, sustainable farming, sustainable business and change of land-use. CAP24 states that the decarbonisation of Ireland's manufacturing industry is key for Ireland's economy and future competitiveness. There is a target to reduce the embodied carbon in construction materials by 10% for materials produced and used in Ireland by 2025 and by at least 30% for materials produced and used in Ireland by 2030. CAP24 states that these reductions can be brought about by product substitution for construction materials and reduction of clinker content in cement. Cement and other high embodied carbon construction elements can be reduced by the adoption of the methods set out in the Construction Industry Federation 2021 report Modern Methods of Construction. In order to ensure economic growth can continue alongside a reduction in emissions, the IDA Ireland will also seek to attract businesses to invest in decarbonisation technologies.

In April 2023 the Government published its *Long-Term Strategy on Greenhouse Gas Emissions Reductions* (DECC, 2023b). This strategy provides a long-term plan on how Ireland will transition towards net carbon zero by 2050, achieving the interim targets set out in the Climate Action Plan.

The Fingal County Council (FCC) Climate Action Plan 2024-2029 (FCC and Codema, 2024) outlines FCC's goals to mitigate GHG emissions and plans to prepare for and adapt to climate change. The FCC Climate Action Plan states that FCC aims to reduce car dependency by encouraging modal shifts from cars to active travel and more sustainable modes, including public transport and cycling. Similar to DECC, FCC

states that it wishes to work with the relevant transportation bodies to introduce measures to achieve modal shifts.

The FCC Climate Action Plan highlights the risks that climate change poses to the transportation network, with risks mainly associated with extreme weather events. The FCC Climate Action Plan notes that cold spells and flooding (pluvial, fluvial coastal, etc) and have the greatest future risk when both the likelihood and consequence are accounted for. Increases in flooding will cause an inundation of residential properties, damages to commercial buildings and premises, and disruption of transport networks.

12.4.1.3 Guidance

The assessment of potential impacts on climate has been prepared in accordance with the most relevant principal guidance and best practice documents:

- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning & Local Government, 2018);
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022);
- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017);
- GE-GEN-01101: Guide to the Implementation of Sustainability for Transport Infrastructure Ireland Projects (TII, 2023);
- PE-ENV-01104: Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document (TII, 2022a);
- PE-ENV-01105: Climate Assessment Standard for Proposed National Roads (TII, 2022b);
- GE-ENV-01106: TII Carbon Assessment Tool for Road and Light Rail Projects and User Guidance Document (TII, 2022c);
- Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment (European Commission, 2013);
- 2030 Climate and Energy Policy Framework (European Commission, 2014);
- Technical guidance on the Climate Proofing of Infrastructure in the Period 2021-2027 (European Commission, 2021a).
- 2030 EU Climate Target Plan (European Commission, 2021b);
- Climate Action and Low Carbon Development (Amendment) Act 2021 (the 2021 Climate Act) (No. 32 of 2021) (Government of Ireland, 2021).
- Climate Action Plan 2024 (DECC, 2023a);
- Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (hereafter referred to as the IEMA 2020 EIA Guide) (IEMA, 2020a);
- GHG Management Hierarchy (hereafter referred to as the IEMA 2020 GHG Management Hierarchy) (IEMA, 2020b);
- Assessing Greenhouse Gas Emissions and Evaluating their Significance (Institute of Environmental Management & Assessment (IEMA), 2022);
- Environmental Impact Assessment Guide to: Assessing GHG Emissions and Evaluating their Significance (hereafter referred to as the IEMA GHG Guidance) (IEMA, 2022); and
- UK Design Manual for Roads and Bridges (DMRB) Volume 11 Environmental Assessment, Section 3 Environmental Assessment Techniques, Part 14 LA 114 Climate (Highways England, 2021).

12.4.2 Site Surveys/Investigations

No surveys were required as part of the climate assessment.

12.4.3 Greenhouse Gas Assessment

As per the EU guidance document *Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment* (European Commission, 2013) the climate baseline is first established with reference to EPA data on annual GHG emissions (see Section 12.6).

12.4.3.1 Construction Phase

PE-ENV-01104 (TII, 2022a) recommends the calculation of the construction stage GHG emissions, including embodied carbon, using the TII Online Carbon Tool (TII, 2022c). Embodied carbon refers to the sum of the carbon needed to produce a good or service. It incorporates the energy needed in the mining or processing of raw materials, the manufacturing of products and the delivery of these products to site.

The TII Online Carbon Tool (TII, 2022c) has been commissioned by TII to assess GHG emissions associated with road or rail projects in Ireland. The TII Carbon Tool (TII, 2022c) uses emission factors from recognised sources including the Civil Engineering Standard Method of Measurement (CESSM) Carbon and Price Book database (CESSM, 2013), which can be applied to a variety of developments, not just road or rail. The use of the TII carbon tool is considered appropriate as the material types and construction activities employed by the proposed development are accounted for in the tool. The carbon emissions are calculated by multiplying the emission factor by the quantity of the material that will be used over the entire construction / maintenance phase. The outputs are expressed in terms of tCO_2e (tonnes of carbon dioxide equivalent).

The use of the TII Carbon Tool was not considered suitable for the building elements of the proposed development. As the TII Carbon Tool was developed for road and infrastructure projects, the material types within the tool are specific to these types of developments. These material types are not fully appropriate for assessing the embodied carbon associated with the construction of buildings. Therefore, the carbon impact of the buildings was carried out using an alternative tool; the Carbon Designer for Ireland tool.

The Irish Green Building Council in partnership with One Click LCA Ltd. have developed the Carbon Designer for Ireland tool (One Click LCA Ltd., 2023) for use on Irish specific building projects. The Carbon Designer tool is promoted by the EPA and the Land Development Agency. OneClickLCA is certified to EN 15978, EN 15978, ISO 21931–1 & ISO 21929, and data requirements of ISO 14040 & EN 15804, and is LEED, BREEAM and PAS 2080 aligned. It allows users to assess the carbon impact of buildings at an early stage using typical default materials and values. Inputs to the tool include the gross floor area and number of stories above ground level along with the building frame type. Once the baseline is established using generic data, the tool allows for optioneering and optimization of the carbon impact. It highlights the key areas within the building with the highest carbon impact and provides options for lower carbon intensive materials. The Carbon Designer for Ireland tool has been used to assess the embodied carbon impact of the proposed development.

Reasonable conservative estimates have been used in this assessment where necessary to provide an estimate of the GHGs associated with the proposed development.

Information on the site clearance activities, land clearance, excavations, fuel usage during construction, waste quantities and construction traffic (material, staff and waste transport) were provided by the design team for input into the TII carbon tool and are also discussed in Chapter 18 - Traffic and Transportation and Chapter 19 - Material Assets Waste. This information was used to determine an estimate of the GHG emissions associated with the development.

Information on the apartment building areas for input into the OneClick tool was provided by the design team. The GHG emissions associated with the materials required (product stages, A1-A3, see below) for the houses and duplexes were estimated based on the emission intensity (tCO_2e/m^2) calculated by Glenveagh sustainability team as part of their Scope 3 emissions quantification for Glenveagh Properties PLC *Net Zero Transition Plan,* published in March 2023. Scope 1, Scope 2 and Scope 3 emissions are terms defined by GHG protocol which applied the most widely used greenhouse gas accounting standards (GHG Protocol, 2004).

- Scope 1 emissions come from sources that an organisation owns or controls directly, e.g. fuel use by vehicles.
- Scope 2 emissions come indirectly from the company's energy use, e.g. electricity.
- Scope 3 emissions are not produced by the company itself and are not the result of activities from assets owned or controlled by them, but by those that the company is indirectly responsible for up and down its value chain e.g. buying, using and disposing of products. Scope 3 emissions include all those not within scope 1 and 2.

Estimates of the fuel quantities needed for the construction phase were provided by the Glenveagh sustainability team, and are based on the overall fuel usage by Glenveagh Properties PLC in 2023, as well as the fuel being used in the construction of Phase 1 of the Ballymastone residential development (Planning Application Ref: LRD0008/S3).

The GHG assessment accounts for various components relating to the project during different life stages to determine the total impact of the development on climate. The reference study period (i.e. the assumed building life expectancy) for the purposes of the assessment is 50 years. Embodied carbon emissions are attributed to four main categories, taken from BS EN 15978. The categories are:

- Product Stages (category A1 to A3): The carbon emissions generated at this stage arise from extracting the raw materials from the ground, their transport to a point of manufacture and then the primary energy used (and the associated carbon impacts that arise) from transforming the raw materials into construction products. These stages have been included within the scope of this assessment.
- Construction (category A4 to A5): These carbon impacts arise from transporting the construction products to site, and their subsequent processing and assembly into the building. This has been included within the scope of the assessment. Information for these stages was incorporated into the TII tool.
- Use Stage (category B1 to B7: This covers a wide range of sources from the GHG emissions associated with the operation of the building (B1), maintenance (B2), repair (B3), refurbishment (B4) and replacement (B5) of materials, and operational energy use (B6) and water use (B7). Categories B1-B3, B6 and B7 are not included in the assessment scope of this study, as these are highly variable and dependent on individual users of the buildings during operation. Material refurbishment and replacement throughout the lifetime of the development (category B4 – B5) has been included within this assessment.

- End of Life Stages (category C1 to C4): The eventual deconstruction and disposal of the existing building at the end of its life takes account of the on-site activities of the demolition contractors. No 'credit' is taken for any future carbon benefit associated with the reuse or recycling of a material into new products. This stage as not included within the scope of this study due to the variability and uncertainty in deconstruction methods which may be in place at the end of the development's lifespan.

12.4.3.2 Operational Phase

Emissions from road traffic associated with the proposed development have the potential to emit carbon dioxide (CO_2) which will impact climate.

The Highways England DMRB guidance document in relation to climate impact assessments *LA 114 Climate* (Highways England, 2021) contains the following scoping criteria to determine whether a detailed climate assessment is required for a proposed project during the operational stage. If any of the road links impacted by the proposed development meet or exceed the below criteria, then further assessment is required.

- A change of more than 10% in AADT;
- A change of more than 10% to the number of heavy duty vehicles; and
- A change in daily average speed of more than 20 km/hr.

There is one road link that will experience a change of over 10% in the AADT during the operational phase as a result of the proposed development. As a result a detailed assessment of traffic related carbon dioxide (CO_2) emissions was conducted.

PE-ENV-01104 (TII, 2022c) states that road traffic related emissions information should be obtained from an Air Quality Practitioner to show future user emissions during operation without the development in place. The Air Quality Practitioner calculated the traffic related emissions through the use of the TII REM tool (TII, 2022d) which includes detailed fleet predictions for age, fuel technology, engine size and weight based on available national forecasts. The output is provided in terms of CO_2e for the Base Year 2023, Opening Year 2026 and Design Year 2041. Both the Do Nothing and Do Something scenarios are quantified in order to determine the degree of change in emissions as a result of the proposed development.

Traffic data was obtained from DBFL Consulting Engineers Ltd. for the purpose of this assessment. Inputs include light duty vehicle (LDV) annual average daily traffic movements (AADT), annual average daily heavy duty vehicles (HDV AADT), annual average traffic speeds, road link lengths, road type and project county location. A total of 3 no. scenarios were assessed, these include:

- The Do Minimum scenario – this is the '*Do Nothing*' scenario and assumes the proposed development is not in place in future years.
- The Proposed Development scenario – this scenario includes traffic from the Do Minimum scenario and traffic associated with the full build-out of the masterplan lands in the ownership of the Applicant.
- Cumulative scenario – this scenario includes traffic from the 2 scenarios above as well as traffic associated with cumulative developments in the wider area.

Further detail on the modelling scenarios can be found in the Traffic and Transport Assessment prepared by DBFL Consulting Engineers Ltd and submitted with this planning application. The traffic

data is detailed in **Table 12.3**. Only road links that met the DRMB scoping criteria were included in the modelling assessment. Inputs include light duty vehicle (LDV) annual average daily traffic movements (AADT), annual average daily heavy duty vehicles (HDV AADT), annual average traffic speeds, road link lengths, road type and project county location. See Chapter 11 Air Quality and Chapter 18 Traffic & Transportation for further details on the traffic data.

Table 12.3 Traffic Data used in Operational Phase Climate Assessment

Road Link	Location	Speed (kph)	2023	Do Minimum 2026	Do Minimum 2041
			LDV AADT (HDV AADT)	LDV AADT (HDV AADT)	LDV AADT (HDV AADT)
A	Donabate Distributor Road	60	4945 (247)	8051 (279)	8824 (276)

12.4.3.3 Significance Criteria for GHGA

The Transport Infrastructure Ireland (TII) guidance document entitled PE-ENV-01104 Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document (TII 2022a) outlines a recommended approach for determining the significance of both the construction and operational phases of a development.

The significance of GHG effects set out in PE-ENV-01104 (TII, 2022a) is based on IEMA guidance (IEMA, 2022) which is broadly consistent with the terminology contained within Figure 3.4 of the EPA's (2022) 'Guidelines on the information to be contained in Environmental Impact Assessment Reports'.

The 2022 IEMA Guidance (IEMA, 2022) sets out the following principles for significance:

- When evaluating significance, all new GHG emissions contribute to a negative environmental impact. However, some projects will replace existing development or baseline activity that has a higher GHG profile. Therefore, the significance of a project's emissions should be based on its net impact over its lifetime, which may be positive, negative or negligible;
- Where GHG emissions cannot be avoided, the goal of the EIA process should be to reduce the project's residual emissions at all stages; and
- Where GHG emissions remain significant, but cannot be further reduced, approaches to compensate the project's remaining emissions should be considered.

The criteria for determining the significance of effects are a two-stage process that involves defining the magnitude of the impacts and the sensitivity of the receptors (i.e. Ireland's National GHG targets). In relation to climate, there is no project specific assessment criteria, but the project will be assessed against the recommended IEMA significance determination. This takes account of any embedded or committed mitigation measures that form part of the design which should be considered.

TII (TII, 2022a) states that professional judgement must be taken into account when contextualising and assessing the significance of a project's GHG impact. In line with IEMA Guidance (IEMA, 2022), TII state that the crux of assessing significance is "*not whether a project emits GHG emissions, nor even the*

magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero[29] by 2050".

Significance is determined using the criteria outlined in **Table 12.4** (derived from Table 6.7 of PE-ENV-01104 (TII, 2022a) along with consideration of the following two factors:

- The extent to which the trajectory of GHG emissions from the project aligns with Ireland's GHG trajectory to net zero by 2050; and
- The level of mitigation taking place.

Table 12.4 GHGA Significance Criteria

Effects	Significance Level	Description
Significant Adverse	Major Adverse	The project's GHG impacts are not mitigated. The project has not complied with do-minimum standards set through regulation, nor provided reductions required by local or national policies; and No meaningful absolute contribution to Ireland's trajectory towards net zero.
	Moderate Adverse	The project's GHG impacts are partially mitigated. The project has partially complied with do-minimum standards set through regulation, and have not fully complied with local or national policies; and Falls short of full contribution to Ireland's trajectory towards net zero.
Not Significant	Minor Adverse	The project's GHG impacts are mitigated through 'good practice' measures. The project has complied with existing and emerging policy requirements; and Fully in line to achieve Ireland's trajectory towards net zero.
	Negligible	The project's GHG impacts are mitigated beyond design standards. The project has gone well beyond existing and emerging policy requirements; and Well 'ahead of the curve' for Ireland's trajectory towards net zero.
Beneficial	Beneficial	The project's net GHG impacts are below zero and it causes a reduction in atmosphere GHG concentration. The project has gone well beyond existing and emerging policy requirements; and Well 'ahead of the curve' for Ireland's trajectory towards net zero, provides a positive climate impact.

Ireland's carbon budgets can also be used to contextualise the magnitude of GHG emissions from the proposed development (TII, 2022a). The approach is based on comparing the net proposed development GHG emissions to the relevant carbon budgets (DECC, 2023a). With the publication of the Climate Action Act in 2021 and the Climate Action Plan 2024, sectoral carbon budgets have been published for comparison with the net GHG emissions from the proposed development over its lifespan.

29 Net Zero: "When anthropogenic emissions of greenhouse gases to the atmosphere are balanced by anthropogenic removals over a specified period." Net zero is achieved where emissions are first educed in line with a 'science-based' trajectory with any residual emissions neutralised through offsets.

The relevant sector budgets are for Industry, Buildings (Residential) and Transport. The Industry and Buildings (Residential) sectors each emitted approximately 7 Mt CO_2e in 2018 and have a ceiling of 4 Mt CO_2e in 2030 which is a 35% and 40% reduction respectively over this period (see **Table 12.2**). The Transport sector emitted approximately 12 MtCO_2e in 2018 and has a ceiling of 6 Mt CO_2e in 2030 which is a 50% reduction over this period.

12.4.4 Climate Change Risk Assessment

The assessment involves determining the vulnerability of the proposed development to climate change. This involves an analysis of the sensitivity and exposure of the development to climate hazards which together provide a measure of vulnerability.

PE-ENV-01104 (TII, 2022a) states that the CCRA is guided by the principles set out in the overarching best practice guidance documents:

- Technical guidance on the climate proofing of Infrastructure in the Period 2021-2027 (European Commission, 2021a); and
- The Institute of Environmental Management and Assessment, Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (2nd Edition) (IEMA, 2020).

The baseline environment information provided in Section 12.6, future climate change modelling and input from other experts working on the proposed development (i.e. hydrologists) should be used in order to assess the likelihood of a climate risk.

First an initial screening CCRA based on the operational phase is carried out, according to the TII guidance PE-ENV-01104. This is carried out by determining the sensitivity of proposed development assets (i.e. receptors) and their exposure to climate change hazards.

The proposed development asset categories must be assigned a level of sensitivity to climate hazards. PE-ENV-01104 (TII, 2022a) provides the below list of asset categories and climate hazards to be considered. The asset categories will vary for development type and need to be determined on a development by development basis.

- **Asset Categories** Pavements; drainage; structures; utilities; landscaping; signs, light posts, buildings, and fences.
- **Climate Hazards** Flooding (coastal, pluvial, fluvial); extreme heat; extreme cold; wildfire; drought; extreme wind; lightning and hail; landslides; fog.

The sensitivity is based on a High, Medium or Low rating with a score of 1 to 3 assigned as per the criteria below.

- **High Sensitivity** The climate hazard will or is likely to have a major impact on the asset category. This is a sensitivity score of 3.
- **Medium Sensitivity** It is possible or likely the climate hazard will have a moderate impact on the asset category. This is a sensitivity score of 2.
- **Low Sensitivity** It is possible the climate hazard will have a low or negligible impact on the asset category. This is a sensitivity score of 1.

Once the sensitivities have been identified the exposure analysis is undertaken. The exposure analysis involves determining the level of exposure of each climate hazard at the project location irrespective of the project type for example: flooding could be a risk if the project location is next to a river in a floodplain. Exposure is assigned a level of High, Medium or Low as per the below criteria.

- **High Exposure** It is almost certain or likely this climate hazard will occur at the project location i.e. might arise once to several times per year. This is an exposure score of 3.
- **Medium Exposure** It is possible this climate hazard will occur at the project location i.e. might arise a number of times in a decade. This is an exposure score of 2.
- **Low Exposure** It is unlikely or rare this climate hazard will occur at the project location i.e. might arise a number of times in a generation or in a lifetime. This is an exposure score of 1.

Once the sensitivity and exposure are categorised, a vulnerability analysis is conducted by multiplying the sensitivity and exposure to calculate the vulnerability.

12.4.4.1 Significance Criteria for CCRA

The CCRA involves an initial screening assessment to determine the vulnerability of the proposed development to various climate hazards. The vulnerability is determined by combining the sensitivity and the exposure of the proposed development to various climate hazards. The vulnerability assessment takes any proposed mitigation into account.

Vulnerability = Sensitivity x Exposure

Table 12.5 details the vulnerability matrix; vulnerabilities are scored on a high, medium and low scale. A risk that is low or medium is classed as non-significant, while a high or extreme risk is classed as a significant risk.

TII guidance (TII, 2022a) and the EU technical guidance (European Commission, 2021a) note that if all vulnerabilities are ranked as low in a justified manner, no detailed climate risk assessment may be needed. The impact from climate change on a development would therefore be considered not significant.

Where residual medium or high vulnerabilities exist the assessment may need to be progressed to a detailed climate change risk assessment and further mitigation implemented to reduce risks. An assessment of construction phase CCRA impacts is only required according to the TII guidance (TII, 2022a) if a detailed CCRA is required.

Table 12.5 Vulnerability Matrix

		Exposure		
		High (3)	Medium (2)	Low (1)
Sensitivity	High (3)	9 - High	6 – High	3 - Medium
	Medium (2)	6 - High	4 – Medium	2 - Low
	Low (1)	3 - Medium	2 – Low	1 - Low

The screening CCRA, detailed in Section 12.8.2, did not identify any residual medium or high risks to the proposed development as a result of climate change. Therefore, a detailed CCRA for the construction and operational phase were scoped out.

While a CCRA for the construction phase was not required, best practice mitigation against climate hazards is still recommended in Section 12.9.1.

12.5 Difficulties Encountered

There were no difficulties encountered in compiling this assessment.

12.6 Baseline Environment

PE-ENV-01104 (TII, 2022c) states that a baseline climate scenario should identify, consistent with the study area for the project, GHG emissions without the project for both the current and future baseline.

Ireland declared a climate and biodiversity emergency in May 2019 and in November 2019 there was European Parliament approval of a resolution declaring a climate and environment emergency in Europe. This, in addition to Ireland's current failure to meet its EU binding targets under Regulation 2018/842 (European Union, 2018) results in changes in GHG emissions either beneficial or adverse being of more significance than previously considered prior to these declarations.

12.6.1 Current GHGA Baseline

Data published in July 2023 (EPA, 2023) predicts that Ireland exceeded (without the use of flexibilities) its 2022 annual limit set under EU's Effort Sharing Decision (ESD) (EU 2018/842) by 3.72 Mt CO_2e. When the available flexibilities are taken into account, the limit is exceeded by 1 MtCO_2e. The sectoral breakdown of 2022 GHG emissions is shown in **Table 12.6**. The sector with the highest emissions in 2022 was agriculture at 38.4% of the total, followed by transport at 19.1%. For 2022 total national emissions (excluding LULUCF) were estimated to be 60.76 Mt CO_2e as shown in **Table 12.6** (EPA, 2023).

The future baseline with respect to the GHGA can be considered in relation to the future climate targets which the assessment results will be compared against. In line with TII (TII, 2022c) and IEMA Guidance (IEMA, 2022) the future baseline is a trajectory towards net zero by 2050, "*whether it* [the project] *contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050*".

The future baseline will be determined by Ireland meeting its targets set out in the CAP23, and future CAPs, alongside binding 2030 EU targets. In order to meet the commitments under the Paris Agreement, the European Union (EU) enacted *'Regulation (EU) 2018/842 on binding annual GHG emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No. 525/2013'* (hereafter referred to as the Regulation) (European Union, 2018). The Regulation aims to deliver, collectively by the EU in the most cost-effective manner possible, reductions in GHG emissions from the Emission Trading Scheme (ETS) and non-ETS sectors amounting to 43% and 30%, respectively, by 2030 compared to 2005. The ETS is an EU-wide scheme which regulates the GHG emissions of larger industrial emitters including electricity generation, cement manufacturing and heavy industry. The non-ETS sector includes all domestic GHG emitters which do not fall under the ETS scheme and includes GHG emissions from transport, residential and commercial buildings and agriculture.

Table 12.6 Total National GHG Emissions in 2022 (EPA 2023)

Sector	2021 Emissions (Mt CO_2e)	2022 Emissions (Mt CO_2e)	% Total 2022 (including LULUCF)	% Change from 2021 to 2022
Agriculture	23.626	23.337	34%	-2.1
Transport	10.978	11.634	17%	6.0
Energy Industries	10.262	10.076	15%	-1.8
Residential	6.992	6.105	9%	-12.7
Manufacturing Combustion	4.614	4.288	6%	-7.1
Industrial Processes	2.475	2.289	3%	-7.5
F-Gases	0.745	0.741	1%	-0.5

Sector	2021 Emissions (Mt CO_2e)	2022 Emissions (Mt CO_2e)	% Total 2022 (including LULUCF)	% Change from 2021 to 2022
Commercial Services	0.765	0.767	1%	0.2
Public Services	0.672	0.659	1%	-1.9
Waste Note 1	0.726	0.867	1%	4.9
LULUFC	7.338	7.305	11%	-0.5
National total excluding LULUFC	61.955	60.764	89%	-1.9
National total including LULUFC	62.293	68.069	100%	-1.8

Note 1 Waste includes emissions from solid waste disposal on land, solid waste treatment (composting and anaerobic digestion), wastewater treatment, waste incineration and open burning of waste.

12.6.2 Future GHGA Baseline

The future baseline with respect to the GHGA can be considered in relation to the future climate targets which the assessment results will be compared against. In line with TII (TII, 2022c) and IEMA Guidance (IEMA, 2022) the future baseline is a trajectory towards net zero by 2050, *"whether it [the project] contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050"*.

The future baseline will be determined by Ireland meeting its targets set out in the CAP23, and future CAPs, alongside binding 2030 EU targets. In order to meet the commitments under the Paris Agreement, the European Union (EU) enacted *'Regulation (EU) 2018/842 on binding annual GHG emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No. 525/2013'* (hereafter referred to as the Regulation) (European Union, 2018). The Regulation aims to deliver, collectively by the EU in the most cost-effective manner possible, reductions in GHG emissions from the Emission Trading Scheme (ETS) and non-ETS sectors amounting to 43% and 30%, respectively, by 2030 compared to 2005. The Regulation was amended in April 2023 and Ireland must now limit its greenhouse gas emissions by at least 42% by 2030. The ETS is an EU-wide scheme which regulates the GHG emissions of larger industrial emitters including electricity generation, cement manufacturing and heavy industry. The non-ETS sector includes all domestic GHG emitters which do not fall under the ETS scheme and includes GHG emissions from transport, residential and commercial buildings and agriculture.

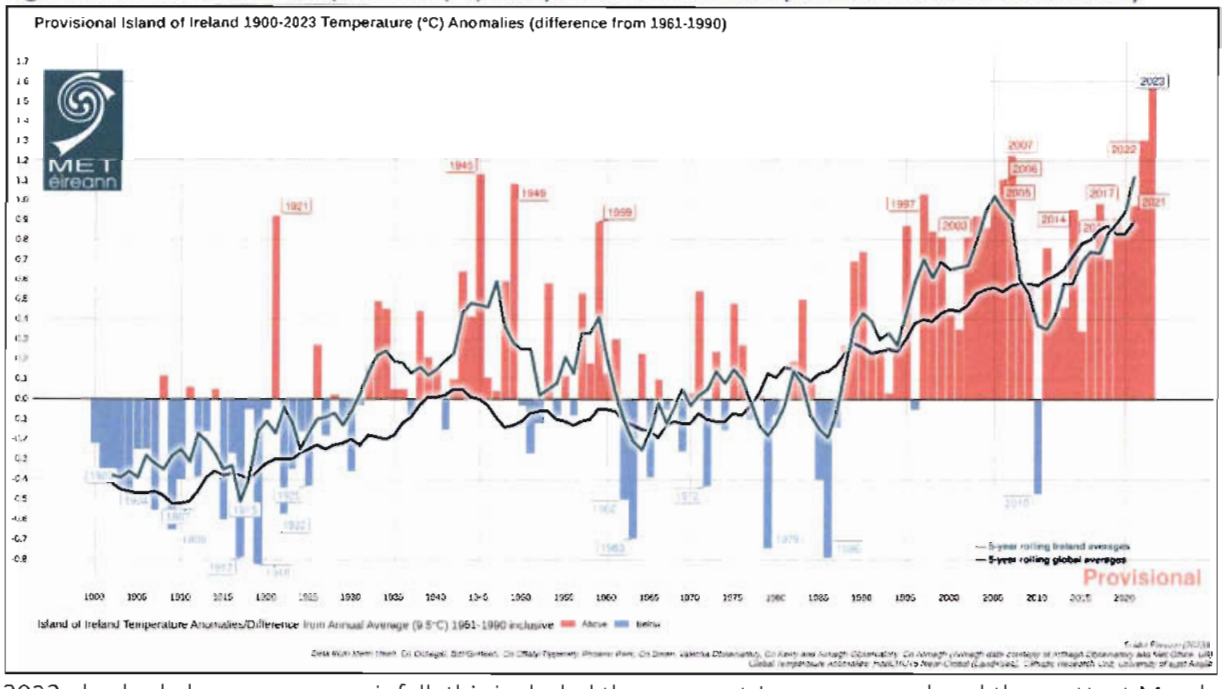
12.6.3 Current CCRA Baseline

The region of the proposed development has a temperate, oceanic climate, resulting in mild winters and cool summers. The Met Éireann weather station at Dublin Airport is the nearest weather and climate monitoring station to the proposed development with meteorological data recorded for the 30-year period from 1991 to 2020. The historical regional weather data for Dublin Airport Metrological station is representative of the current climate in the region of the proposed development. The data for the 30-year period from 1991 to 2020 (Met Éireann, 2023a) indicates that the wettest months at Dublin Airport Metrological Station were November and December, and the driest month on average was June. July was the warmest month with a mean temperature of 15.4 Celsius. January was the coldest month with a mean temperature of 5.2 Celsius.

Met Éireann's 2023 Climate Statement (Met Éireann, 2023a) states 2023's average shaded air temperature in Ireland is provisionally 11.20 °C, which is 1.65°C above the 1961-1990 long-term

average. Previous to this 2022 was the warmest year on record, however 2023 was 0.38 °C warmer (see Figure 12.1).

Figure 12.1 1900-2023 Temperature (°C) Temperature Anomalies (Differences from 1961-1990)



2023 also had above average rainfall, this included the warmest June on record and the wettest March and July on record. Record high sea surface temperatures (SST) were recorded since April 2023 which included a severe marine heatwave to the west of Ireland during the June 2023. This marine heatwave contributed to the record rainfall in July.

Recent weather patterns and records of extreme weather events recorded by Met Éireann have been reviewed. Considering the extraordinary 2023 data, Met Éireann states that the latest Irish climate change projections indicate further warming in the future, including warmer winters. The record temperatures means the likelihood of extreme weather events occurring has increased. This will result in longer dry periods and heavy rainfall events. Storm surges and coastal flooding due to sea level rise. Compound events, where coastal surges and extreme rainfall events occur simultaneously will also increase. Met Éireann has high confidence in maximum rainfall rates increasing but not in how the frequency or intensity of storms will change with climate change.

12.6.4 Future CCRA Baseline

Impacts as a result of climate change will evolve with a changing future baseline, changes have the potential to include increases in global temperatures and increases in the number of rainfall days per year. Therefore, it is expected that the baseline climate will evolve over time and consideration is needed with respect to this within the design of the proposed development.

Ireland has seen increases in the annual rainfall in the north and west of the country, with small increases or decreases in the south and east including in the region where the proposed development will be located (EPA, 2021b). The EPA have compiled a list of potential adverse impacts as a result of climate change including the following which may be of relevance to the proposed development (EPA, 2021a):

- More intense storms and rainfall events;

- Increased likelihood and magnitude of river and coastal flooding;
- Water shortages in summer in the east;
- Adverse impacts on water quality; and
- Changes in distribution of plant and animal species.

The EPA's *State of the Irish Environment Report (Chapter 2: Climate Change)* (EPA, 2020c) notes that projections show that full implementation of additional policies and measures, outlined in the 2019 Climate Action Plan, will result in a reduction in Ireland's total GHG emissions by up to 25 per cent by 2030 compared with 2020 levels. Climate change is not only a future issue in Ireland, as a warming of approximately 0.8°C since 1900 has already occurred. The EPA state that it is critically important for the public sector to show leadership and decarbonise all public transport across bus and rail networks to the lowest carbon alternatives. The report (EPA, 2020c) underlines that the next decade needs to be one of major developments and advances in relation to Ireland's response to climate change in order to achieve these targets and that Ireland must accelerate the rate at which it implements GHG emission reductions. The report states that mid-century mean annual temperatures in Ireland are projected to increase by between 1.0°C and 1.6°C (subject to the emissions trajectory). In addition, heat events are expected to increase by mid-century (EPA, 2020c). While individual storms are predicted to have more severe winds, the average wind speed has the potential to decrease (EPA, 2020c).

TII's Guidance document PE-ENV-01104 (TII, 2022c) states that for future climate change a moderate to high Representative Concentration Pathways (RCP) should be adopted. RPC4.5 is considered moderate while RPC8.5 is considered high. Representative Concentration Pathways (RCPs) describe different 21st century pathways of GHG emissions depending on the level of climate mitigation action undertaken.

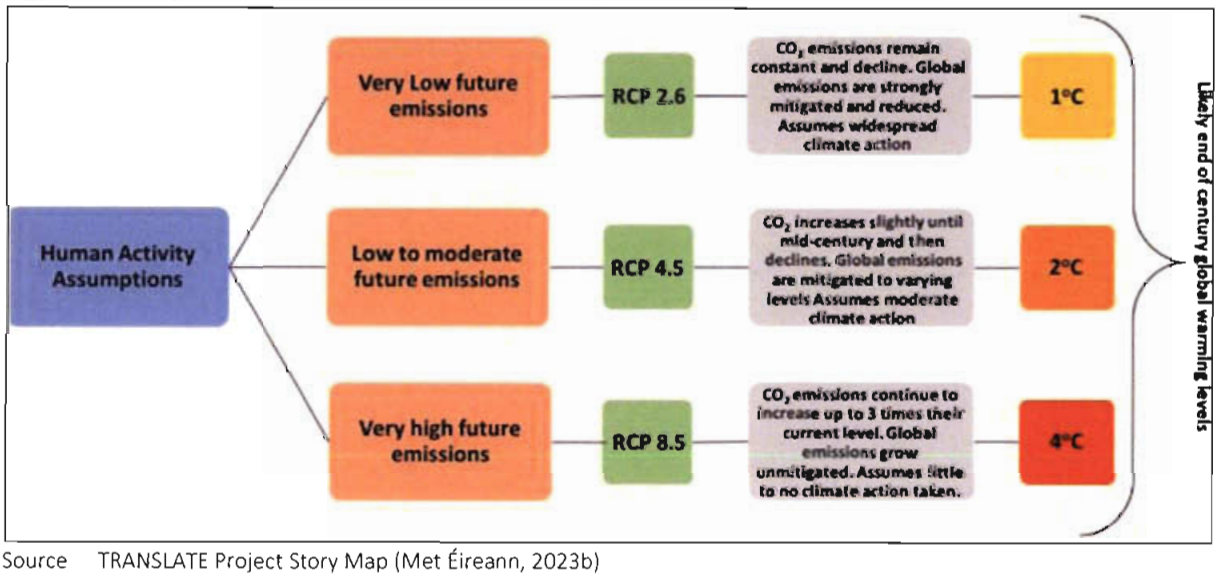
Future climate predictions undertaken by the EPA have been published in *'Research 339: High-resolution Climate Projections for Ireland – A Multi-model Ensemble Approach'* (EPA 2020d). The future climate was simulated under both Representative Concentration Pathway 4.5 (RCP4.5) (medium-low) and RCP8.5 (high) scenarios. This study indicates that by the middle of this century (2041–2060), mid-century mean annual temperatures are projected to increase by 1 to 1.2°C and 1.3 to 1.6°C for the RCP4.5 and RCP8.5 scenarios, respectively, with the largest increases in the east. Warming will be enhanced at the extremes (i.e. hot days and cold nights), with summer daytime and winter night-time temperatures projected to increase by 1 to 2.4°C. There is a projected substantial decrease of approximately 50%, for the number of frost and ice days. Summer heatwave events are expected to occur more frequently, with the largest increases in the south. In addition, precipitation is expected to become more variable, with substantial projected increases in the occurrence of both dry periods and heavy precipitation events. Climate change also has the potential to impact future energy supply which will rely on renewables such as wind and hydroelectric power. Wind turbines need a specific range of wind speeds to operate within and droughts or low ground water levels may impact hydroelectric energy generating sites. More frequent storms have the potential to damage the communication networks requiring additional investment to create resilience within the network.

The EPA's *Critical Infrastructure Vulnerability to Climate Change* report (EPA, 2021b) assesses the future performance of Ireland's critical infrastructure when climate is considered. With respect to road infrastructure, fluvial flooding and coastal inundation/coastal flooding are considered the key climate change risks with snowstorm and landslides being medium risks. Extreme winds and heatwaves/droughts are considered low risk to road infrastructure. One of the key outputs of the

research was a framework that will provide quantitative risk-based decision support for climate change impacts and climate change adaptation analysis for infrastructure.

National Framework for Climate Services (NFCS) was founded in June 2022 to streamline the provision of climate services in Ireland and will be led by Met Éireann. The aim of the NFCS is to enable the co-production, delivery and use of accurate, actionable and accessible climate information and tools to support climate resilience planning and decision making. In addition to the NFCS, further work has been ongoing into climate projects in Ireland through research under the TRANSLATE project. TRANSLATE (Met Éireann, 2023b) has been led by climate researchers from University of Galway – Irish Centre for High End Computing (ICHEC), and University College Cork – SFI Research Centre for Energy, Climate and Marine (MaREI), supported by Met Éireann climatologists. TRANSLATE's outputs are produced using a selection of internationally reviewed and accepted models from both CORDEX and CMIP5. Representative Concentration Pathways (RCPs) provide a broad range of possible futures based on assumptions of human activity. The modelled scenarios include for "*least*" (RCP2.6), "*more*" (RCP4.5) or "*most*" (RCP8.5) climate change, see **Figure 12.2**.

Figure 12.2 Representative Concentration Pathways Associated Emission Levels

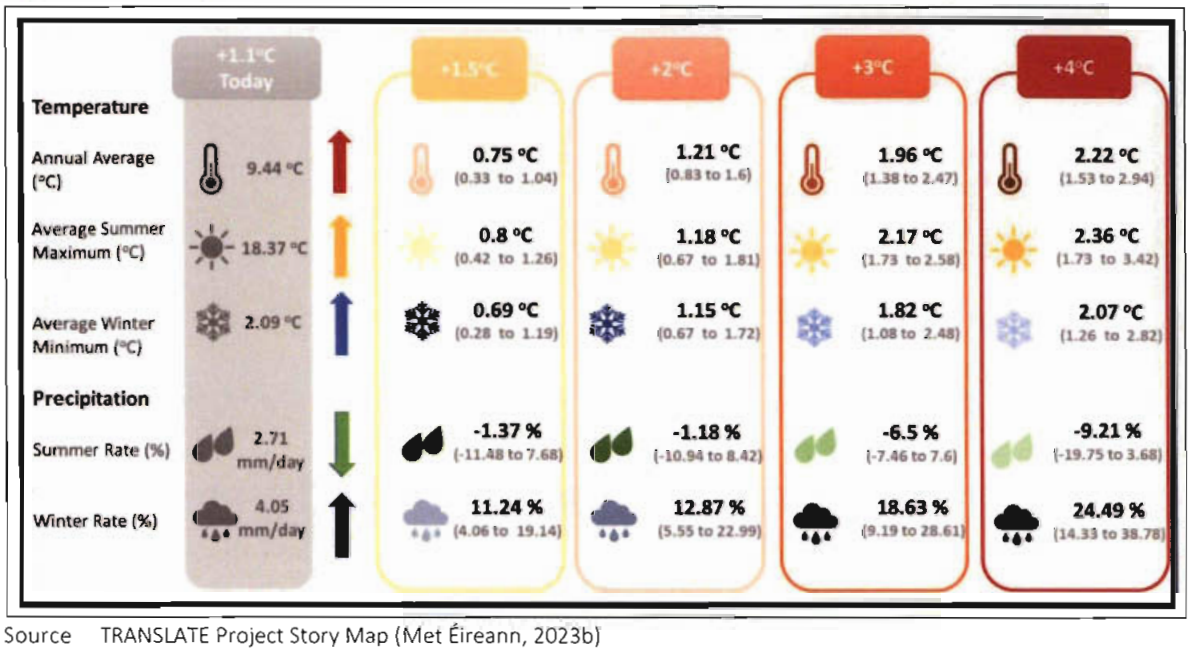


Source TRANSLATE Project Story Map (Met Éireann, 2023b)

TRANSLATE (Met Éireann, 2023b) provides the first standardised and bias-corrected national climate projections for Ireland to aid climate risk decision making across multiple sectors (for example, transport, energy, water), by providing information on how Ireland's climate could change as global temperatures increase to 1.5°C ,2°C, 2.5°C, 3°C or 4°C (see **Figure 12.3**). Projections broadly agree with previous projections for Ireland. Ireland's climate is dominated by the Atlantic Meridional Overturning Circulation (AMOC), a large system of ocean currents – including the Gulf Stream – characterised by a northward flow of warm water and a southward flow of cold water. Due to the AMOC, Ireland does not suffer from the extremes of temperature experienced by other countries at a similar latitude. Recent studies have projected that the AMOC could decline by 30 – 40 % by 2100, resulting in cooler North Atlantic Sea surface temperatures (SST)s (Met Éireann, 2023b). Met Éireann projects that Ireland will nevertheless continue to warm, although the AMOC cooling influence may lead to reduced warming compared with continental Europe. AMOC weakening is also expected to lead to additional sea level rise around Ireland. With climate change Ireland's temperature and rainfall will undergo more and more significant changes e.g. on average summer temperature could increase by more than 2°C, summer rainfall could decrease by 9% while winter rainfall could increase by 24%. Future projects also include

a 10-fold increase in the frequency of summer nights (values > 15°C) by the end of the century, a decrease in the frequency of cold winter nights and an increase in the number of heatwaves. A heatwave in Ireland is defined as a period of 5 consecutive days where the daily maximum temperature is greater than 25°C.

Figure 12.3 Change of Climate Variables for Ireland for Different Global Warming Thresholds



Source TRANSLATE Project Story Map (Met Éireann, 2023b)

12.7 The 'Do Nothing' Scenario

Under the Do Nothing Scenario construction works associated with the proposed development will not take place. Impacts from increased traffic volumes and associated emissions from the proposed development will also not occur. The climate baseline will continue to develop in line with the identified trends (see Section 12.6).

12.8 Potential Significant Effects

12.8.1 Greenhouse Gas Assessment

12.8.1.1 Construction Phase

Embodied carbon is carbon dioxide emitted during the manufacture, transport and construction of building materials, together with site activities. The most significant proportion of carbon emissions tend to occur during the construction phase because of embodied carbon in construction materials and emissions from construction activities. Therefore, the assessment has included the construction phase embodied carbon for the purposes of the EIAR. The assessment is broken down into the following stages as per Section 12.4.3.1:

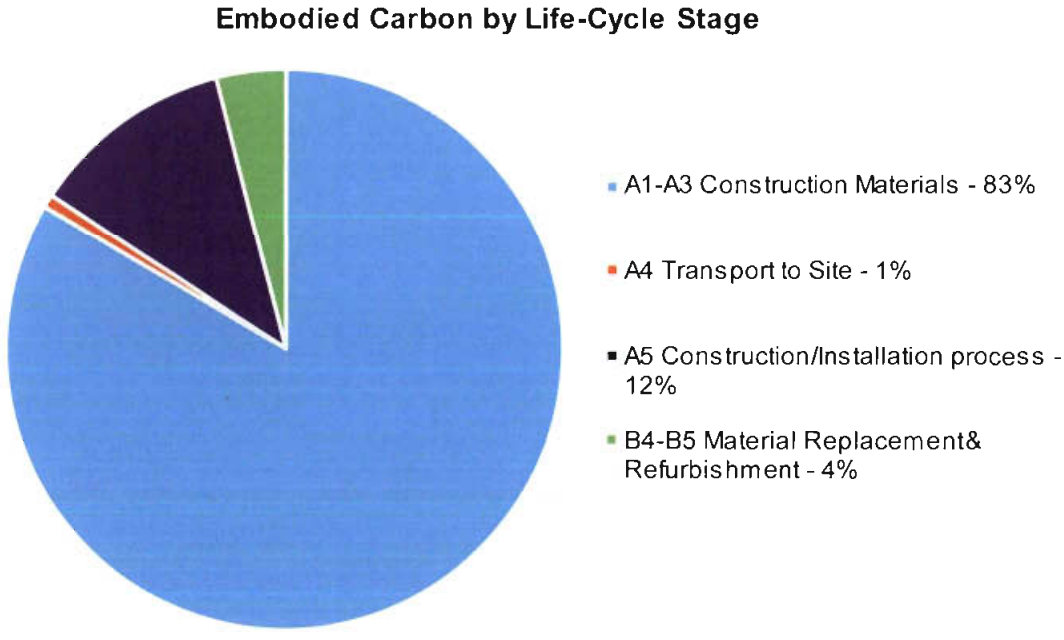
- Product stage (A1 – A3);
- Transportation to site (A4);
- Site operations (construction activities) (A5); and
- Material replacement & refurbishment (B4 – B5).

The construction phase embodied carbon emissions comprise stages A1 – A5 include the construction materials, the transport of the materials to site and the construction activities or site operations. Ongoing material refurbishment and replacement throughout the lifetime of the development is included within category B4 – B5, these are default values based on the typical maintenance requirements for the chosen material types over the assumed 50 year lifetime. **Figure 12.4** shows the embodied carbon for the proposed development per life-cycle stage with both the output from the OneClick tool and TII Carbon Tool assessments included.

Construction materials make up the majority of carbon emissions for the proposed development making up approx. 83% of the total construction phase embodied carbon emissions across the different buildings and the relevant infrastructure. The external walls as well as the beams, floors and roofs are the areas with the highest carbon impact, based on the general default values and assumptions made for the carbon calculations. Transportation to site, site operations and material replacement make up the remainder of the construction embodied carbon emissions.

The carbon assessment has highlighted the areas where the highest embodied carbon emissions occur, specifically as a result of building materials. The carbon emissions have been calculated based on standard default materials for the various building types within the OneClick tool as detailed material information was not available at this stage in the project. Additionally, the average material types within the TII Carbon Tool were used for the purposes of this assessment in the absence of more detailed information.

Figure 12.4 Embodied Carbon by Life-Cycle Stage



It has been calculated that the total construction phase embodied carbon (including maintenance and replacement of materials over the development lifetime) will be 88,077 tonnes CO_2e (see **Table 12.7**). The GHG emissions from the development as a total cannot be compared against one specific sector 2030 carbon budget, the emissions are broken down into different assessment categories and these must be compared separately to the relevant sectoral emissions budget which are detailed in **Table 12.8.** The relevant sectoral emissions for the proposed development comparison include the Industry Buildings (Residential) sector, Transport sector, Electricity sector and Waste sector. The predicted

emissions for the proposed development are annualised over the assumed 50 year lifespan and then compared to the relevant sector 2030 carbon budgets. Annualising the full carbon emissions over the lifetime of the development allows for appropriate comparison with annual GHG targets.

Table 12.7 GHG Assessment Results

Stage	GHG Assessment Category	Predicted GHG Emissions (tCO_2e)	Relevant Sector for Carbon Budget Comparison	Annualised GHG Emissions as % of Relevant Carbon Budget
A1-A3	Materials	73,263	Industry	0.04%
A4	Material Transport	882	Transport	0.0003%
A5	Clearance and demolition	4	Industry	0.000002%
A5	Excavation	34	Industry	0.00002%
A5	Plant Use	9,908	Electricity	0.01%
A5	Construction Worker Travel to Site	297	Transport	0.0001%
A5	Construction Waste Disposal	60	Waste	0.0001%
A5	Construction Waste Transport	12	Transport	0.000004%
B4-B5	Maintenance Material	3,517	Industry	0.002%
Total		**88,077**		

Note 1 Project lifespan assumed 50 years for calculation purposes in line with best practice

The predicted GHG emissions (as shown in **Table 12.8**) can be averaged over the full lifespan of the proposed development to give the predicted annual emissions to allow for direct comparison with national annual emissions and targets.

In **Table 12.8**, GHG emissions have been compared against the carbon budget for the electricity, transport, industry and waste sectors in 2030 (DECC, 2023a), against Ireland's total GHG emissions in 2022 and against Ireland's EU 2030 target of a 30% reduction in non-ETS sector emissions based on 2005 levels (33 Mt CO_2e) (set out in Regulation EU 2018/842 of the European Parliament and of the Council).

The estimated total GHG emissions, when annualised over the 50-year proposed development lifespan, are equivalent to 0.003% of Ireland's total GHG emissions in 2022 and 0.005% of Ireland's non-ETS 2030 emissions target. The estimated GHG emissions associated with energy use during the construction phase are equivalent to 0.007% of the 2030 Electricity budget, while the total GHG emissions associated with transport-related activities are 0.0004% of the 2030 Transport budget, construction waste GHG emissions are 0.0001% of the Waste budget and industry-related activities are 0.1% of the 2030 Industry budget (DECC, 2023a).

Table 12.8 Estimated GHG Emissions Relative to Sectoral Budgets and GHG Baseline

Target/Sectoral Budget (tCO_2e)		Sector Annualised Proposed Development GHG Emissions	Annualised Proposed Development GHG Emissions as % of Relevant Target/Budget
Ireland's 2022 Total GHG Emissions (existing baseline)	60,746,000	Total GHG Emissions	0.003%
Non-ETS 2030 Target	33,000,000	Total GHG Emissions	0.005%
2030 Sectoral Budget (Industry Sector)	4,000,000	Total Industry Emissions	0.1%

Target/Sectoral Budget (tCO_2e)		Sector Annualised Proposed Development GHG Emissions	Annualised Proposed Development GHG Emissions as % of Relevant Target/Budget
2030 Sectoral Budget (Transport Sector)	6,000,000	Total Transport Emissions	0.0004%
2030 Sectoral Budget (Electricity Sector)	3,000,000	Total Electricity Emissions	0.007%
2030 Sectoral Budget (Waste Sector)	1,000,000	Total Waste Emissions	0.0001%

12.8.1.2 Operational Phase

Ongoing maintenance of the proposed development materials has been accounted for within Section 12.8.1.1 above. The following section outlines the impact of operational energy use on GHG emissions.

Operational Energy Usage

The proposed development has been designed to reduce the impact to climate where possible. A number of measures have been incorporated into the design to ensure the operational phase emissions are minimised. These are outlined fully within the Residential Climate Action Energy Statement (Ethos Engineering, 2024), in relation to the development. The primary elements with respect to reducing climate impacts and optimising energy usage are summarised in Section 12.9.2.

Operational Traffic Emissions

There is the potential for increased traffic volumes to impact climate during the operational phase. To provide for a worst-case assessment and to assess potential cumulative impacts, the traffic data has included specific cumulative developments within the area (see Traffic & Transportation Assessment (DBFL, 2024) for further details).

The predicted concentrations of CO_2e for the future years of 2026 and 2041 are detailed in **Table 12.9**. These are significantly less than Ireland's national 2026 and 2030 targets set out under EU legislation (targets beyond 2030 are not available) and the 2030 sectoral emissions ceilings. It is predicted that in 2026 the proposed development will increase CO_2 emissions by 87 tonnes CO_2e. This equates to 0.0002% of the 2026 national emission ceiling or 0.0015% of the 2030 Transport sector emissions ceiling (see **Table 12.2**). Similarly low increases in CO_2 emissions are predicted to occur in 2041 with emissions increasing by 38 tonnes CO_2e. This equates to 0.0001% of the 2030 national emission ceiling or 0.0006% of the 2030 Transport sector emissions ceiling (see **Table 12.2**).

In addition, electric vehicle parking and charging infrastructure will be provided as part of the parking requirements at the proposed development which will promote the use of more sustainable methods of transport.

Table 12.9 Traffic Emissions GHG Impact Assessment

Year	Scenario	CO_2e (tonnes/annum)
2026	Do Minimum	570
	Do Something	657
2041	Do Minimum	503
	Do Something	541
Increment Change in 2026		87

Year	Scenario	CO_2e (tonnes/annum)
National Emission Ceiling 2026 (Tonnes) Note 1		35,625,332
Impact in 2026 (as % of National Emissions Ceiling)		0.0002%
Transport Sector 2030 Emission Ceiling		6,000,000
Impact in 2026 (as % of Transport Sector Emissions Ceiling)		0.0015%
Increment Change in 2041		38
National Emission Ceiling 2030 (Tonnes) Note 1		33,381,312
Impact in 2041 (as % of National Emissions Ceiling)		0.0001%
Impact in 2041 (as % of Transport Sector Emissions Ceiling)		0.0006%

Note 1 Target under Commission Implementing Decision (EU) 2020/2126 of 16 December 2020 on setting out the annual emission allocations of the Member States for the period from 2021 to 2030 pursuant to Regulation (EU) 2018/842 of the European Parliament and of the Council.

12.8.1.3 GHGA Significance of Effects

The TII guidance states that the following two factors should be considered when determining significance:

- The extent to which the trajectory of GHG emissions from the project aligns with Ireland's GHG trajectory to net zero by 2050; and
- The level of mitigation taking place.

The level of mitigation described in Section 12.9 has been taken into account when determining the significance of the proposed development's GHG emissions. According to the TII significance criteria described in Section 12.4.3.3 and **Table 12.4** the significance of the GHG emissions during the construction and operational phase is **minor adverse.**

In accordance with the EPA guidelines (EPA, 2022), the above significance equates to a significance of effect of GHG emissions during the construction and operational phase which is **direct, long-term, negative** and **slight**, which is overall **not significant** in EIA terms.

12.8.2 Climate Change Risk Assessment

12.8.2.1 Construction Phase

A detailed CCRA of the construction phase has been scoped out, as discussed in Section 12.4.4 and Section 12.8.2.2, which state that there are no residual medium or high risk vulnerabilities to climate change hazards and therefore a detailed CCRA is not required (TII, 2022a). However, consideration has been given to the proposed development's vulnerability to the following climate change hazards with best practice mitigation measures proposed in Section 12.9:

- Flood Risk due to increased precipitation, and intense periods of rainfall. This includes fluvial and pluvial flooding. The Site Specific Flood Risk Assessment (SSFRA) carried out for the proposed development by DBFL Consulting Engineers concluded that the site is considered to be within Flood Zone C which indicates that coastal, fluvial or pluvial flooding is not a significant risk at the project location. However, best practice mitigation measures are to be implemented as per Section 12.9;
- Increased temperatures potentially causing drought, wildfires and prolonged periods of hot weather;
- Reduced temperatures resulting in ice or snow; and
- Major Storm Damage – including wind damage.

12.8.2.2 Operational Phase

In order to determine the vulnerability of the proposed development to climate change the sensitivity and exposure of the development to various climate hazards must first be determined. The following climate hazards have been considered in the context of the proposed development: flooding (coastal, pluvial, fluvial), extreme heat, extreme cold, wildfire, drought, extreme wind, lightning, hail, landslides and fog.

The sensitivity of the proposed development to the above climate hazards is assessed irrespective of the project location. Table 12.10 details the sensitivity of the proposed development on a scale of high (3), medium (2) and low (1). Once the sensitivity has been established the exposure of the proposed development to each of the climate hazards is determined, this is the likelihood of the climate hazard occurring at the project location and is also scored on a scale of high (3), medium (2) and low (1). The product of the sensitivity and exposure is then used to determine the overall vulnerability of the proposed development to each of the climate hazards as per Table 12.5. The results of the vulnerability assessment are detailed in Table 12.10.

Table 12.10 Climate Change Vulnerability Assessment

Climate Hazard	Sensitivity	Exposure	Vulnerability
Flooding (Coastal, Pluvial, Fluvial)	1 (Low)	2 (Medium)	2 (Low)
Extreme Heat	1 (Low)	2 (Medium)	2 (Low)
Extreme Cold	1 (Low)	2 (Medium)	2 (Low)
Wildfire	1 (Low)	1 (Low)	1 (Low)
Drought	1 (Low)	1 (Low)	1 (Low)
Extreme Wind	1 (Low)	1 (Low)	1 (Low)
Lightning & Hail	1 (Low)	1 (Low)	1 (Low)
Landslides	1 (Low)	1 (Low)	1 (Low)
Fog	1 (Low)	1 (Low)	1 (Low)

The sensitivity and exposure of the area was determined with reference to a number of online tools and with input from the various discipline specialists on the project team. It was concluded that proposed development does not have any significant vulnerabilities to the identified climate hazards as described in the below sections. All vulnerabilities are classified as low. There are no residual medium or high risk vulnerabilities to climate change hazards and therefore a detailed CCRA is not required (TII, 2022a).

Flooding

A Site Specific Flood Risk Assessment (SSFRA) for the proposed development was undertaken by DBFL, and is submitted with this planning application. The SSFRA concluded that the site is considered to be within Flood Zone C which indicates that coastal, fluvial or pluvial flooding is not a risk at the project location. The drainage for the development has been designed to allow for a 20% increase in rainfall in future years as a result of climate change and is in line with the *"Medium Risk"* RCP4.5 scenario. Appropriate SUDS measure have been incorporated into the design of the proposed development, with attenuation tanks and basins are incorporated through the public open space system and all private driveways will be paved with permeable paving to manage surface water run off. Additionally the proposed drainage system will be maintained on a regular basis to reduce the risk of a blockage and in the event of storms exceeding the 100-year design capacity of the drainage system possible flooding can be directed towards green areas or the drainage outfalls. Therefore, the risk of flooding at the proposed development overall is still considered low.

Extreme Wind, Fog, Lightning & Hail

In relation to extreme winds, the buildings shall be designed to the appropriate standards to account for the relevant wind loadings. If required as part of the building design, lightning protection shall be provided for. Hail and fog are not predicted to significantly affect the buildings due to their design.

Wildfires

In relation to wildfires, the Think Hazard! tool developed by the Global Facility for Disaster Reduction and Recovery (GFDRR, 2023), indicates that the wildfire hazard is classified as low for the Dublin area. This means that there is between a 4% to 10% chance of experiencing weather that could support a problematic wildfire in the project area that may cause disruptions and low but tangible risk of life and property loss in any given year. Future climate modelling indicates that there could be an increase in the weather conditions which are favourable to fire conditions, these include increases in temperature and prolonged dry periods. However, due to the project location in a suburban area the risk of wildfire is significantly lessened and it can be concluded that the proposed development is of low vulnerability to wildfires.

Landslides

Landslide susceptibility mapping developed by Geological Survey Ireland (GSI, 2024) indicates that the proposed development location is not within an area that is susceptible to landslides and there are no recorded historical landslide events at the project location. It can be concluded that landslides are not a risk to the proposed development site.

Extreme Temperatures (Heat & Cold) & Drought

In relation to extreme temperatures, both extreme heat and extreme cold, these have the potential to impact the building materials and some related infrastructure. However, the building materials selected at the detailed design stage will be of high quality and durability. Therefore, extreme temperatures are not considered a significant risk.

In relation to drought, planting material for the proposed development landscaping is typical of the locality and is generally tolerant of climatic zones which experience variable warmer and cooler conditions. An existing hedgerow system with established young/semi-mature trees will be retained and its presence is indicative of tolerance of the drier conditions north county Dublin experiences (relative to the remainder of Ireland). Therefore the sensitivity to drought is considered low and the vulnerability is also low.

Summary

Overall, the proposed development has at most low vulnerabilities to the identified climate hazards. Therefore, no detailed risk assessment is required.

12.8.2.3 CCRA Significance of Effects

With design mitigation in place, there are no significant risks to the proposed development as a result of climate change. In accordance with the EPA Guidelines (EPA, 2022), the significance of effect of the impacts to the proposed development as a result of climate change are **direct, long-term, negative** and **imperceptible**, which is overall **not significant** in EIA terms.

12.8.3 Cumulative Effects

With respect to the requirement for a cumulative assessment PE-ENV-01104 (TII, 2022c) states that "for GHG Assessment is the global climate and impacts on the receptor from a project are not

geographically constrained, the normal approach for cumulative assessment in EIA is not considered applicable".

However, by presenting the GHG impact of a project in the context of its alignment to Ireland's trajectory of net zero and any sectoral carbon budgets, this assessment will demonstrate the potential for the project to affect Ireland's ability to meet its national carbon reduction target. Therefore, the assessment approach is considered to be inherently cumulative. The cumulative impact of the proposed development in relation to GHG emissions is considered **direct, long-term, negative** and **slight**, which is overall **not significant** in EIA terms.

12.9 Mitigation

12.9.1 Construction Phase Mitigation

Embodied carbon of materials and construction activities will be the primary source of climate impacts during the construction phase. During the construction phase the following best practice measures shall be implemented on site to prevent significant GHG emissions and reduce impacts to climate:

- Creating a construction program which allows for sufficient time to determine reuse and recycling opportunities for construction wastes;
- Appointing a suitably competent contractor who will undertake a pre-construction audit detailing resource recovery best practice and identify materials/building components that can be reused/recycled;
- Materials will be reused on site where possible;
- Prevention of on-site or delivery vehicles from leaving engines idling, even over short periods;
- Ensure all plant and machinery are well maintained and inspected regularly;
- Minimising waste of materials due to poor timing or over ordering on site will aid to minimise the embodied carbon footprint of the site;
- Material choices and quantities will be reviewed during detailed design, to identify and implement lower embodied carbon options where feasible.
- Sourcing materials locally where possible to reduce transport related CO2 emissions; and
- The project shall review and determine compliance with the requirements set out in the EU Taxonomy Regulation (Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088 (Text with EEA relevance)) in relation to circular economy. This is specific to reuse, recycling and material recovery of construction wastes.

These measures are supported by Glenveagh Properties PLC's *Net Zero Transition Plan 2023*, published in March 2023, which identifies the sources of Glenveagh Properties PLC's emissions and proposes measures to reduce these. A commitment to achieve a 55% reduction in Scope 3 (construction methods) emissions intensity (tCO_2e per 100 m^2 of complete floor area) by 2031 (using 2021 as the baseline year) will involve supplier engagement to make informed procurement decisions, engaging with subcontractors to support their transition to less carbon intensive fuels (diesel and gas oil is currently the norm) and investing in innovation of designing and building homes to reduce their associated embodied carbon. A reduction target of 46.2% by 2031 is also set in the plan for Scope 1 and 2 emissions (company operations). All targets have been validated by the Science Based Targets initiative (SBTi).

The Science Based Targets initiative (SBTi) is a corporate climate action organisation, incorporated as a charity, which develops standards, tools and guidance enabling companies to set greenhouse gas (GHG) emissions reductions targets in line net-zero by 2050 at latest. Science-based targets show companies and financial institutions how much and how quickly they need to reduce their greenhouse gas (GHG) emissions to prevent the worst effects of climate change (SBTi, 2024a). Glenveagh Properties PLC was one of the over 4,000 companies and financial institutions who had their emission reduction targets validated by the SBTi (Glenveagh's targets can be searched in the SBTi's target dashboard (SBTi, 2024b)).

Glenveagh Properties PLC's *Full Year 2023 Results*, published in February 2024, identified that Scope 3 emissions decreased by 7% against the 2021 baseline, measured on an intensity basis (tCO_2e per $100m^2$). This is primarily due to the focus on the energy efficiency of the residential unit, with the proportion of A1 rated homes in 2023 increasing from 55% to 85%. Scope 1 and 2 emissions decreased by 11% compared to 2022, which can be attributed to the roll out of HVO (hydrotreated vegetable oil) to replace diesel across sites.

Specific measures are proposed to reduce GHG emissions during the construction phase:

- An estimated total of approx. 41,000 tonnes of excavated material generated during the construction phase of the development site can be reused. This material re-use represents GHG savings of 378 tCO_2e (if avoidance of worst-case landfill disposal is assumed);
- Other materials such as concrete, bricks, tiles and ceramics, metals and timber may be diverted from waste processing by recycling or disposal in landfill, and can instead be reused on-site. This will reduce the associated CO_2 by approximately 32.6 tonnes; and
- Use of timber as a lower carbon option for frames for the house units.

In terms of impact on the proposed development due to climate change, during construction the Contractor will be required to mitigate against the effects of extreme rainfall/flooding through site risk assessments and method statements. The Contractor will also be required to mitigate against the effects of extreme wind/storms, temperature extremes through site risk assessments and method statements. All materials used during construction will be accompanied by certified datasheets which will set out the limiting operating temperatures. Temperatures can affect the performance of some materials, and this will require consideration during construction. During construction, the Contractor will be required to mitigate against the effects of fog, lighting and hail through site risk assessments and method statements.

12.9.2 Operational Phase Mitigation

As per the *Residential Climate Action Energy Statement* (Ethos Engineering, 2024) and the *Life Cycle Report* (McCauley Daye O'Connell Architects Ltd., 2024) (both submitted under separate cover with this planning application) the development will be a Nearly Zero Energy Building (NZEB) in accordance with the Building Regulations Technical Guidance Document L 2021 and the relevant sustainability policies within the Fingal Development Plan 2023-2028. Both reports detail a number of design mitigation measures that have been incorporated into the design of the development to reduce the impact on climate wherever possible. Such measures included in the proposed development to reduce the impact to climate from energy usage are:

- The residential units will aim to achieve a Building Energy Ratio (BER) of A2 (25-50 $kwh/m^2/yr$ with CO_2 emissions <10 kg CO_2/m^2 per year).;

- Achieve air tightness standards of 3 $m^3/m^2/hr$;
- Ensure thermal bridging details are designed to achieve thermal bridging factors of 0.08W/m^2K (0.15 W/m^2k required in Part L);
- Energy Performance Coefficient (EPC) < 0.30;
- Carbon Performance Coefficient (CPC) < 0.35;
- Renewable Energy Ratio (RER) > 0.20;
- Meet or exceed minimum U-Value standards identified in Part L 2022 Dwellings;
- A combination of low energy strategies such as air to water heat pumps, mechanical ventilation heat recovery and/or natural ventilation will be decided and implemented to achieve A2 BER Rating;
- Provide an appropriate combination of technologies to ensure energy consumption is in line with Part L 2022 Dwellings requirements;
- Use of natural daylight will be maximised to reduce the need for artificial lighting;
- Where artificial lighting is required this will be in the form of energy efficient LED lighting within in the dwellings and common areas, with latter being on dusk-dawn profiles;
- White goods package planned for the houses and apartments will all have energy ratings ranging from B to A+++;
- Efficient water fittings to sanitaryware such as flow restrictors will be fitted to reduce water consumption;
- Solar gains will be optimised to reduce space heating demands during the winter months, whilst limiting summertime solar gains to reduce space cooling demands;
- Natural/passive ventilation in circulation areas, car parks and other common areas removes need for mechanical ventilation;
- All in-curtilage parking spaces will be capable of being fitted with EV charging points. All off-curtilage spaces will be ducted for EV charging, with 20% fitted out from the outset, equating to 27 no. spaces;
- High quality secure short-term and long-term bicycle parking facilities will be provided and the connectivity of onsite pedestrian and cycle infrastructure has been incorporated into the design of the proposed development; and
- The proposed development location maximises connectivity to existing and proposed public transport bus services, as well as by its proximity to Donabate railway station, providing sustainable alternative to private vehicles.

The above measures will assist in optimising the energy consumed by the development and will also have the benefit of reducing the impact to climate during the operational phase of the development.

Some measures have been incorporated into the design of the development to mitigate the impacts of future climate change. For example, adequate attenuation and drainage have been incorporated to avoid potential flooding impacts due to increased rainfall events in future years. These measures have been considered when assessing the vulnerability of the proposed development to climate.

12.10 Residual Impact Assessment

The impact to climate as a result of a proposed development must be assessed as a whole for all phases. The proposed development will result in some impacts to climate through the release of GHGs. TII state that the crux of assessing significance is "*not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050*". The proposed

development has proposed some best practice mitigation measures and is committing to reducing climate impacts where feasible. As per the assessment criteria in **Table 12.4** the residual impact of the proposed development in relation to GHG emissions is considered **direct, long-term, negative** and **slight**, which is overall **not significant** in EIA terms.

In relation to climate change vulnerability, it has been assessed that there are no significant risks to the proposed development as a result of climate change. The residual effect of climate change on the proposed development is considered **direct, long-term, negative** and **imperceptible**, which is overall **not significant** in EIA terms.

12.11 Indirect and /or Secondary Impacts

The direct impacts on climate have been assessed in Section 12.8. There are no additional indirect and/or secondary impacts on climate which are not a direct result of the proposed development, often produced away from (the site) or as a result of a complex pathway (EPA, 2022).

12.12 Risk of Major Accidents or Disasters

As detailed in Section 12.8.2, climate change has the potential to alter weather patterns and increase the frequency of rainfall in future years. However, the potential for flooding on site has been reviewed and adequate attenuation and drainage have been provided for to account for increased rainfall in future years. The proposed development has been assessed as having only low vulnerabilities to various climate change related hazards and there is no significant risk to the site as a result of climate change. Therefore, the impact will be ***neutral*** and ***imperceptible***.

12.13 Worst Case Scenario

Worst case estimates have been used as part of this assessment. As a result, Section 12.8 details the worst case impact for the proposed development.

12.14 Interactions

Climate has the potential to interact with a number of other environmental attributes.

12.14.1 Land, Soils, Geology and Hydrology

The impact of flood risk has been assessed and the surface water drainage network will be designed to cater for increased rainfall in future years as a result of climate change. The effect of the interactions between climate and land, soils, geology and hydrology (Ch.9) are **direct, short-term, negative** and **imperceptible** during the construction phase and **direct, long-term, negative** and **imperceptible** during the operational phase, which is overall **not significant** in EIA terms.

12.14.2 Air Quality

Air quality (Ch.11) and climate have interactions due to the emissions from the burning of fossil fuels during the construction and operational phases generating both air quality and climate impacts. Air quality modelling outputs are utilised within the Climate Chapter. There is no impact on climate due to air quality; however, the sources of impacts on air quality and climate are strongly linked.

12.14.3 Microclimate – Wind

There is the potential for the proposed development to be impacted by the local wind microclimate. More detail can be found in Ch. 17 Microclimate – Wind. This chapter identified no significant effects on the proposed development as a result of the wind microclimate. Therefore, in this assessment the effects of the interactions between microclimate - wind and climate are considered to be **direct, short-term, negative** and **imperceptible** during the construction phase and **direct, long-term, negative** and **imperceptible** during the operational phase, which is overall **not significant** in EIA terms.

12.14.4 Traffic and Transportation

During the construction and operational phase, there is the potential for interactions between climate and traffic (for more information see Ch.18 Traffic and Transportation). Vehicles accessing the site will result in emissions of CO_2, a greenhouse gas. The effects of the proposed development on air quality are assessed by reviewing the change in annual average daily traffic on roads close to the site. In this assessment, the effects of the interactions between traffic and climate are considered to be **direct, short-term, negative** and **not significant** during the construction phase and **direct, long-term, negative** and **not significant** during the operational phase, which is overall **not significant** in EIA terms.

12.14.5 Waste

Waste (Ch.19) management measures will be put in place to minimise the amount of waste entering landfill, which has higher associated embodied carbon emissions than other waste management such as recycling. The effect of the interactions between waste and climate are considered to be **direct, short-term, negative** and **not significant** during the construction phase and **direct, long-term, negative** and **not significant** during the operational phase, which is overall **not significant** in EIA terms.

12.15 Monitoring

There is no proposed monitoring during the construction phase and there is no proposed monitoring during the operational phase.

12.16 References

- Standard Method of Measurement (CESSM) (2013) Carbon and Price Book database
- Department of Housing, Planning & Local Government (2018) Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment
- Department of Environment, Climate and Communications (DECC) (2023a) Climate Action Plan (CAP) 2024
- Department of Environment, Climate and Communications (DECC) (2023b) Long-term Strategy on Greenhouse Gas Emissions Reductions (draft)
- Environmental Protection Agency (EPA) (2020a) State of the Irish Environment Report (Chapter 2: Climate Change)
- Environmental Protection Agency (EPA) (2020b) Research 339: High-resolution Climate Projections for Ireland – A Multi-model Ensemble Approach.
- Environmental Protection Agency (EPA) (2021a) Critical Infrastructure Vulnerability to Climate Change Report no. 369

- Environmental Protection Agency (EPA) (2021b) What impact will climate change have for Ireland? [Online] Available at https://www.epa.ie/environment-and-you/climate-change/what-impact-will-climate-change-have-for-ireland/
- Environmental Protection Agency (EPA) (2022) Guidelines on the Information to be contained in Environmental Impact Assessment Reports
- Environmental Protection Agency (EPA) (2023) Ireland's Final Greenhouse Gas Emissions 1990-2021
- European Commission (2013) Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment
- European Commission (2014) 2030 Climate and Energy Policy Framework
- European Commission (2017) Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report
- European Commission (2021a) Technical guidance on the climate proofing of infrastructure in the period 2021-2027
- European Commission (2021b) 2030 EU Climate Target Plan
- European Union (2018) Regulation 2018/842 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No. 525/2013
- Fingal County Council & Codema (2019) Fingal County Council Climate Change Action Plan 2019 - 2024
- Geological Society of Ireland (GSI) (2024) Landslide Susceptibility Map https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=b68cf1e4a9044a5981f950e9b9c5625c
- Glenveagh Properties PLC (2023) Net Zero Transition Plan 2023
- Glenveagh Properties PLC (2024) Full Year 2023 Results
- Global Facility for Disaster Reduction and Recovery (2023) Think Hazard! Tool https://thinkhazard.org/en/
- Government of Ireland (2015) Climate Action and Low Carbon Development Act
- Government of Ireland (2018) Climate Action Plan 2019
- Government of Ireland (2020) Climate Action Plan 2021
- Government of Ireland (2021) Climate Action and Low Carbon Development (Amendment) Act 2021 (No. 32 of 2021)
- Government of Ireland (2022) Climate Action Plan 2023
- The Greenhouse Gas Protocol (2004) A Corporate Accounting and Reporting Standard, Revised Edition
- Highways England (2021) UK Design Manual for Roads and Bridges (DMRB) Volume 11 Environmental Assessment, Section 3 Environmental Assessment Techniques, Part 14 LA 114 Climate
- Institute of Environmental Management & Assessment (IEMA) (2020a) EIA Guide to: Climate Change Resilience and Adaptation
- Institute of Environmental Management & Assessment (IEMA) (2020b) GHG Management Hierarchy
- Institute of Environmental Management & Assessment (IEMA) (2022) Assessing Greenhouse Gas Emissions and Evaluating their Significance
- Met Éireann (2023a) 2023 Climate Statement

- Met Éireann (2023b) TRANSLATE: One Climate Resource for Ireland. [Online] Available at: https://www.met.ie/science/translate
- One Click LCA Ltd. (2023) Carbon Designer for Ireland Tool
- Science Based Targets initiative (SBTi) (2024a) Science Based Targets initiative - About Us. [Online] Available at: https://sciencebasedtargets.org/about-us
- Science Based Targets initiative (SBTi) (2024b) Science Based Targets Dashboard (beta). [Online] Available at: https://sciencebasedtargets.org/target-dashboardTransport Infrastructure Ireland (TII) (2023) GE-GEN-01101: Guide to the Implementation of Sustainability for TII Projects
- Transport Infrastructure Ireland (TII) (2022a) PE-ENV-01104: Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document
- Transport Infrastructure Ireland (TII) (2022b) PE-ENV-01105: Climate Assessment Standard for Proposed National Roads
- Transport Infrastructure Ireland (TII) (2022c) GE-ENV-01106: TII Carbon Assessment Tool for Road and Light Rail Projects and User Guidance Document

13 Noise & Vibration

13.1 Introduction

The following chapter presents an assessment of the impacts of the proposed residential and commercial development at Ballymastone, Donabate, Co. Dublin in terms of noise and vibration in the local environment. The assessment for noise and vibration is based on the most up to date applicable guidance and assessment documents available both nationally and internationally.

The noise and vibration assessment has been prepared by Mike Simms (Principal Acoustic Consultant with AWN Consulting) who holds a BE and MEngSc in Mechanical Engineering and is a member of the Institute of Acoustics and of the Institution of Engineering and Technology. Mike has worked in the field of acoustics for 20 years. He has extensive experience in all aspects of environmental surveying, noise modelling and impact assessment for various sectors including, wind energy, industrial, commercial and residential.

Noise and vibration will be considered in terms of two aspects. The first is the outward effect of the development (i.e. the potential effect of the buildings and commercial activities on existing sensitive receptors in the study area), and the second is the inward effect of the existing noise and vibration sources on the development itself. A full project description is included in Chapter 5 of this Environmental Impact Assessment Report (EIAR).

13.2 Method

The study has been undertaken using the following methodology:

- A review of the standards and guidelines has been conducted in order to set a range of acceptable noise and vibration criteria for the construction and operational phases of the proposed development;
- The receiving environment for both inward and outward impact has been characterised by a baseline noise survey;
- Predictive calculations have been performed to estimate the likely noise emissions during the construction phase of the proposed development at the nearest noise sensitive locations (NSLs) to the site;
- Predictive calculations have been performed to assess the potential impacts associated with the operation of the development at the most NSLs surrounding the development site;
- An assessment has been completed of potential cumulative impacts that may arise as a result of the proposed development and other existing or proposed plans and projects, and
- A schedule of mitigation measures has been proposed, where relevant, to control the noise and vibration emissions associated with both the construction and operational phases of the proposed development.

Specific noise and vibration standards and guidelines referred to in this chapter are listed as follows:

- British Standard BS 8233: 2014: Guidance on sound insulation and noise reduction for buildings.
- British Standard BS 4142: 2014+A1:2019: Methods for Rating and Assessing Industrial and Commercial Sound.
- British Standard BS 5228: 2009 +A1:2014: Code of Practice for Control of Noise and Vibration on Construction and Open Sites Part 1: Noise & Part 2: Vibration.

- British Standard BS 7385: 1993: Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration.
- Department of Transport Welsh Office, HMSO (1988). Calculation of Road Traffic Noise.
- EPA (2022). Guidelines on the Information to be contained in Environmental Impact Assessment Reports.
- The UK Highways Agency (2020). Design Manual for Roads & Bridges – LA111 -Revision 2.

13.2.1 Construction Phase

13.2.1.1 Criteria for Assessing Construction Noise Impacts

There is no published statutory Irish guidance relating to the maximum permissible noise level that may be generated during the construction phases of a project. Local authorities normally control construction activities by imposing limits on the hours of operation and consider noise limits at their discretion.

In the absence of specific noise limits, appropriate criteria relating to permissible construction noise levels for a development of this scale may be found in the British Standard BS 5228 – 1: 2009+A1:2014: *Code of practice for noise and vibration control on construction and open sites – Noise* (hereafter referred to as BS 5228-1).

The approach adopted here calls for the designation of a NSL into a specific category (A, B or C) based on exiting ambient noise levels in the absence of construction noise. This then sets a threshold noise value that, if exceeded at this location, indicates a potential significant noise impact is associated with the construction activities.

This document sets out guidance on permissible noise levels relative to the existing noise environment. **Table 13.1** sets out the values which, when exceeded, signify a potential significant effect at the façades of residential receptors, as recommended by BS 5228-1.

Table 13.1 Example thresholds of potential significant effect at dwelling

Assessment category and threshold value period (L_{Aeq})	Threshold value, in decibels (dB)		
	Category A [30]	Category B[31]	Category C[32]
Night-time (23:00 to 07:00hrs)	45	50	55
Evenings and weekends[33]	55	60	65
Daytime (07:00 - 19:00) and Saturdays (07:00 – 13:00hrs)	65	70	75

It should be noted that this assessment method is only valid for residential properties, and if applied to commercial premises without consideration of other factors, may result in an excessively onerous thresholds being set.

[30] Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are less than these values.
[31] Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are the same as category A values.
[32] Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than category A values.
[33] 19:00 – 23:00 weekdays, 13:00 – 23:00 Saturdays and 07:00 – 23:00 Sundays.

Fixed Limits

BS 5228-1 gives several examples of acceptable limits for construction or demolition noise, the most simplistic being based upon the exceedance of fixed noise limits. For example, paragraph E.2 states: -

> *"Noise from construction and demolition sites should not exceed the level at which conversation in the nearest building would be difficult with the windows shut."*

Paragraph E.2 goes on to state: -

> *"Noise levels, between say 07.00 and 19.00 hours, outside the nearest window of the occupied room closest to the site boundary should not exceed: -*
>
> *70 decibels (dBA) in rural, suburban areas away from main road traffic and industrial noise;*
>
> *75 decibels (dBA) in urban areas near main roads in heavy industrial areas".*

Proposed Threshold Levels for Noise

Taking into account the proposed documents outlined above and making reference to the baseline noise environment monitored around the development site (see **Section 13.3**), BS 5228-1 has been used to inform the assessment approach for construction noise, in line with the ABC method.

The following Construction Noise Threshold (CNT) levels are proposed for the construction stage of this development:

- For residential NSLs it is considered appropriate to adopt 65 dB(A) CNT for daytime periods and Saturday mornings.
- For non-residential NSLs it is considered appropriate to adopt the 70 dB(A) CNT, given the suburban environment in which the proposed development is set, in line with BS5228-1 Annex E2.

Interpretation of the Construction Noise Levels (CNL)

In order to assist with interpretation of CNL, **Table 13.2** includes guidance as to the likely magnitude of impact associated with construction activities, relative to the threshold value. This guidance is taken from United Kingdom Highways Agency (UKHA) *Design Manual for Roads and Bridges (DMRB) Sustainability & Environment Appraisal LA 111 Noise and Vibration Revision 2* (UKHA, 2020), (hereafter referred to as DMRB). Table 3.16 of DMRB is presented below and adapted to include the EPA EIAR Guidelines.

Table 13.2 Interpretation of CNL at dwelling

CNL per Period	Impact Guidelines for Noise Impact Assessment Significance (Adapted from DMRB)	EPA EIAR Guidelines	Determination
Below or equal to baseline noise level	Negligible	Not Significant	Depending on range of CNL and baseline noise level
Above baseline and below or equal to CNT	Minor	Slight to Moderate	
Above CNT and below or equal to CNT +5 dB	Moderate	Moderate to Significant	

CNL per Period	Impact Guidelines for Noise Impact Assessment Significance (Adapted from DMRB)	EPA EIAR Guidelines	Determination
Above CNT +5 dB	Major	Significant to Very Significant	

The adapted DMRB guidance outlined will be used to assess the predicted construction noise levels at NSLs and comment on the likely impacts during the construction stages.

Construction Vehicular Traffic

Vehicular movement to and from the construction site for the proposed development will make use of the existing road network. In order to assess the potential noise impact of additional traffic on the surrounding road network, the following two guidelines are referenced; the DMRB and the Environmental Protection Agency (EPA) *Guidelines on the Information to be contained in Environmental Impact Assessment Reports* (EPA, 2022). For construction traffic, due to the short-term period over which this impact occurs, the magnitude of impacts is assessed against the 'short term' period in accordance with the DMRB document. **Table 13.3** sets out the classification of changes in noise level to impact on human perception based on the guidance contained in these documents.

Table 13.3 Likely effect associated with change in traffic noise level – construction noise (DMRB 2020)

Change in Sound Level (dB)	Subjective Reaction	DMRB Magnitude of Impact (Short-term)	EPA Significance of Effect
Less than 1 dB	Inaudible	Negligible	Imperceptible
1 – 2.9	Barely Perceptible	Minor	Not Significant
3 – 4.9	Perceptible	Moderate	Slight, Moderate
≥ 5	Up to a doubling of loudness	Major	Significant

In accordance with the DMRB Noise and Vibration Guidance, construction noise and construction traffic noise effects shall constitute a significant effect where it is determined that a major or moderate magnitude of effect will occur for a duration exceeding:

- Ten or more days or nights in any 15 consecutive days or nights, or
- A total number of days exceeding 40 in any six consecutive months.

The DMRB guidance outlined will be used to assess the predicted increases in traffic levels on public roads associated with the proposed development and comment on the likely impacts during the construction stage.

13.2.1.2 Criteria for Assessing Construction Vibration Impacts

There are two aspects to the issue of vibration that are addressed in the standards and guidelines: the risk of cosmetic or structural damage to buildings and human perception of vibration. In the case of this development, vibration levels used for the purposes of evaluating building protection and human comfort are expressed in terms of Peak Particle Velocity (PPV) in mm/s. There is no published statutory

Irish guidance relating to the maximum permissible vibration level. The following standards are referenced here in relation to cosmetic or structural damage to buildings:

- British Standard BS 7385: 1993: Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration (BS 7385-2), and;
- British Standard BS 5228: 2009 +A1 2014: Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration (BS 5228-2).

Building Damage

BS7385-2 and BS5228-2 advise that, for soundly constructed residential properties and similar structures that are generally in good repair, a threshold for minor or cosmetic (i.e. non-structural) damage should be taken as a peak component particle velocity (in frequency range of predominant pulse) of 15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz and 50 mm/s at 40 Hz and above for transient vibration. Where the dynamic loading caused by continuous vibration is such as to give rise to dynamic magnification due to resonance, especially at the lower frequencies where lower guide values apply, then the guide values in Table B.2 of BS5228-2:2009+A1:2014 might need to be reduced by up to 50%. On a cautious basis, therefore, continuous vibration limits are set as 50% of those for transient vibration across all frequency ranges.

Table 13.4 Transient Vibration Guide Values for Cosmetic Building Damage

Type of Building	Peak component particle velocity in frequency range of predominant pulse	
	4 Hz to 15 Hz	15 Hz and above
Reinforced or framed structures. Industrial and heavy commercial buildings	50 mm/s at 4 Hz and above	
Unreinforced or light framed structures. Residential or light commercial building types	15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above.

Values referred to in **Table 13.4** are at the base of the building. As per BS5228-2, below a frequency of 4 Hz where a high displacement is associated with a relatively low component PPV, a maximum displacement of 0.6 mm (zero to peak) should be used.

BS 5228-2 and BS 7385-2 state that minor structural damage can occur at vibration magnitudes greater than twice those in **Table 13.4** and major structural damage can occur at vibration magnitudes greater than four times these values.

The guide values contained in **Table 13.4** relate to predominantly transient vibration which does not give rise to resonant responses in structures, and to low rise buildings.

Human Perception

It is acknowledged that humans are particularly sensitive to vibration stimuli and that any perception of vibration may lead to concern. In the case of traffic, vibration is perceptible at around 0.5mm/s and may become disturbing or annoying at higher magnitudes. Higher levels of vibration, however, are typically tolerated for single events or events of short duration. For example, during piling, one of the primary sources of vibration during construction, vibration levels may typically be tolerated at up to

2.5mm/s. This guidance is applicable to the daytime only; it is unreasonable to expect people to be tolerant to such activities during the night-time (or if they are trying to sleep during the daytime).

BS5228-2 provides a useful guide relating to the assessment of human response to vibration in terms of PPV. **Table 13.5** below summarises the range of vibration values and the associated potential effects on humans.

Table 13.5 Guidance on effects of human response to PPV magnitudes

Vibration level, PPV	Likely Effect (DMRB)	Significance Ratings (EPA)
≥10	Major	Moderate to Significant to Very Significant
≥1 to <10	Moderate	Moderate to Significant
≥0.3 to <1	Minor	Not Significant to Slight
≥0.14 to 0.3	Negligible	Imperceptible to Not significant
Less than 0.14		Imperceptible

13.2.2 Operational Phase

13.2.2.1 Criteria for Assessing Operational Noise Impacts

The main potential source of outward noise from the proposed development will relate to traffic flows to and from the development site onto the public roads and activities from vehicular movements on site. There will also be a variety of electrical and mechanical plant required to service the development. The relevant guidance documents used to assess potential operational noise and vibration impacts are summarised in the following sections.

Change in Traffic Noise Levels

In the absence of any Irish guidelines or standards describing the effects associated with changes in road traffic noise levels, reference has been made to the DMRB guidance. This document provides magnitude rating tables relating to changes in road traffic noise. The document suggests that, during the year of opening, the magnitude of impacts between the Do Minimum and the Do Something scenarios are likely to be greater compared to the longer term period (fifteen years post-opening), when people become more habituated to the noise level change. It shows that small changes in noise levels are not normally noticeable, whereas an increase of 10 dB would be described as a doubling of loudness. In summary, the assessment looks at the impact with and without development at the nearest noise sensitive locations.

Table 13.6 Classification of magnitude of traffic noise changes in the short-term

Change in Noise Level (dB LA10)	Subjective Reaction	Short to medium-term magnitude	EPA criteria magnitude of impact
<1.0	Inaudible	Negligible	Imperceptible
1.0 to 2.9	Barely Perceptible	Minor	Not Significant
3 – 4.9	Perceptible	Moderate	Slight, Moderate
>5.0	Up to a doubling of loudness	Major	Significant

Table 13.7 Classification of magnitude of traffic noise changes in the long term

Change in Noise Level (dB L_{A10})	Subjective Reaction	Long-Term Term Magnitude	EPA Classification Magnitude of Impact
0	Inaudible	No Change	Neutral
0.1 – 2.9	Barely Perceptible	Negligible	Imperceptible
3 – 4.9	Perceptible	Minor	Slight
5 – 9.9	Up to a doubling of loudness	Moderate	Moderate
10+	Doubling of loudness and above	Major	Significant

The criteria above reflect the key benchmarks that relate to human perception of sound. A change of 3 dB(A) is generally considered to be the smallest change in environmental noise that is perceptible to the human ear. A 10 dB(A) change in noise represents a doubling or halving of the noise level. The difference between the minimum perceptible change and the doubling or halving of the noise level is split to provide greater definition to the assessment of changes in noise level.

Building Services and Plant

Once a development of this nature becomes fully operational, a variety of electrical and mechanical plant will be required to service the development. Most of this plant will be capable of generating noise to some degree. Some of this plant may operate 24 hours a day, and hence would be most noticeable during quiet periods (i.e. overnight). Noisy plant with a direct line-of-sight to noise sensitive properties would potentially have the greatest effect. Plant contained within plant rooms has the least potential for impact, once consideration is given to appropriate design of the space.

The following wording would be considered typically suitable for a planning condition related to operational noise (plant) associated with a development of this nature: -

> *"Noise levels from the Proposed Development should not be so loud, so continuous, so repeated, of such duration or pitch or occurring at such times as to give reasonable cause for annoyance to a person in any premises in the neighbourhood or to a person lawfully using any public space. In particular the rated noise levels from the Proposed Development shall not constitute reasonable grounds for complaint as provided for in B.S. 4142. Method for rating industrial noise affecting mixed residential and industrial area.*

Reason: In order to ensure a satisfactory standard of development, in the interests of residential amenity."

The typical planning condition outlined above related to noise emissions from mechanical plant items makes reference to the British Standard BS 4142: 2014+A1:2019: *Methods for Rating and Assessing Industrial and Commercial Sound*. This document is the industry standard method for analysing building services plant noise emissions to residential NSLs and is the document used by Fingal County Council in their standard planning conditions and also in complaint investigations.

BS 4142 describes methods for rating and assessing sound of an industrial and/or commercial nature. The methods described in this British Standard use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident.

For an appropriate BS 4142 assessment, it is necessary to compare the measured external background noise level (i.e. the $L_{A90,T}$ level measured in the absence of plant items) to the rating level ($L_{Ar,T}$) of the various plant items, when operational. Where noise emissions are found to be tonal, impulsive in nature or irregular enough to attract attention, BS 4142 also advises that a penalty be applied to the specific level to arrive at the rating level.

The subjective method for applying a penalty for tonal noise characteristics outlined in BS 4142 recommends the application of a 2 dB penalty for a tone which is just perceptible at the NSL, 4 dB where it is clearly perceptible, and 6 dB where it is highly perceptible.

The following definitions, as discussed in BS 4142, are summarised below: -

"ambient noise level, $L_{Aeq,T}$"	is the noise level produced by all sources including the sources of concern, i.e. the residual noise level plus the specific noise of mechanical plant, in terms of the equivalent continuous A-weighted sound pressure level over the reference time interval [T].
"residual noise level, $L_{Aeq,T}$"	is the noise level produced by all sources excluding the sources of concern, in terms of the equivalent continuous A-weighted sound pressure level over the reference time interval [T].
"specific noise level, $L_{Aeq,T}$"	is the sound level associated with the sources of concern, i.e. noise emissions solely from the mechanical plant, in terms of the equivalent continuous A-weighted sound pressure level over the reference time interval [T].
"rating level, $L_{Ar,T}$"	is the specific sound level plus any adjustments for the characteristic features of the sound (e.g. tonal, impulsive or irregular components);
"background noise level, $L_{A90,T}$"	*is the sound pressure level of the residual noise that is exceeded for 90% of the time period T.*

If the rated plant noise level is +10 dB or more above the pre-existing background noise level, then this indicates that complaints are likely to occur and that there will be a significant adverse effect. A difference of around +5 dB is likely to be an indication of an adverse effect, depending on the context.

The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse effect or a significant adverse effect. Where the rating

level does not exceed the background sound level, this is an indication of the specific sound source having a low effect.

Noise criteria for building services are discussed in **Section 13.5.3.2.** It is important to note that cumulative plant noise levels from the proposed development site must be designed so as to meet the relevant noise criteria set at a given sensitive receptor location.

Internal Noise at Receivers within the Development

To ensure there is no adverse impact on the future inhabitants of the proposed development itself, it is appropriate to refer to internal noise targets derived from BS 8233: 2014: *Guidance on Sound Insulation and Noise Reduction for Buildings*. The recommended indoor ambient noise levels are set out in **Table 13.8** and are based on annual average data; that is to say, they omit occasional events where higher intermittent noisy events may occur.

For the purposes of this study, it is appropriate to derive external assessment criteria based on the internal criteria noted in the **Table 13.8**. This is done by factoring in the degree of noise reduction afforded by a partially open window. This is nominally deemed to be 15 dB.

Table 13.8 Indoor Ambient Noise Levels for Dwellings from BS 8233:2014

Activity	Location	Day (07:00 to 23:00hrs) dB $L_{Aeq,16hr}$	Night (23:00 to 07:00hrs) dB $L_{Aeq,8hr}$	Derived External Criteria
Resting	Living room	35 dB $L_{Aeq,16hr}$	-	50 dB $L_{Aeq,16hr}$
Dining	Dining room/ area	40 dB $L_{Aeq,16hr}$	-	55 dB $L_{Aeq,16hr}$
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16hr}$	30 dB $L_{Aeq,8hr}$ 45 dB $L_{Amax,T}$[34]	50 dB $L_{Aeq,16hr}$ (45 dB $L_{Aeq,8hr}$ at night)

Based on the guidance outlined the BS8233 standard, the following external noise levels would be considered reasonable in order to achieve suitable internal noise levels within the nearest residential properties:

- Daytime (07:00 to 23:00 hrs): 50 dB $L_{Aeq,15mins}$
- Night-time (23:00 to 07:00 hrs): 45 dB $L_{Aeq,15mins}$

13.2.2.2 Criteria for Assessing Operational Vibration Impacts

There are no noteworthy sources of vibration associated with the operational stage, therefore vibration criteria have not been specified.

13.3 Baseline Environment

13.3.1 Site Area Description

The Proposed Development comprises of 13.74 Ha. approximately, currently of greenfield lands lying to the west of the Donabate Distributor Road. A full description of the development is provided in

[34] The document comments that the internal $L_{Amax,T}$ noise level may be exceeded no more than 10 times per night without a significant impact occurring.

Chapter 5: Description of the Proposed Development. The site is to be located in the townlands of Ballalease North, Ballisk, Ballymastone and Portaine Demesne, Donabate, County Dublin.

13.3.2 Receptors

The site is bounded by Priory Wood residential estate and Donabate Burial Grounds to the north, The Links residential estate to the west, the Donabate Distributor Road to the east and the Ballymastone Phase 1 site to the south, currently under construction.

13.3.3 Environmental Noise Survey

An environmental noise survey was conducted in order to quantify noise emissions across the existing site. The external survey was conducted in general accordance with ISO1996-2:2017 *Acoustics - Description, Measurement and Assessment of Environmental Noise -- Determination of Environmental Noise Levels*. Specific details are set out in the following sections.

13.3.4 Choice of Measurement Positions

An environmental noise survey was conducted at the site between 01 November to 05 November 2021 by AWN Consulting in order to quantify the existing noise environment. Measurement locations were selected as shown in **Figure 13.1** below. The locations were chosen to characterise the baseline noise environment at locations representative of the environment close to the DDR and also at locations located away from the roads where noise levels are quieter. Four attended locations AN1 to AN4 were positioned close to the four major boundaries of the site while the unattended location UN1 was positioned on the development site overlooking the main noise source in the area of DDR. The purpose of UN1 was to measure the noise levels incident on the development itself.

Figure 13.1 Indicating attended noise survey locations (© Google Earth)

13.3.5 Survey Period

The attended noise survey was conducted between the following periods:

- AN1 to AN4 between 10:55 hrs to 15:00 hrs on 01 November 2021.

The unattended noise survey was conducted between the following periods:

- UN1 between 10:35 hrs on 01 November to 10:55 hrs on 05 November 2021.

The measurements cover a period that was selected in order to provide a typical snapshot of the existing noise climate, with the primary purpose being to ensure that the proposed noise criteria associated with the development are commensurate with the prevailing environment.

It is noted that Phase 1 of the Ballymastone development is currently under construction, and as such the noise survey data from 2021 is used to characterise the baseline environment, in the absence of construction noise.

13.3.6 Instrumentation

The measurements were performed using the equipment listed in **Table 13.9** below.

Table 13.9 Noise Monitoring Equipment Details

Measurement	Manufacturer	Equipment Model	Serial Number	Calibration date
Unattended Sound Level Meter	Rion	NL-52	164427	5 May 2020
Attended Sound Level Meter	Brüel & Kjær	Type 2250	2818080	25 August 2021
Calibrator	Brüel & Kjær	Type 4231	2205805	6 December 2020

The microphone was protected using a proprietary windshield. The sound level meter was check calibrated using a Brüel & Kjær Type 4231 Sound Level before and after the survey. Calibration certificates available on request.

13.3.7 Measurement Parameters

The noise survey results are presented in terms of the following parameters:

L_{Aeq} is the equivalent continuous sound level. It is a type of average and is used to describe a fluctuating noise in terms of a single noise level over the sample period.

L_{AFmax} is the instantaneous maximum sound level measured during the sample period using the 'F' time weighting.

L_{A90} is the sound level that is exceeded for 90% of the sample period. It is typically used as a descriptor for background noise.

The 'A' suffix denotes the fact that the sound levels have been 'A-weighted' in order to account for the non-linear nature of human hearing. All sound levels in this report are expressed in terms of decibels (dB) relative to 2×10^{-5} Pa.

13.3.8 Procedure

The unattended monitoring equipment was configured to log data over 15-minute periods, saved to the instrument memory for subsequent analysis. Survey personnel noted all primary noise sources contributing to noise build-up when the instrumentation was being set up and collected.

The attended noise monitoring equipment was configured to measure data over a 15-minute period at each location. Three measurements were taken at each location.

13.3.9 Results

The weather during the survey periods were generally dry and calm and was not considered to have had a detrimental effect on the noise measurements.

13.3.9.1 Unattended Survey Results UN1

Table 13.10 summarises the measured day, evening and night-time noise levels for the entire survey period.

Table 13.10 Summary of Measured Noise Levels (dB re. $2x10^{-5}$ Pa)

Day	Sound Pressure Level (dB re. $2x10^{-5}$ Pa)								
	Daytime (07:00 to 19:00 hrs)			Evening (19:00 to 23:00 hrs)			Night (07:00 to 23:00 hrs)		
	L_{Aeq}	L_{A90}	L_{AFMax}	L_{Aeq}	L_{A90}	L_{AFMax}	L_{Aeq}	L_{A90}	L_{AFMax}
Mon, November 1st	54	45	81	48	40	66	43	34	72

Day	Sound Pressure Level (dB re. $2x10^{-5}$ Pa)								
	Daytime (07:00 to 19:00 hrs)			Evening (19:00 to 23:00 hrs)			Night (07:00 to 23:00 hrs)		
	L_{Aeq}	L_{A90}	L_{AFMax}	L_{Aeq}	L_{A90}	L_{AFMax}	L_{Aeq}	L_{A90}	L_{AFMax}
Tues, November 2nd	50	43	80	49	39	63	42	33	63
Wed, November 3rd	52	44	83	49	39	64	43	34	62
Thurs, November 4th	51	43	70	49	39	79	42	33	64
Fri, November 5th	51	45	77	--	--	--	--	--	--
Average	52[2]	44[3]	78	48[1]	39[2]	*68*	43[1]	33[2]	*65*

Note 1: *Logarithmically overaged*
Note 2: *Arithmetically averaged*

Daytime noise levels were found to range between 51 to 54 dB $L_{Aeq,12hour}$, evening noise levels were in the range between 48 to 49 dB $L_{Aeq,4hour}$, while night-time noise levels were in the range of 42 to 43 dB $L_{Aeq,8hour}$. Dominant noise sources noted during the survey were road traffic on the R126 DDR Road with distant road traffic from Portrane Road and New Road also contributing to the ambient noise levels.

13.3.9.2 Survey Position AN1

The survey results for Location AN1 are presented in **Table 13.11**. During the daytime period, road traffic noise from DDR and Portrane Road and the surrounding estate roads were the dominant noise source at this location, with intermittent aircraft flyovers, birdsong and dogs barking in the distance.

Table 13.11 Measured noise levels at Location AN1

Date	Period	Measurement Period	Measured Noise Levels, dB re $2x10^{-5}$ Pa		
			L_{Aeq}	L_{AFMax}	L_{AF90}
01 November 2021	Day	14:05 – 14:20	52	70	43
		14:25 – 14:40	52	72	41
		14:45 – 15:00	46	59	41

Daytime noise levels were in the range of 46 to 52 dB $L_{Aeq,15min}$ and in the range of 41 to 43 dB $L_{A90,15min}$ during the measurement periods.

No significant level of vibration was noted at this location during site attendance.

13.3.9.3 Survey Position AN2

The survey results for Location AN2 are presented in **Table 13.12**. During the daytime period, road traffic noise from DDR and Portrane Road were the dominant noise source at this location, with intermittent aircraft flyovers, birdsong and construction noise in the distance.

Table 13.12 Measured noise levels at Location AN2

Date	Period	Measurement Period	Measured Noise Levels, dB re $2x10^{-5}$ Pa		
			L_{Aeq}	L_{AFMax}	L_{AF90}
01 November 2021	Day	10:55 – 11:10	53	69	44
		11:15 – 11:30	53	64	48
		11:35 – 11:50	53	64	47

Daytime noise levels were in the order of 53 dB $L_{Aeq,15min}$ and in the range of 44 to 48 dB $L_{A90,15min}$ during the measurement periods.

No significant level of vibration was noted at this location during site attendance.

13.3.9.4 Survey Position AN3

The survey results for Location AN3 are presented in **Table 13.13.** During the daytime period, road traffic noise from the DDR and New Road to the south were the dominant noise source at this location, with intermittent aircraft flyovers, birdsong and a street cleaner operating in the distance.

Table 13.13 Measured noise levels at Location AN3

Date	Period	Measurement Period	Measured Noise Levels, dB re $2x10^{-5}$ Pa		
			L_{Aeq}	L_{AFMax}	L_{AF90}
01 November 2021	Day	12:00 – 12:15	50	64	41
		12:20 – 12:35	54	66	42
		12:40 – 12:55	44	59	40

Daytime noise levels were in the range of 44 to 54 dB $L_{Aeq,15min}$ and in the range of 40 to 42 dB $L_{A90,15min}$ during the measurement periods.

No significant level of vibration was noted at this location during site attendance.

13.3.9.5 Survey Position AN4

The survey results for Location AN4 are presented in **Table 13.14**. During the daytime period, road traffic noise from DDR and Portrane Road and the surrounding estate roads were the dominant noise source at this location, with intermittent aircraft flyovers, birdsong and dogs barking in the distance. During the third measurement at this location a large truck parked in idle nearby elevating the measured noise levels.

Table 13.14 Measured noise levels at Location AN4

Date	Period	Measurement Period	Measured Noise Levels, dB re $2x10^{-5}$ Pa		
			L_{Aeq}	L_{AFMax}	L_{AF90}
01 November 2021	Day	13:01 – 13:16	50	65	41
		13:20 – 13:35	53	69	41
		13:40 – 13:55	59	76	48

Daytime noise levels were in the range of 50 to 59 dB $L_{Aeq,15min}$ and in the range of 41 to 48 dB $L_{A90,15min}$ during the measurement periods.

No significant level of vibration was noted at this location during site attendance.

13.3.10 EPA Round 4 Noise Maps

The EPA Round 4 Noise Maps[35], present noise levels for the overall day / evening / night period in terms of L_{den} and the night-time period in terms of L_{night}.

Figure 13.2 and **Figure 13.3** present the predicted noise levels across the development site for road traffic in terms of L_{den} and L_{night}. The predicted noise levels across the site are outside the 55 dB L_{den} and 55 dB L_{night} contours.

[35] https://gis.epa.ie/EPAMaps/

Figure 13.2 EPA Round 4 Noise Maps (Agglomerations) L_{den}

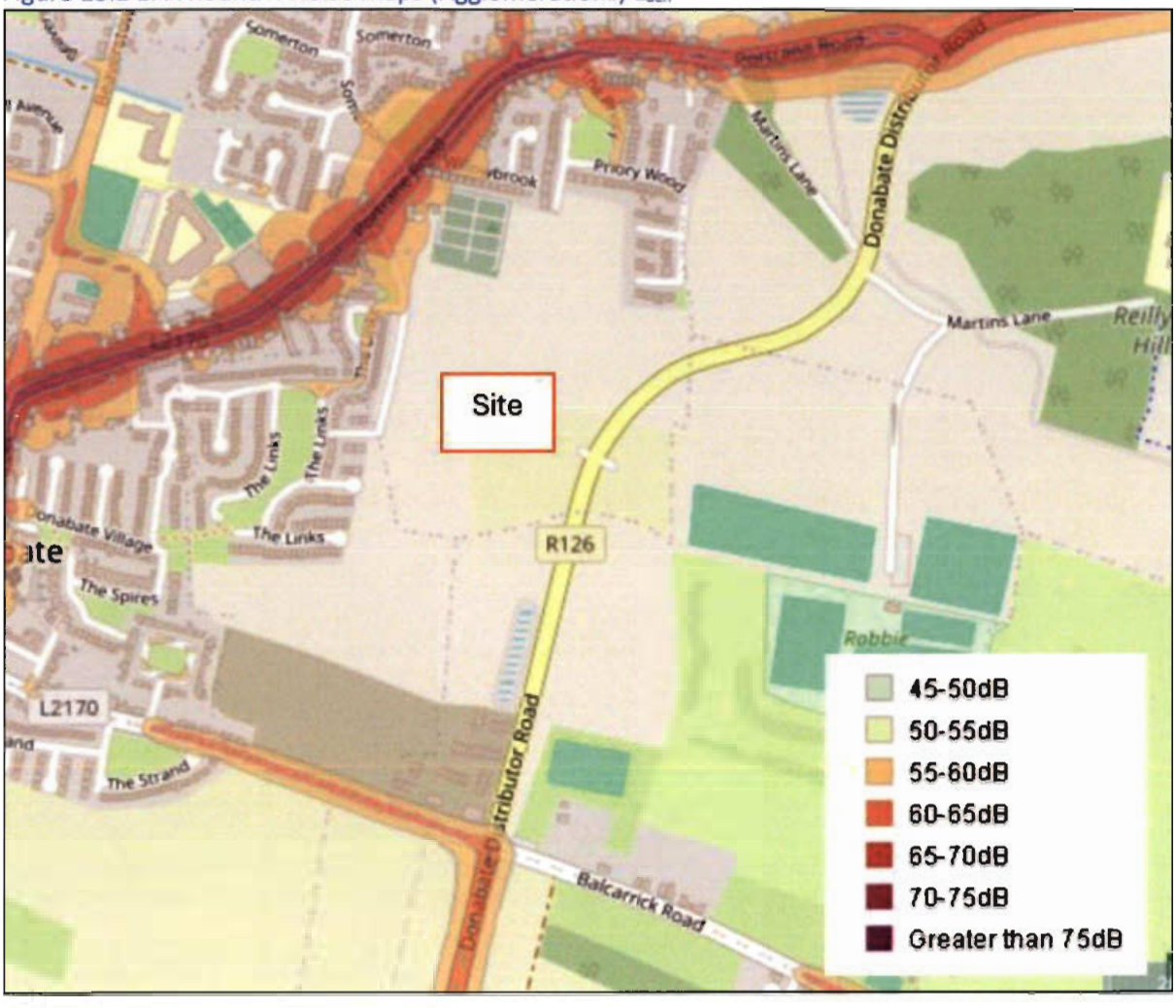
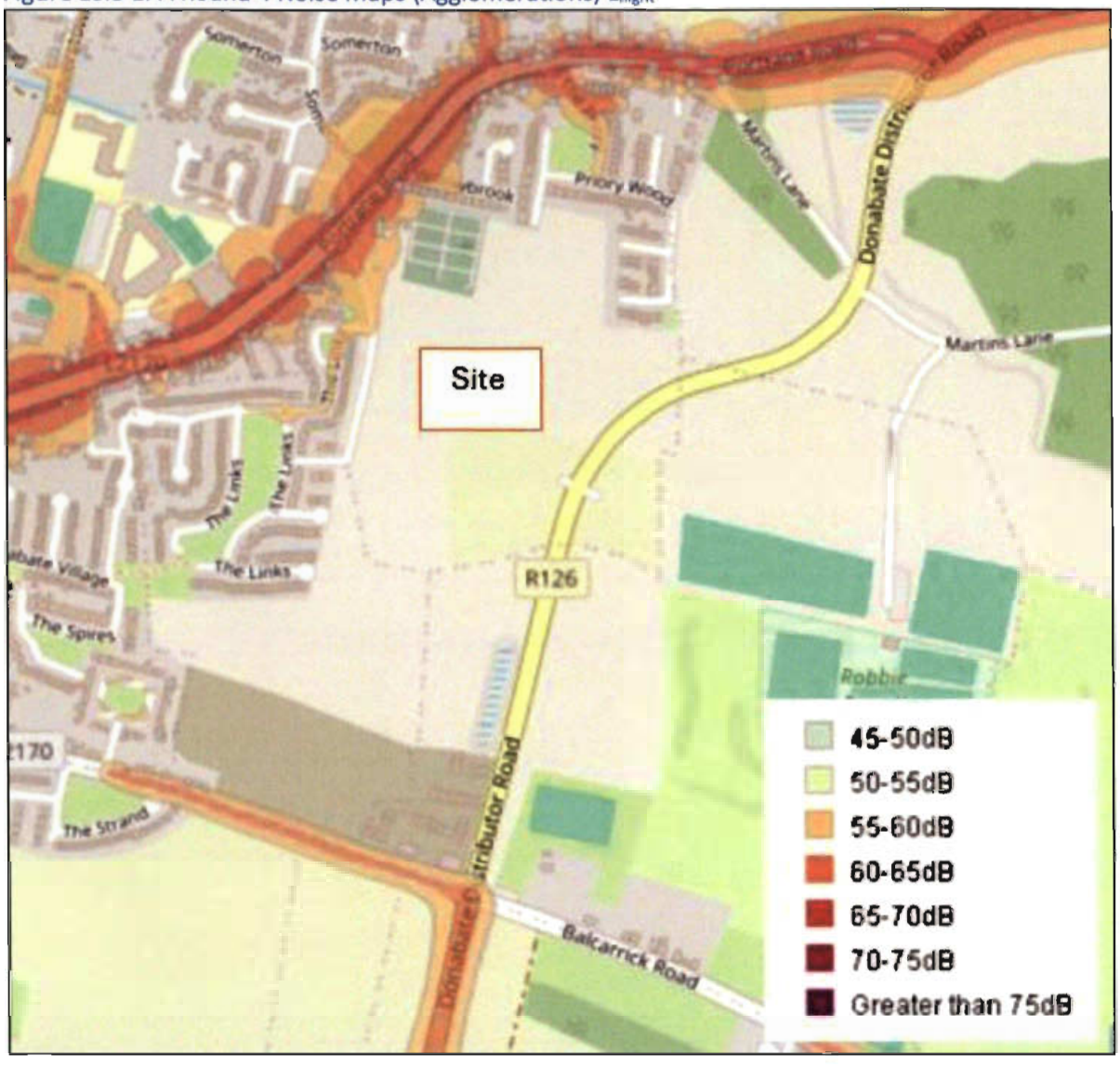


Figure 13.3 EPA Round 4 Noise Maps (Agglomerations) L_{night}



13.3.11 Dublin Airport

It is noted that the site lies outside the DAA Airport Noise Zones as referred to in the Objective DA011 in the Fingal Development Plan 2023 – 2029. The site is approximately 2 km from the edge of the outermost airport noise zone, Zone D, therefore noise incident on the site from aircraft movements at Dublin Airport is screened out of this assessment.

13.4 Characteristics Of The Proposed Development

The development description is presented in Chapter 5.

13.5 Potential Impacts Of The Proposed Development

A variety of items of plant will be in use for the purposes of site clearance and construction. The type and number of equipment will vary between construction phases and will vary depending on the phasing of said works. There will be vehicular movements to and from the site that will make use of existing roads. Due to the nature of these activities, there is potential for the generation of elevated levels of noise.

During the operational phase, the potential sources of noise are those associated with additional vehicular traffic on public roads, operational plant and building services, and vehicular movements and car parking on-site.

Noise and vibration emissions from the proposed development will vary both in terms of duration and magnitude. The following sections analyse the expected construction and operational phase noise and vibration impacts, both in terms of the proposed assessment criteria and the expected impacts in terms of the significance of effects.

13.5.1 Do-nothing Impact

In the absence of the proposed development being constructed, the noise environment at the nearest noise sensitive locations and within the development site will remain largely unchanged resulting in a **neutral and local impact in the long-term**.

13.5.2 Construction Phase

A variety of items of plant will be in use for the purpose of site clearance and construction works. There will also be vehicular movements to and from the site that will make use of existing roads. Due to the nature of these activities, there is potential for the generation of elevated levels of noise in the vicinity of existing noise sensitive properties.

The proposed general construction hours are 07:00 to 18:00 hrs, Monday to Friday and 08:00 to 14:00 hrs on Saturdays.

The construction phase will be controlled through the use of construction noise threshold values which the contractor will be required to work within as much as is practicable. In this regard, the choice of plant, scheduling of works on site, provision of localised screening and other best practice control measures will be employed.

13.5.2.1 Sensitive Receptors

Noise and vibration impacts will be assessed to the nearest sensitive locations to the site boundaries, i.e. a worst case assessment of the closest sensitive locations during any of the construction stages. These closest locations are identified in **Figure 13.4** below.

Figure 13.4 Indicating closest noise sensitive locations (© Google Earth)

- **N1:** Priory Wood residential development approx. 15 m to the north and east of the northern site boundary.
- **N2:** The Links residential development approx. 20 m to the west of the western site boundary.
- **N3:** St. Patrick's Park residential development approx. 20 m to the southwest of the western site boundary.
- **N4:** Residential dwellings approx. 140 m to the southwest of the southern site boundary.
- **N5:** Residential dwellings approx. 120 m to the southeast of the southern site boundary.
- **N6:** Donabate Burial Grounds adjacent to the northern site boundary.
- **N7:** National Forensic Mental Health Service Hospital approx. 400 m to the northeast of northern site boundary.

The following residential developments are currently under construction:

- Phase 1 of the Ballymastone development, located immediately to the south of the proposed development;
- F17A/0373, at approx. 130 m to the south of the southern site boundary;
- F20A/0510/ABP 311447 at approx. 150 m to the south of the southern site boundary.

The following construction noise threshold levels are proposed for the construction stage of this development: -

- For residential NSLs, based on the guidance in **Section 13.2.1.1**, it is considered appropriate to adopt the 65 dB(A) threshold level, given the baseline monitoring carried out, which would indicate that Category A values are appropriate, using the ABC method.
- An appropriate construction noise limit at the nearest non-residential buildings is considered to be 70 dB $L_{Aeq,1hr}$, based on guidance presented in **Section 13.2.1.1**.

13.5.2.2 Construction Noise

13.5.2.2.1 Excavation and Piling

For construction works associated with activities such as excavation and structural works including excavators, loaders, dozers, cranes, generators, concreting works and continuous flight augured piling etc. noise levels are typically in the range of 70 to 82 dB $L_{Aeq\ at\ 10m}$. Non-percussive piling methods will be employed on the site.

13.5.2.2.2 Construction of Proposed Structures

For construction work areas with lower noise levels such as those associated with superstructure works including site compounds (for storage, offices and material handling, generators etc.), smaller items of mobile plant (excavators, cranes, dozers), landscaping and concreting works with lower noise emissions, a total construction noise level of 80 dB $L_{Aeq\ at\ 10m}$ has been used for the purposes of indicative calculations. This would include, for example two items of plant at 75 dB L_{Aeq} and three items of plant at 70 dB L_{Aeq} operating simultaneously within a work area.

13.5.2.2.3 Indicative Construction Noise Levels

Indicative noise calculations have been undertaken which assume that plant items are operating for 66% of the time. Screening from a standard site hoarding of 2.4m is assumed around all site boundaries. It must be stated that for most of the time, plant and equipment will be a greater distance from the nearest NSLs than those used within the calculations and the "on-time" of plant and equipment will be less than those assumed over a normal working day (i.e. the use of piling rigs or breakers for demolition will be in use for shorter periods than those assumed over a normal working day) and consequently will have lower noise levels. The assessment presented is therefore representative of a best estimate conservative scenario representing construction activities. **Table 13.15** presents the calculated noise levels at varying distances.

Table 13.15 Indicative construction noise levels at nearest noise sensitive locations

Activity	Predicted Construction Noise Level $L_{Aeq(1hour)}$ (dB)					
	15 m	20 m	30 m	40 m	50 m	75m
Excavations and Piling Works	71	69	65	63	61	57
General Site Work including Superstructure and Fit out	64	62	58	56	54	50

Reference to the construction noise levels in **Table 13.15** indicate that the CNT of 65 dB $L_{Aeq,T}$ will be exceeded at the closest NSLs when activities are occurring along the closest site boundaries. However, a range of noise levels will occur as works take place across the site.

During piling works, there is potential for the CNT to be exceeded at distances of less than 30m; At distances of 20m construction noise levels are calculated at 69 dB $L_{Aeq,T}$, however the duration of this phase works is limited in the overall period of the construction phase of the project.

During the general site construction works involving construction of the site buildings, lower noise levels will be generated on site. When works are occurring at 15m or greater distances from NSLs, the works are likely to be within the CNT.

Noise mitigation measures will therefore be required on site to reduce construction noise levels along these boundaries to reduce any potential significant effects. Recommended mitigation measures are presented in **Section 13.6.1**.

For those residential NSLs immediately within 15 m to 30 m of the site boundary, the associated construction noise impact will be **negative, significant and short-term** when works are carried out along the site boundary. At all other sensitive receptors, the noise impact will be **negative, not significant and short-term**.

13.5.2.3 Construction Vibration

Potential for vibration impacts during the construction phase programme are likely to be limited given the ground breaking, piling and excavations required. There is potential for piling to be used for building and basement foundations for apartment buildings. For the purposes of this assessment, the expected vibration levels during piling, assuming augured or bored piles, have been determined through reference to published empirical data. The British Standard BS 5228 – *Part 2: Vibration*, publishes the measured magnitude of vibration of rotary bored piling using a 600 mm pile diameter for bored piling into soft ground over rock:

- 0.54 mm/s at a distance of 5 m, for auguring;
- 0.22 mm/s at a distance of 5 m, for twisting in casing;
- 0.42 mm/s at a distance of 5 m, for spinning off; and
- 0.43 mm/s at a distance of 5 m, for boring with rock auger.

Considering the low vibration levels at very close distances to the piling rigs, vibration levels at the nearest buildings are not expected to pose any significance in terms of cosmetic or structural damage. In addition, the range of vibration levels is typically below a level which would cause any disturbance to occupants of nearby buildings.

In this instance, taking account of the distance to the nearest sensitive off-site buildings, vibration levels at the closest neighbouring buildings are expected to be orders of magnitude below the limits set out in **Table 13.4** to avoid any cosmetic damage to buildings. Vibration levels are also expected to be below a level that would cause disturbance to building occupants, as set out in **Table 13.5**. The predicted vibration impact during the construction phase is **short-term, neutral and imperceptible**.

13.5.2.4 Construction Traffic

All construction related vehicles accessing and egressing the site will do so from the site entrance along the DDR. Chapter 18 (Traffic & Transportation) discusses the potential effects of traffic on the local area. Vehicles visiting the site are not considered to be excessive and will be spread out over the duration of the construction phase, which will be executed in phases, as outlined in Chapter 5 (Description of the Proposed Development).

The Traffic and Transport consultants have confirmed that HGV vehicle movements are not expected to exceed four vehicles per hour during the majority of the construction phase; during the busiest period of construction works this may increase to 6 to 8 HGV vehicle movements per hour. Based on Do Minimum traffic figures for 2026 along the DDR of 8051 AADT and 3.5% HGV, Do Minimum HGV vehicle movements are 282 HGV movements per day. Assuming a worst case of an additional 80 HGVs per day along this road during the peak construction period based on a 10 hour working day, traffic

noise levels would increase by less than 1 dB. The noise impact of construction traffic is, therefore, determined to be **neutral**, **short-term** and **imperceptible**.

13.5.3 Operational Phase

Once the proposed development is operational, the potential noise impacts to the surrounding environment are predicted to be minimal. The residential aspect of the development is not expected to generate any significant noise sources over and above those which form part of the existing environment at neighbouring residential areas (road traffic noise, estate vehicle movements, children playing, etc.) and, hence, **no significant impact** are predicted in this regard.

The main potential noise impact associated with the proposed development is considered, therefore, to relate to the generation of additional traffic to and from the site as a result of the new residential and commercial buildings. Potential noise impacts also relate to operational plant serving the commercial and apartment buildings, where relevant. Once operational, there are no noteworthy sources of vibration associated with the development site.

Due consideration must be given to the nature of the primary noise sources when setting criteria. Potential noise impacts during the operational phase include the following:

- Additional vehicular traffic on surrounding roads;
- Building services plant;

13.5.3.1 Additional Vehicular Traffic on Surrounding Roads

For the purposes of assessing the potential noise impact, it is appropriate to consider the relative increase in noise level associated with traffic movements on existing roads and junctions with and without the proposed development, given that traffic from the development will make use of the existing road network.

A traffic impact assessment relating to the proposed development has been prepared by the DBFL Consulting Engineers as part of this EIAR (refer to Chapter 18 – Traffic & Transportation). The results of this assessment have been reviewed to predict any impact of the proposed development on traffic flows in the area. The calculated change in noise levels during Opening Year (2026) and Future Design Year (2041) are summarised in **Table 13.16** and **Table 13.17**.

Table 13.16 Summary of change in noise level (Opening Year 2026)

Location	AADT do nothing	AADT do something	Change in noise level (all vehicles)
A - Donabate Distributor Road north of L2170	8051	8791	+0.4
B - L2170 West of DDR	4602	4922	+0.3
C - Portrane Road west of Site Access	9412	9576	+0.1

Table 13.17 Summary of change in noise level (Future Design Year 2041)

Location	AADT do nothing	AADT do something	Change in noise level (all vehicles)
A - Donabate Distributor Road north of L2170	8824	10435	+0.7
B - L2170 West of DDR	5055	5755	+0.6
C - Portrane Road west of Site Access	10628	10986	+0.1

The predicted increase in AADT traffic levels associated with the development are between +0.1 to +0.4 dB(A) in the vicinity of the roads assessed for the Opening Year and between +0.1 to +0.7 dB(A) during the Future Design Year. Reference to **Table 13.16** confirms that the increase in the Opening Year is **neutral, imperceptible and short-term**. Reference to **Table 13.17** confirms that the increases in the Future Design Year are **neutral, imperceptible and long-term**.

In summary, the predicted increase in noise levels associated with vehicles at road junctions in the vicinity of the proposed development during the operational phase constitutes a **long-term, imperceptible impact**.

13.5.3.2 Building Services and Plant

Once operational, there will be building services plant items required to serve the commercial and residential aspects of the proposed development. The specific requirements for mechanical and electrical plant items has not yet been progressed at this stage of the design. Most of this plant will be capable of generating noise to some degree and may operate 24 hours a day. It would, therefore, be most noticeable during quiet periods (i.e. overnight). Noisy plant with a direct line-of-sight to noise sensitive properties as well as louder plant areas on roofs would potentially have the greatest impact.

The location or type of building services plant has not yet been established. Therefore, it is not possible to calculate noise levels to the surrounding environment. In this instance, it is best practice to set appropriate noise limits that will inform the detailed design during the selection and layout of building services for the proposed development. Plant items will be selected, designed and located so that there is no negative impact on sensitive receivers within the development itself.

The cumulative operational noise level from building services plant at noise sensitive locations will be designed / attenuated to meet the relevant noise criteria for day and night-time periods as set out below. Based on the baseline noise data the following criteria is proposed for plant noise:

- Dwellings within the development itself: 45 dB $L_{Aeq,15min}$
- Existing dwellings external to the development: Based on the measured noise levels (See **Table 13.10**) of 44 dB L_{A90} during daytime periods and 33 dB L_{A90} during night-time periods, the following building services noise criteria are adopted for noise-sensitive locations external to the site:
  - 40 dB $L_{Aeq,15min}$ for daytime and evening periods, and
  - 35 dB $L_{Aeq,15mins}$ffor night-time periods.

These criteria have been set taking account of guidance from BS4142 and BS8233. For dwellings internal to the development to be newly occupied, a change in noise level will not occur, and as such the criteria has been set to achieve the internal guidance night-time noise levels in BS8233 so that the guidance

levels will be met when occupants have their windows open. For existing dwellings located off site the criteria have been set so that plant noise will not be greater than background noise levels as per BS4142 guidance which indicates this will be a neutral impact. Plant items and their location will be selected at the detailed design stage to ensure that noise emissions to sensitive receivers both external and within the development itself will be within the relevant criteria set out above. The resultant effects are considered **negative, not significant and long-term**.

13.6 Remedial And Mitigation Measures

13.6.1 Construction Phase

The assessment detailed in **Section 13.5.2** has found that predicted construction noise levels do exceed the threshold during the worst-case assessment at NSLs within 30 m of the site boundary'. Vibration levels at the closest neighbouring buildings are expected to be orders of magnitude below the limits set out in **Table 13.4** to avoid any cosmetic damage to buildings.

Best practice noise and vibration control measures will be employed by the contractor during the construction phase in order to avoid significant impacts at the nearest sensitive buildings. The best practice measures set out in BS 5228 Parts 1 and 2 will be complied with. This includes guidance on several aspects of construction site mitigation measures, including, but not limited to:

- Selection of quiet plant;
- Noise control at source;
- Screening, and;
- Liaison with the public.

Further comment is offered on these items in the following paragraphs. Noise control measures that will be employed include the selection of quiet plant, enclosures and screens around noise sources, limiting the hours of work and noise monitoring, where required.

13.6.1.1 Selection of Quiet Plant

The potential for any item of plant to generate noise will be assessed prior to the item being brought onto the site. The least noisy item will be selected wherever possible. Should a particular item of plant already on the site be found to generate high noise levels, the first action will be to identify whether said item can be replaced with a quieter alternative.

13.6.1.2 Noise Control at Source

If replacing a noisy item of plant is not a viable or practical option, then consideration will be given to noise control at source. This refers to the modification of an item of plant or the application of improved sound reduction methods in consultation with the supplier. For example, resonance effects in panel work or cover plates can be reduced through stiffening or application of damping compounds; rattling and grinding noises can often be controlled by fixing resilient materials in between the surfaces in contact.

The following best practice migration measures will be considered:

- Site compounds will be located away from noise sensitive boundaries within the site constraints.
- Lifting bulky items, dropping and loading of materials within these areas will be restricted to normal working hours.

- For mobile plant items such as cranes, dump trucks, excavators and loaders, maintaining enclosure panels closed during operation can reduce noise levels over normal operation. Mobile plant will be switched off when not in use and not left idling.
- For steady continuous noise, such as that generated by diesel engines, it may be possible to reduce the noise emitted by fitting a more effective exhaust silencer system.
- For percussive tools such as pneumatic breakers, a number of noise control measures include fitting muffler or sound reducing equipment to the breaker tool and ensuring any leaks in the air lines are sealed.
- Erecting localised screens around breaker or drill bit when in operation in close proximity to noise sensitive boundaries.
- For concrete mixers, control measures will be employed during cleaning to ensure no impulsive hammering is undertaken at the mixer drum.
- For all materials handling, ensure that materials are not dropped from excessive heights, lining drops chutes and dump trucks with resilient materials.
- For compressors, generators and pumps, these can be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation.
- All items of plant will be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures.

13.6.1.3 Screening

Screening is an effective method of reducing the noise level at a receiver location and can be used successfully as an additional measure to all other forms of noise control. Standard construction site hoarding (2.4 m in height) with a mass per unit of surface area greater than 7 kg/m^2 can provide adequate sound insulation. This will be installed along boundaries with residential receptors.

13.6.1.4 Liaison with the Public

A designated Community Liaison Officer (CLO) will be appointed to site during construction works. Any noise complaints will be logged and followed up in a prompt fashion by the CLO. In addition, prior to particularly noisy construction activity (e.g. piling), the CLO will inform the nearest noise sensitive locations of the time and expected duration of the noisy works.

13.6.1.5 Project Programme

The phasing programme will be arranged so as to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity. If piling works are in progress on another site at the same time as other works of construction that themselves may generate significant noise and vibration, the working programme will be phased so as to ensure noise limits are not exceeded due to cumulative activities. This will be reviewed in relation to other potential cumulative works occurring on adjacent construction site in close proximity to noise sensitive properties which have the potential to lead to significant construction noise impacts.

13.6.2 Operational Phase

13.6.2.1 Building Services and Plant

As part of the detailed design of the development, plant items and, where necessary, appropriately selected remedial measures (e.g. enclosures, silencers etc.) will be specified in order that the adopted plant noise criteria presented in **Section 13.5.3.2** are complied with at the façades of noise sensitive properties, including those within the development itself.

13.7 Residual Impacts Of The Proposed Development

13.7.1 Construction Phase

During the construction phase of the proposed development, there is the potential for short-term noise impacts on nearby noise sensitive properties due to noise emissions from site activities. The application of binding noise limits and hours of operation, along with implementation of appropriate noise and vibration control measures, will ensure that noise and vibration impact is kept to a minimum as far as practicable. For the duration of the construction period, construction noise impacts will be short-term and negative, depending on the proximity of the works to the site boundary.

Residual noise impacts during the construction phase will be **negative, significant** and **short-term** at distances within 30m of the closest NSLs. It should be noted that the assessment can be considered worst case and it is unlikely that all items of plant assessed will be in operational simultaneously. Additionally, the predictions only indicate a potential significant effect (based on a worst-case scenario) when working at the closest location to the NSLs, with lesser impacts predicted at all other locations across site.

At distances greater than 30m from the construction works the residual noise impact will be **negative, not significant** and **short-term.**

Residual vibration impacts during the construction phase will be **neutral, imperceptible and short-term.**

13.7.2 Operational Phase

13.7.2.1 Additional Traffic on Roads

The predicted change in noise levels associated with additional traffic is expected to be **neutral, imperceptible** and **long-term** along the existing road network.

13.7.2.2 Building Services and Plant

Proprietary noise and vibration control measures will be employed as part of the detailed design in order to ensure that noise emissions from building services plant do not exceed the adopted criterion at any nearby NSLs. In addition, noise emissions should be broadband in nature and should not contain any tonal or impulsive elements. The impact from building services and plant is predicted to be ***negative, not significant and long term.***

13.8 Indirect and /or Secondary Impacts

No significant secondary or indirect impacts are expected as a result of the proposed development.

13.9 Monitoring Or Reinstatement

13.9.1 Construction Phase

During the construction phase, noise monitoring will be undertaken at the nearest sensitive locations to ensure construction noise limits outlined in **Section 13.2.1.1** are not exceeded. Noise monitoring will be conducted in accordance with the International Standard ISO 1996: *Acoustics – Description, measurement and assessment of environmental noise Part 1* (2016) and *Part 2* (2017). The selection of monitoring locations will be based on the nearest sensitive buildings to the working areas.

It is recommended that noise control audits are conducted at regular intervals throughout the construction programme in conjunction with noise monitoring. The purpose of the audits will be to ensure that all appropriate steps are being taken to control construction noise emissions and to identify opportunities for improvement, where required.

13.9.2 Operational Phase

There is no monitoring recommended for the operational phase of the development as impacts to noise and vibration are predicted to be imperceptible.

13.10 Reinstatement

During reinstatement the construction phase noise and vibration impacts outlined in Section 13.5.2 will apply.

13.11 Interactions

The key interactions with other chapters of this Environmental Impact Assessment Report are as follows:

- **Chapter 7 (Population & Human Health):** Elevated noise levels during the construction and operational phases have the potential to result in nuisance / disturbance to the local population and / or human health impacts, as assessed above and in Chapter 7.
- **Chapter 8 (Biodiversity):** Elevated noise levels during the construction and operational phases have the potential to result in disturbance of wildlife, as addressed under the scope of Chapter 8.
- **Chapter 18 (Traffic & Transportation):** Additional traffic generated by the proposed development during the construction and operational phases has the potential to perceptibly alter noise levels in the receiving environment, as assessed above.

The above-listed interactions have been addressed comprehensively in this Environmental Impact Assessment Report. **No significant impacts** are predicted in relation to any of these interactions.

13.12 Cumulative Impacts

13.12.1 Construction Phase

In considering the potential cumulative noise impacts of the proposed development in combination with existing, permitted and proposed other developments in the receiving environment, regard has been had to the developments listed in **Table 13.18**, below.

The assessment has determined that the majority of identified projects are sufficiently separated from the proposed development such that there is no likelihood for cumulative effects during either the construction or operational phases.

There are a small number of listed projects which, if construction periods overlap, there is potential for cumulative construction noise effects. Given the proposed project will be the dominant construction noise source at the NSL immediately adjacent to its site boundary, it is unlikely the contribution from nearby construction sites would add to the overall construction noise levels. Under a worst-case scenario where an adjacent project is operating under the same intensity of construction works at the closest NSLs to the proposed project, noise levels predicted in Section 13.5.2 could increase by up to +3 dB. No traffic effects in relation to noise are predicted.

For further information in relation to the below-listed developments, refer to **Chapter 22** (Cumulative Impacts).

Table 13.18 Cumulative Construction Noise Effects

Ref.	Description - overview	Distance to site (approx.)	Likely Cumulative Effects
F19A/0243/ ABP-307657-20	Underground Wastewater Pump Station	250 m	Potential for cumulative effects during construction period if works take place at the same time. A potential increase of the levels predicted in Section 13.5.1.2 by a worst case of +3 dB. No traffic effects in relation to noise are predicted.
LRD0008/S3/ ABP-315288-22	Ballymastone PHASE 1	n/a	Potential for cumulative effects during construction period if works take place at the same time. A potential increase of the levels predicted in Section 13.5.2.2 by a worst case of +3 dB. No traffic effects in relation to noise are predicted.
LRD0017/S3	Aledo Donabate Residential Development	280 m	Potential for cumulative effects during construction period if works take place at the same time. A potential increase of the levels predicted in Section 13.5.2.2 by a worst case of +3 dB. No traffic effects in relation to noise are predicted.
F22A/0527	Residential Development at Corballis East	550 m	No cumulative effects relating to noise or vibration due to distance and sufficient screening from proposed development.
F20A/0510/ ABP-311447-21	Residential Development at Ballymastone – Balcarrick Road	160 m	Potential for cumulative effects during construction period if works take place at the same time. A potential increase of the levels predicted in Section 13.5.2.2 by a worst case of +3 dB. No traffic effects in relation to noise are predicted.
F20A/0204/ ABP-308446-20	Residential Development at lands South of Main Street, Corballis East	590 m	No cumulative effects relating to noise or vibration due to distance and sufficient screening from proposed development.
F17A/0373	Residential Development at Ballymastone – Balcarrick Road	135 m	Potential for cumulative effects during construction period if works take place at the same time. A potential increase of the levels predicted in

Ref.	Description - overview	Distance to site (approx.)	Likely Cumulative Effects
			Section 13.5.2.2 by a worst case of +3 dB. No traffic effects in relation to noise are predicted.
F23A/0134	St Patrick's GAA Clubhouse Donabate.	540 m	No cumulative effects relating to noise or vibration due to distance and sufficient screening from proposed development.
YA06F.304624	Broadmeadow Way - Greenway between Malahide Demesne and Newbridge Demesne	1.2 km	No cumulative effects relating to noise or vibration due to distance and sufficient screening from proposed development.
Not available (Part 8)	Ballymastone Recreational Hub	n/a	Potential for cumulative effects during construction period if works take place at the same time. A potential increase of the levels predicted in Section 13.5.2.2 by a worst case of +3 dB. No traffic effects in relation to noise are predicted.
F22A/0165	Semple Woods, Hearse Road Residential Development	800 m	No cumulative effects relating to noise or vibration due to distance and sufficient screening from proposed development.
F21A/0113	Semple Woods, Hearse Road Residential Development	800 m	No cumulative effects relating to noise or vibration due to distance and sufficient screening from proposed development.
F21A/0056	Semple Woods, Hearse Road Residential Development	800 m	No cumulative effects relating to noise or vibration due to distance and sufficient screening from proposed development.
F17A/0113	Semple Woods, Hearse Road Residential Development.	800 m	No cumulative effects relating to noise or vibration due to distance and sufficient screening from proposed development.
TA06F.306794	Residential Development at Turvey Avenue	670 m	No cumulative effects relating to noise or vibration due to distance and sufficient screening from proposed development.
F20A/0630	Mixed-use Development at Turvey Walk	650 m	No cumulative effects relating to noise or vibration due to distance and sufficient screening from proposed development.

Ref.	Description - overview	Distance to site (approx.)	Likely Cumulative Effects
F21A/0257	Revisions to Previously Permitted Residential Development at Beresford	830 m	No cumulative effects relating to noise or vibration due to distance and sufficient screening from proposed development.

13.12.2 Operational Phase

During the operational phase any cumulative effects will be due to an increase in road traffic noise. However, given the insignificant levels of noise increase as a result of the traffic associated with this proposed development, it is not expected that cumulative traffic noise will increase by any significant margin as a result of this proposed development. Moreover, in the 'Do Something' traffic flow values, the contribution to the traffic flows from permitted developments is included.

13.13 References

- British Standard BS 8233: 2014: Guidance on sound insulation and noise reduction for buildings.
- British Standard BS 4142: 2014+A1:2019: Methods for Rating and Assessing Industrial and Commercial Sound.
- British Standard BS 5228: 2009 +A1:2014: Code of Practice for Control of Noise and Vibration on Construction and Open Sites Part 1: Noise & Part 2: Vibration.
- British Standard BS 7385: 1993: Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration.
- Department of Transport Welsh Office, HMSO (1988). Calculation of Road Traffic Noise.
- EPA (2022). Guidelines on the Information to be contained in Environmental Impact Assessment Reports.
- The UK Highways Agency (2020). Design Manual for Roads & Bridges – LA111 -Revision 2.

14 Landscape & Visual

14.1 Introduction

This Landscape and Visual Impact Assessment (LVIA) describes the landscape at the location of the proposed development in Donabate, Co. Dublin, and assesses the likely impacts of the proposed development on landscape and visual amenity. It was informed by a desktop study and site surveys over the course of the masterplan development and Phase 1 design from 2019 – 2024. The most recent site survey was carried out in January 2024.

The Phase 2 development site is approximately 13.74ha with a net development area of 8.14ha. The site is located on the eastern fringe of the village of Donabate. The Phase 2 development is part of a larger area of land, including the permitted Phase 1 (Planning Reg No: LRD0008/S3) to the south and east, currently under construction, and Phase 3 extending north of Phase 2 and totalling approximately 32ha . The recently developed Donabate Distributor Road (DDR) (R126) lies to the east of the site. This report discusses and assess the Phase 2 site and its impacts in the context of the wider masterplan and zoned lands and refers to them as Phase 2 and Masterplan as appropriate.

This assessment has been prepared by Cunnane Stratton Reynolds Ltd (CSR), landscape architects and planners. This report is prepared by Declan O'Leary B.Agr.Sc. Land. Hort., Dip LA., CLI, MILI and Prithvi Gowda B.Arch., MScUD&P, CPM Dip. Declan has over 30 years' experience in the design and analysis of landscape and the impacts of change, and the preparation of assessments for inclusion EIAR. Prithvi has over 5 years multi-disciplinary experience and has assisted in preparing LVIAs.

14.2 Methodology

14.2.1 Definition of Landscape

Ireland is a signatory to the European Landscape Convention (ELC). The ELC defines landscape as 'an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors'. This definition is important in that it expands beyond the idea that landscape is only a matter of aesthetics and visual amenity. It encourages a focus on landscape as a resource in its own right - a shared resource providing a complex range of cultural, environmental and economic benefits to individuals and society.

As a cultural resource, the landscape functions as the setting for our day-to-day lives, also providing opportunities for recreation and aesthetic enjoyment and inspiration. It contributes to the sense of place experienced by individuals and communities and provides a link to the past as a record of historic socio-economic and environmental conditions.

As an environmental resource, the landscape provides habitat for fauna and flora. It receives, stores, conveys and cleans water; and vegetation in the landscape stores carbon and produces oxygen. As an economic resource, the landscape provides the raw materials and space for the production of food, materials (e.g. timber, aggregates) and energy (e.g. carbon-based fuels, wind, solar), living space and for recreation and tourism activities.

14.2.2 Forces of Landscape Change

Landscape is not unchanging. Many different pressures have progressively altered familiar landscapes over time and will continue to do so in the future, creating new landscapes. For example, within the receiving environment, the environs of the proposed development have altered over the last thousand years, from wilderness to agriculture and settlement or townscape.

Many of the drivers of change arise from the requirement for development to meet the needs of a growing population and economy. The concept of sustainable development recognises that change must and will occur to meet the needs of the present, but that it should not compromise the ability of future generations to meet their needs. This involves finding an appropriate balance between economic, social and environmental forces and values. In this case the lands at Ballymastone are zoned for residential development reflecting local policy.

The reversibility of change is an important consideration. If change must occur to meet a current need, can it be reversed to return the resource (in this case, the landscape) to its previous state to allow for development or management for future needs.

Climate change is one of the major factors likely to bring about future change in the landscape, and it is accepted to be the most serious long-term threat to the natural environment, as well as economic activity (particularly primary production) and society. The need for climate change mitigation and adaptation, including the management of water and more extreme weather and rainfall patterns, is part of this.

14.2.3 Guidance

Landscape and Visual Impact Assessment (LVIA) is a tool used to identify and assess the significance of and the effects of change resulting from development on both the landscape as an environmental resource in its own right and on people's views and visual amenity. The methodology for assessment of the landscape and visual effects is informed by the following key guidance documents, namely:

- *Guidelines for Landscape and Visual Impact Assessment, 3rd Edition 2013, published by the UK Landscape Institute and the Institute of Environmental Management and Assessment (hereafter referred to as the 'GLVIA');*
- *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, May 2022, published by the Environmental Protection Agency (EPA) (hereafter referred to as the 'EPA guidelines'); and*
- *The Fingal Development Plan 2023-2029.*

The GLVIA (3rd Edition) outlines the assessment process, which combines judgements on the sensitivity of the resource and the magnitude of the change which it will undergo as a result of the proposed development. These are then combined to reach an assessment of the importance (or significance) of the effect. This guidance is authored by the Landscape Institute in the UK and the IEMA which contains a network of members in UK and Ireland and internationally. The guidance was prepared within the parameters of relevant EU directives at the time and is updated where necessary by Landscape Institute bulletins online. The GLIVA 3rd edition is used internationally and is the industry standard for LVIA in Ireland.

The EPA guidance (2022) refers to the use of topic specific guidance and specifically references the GLVIA 3 in relation to professional judgement. 3.7.2 Documenting the Process recognises that:

"Some uncertainty is unavoidable in EIA, especially about matters that involve an element of judgement, such as assigning a level of significance to an effect. Such judgements should be explicit and substantiated rather than presented as objective fact. This is best done using agreed referable approaches, e.g. the Guidelines on Landscape and Visual Impacts Assessment provide guidance on what constitutes a severe visual effect".

Landscape and Visual Assessment Process

The GLVIA 2013 outlines the assessment process, which combines judgements on the *sensitivity* of the resource, and the *magnitude* of the change as a result of the proposed development. These are then combined to reach an assessment of the significance of the effect.

Another key distinction to make is that in the GLVIA methodology, a distinction is made between landscape effects and the visual effects of a proposed development.

'Landscape' results from the interplay between the physical, natural and cultural components of our surroundings. Different combinations of these elements and their spatial distribution create distinctive character of landscape in different places. 'Landscape character assessment' is the method used in LVIA to describe landscape, and by which to understand the potential effects of a development on the landscape as 'a resource'. Character is not just about the physical elements and features that make up a landscape, but also embraces the aesthetic, perceptual and experiential aspects of landscape that make a place distinctive.

Views and 'visual amenity' refer to the interrelationship between people and the landscape. The GLVIA 2013 prescribes that effects on views and visual amenity should be assessed separately from landscape, although the two topics are inherently linked. Visual assessment is concerned with changes that arise in the composition of available views, the response of people to these changes and the overall effects on the area's visual amenity.

Establishment of Baseline

The process set out in the GLVIA 2013 and in the EPA (2022) involves the preparation of the baseline or receiving environment characteristics. This includes two stages, which are a desk based study and a site visit/field study. These allow the assessor to establish the existing receiving environment and key landscape and visual characteristics and their sensitivities.

The desk based study includes:

- Review of preliminary proposals and identification of preliminary study area
- Review of current County Development Plan within the study area, to identify relevant national and local designations and polices. This may include designations such as scenic routes, protected views and other landscape designations including any Landscape Character Assessments.
- Other information that may be consulted include aerial imagery, OSI Discovery series mapping, historic (6-inch and 25-inch) mapping and CORINE Landcover Maps (2018).

A site visit is then carried out to review and/or confirm the findings of the desk based study and provide a more detailed description of the landscape and visual character of the study area. Based on both the desk study and site visit, the assessor identifies landscape and visual receptors and their relative sensitivity. The site visit was carried out in January 2024.

Assessment of Effects

Once the baseline is established, and the proposed development drawings and descriptions reviewed, the assessment process commences.

Use of 'Impact and 'Effect

Section 1.16 of the GLVIA (referring to the EIA Directive), advises that the terms 'impact' and effect' should be clearly distinguished and consistently used in the preparation of an LVIA.

'*Impact*' is defined as the action being taken. In the case of the proposed development, the impact would include the construction of the proposed buildings and associated boundaries and external areas, including two different proposed car parks, among other features.

'Effect' is defined as the change or changes resulting from those actions, e.g. a change in landscape character, or changes to the composition, character and quality of views in the receiving environment. This report focusses on these effects.

14.2.4 Methodology for Landscape Assessment

In Section 14.5 of this report, the landscape effects of the proposed development are assessed. The nature and scale of changes to the landscape elements and characteristics are identified, and the consequential effect on landscape character and value are discussed. Trends of change in the landscape are taken into account. The assessment of the significance of the effects takes account of the sensitivity of the landscape resource and the magnitude of change to the landscape, which resulted from the proposed development.

Definitions and descriptions of sensitivity, magnitude of change and quality and longevity of effects are derived from the GLVIA 2013. The GLVIA 2013 does not set out specific definitions of descriptions used but contains widely used principles and case studies / examples that are intended to inform a professional's methodology, supported by their experience and judgements in relation to landscape and landscape change. These descriptions expand and complement the EPA guidelines as intended, in relation to topic-specific guidance.

Sensitivity of the Landscape

Sensitivity is a combination of landscape value as well as the susceptibility of the landscape to change:

- Landscape values can be identified by the presence of landscape designations or policies, which indicate particular values, either on a national or local level. In addition, a number of criteria are used to assess the value of a landscape. These are described further below, in Section 14.4.1.
- Landscape susceptibility is defined in the GLVIA as, *"the ability of the landscape receptor to accommodate the proposed development without undue consequences for the maintenance of the baseline scenario and/or the achievement of landscape planning policies and strategies." Susceptibility is a function of its land use, landscape patterns and scale, visual enclosure and distribution of visual receptors, scope for mitigation, and the value placed on the landscape. Susceptibility also relates to the type of development; a landscape may be highly susceptible to certain types of development but have a low susceptibility to other types of development."*

With regard to landscape effects, a proposed development has the potential to improve the environment as well as damage it. In certain situations, there might be policy encouraging a type of change in the landscape, and a particular development may achieve this.

Landscape Sensitivity ranges from Low to Very High as outlined in **Table 14.1**, below.

Table 14.1 Categories of Landscape Sensitivity

Sensitivity	Description
Very High	Areas where the landscape exhibits a very strong, positive character with valued elements, features and characteristics that combine to give an experience of unity, richness and harmony. The character of the landscape is such that its capacity for accommodating change in the form of development is very low. These attributes are recognised in landscape policy or designations as being of national or international value and the principal management objective for the area is protection of the existing character from change
High	Areas where the landscape exhibits strong, positive character with valued elements, features and characteristics. The character of the landscape is such that it has limited/low capacity for accommodating change in the form of development. These attributes are recognised in landscape policy or designations as being of national, regional or county value and the principal management objective for the area is conservation of the existing character.
Medium	Areas where the landscape has certain valued elements, features or characteristics but where the character is mixed or not particularly strong. The character of the landscape is such that there is some capacity for change in the form of development. These areas may be recognised in landscape policy at local or county level and the principal management objective may be to consolidate landscape character or facilitate appropriate, necessary change
Low	Areas where the landscape has few valued elements, features or characteristics and the character is weak. The character of the landscape is such that it has capacity for change; where development would make no significant change or would make a positive change. Such landscapes are generally unrecognised in policy and where the principal management objective is to facilitate change through development, repair, restoration or enhancement.
Negligible	Areas where the landscape exhibits negative character, with no valued elements, features or characteristics. The character of the landscape is such that its capacity for accommodating change is high; where development would make no significant change or would make a positive change. Such landscapes include derelict industrial lands or extraction sites, as well as sites or areas that are designated for a particular type of development. The principal management objective for the area is to facilitate change in the landscape through development, repair or restoration.

Magnitude of Landscape Change

The magnitude of change is a factor of the scale, extent and degree of change imposed on the landscape with reference to its key elements, features and characteristics (also known as 'landscape receptors'). For the purpose of assessment, five categories are used to classify the landscape sensitivity of the

receiving environment, from Very High sensitivity to Negligible. (These categories are defined in **Table 14.2**, below):

Table 14.2 Magnitude of Landscape Change

Magnitude of Change	Description
Very High	Change that is large in extent, resulting in the loss of or major alteration to key elements, features or characteristics of the landscape and/or introduction of large elements considered totally uncharacteristic in the context. Such development results in fundamental change in the character of the landscape.
High	Change that is moderate to large in extent, resulting in alteration or compromise to key elements, features or characteristics, and/or introduction of large elements considered uncharacteristic in the context. Such development results in a moderate to large change to the character of the landscape.
Medium	Change that is moderate in extent, resulting in partial loss or alteration to key elements, features or characteristics of the landscape, and/or introduction of elements that may be prominent but not necessarily uncharacteristic in the context. Such development results in moderate change to the character of the landscape.
Low	Change that is limited in extent, resulting in minor alteration to key elements, features or characteristics of the landscape, and/or introduction of elements that are not uncharacteristic in the context. Such development results in minor change to the character of the landscape
Negligible	Change that is very limited in extent, resulting in no alteration to key elements, features or characteristics of the landscape, and/or introduction of elements that are characteristic in the context. Such development results in minimal change to the character of the landscape.

14.2.5 Methodology for Visual Assessment

In Section 14.6 of this chapter, the visual effects of the proposed development are assessed. Visual assessment considers the sensitivity of the viewers (i.e. groups of people) and the magnitude of the changes to the composition and character of views. The assessment is made for a number of viewpoints selected to represent the range of visual receptors in the receiving environment. The significance of the visual effects experienced at these locations is assessed by measuring the visual receptor sensitivity against the magnitude of change to the view resulting from the proposed development.

Sensitivity of the Visual Receptor

Visual receptor sensitivity is a function of two main considerations:

- *Susceptibility of the visual receptor to change.* This depends on the occupation or activity of the people experiencing the view, and the extent to which their attention or interest is focussed on the views or visual amenity they experience at that location. Visual receptors most susceptible to change include residents at home, people engaged in outdoor recreation focused on the landscape (e.g. trail users), and visitors to heritage or other attractions and places of community congregation where the setting contributes to the experience. Visual receptors less susceptible to change include

travellers on road, rail and other transport routes (unless on recognised scenic routes which would be more susceptible), people engaged in outdoor recreation or sports where the surrounding landscape does not influence the experience, and people in their place of work or shopping where the setting does not influence their experience.

- *Value attached to the view.* This depends to a large extent on the subjective opinion of the visual receptor but also on factors such as policy and designations (e.g. scenic routes, protected views), or the view or setting being associated with a heritage asset, visitor attraction or having some other cultural status (e.g. by appearing in arts).

For the purpose of assessment, five categories are used to classify visual receptor sensitivity. These categories range from Very High to Negligible and are described in Table 14.3.

Table 14.3 Categories of Visual Receptor Sensitivity

Sensitivity	Description
Very High	Viewers at iconic viewpoints - towards or from a landscape feature or area - that are recognised in policy or otherwise regarded as being of very high value or national value. This may also include residential viewers whose primary view is of very high value.
High	Viewers at viewpoints that are recognised in policy or otherwise designated as being of high value, or viewpoints that are highly valued by people that experience them regularly (such as views from houses or outdoor recreation features) and are valued by the local community. This would include tourist attractions, and heritage features of regional or county value, and viewers travelling on scenic routes.
Medium	Viewers at viewpoints representing people travelling at slow or moderate speed through or past the affected landscape in cars or on public transport, where they are partly but not entirely focused on the landscape, or where the landscape has some valued views. The views are generally not designated, but which include panoramic views or views judged to be of some scenic quality, which demonstrate some sense of naturalness, tranquillity or some rare element in the view.
Low	Viewers at viewpoints reflecting people involved in activities not focused on the landscape e.g. people at their place of work or engaged in similar activities such as shopping, etc. The view may present an attractive backdrop to these activities but there is no evidence that the view is valued, or that it is regarded as an important element of these activities. Viewers travelling at high speeds (e.g. motorways) may also be considered of low susceptibility.
Negligible	Viewpoints reflecting people involved in activities not focused on the landscape e.g. people at their place of work or engaged in similar activities, such as shopping, where the view has no relevance or is of poor quality and not valued.

Magnitude of Change to the view

Classification of the magnitude of change takes into account the size or scale of the intrusion of the proposed development into the view, relative to the other elements and features in the composition (i.e. its relative visual dominance), the degree to which it contrasts or integrates with the other elements and the general character of the view, and the way in which the change will be experienced

(e.g. in full view, partial or peripheral, or glimpses). It also takes into account the geographical extent of the change, the duration and the reversibility of the visual effects.

Five categories are used to classify magnitude of change to a view. These range from Very High to Negligible and are defined in **Table 14.4**, below.

Table 14.4 Magnitude of Visual Change

Magnitude of Change	Description
Very High	Full or extensive intrusion of the development in the view, or partial intrusion that obstructs highly valued features or characteristics, or the introduction of elements that are completely out of character in the context, to the extent that the development becomes dominant in the composition and defines the character of the view and the visual amenity.
High	Extensive intrusion of the development in the view, or partial intrusion that obstructs valued features, or introduction of elements that may be considered uncharacteristic in the context, to the extent that the development becomes co-dominant with other elements in the composition and affects the character of the view and the visual amenity.
Medium	Partial intrusion of the development in the view, or introduction of elements that may be prominent but not necessarily uncharacteristic in the context, resulting in change to the composition but not necessarily the character of the view or the visual amenity.
Low	Minor intrusion of the development into the view, or introduction of elements that are not uncharacteristic in the context, resulting in minor alteration to the composition and character of the view but no change to visual amenity.
Negligible	Barely discernible intrusion of the development into the view, or introduction of elements that are characteristic in the context, resulting in slight change to the composition of the view and no change in visual amenity.

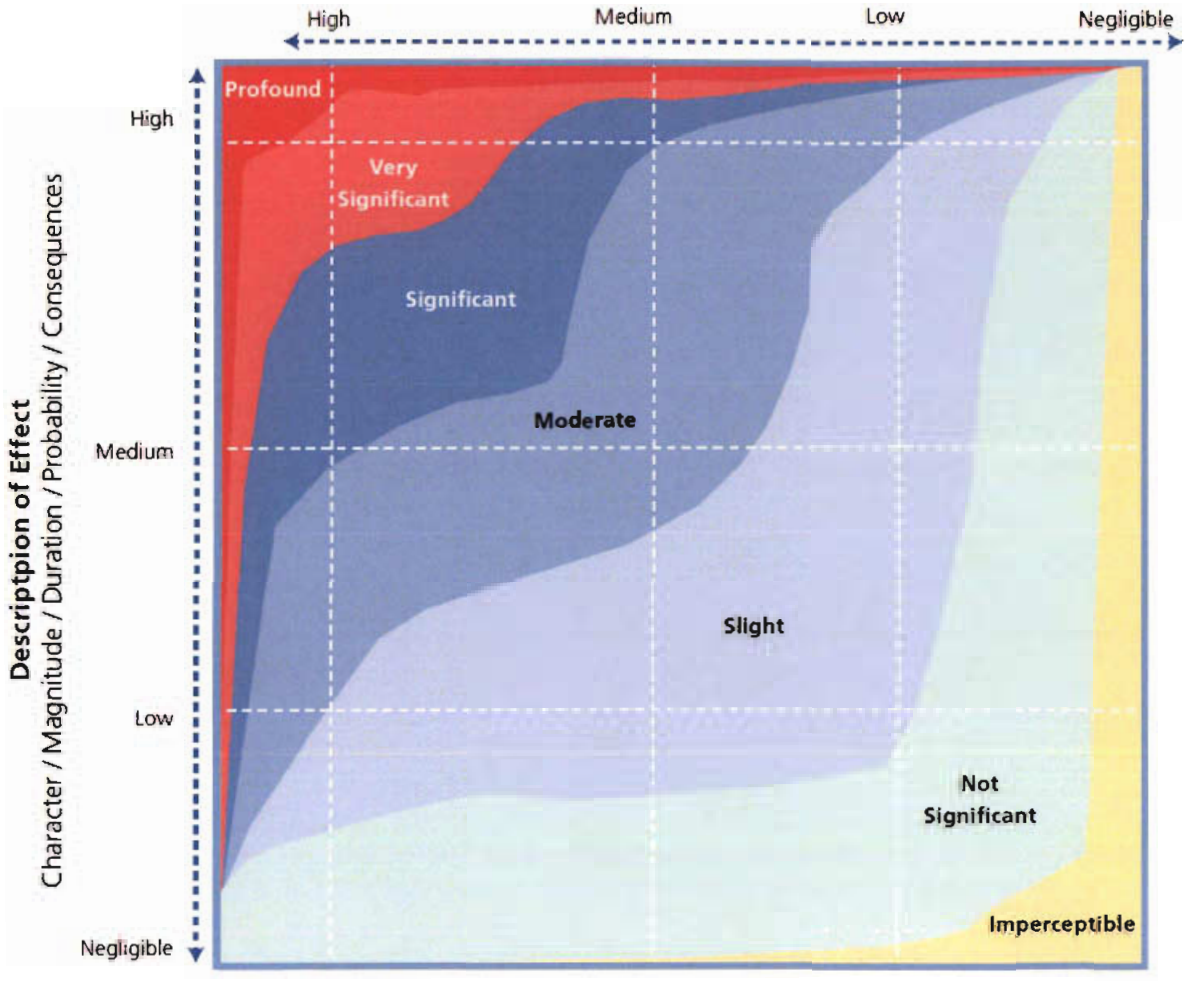
In this case, a number of tools are used to assist in the assessment of visual effects. These include Photomontages, which are produced from selected viewpoints. Initial viewpoints for photomontages are selected during the desk study with the exact location confirmed in the field during the site visit. The completed photomontages are also used to assist in the assessment of visual effects.

14.2.6 Significance of Effects

In order to classify the significance of landscape and visual effects, the predicted magnitude of change is measured against the sensitivity of the landscape/viewpoint. The definitions used by the EPA (2022) provide a useful scale to describe the significance of the effects.

There are seven classifications of significance, namely: (1) imperceptible, (2) not significant, (3) slight, (4) moderate, (5) significant, (6) very significant, (7) profound. Please refer to Table 14.5, below.

Table 14.5 Significance of Effect (Source: EPA 2022)



Please note that the above graphic is a guideline only, and an element of professional judgment is also applied. The assessor also uses professional judgement informed by their expertise, experience and common sense, to arrive at a classification of significance that is reasonable and justifiable. As the GLVIA 3rd Edition recognises (at para 2.23):

"...professional judgement is a very important part of LVIA. While there is scope for quantitative measurement of some relatively objective matters, much of the assessment must rely on qualitative judgements."

14.2.7 Quality and Timescale

In accordance with the EPA (2022), the predicted impacts are also classified as beneficial, neutral, or adverse.

"This is not an absolute exercise; in particular, visual receptors' attitudes to development, and thus their response to the impact of a proposed development, will vary. However, the methodology applied is designed to provide robust justification for the conclusions drawn."

These qualitative definitions are included in **Table 14.6**, below.

Table 14.6 Quality of Effect (Source: CSR based on GLVIA 2013)

Definition of quality of effects	
Adverse / negative	Scheme at variance with landform, scale, pattern. Would degrade, diminish or destroy the integrity of valued features, elements or their setting or cause the quality of the landscape (townscape) view to be diminished;
Neutral	Scheme complements (or does not detract from) the scale, landform and pattern of the landscape (townscape)/view and maintains landscape quality;
Beneficial / positive	Improves landscape (townscape)/view quality and character, fits with the scale, landform and pattern and enables the restoration of valued characteristic features or repairs / removes damage caused by existing land uses.

In accordance with the EPA (2022), Impacts/effects are also categorised according to their longevity or timescale as in **Table 14.7** below:

Table 14.7 Duration of Effect (Source: EPA 2022)

Definition of duration of effects	
Duration	**Description**
Temporary	Effects lasting one year or less
Short Term	Effects lasting one to seven years
Medium Term	Effects lasting seven to fifteen years
Long Term	Effects lasting fifteen to sixty years
Permanent	Effects lasting over sixty years

14.3 Characteristics of the Proposed Development

14.3.1 Ballymastone Residential Development – Overall Masterplan

The overall Masterplan for the development lands at Ballymastone (of which the proposed development constitutes one of three phases) involves the construction of approximately 1,194 residential units over an approximate site of c. 32 ha. The majority of the lands are zoned RA for residential use and the development has been laid out in accordance with a well-considered Masterplan.

The overall scheme Masterplan has been prepared by Glenveagh Living Limited and their design team. For planning purposes, the scheme will proceed as three self-contained phases. This application relates to Phase 2 and sets out the overall strategy for the wider Masterplan area and the detail required in relation to the Phase 2 application lands.

The overall strategy and principles in the original concept and Masterplan submitted remain constant; however, the detail of the Masterplan is evolving with design development, new planning and guidance requirements and other infrastructural factors impinging on layout.

Figure 14.1 Overall Masterplan Lands and Scheme – see Drawing No 19164-C-2-100

14.3.2 Proposed Development Site

The proposed development will consist of the construction of a residential development, which represents Phase 2 of a wider development of the Ballymastone Lands (as identified in the Donabate Local Area Plan 2016 (as extended)) and is a continuation of Phase 1 of the Masterplan lands (permitted under LRD0008/S3). The proposed development ranges in height from 2 to 6 storeys to accommodate 364 residential dwellings (including a mix of apartments, duplexes and houses), and public open space. The site will accommodate car parking spaces, bicycle parking spaces, storage, services, new pedestrian/cycle links, road improvements and plant areas. Landscaping will include communal amenity areas, and a significant public open space provision.

The proposed development lies within an overall site area of 13.74ha and the net site area is 8.14ha (core area).

A detailed description of the proposed development is provided in Chapter 5 (Description of the Proposed Development).

Figure 14.2 Phase 2 Development Site – See Drawing No. 19164-C-2-101-Phase 2

Key issues relating to landscape and visual impact include;

- The change from the existing semi-rural landscape in transition to a new built form, townscape and suburb.
- Building heights and their potential impact locally as well as on the wider sensitive visual receptors.
- Impacts / loss of trees and hedgerows.
- Place-making in accordance with local policy and good practice
- Interfaces with existing established residential areas, those under construction and the wider town.
- New landscape structure, features and amenities / habitats including tree cover.

14.4 Receiving Environment

This section sets out a review of landscape related Planning Policy as set out in the Fingal Development Plan and associated documents, and a description of the study area informed by desktop assessment.

The local planning and other policy in the Fingal County Development Plans are reviewed which identify development objectives and trends and also constraints on development in terms of protections and sensitivities. Precedent planning decisions may be described if appropriate.

The receiving environment is described in terms of its character, physical characteristics and the various elements that make up the landscape, including cultural, recreational, residential and other amenity values.

Cumulatively this analysis informs a description of the landscape in terms of values that support its protection and conservation and/or its enhancement or change. This reflects best practice guidance under the GLVIA.

14.4.1 Relevant Planning Policy

14.4.1.1 Fingal Development Plan 2023 – 2029

The *Fingal Development Plan 2023 – 2029* ('the Plan' hereafter), came into effect on 5th April 2023. The Plan contains a range of policies and objectives relevant to establishing the landscape and visual values and sensitivities for the site and site environs, and guiding the appropriate design and mitigation of impacts for the proposed development. These are set out below.

Section 1.4 of the Development Plan sets out the Strategic Objectives for the County. Objectives that are of relevance are listed below:

"2. Continue the development of a network of well-serviced, well-connected, sustainable neighbourhoods which have a range of facilities, a choice of tenure and universally designed adaptable house types, promote social inclusion and integration of all minority communities.

3. Ensure new residential development is of the highest quality, endorsing the principles of healthy placemaking, enabling life cycle choices and physical, community, recreation and amenity infrastructure are provided in tandem, to create sustainable, healthy, inclusive and resilient communities.

5. Protect the unique character of Fingal. Support and facilitate revitalisation and consolidation of our towns, urban and rural villages and neighbourhoods, through placemaking and public realm initiatives, which encompasses a multi-faceted approach to planning, design and management.

7. Ensure the highest quality of public realm and urban design principles are applied to all new developments, ensuring developments contribute to a positive sense of place ond local distinctiveness of an area and facilitate the universal design approach into all developments.

9. Reduce car dependency and promote and facilitate sustainable modes of transport. Prioritise walking, cycling and public transport, while supporting an efficient and effective transport system.

10. Protect, enhance and ensure the sustainable use of Fingal's key infrastructure, including water supplies and wastewater treatment facilities, energy supply including renewables, broadband and tronsportation.

11. Protect, enhance and connect areas of natural heritage, green infrastructure and open space for the benefits of quality of life, biodiversity, protected species and habitats, while having the potential to facilitate climate change adaptation and flood risk measures.

12. Protect, conserve and enhance the built and cultural heritage of Fingal, through promoting awareness, utilising relevant heritage legislation and ensuring good quality urban design principles are applied to all new developments. The principle that well planned and integrated development enhances the sustainability, attractiveness and quality of an area should be at the centre of any proposal."

Core Strategy and Settlement Strategy (Chapter 2 of the Development Plan)

Donabate lies is within the Dublin Metropolitan Area Strategic Plan (MASP) boundary.

Donabate is designated as a 'Self-Sustaining Growth Town' within the Metropolitan Area, and is defined as a town with "a moderate level of jobs and services – includes sub-county market towns and commuter towns with good transport links and capacity for continued commensurate growth to become more self-sustaining."

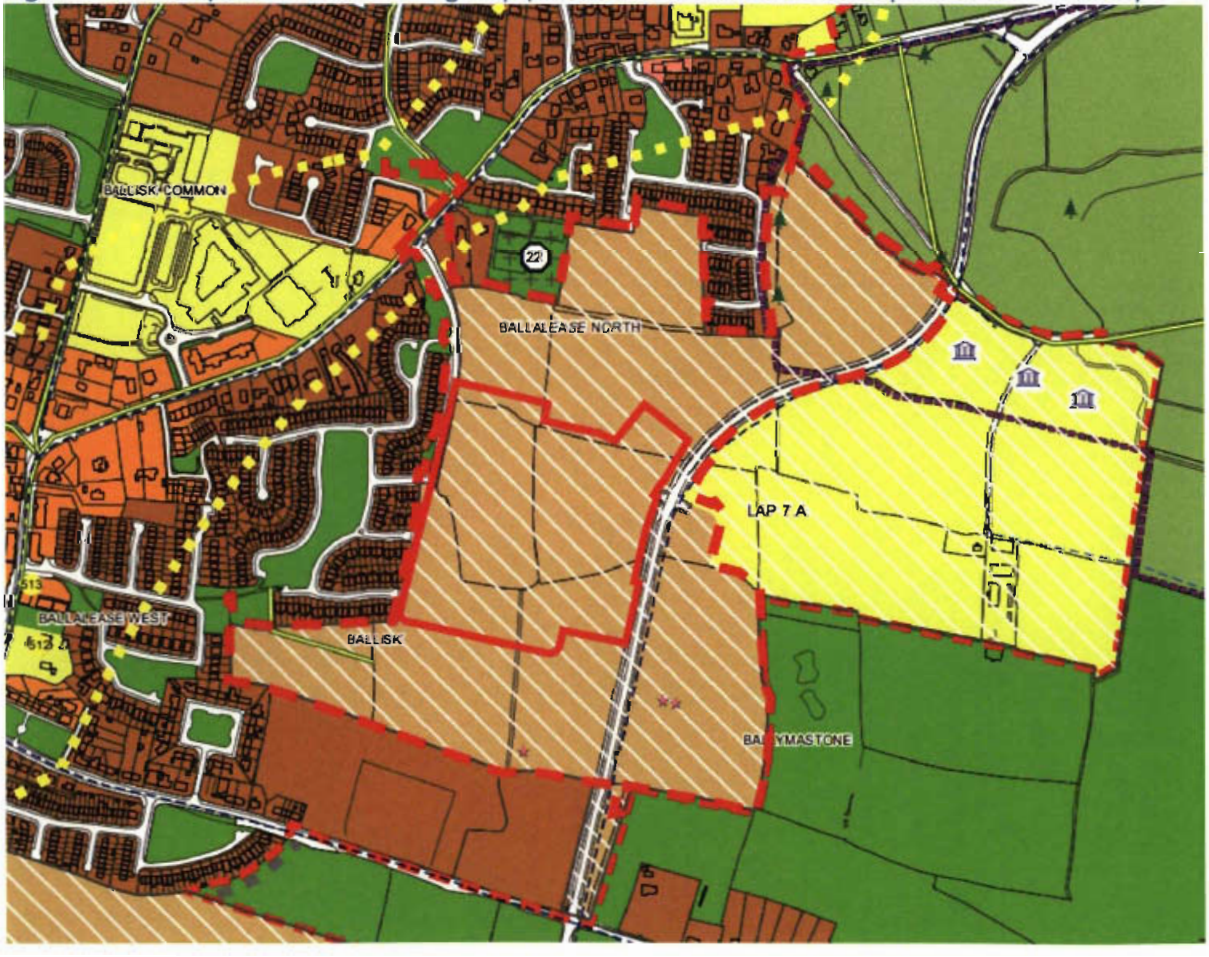
Self-Sustaining Growth Towns Policies:

- Policy CSP31 – *MASP Strategic Development Areas: Deliver strategic development areas identified in the MASP, located at key nodes along high-quality public transport corridors in tandem with the delivery of infrastructure and enabling services to ensure a steady supply of serviced sites and to support accelerated delivery of housing.*
- Policy CSP32 – *Donabate LAP: Facilitate development on zoned residential lands within the settlement boundary of Donabate as prescribed in the Donabate LAP. Support the provision of the necessary social and community infrastructure including recreational facilities and strengthen and enhance the public realm, providing improved levels of connectivity and permeability.*
- Policy CSP33 – *Consolidate Development and Protect Unique Identity of Donabate: Consolidate the development and protect the unique identity of Donabate.*

Land Use

The site is zoned as 'Residential Area' (RA) with the objective to "*provide for new residential communities subject to the provision if the necessary social and physical infrastructure*".

Figure 14.3 Excerpt of Land use zoning map (Phase 2 Core Area and Masterplan Lands identified)



Heritage

Chapter 10 of the Plan sets out policies and objectives for safeguarding heritage within the county. Phase 2 application site boundary partly lies within the Portrane Demesne Architectural Conservation Area (ACA). However the Phase 2 Core Area where majority of works are proposed does not fall within the ACA. There are no protected structures on Phase 2.

The northern portion of Masterplan lands including the north eastern portion of Phase 2, falls within the Portrane Demesne Architectural Conservation Area (ACA).

See Cultural Heritage Chapter within this EIAR for further details.

Historic Landscape Characterisation

Historic Landscape Characterisation (HLC) seeks to identify and to understand the historic development of today's landscape by placing emphasis on the contribution that past historic processes make to the character of the landscape as a whole, not just selected 'special sites'. The overall masterplan lands and the subject site falls within the Donabate HLC. It therefore contributes to a broader assessment and understanding of landscape character. It was prepared in May 2007.

Green Infrastructure and Natural Heritage

Chapter 9 of the Plan sets out Green Infrastructure and Natural Heritage objectives and policies. The following policies and objectives of pertinence are set out below:

- Policy GINHP1 – *Resilient Design: Promote an awareness of the benefits of resilient design and the multi-functional nature of green infrastructure. Apply multi-functional principles of green infrastructure to inform the Development Management process in terms of design and layout of new residential areas, business/industrial development and other significant projects while maximising the multi-functional nature of green infrastructure by ensuring the development of synergies between Public Open Space, Biodiversity, SuDS/Water Sensitive Design, Climate Change and Active Travel objectives.*
- Policy GINHP2 – *Protection of Green Infrastructure: Ensure that areas and networks of green infrastructure are identified, protected, enhanced, managed and created to provide a wide range of environmental, social and economic benefits to communities.*
- Policy GINHP3 – *Greening of Developments: Encourage measures for the 'greening' of new developments including the use of green roofs, brown roofs, green walls and water harvesting. Where feasible require new developments to incorporate greening elements such as green roofs, brawn roofs, green walls, green car parking and SuDs (e.g. clean water ponds fed by rainwater via downpipes).*
- Policy GINHP5 – *Green Infrastructure Network: Develop the green infrastructure network to ensure the conservation and enhancement of biodiversity, including the protection of European Sites, the provision of accessible parks, open spaces and recreational facilities (including allotments and community gardens), the sustainable management of water, the maintenance of landscape character including historic landscape character and the protection and enhancement of archaeological and heritage landscapes.*
- Policy GINHP10: *Green Infrastructure and Development Seek a net gain in Green Infrastructure through the protection and enhancement of existing assets, through the provision of new Green Infrastructure as an integral part of the planning process, and by taking forward priority projects*

including those indicated on the Development Plan Green Infrastructure maps during the lifetime of the Development Plan.

- **Objective GINHO19:** *Green Networks: Create an integrated and coherent Green Infrastructure for the County by requiring the retention of substantial networks of green space in urban, urban fringe and adjacent countryside areas to serve the needs of communities now and in the future including the need to adapt to and mitigate climate change.*
- **Objective GINHO21:** *Integration of Green Infrastructure: Avoid the fragmentation of green spaces in site design and to link green spaces /greening elements to existing adjacent Green Infrastructure / the public realm where feasible and to provide for ecological functions.*
- **Objective GINHO22:** *Network Fragmentation: Resist development that would fragment or prejudice the County's strategic Green Infrastructure network.*

The following objectives of pertinence are set out in relation to biodiversity:

- **Objective GINHO2:** *Fragmentation: Reduce fragmentation and enhance the resilience of Fingal's GI network by strengthening ecological links between urban areas, Natura 2000 sites, proposed Natural Heritage Areas, parks and open spaces and the wider regional network by connecting all new developments into the wider Green Infrastructure network.*
- **Objective GINHO3:** *Biodiversity in Open Space: Make provision for biodiversity within public open space and include water sensitive design and management measures (including SuDS) as part of a sustainable approach to open space design and management.*
- **Objective GINHO4:** *Green Infrastructure and Development: Resist development that would fragment or prejudice the County's strategic Green Infrastructure network.*

The following policies and objectives of pertinence are set out in relation to parks, open space and recreation:

- **Policy GINHP6:** *Multi-Functionality: Ensure delivery of multifunctional green and civic spaces that meet community needs, promote active and passive recreation, flood and surface water management and local habitat improvements. The multi-functionality of spaces will be balanced against the need to protect and enhance local habitat and the recreational and functional requirements of parks.*
- **Objective GINHO7:** *Provision of Open Space: Provide a range of accessible new parks, open spaces and recreational facilities accommodating a wide variety of uses (both passive and active), use intensities and interests.*
- **Objective GINHO8:** *Routes: Provide attractive and safe routes linking parks and open spaces and other related features such as cultural sites and heritage assets as an integral part of Green Infrastructure provision, where appropriate and feasible.*
- **Objective GINHO9:** *Greenways and Net Gain: Ensure that all greenway developments have a biodiversity net gain. Nature conservation and opportunities for biodiversity enhancement will be a key part of these infrastructure projects and nature conservation will be considered throughout the lifetime of the project and into the future, following project completion.*

The following policies and objectives of pertinence are set out in relation to sustainable water management:

- Policy GINHP7: *Protection: Protect and enhance the natural, historical, amenity and biodiversity value of the County's watercourses, flood plains, riparian corridors, wetlands and coastal area though long-term and liaison with relevant Prescribed Bodies where appropriate.*
- **Objective GINHO12:** *Green Infrastructure Requirements: Ensure the provision of new Green Infrastructure addresses the requirements of functional flood storage, the sustainable management of coastal erosion, and links with provision for biodiversity, Sustainable Drainage Systems (SuDS) and provision for parks and open space wherever possible and appropriate.*
- **Objective GINHO13:** *Wetlands: Seek the creation of new wetlands and/or enhancement of existing wetlands through provision for Sustainable Drainage Systems (SuDS) where appropriate.*
- **Objective GINHO15:** *SuDs: Limit surface water run-off from new developments through the use of appropriate Sustainable Urban Drainage Systems (SuDS) using nature-based solutions and ensure that SuDS is integrated into all new development in the County.*

The following policies and objectives of pertinence are set out in relation to species protection:

- **Policy GINHP18:** *Species Protection: The Council will seek to protect rare and threatened species, including species protected by law and their habitats by requiring planning applicants to demonstrate that proposals will not have a significant adverse impact on such species and their habitats.*
- **Objective GINHO33:** *Annex I and Annex II: Ensure that development does not have a significant adverse impact on proposed Natural Heritage Areas (pNHAs), Natural Heritage Areas (NHAs), Statutory Nature Reserves, Refuges for Fauna, Habitat Directive Annex I sites and Annex II species contained therein, and on rare and threatened species including those protected by law and their habitats.*

The following policies and objectives of pertinence are set out in relation to trees, hedgerows and Tree Protection Orders (TPOs):

- **Policy GINHP21:** *Protection of Trees and Hedgerows: Protect existing woodlands, trees and hedgerows which are of amenity or biodiversity value and/ or contribute to landscape character and ensure that proper provision is made for their protection and management.*
- **Policy GINHP22:** *Tree Planting: Provide for appropriate protection of trees and hedgerows, recognising their value to our natural heritage, biodiversity and climate action and encourage tree planting in appropriate locations*
- **Objective GINHO45**: *Hedgerow Categorisation: Develop a 'Hedgerow Categorisation and Management Appraisal Tool' and associated appropriate planning and management requirements for Development Management purposes to ensure a sustainable future for retained hedgerows in the context of new developments.*
- **Objective GINHO46**: *Tree Removal: Ensure adequate justification for tree removal in new developments and open space management and require documentation and recording of the reasons where tree felling is proposed and avoid removal of trees without justification.*
- **Objective GINHO47**: *Woodland Development Schemes: Promote and support woodland development schemes by identifying suitable areas to establish and enhance woodlands for biodiversity, climate change and recreational purposes in partnership with local communities in line with the adopted Forest of Fingal-A Tree Strategy for Fingal.*

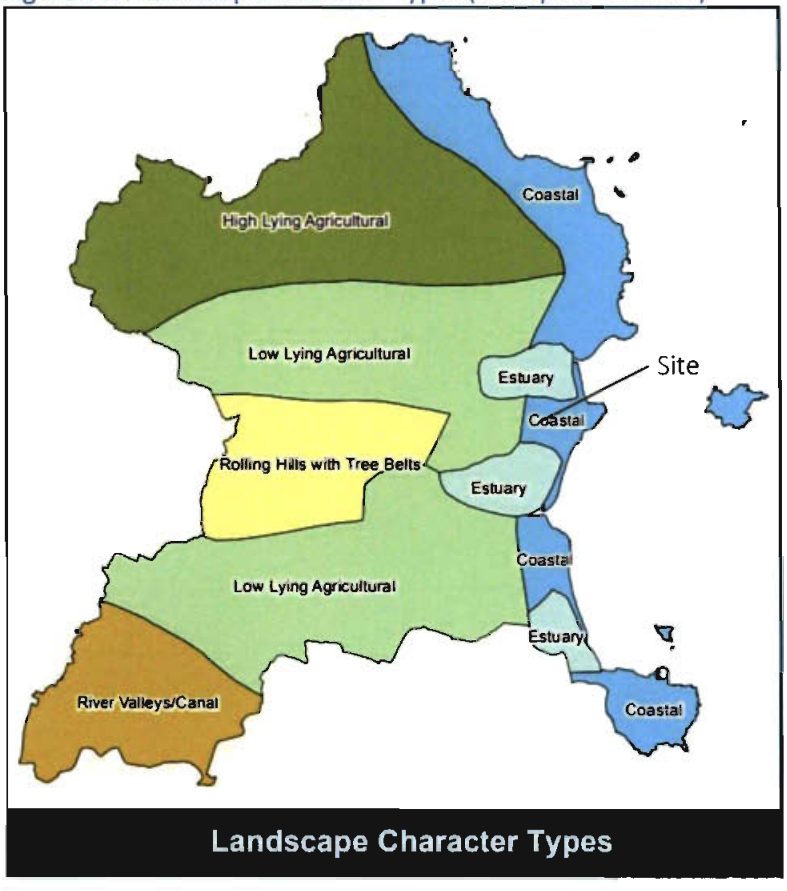
Landscape Character Assessment

The landscape designations is covered under Section 9.6.14 of the Plan.

A Landscape Character Assessment (LCA) for Fingal was carried out, and provides for the classification of Fingal's landscapes into types and values and sensitivities. The LCA divides the County into six Landscape Character Types representing generic areas of distinctive character that makes one landscape different from another, such as uplands or the coast.

The LCA places a value on each landscape character type ranging from exceptional to modest Subsequent to the type and value being identified, the sensitivity of each character type is defined as its overall ability to sustain its character in the face of change. Sensitivity is evaluated using criteria ranging from high to low. It should however be noted, that the GLVIA states that sensitivity of a landscape is linked directly to the proposed change.

Figure 14.4 Landscape Character Types (excerpt of the Plan)



The site falls within an area characterised as 'Coastal' Landscape Character Type. This Landscape Character Type is of 'Exceptional' Landscape Value and of 'High' Landscape Sensitivity.

In relation to the Coastal Character type, the Development Plan states the following:

"The Coastal Character Type is categorised as having an exceptional landscape value. This value is arrived at due to the combination of visual, ecological, recreational and historical attributes. The area has magnificent views out to sea, to the islands and to the Mourne and Wicklow mountains and contains numerous beaches and harbours. The area's importance is highlighted by the High Amenity zoning covering substantial parts of the area. The area is rich in archaeological, architecturol and natural heritage and is of high ecological value."

Figure 14.5 Landscape Character Type for Donabate and Surrounds (Extract from Donabate LAP 2016). The Masterplan lands fall within the Costal Landscape Character Type.

Table 14.8 Landscape Character Assessment – *Fingal Development Plan 2023 – 2029*

Landscape Character Type	Landscape value	Landscape sensitivity
Rolling Hills	Modest	Medium
High Lying	High	High
Low Lying	Modest	Low
Estuary	Exceptional	High
Coastal	Exceptional	High
River Valley and Canal	High	High

Relevant policies and objectives in relation to landscape character are as follows:

- **Policy GINHP9:** *Landscape Character: Ensure Green Infrastructure provision responds to and reflects landscape character including historic landscape character, conserving, enhancing and augmenting the existing landscapes and townscapes of Fingal which contribute to a distinctive sense of place.*
- **Policy GINHP25:** *Preservation of Landscape Types: Ensure the preservation of the uniqueness of a landscape character type by having regard to the character, value and sensitivity of a landscape when determining a planning application.*
- **Objective GINHO55:** *Protection of Skylines: Protect skylines and ridgelines from development.*
- **Objective GINHO56:** *Visual Impact Assessments: Require any necessary assessments, including visual impact assessments, to be prepared prior to approving development in highly sensitive areas.*

- **Objective GINHO57:** *Development and Landscape: Ensure development reflects and, where possible, reinforces the distinctiveness and sense of place of the landscape character types, including the retention of important features or characteristics, taking into account the various elements which contribute to their distinctiveness such as geology and landform, habitats, scenic quality, settlement pattern, historic heritage, local vernacular heritage, land-use and tranquillity.*
- **Objective GINHO58:** *Sensitive Areas: Resist development such as houses, forestry, masts, extractive operations, landfills, caravan parks, and campsites, and large agricultural/horticulture units which would interfere with the character of highly sensitive areas or with a view or prospect of special amenity value, which it is necessary to preserve.*
- **Objective GINHO59:** *Development and Sensitive Areas: Ensure that new development does not impinge in any significant way on the character, integrity and distinctiveness of highly sensitive areas and does not detract from the scenic value of the area. New development in highly sensitive areas shall not be permitted if it: ¨ Causes unacceptable visual harm. ¨ Introduces incongruous landscape elements. ¨ Causes the disturbance or loss of (i) landscape elements that contribute to local distinctiveness, (ii) historic elements that contribute significantly to landscape character and quality such as field or road patterns, (iii) vegetation which is a characteristic of that landscape type and (iv) the visual condition of landscape elements.*

Views and Prospects

The Development Plan identifies views and prospects for protection. It notes that in assessing views and prospects it is not proposed that this should give rise to the prohibition of development along these routes, but development, where permitted, should not hinder or obstruct these views and prospects and should be designed and located to minimise their impact. The relevant policies and objectives are listed below:

- **Policy GINHP26:** *Preservation of Views and Prospects: Preserve Views and Prospects and the amenities of places and features of natural beauty or interest including those located within and outside the County.*
- **Objective GINHO60:** Protection of Views and Prospects: Protect views and prospects that contribute to the character of the landscape, particularly those identified in the Development Plan, from inappropriate development.
- **Objective GINHO61:** Landscape/Visual Assessment: Require a Landscape/Visual Assessment to accompany all planning applications for significant proposals that are likely to affect views and prospects.

Highly Sensitive Landscape

The site is identified to lie within an area designated as 'Highly Sensitive Landscape / High Amenity Zoning' (HA). This zoning (HA) has been applied to areas of the county of high landscape value. The following policy and objective are relevant:

- **Policy GINHP28** – *Protection of High Amenity Areas: Protect High Amenity areas from inappropriate development and reinforce their character, distinctiveness and sense of place.*
- **Objective GINHO67** – *Development and High Amenity Areas: Ensure that development reflects and reinforces the distinctiveness and sense of place of High Amenity areas, including the retention of important features or characteristics, taking into account the various elements which contribute to*

its distinctiveness such as geology and landform, habitats, scenic quality, settlement pattern, historic heritage, local vernacular heritage, land-use and tranquillity.

14.4.1.2 Donabate Local Area Plan 2016 – 2021

The Donabate Local Area Plan (hereafter referred to as the 'LAP') was prepared by Fingal County Council as part of the Development Plan 2016-2021. In March 2021, Fingal County Council resolved to extend the LAP until March 2026.

The LAP seeks to achieve the successful integration of the new development areas into the existing settlement and provide for the supporting infrastructure to ensure that Donabate continues to be a successful and attractive place for current and future residents. The LAP establishes a framework for the planned, co-ordinated and sustainable development of undeveloped lands zoned Objective RA – *'Provide for new residential communities in accordance with approved local area plans and subject to the provision of the necessary social and physical infrastructure'*. The LAP lands comprise approx. 138 hectares (340 acres) in four land parcels at Corballis, Ballymastone, Rahillion and at Turvey.

Strategic Aims of the LAP

The LAP is underpinned by a series of strategic aims as follows:

- *Provide a framework for a growing population with phased development of new housing delivered in tandem with supporting community and physical infrastructure.*
- *Support Donabate Village as the primary location for commercial, retail, community and cultural development serving the Town and Peninsula generally.*
- *Provide infrastructural investment to address traffic, pedestrian safety and movement challenges including the early delivery by FCC of a new road & bridge providing an alternative access to Donabate and Portrane.*
- *Protect and enhance the existing natural amenities of Donabate together with improving access to established local amenity areas through the creation of a network of designated green routes.*

Figure 14.6 Extract from Donabate LAP (Figure 1.2), showing location of Ballymastone Masterplan lands (black line)

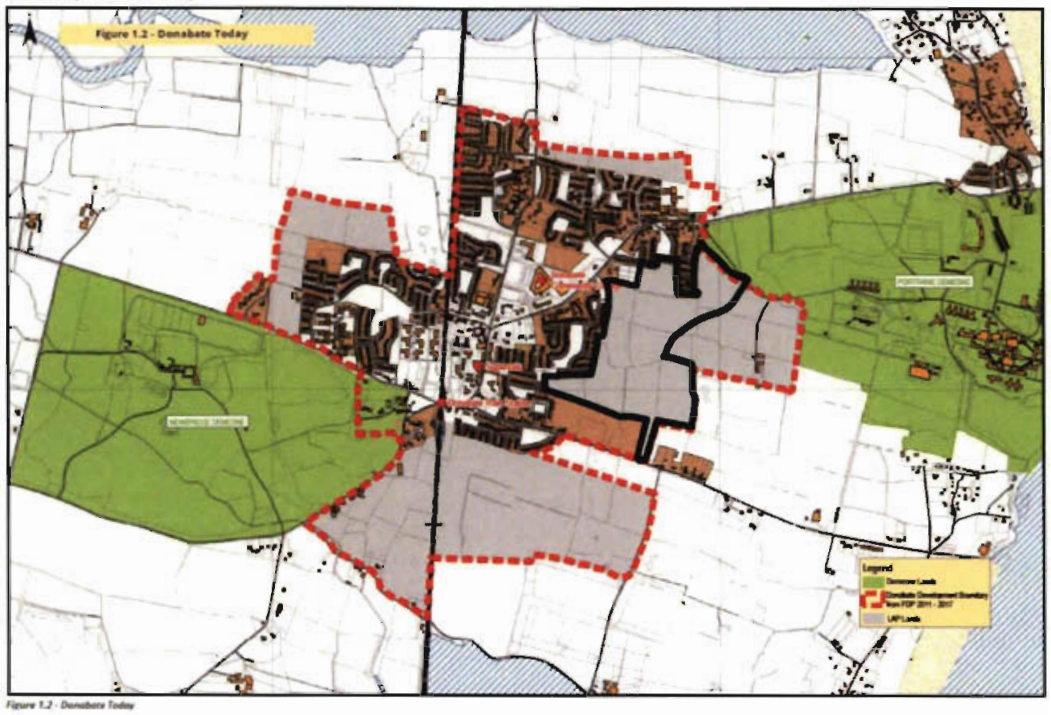
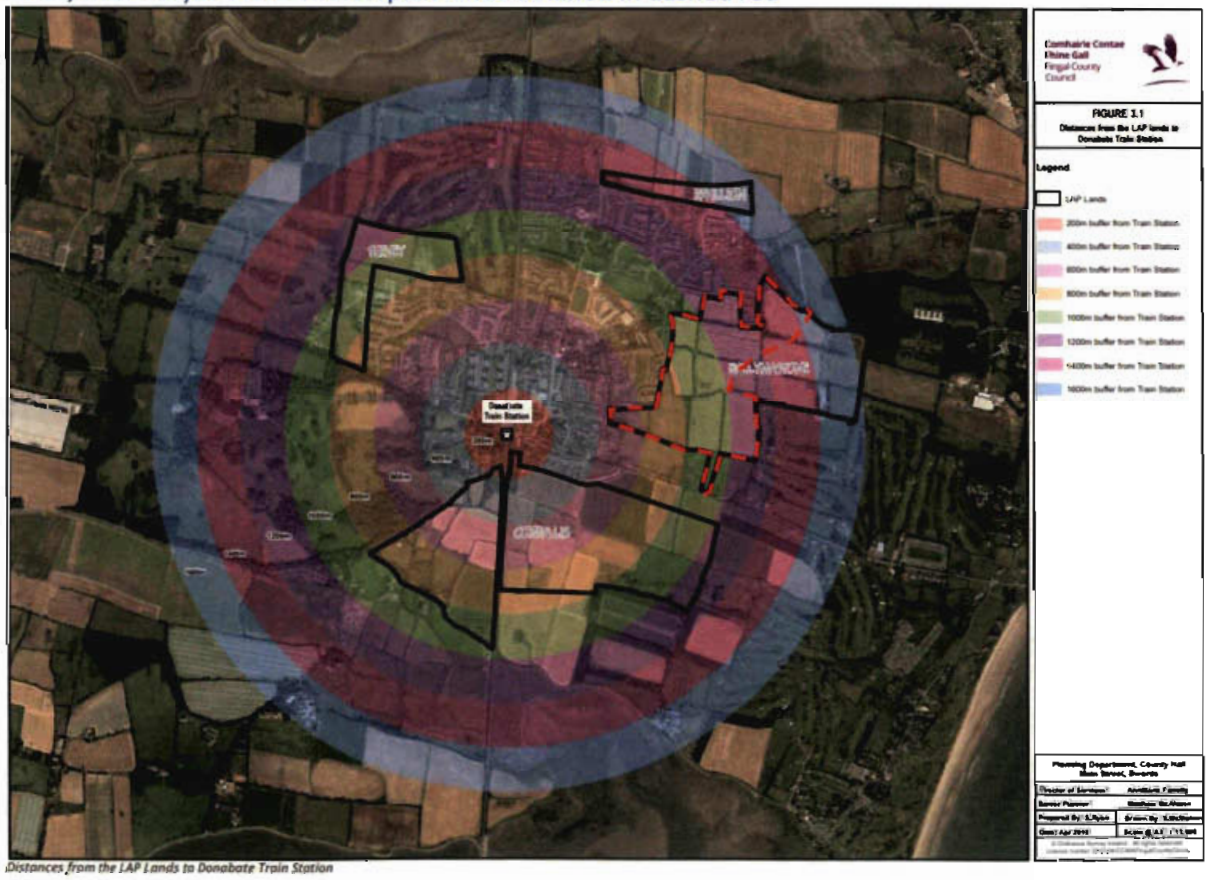


Figure 1.2 - Donabate Today

Figure 14.7 Extract from Donabate LAP showing the distance from Donabate Train Station to LAP lands, with Ballymastone Masterplan lands outlined in dashed red



Distances from the LAP Lands to Donabate Train Station

Figure 14.7, above, shows distances from the Ballymastone Masterplan lands to the Donabate Train Station. The subject site falls within the range of 800 – 1,400 m from the train station.

The following sections set out the objectives of the LAP that are of greatest relevance to the proposed development.

Open Space

The LAP sets out the desired hierarchy, accessibility and function of open space within the LAP lands. In relation to Ballymastone, the LAP envisages that Class 1 Public Open Space will be provided. In terms of the desired location and function, the following is stated (p. 41):

"Passive and Active recreation facilities including proposed all-weather pitch, sports clubs, athletic facilities, movement corridor, biodiversity conservation and enhancement, SUDS integration. Cycling and pedestrian linkages."

Relevant objectives in relation to open space include the following (p. 42):

- **OBJECTIVE 4.6**: *Provide appropriately scaled children's playground facilities and youth activity spaces within residential development, having regard to relevant Fingal County Development Plan policy, Department of Environment guidance and best practice.*
- **OBJECTIVE 4.7**: *To provide a large multi-functional playground at Ballymastone with a range of facilities to cater for a variety of age-groups (toddlers to teens).*
- **OBJECTIVE 4.10**: *Provide an integrated network of open spaces, pocket parks and pedestrian / cycle routes through the implementation of the Open Space Strategy outlined in the LAP.*

Landscape

The following objectives seeks to mitigate the impact of development proposals on landscape and ecology, with particular focus on the protection of existing vegetation, archaeology and sensitivities of ACAs, local landscape character areas, etc. (p. 56):

- **OBJECTIVE 5.1:** *Development proposals shall include Visual Impact Assessments and Landscape Impact Assessments demonstrating compliance with LAP landscape and heritage objectives, outlined hereunder.*
- **OBJECTIVE 5.3:** *Ensure development reflects and, reinforces the distinctiveness and sense of place of the landscape character types, including the retention of important features or characteristics, taking into account the various elements which contribute to their distinctiveness such as geology and landform, habitats, scenic quality, settlement pattern, historic heritage, locol vernacular heritage, land-use and tranquillity.*
- **OBJECTIVE 5.4:** *Seek the protection and retention of trees, hedgerows and historic walls or other distinctive boundary treatments that contribute to the visual amenity and landscape character of the area.*
- **OBJECTIVE 5.5:** *Protect, preserve and ensure the effective management of trees and groups of trees.*
- **OBJECTIVE 5.7:** *Conserve the historic building stock, structures on the Record of Protected Structures and archaeological sites and features including those an the Record of Monuments and Places and their settings.*
- **OBJECTIVE 5.8:** *Positively enhance the character of the area taking full account of the relevant ACA Statements of Character.*

- OBJECTIVE 5.10: *Any application for development on the LAP lands shall be accompanied by an Archaeological Impact Assessment.*

Urban Design

In relation to urban design, the following objective of relevance to the proposed development is stated (p. 93):

- OBJECTIVE 8.18: *Ensure that the interface between the proposed Donabate Distributor Road and all development abutting the road comprises only best practice urban design led solutions. In this regard no backing on of houses or house rear boundary walls will be permitted olong the entire road alignment.*

14.4.1.3 Summary of Planning Policy & Objectives

The above-discussed planning policies and objectives may be summarised as follows:

- The Phase 2 site is zoned as 'RA – Residential Areas'
- The Development Plan supports the principle of residential development while protecting and enhancing the coastal character of the area.
- Requirement for good Urban Design to contribute to Place Making in new developments.
- Requirements for open space provision and integration with Green Infrastructure.
- Recent construction of the Donabate Distributor Road to facilitate the development of Donabate and Portrane.
- General protection of trees, woodlands and hedgerows.
- Requirement for Sustainable Urban Drainage Systems not to be considered part of the Public Open Space System unless they contribute in a significant way to the design and quality of that space.
- A part of the subject site (Phase 2) and masterplan lands falls within Portrane Demesne Architectural Conservation Area (ACA) and Donabate and Portrane Historic Landscape Characterisation (HLC) Area, which provide for the safeguarding of archaeological sites, monuments, objects and their settings listed in the Record of Monuments and Places (RMP), and any additional newly discovered archaeological remains.
- The site is located within the 'Coastal Character Type' within wider Landscape Character Areas and is categorised as a 'Highly Sensitive Character Type', requiring the preparation of a Landscape and Visual Impact Assessment.

14.4.2 Description of Receiving Environment

The existing site and its environs are described below in terms of:

- Wider environs; and
- The proposed development site and its immediate surroundings.

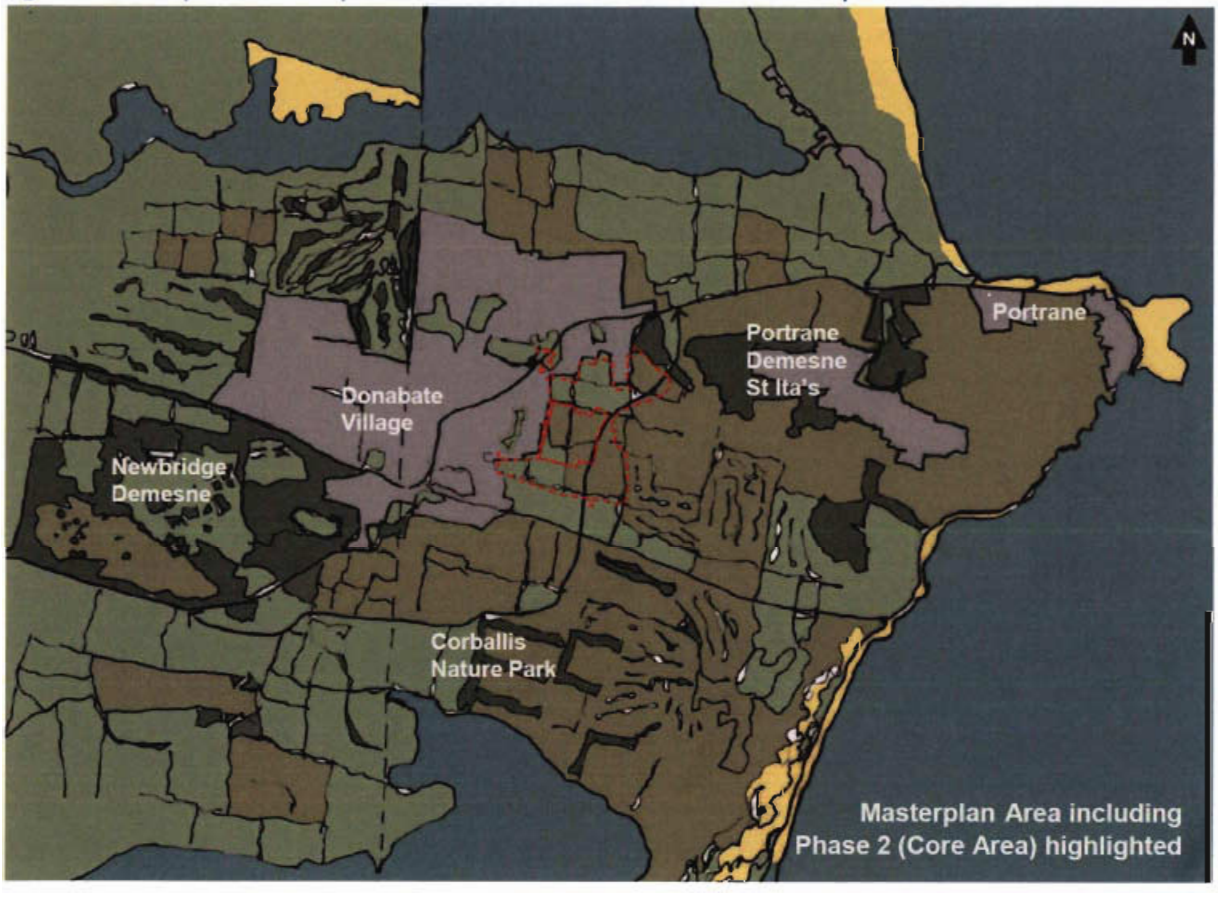
14.4.2.1 Wider Environs: The Donabate Peninsula

Donabate is in north Co. Dublin, located approximately 25km from Dublin City Centre and is approximately 11km north of Dublin Airport. It is 3km north-east of Swords, the administrative and commercial centre of Co. Fingal, which is one of four administrative units within Dublin Metropolitan Area. The Donabate peninsula is enclosed on the northern and southern sides by the Rogerstown and Malahide Estuaries and by the village of Portrane, St. Ita's Hospital / Portrane Demesne and Donabate Golf Course to the east. Donabate Village is surrounded by agricultural, residential and recreational use

and the town is well connected by road and public transport. Lands surrounding Donabate Village are zoned Greenbelt, High Amenity and Open Space. The Dublin-Belfast railway line cuts through Donabate Village and road access is from the M1 (via Hearse Road and Turvey Avenue).

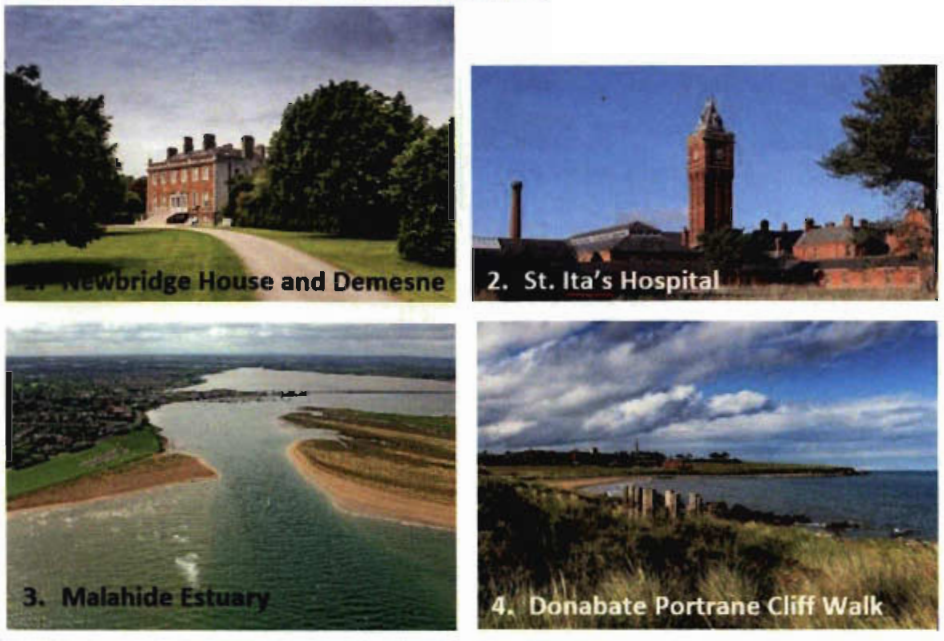
The Donabate Peninsula features many important natural areas including the Rogerstown and Malahide Estuaries, which form part of the Natura 2000 network. Both Rogerstown and Malahide Estuaries are the subject of multiple national and international conservation designations, including Special Area of Conservation, Special Protection Area and Ramsar Site (international), Natural Heritage Area and Statutory Nature Reserve (national). These designations covers the wetlands, beaches and inshore areas, including parts of the Portrane Demesne and Newbridge House and Demesne.. In addition, the extensive Newbridge House and Demesne is an important Regional Park located to the west of the existing village, while St. Ita's Hospital Portrane is located to the east of the village and north-east of the masterplan lands.

Figure 14.8 Proposed development site in the context of the Donabate peninsula



There are many local walking routes around Donabate, namely Newbridge Demesne Walks, Portrane Demesne Walks and the Donabate Portrane Cliff Walk. The Donabate Portrane Cliff Walk is a frequently used coastal walking route for locals and visitors. The 4km coastal walk starts from the Shoreline Hotel near Donabate Beach to Tower Bay at Portrane. The walk leads past impressive cliffs and offers views over the Irish Sea and Lambay Island.

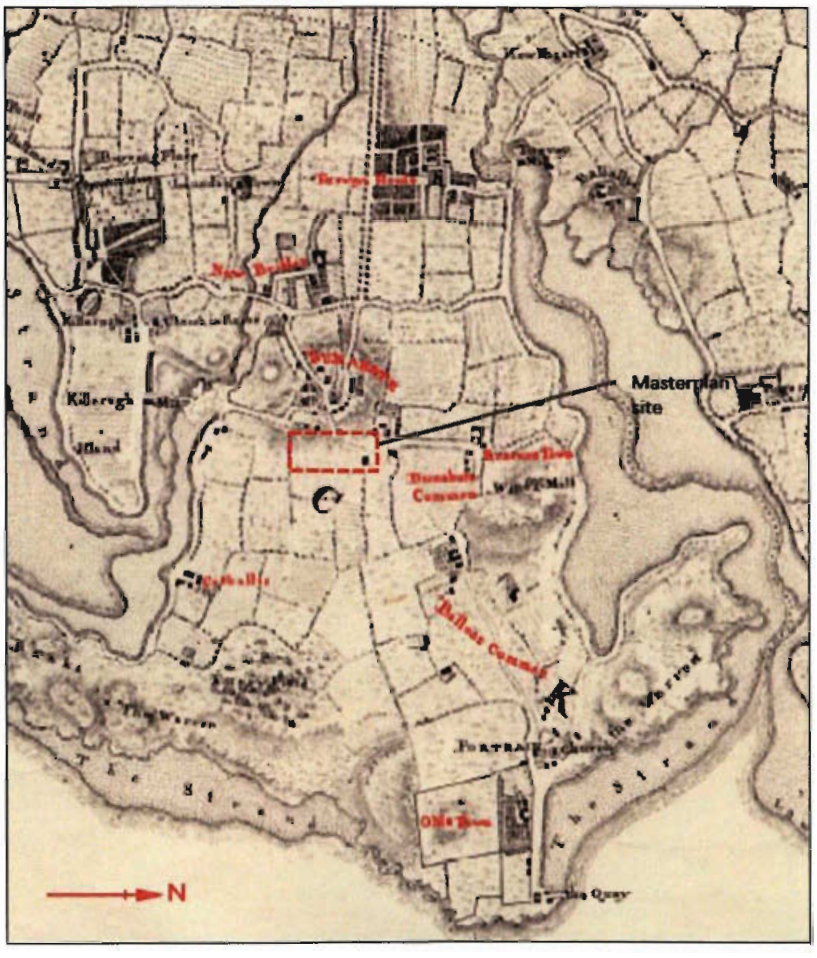
Figure 14.9 Key location in Donabate peninsula



The photographs above in **Figure 14.9** illustrate the wider environs' rich natural and built heritage

14.4.2.2 Wider Environs: Historic Development

Figure 14.10 Rocque's map of the Donabate Peninsula, 1760, indicative Ballymastone Masterplan lands outlined in dashed red

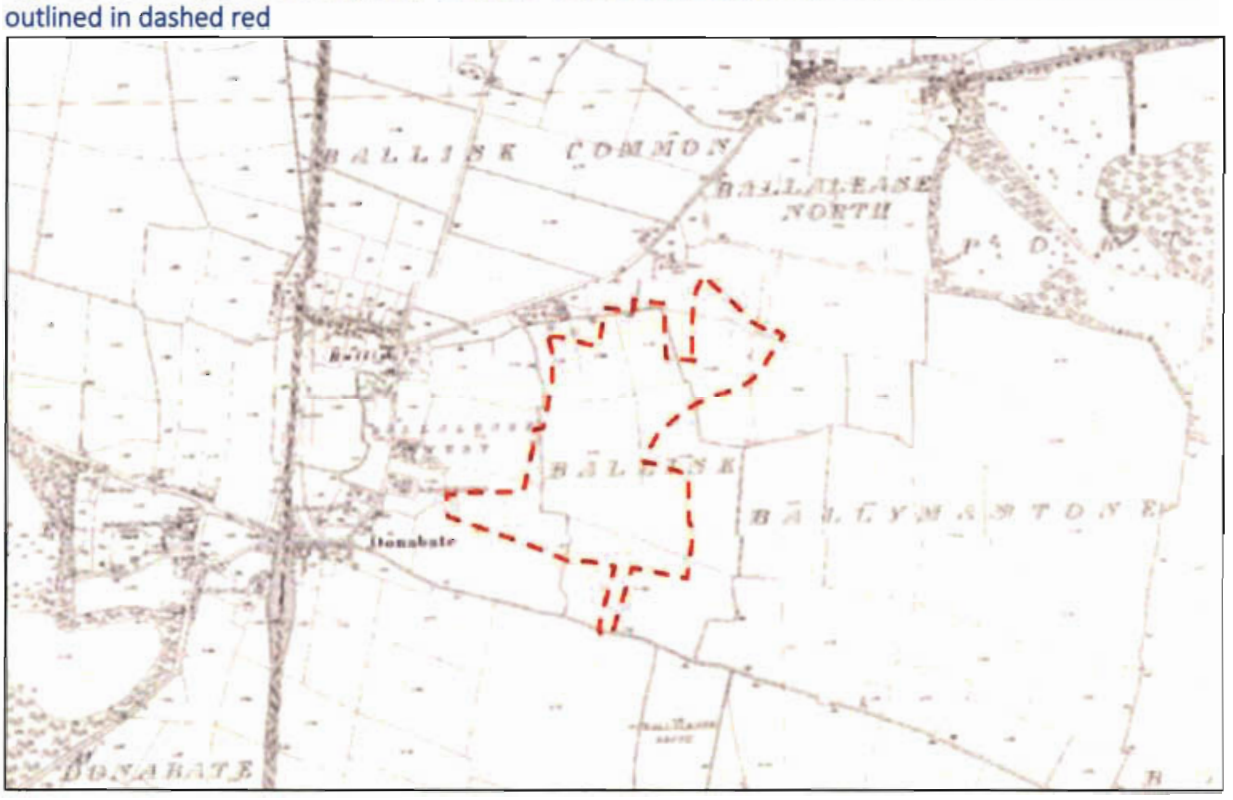


Although there is evidence of human habitation in the area from the Mesolithic period onwards, the present urban structure began to develop around the medieval ecclesiastical foundation in Donabate townland, which was in existence by the early 13th century.

A thriving economy based on fishing and limestone quarrying fuelled a period of significant development in the 18th century. Margaret Gowan and Co. (2006) identified that Rocque's map of 1760 showed 'Donabate' as a small village clustered around the area of the medieval core, "the cross of Donabate" marked at the centre of the settlement (**Figure 14.10**). The nearby manors and estate lands of Turvey and Newbridge, as well as the houses of Beaverstown and Corballis are shown on roads and avenues leading into the village.

The town underwent further significant change with the construction of the Dublin-Belfast railway line in the mid 19th century. The 1843 Ordnance Survey six-inch map (**Figure 14.11**) shows the newly constructed railway running north-south through the peninsula. The map identifies Donabate village to the west of the line and Ballisk village to the east. By this stage the alignment of the road through the village (now the R126) was also established. In 1903, St. Patrick's Catholic Church, now the recognised centre of the modern town, was built beside this road.

Figure 14.11 Ordnance Survey 1897-1913 25" Map of Donabate, with Ballymastone Masterplan lands outlined in dashed red



14.4.2.3 Wider Environs: Built and Cultural Heritage

The Donabate area and settlement dates back to prehistoric period. Therefore, there are a number of Protected Structures in Donabate. There are two 'Architectural Conservation Areas' designated on the Donabate Peninsula. Newbridge Demesne and The Square ACA borders west of the town. St Ita's Hospital and Portrane Demesne ACA lies north-east of Ballymastone. The Phase 2 site and the masterplan lands partly lie within the Portrane Demesne ACA.

There are no recorded monuments within Phase 2 planning application boundary.

14.4.2.4 The Site & Immediate Environs

The site is located to the east of the existing Donabate Village. The Masterplan area is situated between Donabate Village and Portrane Demesne (St. Ita's Hospital). The DDR splits the Masterplan area into eastern and western sections.

To the west and north of the Masterplan area there is existing residential development and a local cemetery. To the east is the Donabate GAA Club and Donabate Golf Club. To the south, lies a rectangular field that is zoned for residential development and is partly developed. Further south is the New Road which connects Donabate Town to the Coast.

The Phase 2 (proposed development) lands comprises the central section of the overall masterplan. To the north of this Phase 2 (Core Area) proposed development is the proposed Ballymastone Phase 3 development and to the south is the permitted Ballymastone Phase 1 development. To the east is DDR and to the west is existing residential development ('the Links' being the nearest of these).

Figure 14.12 Proposed development site context

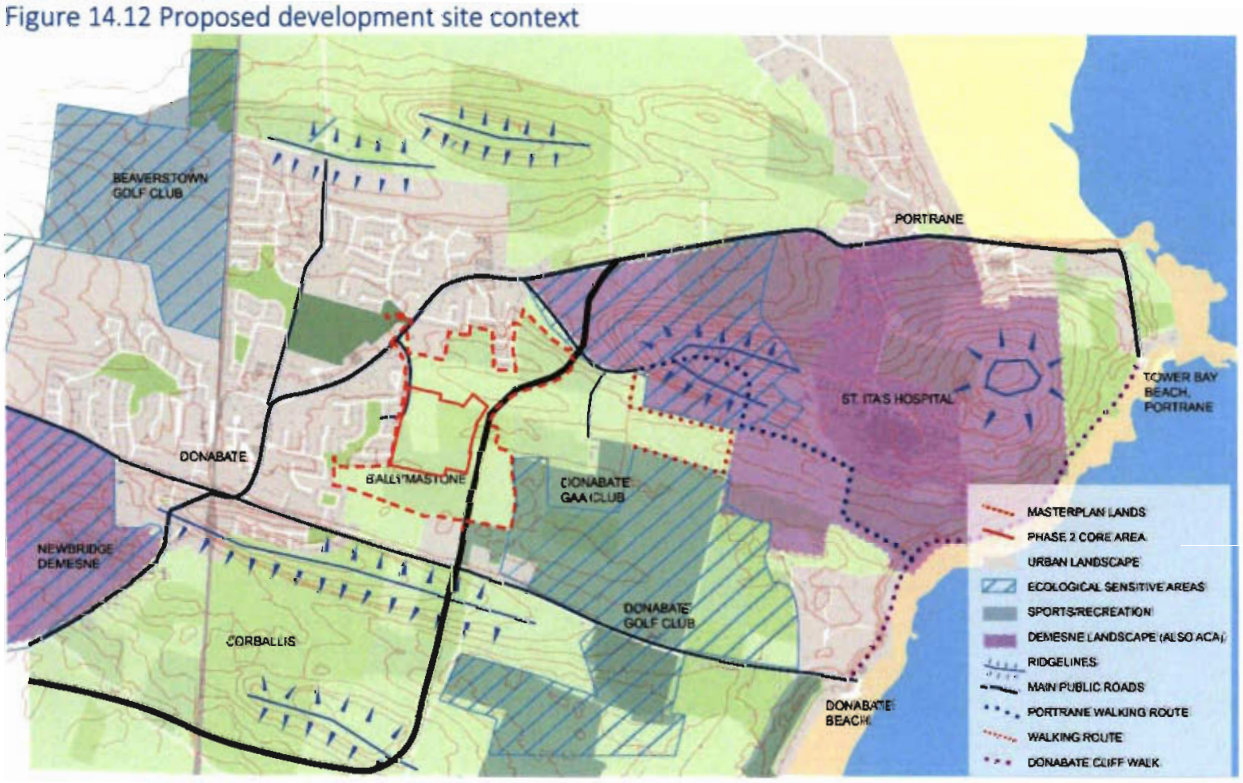
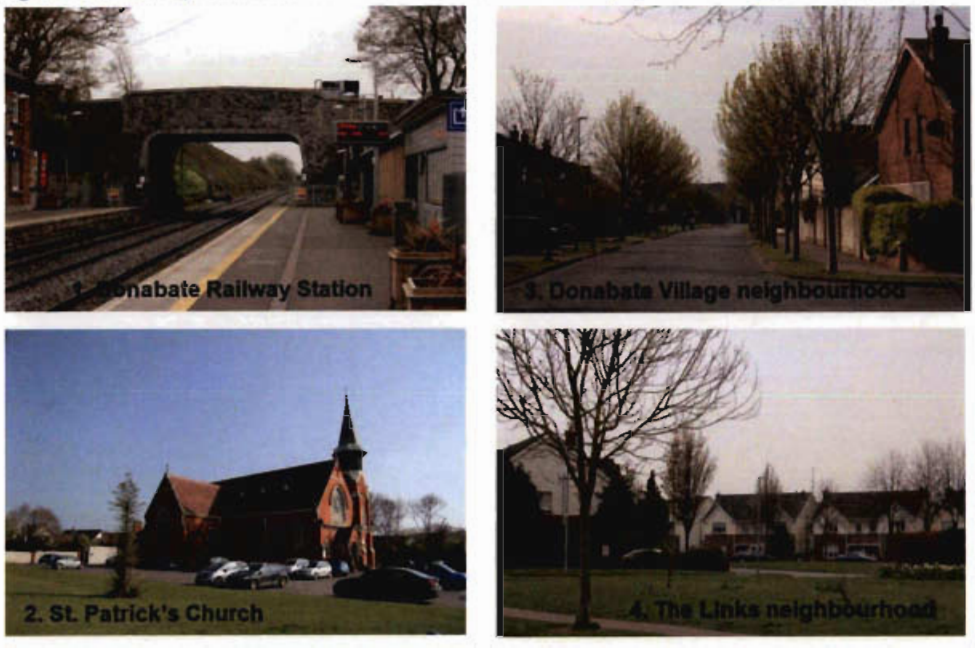
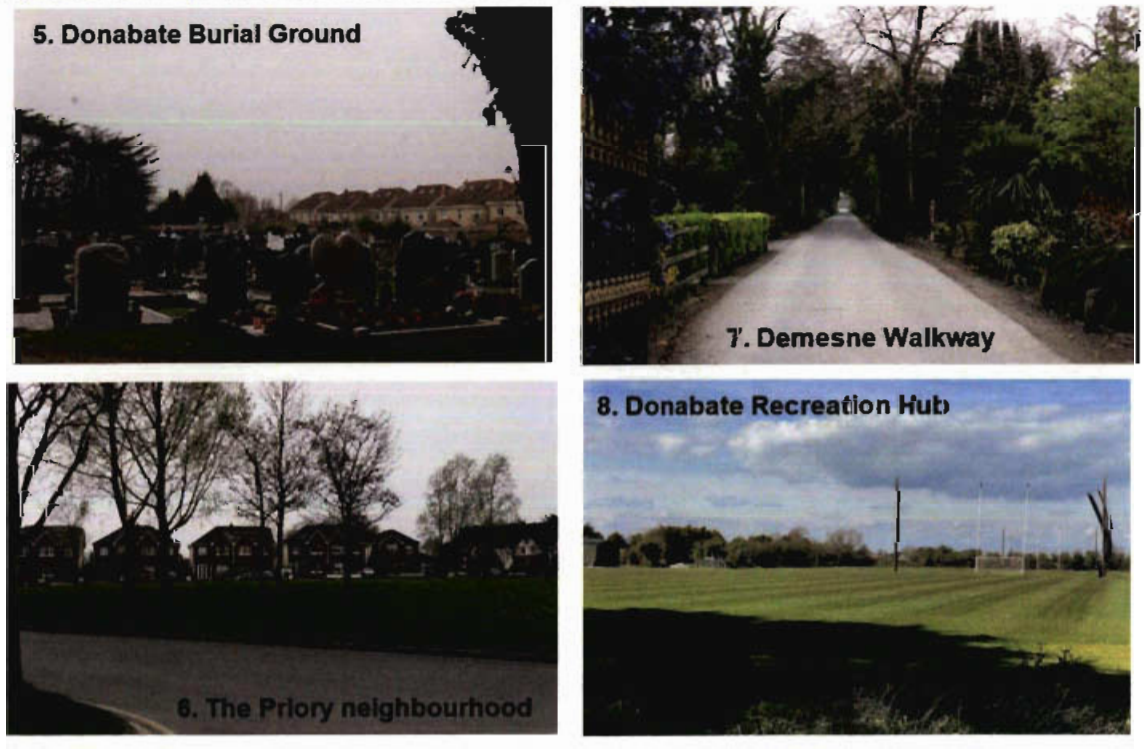


Figure 14.13 Key characteristics of the local landscape / townscape at Donabate



The photographs in **Figure 14.13** above and **14.14** below, above, illustrate the key characteristics of the local landscape / townscape, particularly the village qualities of Donabate – its landmarks, historic features and Demesne, green and leafy neighbourhoods and residential areas where the village abuts the western boundary of the site and, to the east the Donabate Distributor Road (DDR) and evolving Recreational Hub.

Figure 14.14 Key characteristics of the local landscape / townscape at Donabate



The immediate environs to the Phase 2 site illustrate a receiving environment in transition in accordance with agreed zoning and permitted planning schemes. The main features include the DDR itself built to service these lands, the Phase 1 permitted scheme now at an advanced stage of construction both east and west of the DDR, and other developments fronting onto New Road.

Figure 14.15 The landscape can be described as an area in transition; views of the surrounds from the DDR

Figure 14.16 Permitted development to the south of masterplan lands, north of New Road and west of DDR.

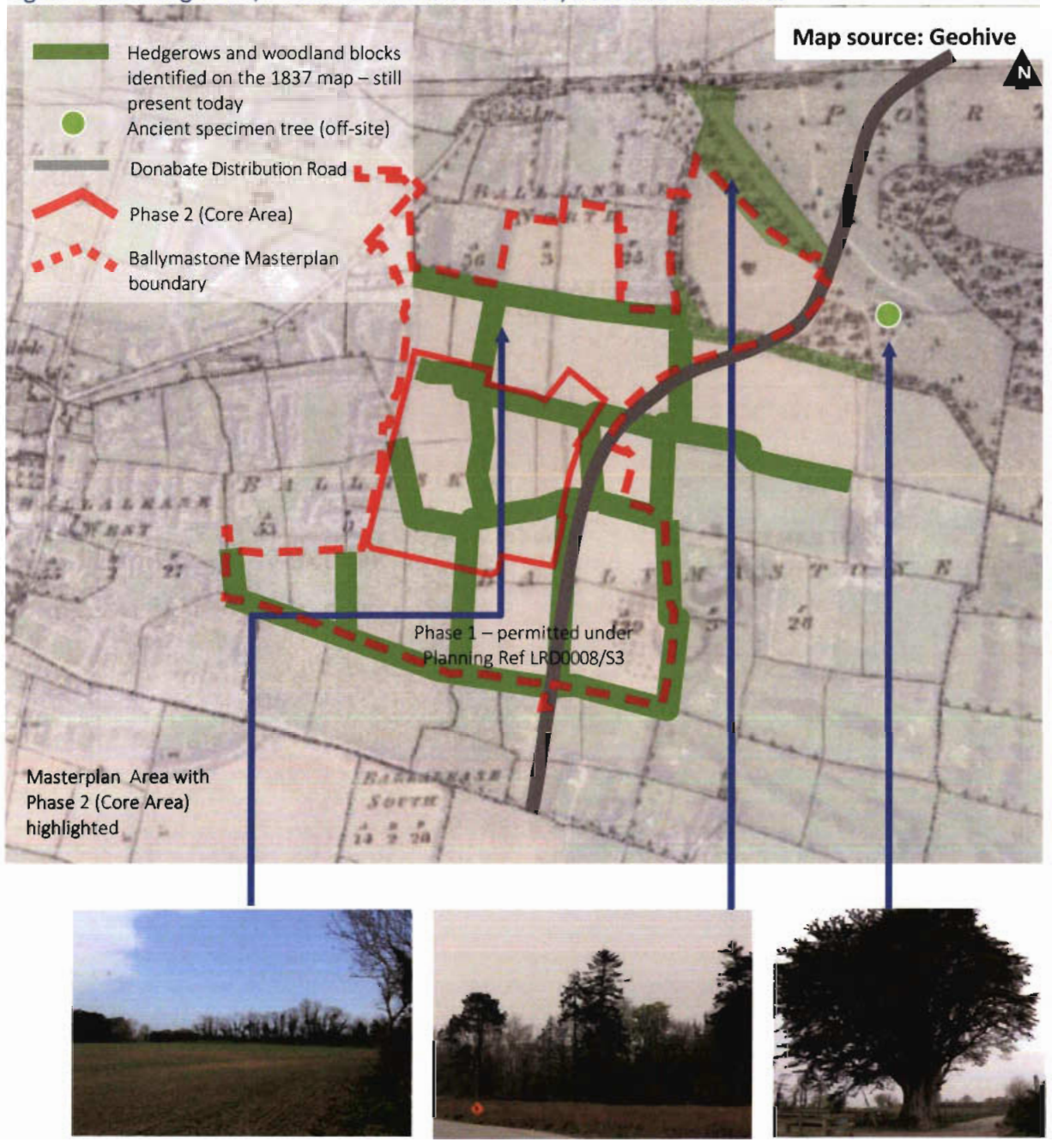
Figure 14.17 Views of Masterplan lands (Phase 1); (left) Phase 1 site, east of the DDR, and (right) Phase 1, to the west of DDR and to the south of and including parts of the Phase 2 Site.

14.4.2.5 The Masterplan and the Phase 2 Site: Field Patterns

The 32ha overall masterplan area is made up of some 14-16 fields, at present mostly used for agricultural purposes. The Phase 2 site comprises X-Y fields. There is some uniformity in field shape and size. The majority are roughly rectangular and up to 3-4ha in size (several fields have notably similar dimensions of roughly (150x280m). The fields around the western and northern edge of the overall masterplan site are less uniform in size and shape.

The agricultural filed pattern have been present since before 1837 (almost 200 years). These represent rich, wide and well-established wildlife corridors. They also add a sense of maturity to the landscape. There are a few fine examples of specimen trees around the site in adjacent woodland blocks. The specimen trees add character to the landscape and contributes towards visual amenity. See **Figure 14.18** below that highlights the historical hedgerows within the site.

Figure 14.18 Hedgerows, historic townland boundaries, trees and woodlands



Outside the Masterplan boundary, to the east of DDR, several of the hedgerows have significant rows of mature trees. Most of these are Ash. Towards the north-east of the masterplan area, the boundaries of several fields, which are shown on historic maps to have been part of the Portrane Demesne, include a greater variety, and more mature trees. Some of these are monumental in stature.

The following extract is taken from Margaret Gowan and Co.'s report on the Site, prepared in 2006 to inform the LAP (p.41-43): *"The townland boundary between Ballymastone and Portrane Demesne, Ballalease North and Portrane Demesne, between Ballalease North and Ballisk Common, Ballalease North and Ballymastone, Ballymastone and Ballisk are intact within the Ballymastone Lands. Townland boundaries are one of the earliest formal land divisions and are unique to Ireland. Their origins are undoubtedly of great antiquity, most certainly pre-Norman. They existed well before parishes or counties... Townland boundaries can be integrated into developments, however if some or all are to be removed they should be appropriately recorded (their nature and composition established) during archaeological site investigations".*

The masterplan lands are characterised by a relatively unchanging agricultural field pattern of hedgerows and tree rows and woodland copses or clusters that are also legible on historic maps.

The landscape has been much neglected in recent years and hedgerows have grown large and dense and the enclosed fields have been colonised by scrub, bramble and young trees. Despite this partial neglect, the area is used by local dog walkers and others. The most significant trees lie to the north-east masterplan boundary and west of the DDR and east of Priory Wood neighbourhood – an area where they impart an attractive wooded character.

The Phase 2 (Proposed Development) lands occupy the central part of the overall masterplan lands see **Figure 14.18** and are typical of the wider Masterplan landscape, however there are no significant individual trees or woodlands within Phase 2.

14.4.2.6 The Masterplan and the Phase 2 Site: Field Boundaries & Trees

All of the field boundaries are defined by hedgerows, except on the site boundary bordering The Links, where the hedgerows were removed during the construction of that estate. The hedgerows are made up of a typical combination of species, primarily Hawthorn and Ash, and an abundance of Ivy.

The quality of the hedgerows is variable. Some are more mature and these provide significant habitat features and a high degree of visual enclosure in the landscape. Others are less mature or have suffered from poor maintenance, and have less value as habitat and landscape features.

Figure 14.19 Views showing the variable quality of hedgerows on the site - central hedgerow

The Phase 2 (Proposed Development) lands occupy the central part of the overall masterplan lands see **Figure 14.19** and are typical of the wider Masterplan landscape. In Phase 2 Core Area boundary, there are three existing hedgerow boundaries; hedgerow running east-west along the northern core site

boundary; hedgerow running east-west in the southern side of the Phase 2 site; and a hedgerow running north-south in the central part of the Phase 2 site. They are all part of an interconnected hedgerow system as shown in **Figure 14.18**.

The scheme layout retains existing hedgerows as part of the open space system, however some will be removed to facilitate the development. The retained hedgerow forms a part of the central linear open space and maintains connectivity with other retained hedgerows in Phase 1 and the wider masterplan lands.

14.4.2.7 The Masterplan and the Phase 2 Site: Topography & Drainage

The Masterplan lands' topography lacks any distinctive features; however, there are gentle undulations across the site of approximately 2m. It is generally low-lying and flat, but rises gradually towards the north-east. The northernmost field can be considered part of the foot-slope of the ridge on the neighbouring St. Ita's Hospital lands. A shallow linear basin, aligned east-west in keeping with the prevailing topography of the peninsula, can be perceived in the northern portion of the subject site at the base of the ridge mentioned above.

There are no streams or rivers on the site; the natural drainage pattern has been disturbed by the improvement of the lands for agriculture. Drainage ditches along the edges of most of the fields, associated with the hedgerows, capture the site's surface water and channel it off site to the west and north-east.

Figure 14.20 Drainage ditches along the internal field boundaries (southern masterplan boundary – Phase 1)

The Phase 2 (Proposed Development) lands occupy the central part of the overall masterplan lands see **Figure 14.18** and are typical of the wider Masterplan topography and drainage patterns.

14.4.2.8 The Masterplan, the Phase 2 Site and Environs; Landscape and Visual Amenity

A number of features of the surrounding landscape are prominent in views from the Masterplan lands and Phase 2 site, lending it context/legibility and positive character:

Towards the north-east, the wooded ridge of Portrane Demesne (now St. Ita's Hospital lands) and some remnant demesne trees (east of the distributor road) generate a high degree of visual enclosure and positive landscape character and views. Also partially visible are the steeply pitched roofs of St. Ita's Hospital buildings that protrude above the wooded ridgeline.

Figure 14.21 The wooded ridge of Portrane Demesne is prominent to the east from parts of the site

To the west, north and south, the masterplan borders on various low density residential estates. In most cases, the rear or side facades of the houses and properties are visible from the site. As a result the views are (sub)urban in character and of limited quality.

Figure 14.22 Views from the Site to the west towards the neighbouring estates and work in progress (Phase 1)

Views towards other prominent features like Spires and Local Landmarks. In views from the central portion of the masterplan site and particularly from Phase 2, the church spire can be seen to the west, indicating the direction of the town centre.

From the north-western portion of the northern masterplan area, the distinctive red brick school (now converted for residential use) is partially visible.

Figure 14.23 (left) Views from the Site to the west towards looking at the Spire and village, (right): Red brick school (now residential use)

14.4.2.9 The Masterplan and the Phase 2 Site: Visibility

The most visible areas of the Phase 2 Core Area site are located in or along the:

- Immediate western edge – The site is clearly visible from The Links neighbourhood; and
- From DDR - The DDR splits the overall Masterplan area and Phase 2 (proposed development) lands are clearly visible from the DDR.

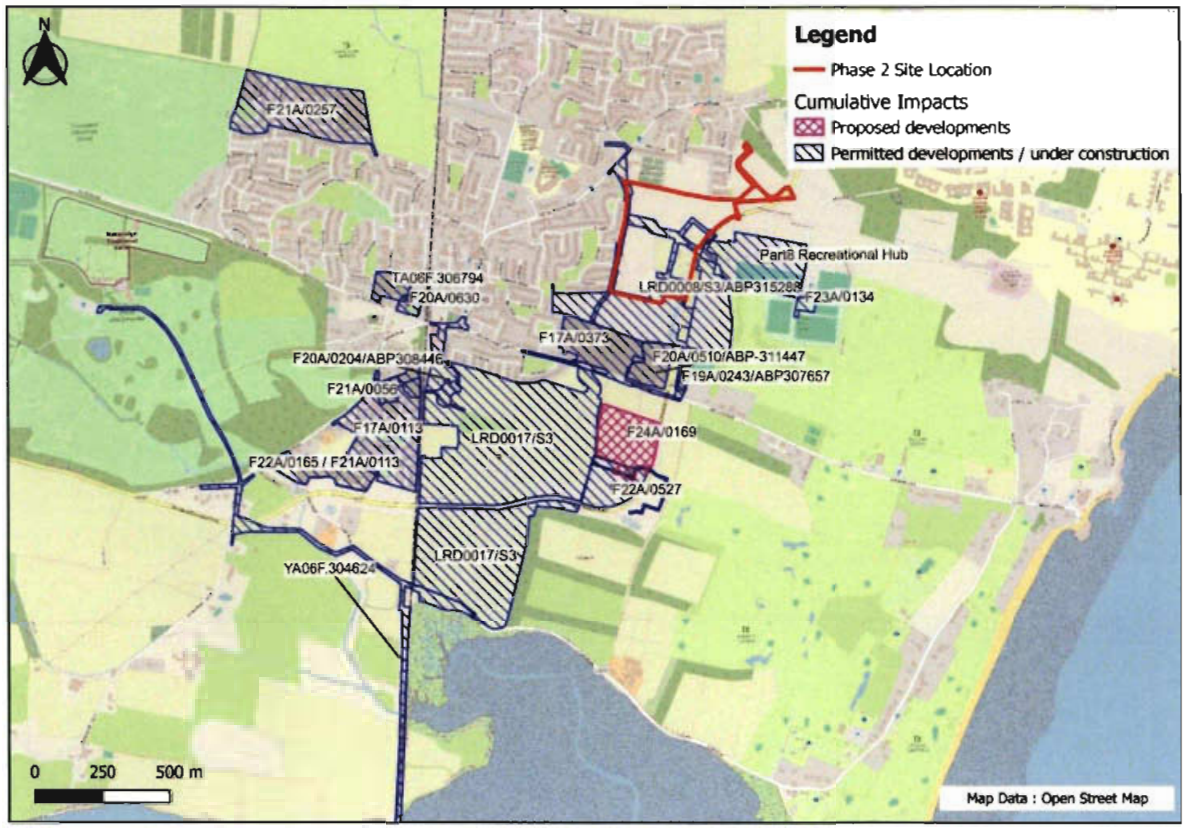
Partial visibility can be afforded from:

- New Road - The visibility of Phase 2 lands from New Road is reduced by recently completed residential development north of New Road and will be reduced further once Ballymastone Phase 1 is complete.
- Corballis Ridge - The steep Corballis ridge directly south of New road, presently in agricultural use but zoned for residential development has been recently granted planning permission for residential development (reg. ref: LRD0017/S3), affords panoramic views of the masterplan area and the Phase 2 site. This will further reduce when Phase 1 is complete.
- Local Walking Route - There is a local walking trail connecting the DDR to Ladies Beach along the coast through the Portrane Demesne. The topography raises up and forms a ridge. There are gaps in vegetation at higher elevation where views of the village and masterplan area are partially visible.

14.4.3 Relevant Planning History of the Environs

A number of permitted and proposed developments in the vicinity of the proposed development site are listed in **Table 22.1** of this EIAR and same is highlighted below.

Figure 14.24 Permitted and proposed developments in the vicinity of the proposed site



The transition of the area has already begun. This would reflect the change on the proposed lands and as permitted (Phase 1) and potential future development in the wider Ballymastone Masterplan lands. The Ballymastone Phase 1 development is under construction (Planning Ref LRD0008/S3). The lands immediate south of the masterplan lands and north of New Road, there are two planning applications granted for residential development (reg. ref: F17A/0373 and F20A/0510). The planning permission reg. ref: F20A/0510 is mostly completed on-site. The permitted Recreational Hub (Part 8) lies to the east of masterplan lands and to the east of the DDR. Planning permission has been granted for a large scale residential development (reg ref: LRD0017/S3), to the south west, for 1,365 no. units, among other developments.

These changes are all part of policy to delivery an expanded urban area of Donabate to the east and along the newly established DDR corridor. Currently these lands are in a state of transition (neglect) awaiting change. The cumulative effect of all these changes will be transformational and see the semi-rural current landscape become urban with planned amenities, landscaped streets, and a variety of housing styles and materials. A new place/landscape /townscape is being created here.

14.4.4 Summary of Landscape Characteristics and Values

The above sections explored the policy and objectives for the site, provided a detailed description of the receiving environment in terms of context, history and landscape and visual characteristics. The landscape characteristics and values of the site and receiving environment may be summarised as follows:

- Donabate is situated on a peninsula on the coast to the north of Dublin City. Although within the Dublin Metropolitan Area, Donabate is separated from the continuous urban structure of Dublin City; it exists as a defined urban area surrounded by countryside / open space.
- Surrounded by water on three sides (the Irish Sea and Rogerstown and Malahide Estuaries) and characterised by mature hedgerows and woodlands, the peninsula has high conservation value, confirmed by multiple national and international designations.
- The woodlands in the surrounds are associated with two historic demesne landscapes, Newbridge and Portrane (now St. Ita's Hospital).
- The combination of agricultural, recreational and conservation usage lends the landscape of the Donabate Peninsula a rural/coastal character, which is only enhanced by its metropolitan location / context.

14.4.4.1 Conservation Values

These are values to be conserved and indicate those aspects of the receiving environment which are of value and is sensitive could be negatively impacted on by the proposed development.

- Protection or enhancement of highly sensitive Coastal landscape character type.
- Sensitivity of the Architectural Conservation Area (in partly which the application site boundary lies) and archaeological features on masterplan lands.
- Landscape resource and elements – historical townland boundaries, historical field boundaries, matured hedgerows, trees and ditches.
- The green interface between existing communities and new developments with the site in terms of views, boundary treatments and character.
- The contribution of the remaining rural and green characteristics of the site to the scenic qualities of the area.

14.4.4.2 Enhancement Values

The values to be enhanced represent the site's capacity to accommodate change. These include:

- Extensive policy, objectives and actions underway for Donabate as a 'Self-sustaining Growth Town' within the Dublin Metropolitan Area resulting in the lands changing from rural/agricultural to urban;
- Zoning of lands for residential development in the development plan and guidance provided by Donabate LAP;
- Objectives to support compact, well-connected, high-quality urban development with a strong sense of place;
- The site's location on the edge of an urban area and partially developed urban landscape / area in transition.
- Recent construction of the DDR to facilitate development;
- Recent permissions in the general environs as the LAP is progressed;
- The visual and physical connection/proximity from the Masterplan lands and the Phase 2 site in particular to Donabate and its amenities and infrastructure;
- Limited accessibility and diversity of the lands as private agricultural fields.
- Currently, the Phase 1 and parts of Phase 2 site are disturbed and partly cleared and construction of Phase 1 has begun and construction activity is progressing.

The enhancement values reflect change that is occurring in the landscape and its inherent robustness – this includes the site's location on the edge of an urban area.

14.5 Predicted Landscape Impacts

The sites enhancement values (as set out in **Section 14.4.4**, above) reflect a body of policy that is supportive of landscape change at this location (and its environs) as part of general town expansion of Donabate as a self-sustaining growth town, and change that is already underway.

The site's conservation values (as set out in **Section 14.4.4** above) predominantly reflect the core elements of the local architectural, heritage and landscape designations and the landscape resource.

Overall, the impact of the proposed development is the change of the site from its current agricultural lands (albeit lands that are currently under-utilised and neglected) to a high-quality residential neighbourhood.

14.5.1 Landscape Sensitivity

The proposed development directly affects the physical character of:

- LCA – Coastal Character Area; and
- The immediate environs of the proposed development site.

14.5.1.1 Coastal Landscape Character Area

The Coastal LCA is classified to have **'Exceptional' Value and 'High' Sensitivity,** *i.e. areas where the landscape exhibits a very strong, positive character with valued elements, features and characteristics that combine to give an experience of unity, richness and harmony. The character of the landscape is such that its capacity for accommodating change in the form of development is very low. These attributes are recognised in landscape policy or designations as being of national or international value and the principle management objective for the area is protection of the existing character from change.*

14.5.1.2 The immediate environs of the proposed development site

The subject site and the receiving environment were explored and detailed in **Section 14.4.2**, above. The landscape resource of the subject site contains some valued elements, features or characteristics in the form of hedgerows, trees and ditches.

The site and environs are zoned for residential development. There are extensive policy objectives for compact and sustainable residential development at this site in the development plan and the Donabate LAP.

The subject site is located in the fringes of existing urban areas to the east and north, and acts as a transition area from the urban landscape to the coastal landscape. The site also lies adjacent to recently completed development along New Road (reg. ref: F20A/0510) and the under construction Ballymastone Phase 1 development site. The subject site, therefore has an evolving character reflected in the DDR road and is in transition from rural to urban. The site lies low compared to the wider landscape area and, as such, long distance views of the site are limited, which reduces the visual sensitivity.

The landscape sensitivity of the subject lands is classified as **'Medium'**, i.e. *areas where the landscape has certain valued elements, features or characteristics but where the character is mixed or not particularly strong or has evidence of alteration to / degradation / erosion of elements and characteristics. The character of the landscape is such that there is some capacity for change in the form of development. These areas may be recognised in landscape policy at local or county level and the*

principle management objective may be to consolidate landscape character or facilitate appropriate, necessary change.

A review of the extent to which the proposed development will affect the views experienced from adjacent landscapes is carried out in **Section 14.6**, below.

14.5.2 Construction Phase

The construction phase of the proposed development will result in ongoing infrastructure, building and related works for approximately 30 months, as phased. This will entail:

- The removal of some hedgerows and trees and the protection of retained hedgerows and trees on site, where applicable – See Arboricultural Impact Assessment & Method Statement by John Morris April 2024;
- The temporary movement and stockpiling of earth and materials;
- The temporary movement of machinery in and out of the site; and
- All engineering, building and landscape works required with associated site infrastructure, fencing and plant.

For the purposes of assessment the Construction Phase Impacts are categorised as **Temporary to Short-term.**

14.5.2.1.1 Construction Effects on the Landscape: Coastal Landscape Character Area (High Sensitivity)

The effects during construction would affect a small geographical extent of this LCA and an area that is not directly linked to the coast itself. During construction, it would introduce elements that are uncharacteristic of the LCA in a small geographical area resulting in minor change to the LCA. The predicted magnitude of change is **'low'**.

This will result in an effect of '**slight to moderate significance**'.

Overall, the predicted impacts are **temporary - short term** and **adverse** in nature.

It should be noted the core coastal part of the LCA would experience no change – see visual assessment below.

14.5.2.1.2 Construction Effects on the Landscape: The immediate environs of the proposed development site (Medium Sensitivity)

The effects during construction would be intensive across the Phase 2 site and immediate environs. The magnitude of change would be '**high**', resulting in the loss of agricultural lands and some hedgerows across the site.

This would change the character of the landscape and generate a landscape effect that would be '**significant**'.

Qualitatively, it is expected that all construction works would have an **adverse** landscape impact. Although valued features would be protected, the works would change and degrade the lands until they are re-made into the proposed neighbourhood.

The construction works are expected to take up to 30 months and, therefore, are considered as **temporary – short term** in duration.

14.5.3 Operational Stage

The site's enhancement values (as set out in **Section 14.4.4**, above) reflect a significant body of policy that is supportive of major landscape change at this location to form a new residential community. Despite its attractive rural qualities, the site is currently surrounded by landscape change and the urbanisation of its setting – it is an area in transition and increasingly an anomaly in this context. Nonetheless, it offers attractive characteristics to contribute to this new environment (reflected in its conservation values, as set out in **Section 14.4.4**, above.

The impact of the proposed development would be the change of the site from open agricultural landscape to a new residential and urban neighbourhood. Locally, some trees and hedgerows will be affected; however, the proposed development has been laid out to incorporate many of these existing landscape 'green infrastructure' features within its landscape structure of open spaces and networks.

The proposed development has been prepared in accordance with best practice national and regional guidelines and policies, including the *Fingal Development Plan 2023-2029*, the Sustainable Residential Development and Compact Settlement Guidelines for Planning Authorities (2024) and the 'Design Manual for Urban Roads and Streets' (Department of Transport, Tourism and Sport & Department of Housing, Planning and Local Government, 2013). The proposed Masterplan development has been laid out to reflect existing landscape features such as topography and urban grain. The Phase 2 site layout has been sensitive to the landscape elements of value on the site, incorporating them into the development, adding value to them and enhancing their role. The site layout incorporates new landscape elements within the building cluster, contributing positively to the local streetscape and residential amenity for new and surrounding residents and reflecting best practice place making and green infrastructure delivery.

The effects of this, in terms of alteration of the landscape character, are assessed below.

14.5.3.1 Operational Effects on the Landscape: Coastal Landscape Character Area (High Sensitivity)

The effects of the proposed development at operation would affect a limited geographical extent of this LCA. The proposed development, in general, complements the scale, landform and pattern of the landscape and townscape in most places and is also in keeping with relevant policy objectives. Change is relatively limited in scale resulting in minor alteration to the landscape as the existing urban area incrementally extends further east with localised change to the overall Coastal LCA and its purpose.

The magnitude of change would be **low** relative to the whole LCA.

The effect would be of **slight to moderate significance.**

This would occur over the **short, medium and long term**.

Qualitatively, the effect would be **neutral** i.e. *Scheme complements the scale, landform and pattern of the landscape (townscape) / view and maintains landscape quality.*

14.5.3.2 Operational Effects on the Landscape: The immediate environs of the proposed development site (Medium Sensitivity)

The proposed development would impact the full extent of the site, resulting in the loss of the agricultural lands. The proposal would introduce residential development into the landscape, which, although may be new and prominent, is not uncharacteristic of the area. The proposed development

achieves local policy objectives of Fingal County Council and is in keeping with local land use zoning. Its scale and effect would be transformational along the edge of Donabate and the DDR, but important to be so, in order to contribute to local place-making.

The magnitude of effect would be **High** i.e. *Change that is moderate to large in extent, resulting in major alteration to key elements features or characteristics of the landscape and/or introduction of large elements considered uncharacteristic in the context. Such development results in change to the character of the landscape.*

The effect would be **significant.**

This would remain over the **short, medium and long term.**

Qualitatively, the effect would be **beneficial** i.e. *Scheme improves landscape (townscape) / view quality and character, fits with the scale, landform and pattern .....*

14.5.3.3 Summary of Effects on the Landscape

The proposed development is expected to have a **temporary – short term adverse** effect on the landscape resource during construction.

Upon operation and into the future, the development would have a **low to significant** (depending on proximity) and **neutral to beneficial** effect the immediate and wider landscape resource of Phase 2 and the wider context.

14.5.4 Cumulative Impacts

A number of permitted and proposed developments in the vicinity of the proposed development site are listed in **Table 22.1** of this EIAR and same is highlighted in **Section 14.4.3** above.

Cumulative Effects during Construction Phase

The **cumulative magnitude of change** would be **'Very High'**, i.e., *Change that is large in extent, resulting in the loss of or major alteration to key elements, features or characteristics of the landscape and/or introduction of large elements considered totally uncharacteristic in the context. Such development results in fundamental change in the character of the landscape.*

The **cumulative effect** would be **Significant to Very Significant**, depending on the proximity to the change and stage of development. Qualitatively the landscape effect is **Adverse (negative)** during the construction phase.

Cumulative Effects during Operational Phase

The **cumulative magnitude of change** would be **'Very High'**, i.e., *Change that is large in extent, resulting in the loss of or major alteration to key elements, features or characteristics of the landscape and/or introduction of large elements considered totally uncharacteristic in the context. Such development results in fundamental change in the character of the landscape.*

The **cumulative effect** locally would be **Moderate to Very Significant,** depending on the proximity to the change. (NB the core coastal areas would remain unaffected by the cumulative effects)

Qualitatively the landscape effect is **Neutral to Beneficial** during operational phase.

14.5.5 Do Nothing Scenario

The *'do-nothing'* impact refers to the non-implementation of the proposed development. The primary effect of this would be that the impacts and effects identified above would not directly occur. In this regard, the following issues are relevant.

In the absence of the proposed development, this site would continue to operate as an open, abandoned network of fields. Its landscape, biodiversity and recreational values would continue to change and it would detract from the evolving urban area. Depreciation and reduced activity could see the increase of antisocial behaviour and fly tipping on the site. The objectives of the Development Plan and LAP would not be realised in relation to the site and the purpose and investment in the DDR would not be realised.

14.6 Predicted Visual Impacts

14.6.1 Zone of Visual Influence and Potential Visual Receptors

Based on the assessment of the landscape characteristics, values and sensitivities, 21 representative viewpoints were selected to assess visual impact and effects. These are scheduled and mapped below. These viewpoints will be used for the current Phase 2 assessments and future phases. The current Phase 2 assessment will refer to the potential cumulative impact of future phases and / or development of adjacent zoned land, as appropriate.

Existing photographs and proposed photomontages are provided by Modelworks, submitted under separate cover as part of the planning application. The booklet of photomontages should be reviewed in conjunction with this section. The landscape architect's site survey was conducted in January 2024 and verified views were captured in February 2024.

Table 14.9 below lists the representative viewpoints and the rationale for selection. The assessed viewpoints (VP) are shown in **Figure 14.25**, overleaf.

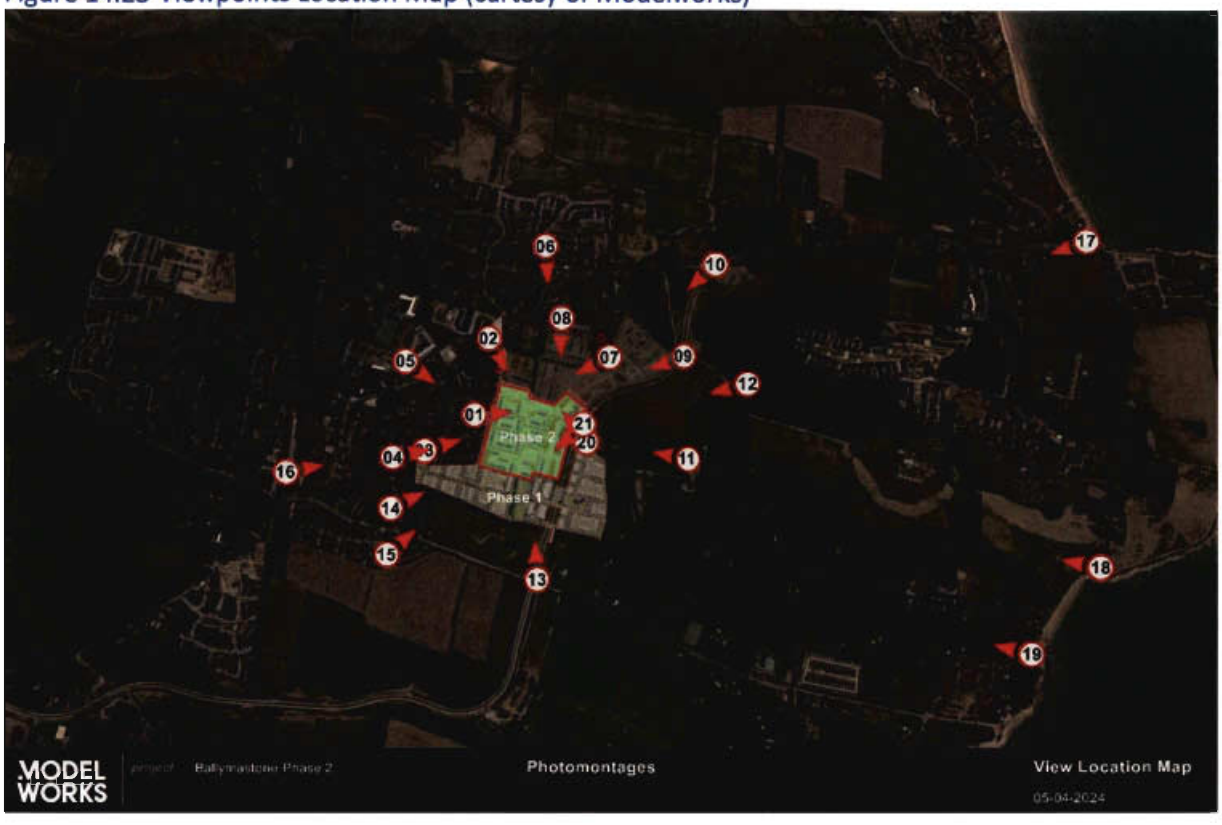
Table 14.9 Viewpoints

VP	Description of viewpoint	Rationale for selection
1	Looking east from the Links / entrance of track junction	Representing residential receptors overlooking the development. Close proximity views down road extension and into the development possible. Views from The Links will look directly east.
2	Looking south-east from The Links / junction to Portrane Road	Representing residential receptors on both sides of the R126, road users and the civic nature of the junction.
3	The Links – south, looking east from the Links Park	Representing residential receptors and users of Public Park. Close proximity view towards western entrance into the site overlooking proposed POS, crèche and gable ends

VP	Description of viewpoint	Rationale for selection
4	Looking east from the junction of The Spire and Donabate Village	Representing residential receptors and road users (pedestrian and vehicular). Close proximity views towards the development entrance.
5	View from Donabate Community College – looking east	Potential views from rear of the school but no visibility from the entrance.
6	View looking south from Carr's Mill	Representing residential / road receptors – possible views from rear of properties. Cemetery boundary vegetation visible - leylandii
7	View looking south-west from Priory Wood	Representing residential and road receptors. View through trees towards proposed POS and new houses facing onto the parkland.
8	View looking south from The Priory	Representing views from rear elevations of adjacent properties and proposed pedestrian route (informal paths presently evident).
9	View looking south-west from the junction of Cycle way / DDR junction / GAA access road	Representing road users – pedestrian, cycle and vehicular receptors. Close proximity views SW.
10	View looking south / south-west from bus stop on unnamed local road	Representing medium / long views from R126 and Portrane Road junction. Visual receptors from bus stop and views from scattered residential receptors to north.
11	View looking west from GAA club car parking	Representing views from community facility. Distant views towards St Patrick's Church Spire between trees and over hedges.
12	View looking west from Portrane Demesne Woods	Representing pedestrian views and local users of the public amenity. Views available towards the site available at the woodland edge through perimeter trees.
13	View looking north from the junction of DDR south & New Road	Representing residential receptors and pedestrian views.
14	View looking north-east from St Patrick's Park	Representing residential receptors and open space users.
15	View looking north-east from The Strand	Representing residential receptors and open space users. Elevated views towards north and north-east from The Strand.

VP	Description of viewpoint	Rationale for selection
16	View looking east from the Pedestrian Bridge over the Railway Station	Representing views enjoyed by apartment residents along the railway line. Views towards St Patrick's Church and long-distance views towards the site.
17	View looking southeast from Quay Road, Portrane	Representing residential, commercial and amenity receptors in the village centre.
18	View looking east from the coast path	Representing coastal receptors and views experienced by pedestrians using the coastal path.
19	View looking north-east from the Shoreline Hotel and environs	Representing likely views from the Shoreline Hotel and environs which is a popular destination.
20	DDR looking north-west	Representing road receptors
21	DDR looking south-west	Representing road receptors

Figure 14.25 Viewpoints Location Map (curtesy of Modelworks)



14.6.1.1 Photography and Presentation of Viewpoints

Each viewpoint is illustrated by a photograph showing the existing view and the photomontage showing the proposed development.

Photomontages have been produced by Modelworks and are presented in a separate booklet as part of the planning application, with a map of their locations. Verified photographs and photomontages have been taken with a wide angle focal length (FL) and prime lens to allow representation of the development within its context. In all visualisations, the extent of the 50mm FL view has been indicated for reference, which is broadly equivalent to the c.40 degree Horizontal Field of View (HFoV) and is representative of what the human eye perceives and reflects the requirements of the Landscape Institute 'Technical Guidance Note on Visual Representation' (2019).

To correctly view the photomontage at the correct scale, the extents of the 50mm lens or 40 degree angle of view should be extended to A3 in size and viewed at arm's length. This can be done by printing a hard copy or, more easily, digitally on screen, allowing reference back to the wider angle to understand the context.

Each viewpoint is described below in its existing condition and the effects of the proposed development. The descriptions, including of the change / effects, focus primarily on the extent of the 50mm image, and the winter (worst case scenario) view, but refer to the context, as appropriate, to inform analysis.

14.6.2 Construction Impacts and Effects on Visual Receptors

Construction is expected to be phased over 30 months. This is set out in more detail in Chapter 5. However individual areas will experience construction phases as a Temporary – Short-Term Impact within this 30 month programme.

The construction stage impacts are described for each view in the commentary in Section 14.6.3 and will generally consist of substantial site clearance, including trees and vegetation, and building processes required to construct the proposed development. These effects are predominantly **adverse** in nature, varying in magnitude and significance depending on visibility.

14.6.3 Visual Impacts and Effects on Visual Receptors

The descriptions below of impacts and effects focus primarily on the Operational Stage of the development i.e. post-completion and the use/occupation of the development and the establishment and maturing of landscape works over time. Each viewpoint contains a brief description of Construction Stage Impacts and also potential Cumulative Impacts in association with adjacent planned development.

14.6.3.1 Viewpoint 1: Looking east from the Links / entrance of track junction	
Existing	This existing view is from the Links, a local road (the road linking the Links neighbourhood to Portrane Road). The viewpoint is situated in the middle of the Links road and is approximately 30m from western application site boundary. The view is representative of views experienced by road users and pedestrians, and the views experienced by the residents of the Links neighbourhood. In the view; the road is visible to the centre; on either sides of the road a grassy verge with trees and alongside it footpaths are visible, and beyond the footpath on either sides, individual driveways of respective dwellings and the 2-storey dwellings themselves are visible. In the background of the view, The Links Road is closed off by fencing; and the construction area and construction activity is visible, with earth stockpiled on the subject site. This construction activity is related to Ballymastone Phase 1 delivery. To the right of the background, existing hedgerows and trees are visible in the midst of the construction area. Overall, the view is from a local road in a residential neighbourhood, at the edge of an urban location looking at construction activity of an area in transition. The most prominent features are the construction mounding, vegetation; hedgerows and trees scattered in the landscape.
Sensitivity	High
Visual Impacts and Effects	
Construction Effects	The construction stage would see hoarding and construction activity including vehicles and lifting machinery operating here temporarily. The effect would be significant, adverse and temporary – short term.

Operational Phase	The proposed view includes the proposed development can be seen along the eastern side of the Links Road. A row of 2-storey residential dwellings with associated individual driveways and landscaping including tree planting are visible in the closing the view at the end of the street. In total 9 dwellings are visible, includes two blocks of 4 houses each in the view and an individual dwelling to the left of the view. They present an attractive streetscape and light brick coloured elevation with tree planting and hedges.	
	Magnitude of Change	**Medium**
	Significance of Effects	**Significant**
	Quality	**Beneficial (Positive)**
	Duration	**Permanent**
Cumulative Effects	Other development would not be visible from this location. Thus, there would be no cumulative visual effects.	

14.6.3.2 **Viewpoint 2: Looking south / south-east from The Links / junction to Portrane Road**	
Existing	This view is located on the west side of the Links Road approximately 60m from the Portrane Road. In the foreground, the Links road, the verge and trees along the road and the new cycleway and footpath are visible and present an attractive, well maintained and established sub-urban landscape. To the left (east) of the view, the masterplan lands are fenced off by harris mesh site fencing. Topsoil from Phase 1 works under construction is stockpiled to the rear of the fencing and closes more distant views. To the right (west) the local greens and house of the Links estate are visible. Overall the view is mixed showing an established residential area, street improvements and new development underway.
Sensitivity	**Medium....** Although the area is residential and the setting attractive the viewpoint is located along an access road with no houses facing outwards across the road towards the masterplan lands / phase 2 site, but instead backing on to the road with construction works already underway.
Visual Impacts and Effects	
Construction Effects	The construction stage would see hoarding and construction activity including vehicles and lifting machinery operating here temporarily. The effect would be Slight to Moderate & Neutral. Similar to what is visible.
Operational Phase	The proposed development is visible to the background of the view. Towards the middle the 3-storey high proposed dwellings blend in with the existing dwellings (Links neighbourhood) and to the left in the rear, 6-storey apartment blocks along

	the DDR are visible. The proposed development is partially screened/softened by existing hedgerow and trees on site.	
	Magnitude of Change	**Medium**
	Significance of Effects	**Moderate**
	Quality	**Neutral**
	Duration	**Permanent**
Cumulative Effects	The potential future development of Ballymastone Phase 3 would be visible to the left of the view and involves new housing development. This future Phase 3 would eventually screen the proposed development from this location. The cumulative change would be the evolution of the view from a construction area to a view with attractive natural elements, to a more urban, but well considered environment. The cumulative effect of the development would be part of the evolution towards an expanded urban area in accordance with policy. The cumulative impact/effect would be very significant and neutral.	

14.6.3.3 **Viewpoint 3: Looking east from Links Park**	
Existing	This view is located on the grassed area of Links Park adjacent to the turning head at the end of The Links Road. The view looks east across the Links Park at the Links neighbourhood and is about 175m away from the western site boundary. The viewpoint is representative of views experienced by the residents of the Links neighbourhood and the open space users. In the view; in the foreground, the grassy kickabout space is visible; in the middle-ground, the Links neighbourhood mostly of 2-storey semi-detached dwellings are visible. The proposed site is partially visible in the background and to the right of the view. This is an attractive view from a park and mature established residential neighbourhood.
Sensitivity	**High**
Visual Impacts and Effects	
Construction Effects	The construction stage would be barely visible from this location. Mainly cranes, vehicles and lifting machinery operating on site may temporarily be visible. The effect would be of slight significance, adverse and temporary-short-term.
Operational Phase	The proposed view would include the proposed development in the background and to the right of the view, and only visible in gaps in existing built form along streets. The 3-storey duplex block off the New Access Road to Ballymastone Phase 1

	development is visible in the proposed view. The proposed development integrates into and complementing the existing established residential neighbourhood.	
	Magnitude of Change	Low
	Significance of Effects	Slight
	Quality	Neutral
	Duration	Permanent
Cumulative Effects	Other developments planned in the immediate area including the future phases of the masterplan would not be visible from this location. There would be no cumulative impact/effect.	

14.6.3.4 Viewpoint 4: Looking East from the Junction of the Spire and Donabate Village	
Existing	This view is located at the footpath at the junction of the Spire and Donabate Village looking east towards the site some 260m away and located beyond the hedge and house right of centre in the view. The viewpoint is representative of road users and pedestrians, and the residents of the Donabate Village neighbourhood. In the foreground, the Spire residential road is visible curving left to right across the view. A footpath leads east away from the viewer towards the Links green and housing area. The main central part of the view occupied by a large grassy open space with trees, bounded predominantly by hedges and hedgerows; and to the right (south), residential properties abutting the site boundary behind are visible. The site is barely visible from this location. This is an attractive view from a park and mature established residential neighbourhood. As well as the local green the backdrop of the hedgerows and trees is attractive. Overall, the view is a typical view within a residential neighbourhood. The most attractive features are the open space, paths and the trees and vegetation scattered in the view.
Sensitivity	High
Visual Impacts and Effects	
Construction Effects	The construction stage would see partial visibility of some construction activity including vehicles and lifting machinery operating temporarily at the far end of the view and in gaps in existing built-form. The effect would be not significant, adverse and temporary-short-term.
Operational Phase	The proposed view would the roofscape and some upper elevations of the development would be partially in the middle of the background of the view. The change to the view would involve partial visibility of roofscape of a duplex block along

	the New Access Road to Ballymastone Phase 1 site. The new houses would integrate well with the scale and character of the existing foreground area.	
	Magnitude of Change	Low
	Significance of Effects	Slight
	Quality	Neutral
	Duration	Permanent
Cumulative Effects	The cumulative view would change to include the permitted Ballymastone Phase 1 development to the right of the view. The Phase 1 development would be partially visible through the tree cover. The cumulative change would be of moderate significance and neutral.	

14.6.3.5 Viewpoint 5: View from Donabate Community College – looking east		
Existing	This view is located at the footpath of a local road, leading to the Community College. The viewpoint is representative of views experienced by road users and pedestrians and users of Donabate Community College. In the foreground, the local road is visible; in the middle ground, the residential single storey properties are visible; and in the background, some tall trees can be seen over the roofs of some properties. The proposed development site is not visible from this location.	
Sensitivity	Low	
Visual Impacts and Effects		
Construction Effects	The construction stage of the development would not be visible from this location. There would be no change to the view.	
Operational Phase	The development would not be visible from this location. There would be no change to the view.	
	Magnitude of Change	-
	Significance of Effects	-
	Quality	-
	Duration	-
Cumulative Effects	Other developments planned in the immediate area including the future phases of the masterplan would not be visible from this location. There would be no cumulative impact/effect.	

14.6.3.6 Viewpoint 6: Looking South from Carr's Mill		
Existing	The view is located at the footpath along Carr's Mill road, close to the first cul-de-sac junction with Carr's Mill. The view is looking south towards the main development area of site some 600m away. The viewpoint is representative of views experienced by road users and pedestrians and residents of the Carr's Mill neighbourhood. In the foreground and middle-ground, the Carr's Mill road, grass verge and trees, and pedestrian pathways are visible. To the left (east), a garden wall in stone is visible; and to the right (west), front gardens and entrances to residential properties are visible. In the middle distance, residential properties along the R126 close the view south. Some mature trees are visible above the roofs of the properties on the R126. These trees are to the rear of the Donabate Burial Grounds and also form part of the northern boundary line of the wider Ballymastone Masterplan lands. The view is of an established and attractive residential neighbourhood	
Sensitivity	High	
Visual Impacts and Effects		
Construction Effects	The construction stage of the development would not be visible from this location. There would be no change to the view.	
Operational Phase	The development would not be visible from this location. There would be no change to the view.	
	Magnitude of Change	-
	Significance of Effects	-
	Quality	-
	Duration	-
Cumulative Effects	Other developments planned in the immediate area including the future phases of the masterplan would not be visible from this location. There would be no cumulative impact/effect.	

14.6.3.7 Viewpoint 7: Looking south-west from Priory Wood	
Existing	This view is situated on Priory Wood, a local road leading to a cul-de-sac and in front of property 87 Priory Wood. The view is orientated towards the northern part of the masterplan for future phases of assessment. The viewpoint is representative of views experienced by road users and pedestrians, and the residents of Priory Wood. In the view, the local road and grassy verges with mature trees and a row of semi-detached residential dwellings blocks are visible.

	Overall, the view is of a mature, leafy residential street.	
Sensitivity	High	
Visual Impacts and Effects		
Construction Effects	The construction stage of the development would not be visible from this location. There would be no change to the view.	
Operational Phase	The development would not be visible from this location. There would be no change to the view.	
	Magnitude of Change	-
	Significance of Effects	-
	Quality	-
	Duration	-
Cumulative Effects	Other developments planned in the immediate area including the future phase 3 of the masterplan would not be visible from this location. There would be no cumulative impact/effect in this view.	

14.6.3.8 Viewpoint 8: Looking South from the Priory	
Existing	This view is located at the end / cul-de-sac of the Priory looking south. The view is orientated towards the northern part of the masterplan for future phases of assessment. The viewpoint is representative of views enjoyed by residential properties and road users. In the foreground, the local suburban road and associated grassy areas and some mature trees are visible with residential front gardens. In the middle ground; to the left, thick vegetation is visible; in the middle, the site boundary (in the form or thick hedgerow and vegetation and rows of trees) is visible; and to the left, a low brick wall and residential entrance is visible. This vegetation closes views further south to the masterplan lands and Phase 2 over 450m away. Overall, the view is of a mature, leafy residential street.
Sensitivity	High
Visual Impacts and Effects	
Construction Effects	Construction activity would be barely visible from this location. Generally, construction effects would be adverse and temporary to short-term in nature.
	The view would partially change to include the proposed development in the background of the view. The roofscape of proposed dwellings and apartments blocks

Operational Phase	are partly visible in the view. Most of the proposed development is screened by existing vegetation.	
	Magnitude of Change	Low
	Significance of Effects	Moderate
	Quality	Neutral
	Duration	Permanent
Cumulative Effects	The future Ballymastone Phase 3 of the masterplan would involve new housing to the rear of the boundaries currently closing the view to the south. The hedgerow would be retained and enhanced although the new houses would be slightly visible. The cumulative impact/effect would be of slight significance and neutral.	

14.6.3.9 **Viewpoint 9: Looking South-west from the Junction of Cycleway / DDR Junction / GAA Access Road**	
Existing	The view is located at the footpath at the junction of the DDR and the GAA Access Road approximately 550m from the main built area of the proposed development. This viewpoint is representative of views experienced by road users, pedestrians and cyclists along the DDR. In the foreground, the DDR is visible, with cycleway on both sides and pedestrian access. In the middle-ground; to the left, the bend of the DDR and the topography is slightly elevated; in the middle, the timber and mesh fence marking the Ballymastone Masterplan lands boundary is seen. The new road has associated tree and native shrub planting along this boundary. The masterplan lands are visible behind the fence. In the background, tall and mature trees and hedgerows along field boundaries are evident. The woodland area forming a buffer between the northern masterplan lands and Priory Wood is clearly visible. More centrally a mature hedgerow run east west closing low level views south to the Phase 2 site. The most valuable elements would be the existing vegetation in the view, off and on the site contributing to the visual character and landscape structure of the area.
Sensitivity	Medium
Visual Impacts and Effects	
Construction Effects	The construction stage would see partial visibility of some construction activity including vehicles and lifting machinery and scaffolding operating here temporarily. The effect would be of slight significance, adverse and temporary to short-term.
	The change would include the proposed development in the middle of the background of the view. The proposed apartment blocks and duplexes off the DDR

Operational Phase	are prominent behind the vegetation and roofscape of proposed dwellings are also partially in the view. The proposed development creates a new urban element in the landscape changing the character of the view and DDR corridor contributing to place-making in accordance with policy. The most prominent landscape elements would remain in the proposed view.	
	Magnitude of Change	**High**
	Significance of Effects	**Significant**
	Quality	**Neutral**
	Duration	**Permanent**
Cumulative Effects	The future Phase 3 of the masterplan would involve new housing throughout the masterplan lands centrally in the view. This would involve several more apartment blocks addressing and defining the DDR. The interface with the main road would be formalised and a more parkland landscape created as a new urban character evolved. To the left (east) of the DDR the permitted new recreational hub would be developed adding further amenities and urban character to the expanded town. The cumulative change would be the evolution of the road corridor / view to a more urban, but well considered environment. The cumulative effect of the development would be critical in place-making in accordance with policy. The cumulative impact/effect would be of very significant and beneficial.	

14.6.3.10 **Viewpoint 10: Looking South / South-west from DDR near junction with Portrane Road / L2170**	
Existing	This view is located at the footpath along the northside of R126 / DDR and about 25m east from the junction of Portrane Road and R126 and looking south west towards the site almost 900m away. The views are representative of views enjoyed by road users. In the foreground and middle-ground, the newly built DDR is visible weaving southwards. To the left (east), can be seen mixed woodland that was historically part of the Portrane Demesne is visible. To the right (west), the junction with Portrane Road is visible (the Portrane Road leading to the town of Donabate). In the background; to the right of the DDR, tall mature trees indicate the northern boundary of the wider Ballymastone masterplan lands. The woodland to both sides of the road obscures long-distance views and is effective in screening existing built form at the edge of the town. This is a view along a busy Regional Road. The most prominent features is the woodland to Portrane Demesne and west of the DDR. The road weaves its route

	attractively through the mature established setting. New landscape planting is establishing along the road corridor. This is an attractive outlook along the new road.
Sensitivity	Medium
Visual Impacts and Effects	
Construction Effects	The development would not be visible from this location. There would be no change to the view. The construction stage of the development would not be visible from this location. There would be no change to the view.
Operational Phase	The development would not be visible from this location. There would be no change to the view.
	Magnitude of Change -
	Significance of Effects -
	Quality -
	Duration -
Cumulative Effects	The future Phase 3 of the masterplan would involve new housing behind the woodland currently closing the view to the south. The woodland would be retained and enhanced and the extended masterplan development would not be visible. Three would be no cumulative impact.

14.6.3.11 Viewpoint 11: View Looking West from GAA Club Car Parking	
Existing	This view is from the edge of the GAA club parking area approximately 290m from the site boundary. The view is representative of views enjoyed by recreational users of the GAA club and looks west towards the site. In the foreground and middle-ground, the GAA playing fields are visible alongside sports field infrastructure – lighting, sheds and goal fixtures and nets. The view west towards the site and Part B to the west of the DDR in particular however views beyond the GAA grounds are closed by mature boundary hedgerows and trees. Gaps in the vegetation allow glimpses of the church spire of St. Patrick's Church in the town centre creating a visual connection from the edge of the town to the town itself. However generally the boundary vegetation screens views towards the DDR and town. The construction activity and stockpiling are visible in the background of the view. The view is of an attractive and active recreational landscape / sports field – a key part of the town's amenities in an attractive mature setting.
Sensitivity	Low
Visual Impacts and Effects	

Construction Effects	The construction stage would see partial visibility of some construction activity including vehicles and lifting machinery here temporarily. The effect would be of moderate significance, adverse and temporary to short-term.	
Operational Phase	The view would see the proposed development in the middle of the background of the view. From left, the 3-storey duplex block, 5-storey apartment block and 2 no. 6-storey high apartment blocks are visible and prominent with their elevations looking east across the recreational lands. In gaps between the larger, the roofscape of some lower rise residential dwellings are also visible. Once the proposed landscape matures, the facades and elevations of the blocks would be partially softened by intervening vegetation and trees along the DDR – this would help anchor the prominent buildings in an evolving maturing new context.	
	Magnitude of Change	**High** in the short and medium term **Low** in the long term - as planting matures, the magnitude of change would decline.
	Significance of Effects	**Moderate** in the short and medium term **Slight – Not Significant** In the long term.
	Quality	**Neutral,** improving to **Beneficial** in the long-term.
	Duration	*As above*
Cumulative Effects	The cumulative view includes the proposed development and the permitted Phase 1 development partly visible to the left of the proposed development and to the left of the view. The future Ballymastone Phase 3 would be visible to the right of the Phase 2 and to the right of the view. The Phase 3 would involves two more apartment blocks addressing the western side of the DDR and being similarly prominent in the view but over time gradually reducing in visibility. The main change would be the proposed new recreation ground which would occupy all of the foreground to the DDR and lands to the rear and right (north) of the viewer. The playing fields to the front would be replaced by an athletic track with floodlighting and a more sophisticated sports infrastructure created. The cumulative change would see further expansion of the town facilities and amenities to service the expanding population created by the proposed development and existing and other planned developments. The cumulative effect of these developments would change parts of the rural character of the receiving environment but would be important in place-making in accordance with policy and the provision of new residential and recreational facilities. The cumulative impact/effect would be of very significant and beneficial.	

14.6.3.12 Viewpoint 12: View Looking West from Portrane Demesne Woods		
Existing	This view is from an access road / walkway on the western edge of Portrane Demesne woodland looking south-west towards the site some 500m away. The views are representative of views enjoyed by local amenity users. In the foreground, the old road can be seen winding west towards the DDR. To the left and right of the road the landscape is semi-natural with a mix of meadow, regenerating scrub, specimen parkland trees and to the right (north) the edge of the Portrane woodland. In the distance can be seen the boundary timber fence of the DDR road corridor with further large trees / woodland prominent further west. The view is of a former parkland / demesne and rural landscape in transition as the new road creates both opportunities for both development as well as access and enjoyment.	
Sensitivity	High	
Visual Impacts and Effects		
Construction Effects	The construction stage of the development would be partly visible from this location. Generally, would be adverse and would last during the construction period.	
Operational Phase	The view would change to include the proposed development in the middle of the background of the view, and behind the valued landscape elements. The apartment blocks facing the DDR are partially visible in the gaps in the vegetation.	
	Magnitude of Change	Medium
	Significance of Effects	Moderate
	Quality	Neutral
	Duration	Permanent
Cumulative Effects	The cumulative view includes the proposed development and partially visibility of the permitted Phase 1 development to the left of the proposed development and to the left of the view. The future Ballymastone Phase 3 would be visible to the right of the Phase 2 and to the right of the view. The future Phase 3 would involves two more apartment blocks addressing the western side of the DDR and being similarly prominent in the view but over time gradually reducing in visibility. The permitted recreation hub would occupy lands beyond the tree line / hedgerow to the left (south) of the viewer and would potentially be partly visible particularly taller infrastructural elements such as floodlights. The cumulative effect of these developments would be partly visible but would be important in place-making in accordance with policy.	

	The cumulative impact/effect would be of moderate significance and neutral.

14.6.3.13 **Viewpoint 13: View Looking North from the Junction of DDR South & New Road**		
Existing	This view is located at the footpath a short distance east of the junction of DDR / R126 and New Road. The view looks north and is about 400m from the site boundary. The view is representative of views enjoyed by road users, pedestrians, visitors to the seaside amenities further along New Road and local residential receptors at this location. In the view the DDR is visible, running diagonally in the view, running south to north (left to right in the view), lined with street lights and newly planted landscape. To the right / east of the DDR, undeveloped lands – part of the reservation area of the DDR are visible. To the left / west of the DDR, recently completed residential development, a mix of 4-story apartment and 2-storey duplex blocks are visible in the view and form a new built element and interest. The view is of a new suburban distributor road passing through partly developed / in transition landscape.	
Sensitivity	**Medium**	
Visual Impacts and Effects		
Construction Effects	The construction stage would see partial visibility of some construction activity including vehicles and lifting machinery and scaffolding operating here temporarily. The effect would be of slight significance, adverse and temporary to short-term.	
Operational Phase	The proposed development would see the new apartment buildings and duplexes providing a strong new built edge to the DDR rising to 5 and 6 storeys in the middle of the view (duplexes to 3 storeys). New tree planting to the DDR and streets and open spaces complements and softens the buff brick and varied cladding (of the apartments) creating a considered new townscape replacing the distant views of established woodland and hedgerows, and realising the local development plan policies in an attractive place-making composition.	
	Magnitude of Change	**Medium**
	Significance of Effects	**Moderate**
	Quality	**Neutral**
	Duration	**Permanent**
Cumulative Effects	The permitted Phase 1 development of the masterplan would be visible to the east and west of the DDR and to the south and east of the proposed development. Apartment blocks of similar scale to the proposed development would be built and visible to the in the view.	

	The effect would be the expansion of the urban development north of Phase 2 and to the south also. The cumulative effect of these developments would be visible but would be part of ongoing place-making in accordance with policy. The cumulative impact/effect would be very significant and neutral-beneficial.

14.6.3.14 **Viewpoint 14: Looking south / south-east from The Links / junction to Portrane Road**		
Existing	The viewpoint is located at St. Patrick's Park, a small single storey residential development around a local green. The view is looking north-east towards the development site approximately 100m away. The views are representative of views enjoyed by residents and of open space users. The St. Patrick's Park is a cul-de-sac with a rectangular green in the centre. The residential buildings are of single-storey semi-detached cottages. The character of the view is of low-rise and residential in nature. In the foreground, the local access and rectangularly shaped open space is clearly visible. In the middle ground, the cottages and some trees in the open space is visible. In the background, behind the cottages, poplar trees indicating the development site boundary can be seen. These trees close the view. The view is from an established and attractive residential setting with a rural character.	
Sensitivity	High	
Visual Impacts and Effects		
Construction Effects	The proposed development would not be visible from this location. The construction stage would see partial visibility of some construction activity including cranes and lifting machinery from here lasting the construction period. The effect would be of slight significance, adverse and temporary.	
Operational Phase	The proposed development would not be visible from this location.	
	Magnitude of Change	-
	Significance of Effects	-
	Quality	-
	Duration	-
Cumulative Effects	The Ballymastone Phase 1 development would be partially visible in cumulative view. The change to the view would involve a partial visibility of gables and roofscape of the permitted Phase 1 development. The cumulative impact/effect would be slight and neutral.	

14.6.3.15 Viewpoint 15: View Looking North-east from the Strand		
Existing	The viewpoint is from an open space located at The Strand. The existing view is from a elevated crest and overlooks north and views towards the site approximately 250m away. The view is from a residential setting and an open space used by the residents. In the foreground, the local open space is seen. In the middle-ground, thick vegetation and trees along the southern-side of the New Road can be seen enclosing the Strand development and open space. The vegetation in the middle-ground partially screens views, including the poplar trees along the southern boundary, however there are gaps where long-distance views can be enjoyed. The prominent conifers at the burial ground are legible. The view is from a residential setting and provides an attractive outlook northwards.	
Sensitivity	High	
Visual Impacts and Effects		
Construction Effects	The construction stage would see partial visibility of some construction activity including vehicles and lifting machinery and scaffolding operating here temporarily. The effect would be of slight significance, adverse and temporary to short-term.	
Operational Phase	The roofscape of the 6 storey apartment blocks are partially visible in this winter view.	
	Magnitude of Change	Low
	Significance of Effects	Slight-Moderate
	Quality	Neutral
	Duration	Permanent
Cumulative Effects	The permitted Phase 1 development would be visible in the cumulative view. Some roofscape on the western and southern boundary of the permitted Phase 1 would be partly visible above the vegetation in the view. The cumulative impact/effect would be slight and neutral.	

14.6.3.16 Viewpoint 16: View Looking East from the Pedestrian Bridge at Donabate Station	
Existing	The view is from the overhead railway bridge crossing. The view is looking east towards the town and the development site and is approx. 450m from the western site boundary. The views are representative of views from pedestrians and commuters using the railway as well as elevated town centre views. In the view, the Donabate Train Station Car Park is clearly visible in the foreground. In the middle and background, large trees along the edge of the car park screens the

	town to the east from the view. The are apartments blocks along Ballisk Court visible in the left-hand side (north) of the view. The distinctive Spire of the Saint Patrick's Church is clearly visible and is one of the prominent features of the view. The topography of the landscape is mostly flat and therefore, there are no long-distance views other than some distant trees tops visible in the background. The view is a working town centre location used by commuters and visitors but also representative of local residents.
Sensitivity	**Medium**
Visual Impacts and Effects	
Construction Effects	The construction stage would be barely perceptible. The effect would be not significant-imperceptible, neutral and temporary to short-term.
Operational Phase	The upper floors of the apartment buildings in Phase 2 would be partly visible in the background amongst the buildings. It is a minor and barely perceptible addition to the view and would be seen as a distant consolidation of the built up area.
	Magnitude of Change — **Negligible**
	Significance of Effects — **Not significant**
	Quality — **Neutral**
	Duration — **Permanent**
Cumulative Effects	The permitted Phase 1 development would be barely visible to the right / south of the proposed development. The upper floors of the apartment buildings in Phase 1 would be partly visible in the background amongst the trees. Taller elements of future Phase 3 of the Ballymastone masterplan would have a similar partial visibility. The cumulative impact/effect would remain not significant and neutral.

14.6.3.17 **Viewpoint 17: View Looking South-east from Quay Road, Portrane**	
Existing	This viewpoint is located approx. 2km from the site. at Portrane, and situated on Burrow Road, along the coast. The views are presentative of views enjoyed by local residential receptors, open space users and users enjoying views from the coast/beach and reflects a view from the coast from within the Coastal Character Area. Portrane is a small seaside settlement, about 3km from Donabate, Fingal. This coastal settlement is of predominantly 2-storey residential dwellings with attractive greens and trees. The topography is predominantly flat except for the Portrane Demesne

	which is located on an elevated site. There are no long distance views available inland from the settlement. In the foreground the Burrow Road and Portrane Road can be seen. In the middle ground, to the left (south) a vacant site and some vegetation can be seen behind a stone wall, to the right a village green can be seen with some perimeter tree planting. In the background, the existing housing of the Portrane settlement is visible and closes the view west. The area is well planted with trees and most of the visible development are of two-storeys in height and are well integrated within the trees present. The existing developments coupled with tree planting close long distance views from this viewpoint. The view is from a coastal location looking inland and would be from a core area of the Coastal Character LCA. The location is an attractive settlement by the coast / beach.	
Sensitivity	High	
Visual Impacts and Effects		
Construction Effects	The development would not be visible from this location. There would be no effects during construction.	
Operational Phase	The development would not be visible from this location. There would be no change to the view.	
	Magnitude of Change	-
	Significance of Effects	-
	Quality	-
	Duration	-
Cumulative Effects	Other developments planned in the immediate area and future phases of the Ballymastone masterplan would not be visible from this location. There would be no cumulative impact/effect.	

14.6.3.18 Viewpoint 18: Looking south / south-east from The Links / junction to Portrane Road	
Existing	The existing view is from Donabate Portrane Cliff Walk. The viewpoint is situated mid-way along the coastal walk and just north of Ladies Beach, Donabate. The viewpoint is approx. 1.6km from the site and is looking west towards the Portrane Demesne and Donabate Golf Club and beyond towards the development site. The views are representative of views enjoyed by coastal walkers and amenity areas of the coast and a core part of the Coastal Character LCA. In the foreground and middle-ground the walking path and the open landscape are visible. In the background, woodland which forms part of the Portrane Demesne

	closes the view to the west and north. There are no long distance views available because of the topography being flat and existing vegetation in the landscape. The composition of the view is very simple with no built development visible. The view is from a coastal location looking inland and would be from a core area of the Coastal Character LCA. The location is a popular local walk / amenity.	
Sensitivity	High	
Visual Impacts and Effects		
Construction Effects	The development would not be visible from this location. There would be no effects during construction.	
Operational Phase	The development would not be visible from this location. There would be no change to the view.	
	Magnitude of Change	-
	Significance of Effects	-
	Quality	-
	Duration	-
Cumulative Effects	Other developments planned in the immediate area and future phases of the Ballymastone masterplan would not be visible from this location. There would be no cumulative impact/effect.	

14.6.3.19 Viewpoint 19: View looking north-east from the Shoreline Hotel and Environs	
Existing	The viewpoint is situated mid-way along the Donabate Portrane Cliff Walk and about 250m north from the Shoreline Hotel located on Corballis Cottages / Donabate Beach. The viewpoint is approx. 1.5km from the site and is looking west towards the Donabate Golf Club and the development site. The views are representative of views enjoyed by coastal walkers and amenity areas of the coast. In the view, in the foreground and middle-ground the flat topography is evident and is occupied by a field in a meadow. In the background, a cluster of residential development lies just east of the Donabate Golf Club but is well integrated/hidden in associated trees and vegetation. Due to the flat topography the trees close any long distance views westwards.
Sensitivity	High
Visual Impacts and Effects	
Construction Effects	The development would not be visible from this location. There would be no effects during construction.

Operational Phase	The development would not be visible from this location. There would be no change to the view.	
	Magnitude of Change	-
	Significance of Effects	-
	Quality	-
	Duration	-
Cumulative Effects	Other developments planned in the immediate area and future phases of the Ballymastone masterplan would not be visible from this location. There would be no cumulative impact/effect.	

14.6.3.20 Viewpoint 20: Looking north-west from DDR		
Existing	The existing view is from the Donabate Distributor Road (DDR). The viewpoint is close-distance view and is looking north-west at the northern part of the wider masterplan lands and directly at the Phase 2 site. The views are representative of views enjoyed by road users. In the view, in the foreground and middle-ground the DDR and associated infrastructure are visible. The view is also looking at crossroads or four-way intersection which would access the lands to the west of the DDR. Behind the viewer the junction leads to the new Recreational Hub. In the background, evidence of existing residential development of Priory Wood are partly visible however the general outlook is of slightly overgrown fields and associated hedgerows and trees.	
Sensitivity	Medium	
Visual Impacts and Effects		
Construction Effects	The construction stage would see partial visibility of some construction activity including vehicles and lifting machinery operating here temporarily. The effect would be of Significant significance, adverse and temporary to short-term.	
Operational Phase	The proposed 6-storey apartment blocks along / facing the DDR would be visible in the view, along with proposed landscaping. The elevations offer interesting and contrasting elements of brick, metal cladding, balconies and create a distinctive landmark gateway to the development area contributing to place-making for the new urban area. A separate summer photomontage is provided with the application, which shows the leafy trees that partially screens and softens the facades of the apartment blocks.	
	Magnitude of Change	Very High
	Significance of Effects	Very Significant

	Quality	**Beneficial**
	Duration	**Permanent**
Cumulative Effects	The future Ballymastone Phase 3 development would be visible in the middle, in between the apartment blocks and in background of the view. The cumulative impacts /effects would be Very Significant and Beneficial. Similar to the operational effects.	

14.6.3.21 Viewpoint 21: Looking south-west from DDR	
Existing	The existing view is from the newly constructed Donabate Distributor Road (DDR). The viewpoint is looking south directly at the core part of the Phase 2 development site. The views are representative of views enjoyed by road users, cyclists and pedestrians. In the foreground the DDR, crossroads or four-way junction and associated road infrastructure are visible. In the foreground, the road turning left leads to the proposed Recreational Hub and the road turning right leads directly to the masterplan lands and will be one of the main access to the masterplan lands and Phase 2 from the DDR. In the middle-ground, to the right of the view, existing residential development along New Road and St. Patrick's Park are nestled in the landscape. To the left of the middle-ground residential dwellings along New Road are partly visible. The topography is slightly undulating and offers some long-range views. The Corballis ridge is visible along both sides of the DDR. The DDR junction with New Road is also visible. Further behind, on a clear day the Dublin Mountains are visible in this view, as seen in the view. The current character of the view is heavily influenced by construction works associated with the permitted Phase 1 scheme.
Sensitivity	**Medium**
Visual Impacts and Effects	
Construction Effects	The construction stage would see partial visibility of some construction activity including vehicles and lifting machinery operating here temporarily. The effect would be of Significant significance, adverse and temporary to short-term.
Operational Phase	The proposed development would see the new apartment buildings and duplexes at this location providing a strong new built edge to the DDR rising to 5 and 6 storeys in the middle of the view (duplexes to 3 storeys). New tree planting to the DDR and streets and open spaces complements and softens the buff brick and varied cladding and form (of the apartments) creating a considered new townscape replacing the distant views of Corballis and the mountains further

	south, and realising the local development plan policies in an attractive place-making composition.	
	Magnitude of Change	**Very High**
	Significance of Effects	**Very Significant**
	Quality	**Beneficial**
	Duration	**Permanent**
Cumulative Effects	The cumulative view would include the proposed development and the permitted Phase 1 development further to the left of the view and south of Phase 2. A 6-storey apartment building is visible in the view. The cumulative effect of these developments would be transformation and highly visible but would be part of ongoing place-making in accordance with policy. The cumulative impact/effect would be very significant and neutral-beneficial.	

14.6.4 Summary of Visual Effects

Table 14.10 Table of Summary of Visual Effects

VP	Location	Sensitivity	Magnitude of Change	Construction Phase Effects	Operational Phase Significance, Quality and Term			Cumulative Impacts
					Short	Medium	Long	
1	Looking east from the Links / entrance of track junction	High	Medium	Significant Adverse and Temporary – Short-term.	Significant Beneficial and Permanent			No impact / effect.
2	Looking south-east from The Links / junction to Portrane Road	Medium	Medium	Slight to Moderate Significance. Adverse and Temporary – Short-term.	Moderate Neutral and Permanent			Very Significant & Neutral.
3	The Links – south, looking east from the Links Park	High	Low	Slight Significance. Adverse and Temporary – Short-term.	Slight Neutral and Permanent			No impact / effect.
4	Looking east from the junction of The Spire and Donabate Village	High	Low	Not Significant. Adverse and Temporary – Short-term.	Slight Neutral and Permanent			Moderate significance and Neutral
5	View from Donabate Community College – looking east	Low	No change	No change	No change			No impact / effect.
6	View looking south from Carr's Mill	High	No change	No change	No change			No impact / effect.
7	View looking south-west from Priory Wood	High	No change	No change	No change			No impact / effect.
8	View looking south from The Priory	High	Low	Moderate Adverse and Temporary – Short-term.	Moderate Neutral and Permanent			Slight significance & Neutral.
9	View looking south-west from the junction of Cycle way / DDR junction / GAA access road	Medium	High	Slight. Adverse and Temporary – Short-term.	Significant Neutral and Permanent			Very Significant & Beneficial.
10	View looking south / south-west from bus stop on unnamed local road	Medium	No change	No change	No change			No impact / effect.
11	View looking west from GAA club car parking	Low	High	Moderate Adverse and Temporary – Short-term.	Moderate Neutral		Slight – Non-significant, Beneficial	Very significant and Beneficial.
12	View looking west from Portrane Demesne Woods	High	Medium	Moderate Adverse and Temporary – Short-term	Moderate Neutral and Permanent			Moderate and Neutral
13	View looking north from the junction of DDR south & New Road	Medium	Medium	Slight Adverse and Temporary – Short-term	Moderate Neutral to Beneficial.			Very Significant. Neutral to Beneficial.
14	View looking north-east from St Patrick's Park	High	No change	No change	No change			Slight and Neutral
15	View looking north-east from The Strand	High	Low	Slight. Adverse and Temporary – Short-term.	Slight to Moderate. Neutral and Permanent			Slight and Neutral
16	View looking east from the Pedestrian Bridge over the Railway Station	Medium	Negligible	Not Significant to Imperceptible Neutral and Temporary – Short-term.	Not Significant. Neutral and Permanent			Not Significant & Neutral.
17	View looking southeast from Quay Road, Portrane	High	No change	No change	No change			No impact / effect.

VP	Location	Sensitivity	Magnitude of Change	Construction Phase Effects	Operational Phase Significance, Quality and Term			Cumulative Impacts
					Short	Medium	Long	
18	View looking east from the coast path	High	No change	No change	No change			No impact / effect.
19	View looking north-east from the Shoreline Hotel and environs	High	No change	No change	No change			No impact / effect.
20	DDR looking north-west	Medium	Very High	Significant Adverse and Temporary – Short-term.	Very Significant Beneficial and Permanent			Very Significant & Beneficial.
21	DDR looking south-west	Medium	Very High	Significant Adverse and Temporary – Short-term.	Very Significant Beneficial and Permanent			Very Significant & Neutral to Beneficial.

Of the 21 viewpoints assessed 8 show no change / no visual effect.

These reflect generally views at some distance from the development with intervening trees, topography and / or buildings. In general most of the existing built up and residential area of Donabate is unaffected by Phase 2 as also is the actual coastal areas of the Coastal LCA.

The most significant changes visually are along the DDR corridor where the largest buildings would be located and also where currently the landscape is most open with least cover. Whilst these changes are Very Significant, they are also regarded as placemaking and reflecting local policy objectives and the planned expansion of the town eastwards. In this regard they range from neutral (complementary) to beneficial or positive in quality.

Views from adjacent residential areas to the west and south of Phase 2 will have limited visibility of the site, and changes.

14.6.5 Do Nothing Scenario

The *'do-nothing'* impact refers to the non-implementation of the proposed development. The primary effect of this would be that the impacts and effects identified above would not directly occur. In this regard, the following issues are relevant.

In the absence of the proposed development, this site would continue to operate as an open, abandoned network of fields. Its landscape, biodiversity and recreational values would continue to change and it would detract from the evolving urban area. Depreciation and reduced activity could see the increase of antisocial behaviour and fly tipping on the site. The objectives of the Development Plan and LAP would not be realised in relation to the site and the purpose and investment in the DDR would not be realised.

14.7 Mitigation Measures

The following recommendations are put forward to mitigate against any negative impacts identified above and to reinforce the positive impacts of the proposed development. Mitigation measures are proposed and considered only in relation to the proposed development.

14.7.1 Construction Phase

During construction, there will be a notable change to the land use and activity on the site, that is likely to generate negative visual impacts for residents in, and visitors to, areas adjacent to the site.

The remedial measures proposed revolve around the implementation of appropriate site management procedures – such as the control of site lighting, storage of materials, placement of compounds, delivery of materials, car parking, etc. Visual impact during the construction phase will be mitigated somewhat through appropriate site management measures and work practices to ensure the site is kept tidy, dust is kept to a minimum, and that public areas are kept free from building material and site rubbish.

Site hoarding will be appropriately scaled, finished and maintained for the period of construction of each section of the works as appropriate. To reduce the potential negative impacts during the construction phase, good site management and housekeeping practices will be adhered to. The visual impact of the site compound and scaffolding visible during the construction phase are of a temporary nature only and therefore require no remedial action other than as stated above. It is noted that a

Construction Environmental Management Plan (CEMP) has been prepared by DBFL Consulting Engineers (2024), as submitted under separate cover.

Existing trees and woodlands to be retained and are shown in the Landscape Design Report prepared by CSR (included under separate cover as part of this planning application) and Arboricultural Impact Assessment & Method Statement and associated drawings prepared by John Morris Arboricultural Consultancy (included under separate cover as part of this planning application). Existing trees to be retained are particularly sensitive to negative impacts during the construction phase if proper protection measures are not adhered to. With regard to the protection of the retained trees on site during proposed construction works, reference should be made to 'BS5837: Trees in relation Design, Demolition and Construction – Recommendations' (BSI, 2012). Tree protection details have been included in the Arboricultural Impact Assessment & Method Statement and associated drawings (included under separate cover as part of this planning application).

Adverse impacts both during construction and operational phases could be mitigated through undertaking appropriate measures listed under **Table 14.11**, in order to soften and screen views as early on as possible.

Reducing the footprint of all construction works wherever feasible and ensuring the remainder of the land is retained as green field will also limit any adverse effects during the construction phase.

Table 14.11 Mitigation Measures – Construction Phase

Character of potential impact	Mitigation measure
Visual impact of construction works	Follow appropriate site management procedures, including control of site lighting, storage of materials, placement of compounds, delivery of materials, car parking, etc.
Landscape character	Maintain the character of the site by installing proposed planting in accordance with the proposed landscape plans by CSR Landscape Architects, included separately as part of this planning application.
Existing vegetation	To protect trees to be retained, fell adjacent trees to be removed and grind out stumps in accordance with BS5837:2012.
	Tree / hedgerow protection works to be carried out in accordance with Arboricultural Impact Assessment & Method Statement and associated drawings prepared by John Morris Arboricultural Consultancy (included under separate cover as part of this planning application).

14.7.2 Operational Phase

The design of the proposed development incorporates significant consideration in respect of best practice layouts and for successful integration into the receiving environment. The architectural layout aims to address visual impacts by proposing variety in scale and massing of buildings. Elevations and materiality complement local styles and character.

The retention of hedgerows and trees, where feasible, and the planting of additional trees and shrubs throughout the site and open spaces, where possible, will reduce the visual mass of the buildings, soften and partially screen the development over time from various viewpoints, as identified in the

assessment, thereby minimising the visual impacts while creating quality of place and residential amenity. The landscape design strategy creates an open space system through the wider masterplan area and centrally through Phase 2, using the retained hedgerow system, creating a total of 13,646 sqm of public open space and imparting a maturity to the new development.

Landscape works necessary for the creation of a development of quality are proposed with the effect of also avoiding or minimising adverse effects generated due to the proposed development The planting of substantial numbers of new trees and other planting in the open spaces, the site boundaries and internal roads, both native and ornamental varieties, will enhance the overall appearance of the proposed development and compensate for the removal of hedgerows and trees, where needed, for the construction works, and increase the overall landscape capacity of the site to accommodate development. Native and appropriate planting for biodiversity has been incorporated into the scheme in accordance with the advice of the Project Ecologist (refer to Chapter 8 – Biodiversity).

Public open spaces have been designed as part of an overall design strategy that focuses on creating a 'sense of place' and individual character for the development area. The quality of the public realm scheme is of a high standard and the quality of materials proposed is similarly high and robust.

Best practice horticultural methods will be applied to ensure that mitigation measures establish and grow appropriately. Landscape tender drawings and specifications will be produced to ensure that the landscape work is implemented in accordance with best practice. This document will include tree work procedures, soil handling, planting and maintenance.

In conclusion, mitigation is adequately delivered as an integral part of the design of the proposed development, without the need for further mitigation measures to address residual effects.

14.7.3 Cumulative Mitigation

No potential significant cumulative effects were assessed and therefore no cumulative mitigation measures are required.

14.7.4 'Worst-case' Scenario

The 'worst-case' scenario would be if the proposed developments failed to safeguard any of the existing valued landscape features or was laid out in a way that failed to respond to surrounding landscape and townscape character, scale, sensitivities and views. Similarly, if the proposed developments are approved but failed to integrate proposed green infrastructure and if the positive attributes of the design and mitigation measures were not carried through in full or enforced by the Local Authority.

14.8 Residual Impacts

Given the planning policy for the area, development of this site is inevitable, and it is considered likely that any proposed viable development will give rise to impacts of a similar nature. While the intensification of land use, as it changes from now neglected farmland into a residential development is a change that cannot be entirely mitigated, the proposals reflect best practice in residential area layout, and the concepts in the wider Masterplan, and will consolidate the urban area here with an overall beneficial effect locally and to the wider surrounding area.

No adverse residual impacts are predicted in relation to landscape and visual amenity.

14.9 Indirect and /or Secondary Impacts

There are no potential significant indirect and or secondary landscape or visual impacts arising from this proposed development.

14.10 Monitoring

14.10.1 Construction Phase

The contract works will be supervised by a suitably qualified landscape architect.

The planting works will be undertaken in the next available planting season after completion of the main civil engineering and building work.

14.10.2 Operational Phase

This will consist of weed control, replacement planting, pruning etc. All landscape works will be in an establishment phase for the initial three years from planting. The company or public agency responsible for site management of the scheme will be responsible for the ongoing maintenance of the site after this three-year period is complete.

14.10.3 Reinstatement

The proposed landscape development works in the form of tree and shrub planting will be used to re-instate the site, post-construction. These works will be carried out by an appointed landscape contractor and will be supervised by a suitably qualified landscape architect or manager.

14.11 Interactions

The pertinent environmental interactions for landscape and visual are with:

- Chapter 7: Population & Human Health;
- Chapter 8: Biodiversity., and
- Chapter 15: Cultural Heritage, Archaeology & Architectural Heritage.

In this regard, landscape proposals for the scheme have been developed in consultation with the Project Ecologist and the cultural heritage consultants.

For a detailed description of the biodiversity at the site, refer to Chapter 8 (Biodiversity).

In the preparation of Chapter 7 (Population & Human Health), regard has been had to results of the LVIA, as impacts on landscape and visual amenity can in turn negatively affect residential amenity in affected areas.

The Phase 2 site partly lies within an ACA. Appropriate measures have been taken to mitigate impact on the ACA. For further information, refer to Chapter 15 (Cultural Heritage, Archaeology & Architectural Heritage).

No significant impacts are predicted in relation to any of the above-listed interactions.

14.12 Difficulties Encountered

There were no specific difficulties encountered during the preparation of the landscape and visual impact assessment.

14.13 References

- Guidelines for Landscape and Visual Impact Assessment, 3rd Edition 2013, published by the UK Landscape Institute and the Institute of Environmental Management and Assessment (referred to as the GLVIA).
- Guidelines on the information to be contained in Environmental Impact Assessment Reports (May 2022), published by the Environmental Protection Agency.
- Fingal Development Plan 2023-2029.

15 Cultural Heritage, Archaeology & Architectural Heritage

15.1 Introduction

This Cultural Heritage, Archaeology & Architectural Heritage study undertaken at Ballymastone, Donabate, Co. Dublin (**Figure 15.1**) was prepared by Archer Heritage Planning Ltd on behalf of Glenveagh Living Ltd. The objective of the study was to identify and record the location, nature and dimensions of archaeological or cultural heritage features, fabric or artefacts that may be impacted by proposed development, gauge the level of impact and include recommendations for potential mitigations necessary. The study included an examination of existing documentary sources, which was completed in tandem with licensed archaeological investigations.

The study was undertaken by Aidan O'Connell BA MIAI, Senior Archaeologist with Archer Heritage Planning Ltd, who has over 20 years' experience in archaeological and cultural heritage impact assessments. He has been eligible to conduct licenced archaeological excavations (under Section 26 of the National Monuments Act 1930 (as amended)) since 2002. The archaeological component of the EIAR was coordinated by Ciaran McGuinness CPA, MBA, Cert Proj. Mgm., who has over 20 years professional experience in archaeological consultancy and project management.

A detailed description of the proposed development is provided in Chapter 5 (Description of the Proposed Development), with particulars of the proposal reiterated in this Chapter only insofar as they relate to the assessment of impacts on the cultural, archaeological and architectural heritage resource. In summary, the proposed development will consist of the construction of a residential development, which represents Phase 2 of a wider development of the Ballymastone Lands (as identified in the Donabate Local Area Plan 2016 (as extended)) and is a continuation of Phase 1 of the Masterplan lands (permitted under LRD0008/S3). The proposed development ranges in height from 2 to 6 storeys to accommodate 364 residential dwellings (including a mix of apartments, duplexes and houses), and public open space. The site will accommodate car parking spaces, bicycle parking spaces, storage, services, new pedestrian/cycle links, road improvements and plant areas. Landscaping will include communal amenity areas, and a significant public open space provision.

15.2 Method

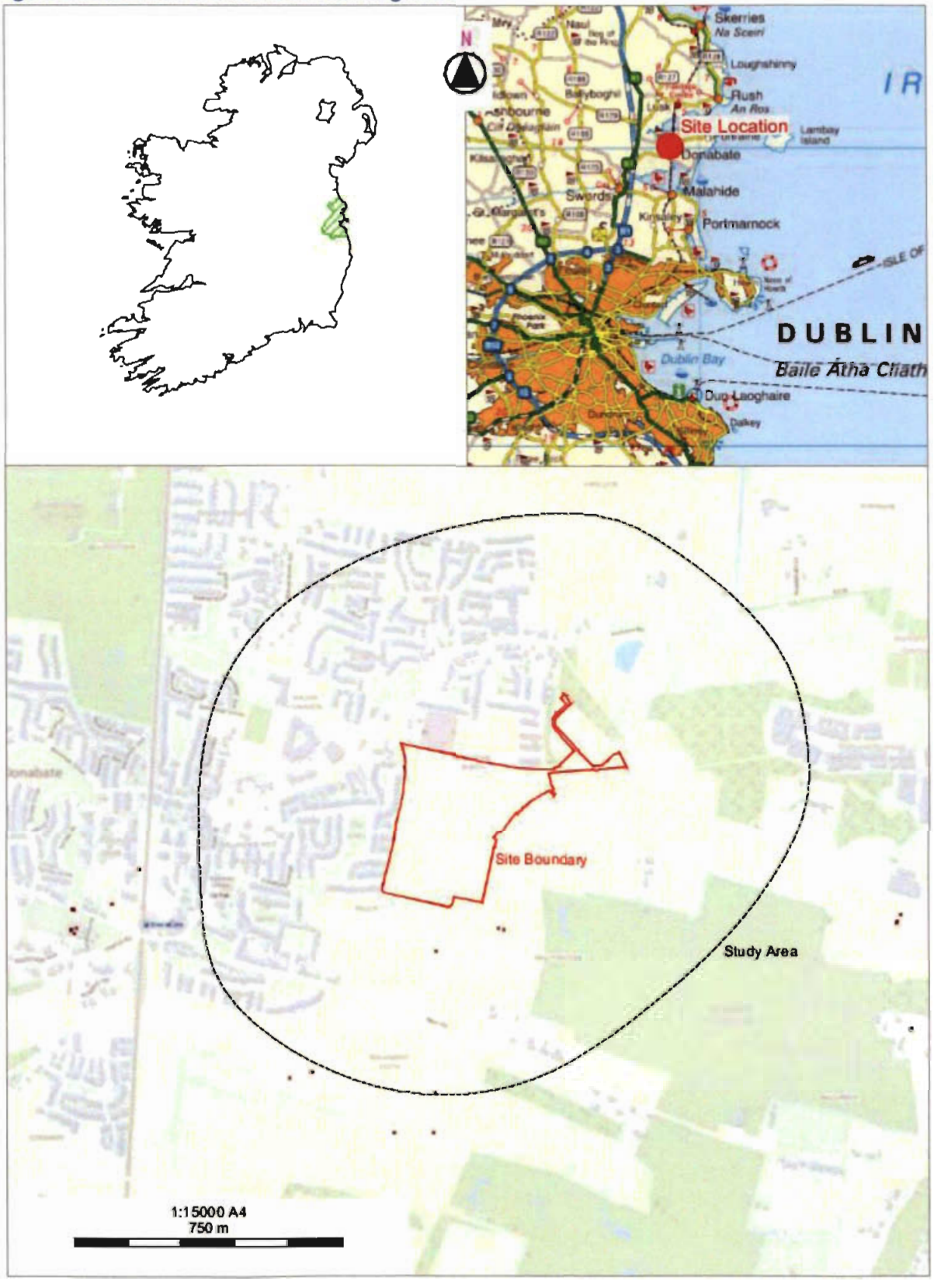
15.2.1 Desk-based Study

A study area was established at a distance of 500m from the outer edge of the redline area and encompassing an area of 214.55 Ha. The Cultural Heritage and Archaeology study included a desk-based study where relevant databases and sources were consulted to determine the archaeological potential of the general area. The consulted sources included:

15.2.1.1 Record of Monuments and Places (RMP)/ Sites and Monuments Record.

The Record of Monuments and Places (RMP) is a statutory inventory of archaeological sites protected under the National Monuments Acts 1930-2014 (Section 12, 1994 Act), compiled and maintained by the Archaeological Survey of Ireland (ASI). The inventory concentrates on pre-1700 AD sites and is based on a previous inventory known as the Sites and Monuments Record (SMR) which does not have legal protection or status (see www.archaeology.ie).

Figure 15.1 Location of site and surrounding RMPs



15.2.1.2 Topographical Files of the National Museum of Ireland.

The National Museum of Ireland Topographical Files is the national archive of all known antiquities recorded by the National Museum listed by county and townland/ street. These files relate primarily to artefacts but also include references to monuments and contain a unique archive of records of previous archaeological excavations. The Museum files present an accurate catalogue of objects reported to that institution from 1928.

15.2.1.3 Aerial Photography

Aerial photography (and other forms of remote sensing) may reveal certain archaeological features or sites (earthworks, cropmarks, soil marks) that for many reasons may not be appreciated at ground level. There are a number of available collections including the National Monuments Section, Geological Society of Ireland (1970–73), Ordnance Survey of Ireland (1995, 2000, 2005), National Museum of Ireland (St Joseph CUCAP Collection) and Air Corps (1950s–1970s).

15.2.1.4 Historical Maps

Analysis of historic mapping can show human impact on landscape over a prolonged period. Large collections of historical maps (pre- and early Ordnance Survey maps as well as estate or private maps) are held at the Glucksman Map Library, Trinity College and other sources (UCD Library, Ordnance Survey Ireland, local libraries and published material).

15.2.1.5 Record of Protected Structures & National Inventory of Architectural Heritage

Local Authorities have a statutory responsibility to safeguard architectural heritage in accordance with Part IV of the Planning and Development Act 2000 (as amended). Under S.51 (1), a County Council must compile a Record of Protected Structures (RPS), which lists all structures that are of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest. The protection, unless otherwise stated, includes the exterior and interior of the structure, lands lying within its curtilage (boundary), other structures and their interiors within the curtilage, plus all fixtures and fittings that form part of the interior or exterior of any of these structures. Buildings can be added to, or deleted from the RPS at any time, though generally this occurs when the county development plan is being reviewed.

The National Inventory of Architectural Heritage (NIAH) was established on a statutory basis under the provisions of the Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act 1999. Its purpose is to identify, record, and evaluate the post-1700 architectural heritage of Ireland, uniformly and consistently as an aid in the protection and conservation of the built heritage. It is intended to provide a basis for recommendations of the Minister for Culture, Heritage and the Gaeltacht to Local Authorities for the inclusion of particular structures in Records of Protected Structures (RPS).

15.2.2 Field Survey

The desk-based study was supported by several field-based surveys that investigated the potential of the site to contain unrecorded archaeological material. These surveys were as follows:

15.2.2.1 Site Walkover Survey

Visual inspection of the site was undertaken in June 2021 as part of the licence application process. This involved a systematic, non-intrusive walkover survey. This survey assessed current land-use patterns, site topography, site access and the presence of any previously unrecorded sites of archaeological and cultural heritage interest.

15.2.2.2 Test Excavation

Archaeological test excavation was undertaken at the site from 20 July to the 11 August 2021 under licence 21E0453 from the Department of Housing, Local Government and Heritage (DHLGH) in consultation with the National Museum of Ireland (NMI) (O'Connell 2019). The aim of the test trenching was to test geophysical anomalies recorded in previous works commissioned for the Donabate Local Area Plan (2016) and to test the general archaeological potential of the site.

15.2.2.3 Archaeological Excavation

Full archaeological excavation was undertaken across a range of sites in advance of development.

15.2.3 Guidance and Legislation

Archaeological and cultural heritage protection in Ireland is provided by several international and national mechanisms. These include but are not limited to:

- National Monuments Acts 1930-2014;
- Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 1999';
- Planning & Development Act 2000 (as amended);
- European Convention on the Protection of the Archaeological Heritage 1992.

The Framework and Principles for the Protection of the Archaeological Heritage (1999) publication outlines the State's general principles in relation to the management and protection of archaeological heritage. It states that avoidance of developmental impacts on archaeological heritage and preservation *in situ* of archaeological sites and monuments are always the preferred option. When a site, or part of a site, must be removed due to development, then preservation by record must be undertaken (i.e. through licensed excavation and recording).

The Historic and Archaeological Heritage and Miscellaneous Provisions Act 2023 was enacted on 13th October 2023. However, while the Act is now law, most of its provisions will not enter into force until the Minister has made one or more of what are known as "Commencement Orders". As of now, no Commencement Orders have been made and the National Monuments Acts 1930 to 2014 remain fully in force at the time of writing.

The Fingal Development Plan 2023-29 sets out general policies and standards for development within the county. The current plan contains lists of cultural heritage sites, including national monuments, recorded monuments and protected structures within the administrative areas. Fingal County Council recognises the value and significance of the county's archaeological heritage, and the importance of fostering a greater public appreciation of this heritage. Through policies and objectives contained in this Development Plan, the Council is dedicated to protecting, conserving and presenting the County's rich cultural heritage while promoting sustainable economic development and the enrichment of the environment. A selection of relevant objectives contained in the Development Plan is provided below:

- ***Policy HCAP2 – Importance of Archaeological Resource*** *Recognise the importance of our archaeological resource and provide appropriate objectives to ensure its appropriate retention, promotion and recording.*
- ***Policy HCAP3 – Record of Monuments and Places/ Sites and Monuments Record*** *Safeguard archaeological sites, monuments, objects and their settings listed in the Record of Monuments and Places (RMP), Sites and Monuments Record (SMR), underwater cultural heritage including protected wrecks and any additional newly discovered archaeological remains.*
- ***Policy HCAP4 – Preservation-in-situ*** *Favour the preservation in-situ (or at a minimum preservation by record) of all sites and features of historical and archaeological interest.*
- ***Objective HCAO1 – Preservation-in-situ*** *Favour the preservation in situ or at a minimum preservation by record, of archaeological sites, monuments, features or objects in their settings. In securing such preservation the Council will have regard to the advice and recommendations of the National Monuments Service of the Department of the Housing, Local Government and Heritage*
- ***Objective HCAO2 – Protection of RMPs/SMRs*** *Protect all archaeological sites and monuments, underwater archaeology, and archaeological objects, which are listed in the Record of Monuments and Places, Wreck Inventory of Ireland and all sites and features of archaeological and historic interest discovered subsequent to the publication of the Record of Monuments and Places, and to seek their preservation in situ (or at a minimum, preservation by record) through the planning process. Objective*
- ***HCAO3 – Management of Archaeological Resource*** *Encourage and promote the appropriate management and maintenance of the County's archaeological heritage, including historical burial grounds and underwater cultural heritage in accordance with conservation principles and best practice guidelines.*
- ***Policy HCAP5 – Development Design*** *Incorporate heritage features into infrastructure design at an early stage in the development planning and management process to protect and promote the cultural heritage resource and create awareness and interpretation.*
- ***Objective HCAO7 – Archaeology and Development Design*** *Ensure archaeological remains are identified and fully considered at the very earliest stages of the development process, that schemes are designed to avoid impacting on the archaeological heritage.*
- ***Objective HCAO9 – Archaeology in the Landscape*** *Ensure that in general development will not be permitted which would result in the removal of archaeological monuments with above ground features, protected wrecks and that this will be especially the case in relation to archaeological monuments which form significant features in the landscape.*
- ***Objective HCAO10 – Context of Archaeological Monuments*** *Ensure that development within the vicinity of a Recorded Monument or Zone of Archaeological Notification does not seriously detract from the setting of the feature and is sited and designed appropriately.*
- ***Objective HCAO11 – Impacts of large-scale development*** *Ensure that proposals for large scale developments and infrastructure projects consider the impacts an the archaeological heritage and seek to avoid them.*
- ***Objective HCAO13 – Findings of Archaeological Activity*** *Encourage reference to or incorporation of significant archaeological finds into development schemes, where appropriate and sensitively designed, through layout, in situ and virtual presentation of archaeological finds and by using historic place names and the Irish language where appropriate.*

- ***Objective HCAO14 – Archaeology in Open Space*** *Retain and manage appropriately archaeological monuments within open space areas in or beside developments, ensuring that such monuments are subject to an appropriate conservation management plan, are presented appropriately and are not left vulnerable, whether in the immediate or longer term, to dangers to their physical integrity or possibility of loss of amenity.*
- ***Objective HCAO15 – Best Practice*** *Promote best practice for archaeological excavation by ensuring that they are undertaken according to best practice as outlined by the National Monuments Service, Department of Housing, Local Government and Heritage, The National Museum of Ireland and the Institute of Archaeologists of Ireland.*
- ***Objective HCAO17 – Dissemination*** *Ensure the public dissemination of the findings of licenced archaeological activity in Fingal through the Dublin County Archaeological GIS project, publications, public lectures and events to promote awareness of, and access to, Fingal's archaeological inheritance and foster high quality community archaeology.*
- ***Objective HCAO18 – Public Awareness*** *Raise public awareness of the cultural heritage and improve legibility by providing appropriate interpretation in areas, sites, villages, and buildings of archaeological and historic significance.*
- ***Objective HCAO15 – Best Practice*** *Promote best practice for archaeological excavation by ensuring that they are undertaken according to best practice as outlined by the National Monuments Service, Department of Housing, Local Government and Heritage, The National Museum of Ireland and the Institute of Archaeologists of Ireland.*
- ***Objective HCAO17 – Dissemination*** *Ensure the public dissemination of the findings of licenced archaeological activity in Fingal through the Dublin County Archaeological GIS project, publications, public lectures and events to promote awareness of, and access to, Fingal's archaeological inheritance and foster high quality community archaeology.*
- ***Objective HCAO18 – Public Awareness*** *Raise public awareness of the cultural heritage and improve legibility by providing appropriate interpretation in areas, sites, villages, and buildings of archaeological and historic significance.*
- ***Policy HCAP11 – Conservation of Architectural Heritage*** *Conserve and protect buildings, structures and sites of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest by adding or retaining them on the Record of Protected Structures or by designating groups of structures as Architectural Conservation Areas.*
- ***Policy HCAP14 – Architectural Conservation Areas*** *Protect the special interest and character of all areas which have been designated as an Architectural Conservation Area (ACA). Development within or affecting an ACA must contribute positively to its choracter and distinctiveness and take opportunities to protect and enhance the character and appearance of the area and its setting wherever possible. Development shall not harm buildings, spaces, original street patterns, archaeological sites, historic boundaries or features, which contribute positively to the ACA.*
- ***Policy HCAP15 – Character of Architectural Conservation Areas*** *Support and encourage the sympathetic and appropriate adaptive reuse, refurbishment, and upgrading of protected structures and buildings or structures that contribute to the character of an Architectural Conservation Area ensuring that their special interest, character and setting is retained. Prohibit development that seeks the demolition of a Protected Structure or buildings that contribute to the character of an ACA in almost all circumstances.*

- ***Policy HCAP19 – Development and Historic Demesnes*** *Resist proposals or developments that would lead to the loss, or cause harm to the character, principal components or setting of historic designed landscapes and demesnes of significance in the County.*
- ***Objective HCAO31 – Protection of Designed Landscapes*** *Identify the historic designed landscapes of significance in the County and determine the appropriate mechanism to ensure their future protection. Several of the most significant are already designated, as Architectural Conservation Areas.*
- ***Objective HCAO32 – Designed Landscape Appraisal*** *Require that proposals for development within historic designed landscapes include a Designed Landscape Appraisal (including an ecological assessment) as part of the planning documentation to fully consider the potential impacts of the proposal. The appraisal should be carried out prior to the initial design of any development, in order that this evaluation to inform the design which must be sensitive to and respect the built heritage elements and green space values of the site.*
- ***Objective HCAO63 – Naming of Residential Schemes*** *Ensure that the naming of mixed residential and mixed-use schemes reflect local history, folklore and/or place names and are stated in the Irish language.*

15.2.4 Aims of Study

The objective of this study was to assess the significance of the receiving archaeological and architectural environment and the impact of the proposed development. Ameliorative measures are proposed where necessary and feasible, to safeguard any monuments, features or finds of antiquity that are identified during this study as likely to sustain significant impacts.

15.3 Baseline Environment

15.3.1 Brief Historical Background

In the early medieval period, Donabate formed part of the kingdom of Brega, initially ruled by a dynastic confederation known as the Laigin, but after the seventh century was under the rule of the Síl nAedo Sláine of the Southern Uí Neill. After the area came under the control of the Anglo-Normans in the late twelfth century, the lands around Donabate came under the control of the Archbishop of Dublin, who had his episcopal manor at Swords, Co. Dublin. Around 1230 AD, Donabate church was granted to the monastery of Grane, Co. Carlow and remained in their possession until the dissolution of the monasteries in 1541 (Bates 2001). In the eighteenth century, an extensive tract of land around Donabate was purchased by Charles Cobbe, later Archbishop of Dublin.

The first portion of the name Donabate (Domhnach Bat) most likely originates from the word Domhnach meaning church and Baite meaning wet or swampy. Donabate is also said to derive its name from the Irish 'Domhnach Bat' or 'Dún a' Bháid' meaning church of the ferry, which is supposed to refer to an ancient church in the townland of Ballymadrough west of Donabate near the Malahide Estuary.

The townland of Ballisk (*Baile Uisce*) gained its name from *baile* – town/ home/ homestead and *uisce*- water. The townland of Ballalease North (*Baile Eilís Thuaidh*) gained its name from *baile* – town/ homestead and *Eilís*- a woman's name, suggesting the homestead/ area once belonged to *Eilís*. The origins of the townland name Ballymastone are less clear. Both the townlands of Ballymastone (spelled Balmasto) and Ballisk (spelled Balilisk) are noted on the Down Survey map (1656). It was also noted on this map that the Donabate townland of 117 acres was forfeited by Anthony Delahide of Lockhumny

(probably Loughshinny) to Lord Fitzharding sometime between 1641 and 1670. The townland name Portraine is derived from *'Port-Rachrann'*; the port or landing place of *Rachra* and refers maritime connection between the mainland and Lambay Island (Joyce 1910, 111). Joyce (*ibid.*) records the ancient Irish name for the island as *'Rechru'*, later modified to *'Rachra'* and cites the practice sending sheep across to the island over the spring and summer months for grazing.

15.3.2 Record of Monuments and Places

The proposed development is located c. 850m east from the ecclesiastical remains at Donabate:

- DU012-005001; Church
- DU012-005002; Castle – tower house
- DU012-005003; Graveyard
- DU012-005004; Wall monument (present location)

Other significant monuments at Donabate village include a medieval enclosure and structures at Turvey Avenue (DU012-082001-004) and early prehistoric settlement activity at Beaverstown (DU012-066).

There are no Recorded Monuments located within the redline boundary for the proposed development. However, there are four archaeological sites located within the wider study area. These are:

- DU012-088 – Enclosure;
- DU012-084 – Ring-ditch;
- DU012-085 – Ring-ditch, and;
- DU012-097 – Ring-ditch.

Those monuments were recorded during previous archaeological assessments carried out in support of the Donabate Local Area Plan (see below **Section 15.3.7**; license numbers 05R012, 07E0650 and 06E0027) and the pre-development archaeological assessments for the Donabate Distributor Road (licence numbers 17E0094 and 17E0407). A selection of RMP entries relevant to this area and within 1km of the subject site are presented below in **Table 15.1**. They include medieval remains within Donabate Village, Beaker Period (2450-2300 BC) settlement at Beaverstown and Bronze Age burnt mounds at Corballis. The location of recorded monuments within the subject site and across the surrounding landscape is indicative of enhanced archaeological potential.

Figure 15.2 Record of Monuments and Places

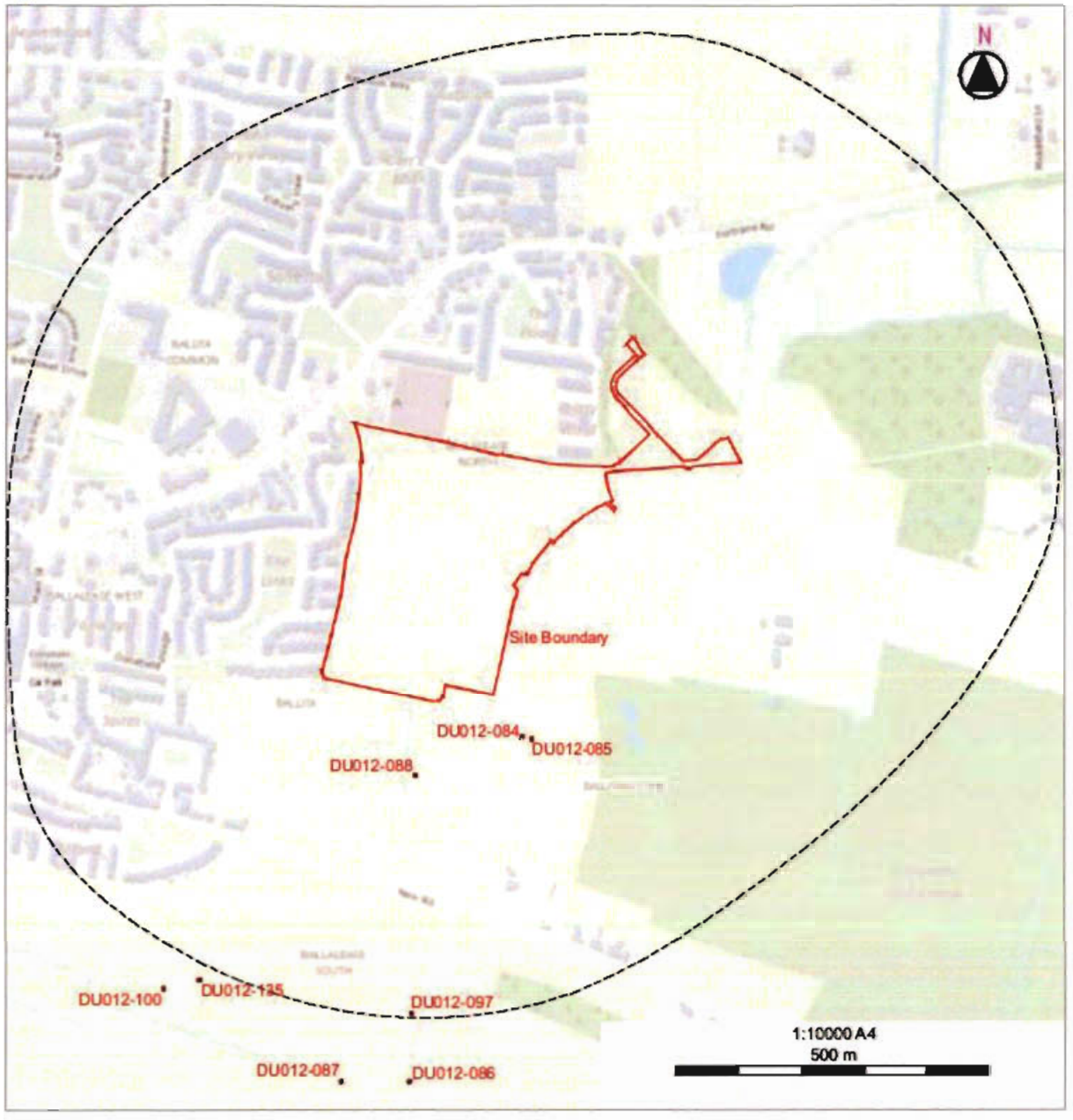


Table 15.1 RMP Entries within 1km of Proposed Development Site

SMR Number	Class	Townland	ITM	Distance
DU012-084----	Ring-ditch	Beaverstown	723679, 749981	0m
This monument was subject to geophysical survey (Licence no. 05R012) and test excavation (Licence no. 06E0027) to inform the Donabate Local Area Plan. A circular ditch (5.45m diam.) and possible post or pit were identified. Although no diagnostic material was recovered, it was interpreted on the basis of morphology as a probable prehistoric hut (Baker 2006, 17).				
DU012-085----	Ring-ditch	Ballymastone	723695, 749978	0m
This monument was subject to geophysical survey (Licence no. 05R012) and test excavation (Licence no. 07E0650) to inform the Donabate Local Area Plan. A possible ring ditch (8m diam.) was identified. (Frazer 2007).				
DU012-088----	Enclosure	Ballymastone	723504, 749918	0m
This monument was subject to geophysical survey (Licence no. 05R012) and test excavation (Licence no. 07E0650) to inform the Donabate Local Area Plan. A ditched (1m wide) circular enclosure (50m diam.) was identified. (Frazer 2007).				
DU012-097----	Ring-ditch	Corballis (Nethercross By.)	723499, 749530	500m S
Situated in tillage on the edge of the broad crest of a ridge, with extensive views in all directions. The sea is in view to the E and the Broadmeadow River estuary lies to the S. First identified in a geophysical survey in 2005 along with a burnt mound (DU012-086----) at the base of the slope to the S in the same field. Another burnt mound (DU012-087----) was identified in that geophysical survey in the adjoining field to the SW (Baker, 2006a; Frazer 2007a). Test excavations were carried out at the site in in 2006 (Licence No. O6E0027) and the ring-ditch was fully excavated in 2017 in advance of the construction of the Donabate Distributor Road by Liam Coen working with Archer Heritage Planning (Licence No. 17E0407). The site consists of a circular area (diam c. 16m) defined by an enclosing fosse which was recut. The first phase of activity consisted of the excavation of a ring-ditch defined by a broad, fairly deep v-shaped fosse. The fill of this was largely undifferentiated, comprising of a sterile fill which gave the appearance of having been backfilled very quickly after having been dug – there was no silting at the base. The upper ring-ditch which was recut into the earlier fosse was a shallow u-shaped fosse, filled with a darker, charcoal-rich fill with an entrance to the E. This was defined by two rounded terminals with a single central post pit at the centre. No features were recorded in the interior. A stone bead with a central waist somewhat reminiscent of a dumbbell bead, some lithics and burnt bone were recovered from the upper ditch fill.				
DU012-100----	Enclosure	Corballis (Nethercross By.)	723094, 749570	585m SW
A substantial ditch enclosure was initially identified in the course of geophysical survey and confirmed as archaeological in origin by test trenching (McLoughlin 2007), the site occupies an area of roughly 65m x 25m in extent. Further test-excavation revealed the ditch to be 1.95m wide and 1.25m deep. Bone, charcoal and a copper object were recovered. A preliminary interpretation of enclosed settlement of the early medieval period has been made (O'Connell 2017).				
DU012-135----	Souterrain	Corballis (Nethercross By.)	723154, 749585	540m SW
Situated in a large rectangular arable field just SE of Donabate village along New Road. An arc of housing occupies the NE quadrant of the field. The field is cultivated into NNE-SSW running ridge and furrow, newly planted with cabbage plants. On a S-facing slope, down from the crest of an E-W running ridge, an oval area of ground (L20m, Wth 8m) has been skirted by a planting tractor in avoidance of lower ground				

SMR Number	Class	Townland	ITM	Distance
within. At the centre of this area is a sunken hollow (D 0.25m) within which is a large capstone, (L1.0m; Wth 0.54m) set along an ESE – WSW axis and embedded within the ground, below the ploughsoil. This is edged by an adjacent boulder (L.0.50) and another stone lies to the S. The upper surface of the capstone, which is triangular in section, slopes NNE and SSW, has spalls have been removed from its upper surface in the past, probably through plough damage. The capstone or lintel is indicative of the presence of a souterrain. No entrance point to the souterrain is visible save approximately 13m downslope another small dip in the topography of the ploughsoil. No variations in soil texture or colour were observed at the time of the site visit indicating that the entrance hole had been infilled some time ago. There is no current access to the souterrain. From a video of the souterrain interior which had been provided to NMS, the souterrain is T shaped in layout. A low passageway exits a small low corbelled beehive chamber of drystone construction. The walls are composed of crude angular and rounded boulders with the upper courses of the passageway walls oversailing to create a corbelled effect but roofed by flat lintels. One passageway is intersected by a taller passageway running at right angles to the former. One of the passageway ends is fairly crudely blocked by roughly coursed boulders while the other may consist of a drop-hole at its end. There are occasional areas of collapse creating an uneven floor surface.				

15.3.3 Topographical Files

The Topographical Files of the National Museum of Ireland were searched for the townlands of Ballisk, Ballalease North, Corballis, Ballisk Commons, Portraine Demesne, Rahillion and Ballymastone, Co. Dublin. There are considerable collections of flint and chipped stone artefacts from further south at Corballis. However, no finds are recorded in Ballisk or Ballease North.

Table 15.2 Topographical Files

Number	Type	Location
1946:444-59	Flint objects	Corballis
P1950:34	Human remains	Corballis
P1950:34.1	Soil sample	Corballis
P1950:34.2	Shell sample	Corballis
P1950:35	Stone pebble	Corballis
R2975	Wood figure	Donabate
X4588	Whalebone book	Donabate
1991:127-9	Copper alloy buckle	Donabate
1991:130-2	Copper alloy button	Donabate
1991:133	Copper alloy spur	Donabate
1991:134	Copper alloy buckle	Donabate
1991:135	Lead musket ball	Donabate
1991:136	Copper alloy vessel	Donabate
2009:C1:1	Bronze Badge	Donabate area
2009:C1:2-5	Bronze Buckle	Donabate area
2009:C1:6-8	Copper alloy object	Donabate area
2009:C1:9	Copper alloy mount	Donabate area
2009:C1:10	Copper alloy crucifix	Donabate area
2009:C1:11	Copper alloy mount	Donabate area
2009:C1:12-14	Iron knife	Donabate area
2009:C1:15	Lead object	Donabate area

Number	Type	Location
2009:C1:16	Brass button	Donabate area
2009:C1:17	Lead weight	Donabate area
2009:C1:18	Copper alloy strap	Donabate area
2009:C1:19	Copper alloy buckle	Donabate area
2009:C1:20	Copper alloy object	Donabate area
2009:C1:21	Lead bead	Donabate area
2009:C1:22-3	Lead musket ball	Donabate area
2009:C1:24	Lead bullet	Donabate area
2009:C1:25	Copper alloy mount	Donabate area
2009:C1:26	Gilt copper alloy button	Donabate area
2009:C1:27-32	Copper alloy button	Donabate area
2009:C1:33	Copper alloy medal	Donabate area
2009:C1:34	Metal medal	Donabate area
2009:C1:35	Copper alloy medal	Donabate area
2009:C1:36	Copper alloy brooch	Donabate area
2009:C1:37	Copper alloy buckle	Donabate area
2009:C1:38	Copper alloy thimble	Donabate area
2009:C1:39	Lead object	Donabate area
2009:C1:40	Copper alloy weight	Donabate area
2009:C1:41-55	Copper alloy coin	Donabate area
2009:C1:56	Copper alloy buckle	Donabate area
2009:C4:509-774	Flint objects	Balcarrick or Corballis, Donabate
2009:C4:775	Flint sample	Balcarrick or Corballis, Donabate
2009:C4:776	Stone sample	Balcarrick or Corballis, Donabate
2009:C4:777	Chert chunk	Balcarrick or Corballis, Donabate
2009:C4:778	Shell sample	Balcarrick or Corballis, Donabate
2009:C4:779	Quartz flake	Balcarrick or Corballis, Donabate
2009:C4:780	Iron nail	Balcarrick or Corballis, Donabate
2009:C4:781	Iron object	Balcarrick or Corballis, Donabate
2009:C4:782-6	Flint objects	Malahide Island/Balcarrick or Corballis
2009:C4:787	Stone	Malahide Island/Balcarrick or Corballis
2009:C4:788	Shell	Malahide Island/Balcarrick or Corballis
2011:C4:174-225	Flint objects	Corballis
2011:C4:226-250	Flint objects	Corballis
2011:C4:251-2	Copper alloy objects	Corballis
2011:C4:253-283	Flint objects	Corballis
2011:C4:284-398	Flint objects	Corballis
2011:C4:399-429	Flint objects	Corballis
2011:C4:430-434	Quartz flakes	Corballis
2011:C4:435-440	Chert chunks	Corballis
2011:C4:441	Chert flake	Corballis
2011:C4:442	Chert blade	Corballis
2011:C4:443-4	Flint pebbles	Corballis
2011:C4:445	Flint flake	Corballis

Number	Type	Location
2011:C4:446	Stone	Corballis
2011:C4:447	Iron object	Corballis
2011:C4:448	Clay pipe	Corballis
2011:C4:449-456	Flint objects	Corballis
2011:C4:457-479	Flint objects	Corballis
2011:C4:480	Stone chunk	Corballis
2011:C4:481-2	Flint objects	Corballis
2011:C4:483-508	Pottery	Corballis
2011:C4:1619-1622	Flint objects	Corballis
2011:C4:1623-1680	Flint objects	Corballis
2011:C4:1681-1737	Flint objects	Corballis
2011:C4:1738-66	Flint objects	Corballis
2011:C4:1767	Shell sample	Corballis
2011:C4:1768	Flint debitage	Corballis
2011:C4:1769	Quartz sample	Corballis
2011:C4:1770	Clay pipe	Corballis
2011:C4:1771	Iron sample	Corballis
2011:C4:1772	Slag sample	Corballis
2011:C4:1773	Stone sample	Corballis
2018:49	Flint flake	Portraine
2002:183	Pottery	Portraine
2002:182	Pottery	Portraine
1997:8	Flint scraper	Portraine
1946:461	Pottery	Portraine
1946:460	Pottery	Portraine
1946:437	Flint chunk	Portraine
1946:436	Flint chunk	Portraine
1946:435	Flint flake	Portraine
1946:434	Flint chunk	Portraine
1946:433	Flint flake	Portraine
1978:21	Flint flake	Beaverstown
1978:20	Flint tool	Beaverstown
1932:5626	Stone axehead	Beaverstown

15.3.4 Cartographic Sources

The following historical maps were consulted in the compilation of this assessment:

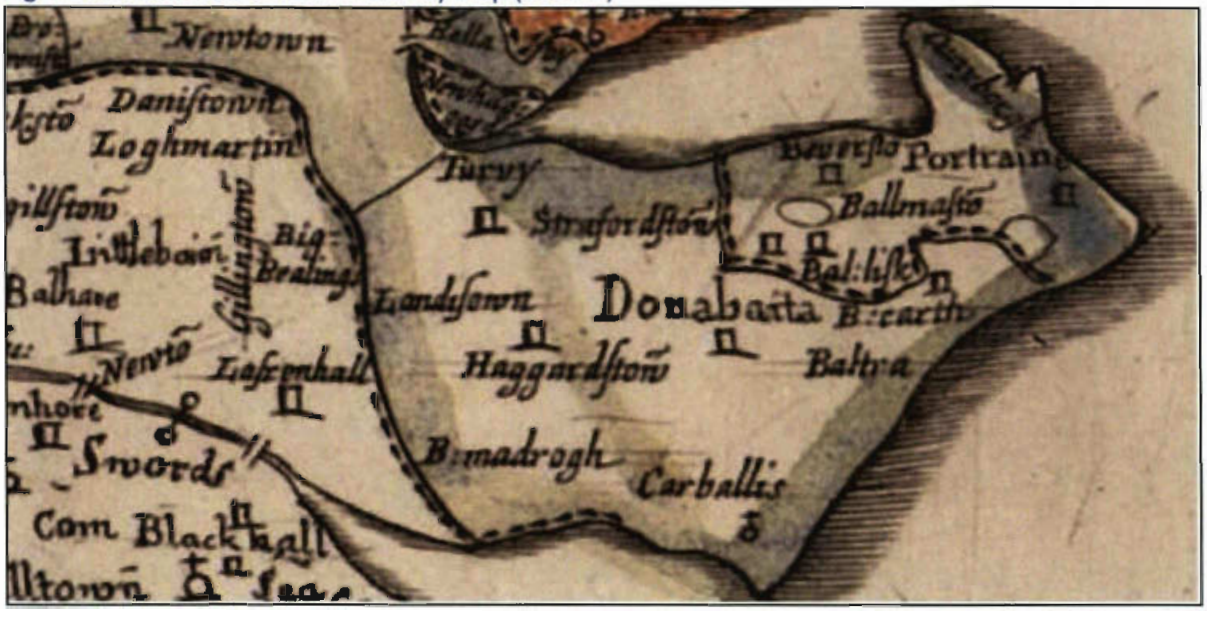
- Down Survey 1656-8.
- Rocque 1760
- OSI 6" First Edition 1844
- OSI Cassini Edition 1906-9

The subject site is depicted as agricultural land and no new features of archaeological potential were noted.

15.3.4.1 Down Survey 1656-8

Donabate (*'Donabaita'*) is marked on the Barony map (**Figure 15.3**) as larger town with a schematic representation of the castle/tower house (DU012-005002) located in the centre of Donabate town. The townlands of Portraine, Ballymastone (labelled *Ballmasto*) and Ballisk (labelled *Balilisk*) are labelled on this map. No structures or potential archaeological monuments are marked on the Parish map.

Figure 15.3 Extract from Down Survey map (1656-8)



15.3.4.2 Rocque (1760)

The subject site is depicted as agricultural land situated east of Donabate (**Figure 15.4**). No potential archaeological features are visible at the subject site.

Figure 15.4 Extract from Rocque (1760)

15.3.4.3 OSI First Edition 6" Map (1844)

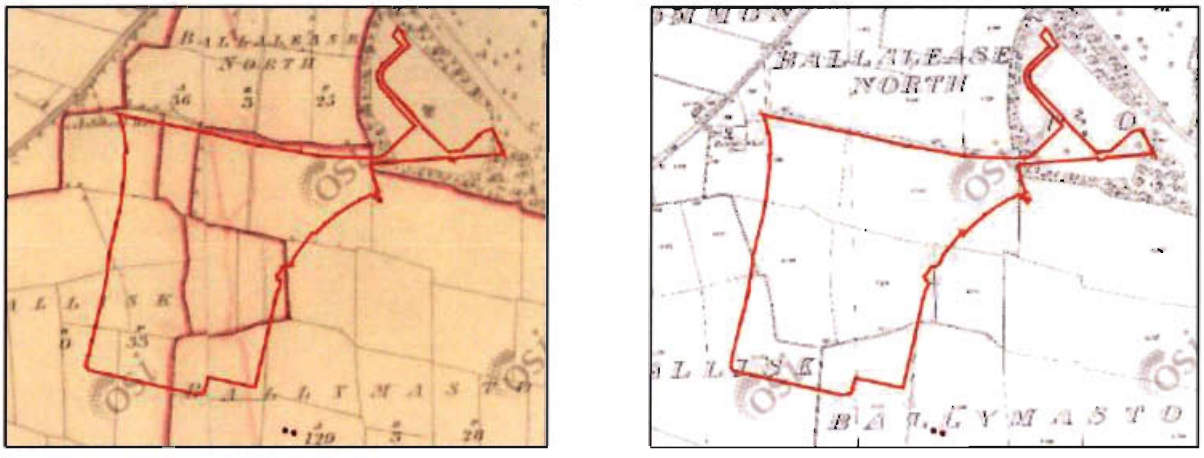
The subject site encompasses parts of four townlands; Portraine Demesne, Ballalease North, Ballymastone and Ballisk (**Figure 15.5**). It crosses a number of townland boundaries. The land is depicted

as large open fields. There are no structures or monuments depicted within the subject area on this map.

15.3.4.4 OSI 25" Map 1906-9

The site is laid out in agricultural land with no major change to the overall field division and layout other than limited field boundary clearance (**Figure 15.5**). No potential archaeological sites or features were noted.

Figure 15.5 Extract from OSI First Edition 6" map (1844) & OSI 25 inch map (1906-9)



15.3.5 Aerial Photography

The following aerial photographic sources were consulted in the compilation of this assessment:

- OSI ortho-rectified aerial photos (1999, 2000, 2005)
- OSI Digital Globe
- Google Earth

The subject site is depicted as agricultural land and no new features of archaeological potential were noted (**Figure 15.6**).

Figure 15.6 Extracts from Aerial Photographs (l Digital Globe 2011-13; r Google Earth 06.2018)

15.3.6 Architectural Heritage

The Fingal Development Plan 2023-9 webviewer was consulted in the preparation of this assessment. There are no Protected Structures located within the site boundary (**Figure 15.7**). The closest sites of

architectural interest are NIAH 1139014 (former school) and NIAH 1139013 (Gate Lodge). They are described thus in the NIAH:

NIAH 11329014

"Detached eight-bay two-storey red brick former school, c.1880, with gable-fronted projecting central block flanked by single-bay single-storey lean-to entrance porches. Single-bay single-storey porch to right gable end, c.2000. Yellow brick rear elevation having two-storey lean-to to rear. Now in apartments. ROOF: Double pitched slate roof; decorative terracotta ridge tiles; granite coping and corbels to gable ends; brick chimneys with granite coping; uPVC rooflight; copper clad spire; catslips roofs to porches; cast-iron rainwater goods. WALLS: Machine made red brick; English garden wall bond; high brick plinth; chamfered brick cornice; limestone carved tablets; yellow brick. OPENINGS: Originally segmental headed openings divided into two with insertion of limestone; brick arches; keystones; reveals and granite and brick cills; uPVC casement windows; squareheaded door and timber panelled door, c.2000".

NIAH 1139013

"Detached three-bay single-storey gate lodge, c.1870, with canted central bay. Single-bay extension to left-hand side. ROOF: Hipped; slate; central red brick chimney; terracotta ridge tiles; decorative terracotta finial to bay window; flat felt roof to left bay; plastic rainwater goods. WALLS: Rendered plinth; rendered; lined and ruled; rendered quoins. OPENINGS: Square-headed windows; rendered reveals; painted canted sills; 1/1 original sash windows to façade; replacement uPVC frames to side. Square headed door; replacement c.1930's timber door; plate glass overlight".

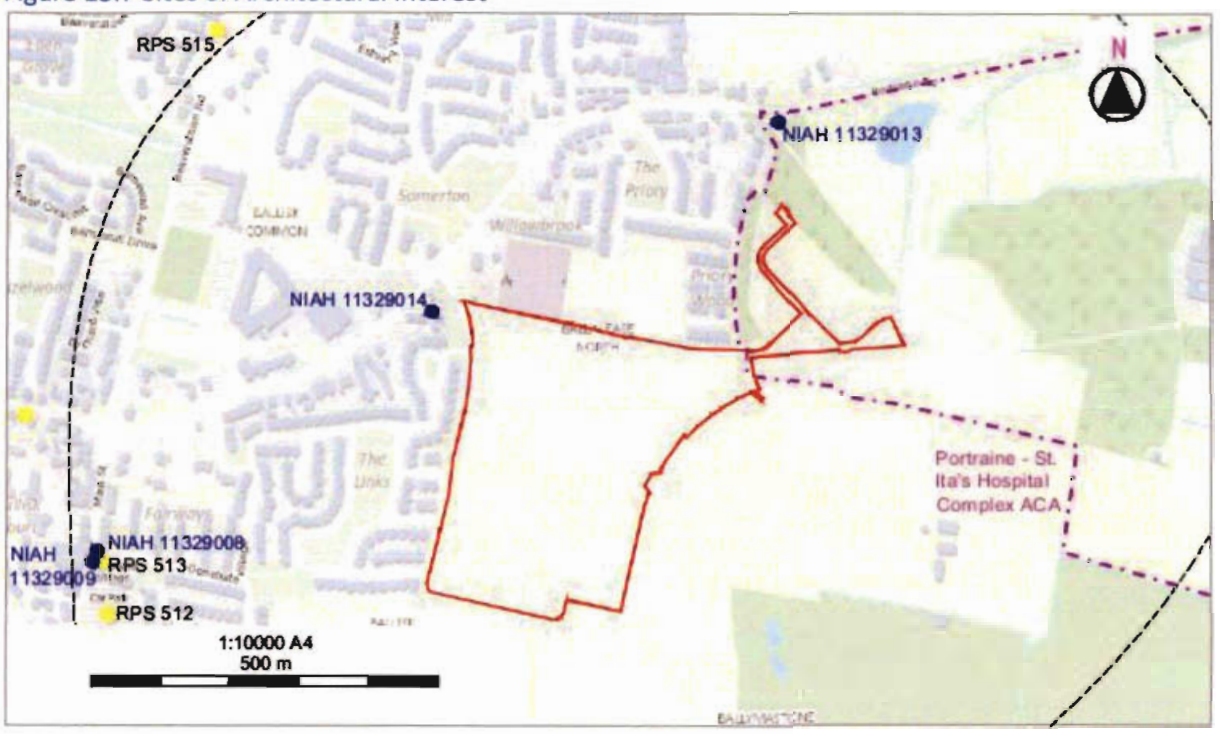
The only Protected Structures located within the study area are St. Patrick's RC Church (RPS 512; Redbrick 19th century catholic church) and a 19th century house (RPS 513; '*An Dùn*'; stone built house with outbuildings). Both are located over 450m west of the proposed development and separated from the subject site by existing residential housing.

Additional sites of architectural interest in the wider study area are as follows:

- NIAH 11329008; water pump.
- NIAH 11329009; water pump.

The northeastern tip of the proposed development lands are partially located within the ACA for Portraine – St. Ita's Hospital Complex.

Figure 15.7 Sites of Architectural Interest



15.3.7 Previous Archaeological Excavations

Numerous licensed archaeological excavations have been carried out in the wider landscape (including Donabate village). The results of these excavations are collated below in **Table 15.3**. These include sites excavated within the medieval town of Donabate and prehistoric and medieval sites recorded in advance of development works in the wider landscape.

Table 15.3 Previous Archaeological Excavations

Excavation No.	Townland	Ex. Bulletin Ref.	Results
02E1872	Beaverstown Road, Donabate, Dublin	2004:0499	No archaeology found
02E1708 ext.	Beaverstown, Donabate, Dublin	2004:0500	No archaeology found
04E0185	Beaverstown, Donabate, Dublin	2004:0501	Excavation of eight archaeological features (pits, a burnt spread, a hearth and a curvilinear feature). Medieval and post-medieval finds.
93E0179	Turvey House, Turvey, Dublin	1993:103	Monitoring in advance of development, revealing three phases of castle/tower house construction.
06E0027 ext.	Ballalease North / Ballymastone / Portraine Ballisk, Dublin	2007:426	Test excavation undertaken in advance of Donabate LAP including portions within the current site. Four 'archaeological areas' were identified: a burnt mound; a ditch (possibly forming a circular enclosure as much as 50m in diameter; 1m wide); a circular ditch enclosure

Excavation No.	Townland	Ex. Bulletin Ref.	Results
			(28m diameter, 0.3–0.9m-wide ditch); a circular ditch enclosure/ring-ditch (12m diameter, 0.6–1.15m-wide ditch), a possible round house/small ring-ditch (8m diameter, 0.6m-wide ditch) and a burnt spread/fulacht fiadh.
07E0185	Donabate, Dublin	2007:459	Testing in advance of broadband project. No archaeology found.
08E0155	Turvey Avenue, Donabate, Dublin	2008:390	Excavation in advance of road widening. Excavated features included early medieval ditches and corn drying kiln; a late medieval structure, pits and ditches and post medieval structures.
09E0155	Turvey Avenue, Donabate, Dublin	2009:305	Testing in advance of new house. No archaeology found.
11E0333	Beaverstown and Rahillion, Dublin	2011:180	Testing in advance of residential development. No archaeology found.
12E253	Newbridge Avenue, Donabate, Dublin	2012:196	Testing in advance of residential development. No archaeology found.
14E0419	Beaverstown, Dublin	2014:493	Testing in advance of residential development. No archaeology found.
16E0188	Newbridge Demesne, Donabate, Dublin	2016:447	Monitoring of services trenches. No archaeology found.
17E0239	St. Patrick's, Donabate, Dublin	2017:500	Testing in advance of development revealed multi-phased archaeological activity in the form of ditches, pits, a metalled surface, two spreads and a human skeleton.
17E0095	Beaverstown Road, Donabate, Dublin	2017:608	Testing in advance of residential development. No archaeology found.
17E0094	Donabate Distributor Road, Dublin	2017:619	Testing in advance of road development. One ringditch and two fulachtaí fia were recorded.
17E0309	Corballis, Donabate, Dublin	2017:642	Testing in advance of residential development. No archaeology found.
17E0608	Corballis, Donabate, Dublin	2017:646	Testing in advance of residential development. Two fulachtaí fia were recorded.

Excavation No.	Townland	Ex. Bulletin Ref.	Results
17E0630	Corballis, Donabate, Dublin	2017:649	Testing in advance of residential development. Two fulachtaí fia and two sites with dispersed pits were recorded.
18E0208	Corballis, Dublin	2018:595	Testing in advance of residential development. One fulacht fia were recorded.
17E0407	Corballis 1, Dublin	2017:662	Excavation of Iron Age ringditch in advance of development.
E1058	Corballis, Co. Dublin, Dublin	n/a	Rescue excavation of human remains by the NMI.
14E0419	Beaverstown, Dublin	2017:718	Monitoring of development groundworks. No archaeology found.
19E0469	Balcarrick, Donabate, Dublin	2019:437	Testing in advance of development. No archaeology found.
18E0414	Donabate, Dublin	2018:732	Excavation of fulacht fia in advance of development.
19E0351	New Road, Ballisk, Donabate, Dublin	2019:516	Testing in advance of development. One pit recorded.
19E0761	Ballalease South and Corballis, Donabate East, Dublin	2020:101	Testing in advance of development. Eight archaeological areas identified; a burnt mound, a rectangular enclosure and various pits and linear features.
19E0618	Beaverstown, Donabate, Dublin	2019:648	Testing in advance of residential development. No archaeology found.
14E0419 ext.	Beaverstown, Donabate, Co. Dunlin, Dublin	2019:687	Monitoring and excavation in advance of development. A burial ground, keyhole-shaped kiln and a number of linear features were fully excavated and recorded.
14E0419	Turvey Avenue, Beaverstown, Donabate, Dublin	2018:881	Monitoring of development groundworks. No archaeology found.
99E0690	Turvey Avenue, Donabate, Dublin	1999:176	Testing in advance of road widening. Multi phased archaeological complex found and subsequently excavated under licence 08E0155.
02E1708	Beaverstown, Donabate, Dublin	2002:0508	Testing in advance of development. Several prehistoric features were uncovered comprising of pits and postholes associated with ceramic finds.

Excavation No.	Townland	Ex. Bulletin Ref.	Results
02E1708 ext.	Beaverstown, Donabate, Dublin	2003:483	Monitoring of development groundworks. Two areas of archaeological interest noted.
03E1634	Beaverstown, Donabate, Dublin	2003:484	Excavation in advance of development. Neolithic, Bronze Age and post-medieval features excavated and recorded.

The results of excavations in the wider landscape as outlined above indicate that the general area is of high archaeological potential. They include the results of previous archaeological assessment work was carried out to inform the Local Area Plan for Donabate village in 2006. This included a program of geophysical survey and follow up test trenching in the townlands of Ballynmastone and Corballis. The initial testing (Baker 2006; Licence 06E0027) focused on the original proposed route of the Donabate Distributor Road, following a programme of geophysical survey (Leigh 2006; Licence 05R0124). A second phase of geophysical survey (Harrison 2007; Licence 07R0177) was followed by additional test excavation (Frazer 2007; Licence 06E0027ext) in 2007. The results of these combined assessments indicated significant archaeological remains within the subject site.

Detailed gradiometer scanning undertaken for the Donabate Local Area Plan (Leigh 2006; 05R0124; Field 8 Area 5) identified a series of short linear responses, forming part of a curvilinear pattern, at ITM 723697, 750358. Subsequent test excavations confirmed the presence buried archaeological features tentatively interpreted as a 50m wide circular enclosure with a central pit (Frazer 2007, 9).

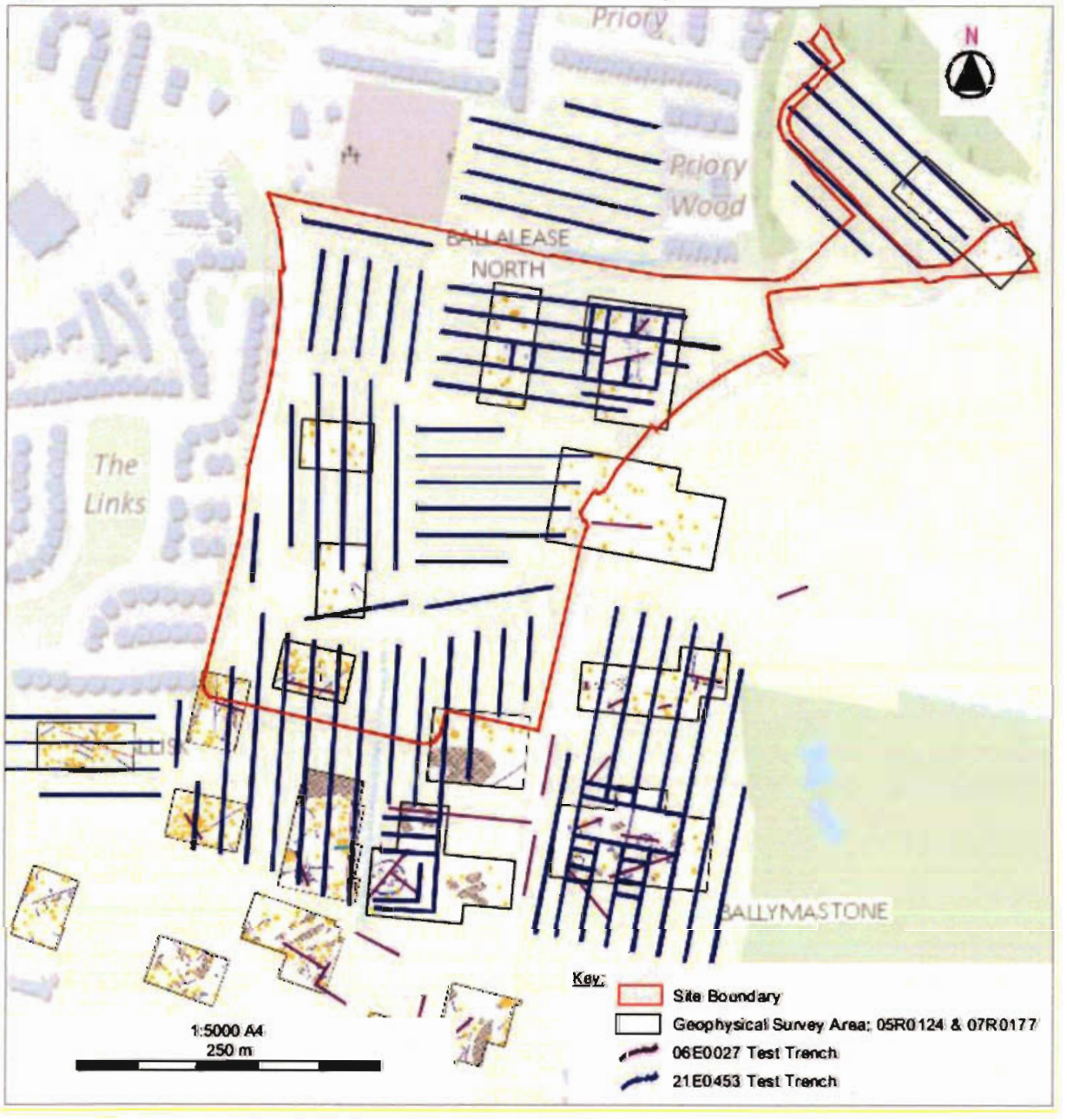
Additional archaeological sites were identified within the wider landholding and outside the current subject site. These are:

- DU012-084; Circular hut site; ITM 723679, 749981
- DU012-085; 12m wide ringditch; ITM 723695, 749978
- DU012-086; 30m wide circular enclosure; ITM 723504, 749918.

15.3.8 Test Excavation

Archaeological test excavation was undertaken within the subject site between the 20 July to the 11 August 2021 by Aidan O'Connell of Archer Heritage Planning Ltd under licence (21E0453) from the Department of Housing, Local Government and Heritage (DHLGH) in consultation with the National Museum of Ireland (NMI). A total of 90 test trenches were excavated across the full Ballymastone Masterplan area. In total, 10191 linear meters/18344 sq. m of test trenches were excavated. An additional 284 sq. m was opened around various archaeological features in order to better define their nature and extent (**Figure 15.8**).

Figure 15.8 Previous archaeological Investigations within the subject site

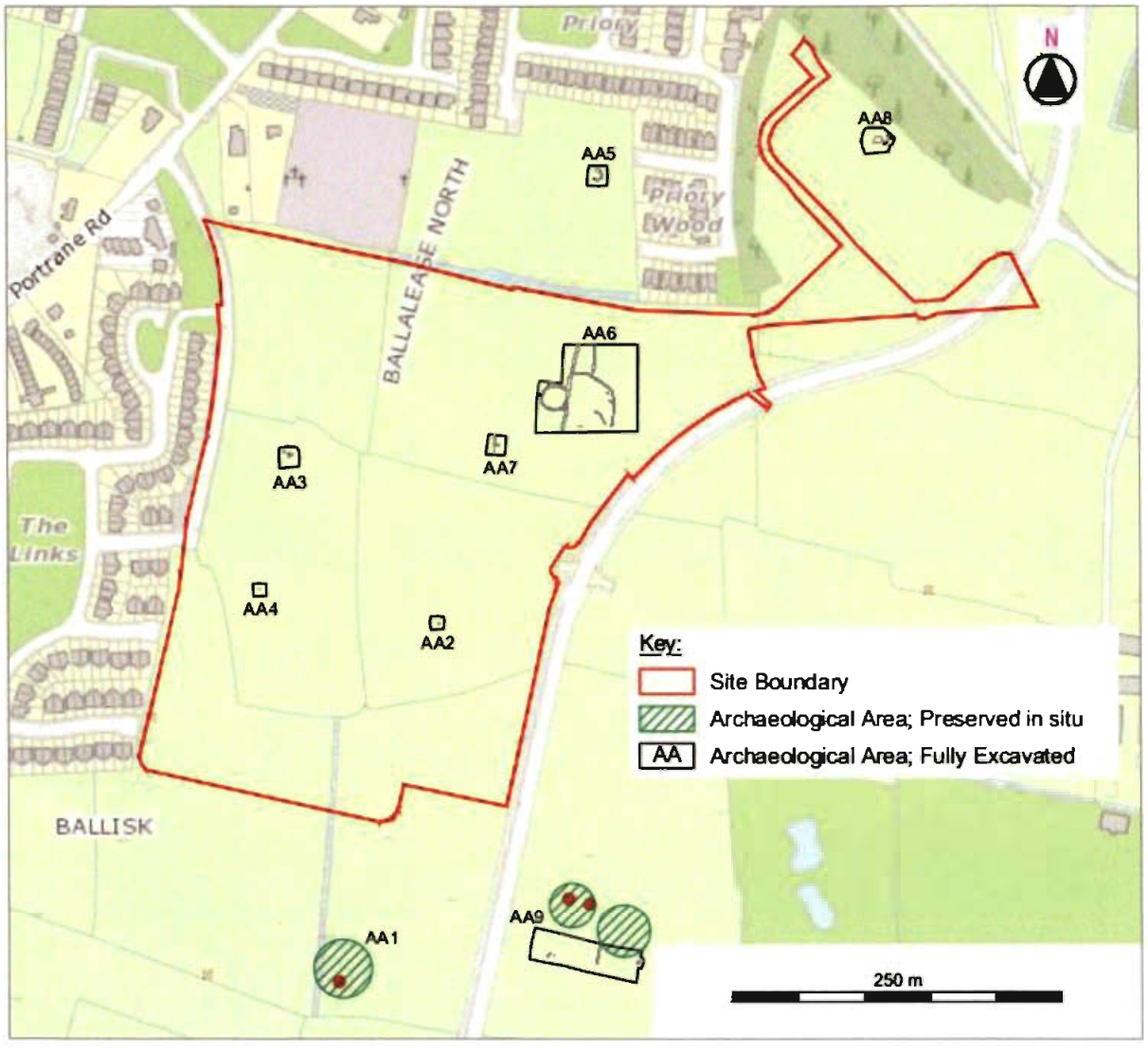


A total of nine archaeological areas were identified within the overall Ballymastone Masterplan area. Three of these were identified from desktop sources/previous archaeological investigations and six from the current test trenching programme. These are as follows:

- Archaeological Area 1; ITM 723504, 749918. Circular Enclosure (30m diameter; RMP DU012-088).
- Archaeological Area 2; ITM 723582, 750191. Pit with burnt mound material.
- Archaeological Area 3; ITM 723471, 750317. Levelled *fulacht fia*.
- Archaeological Area 4; ITM 723445, 750216. Pit with burnt mound material.
- Archaeological Area 5; ITM 723705, 750531. Levelled *fulacht fia*.
- Archaeological Area 6; ITM 723703, 750360. Possible enclosure and associated features.
- Archaeological Area 7; ITM 723652, 750325. Levelled *fulacht fia*.
- Archaeological Area 8; ITM 723916, 750557. Levelled *fulacht fia*.
- Archaeological Area 9; ITM 723695, 749978. Two circular huts, 1 Ringditch & 1 burnt spread.

Of these nine archaeological areas, five (AA2, AA3, AA4, AA6 & AA7) are located within the current application area (see **Figure 15.9**).

Figure 15.9 Test excavations results



15.3.9 Full Archaeological Excavation

Full archaeological excavation was undertaken across eight sites between October and December 2021 (AA2-AA9; see **Figure 15.9**). Excavation results for AA2, AA3, AA4, AA6 & AA7 are outlined below.

15.3.9.1 Archaeological Area 2

Full archaeological excavation of Archaeological Area 2 took place on 10th-11th October 2021 under licence 21E0667. A 10m x 10m cutting was opened by mechanical excavator under archaeological supervision centred on the feature first revealed during the test excavations. No further features were uncovered (**Figure 15.10**). The sub-circular pit measured 0.91m north-east/south-west x 0.78m x 0.25m in depth. It contained a single fill of typical burnt mound material, i.e. heat-affected stone in a charcoal-rich soil. No artefacts were retrieved during the excavation. A fragment of *Prunus* (blackthorn/cherry) charcoal retrieved from the fill of the pit returned a radiocarbon date of 2030-1880 BC (UBA 48146

3605 ± 28 BP) placing activity here in the Early Bronze Age (c. 2200-1700 BC). The fill of the pit indicates the use of heated stone for boiling or heating water. In cases like this, where features are isolated or limited, the pits are often termed 'pot-boilers' where it is thought small-scale cooking was undertaken.

Figure 15.10 Archaeological Area 2

15.3.9.2 Archaeological Area 3

Full archaeological excavation of the remains of a burnt mound/*fulacht fia* uncovered during earlier test excavations took place on 6th-11th October 2021 under licence 21E0668. A 15m x 15m cutting was opened by mechanical excavator under archaeological supervision centred on the features first revealed during the test excavations. The excavation revealed four pits and a small surviving surface spread that had slumped into the adjoining pit (**Figure 15.11**). The deposits comprised typical burnt mound material, *i.e.* heat-affected stone in a charcoal stained soil. The deepest pit, rectangular in plan with upright sides and a flattish base may have functioned as a trough though significant disturbance by a modern drain that truncated entirely one of its long sides and the pit's modest dimensions (2.18m in length x 0.56m x 0.22 in depth) allows only for a tentative interpretation for its use as a trough. Two other shallow pits completed the features in the Cutting. No animal bones or artefacts were retrieved during the excavation that may shed light on what activities took place during the use of the burnt mound/*fulacht fia*. A fragment of *Prunus* (Blackthorn/cherry) charcoal from the fill of pit C11 returned a radiocarbon date of 1430-1280 cal. 2δ BC (UBA 48147 3101+/-27 BP) placing activity here in the Middle Bronze Age (c. 1700-1200 BC).

Figure 15.11 Post-excavation view of AA3 from northwest

15.3.9.3 Archaeological Area 4

Full archaeological excavation, under licence 21E0669, of an isolated pit uncovered during earlier test excavations took place on 6th October 2021. A 10m x 10m cutting was opened by mechanical excavator under archaeological supervision centred on the pit (**Figure 15.12**). No further features were uncovered. The oval pit measured 0.80m east/west x 0.66m x 0.40m in depth. It contained four fills, a basal and upper fill comprising dark stoney deposits of distinctive burnt mound material separated by two more sterile fills. The intervening sterile deposits suggest a period of inactivity between two phases of use though whether for months or possibly longer cannot be said. Burnt mound sites, where the distinctive deposits of heat-affected stone in a charcoal-rich soil matrix are usually encountered, use heated stone to boil/heat water for one or a variety of domestic, industrial or ritual purposes. Isolated pits with the distinctive deposits are often interpreted as 'roasting pits' or 'pot-boilers'; using the same water-heating process for cooking but on a more limited scale. A single flint flake was retrieved from the topsoil during the excavation.

Figure 15.12 Aerial pre excavation view of AA4

15.3.9.4 Archaeological Area 6

Full archaeological excavation of AA6 was undertaken from 2nd-30th November 2021 under excavation licence 21E0674 (**Figure 15.13**). The principal feature recorded during the excavation was a ring ditch, measuring roughly 20m in diameter and located on the western side of the site. The enclosing ditch was V-shaped in profile and measured 0.65-1.30m in width by 0.3-0.7m in depth. A juvenile human burial was interred in the enclosure ditch and radiocarbon dated to AD 650-780 (UBA 48273; 1309 ± 27 BP) in the Early Medieval period. Orientated in the traditional east/west manner, no significant illness or violent trauma was identified in the skeletal remains. Two smaller concentric curvilinear features; possible slot trenches for a palisade fence, were traced along the interior of the southern and eastern arcs of the ring-ditch. Charcoal from one of these possible slot trenches was dated to 1620-1510 BC (UBA 48274; 3298 ± 28 BP) in the Middle Bronze Age period. The remaining features from the excavation comprised undated pits and furrows alongside a series of early modern linear and curvilinear field boundaries. Finds included a residual Grooved ware pottery sherd dating from c. 2800-2500 BC

Figure 15.13 Aerial post-excavation view of AA6

15.3.9.5 Archaeological Area 7

Full archaeological excavation of AA7 was undertaken under excavation licence 21E0675. A rectangular cutting of roughly 13m x 14m was opened by mechanical excavator and exposed the degraded remains of a burnt mound/*fulacht fia* (**Figure 15.14**). The surviving remains consisted of two troughs, one shallow pit, one linear feature and a modern drainage ditch. The archaeological features were filled with typical burnt mound material comprising heat-affected stone in a dark charcoal rich/stained soil. A fragment of hazel charcoal from one of the troughs returned a radiocarbon date of 2200-1980 BC (UBA 48275; 3720 ±31 BP) placing activity here in the Early Bronze Age period. This accords well with dates from other sites of this type. No artefacts, animal bones or charred seeds were retrieved during the excavation, while analysis of the bulk soil samples identified a modest range of charcoal; ash, hazel and cherry/blackthorn, that likely represent the use of fuelwood and the make-up of the surrounding woods.

Figure 15.14 Post-excavation view of AA7 from north

15.3.10 Summary of Baseline Environment Survey

This Cultural Heritage and Archaeology study has employed a variety of sources in conjunction with non-intrusive surveys, archaeological test excavation and full archaeological excavation to make a coherent assessment of the cultural heritage risk associated with the proposed development. The following conclusions are presented to ascertain any likely significant potential direct and indirect impacts which the proposed development may have:

- The site is large in scale, occupying an area of c. 13.74 ha.
- There are no recorded monuments located within the subject site.
- There are three recorded monuments located within 1km of the subject site (DU012-084, DU012-085 & DU012-088. These indicate that the general area is of high archaeological potential.
- No potential archaeological features were recorded in cartographic sources relating to the subject site.
- No potential archaeological features were recorded in aerial photos of the subject site.

- No archaeological objects are listed within the Topographical files of the NMI within the subject site. Numerous objects are listed in the surrounding area.
- There are no protected structures located within the subject site.
- The subject site is partially located within the Portraine St. Ita's Hospital Complex ACA.
- Previous archaeological excavations associated with the Donabate LAP recorded archaeological features within the site (AA6).
- Test trenching undertaken across the full landholding comprised 90 test trenches with a combined length of 10,191 linear metres with an additional 284 sq. m excavated around archaeological features.
- Nine archaeological areas were identified across the landholding (AA1-AA9), including five (AA2, AA3, AA4, AA6 & AA7) within the current application area.
- The five previously unrecorded archaeological areas located within the subject site have all been fully archaeologically excavated (preserved by record) under licence (Licence Refs: 21E0667, 21E0668, 21E0669, 21E0674 & 21E0675) to the DHLGH.

The subject site is large in scale and located in proximity to the medieval town of Donabate and numerous recorded monuments. A total of nine archaeological areas have been identified across the landholding from analysis of desk-based sources and licensed archaeological test excavations carried out in advance of the proposed development. Consequently, there remains high potential for the continued survival of buried archaeological remains at this large site.

15.4 Predicted Impacts of the Proposed Development

15.4.1 Do-Nothing Impact

If the proposed development were not undertaken, any additional unrecorded buried archaeological features within the subject site would be preserved beneath the existing ground surface. However, the site is zoned for development and it is likely that in the absence of this subject proposal, that a development of a similar nature would be progressed on the site that accords with national and regional policies to promote the provision of high quality new residential environments with good layout and design, with adequate public transport and cycle links and within walking distance of community facilities. The impact on the archaeological environment would likely be similar to this proposed development.

15.4.2 Construction Phase

The characterisation of potential impacts is based on the EPA *Guidelines on the Information to be contained in Environmental Impact Assessment Reports* (EPA, 2022) (refer to **Table 1.5** in Chapter 1 (Introduction)).

Buried archaeological sites have been identified at Archaeological Area 2, Archaeological Area 3, Archaeological Area 4, Archaeological Area 6 and Archaeological Area 7. Should development proceed, there are significant direct or indirect impacts on these sites during the construction phase of the proposed development. The greatest threat to these buried archaeological sites would occur during large-scale removal of topsoil during the initial construction phase groundworks and associated construction traffic. It is concluded that, in the absence of the mitigation measures described below, **significant impacts** on the known buried archaeological remains at the site would be **direct, negative** and **permanent**.

The proposed development will involve considerable ground disturbance works across the remainder of the subject site including excavations and other groundworks (e.g. provision of access roads and service trenches), movement of machines and storage of material in sensitive areas. A Construction Environmental Management Plan (CEMP) has been prepared in respect of the proposed development by DBFL Consulting Engineers (submitted under separate cover as part of the planning application), which outlines methodologies for proposed development works, including stripping of topsoil and excavation of subsoil layers. Should additional buried archaeological sites or features remain at the site, open area topsoil stripping has the greatest potential to expose these putative remains, which will be visible in the upper subsoil surface. The CEMP sets out the following measures to be implemented:

- Stripping of topsoil shall be carried out in a controlled and carefully managed way and coordinated with the proposed staging for the development.
- At any given time, the extent of topsoil strip (and consequent exposure of subsoil) shall be limited to the immediate vicinity of active work areas.
- Topsoil stockpiles shall be protected for the duration of the works and not located in areas where sediment laden runoff may enter existing surface water drains.
- Topsoil stockpiles shall also be located so as not to necessitate double handling.

Should development proceed, there are **significant potential direct** or **indirect negative impacts** on additional buried archaeological sites during the construction phase of the proposed development. The greatest threat to buried archaeological deposits occurs during large-scale removal of topsoil during the initial construction phase groundworks. It is concluded that, in the absence of the mitigation measures described below, **significant impacts** on the potential buried archaeological remains at the site would be **direct**, **negative** and **permanent**.

15.4.3 Operational Phase

No potential negative effects are identified at the operational phase. It is anticipated that issues of archaeological and cultural heritage interest will have been resolved prior to or during the construction phase.

15.5 Mitigation Measures

Mitigation measures shall be undertaken as directed by the DHLGH in compliance with national policy guidelines and statutory provisions for the protection of archaeology and cultural heritage.

15.5.1 Mitigation by Design

Advance archaeological assessments were commissioned at the site at design stage in order to identify adverse effects on archaeological and cultural heritage sites / features at an early stage and to inform the design process.

15.5.2 Construction Phase

15.5.2.1 Archaeological Area 2 (AA2)

No site specific construction phase mitigation measures are proposed for Archaeological Area 2 which has been fully archaeologically excavated under licence to the DHLGH.

15.5.2.2 Archaeological Area 3 (AA3)

No site specific construction phase mitigation measures are proposed for Archaeological Area 3 which has been fully archaeologically excavated under licence to the DHLGH.

15.5.2.3 Archaeological Area 4 (AA4)

No site specific construction phase mitigation measures are proposed for Archaeological Area 4 which has been fully archaeologically excavated under licence to the DHLGH.

15.5.2.4 Archaeological Area 6 (AA6)

No site specific construction phase mitigation measures are proposed for Archaeological Area 6 which has been fully archaeologically excavated under licence to the DHLGH.

15.5.2.5 Archaeological Area 7 (AA7)

No site specific construction phase mitigation measures are proposed for Archaeological Area 7 which has been fully archaeologically excavated under licence to the DHLGH.

15.5.2.6 General Mitigation

The following general mitigation measures are proposed:

- All ground disturbance works across the remainder of the development site will be monitored by a suitably qualified archaeologist. In the event that archaeological material is recorded during monitoring, further discussion/consultation with the DHLGH will be sought in order to ascertain the appropriate treatment (i.e. preservation by record/preservation *in situ*) of any additional archaeological remains.
- Should the DHLGH recommend preservation by record/full archaeological excavation, this work will be undertaken under the appropriate licence. The DHLGH may recommend preservation *in situ*, should avoidance of any newly discovered archaeological remains be possible.

15.5.3 Operational Phase

No operational phase mitigation is anticipated. Issues of archaeological and cultural heritage interest will have been resolved prior to or during the construction phase.

15.6 Residual Impacts

The residual effects are the final predicted or intended effects which occur after the proposed mitigation measures have been implemented. It is not anticipated that there will be **any potential negative residual impacts** with the appropriate mitigation measures in place during the construction and operational phases.

15.7 Indirect and /or Secondary Impacts

The indirect/secondary effects are the *impacts on the environment which are not a direct result of the project, often produced away from (the site) or as a result of a complex pathway*. It is not anticipated that there will be any **potential negative indirect impacts** with the appropriate mitigation measures in place during the construction and operational phases.

15.8 Monitoring

Construction groundworks will be monitored by a suitably qualified archaeologist as per the above-listed mitigation. Any future licensed archaeological works will require an application process including approval of proposed methodologies by the National Monuments Service of DHLGH in consultation with the NMI and notification of works.

15.9 Interactions

Should archaeological material be recorded in the course of monitoring, this may necessitate areas being left open to the elements for a period in order to facilitate consultation with DHLGH, processing of licences and/or full excavation/preservation-by-record of archaeological features. Consequently, in this scenario, there could be **slight, short-term and negative effects** on land and soils (Chapter 9 – Land, Soils, Geology & Hydrogeology). These would be confined in extent to the putative new archaeological area.

15.10 Cumulative Impacts

It is noted, following examination of the excavations bulletin and relevant planning files, that considerable archaeological activity has been recorded in the surrounding area arising from pre-development archaeological investigations.

Pre-development test excavations carried out for the current application extended across the full Masterplan area. Nine archaeological areas were identified:

- Archaeological Area 1; ITM 723504, 749918. Circular Enclosure (30m diameter; RMP DU012-088).
- Archaeological Area 2; ITM 723582, 750191. Pit with burnt mound material.
- Archaeological Area 3; ITM 723471, 750317. Levelled *fulacht fia*.
- Archaeological Area 4; ITM 723445, 750216. Pit with burnt mound material.
- Archaeological Area 5; ITM 723705, 750531. Levelled *fulacht fia*.
- Archaeological Area 6; ITM 723703, 750360. Possible enclosure and associated features.
- Archaeological Area 7; ITM 723652, 750325. Levelled *fulacht fia*.
- Archaeological Area 8; ITM 723916, 750557. Levelled *fulacht fia*.
- Archaeological Area 9; ITM 723695, 749978. Two circular huts, 1 Ringditch & 1 burnt spread.

Of these nine archaeological areas, five (AA2, AA3, AA4, AA6 & AA7) are located within the current application area (see **Figure 15.9**).

Proposed and permitted development within the study area, as listed in Chapter 22 Cumulative Impacts, have been considered as part of the assessment of potential cumulative impacts. These have been cross checked against the online database of summary results from licensed archaeological excavations (www.excavations.ie). Sites/features of archaeological significance recorded at the relevant proposed and permitted developments are outlined below.

Archaeological sites have been recorded at the approved Corballis East LRD (LRD0017). These are as follows:

- Corballis 6. Large earthwork enclosure of probable early medieval date (preserved-in-situ)
- Corballis 8 Fulacht fia (excavated in full under license number 18E0106)
- Corballis 9 Fulacht fia (excavated in full under license number 18E0107)

- Corballis 7 RMP site DU012-019, earthwork (preserved-in-situ)
- Corballis 10 Dispersed pits (excavated in full under license number 18E0108)
- Corballis 11 Fulacht fia (excavated in full under license number 18E0110)
- Corballis 12 Fulacht fia (excavated in full under license number 18E0111)
- Corballis 13 Dispersed pits/settlement activity (excavated in full under license number 18E0112)
- Corballis 14 Fulacht Fia (preserved-in-situ)

Archaeological sites have been recorded at Corballis East, Donabate under Excavation licence 19E0761. The assessment area was spread across the location of two separate Planning Application Areas; Permitted Development F22A/0527 & Proposed Development F24A/0169. The recorded archaeological sites are as follows:

- Archaeological Area 1 Rectangular enclosure and associated features
- Archaeological Area 2 Pit associated with burnt mound activity
- Archaeological Area 3 Pits and floor surface with associated post-holes
- Archaeological Area 4 Pit and slot trench
- Archaeological Area 5 Pit
- Archaeological Area 6 Ditch
- Archaeological Area 7 Pits
- Archaeological Area 8 Burnt Mound (DU012-087)

Further Archaeological sites were recorded and excavated in advance of the DDR:

- Corballis 1 Ring ditch excavated/preserved by record under excavation licence 17E0407
- Corballis 2 Burnt mound excavated/preserved by record under excavation licence 17E0408
- Corballis 3 Burnt Mound excavated/preserved by record under excavation licence 17E0409

One isolated pit was recorded in Test Excavation 19E0351 in advance of Permitted Development F17A/0373.

Should additional archaeological sites/features be recorded within the subject site at construction phase, there may be cumulative effects, owing to the previous discovery of archaeological sites within the subject site, the wider landholding and in the surrounding area. However, the proposed mitigation outlined in this Chapter and mitigation measures carried out at separate sites will ensure that cumulative effects will ***not be significant***.

15.11 Difficulties Encountered

No major difficulties were encountered in the course of the study.

15.12 References

- Baker, C. 2006a Archaeological assessment, Donabate Local Area Plan, Ballymastone, Corballis Lands, Donabate, Co. Dublin (Licence no. 06E0027). Unpublished report prepared by M Gowen Ltd on behalf of Fingal County Council.
- Bates, P 2001 *Donabate and Portrane: A History.* Dublin: Self Published.
- Coen, L. 2022. 'Ballalease North AA2, Donabate, Co. Dublin. Final Excavation Report. Licence No. 21E0667'. Unpublished report prepared by Archer Heritage Planning on behalf of Glenveagh Homes.

- Coen, L. 2022. 'Ballalease North AA3, Donabate, Co. Dublin. Final Excavation Report. Licence No. 21E0668'. Unpublished report prepared by Archer Heritage Planning on behalf of Glenveagh Homes.
- Coen, L. 2022. 'Ballalease North AA4, Donabate, Co. Dublin. Final Excavation Report. Licence No. 21E0669'. Unpublished report prepared by Archer Heritage Planning on behalf of Glenveagh Homes.
- Coen, L. 2022. 'Ballalease North AA6, Donabate, Co. Dublin. Final Excavation Report. Licence No. 21E0674'. Unpublished report prepared by Archer Heritage Planning on behalf of Glenveagh Homes.
- Coen, L. 2022. 'Ballalease North AA7, Donabate, Co. Dublin. Final Excavation Report. Licence No. 21E0675'. Unpublished report prepared by Archer Heritage Planning on behalf of Glenveagh Homes.
- Frazer, W. 2007a Archaeological assessment, Donabate Local Area Plan, Ballalease North, Ballymastone, Portraine, Ballisk Lands, Co. Dublin (Licence no. 07E00650). Unpublished report prepared by M Gowen Ltd on behalf of Fingal County Council.
- Joyce, P.W. 1910. *The origin and history of Irish names of places*. Dublin, H. Gill & Sons.
- Leigh, J. 2007 'Geophysical Survey, Rahillion Lands, Donabate. Licence 07R0257'. Unpublished report prepared by M Gowen Ltd on behalf of Fingal County Council.
- O'Connell, A. 2021 'Ballymastone, Donabate, Co. Dublin. Archaeological Test Excavation, Licence no. 21E0453'. Unpublished report prepared by Archer Heritage Planning Ltd. on behalf of Glenveagh Living Ltd.
- Stout, G & Stout, M 1992 'Patterns of the past: County Dublin 5000 BC-1000 AD', in F Aalan & K Whelan (eds) *Dublin from prehistory to present-studies in honour of J.H. Andrews,* 5-25. Dublin, Geography Publications

16 Microclimate – Daylight & Sunlight

16.1 Introduction

This chapter describes the impact assessment undertaken in relation to daylight and sunlight for the proposed development. The proposed development is described in Chapter 5 (Description of the Proposed Development). For a more detailed account of the daylight and sunlight analysis, refer to IN2 Engineering's report, Ballymastone Phase 2 - Daylight and Sunlight Analysis (2024), submitted under separate cover as part of the planning application.

This chapter has been prepared by William O'Donnell and Seulgi Lee of IN2.

William O'Donnell is a Chartered Engineer (CEng) and a member of Engineers Ireland and the Chartered Institute Building Services Engineers (CIBSE). William has 16 years' experience and is responsible for daylight and sunlight analysis for IN2 Engineering.

Seulgi Lee is an environmental engineer and a member of Engineers Ireland. With a master's degree in interior architecture and over 7 years of experience, she now specialises in daylight and sunlight analysis. In her role at IN2 Engineering, Seulgi is tasked with conducting thorough daylight and sunlight analyses.

16.2 Method

16.2.1 Relevant Standards & Guidelines

The following relevant standards and guidance documents have been consulted when compiling the information in this chapter:

- *Sustainable Urban Housing: Design Standards for New Apartments (2023 version) (the "2023 Apartment Guidelines"). These are guidelines issued under section 28 of the 2000 Planning and Development Act (as amended).*
- *The Building Research Establishment's (BRE) Site Layout Planning for Daylight and Sunlight: A guide to good practice (BRE Guide) 3rd edition/ 2022 edition, (the "BRE Guide").*
- *British Standard BS EN 17037:2018 – Daylight in Buildings (the "2018 British EN Standard").*
- *Irish Standard IS EN 17037:2018 (the "2018 Irish EN Standard").*
- Sustainable Residential and Compact Settlement Guideline for Planning Authorities 2024, section 5.3.7.

16.2.1.1 The 2023 Apartment Guidelines

The 2023 Apartment Guidelines state that:

> *"6.5 The provision of acceptable levels of natural light in new apartment developments is an important planning consideration as it contributes to the liveability and amenity enjoyed by apartment residents. In assessing development proposals, planning authorities must however weigh up the overall quality of the design and layout of the scheme and the measures proposed to maximise daylight provision with the location of the site and the need to ensure an appropriate scale of urban residential development."*

"6.6 Planning authorities should ensure appropriate expert advice and input where necessary, and have regard to quantitative performance approaches to daylight provision outlined in guides like A New European Standard for Daylighting in Buildings EN17037 or UK National Annex BS EN17037 and the associated BRE Guide 209 2022 Edition (June 2022), or any relevant future guidance specific to the Irish context, when undertaken by development proposers which offer the capability to satisfy minimum standards of daylight provision.."

"6.7 Where an applicant cannot fully meet all of the requirements of the daylight provisions above, this must be clearly identified and a rationale for any alternative, compensatory design solutions must be set out, which planning authorities should apply their discretion in accepting taking account of its assessment of specific. This may arise due to a design constraints associated with the site or location and the balancing of that assessment against the desirability of achieving wider planning objectives. Such objectives might include securing comprehensive urban regeneration and or an effective urban design and streetscape solution."

16.2.1.2 2022 BRE Guide

The 2022 BRE Guide (and associated EN Standard) introduces two new calculation methodologies, Spatial Daylight Autonomy (SDA) and Median Daylight Factor (MDF), either of which can be applied to demonstrate daylighting compliance. SDA is an accurate and sophisticated methodology utilising advanced computer simulation techniques which accounts for real climatic data for the particular site location, whilst also accounting for window orientation and ensuring daylight uniformity within a space. SDA is therefore a Climate Based Daylight Methodology (CBDM) accounting for recorded annual illumination (light) levels at a particular site. Conversely, MDF is a simplified calculation technique, which utilises a theoretical sky model that does not account for façade orientation or variances of climatic conditions. Therefore, in order to ensure the highest accuracy of daylighting analysis, the SDA/ CBDM methodology has been utilised. The BRE Guide describes its purpose as follows:

"This guide gives advice on site layout planning to achieve good sunlighting and daylighting, both within buildings and in the open spaces between them. It is intended to be used in conjunction with the interior daylight recommendations for new buildings in the British Standard Daylight in buildings, BS EN 17037. It contains guidance on site layout to provide good natural lighting within a new development; safeguarding of daylight and sunlight within existing buildings nearby; and the protection of daylighting of adjoining land for future development."

The BRE Guide also notes that:

"1.6 The guide is intended for building designers and their clients, consultants, and planning officials. The advice given here is not mandatory and the guide should not be seen as an instrument of planning policy; its aim is to help rather than constrain the designer. Although it gives numerical guidelines, these should be interpreted flexibly since natural lighting is only one of many factors in site layout design (see Section 5). In special circumstances the developer or planning authority may wish to use different target values. For example, in a historic city centre, or in an area with modern high-rise buildings, a higher degree of obstruction may be unavoidable if new developments are to match the height and proportions of existing buildings. Alternatively, where natural light is of special importance, less obstruction and hence more sunlight and daylight may be deemed necessary. The calculation methods in Appendices A and

B are entirely flexible in this respect. Appendix F gives advice on how to develop a consistent set of target values for skylight under such circumstances."

"1.7 The guidance here is intended for use in the United Kingdom and in the Republic of Ireland, though recommendations in the Irish Standard IS EN 17037 may vary from those in BS EN 17037. Many of the principles outlined will apply to other temperate climates. More specific guidance for other locations and climate types is given in BRE Report Environmental site layout planning."

Therefore, if the situation arises where the targets identified within the Guide are not achieved, these should be highlighted and either justified in the context of the proposed development or where relevant and applicable, compensatory measures will be proposed. However, the Guide does not impose absolute standards that must be achieved under all circumstances. Within the context of daylight and sunlight analysis, one room required compensatory measures, which were identified and provided.

That the recommendations of the BRE Guide are not suitable for rigid application to all developments in all contexts is of particular importance in the context of national and local policies for the consolidation and densification of urban areas or when assessing applications for highly constrained sites.

16.2.1.3 The 2018 British & Irish Versions of the EN Standards

The EN 17037:2018 standard—which is the basis of both the 2018 British EN Standard and the 2018 Irish EN Standard – considers a metric based on median daylight, in order to ensure both extent and a degree of uniformity of daylight.

"A space is considered to provide adequate daylight if a target illuminance level is achieved across a fraction of the reference plane within a space for at least half of the daylight hours."

The 2018 British Standard includes a *"National Annex"*, containing *"Further recommendations and data for daylight provision in the UK and Channel Islands"*. As there is no equivalent in the 2018 Irish Standard, regard has been had to the 2018 British Standard National Annex, which states:

"NA.1 Introduction: The UK committee supports the recommendations for daylight in buildings given in BS EN 17037:2018; however, it is the opinion of the UK committee that the recommendations for daylight provision in a space (see Clause A.2) may not be achievable for some buildings, particularly dwellings. The UK committee believes this could be the case for dwellings with basement rooms or those with significant external obstructions (for example, dwellings situated in a dense urban area or with tall trees outside), or for existing buildings being refurbished or converted into dwellings. This National Annex therefore provides the UK committee's guidance on minimum daylight provision in all UK dwellings."

NA.2 addresses minimum daylight provision in UK dwellings. It contains a table, in which target illuminance, ET (lx), levels are recommended for different room types. These are: bedroom at 100 lx; living room at 150 lx; and kitchen at 200 lx, which may be compared to EN 17037's recommendation of 300 lux (irrespective of room application). The commentary is as follows:

"Even if a predominantly daylit appearance is not achievable for a room in a UK dwelling, the UK committee recommends that the target illuminance values given in Table NA.1 are exceeded

over at least 50% of the points on a reference plane 0.85 m above the floor, for at least half of the daylight hours."

16.2.2 Overview of Daylight & Sunlight Analysis

The assessment methodology for the various aspects of the daylight and sunlight analysis is summarised in **Table 16.1**, below.

A three-dimensional digital model of the proposed development and existing buildings in the area was constructed by IN2 based on drawings and three-dimensional models supplied by the Design Team, and with reference to satellite and aerial photography. Trees and boundary planting were not included in this model.

Site shading diagrams were prepared to illustrate that the proposed housing development is not predicted to cause any overshadowing on its environs. These were compiled on an hourly basis for the Equinox and Summer / Winter Solstices. From these, the number hours of sunlight availability to the surrounding area on the equinox (21st March) can be determined.

Table 16.1 Overview of daylight and sunlight analysis

	Element	Methodology	Guidelines
Daylight	Proposed development	Spatial Daylight Autonomy	BRE Guide (2022)
	Existing neighbouring buildings	Vertical sky component	BRE Guide (2022)
Sunlight	Proposed development amenity spaces	Sunlight hours	BRE Guide (2022)
	Proposed development	Exposure to Sunlight	BRE Guide (2022)
	Existing neighbouring buildings	Annual probable sunlight hours	BRE Guide (2022)
	Existing Neighbouring amenity spaces	Sunlight hours	BRE Guide (2022)

16.2.3 Glossary

- **Working plane:** The working plane is the notional plane where visual tasks, and on which predicted light levels would normally be undertaken. For a residential assessment, the working plane is defined by BRE Guide at 850 mm above floor level.
- **Climate Based Daylight Modelling - Spatial Daylight Autonomy:** Climate based daylight modelling, also referred to as CBDM, involves the use of a detailed daylight calculation methods where hourly (or sub-hourly) internal daylight illuminance values for a typical year are computed using hourly (or sub-hourly) sky and sun conditions derived from climate data appropriate to the site. CBDM assessments are therefore orientation dependent: i.e. a south facing window would be expected to receive more daylight than north facing etc.
  This calculation method determines daylight provision directly from simulated illuminance values on the working plane with results determined in lux (a measure of light). CBDM is utilised for compliance with EN 17037 method 2 Spatial Daylight Autonomy (SDA).
- **Sunlight Exposure:** Sunlight exposure is assessed on a window of at least one habitable room per dwelling (preferably a living room) for the number of hours of direct sunlight exposure on the 21st March.
- **Probable sunlight hours:** Annual probable sunlight hours and winter probable sunlight hours, also referred to as APSH and WPSH, are used for the assessment of impact on neighbouring buildings by a proposed development. APSH and WPSH are a measure of probable direct sunlight to a window or surface and therefore are only relevant to windows within 90 degrees of south for buildings in

the northern hemisphere. Therefore, any window with a northerly aspect (i.e. orientated between North and East and North and West) is therefore not assessed within the methodology.

- **Vertical sky component (VSC):** Vertical Sky Component, also referred to as VSC, is used for the assessment of impact on neighbouring buildings by a proposed development with respect to daylight availability. VSC is a measure of the percentage of illuminance that a point can receive from the CIE Overcast Sky as a percentage of that received at unobstructed horizontal locations. In simple terms, how much of the sky that can be seen for a given point. VSC assessments do not included reflected light. VSC is calculated for compliance with BRE Guide.
- **Amenity sunlight:** Amenity sunlight is a measure of direct daylight received on an area over the duration of 21st March based on the sun's solar position for a geographical location. As the 21st March is the solar equinox, the sun is at its mid-point of travel position through the year, therefore representing an average condition throughout the year of how well sunlit an amenity space will be. It may be noted that in the Northern Hemisphere, the sun rises due east and sets due west. Amenity sunlight is calculated for compliance with BRE Guide.

16.2.4 Daylight

16.2.4.1 Proposed Development

Spatial Daylight Autonomy (SDA) is a methodology that utilises historic climate data (Dublin IWEC file 039690 was used for this assessment) for predicting internal illumination due to natural light on an hour-by-hour basis, accounting for not only diffuse skylight but also the direct sunlight element. SDA results will differ for façade orientation, with those elevations with southerly aspect (correctly) being deemed to receive more daylight.

Figure 16.1 Example for internal daylight analysis results

Figure 16.1 provides an example of an internal daylight compliance comparison, with green contours illustrating where daylight was predicted to achieve 100 Lux for bedrooms and 200 Lux for kitchen, living and dining areas (KLDs) – the illuminance recommendations for dwellings included in the BRE Guide, based on BS.EN.17037:2018. Compliance for a room is defined in the BRE Guide as at least 50% of the room achieving this target.

The daylight analysis accounts for all aspects that can potentially restrict natural light availability including any adjacent / opposing buildings, balcony structures, window frames / sills, etc. Daylight factors for each space is then calculated for a working plane height of 0.85 m on a 0.25 x 0.25 m grid basis, and a wall offset of 0.3 m (as defined in the BRE Guide) to enable a detailed calculation within each room, the median of which then determined the space compliance. The rooms have been assessed to the minimum areas as prescribed in the 2023 Apartment Guidelines where applicable.

16.2.4.2 Existing Neighbouring Buildings

The impact on daylight to existing buildings is assessed utilising a quantitative assessment method as detailed in the BRE Guide, which states that:

"If any part of a new building or extension, measured in a vertical section perpendicular to a main window wall of an existing building, from the centre of the lowest window, subtends an angle of more than 25° to the horizontal, then the diffuse daylighting of the existing building may be adversely affected. This will be the case if either:

- *the VSC (Vertical Sky Component) measured at the centre of an existing main window is less than 27%, and less than 0.8 times its former value.*
- *the area of the working plane in a room which can receive direct skylight is reduced to less than 0.80 times its former value."*

An analysis was undertaken by calculating daylight and sunlight availability for window locations on the neighbouring buildings which have the potential to be impacted with the proposed development.
The analysis assesses main windows including living rooms and conservatories. Windows to intermittently utilised spaces such as corridors or WC's were excluded from the analysis.

16.2.5 Sunlight

16.2.5.1 Proposed Development Amenity Spaces

The BRE Guide provides guidance with regards to sunlighting and shading to external amenity spaces within proposed developments as follows:

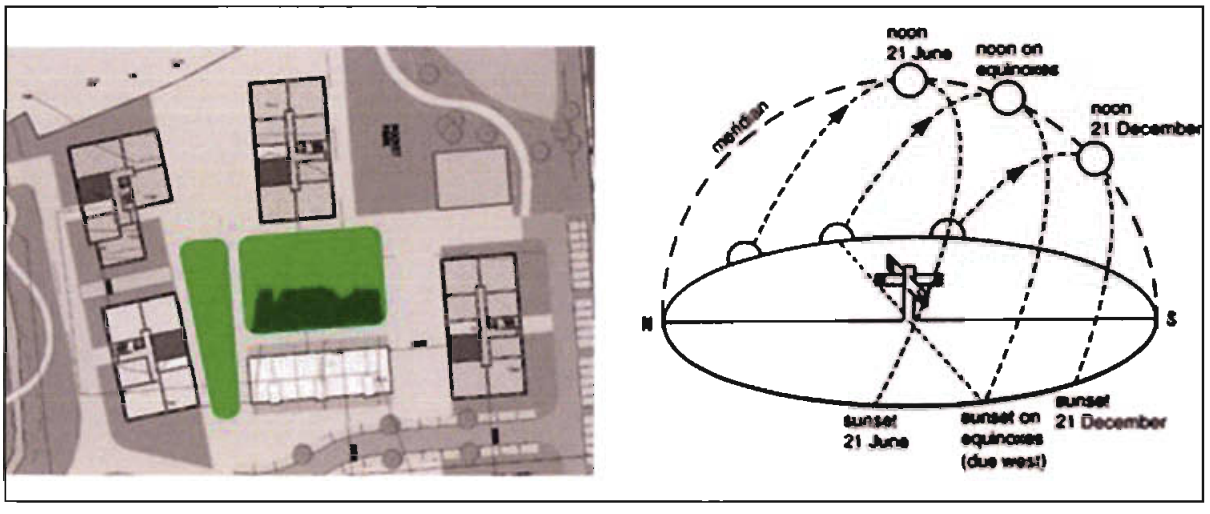
> *"That for it to appear adequately sunlit throughout the year, at least half of a garden or amenity area should receive at least two hours of sunlight on 21st March".*

The methodology assesses sunlight performance at the Equinox, as this is the mid solar position throughout the year (as illustrated in **Figure 16.2**), with compliance indicative of spaces that will receive adequate sunlight and appealing useful spaces, including that the following attributes will be achieved:

- Provide attractive sunlit views (all year);
- Make outdoor activities like sitting out and children's play more pleasant (mainly warmer months);
- Encourage plant growth (mainly spring and summer); and
- Dry out the ground, reducing moss and slime (mainly in colder months).

Analysis was undertaken utilising drawing information as received from McCauley Daye O'Connell Architects. Lighting simulations were then undertaken by IN2 Engineering, utilising Tas software.

Figure 16.2 Example analysis of amenity spaces



16.2.5.2 Exposure to Sunlight

The BRE Guide outlines that:

"3.1.15 In general a dwelling, or non-domestic building that has a particular requirement for sunlight, will appear reasonably sunlit provided:

- *at least one main window wall faces within 90° of due south and*
- *a habitable room, preferably a main living room, can receive a total of at least 1.5 hours of sunlight on 21 March. This is assessed at the inside centre of the window(s); sunlight received by different windows can be added provided they occur at different times and sunlight hours are not double counted."*

As with Sunlight Amenity, the BRE Guide methodology therefore utilises the Equinox as being representative of the solar mid-position throughout the year, with the calculation of potential received sunlight during that day enabling a quantitative assessment in addition to idealised configuration of ensuring southerly aspect – preferably for living areas as described below:

> *"3.1.16 Where groups of dwellings are planned, site layout design should aim to maximise the number of dwellings with a main living room that meets the above recommendations."*

The guide further notes that:

> *"3.1.10 For interiors, access to sunlight can be quantified. BS EN 17037[1] recommends that a space should receive a minimum of 1.5 hours of direct sunlight on a selected date between 1 February and 21 March with cloudless conditions. It is suggested that 21 March (equinox) be used. The medium level of recommendation is three hours and the high level of recommendation four hours. For dwellings, at least one habitable room, preferably a main living room, should meet at least the minimum criterion."*

As described in the 2023 Apartment Guidelines, *"An apartment, for the purpose of these guidelines, may be defined as "a self-contained residential unit in a multi-unit building with grouped or common access"".* Hence, only the unit types that include shared access, such as Apartments and Duplexes are required to be assessed for internal daylight and sunlight. An analysis was undertaken for aforementioned units of the proposed development to assess the exposure to sunlight that each unit

can receive, assessing initially KLD's and where these were found to be non-compliant, a check was undertaken to determine whether a Bedroom could achieve adequate sunlight in accordance with the methodology.

The analysis determined that 100% of the tested units exceeded the BRE minimum recommendations.

16.2.5.3 Existing Neighbouring Buildings, Amenity Spaces (Gardens) & Neighbouring Solar Panels

The impact on sunlight availability to existing buildings can be assessed utilising a quantitative assessment method as detailed in the BRE Guide, which states that:

"If a living room of an existing dwelling has a main window facing within 90° of due south, and any part of a new development subtends an angle of more than 25° to the horizontal measured from the centre of the window in a vertical section perpendicular to the window, then the sunlighting of the existing dwelling may be adversely affected. This will be the case if the centre of the window:

- *receives less than 25% of annual probable sunlight hours and less than 0.80 times its former annual value; or less than 5% of annual probable sunlight hours between 21 September and 21 March and less than 0.80 times its former value during that period;*
- *and also has a reduction in sunlight received over the whole year greater than 4% of annual probable sunlight hours."*

In relation to the assessment of impacts on sunlight availability to existing neighbouring amenity spaces, the BRE Guide states the following:

> *"It is recommended that for it to appear adequately sunlit throughout the year, at least half of a garden or amenity area should receive at least two hours of sunlight on 21 March. If as a result of new development an existing garden or amenity area does not meet the above, and the area that can receive two hours of sun on 21 March is less than 0.80 times its former value, then the loss of sunlight is likely to be noticeable. If a detailed calculation cannot be carried out, it is recommended that the centre of the area should receive at least two hours of sunlight on 21 March."*

For the impact on neighbouring solar panels, the BRE Guide states the following:

> *"As an initial check, the annual probable sunlight hours received at the centre of each panel should be calculated with and without the proposed development in place."*

The BRE Guide also outlines If the annual probable sunlight hours are found to be reduced to less than 0.9 times the existing conditions, a further assessment is warranted as stated below:

> *"Where the annual probable sunlight hours received by a solar panel with the new development in place is less than 0.9 times the value before, a more detailed calculation of the loss of solar radiation should be undertaken".*

16.3 Baseline Environment

A description of the receiving environment is provided in **Section 1.3.1** in Chapter 1 (Introduction) of this EIAR. Refer also to **Figures 1.1** and **1.2** in Chapter 1.

The statistics of Met Éireann, the Irish Meteorological Service (1981-2010), indicate that the sunniest months in Ireland are May and June. During December, Dublin receives a mean daily duration of 1.7 hours of sunlight out of a potential 7.4 hours sunlight each day (i.e. only 22% of potential sunlight

hours). This can be compared with a mean daily duration of 6.4 hours of sunlight out of a potential 16.7 hours each day received by Dublin during June (i.e., 38% of potential sunlight hours).

Therefore, impacts caused by overshadowing are generally most noticeable during the summer months and least noticeable during the winter months. Due to the low angle of the sun in midwinter, the shadow environment in all urban and suburban areas is generally dense throughout winter.

In relation to the daylight and sunlight aspects, neighbouring buildings, their gardens, and neighbouring solar panels assessed are included as follows:

- 42 THE LINK, BALLISK
- 66 THE LINK, BALLISK
- 67 THE LINK, BALLISK
- BZ08 (Ballymastone Phase 1)
- BT36 (Ballymastone Phase 1)
- BZ09 (Ballymastone Phase 1)
- BZ22 (Ballymastone Phase 1)
- BA02 (Ballymastone Phase 1)

Figure 16.3 site plan with adjacent dwellings identified.

16.4 Predicted Impacts of the Proposed Development

16.4.1 Do-Nothing Impact

In a do-nothing scenario, daylight and sunlight availability in the receiving environment would remain unchanged, as per the baseline conditions.

16.4.2 Construction Phase

The daylight and sunlight impact of the construction phase of the proposed development are likely to be, initially, lesser than those of the completed proposed development. As the proposed development nears completion, the impacts of the emerging development in this regard are likely to be similar in all material respects to those of the completed development (as assessed below). It is noted that temporary structures and machinery (e.g. hoarding, scaffolding, cranes, etc.) have the potential to result in changes to sunlight access in buildings, although any additional impacts arising in this regard will be brief to short-term and not significant.

16.4.3 Operational Phase

16.4.3.1 Daylight

Proposed Development

As mentioned in section 16.2.5.2, only the unit types that include shared access, such as Apartments and Duplexes, are required to be assessed for internal daylight and sunlight. The internal daylight analysis has been undertaken for aforementioned units, assessing both KLD and bedroom spaces for SDA. The analysis determined that 99.8% of rooms assessed were in excess of the BRE Guidelines for Spatial Daylight Autonomy (SDA). Detailed daylight assessments are invoked under the 2023 Apartment Guidelines; therefore, all duplex apartment and apartments units have been assessed.

The 2023 Apartment Guidelines advise that "*Where an applicant cannot fully meet all of the requirements of the daylight provisions above* [per the BRE Guide], *this must be clearly identified and a rationale for any alternative, compensatory design solutions must be set out, which planning authorities should apply their discretion in accepting taking account of its assessment*". The daylight results indicate a 99.8% compliance rate across the entire scheme, one room in block BZ03 was found to be marginally non-compliant with the BRE Guide recommendation. Compensatory measures were provided for this room. Therefore, it can be concluded that a 99.8% compliance rate for daylighting performance has been demonstrated for the proposed development.

Most rooms comply with the BRE Guide recommendations, with only one room being marginally non-compliant. As a result, the impact on the proposed development during its operational phase is determined to be **permanently negative**. However, the **impact is not significant** since there is only one room that does not comply with the BRE Guide, and even then, the non-compliance is only marginal.

Neighbouring area

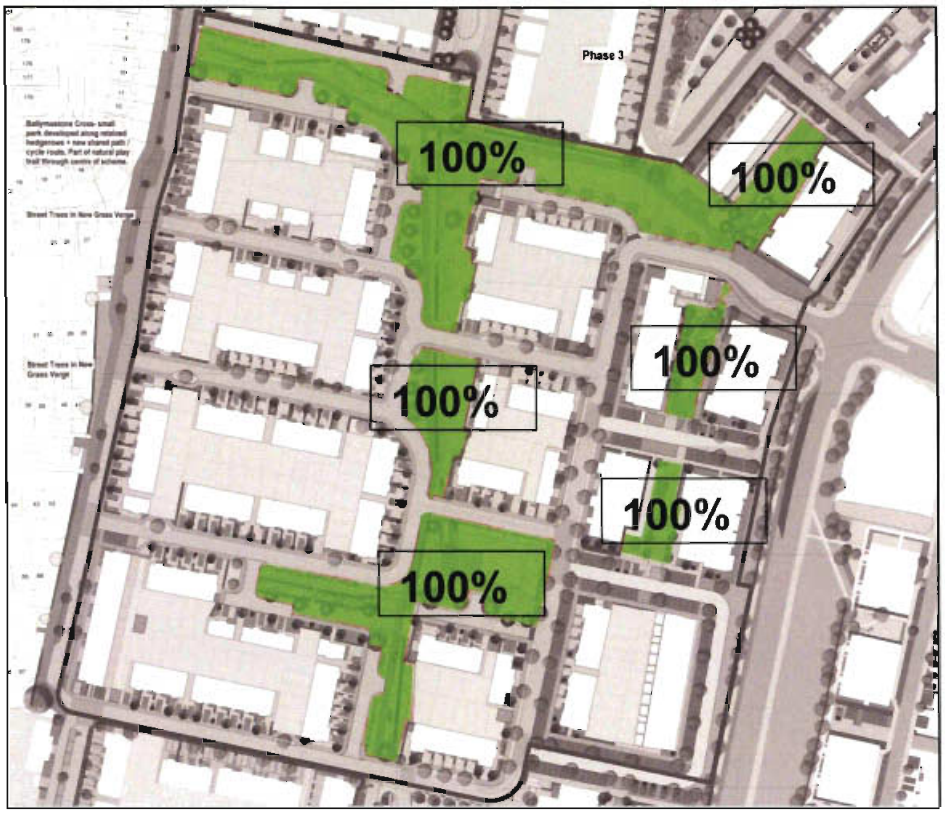
It has been determined that there is no impact on the current daylight received with regards to existing neighbouring buildings during the operational phase. This has been determined to be **neutral**, with no effects within the normal bounds of variation.

16.4.3.2 Sunlight

Proposed Development Amenity Spaces

Annual sunlight availability was analysed for the public and communal open spaces of the proposed development, calculating the extent of each area that can receive at least 2 hours of potential sunlight on 21st March. The proposed public open space was found to receive excellent overall sunlight availability. The results demonstrate each of the amenity open spaces easily achieve compliance with the BRE guidance, with 100% of amenity open space across the site receiving two hours or more of sunlight on 21st March (**Figure 16.4**). As with the determined impact on daylight for operational phase, effect due to sunlight exposure to the proposed development has been demonstrated to be **neutral**, with **no impact** to neighbouring dwellings, with excellent sunlight availability being received to amenity areas as illustrated below.

Figure 16.4 Amenity area sunlight availability



Proposed Development Exposure to Sunlight

As mentioned in section 16.2.5.2, an analysis was undertaken for Apartments and Duplexes of the proposed development to assess the exposure to sunlight that each unit can receive based on the BRE guidelines. The assessment determined that 100% of the assessed units would exceed the minimum guideline recommendations. **No significant negative impacts** are predicted during the operational phase. The overall impact in this regard is predicted to be **permanent**, **neutral** and **imperceptible**.

Neighbouring area

In conjunction that there has determined to be **no impact** to current sunlight received with regards to existing neighbouring gardens and neighbouring solar panels during its operational phase has been determined to be **neutral**, with **no effects** within normal bounds of variation.

16.5 Mitigation Measures

According to section 16.4.3.1, it was found that one room (in block BZ03) does not comply with the BRE Guide recommendation for daylight, and the compensatory measures have been outlined in the table below.

Table 16.2 Compensatory Measures for Daylight

Compensatory Measure	Detail
1. Daylight Adjacency	In cases where a room falls below the target, adjacent rooms within the unit were found to be comfortably compliant.

Compensatory Measure	Detail
	Therefore, each unit has well-daylit rooms, even if the assessed room is slightly below the target.
2. Sunlight	The KLD with below target Spatial Daylight Autonomy receive over 1.5 hours of sunlight (Minimum exposure). Therefore, whilst the room was found to be non-compliant for daylight, its unit achieves the above the requisite sunlight availability for compliance.
3. Dual Aspect	The unit has the added benefit of dual aspect ensuring multiple options for aspect and sunlight / daylight availability.
4. Aspect	In addition to the private amenity space, this unit has direct aspect out onto landscaped communal or public open space providing an excellent view from the KLD space.
5. Unit Size	The Sustainable Urban Housing – Design Standards for New Apartments 2023 require that the majority of units in a development exceed the minimum floor area standards by 10%. This unit exceeds the minimum floor areas by >10%.
6. Communal Open Space	Compensatory measures have been provided outside of the individual units with a large portion of the site being landscaped for communal open space. The proposed development includes the provision of a large quantum of communal open space. The standards in the Apartment Guidelines would require 1,432m^2 of communal open space and the proposal includes 46% more than that at 3,142m^2.

No significant negative impacts have been identified in relation to sunlight. Therefore, beyond that which is already proposed under the scope of the design for the proposed development, no further mitigation measures are proposed in this regard.

16.6 Residual Impacts

With the provision of compensatory measures, the non-compliant room for daylight in block BZ03 would be determined to be **neutral**, **imperceptible,** and **permanent**.

The extent of compliance for sunlight metrics was achieved through undertaking an iterative design process, through to reconfiguring façades and apartment layouts. Best practice sunlight availability has been ensured for the proposed development, with minimal impact on the existing neighbouring environment, requiring no mitigation measures. There would be therefore **no residual impacts** remaining as environmental changes are **permanent, neutral and imperceptible**.

16.7 Indirect and /or Secondary Impacts

In assessing the indirect and/or secondary impacts related to daylight and sunlight, it has been determined that there are no discernible effects. Extensive evaluation and analysis have revealed no notable influence on surrounding environments or elements. Therefore, it can be concluded that the proposed project does not induce any indirect or secondary impacts concerning daylight and sunlight.

16.8 Interactions

The key interaction between this chapter and other specialist chapters of the EIAR is with Chapter 7 (Population & Human Health), since impacts in relation to daylight and sunlight availability, e.g. overshadowing of neighbouring buildings, can negatively or positively affect residential amenity in the

receiving environment. Following the BRE Guide's recommendations for essential daylight and sunlight, internal daylighting is required to meet more than 50% of the targeted illuminance in lux throughout the year. As detailed above, 99.8% of rooms assessed were in excess of the BRE Guide recommendation for daylight and 100% of the assessed units exceeded the minimum guideline recommendation. In terms of sunlight, each unit needs to receive over 1.5 hours of sunlight on March 21st. The results demonstrate each of the amenity open spaces easily achieve compliance with the BRE guidance, with 100% of amenity open space across the site receiving two hours or more of sunlight on 21st March and the shared residential amenity spaces for the Apartment and Duplexes were all fully compliant. **No impacts** to neighbouring residential areas are predicted, and the proposed development itself will provide well-lit homes and amenity areas.

16.9 Cumulative Impacts

In the preparation of this Chapter, regard has been had to the list of developments set out in Chapter 22 (Cumulative Impacts). No cumulative impacts are predicted for daylight and sunlight, as the results of daylight and sunlight assessments have determined that there is no significant impact caused by the proposed development.

16.10 Difficulties Encountered

It was neither possible nor practical for the Design Team to gain unfettered access to every parcel of private property within the study area surrounding the application site in order to carry out measured building survey. Therefore, while IN2 have confidence that the three-dimensional model used in the assessment of the impact of the proposal on sunlight access achieves a high degree of accuracy, it should be noted that some level of assumption was necessary in completing the model.

16.11 References

- Sustainable Urban Housing: Design Standards for New Apartments (2023 version) (the "2023 Apartment Guidelines"). These are guidelines issued under section 28 of the 2000 Planning and Development Act (as amended).
- The Building Research Establishment's (BRE) Site Layout Planning for Daylight and Sunlight: A guide to good practice (BRE 209) 3rd edition/ 2022 edition, (the "BRE Guide").
- British Standard BS EN 17037:2018 – Daylight in Buildings (the "2018 British EN Standard").
- Irish Standard IS EN 17037:2018 (the "2018 Irish EN Standard").
- Sustainable Residential and Compact Settlement Guideline for Planning Authorities 2024, section 5.3.7.

17 Microclimate – Wind

17.1 Introduction

B-Fluid Limited has carried out the Wind Microclimate Analysis for the Ballymastone Phase 2 LRD Development. The objective of the analysis is to identify the possible wind patterns around the area proposed, under mean and peaks wind conditions typically occurring in Donabate, Co. Dublin.

The proposed development will consist of the construction of a residential development, which represents Phase 2 of a wider development of the Ballymastone Lands (as identified in the Donabate Local Area Plan 2016 (as extended)) and is a continuation of Phase 1 of the Masterplan lands (permitted under LRD0008/S3). The proposed development ranges in height from 2 to 6 storeys to accommodate 364 residential dwellings (including a mix of apartments, duplexes and houses), and public open space. The site will accommodate car parking spaces, bicycle parking spaces, storage, services, new pedestrian/cycle links, road improvements and plant areas. Landscaping will include communal amenity areas, and a significant public open space provision.

Figure 17.1 The image identifies the proposed Phase 2 of the development within the boundary of the red line.

This Wind Microclimate Study identifies the possible wind patterns that form when wind moves through a built environment and evaluates how the proposed development is going to modify those patterns. Wind Microclimate is defined as the wind flow experienced by people and the subsequent influence it has on their activities. Wind can accelerate or re-circulate through buildings in such a way to compromise the comfort / safety of pedestrians, and the capacity of using the public realm / external places in accordance with their designated intended use.

This wind microclimate study considers the possible wind patterns formed under both mean and peak wind conditions typically occurring on the site area, accounting for a scenario where the proposed development is inserted in the existing environment *(potential impact)*, and for a scenario where the proposed development is analysed together with the existing environment and any permitted development (not constructed yet) that can be influenced by the wind patterns generated by the proposed one *(cumulative impact)*.

The potential receptors include those areas, in the surrounding of the development, which can be exposed to potential risks generated by the elevated wind speed or building massing wind effects. In particular:

- Amenity areas (pedestrian level), areas likely to be utilised for leisure purposes and as such should be comfortable surroundings.
- Pedestrian routes and seating areas – to determine if locations are comfortable for leisure activities.
- Entrance to the buildings – to determine if there is potential for pressure related issues for entrances or lobbies.
- Landscaped areas – where there are sheltered areas.
- Impact to existing or adjoining developments – where the proposed buildings will cause discomfort conditions through proximity related issues.

The acceptance criteria which define the acceptable wind velocities in relation to the perception of comfort level experienced while carrying out a specific pedestrian activity is known as the 'Lawson Criteria for Pedestrian Comfort and Distress'. A wind microclimate study analyses the wind flow in an urban context (considering the wind conditions typically occurring on the site during a typical year) to develop the so called 'Lawson Comfort and Distress Map'. The map identifies where a specific pedestrian activity can be carried out comfortably during most of the time.

The assessment can be performed by physical testing in wind tunnels or by performing 'virtual wind tunnel testing' through numerical simulation using Computational Fluid Dynamics (CFD), as done for this project. The scope of the numerical study is to simulate the wind around the development to predict under which wind speeds pedestrians will be exposed and what level of comfort pedestrian will experience when carrying out a specific activity (i.e. walking, strolling, sitting).

The following sections details the methodology, acceptance criteria, CFD wind simulations and the impact of the proposed development on the local wind microclimate against best practice guidelines for pedestrian comfort and safety.

17.1.1 Qualifications

This Chapter is completed by Dr. Cristina Paduano, Dr. Patrick Okolo and Dr. Guido Lupieri.

Dr. Cristina Paduano is a Chartered Engineer (CEng) and member of Engineers Ireland who specialises in computational fluid dynamics applications for urban environment and the construction industry with over 18 years of experience. She holds a PhD in Mechanical Engineering from Trinity College Dublin, with M.Eng and B.Eng in Aerospace Engineering.

Dr. Patrick Okolo is a Chartered Engineer (CEng) and member of Engineers Ireland who specialises in computational fluid dynamics applications for the urban environment and in wind tunnel measurements for the aerospace industry. He holds a PhD in Aeroacoustics from Trinity College Dublin, a M.Sc. and B.Sc. in Mechanical Engineering.

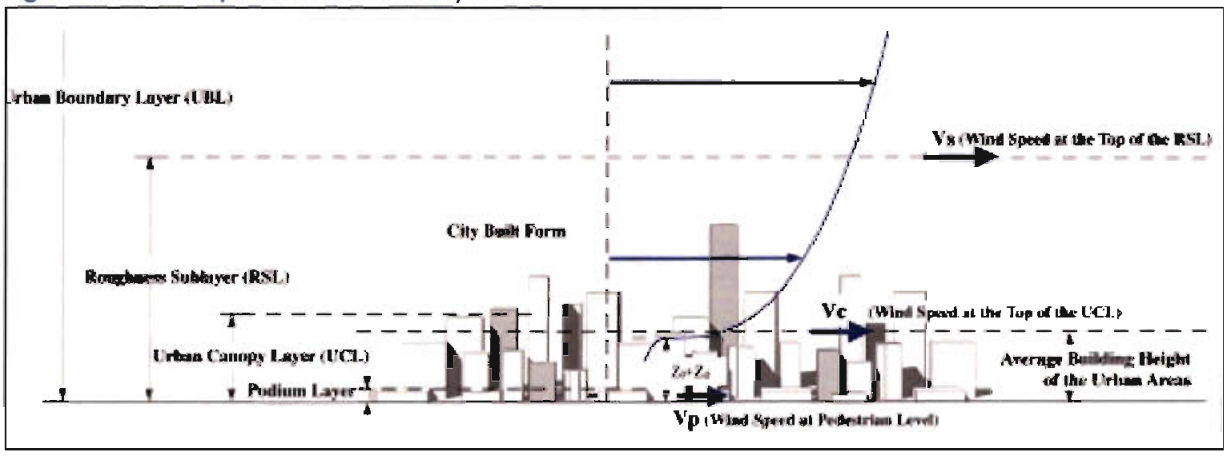
Dr. Guido Lupieri is a CFD Modelling Specialist. He holds a PhD in Applied Geophysics and Hydraulics and MSc in Physics from the University of Trieste, Italy.

17.1.2 Urban Wind Effects

Buildings and topography affect the speed and direction of wind flows. Wind speed increases with increasing height above the ground, assuming a parabolic profile.

Flow near the ground level encounters obstacles represented by terrain roughness / buildings that reduce the wind speed and introduce random vertical and horizontal velocity components. This turbulence causes vertical mixing between the air moving horizontally at one level, and the air at those levels immediately above and below it. For this reason, the wind velocity profile is given by a fluctuating velocity along a mean velocity value. **Figure 17.2** shows the wind velocity profile, as described above.

Figure 17.2 Atmospheric Wind Velocity Profile



17.1.3 Legislative & Policy Context

According to the 'Urban Development and Building Heights, Guidelines for Planning Authorities' (Government of Ireland, December 2018), a specific wind impact assessment of the microclimatic effects should be performed for *"buildings taller than prevailing building heights in urban areas"*. In the same guidance, standard buildings height is considered as 6 – 8 storeys. Above this height, buildings are considered 'taller' by Dublin standards.

The recommended approach to wind microclimate studies is outlined in the 'Wind Microclimate Guidelines for Developments in the City of London' (City of London, 2019), and in the guidelines and recommendations contained in BRE Digest (DG) 520, 'Wind Microclimate around Buildings' (BRE, 2011). The Lawson Criteria of Comfort and Distress are used to benchmark the pedestrian wind microclimate.

It also indicates how to use CFD to assess wind microclimate conditions and how to generate high quality outputs to provide a good understanding of the fundamental flow features in an urban context. For the proposed development, the wind microclimate assessment has been carried out using CFD and the modelling details are summarised later in this chapter.

Table 17.1 Recommended approach to wind microclimate studies based on building height, as per *Wind Microclimate Guidelines for Development in the City of London* (2019)

Building height	Recommended approach
Similar or lower than the average height of surrounding buildings (up to 25 m)	Wind studies are not required, unless sensitive pedestrian activities are intended (e.g. around hospitals, transport hubs, etc.) or the project is located on an exposed location.
Up to double the average height of surrounding buildings (25 m to 50 m)	Computational (CFD) simulations or wind tunnel testing
Up to four times the average height of surrounding buildings (50 m to 100 m)	Computational (CFD) simulations and wind tunnel testing
High rise (above 100 m)	Early-stage massing optimisation: wind tunnel testing or computational (CFD) simulations. Detailed design: Wind tunnel testing and computational (CFD) simulations to demonstrate the performance of the final building design.

17.2 Method

The method for the study of wind microclimate combines the use of Computational Fluid Dynamics (CFD) to predict wind velocities and wind flow patterns, with the use of wind data from suitable meteorological station and the recommended comfort and safety standards (Lawson Criteria -Ref. Buildings Aerodynamics - 2001). The effect of the geometry, height and massing of the proposed development and existing surroundings including topography, ground roughness and landscaping of the site, on local wind speed and direction is considered as well as the pedestrian activity to be expected (sitting, standing, strolling and fast walking). The results of the assessment are presented in the form of contours of the Lawson criteria at pedestrian level.

The assessment has comprised the following scenarios:

- **Baseline Existing Scenario**: This consists of the existing wind microclimate at the site, two scenarios have been analysed consisting of *Existing Baseline and Existing Baseline with included Phase 1 of the proposed development.*
- **Proposed Development in the Existing Scenario**: This consists of the assessment of the wind microclimate of the site with the proposed development, surrounded by existing buildings.
- **Cumulative Scenario**: This consist of the assessment of the wind microclimate of the site with the proposed development, surrounded by existing and permitted buildings.

In accordance with the guideline cited in section 17.1.3, the wind microclimate study should consider the effect of the proposed development together with buildings (existing and/or permitted) that are within 400m from the estimated centre of the site. Other taller buildings outside of this zone that could have an influence on wind conditions within the project site should be included for wind directions where they are upwind of the project site.

Figure 17.3 Extents of Relevant Area for the Wind Microclimate Analysis

In particular, the following has been undertaken:

- Topography of the site with buildings (proposed and adjacent existing/permitted developments massing, depending on the scenario assessed – baseline, proposed or cumulative) has been modelled using CFD OpenFOAM Software.
- Suitable wind conditions have been determined based on historic wind data. Criteria and selected wind scenarios included means and peaks wind conditions that need to be assessed in relation to the Lawson Criteria.
- CFD has been used to simulate the local wind environment for the required scenarios (baseline, proposed and cumulative).
- The impact of the proposed development massing on the local wind environment has been determined (showing the wind flows obtained at pedestrian level).
- Potential receptors (pedestrian areas) have been assessed through review of external amenity/public areas (generating the Lawson Comfort and Distress Map).
- Potential mitigation strategies for any building related discomfort conditions (where necessary) have been explored and their effect introduced in the CFD model produced.

17.2.1 Assessment Criteria for Pedestrian Comfort and Distress

The Lawson Comfort and Distress Criteria have been developed for wind microclimate studies as a means of assessing the long-term suitability of urban areas for walking or sitting, accounting for both microclimatic wind effects (i.e., site location and prevailing winds) and microclimatic air movement associated with wind forces influenced by the localised built environment forms and landscaping effects.

The Lawson scale assesses pedestrian wind comfort in absolute terms and defines the reaction of an average person to the wind. For the distress (safety) criterion, only gust winds are considered. These are usually rare events but deserve special attention in city planning and building design due to their potential impact on pedestrian safety. Gusts cause most cases of annoyance and distress and are assessed in addition to average wind speeds. Gust speeds should be divided by 1.85 to determine 'Gust Equivalent Mean' (GEM) speeds, which are compared to the same criteria as for the mean hourly wind speeds. This avoids the need for different criteria for mean and gust wind speeds.

The criteria in **Table 17.2** are widely accepted by local authorities as well as the international building design and city planning community:

Table 17.2 Lawson Pedestrian Comfort and Distress Criteria – Onset of Discomfort / Distress

Criterion	Onset of discomfort / distress	
Comfort Relates to the activity of the individual	Onset of discomfort	Depends on the activity in which the individual is engaged and is defined in terms of a mean hourly wind speed (or GEM) which is exceeded for 5% of the time.
Distress Relates to the physical wellbeing of the individual	Onset of distress	*Frail person or cyclist:* Equivalent to an hourly mean speed of 15 m/s and a gust speed of 28 m/s (62 mph) to be exceeded less often than once a year (0.022% of the times). This is intended to identify wind conditions that less able individuals or cyclists may find physically difficult. Conditions in excess of this limit may be acceptable for optional routes and routes that less physically able individuals are unlikely to use.
		General public: A mean speed of 20 m/s and a gust speed of 37 m/s (83 mph) to be exceeded less often than once a year. Beyond this gust speed, aerodynamic forces approach body weight and it rapidly becomes impossible for anyone to remain standing. Where wind speeds exceed these values, pedestrian access should be discouraged (Ref. CFD simulation for pedestrian wind comfort and wind safety in urban areas - 2012).

Table 17.3 Lawson Pedestrian Comfort/Distress Criteria Details

Pedestrian Comfort Category (Lawson Scale)	Mean and Gem wind speed not to be exceeded more than 5% of the time	Description
Long-Term Sitting	4m/s	Acceptable for frequent outdoor sitting use, i.e., restaurant /café
Standing	6m/s	Acceptable for occasional outdoor sitting use, i.e., public outdoor spaces
Walking/Strolling	8m/s	Acceptable for entrances/bus stops /covered walkaways
Business Walking	10m/s	Acceptable for external pavements, walkways
Unacceptable/Distress	>10m/s	Start of not comfortable/distress level for pedestrian access

Table 17.4 Lawson Pedestrian Comfort/Distress Criteria Details

Pedestrian Safety Category (Lawson Scale)	Mean and Gem wind speed not to be exceeded more than 0.0022% of the time	Description
Unsafe for public	>20m/s	Distress/safety concern for pedestrian
Unsafe for cyclists or frail person	>15m/s	Distress/safety concern for cyclist/frail person

These criteria for wind forces represent average wind tolerances. They are subjective and variable depending on thermal conditions, age, health, clothing, etc. which can all affect a person's perception of a local microclimate. Moreover, pedestrian activity alters between winter and summer months. The criteria assume that people will be suitably dressed for the time of year and individual activity. It is reasonable to assume, for instance, that areas designated for outdoor seating will not be used on the windiest days of the year. Weather data measured are used to calculate how often a given wind speed will occur each year over a specified area.

Pedestrian comfort and distress criteria are assessed at 1.5 m above ground level as required by the guideline cited in section 17.1.3. If the predicted wind conditions exceed the threshold, then conditions are unacceptable for the type of pedestrian activity and mitigation measures should be implemented into the design.

17.2.2 Significance Criteria

The significance of on-site wind impacts is defined by comparing the above-listed wind comfort/safety levels with the intended pedestrian activity at each location.

Table 17.5 On-Site Receptors Significance Criteria (*Wind Microclimate Guidelines for Developments in the City of London*, 2019)

Significance	Trigger	Mitigation required?
Major Adverse	Conditions are "unsafe"	Yes
Moderate Adverse	Conditions are "unsuitable" (in terms of comfort) for the intended pedestrian use.	Yes
Negligible	Conditions are "suitable" for the intended pedestrian use.	No
Moderate Beneficial	Conditions are calmer than required for the intended pedestrian use (by at least one comfort category).	No

The significance of off-site wind impacts is defined by comparing the wind comfort/safety levels with the intended pedestrian activity at each location, prior to and after the completion of the proposed development.

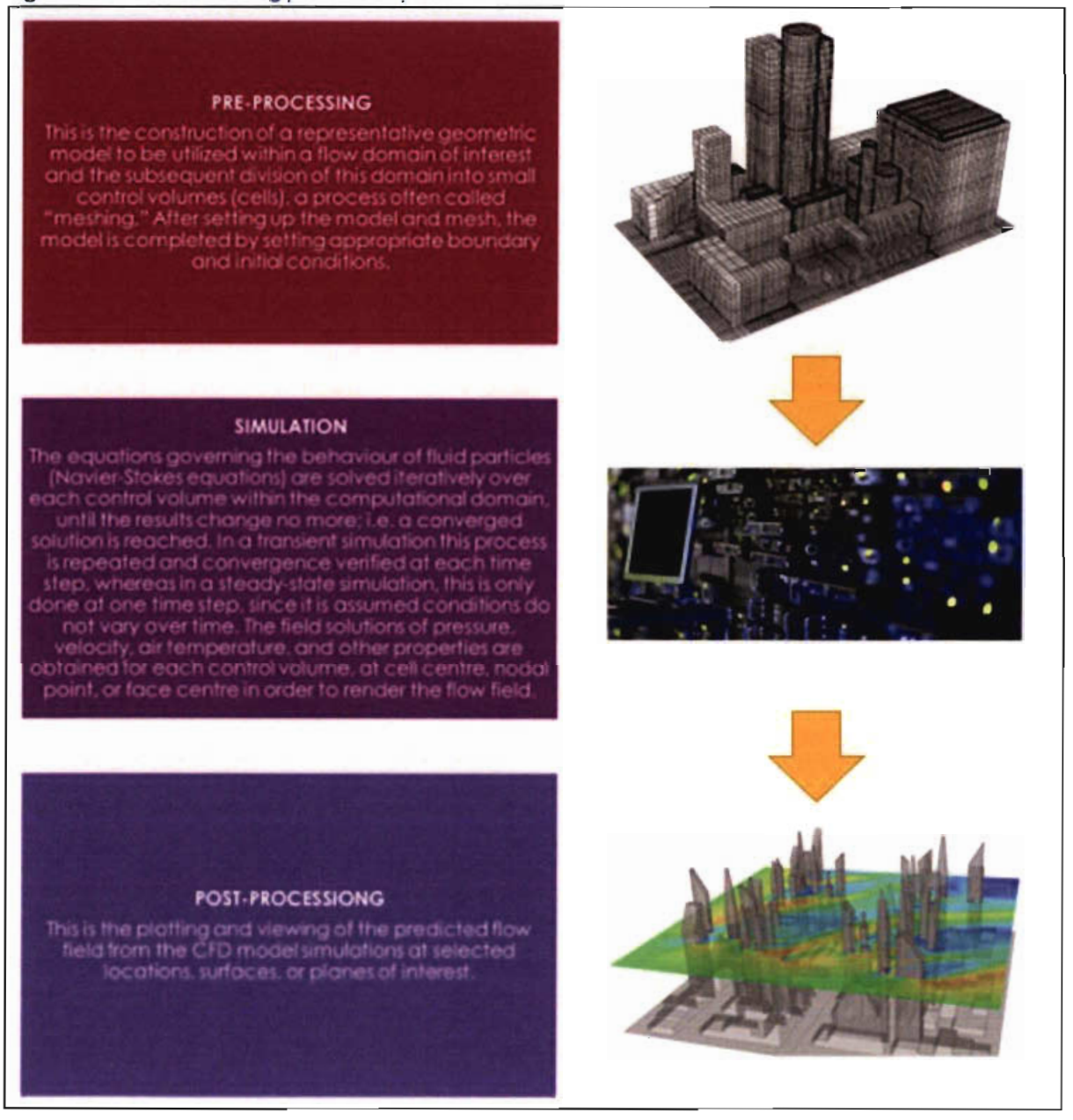
Table 17.6 Off-Site Receptors Significance Criteria Extracted (*Wind Microclimate Guidelines for Developments in the City of London*, 2019)

Significance	Trigger	Mitigation required?
Major Adverse	Conditions that were "safe" in the baseline scenario became "unsafe" as a result of the proposed development. *OR* Conditions that were "suitable" in terms of comfort in the baseline scenario became "unsuitable" because of the proposed development. *OR* Conditions that were "unsafe" in the baseline scenario became worse because of the proposed development.	Yes
Moderate Adverse	Conditions that were "suitable" in terms of comfort in the baseline scenario became windier (by at least one comfort category) as a result of the proposed development but remain "suitable" for the intended pedestrian activity.	No
Negligible	Conditions remain the same as in the baseline scenario.	No
Major Beneficial	Conditions that were "unsafe" in the baseline scenario became "safe" because of the proposed development.	No
Moderate Beneficial Potential Receptors	Conditions that were "unsuitable" in terms of comfort in the baseline scenario became "suitable" because of the proposed development. *OR* Conditions that were "unsafe" in the baseline scenario became better as a result of the proposed development (but not so as to make them "safe").	No

17.2.3 *CFD Modelling Method*

The wind microclimate study is conducted through Computational Fluid Dynamics (CFD). This is a numerical technique to simulate fluid flow, heat and mass transfer, chemical reaction and combustion, multiphase flow, and other phenomena related to fluid flows. Wind flow is described by Navier-Stokes equations which are solved within the CFD analysis using a finite volume algorithm based on the volumetric mesh/grid in which the geometry is divided. CFD modelling includes three main stages: pre-processing, simulation, and post-processing as described in **Figure 17.4.**

Figure 17.4 CFD Modelling procedure phases-schematic.



17.2.4 Modelled Geometry

In accordance with the 'Wind Microclimate Guidelines for Developments in the City of London' (City of London, 2019) and with the 'BRE Digest (DG) 520, 'Wind Microclimate around Buildings' (BRE, 2011),

when a wind study is carried out using CFD modelling, the modelled area must include a detailed three-dimensional representation of the proposed development and the numerical calculation should take place using a model mesh a maximum cell sizes near critical locations (e.g. entrances, corners, etc.) in the order of 0.3m or smaller. Sufficient mesh cells should be also used between buildings with a minimum of 10 cells across a street canyon. However, the cell size of buildings away from the target can be larger to allow for wind modelling efficiency. (Ref. Computational Fluid Dynamics for Urban Physics -2015).

To represent reality, the modelled area for the wind modelling study comprises a wider urban area, this to include the recommended dimensions (400m radius from the site centre).

Table 17.7 Computational modelling details

CFD Model Details	Modelled CFD Environment Dimensions		
	Width	Length	Height
CFD Mesh Domain	1600m approx.	1600m approx	160m approx

17.2.5 Boundary Conditions

A rectangular computational domain was used for the analysis. The wind directions were altered without changing the computational mesh. For each simulation scenario, an initial wind velocity was set according to the statistical weather data collected in order to consider the worst-case scenario. Building surfaces within the model are specified as 'no slip' boundary conditions. This condition ensures that flow moving parallel to a surface is brought to rest at the point where it meets the surface. Air flow inlet boundaries possess the 'inlet' wind profile velocity patch boundary condition with its appropriate inflow turbulence intensity and dissipation rates. Air exits the domain at the 'pressure outlet' boundary condition. (Ref. Best Practice Guidelines for the CFD Simulation of Flows -2007).

Due to aerodynamic drag, there is a wind gradient in the wind flow just a few hundred meters above the Earth's surface – "the surface layer of the planetary boundary layer".

Wind speed increases with increasing height above the ground, starting from zero, due to the no-slip condition. In particular, the wind velocity profile used for the analysis is parabolic. Flow near the surface encounters obstacles that reduce the wind speed and introduce random vertical and horizontal velocity components. This turbulence causes vertical mixing between the air moving horizontally at one level, and the air at those levels immediately above and below it. For this reason, the velocity profile is given by a fluctuating velocity along a mean velocity value which are both numerically simulated by mean of inlet velocity profile and turbulence intensity values assigned to the model. The equation used for the wind velocity profile within the model is as follows:

$$v_2 = v_1 \cdot \frac{ln\frac{h_2}{z_0}}{ln\frac{h_1}{z_0}}$$

Where:

- v_1 = wind speed measured at the reference height h_1

- h_1 = reference height to measure v_1
- h_2 = height of the wind speed v_2 calculated for the wind profile
- z_0 = 0.4 [m] roughness length selected

17.2.6 Computational Mesh

The level of accuracy of the CFD results are determined by the level of refinement of the computational mesh. Details of parameters used to calculate the computational mesh are presented in **Table 17.8**, below.

The grid follows the principles of the 'finite volume method', which implies that the solution of the model equations is calculated at discrete points (nodes) on a three-dimensional grid, which includes all the flow volume of interest. The mathematical solution for the flow is calculated at the centre of each of these cells and then an interpolation function is used by the software to provide the results in the entire domain.

Table 17.8 Computational mesh details and boundary conditions

Parameters To Calculate Computational Mesh	
Air Density ρ	$1.2 kg/m^3$
Ambient Temperature (T)	$288K$ (*approx.* $15C°$) isothermal analysis
Gravity Acceleration (g)	$9.8 m/s^2$
dx	0.3 m at the building 1m in the surroundings 2m elsewhere
Mesh cells size	0.1 m (ratio 1:1)
Total mesh size	Approx. cells number = 10 millions

In **Figure 17.5** is sketched the CFD model of the existing buildings ('Baseline scenario"), **Figure 17.6** includes Phase 2 ("Proposed scenario") while **Figure 17.7** reproduces the "Cumulative scenario".

Figure 17.5 CFD model of existing buildings and Phase 1 Ballymastone development- 'Baseline' Scenario.

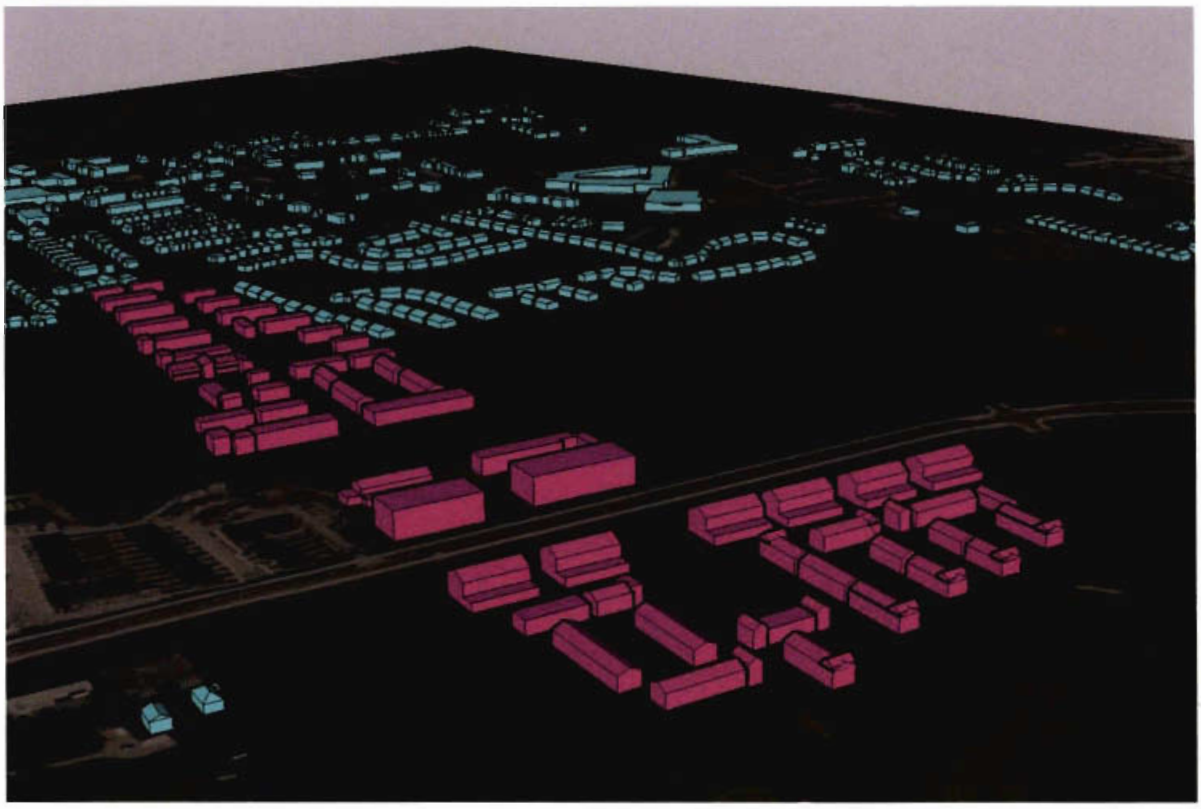


Figure 17.6 CFD model of existing buildings, Phase 1 and Phase2 Ballymastone development – "Proposed scenario"

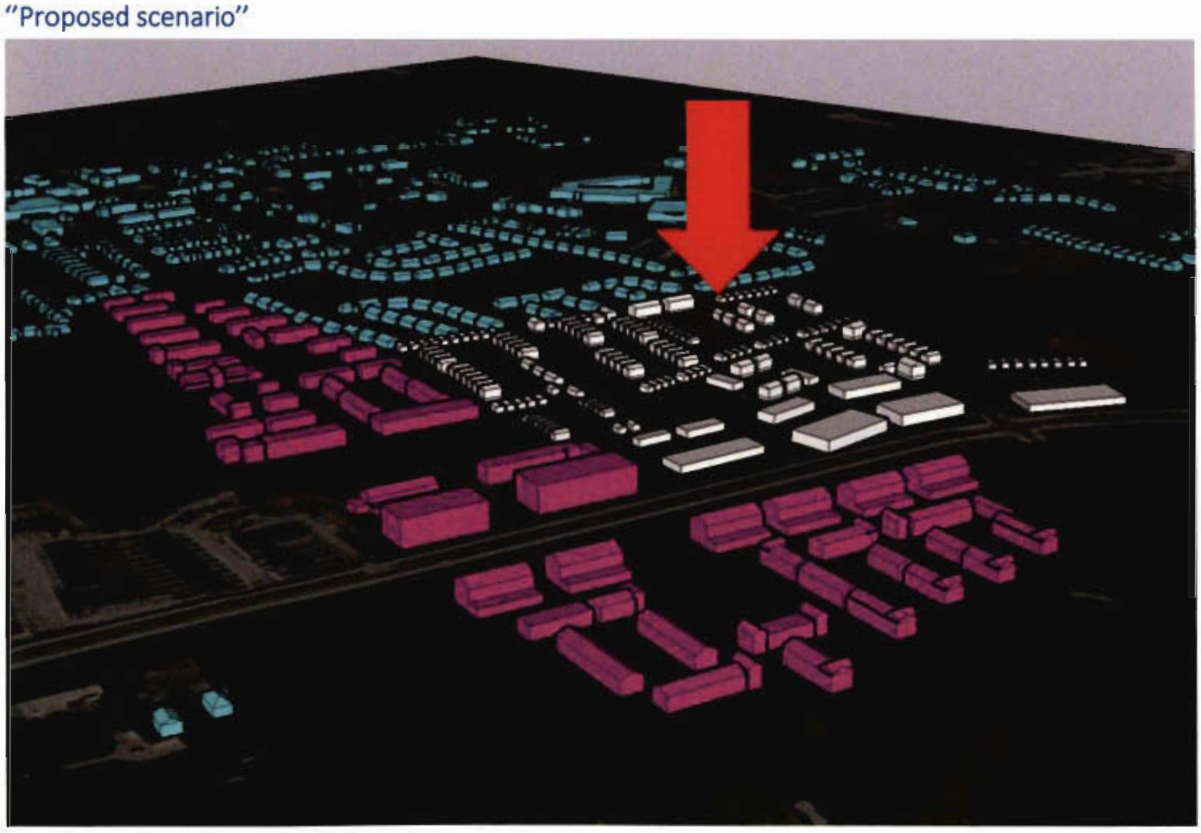
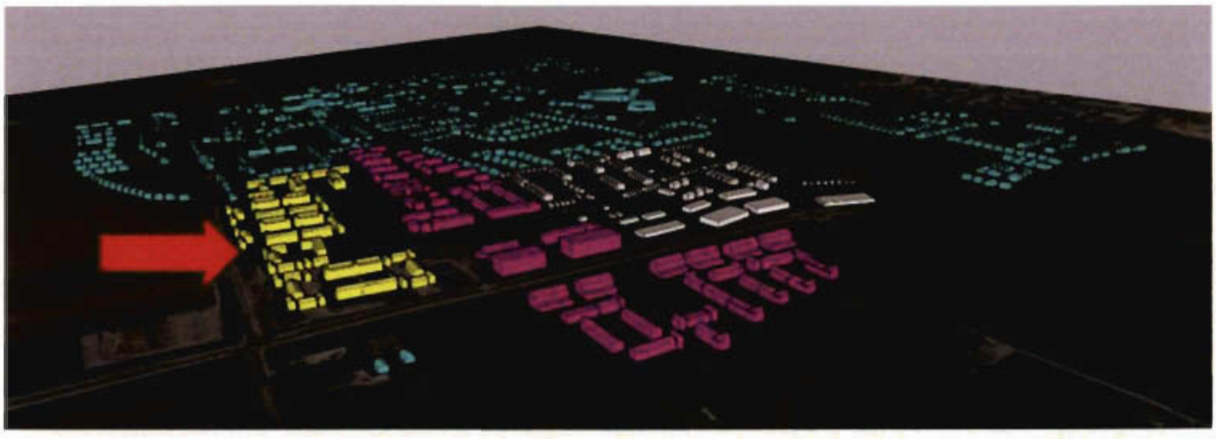


Figure 17.7 CFD model of existing buildings, Phase 1 and Phase2 Ballymastone development, including all permitted buildings – "Cumulative scenario"



17.3 Baseline Environment

The baseline environment consists of the area to be developed as shown in **Figure 17.8** and its surroundings. The wind microclimate of the baseline environment is defined by the wind patterns that develop on the existing site under the local wind conditions shown in **Section 17.4.1**.

The existing context is analysed, and Lawson criteria is applied considering that pedestrian activities (walking, strolling) are taking place on the existing area.

Figure 17.8 Existing environment including Phase 1 and Phase 2.

A statistical analysis of 30 years historical wind data has been carried out to characterise the existing wind climate in terms of wind speeds, frequency, and directions.

The existing wind conditions are obtained using the annual average of meteorology data collected at Dublin Airport Weather Station. **Figure 17.9** shows on the map the position of the subject site and the position of Dublin Airport.

Figure 17.9 Site Location and weather station location at Dublin airport

Regarding the transferability of the available wind data from the Dublin Airport Weather Wind station to the site location, the following considerations have been made:

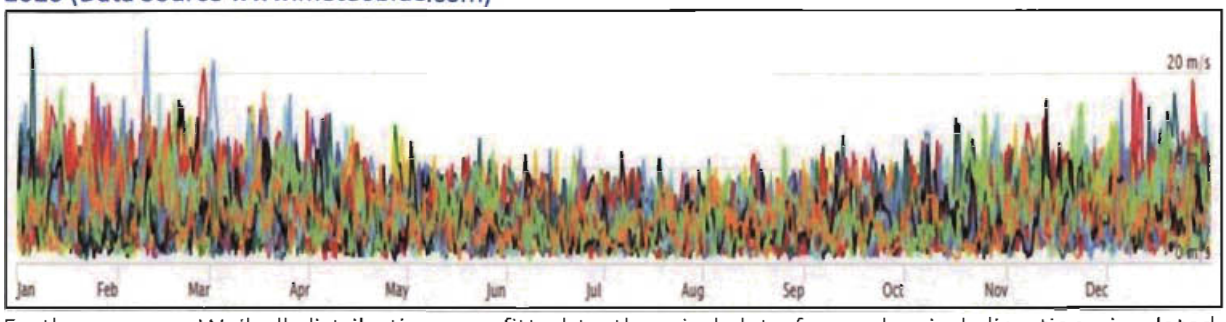
- **Terrain**: The meteorological station is located on the flat open terrain of the airport, whereas the proposed development site is surrounded by low level houses (1 – 2 storeys).
- **Mean wind speeds**: Due to the different terrain, the ground-near wind speeds (at pedestrian level) will be lower at the proposed site compared to the meteorological station at the airport.
- **Wind directions**: The landscape around the development site can principally be characterised as flat terrain.

Based on the above considerations, it can be concluded that the data from the meteorological station at Dublin Airport are applicable for the assessment of the wind climate at the development site.

Two different data sets are analysed as follows:

- The meteorological data associated with the maximum daily wind speeds recorded over a 30-years period between 1990 and 2020; and
- The mean hourly wind speeds recorded over a 10-years period between 1990 and 2020. The data were recorded at 10m above ground.

Figure 17.10 Local Wind Conditions – Wind Speed (Mean Values per Months)- historic data 1990-2020 (Data Source www.meteoblue.com)



Furthermore, a Weibull distribution was fitted to the wind data for each wind direction simulated through the adoption of an appropriate dispersion parameter, c, and a shape parameter, k. In house-based 'Python script' applies the factors to the simulation input wind conditions directly. The local data from Dublin Airport was transposed to the development site using the ESDU (Engineering Sciences Data Unit) methodology.

17.3.1 Local Wind Conditions

The predominant wind direction in the baseline environment identifies from which direction the wind is blowing on the site for most of the time during a typical year. In accordance with Lawson Criteria, if the proposed site is exposed to a wind from a specific direction for more than 5% of the times, then the microclimate analysis should consider the impact of this wind (accounting for its direction and most frequent speed) on the local microclimate.

A statistical analysis was carried out based on two historical wind data sources:

- Meteoblue (over 40 years historical data – since 1979) – Dublin Airport; and
- Openweather (over 40 years historical data – since 1979) – Dublin Airport and proposed development site location.

To understand and correctly validate the weather conditions at the site, a comparison was carried out between the historical data provided by both sources (Meteoblue and Openweather) at the weather station (Dublin Airport).

Data analysis and data visualization were obtained using an in-house program which is coded based on Python language. The speed and frequency of wind for each direction were considered and seasonal changes were analysed in order to indicate the prevailing wind directions (as shown in **Figures 17.11 – 17.12**).

Furthermore, statistical analysis of the number of hours and magnitudes of wind for 36 angles (10° increments) is performed to produce the Lawson plots. Each of the 36 wind directions were interpolated to calculate the probability that a velocity threshold will be exceeded.

Figure 17.11 presents the wind speed diagram for Dublin, showing how often (i.e. how many days per month) the wind blows with a specific speed. **Figure 17.12** shows the wind rose for Dublin and details how often (i.e. how many hours per year) the wind blows from a specific direction. These data indicate that the predominant wind directions for the site are West-South-West, West, and South-West.

Figure 17.11 Annual wind speed diagram – Dublin (Source: meteoblue.com)

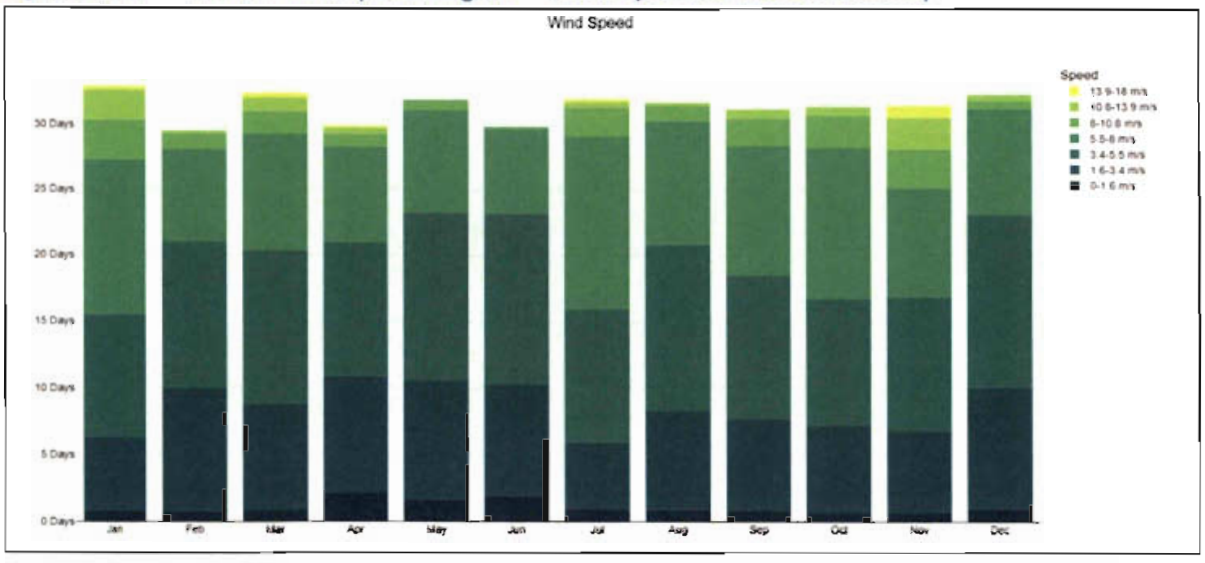


Figure 17.12 Wind rose of Dublin: speed, frequency and duration (Source: meteoblue.com)

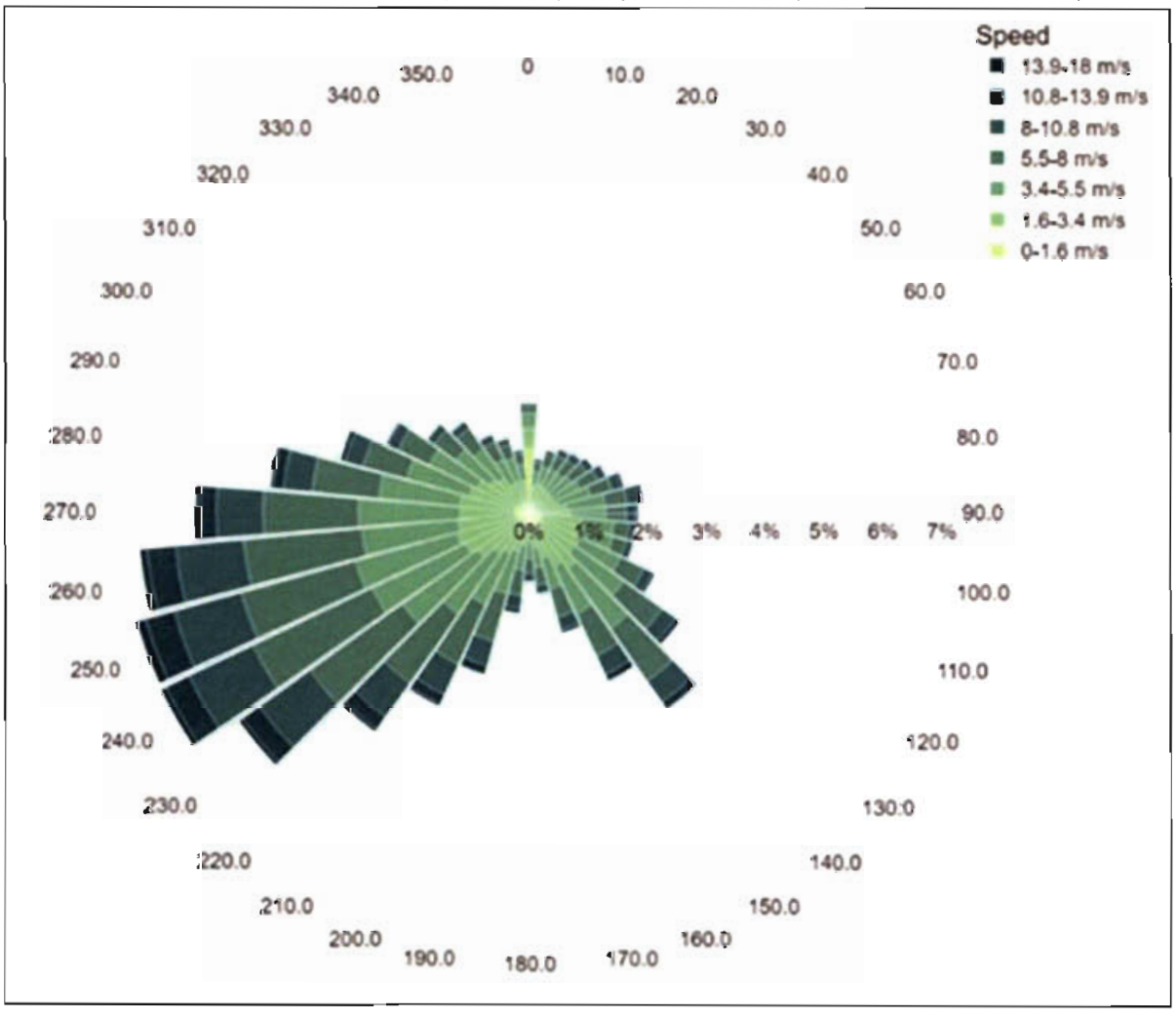


Figure 17.13 Wind speeds and directions by season, Ireland (Source: meteoblue.com)

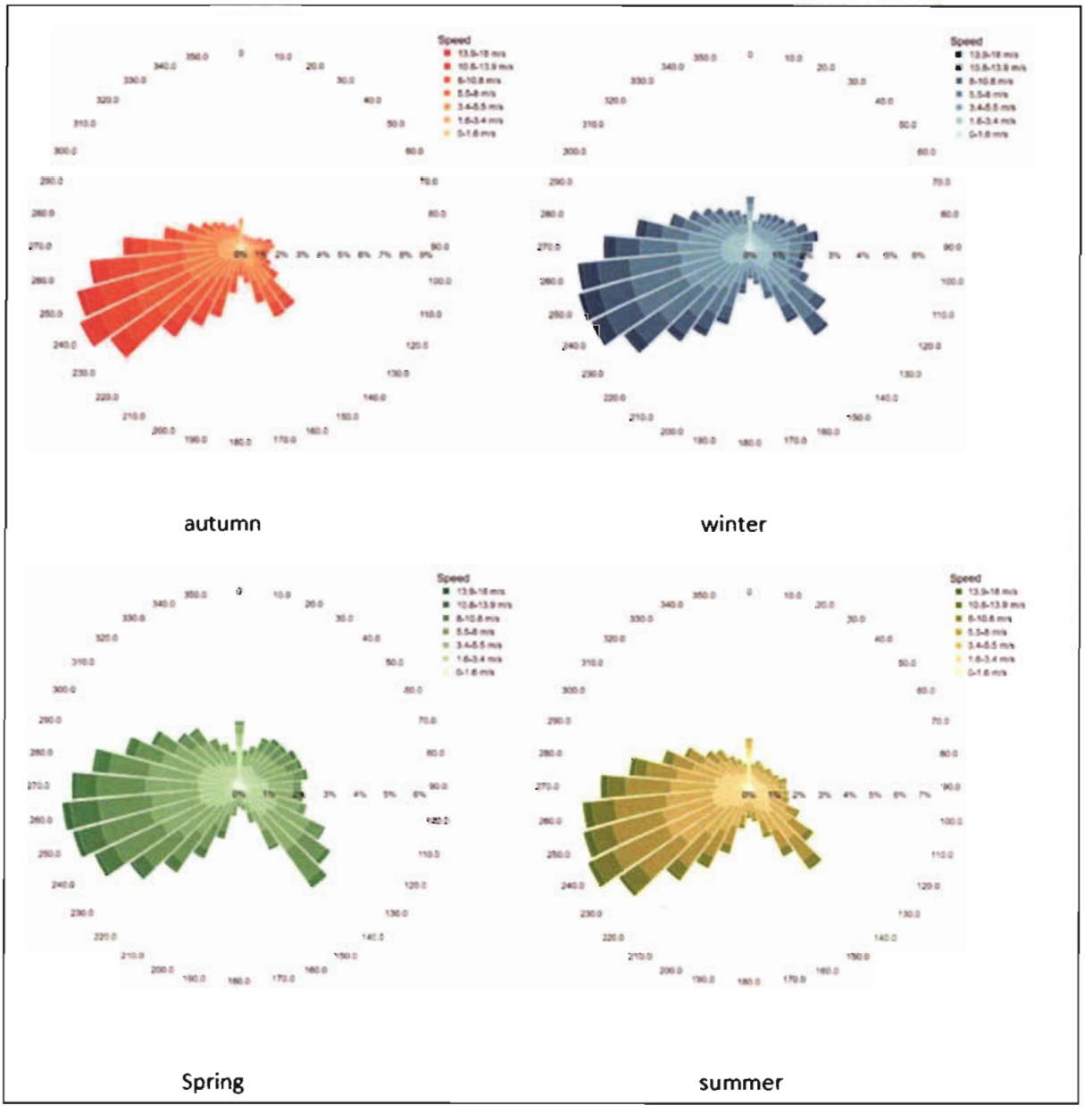


Table 17.9 reports all the wind directions and their correspondent velocity, displayed in descending order of frequency of occurrence (i.e. most frequent at top). As can be noted, the wind at the site is mostly blowing (higher frequency of occurrence) from the South-West (225 deg) direction with a wind velocity of approximately 5 m/s. A similar wind speed is also blowing from the South-South-West direction (213 deg); however, the frequency of occurrence of this wind is less than 5% (only 3.288% of the times). Therefore, this wind is not relevant for the scope of performing the pedestrian comfort and distress analysis as per Lawson Criteria. For assessing the wind microclimate for the proposed development, the study has considered the site exposed to all the wind directions which exceed the 5% of frequency, as required for the Lawson Criteria, and some additional high-speed winds, which are occurring less often (below 5% of the times) but that can cause distress conditions because of their speed.

Table 17.9 Summary of wind speeds, directions and frequency at the site[36]

Velocity (m/s)	Direction (deg)	Frequency (%)
5.601	225	11.233 (> 5%)
4.626	135	6.849 (> 5%)
5.847	236.25	6.792 (> 5%)
6.049	258.75	6.747 (> 5%)
6.034	247.5	6.689 (> 5%)
5.888	270	5.662 (> 5%)
4.994	315	4.338
5.503	281.25	3.904
4.974	292.5	3.436
5.357	213.75	3.288
4.736	123.75	3.105
4.406	146.25	2.751
5.101	303.75	2.648
5.246	112.5	2.500
4.121	157.5	2.386
4.581	101.25	2.340
4.169	45	2.180
3.558	90	2.135

Note [1] Cells highlighted in grey indicate top eight higher frequency winds, which exceed the 5% frequency, and are fundamental to the wind microclimate analysis.

[36] Cells highlighted in grey indicate top eight higher frequency winds, which exceed the 5% frequency, and are fundamental to the wind microclimate analysis.

17.3.2 Baseline Wind Microclimate with Phase 1 included

The Baseline development consists of the construction of the residential development representing Phase 1 of the wider development of the Ballymastone Lands (as identified in the Donabate Local Area Plan 2016 (as extended)), ranging in height from 2 to 6 storeys to accommodate 432 no. residential dwellings (including a mix of apartments, duplexes and houses), a crèche and public open space. The site will accommodate 544 no. car parking spaces, 791 total no. bicycle parking spaces, new pedestrian/cycle links, road improvements, storage, services and plant areas. Landscaping includes communal amenity areas, and a significant public open space provision.

Phase 1 is permitted under Planning Ref. LRD0008/S3.

Figure 17.14 Baseline scenario - CFD Model for wind analysis

17.3.3 Wind Microclimate at Pedestrian Level

Results of the wind simulations carried out are detailed in the following sections. Results of wind microclimate at ground level (1.5 m height - flow speeds) are collected throughout the modelled site and the impact of these on the potential receptors presented in the map that show the area of comfort and distress in accordance with Lawson Criteria.

In order to evidence flow acceleration/deceleration, the wind speed is shown normalised with the unperturbed wind field. In this way, the value of 1 (red in the colormap) will indicate the flow as unperturbed. These flow velocities identify if locally, wind speeds at pedestrian-level are accelerated or decelerated in relation to the undisturbed reference wind speed due to the presence of the existing baseline environment.

As it can be seen, wind speeds are shown to be within tenable conditions and in general comparable to the wind speed of the undisturbed flow for the direction considered.

Figure 17.15 Wind at pedestrian level – baseline – direction N

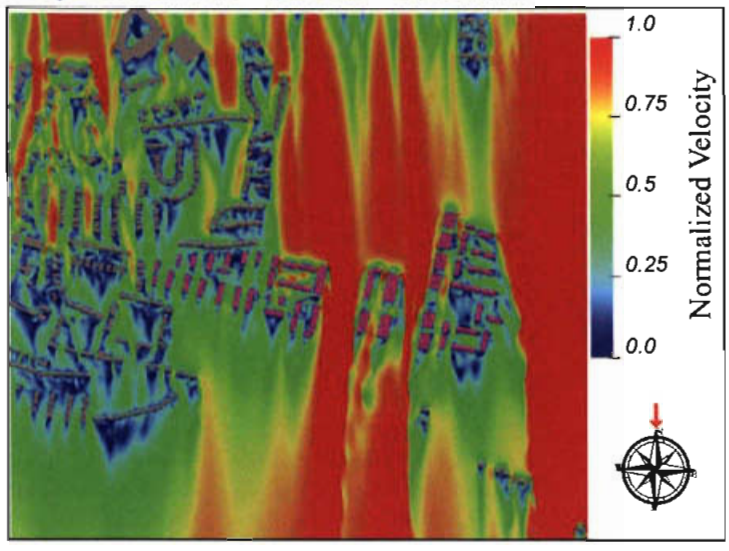


Figure 17.16 Wind at pedestrian level – baseline – direction NNE

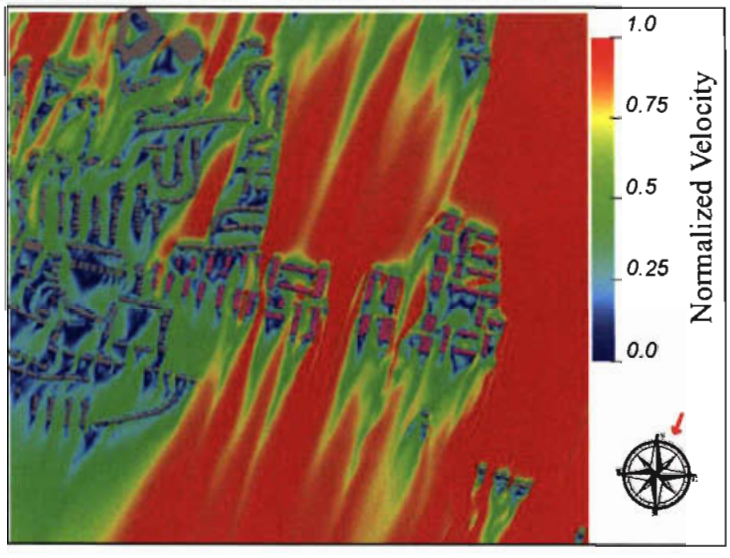


Figure 17.17 Wind at pedestrian level – baseline – direction NE

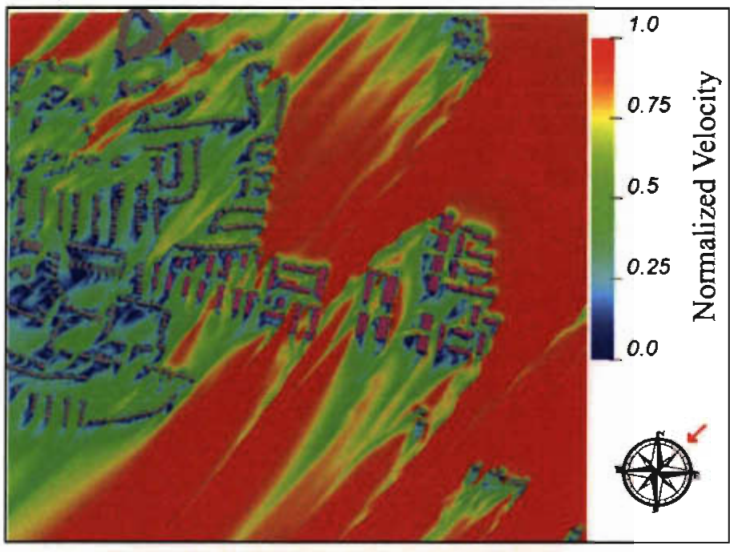


Figure 17.18 Wind at pedestrian level – baseline – direction ENE

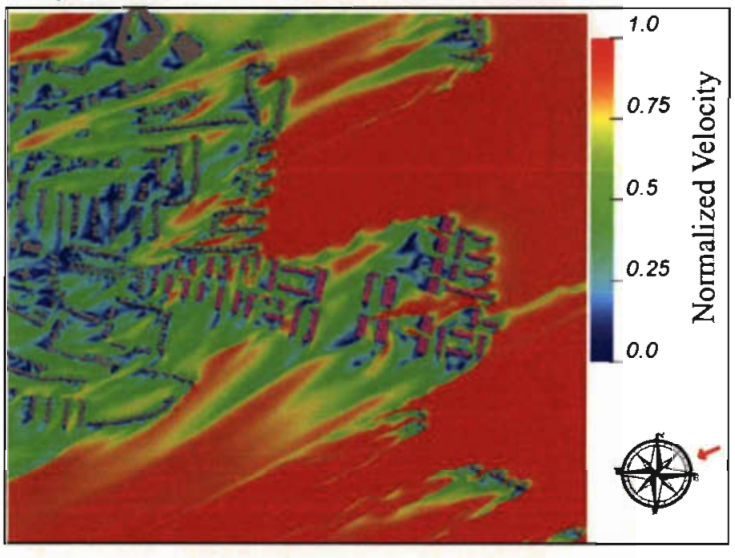


Figure 17.19 Wind at pedestrian level – baseline – direction E

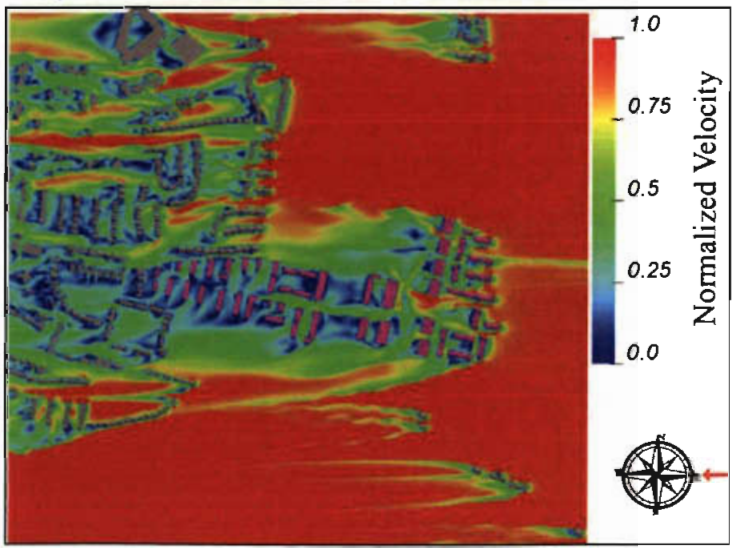


Figure 17.20 Wind at pedestrian level – baseline – direction ESE

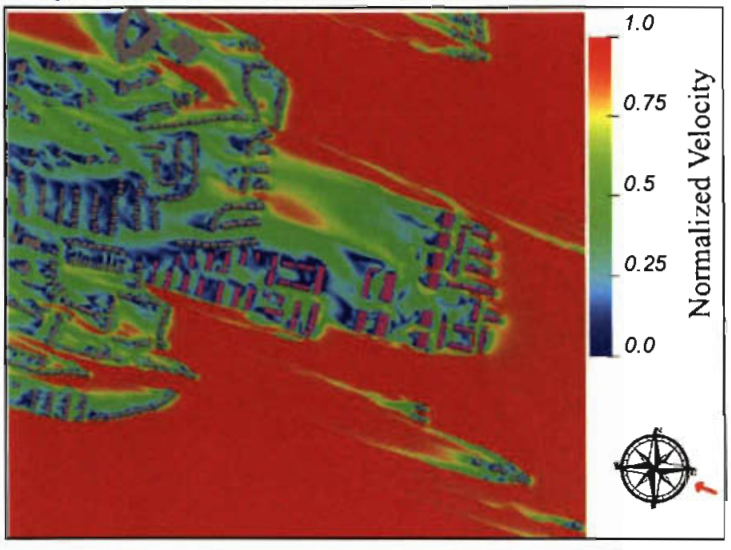


Figure 17.21 Wind at pedestrian level – baseline – direction SE

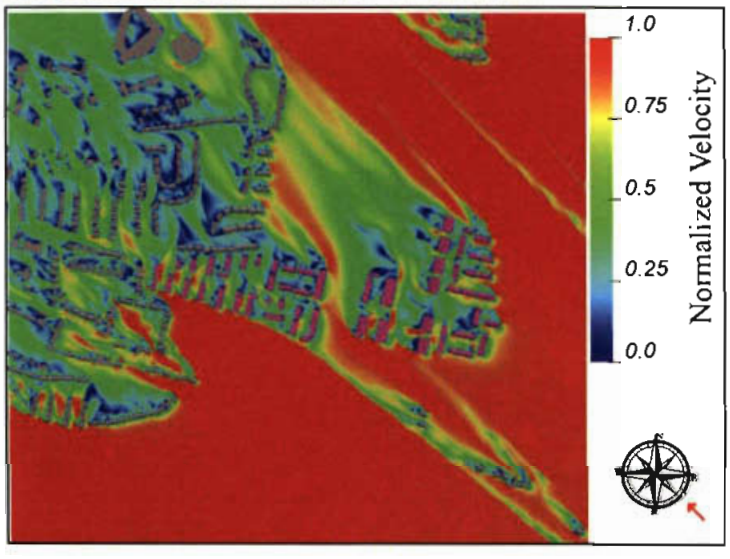


Figure 17.22 Wind at pedestrian level – baseline – direction SSE

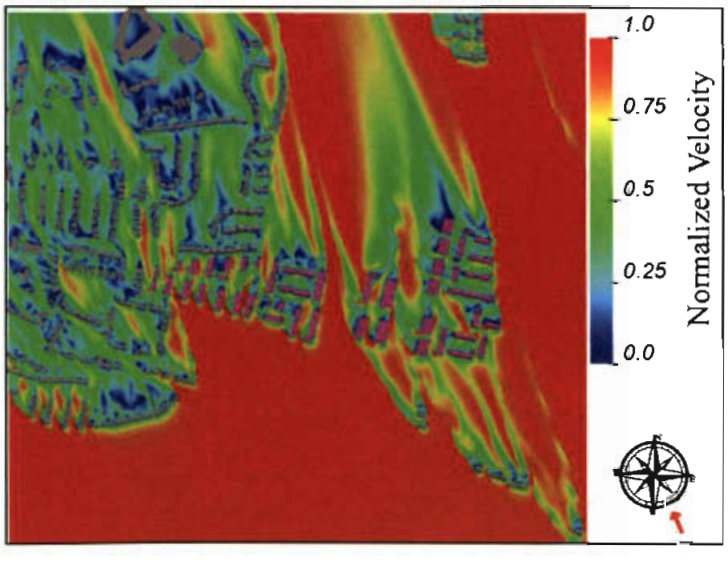


Figure 17.23 Wind at pedestrian level – baseline – direction S

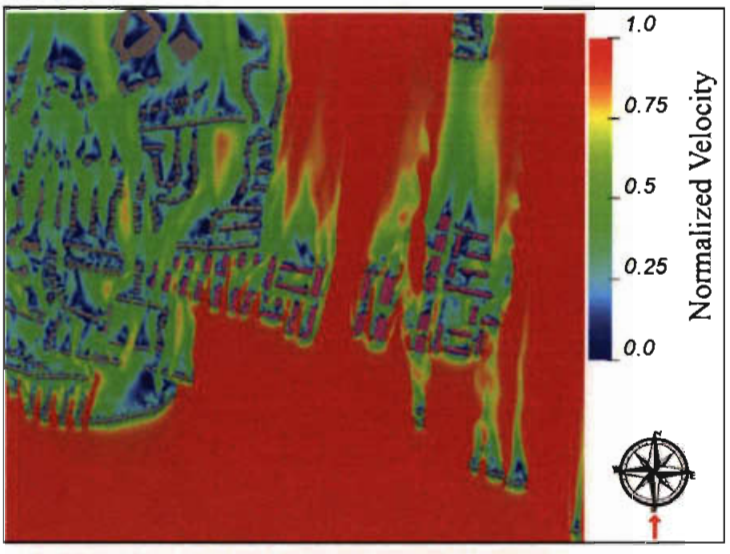


Figure 17.24 Wind at pedestrian level – baseline – direction SSW

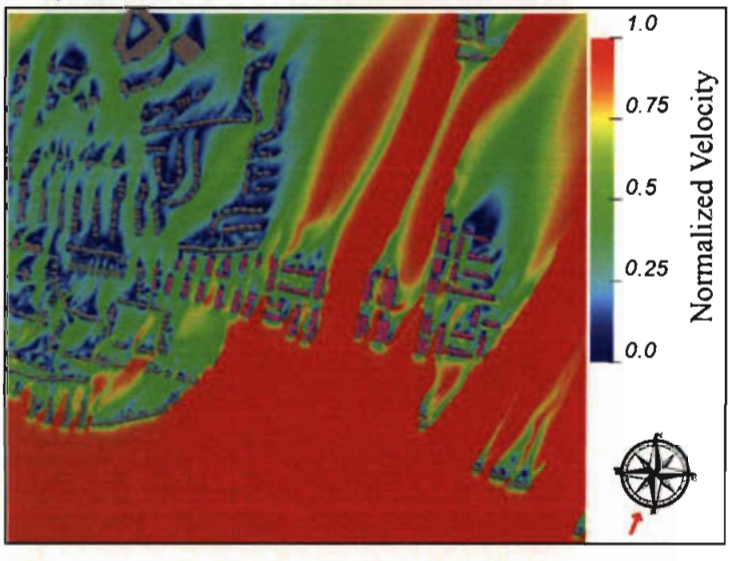


Figure 17.25 Wind at pedestrian level – baseline – direction SW

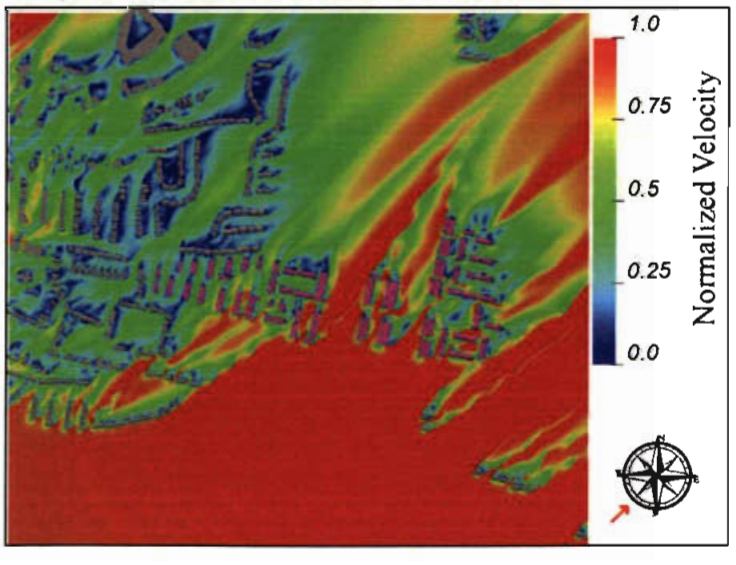


Figure 17.26 Wind at pedestrian level – baseline – direction WSW

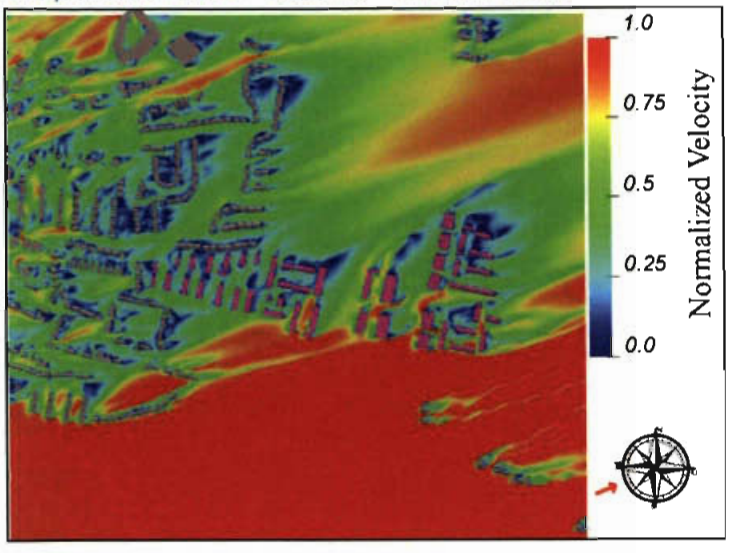


Figure 17.27 Wind at pedestrian level – baseline – direction W

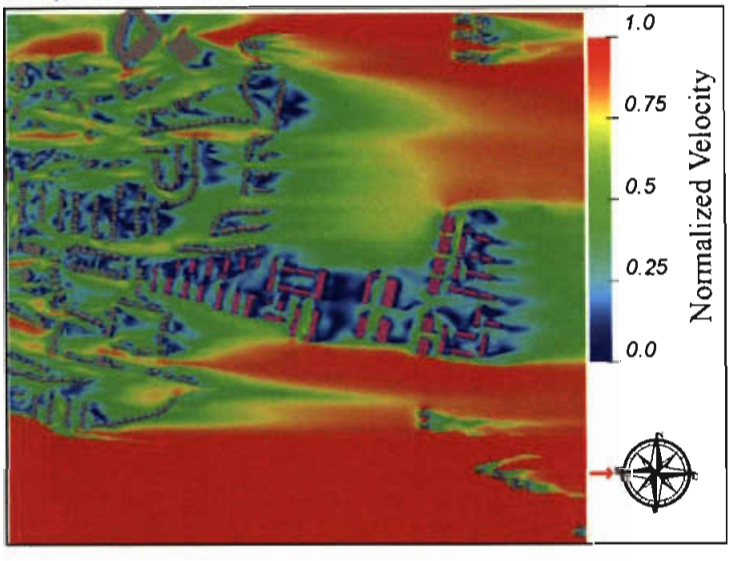


Figure 17.28 Wind at pedestrian level – baseline – direction NWN

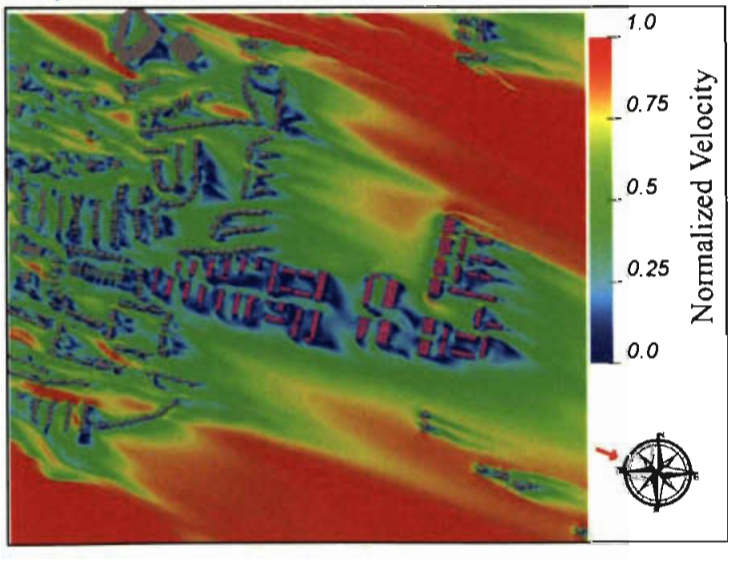


Figure 17.29 Wind at pedestrian level – baseline – direction NW

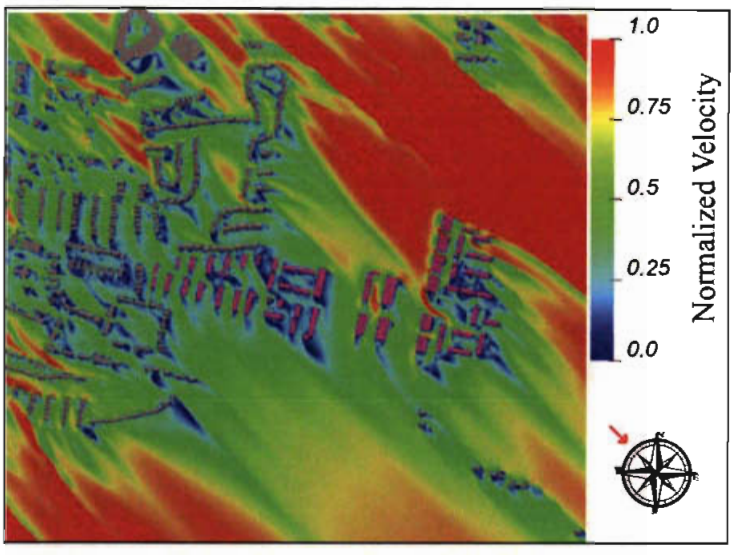
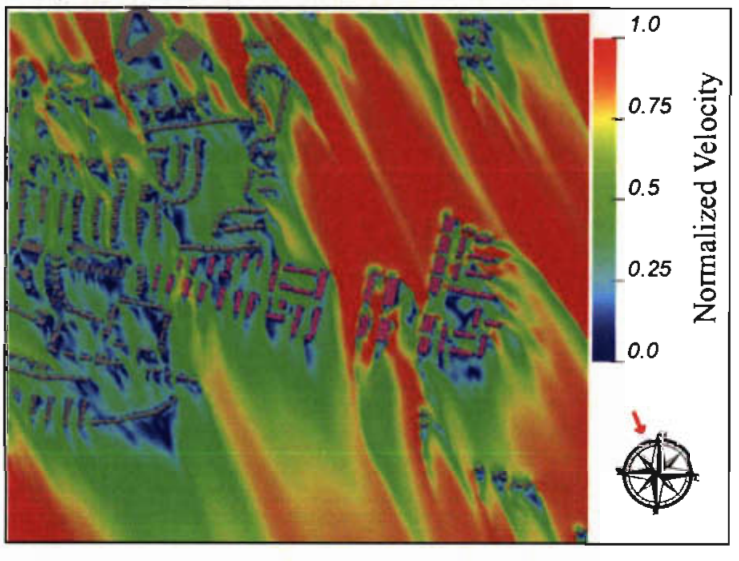


Figure 17.30 Wind at pedestrian level – baseline – direction NNW



17.3.4 Impact on Pedestrian Comfort and Distress with Phase 1 included.

The wind flow results obtained simulating the different direction and wind speeds, are combined with wind frequencies of occurrence to obtain comfort ratings at pedestrian level in all areas included within the model. The comparison of comfort ratings with intended pedestrian activities is shown in the Lawson Comfort and Distress Map that follows. The comfort/distress conditions are presented using a colour coded diagram below formulated in accordance with the Lawson Criteria.

Figure 17.31 Lawson criteria scale

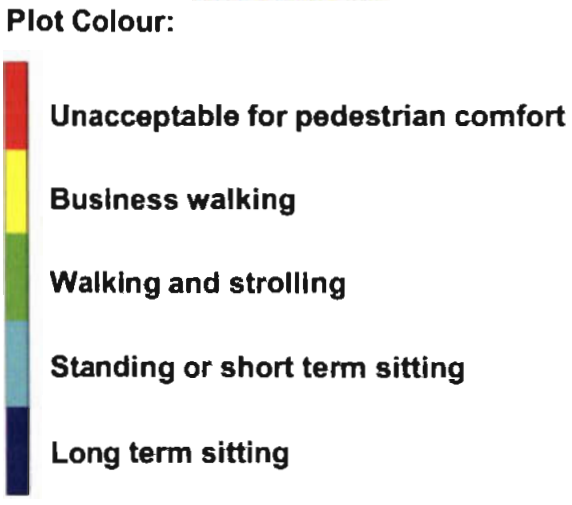
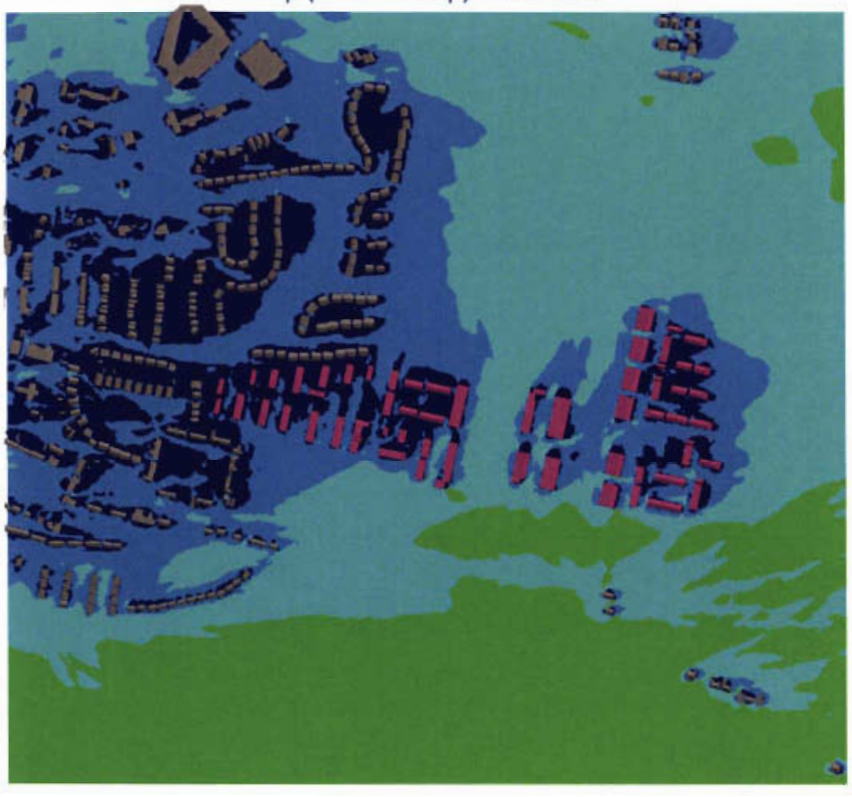


Figure 17.32 Wind comfort-distress map (Lawson map) – baseline



17.3.4.1 Summary

This section has just presented the "Wind Microclimate" study performed for Ballymastone Phase 2 with the baseline including Phase 1 LRD project. This study has been carried out to identify the possible wind patterns around the area proposed, under mean and peaks wind conditions typically occurring in Dublin.

The wind profile of the baseline environment has been built using the annual average meteorology data collected at Dublin Airport Weather Station. The prevailing wind directions for the site are identified as West, South-East and West-South-West, with magnitude of approximately 6m/s. A CFD numerical

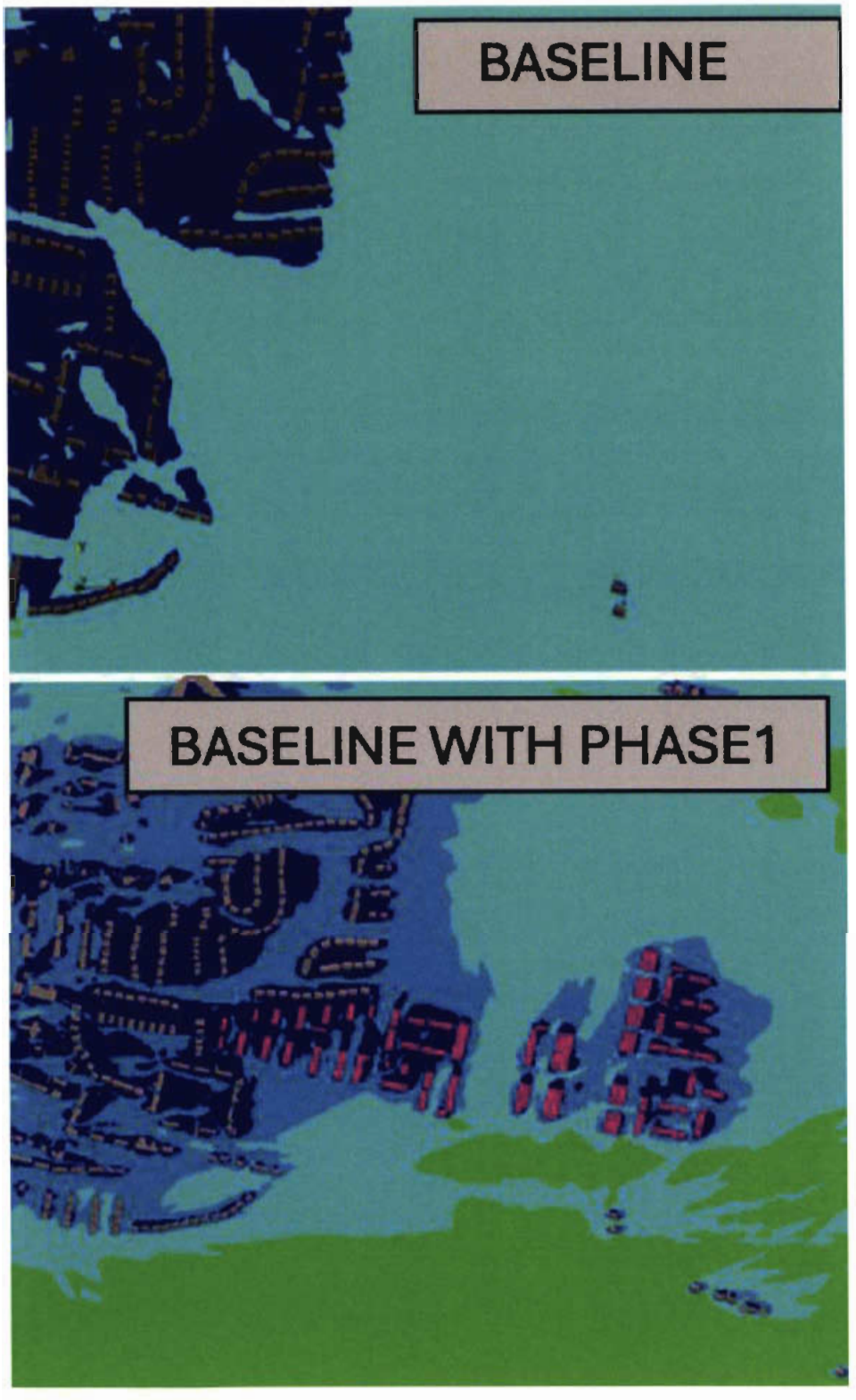
model was built, where the typical wind conditions were applied on the area around the development, both considering the baseline scenario and the impact of the proposed development in a cumulative assessment.

The results of the wind speeds and patterns formed under the different simulated wind conditions were combined with the frequency of occurrence of the same and an overall wind map was produced (Lawson map) which has shown the suitability of each area to a specific pedestrian activity.

The following conclusions can be made observing the results of the wind microclimate analysis and comparing the results obtained, under the same wind conditions for the existing scenario versus the proposed development with Phase 1. :

- The assessment of the baseline scenario has shown that no area is unsafe within the analysed study area and no conditions of distress are created in the existing environment under the local wind climate.
- The area where the proposed development is going to be constructed, is usable for walking and short-term sitting, the roads in the surrounding of the proposed development are usable for their intended scope (walking).
- Now there is no designated area, on the site of the proposed development, for public long-term sitting, however the site presents comfortable conditions for this activity.

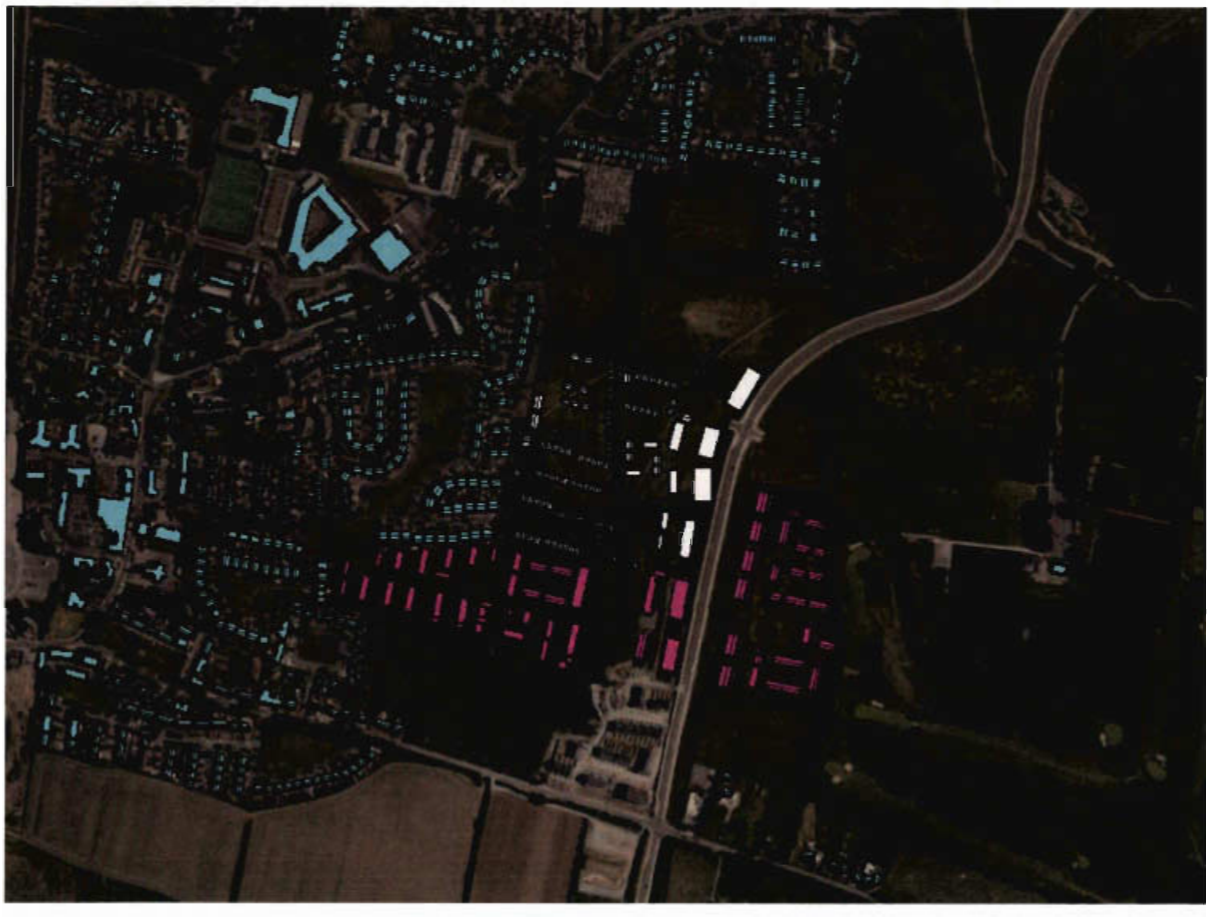
Figure 17.33 Wind comfort-distress map (Lawson map) – Baseline VS Baseline with Phase 1



17.4 Characteristics of the Proposed Development

The proposed development will consist of the construction of a residential development, which represents Phase 2 of a wider development of the Ballymastone Lands (as identified in the Donabate Local Area Plan 2016 (as extended)) and is a continuation of Phase 1 of the Masterplan lands (permitted under LRD0008/S3). The proposed development ranges in height from 2 to 6 storeys to accommodate 364 residential dwellings (including a mix of apartments, duplexes and houses), and public open space. The site will accommodate car parking spaces, bicycle parking spaces, storage, services, new pedestrian/cycle links, road improvements and plant areas. Landscaping will include communal amenity areas, and a significant public open space provision.

Figure 17.34 Model of Proposed scenario: in white proposed Phase 2, in magenta Phase 1 Ballymastone (permitted) and in cyan existing surrounding buildings.



Sensitive Receptors

Potential receptors for the wind assessment are all pedestrian circulation routes, building entrances and leisure open areas within the site and in neighbouring adjacent areas. The pedestrian level is considered at 1.5m above ground.

In addition to the roads and entrances, some sensitive receptors such as courtyard/parks for this assessment are discussed below, these areas are designed for public use activities such as for long term sittings and need to be particularly comfortable/safe. In particular, it is relevant to mention the Recreational Hub of **Figures 17.35** as it is located within the 400 m radius around the proposed area.

The Recreational Hub is permitted and not yet constructed, it will host sport events and needs to display comfort criteria for spectators/users of different age categories.

Figure 17.35 Permitted Recreational Hub

17.5 Predicted Impacts of the Proposed Development

This section assessed the potential impact of the proposed development on the already existing environment, and the suitability of the proposed development to create and maintain a suitable and comfortable environment for different pedestrian activities.

17.5.1 Do-Nothing Impact

In case the development will not be constructed, the wind conditions on the site will be in line with those obtained with the Baseline scenario wind microclimate.

17.5.2 Construction Phase

As the finalization of the development proceeds, the wind setting at the site would progressively conform to those of the completed development. Due to the fact that windier conditions are acceptable within a construction area (not accessible to the public), and the proposed development would not be the reason for critical wind conditions on-Site (and are slightly calmer when the development is in site), the impacts evaluated on-Site are considered to be insignificant. Thus, the predicted impacts during construction phase are identified as **not significant** or **negligible**.

In summary, as construction of the Ballymastone Phase 2 LRD Development progresses, the wind conditions at the site would gradually adjust to those of the completed development. During the construction phase, predicted impacts are classified as **negligible**.

17.5.3 Operational Phase

This section shows CFD results of wind microclimate assessment carried out considering the "Operational Phase" of Ballymastone Phase 2 LRD Development. In this case the assessment has

considered the impact of wind on the existing area including the proposed Ballymastone Phase 2 LRD Development. Wind simulations have been carried out on all the various directions for which the development could show critical areas in terms of pedestrian comfort and safety.

Results of wind microclimate at pedestrian level (1.5m height - flow speeds) are collected throughout the modelled site. These flow velocities identify if locally, wind speeds at pedestrian-level are accelerated or decelerated in relation to the undisturbed reference wind speed due to the presence of the existing baseline environment.

The impact of these speeds is then combined with their specific frequency of occurrence and presented in the maps that show the area of comfort and distress in accordance with Lawson Criteria, these maps are produced at pedestrian level on the ground and on the roof terraces and identify the suitability of each area to its prescribed level of usage and activity.

17.5.4 Wind speeds at pedestrian level

Results of wind speeds and their circulations at pedestrian level of 1.5m above the development ground are presented in the following images in order to assess wind flows at ground floor level of Ballymastone Phase 2 LRD.

Wind flow speeds are shown to be within tenable conditions. Higher velocity and recirculation effects are found in the existing site.

17.5.4.1 Wind Speeds at Pedestrian Level

Results of wind speeds and their circulations at pedestrian level of 1.5m above the development ground are presented in the following images **(Figures 17.36 – 17.51)** in order to assess wind flows at ground floor level of the proposed development during the operational phase. Wind flow speeds are shown to be within tenable conditions. Higher velocity and recirculation effects are found in the existing site.

Figure 17.36 Wind at pedestrian level – proposed – direction N

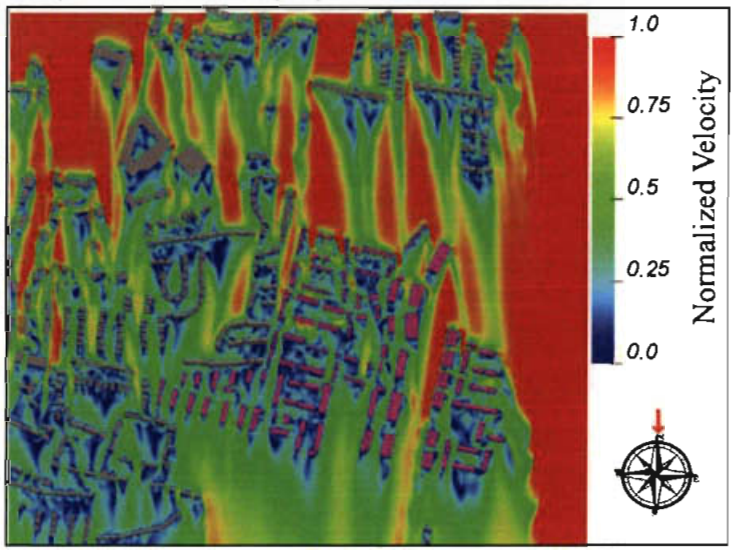


Figure 17.37 Wind at pedestrian level – proposed – direction NNE

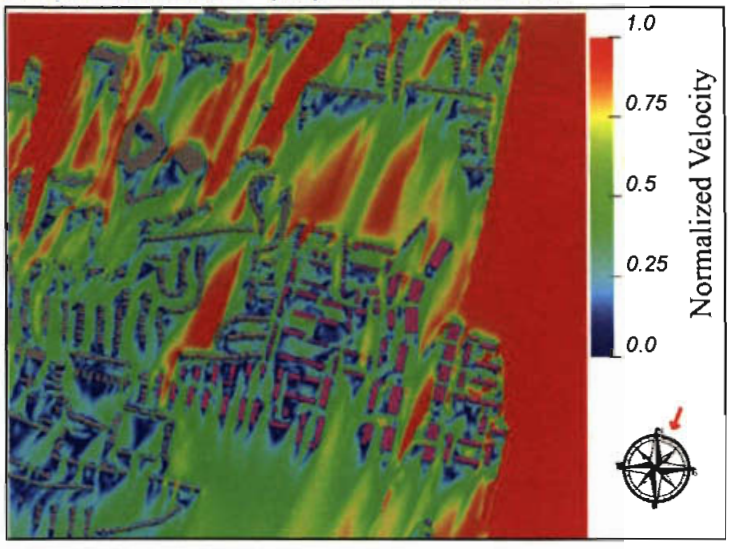


Figure 17.38 Wind at pedestrian level – proposed – direction NE

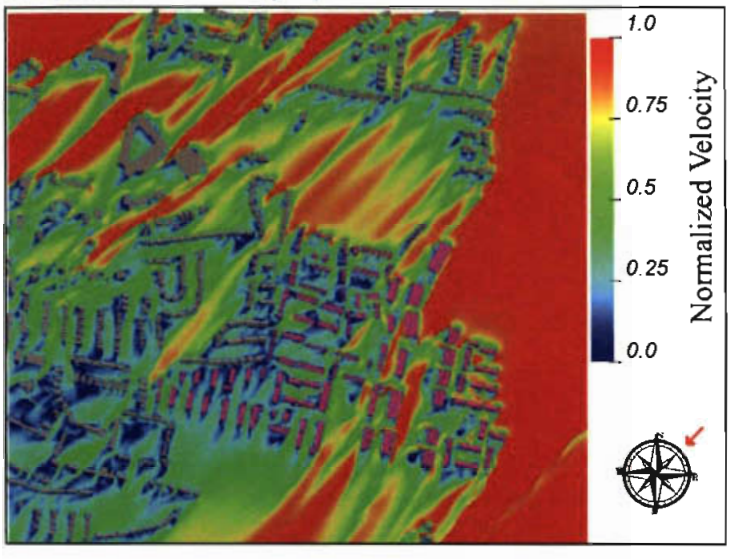


Figure 17.39 Wind at pedestrian level – proposed – direction ENE

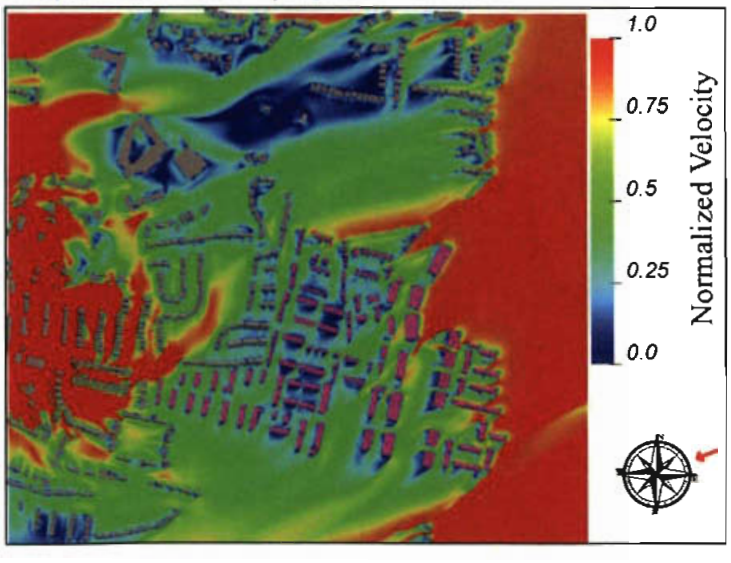


Figure 17.40 Wind at pedestrian level – proposed – direction E

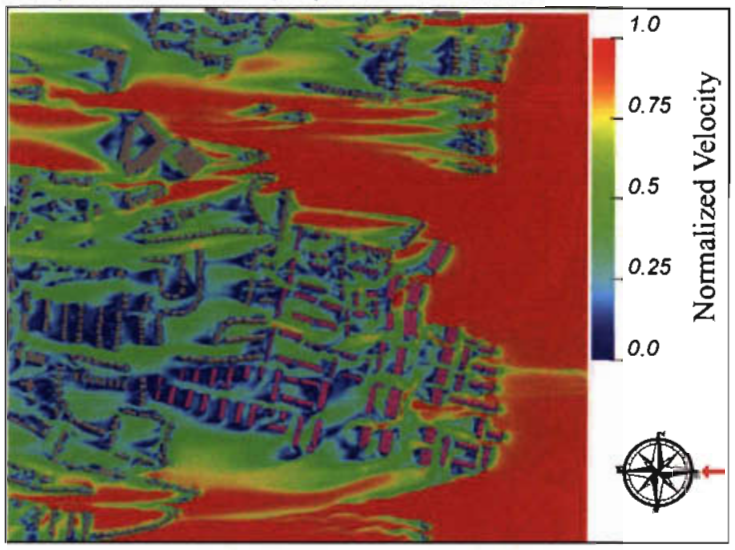


Figure 17.41 Wind at pedestrian level – proposed – direction ESE

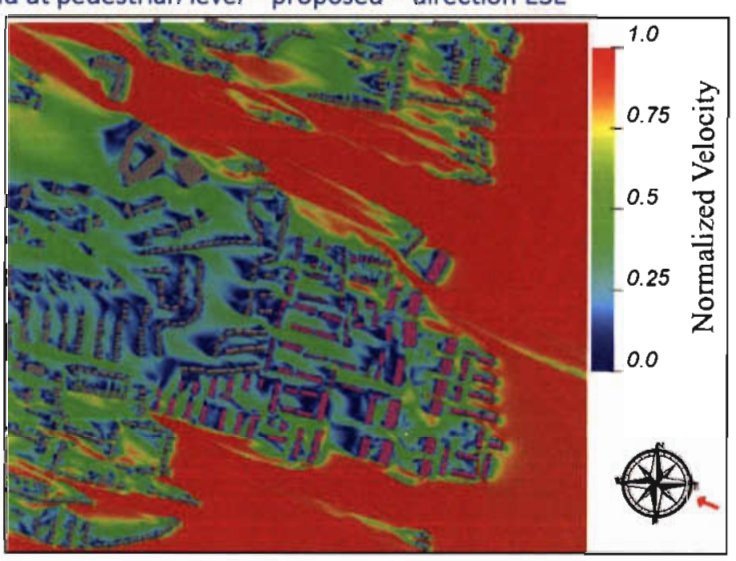


Figure 17.42 Wind at pedestrian level – proposed – direction SE

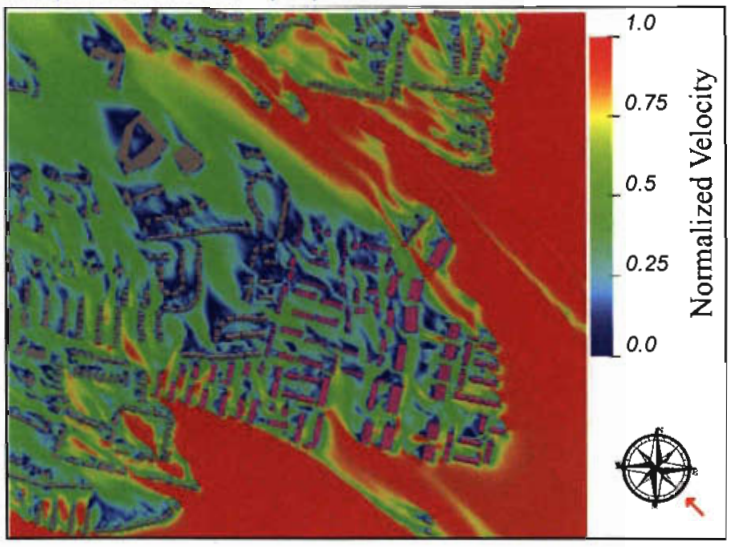


Figure 17.43 Wind at pedestrian level – proposed – direction SSE

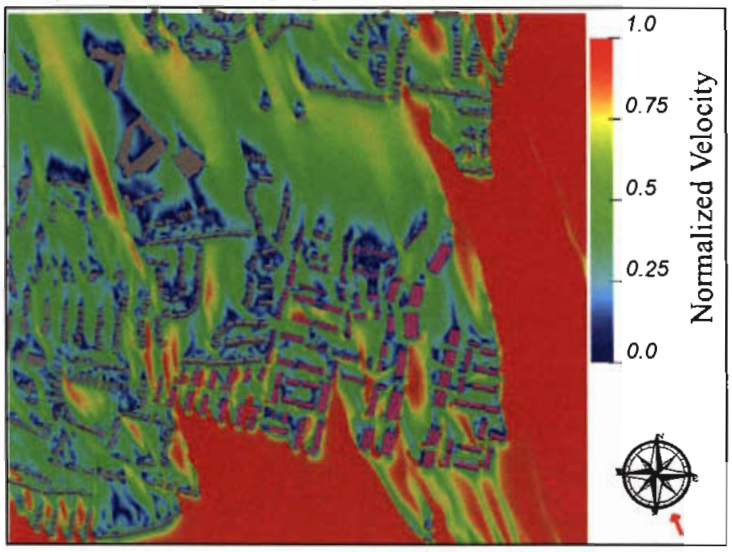


Figure 17.44 Wind at pedestrian level – proposed – direction S

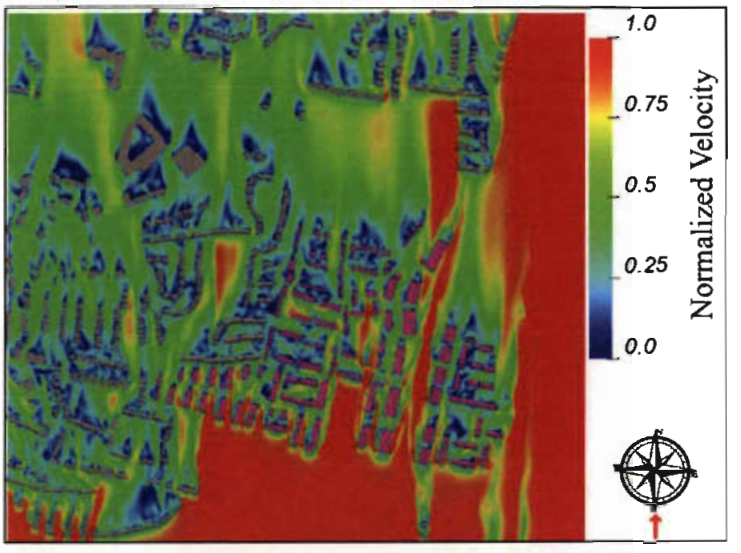


Figure 17.45 Wind at pedestrian level – proposed – direction SSW

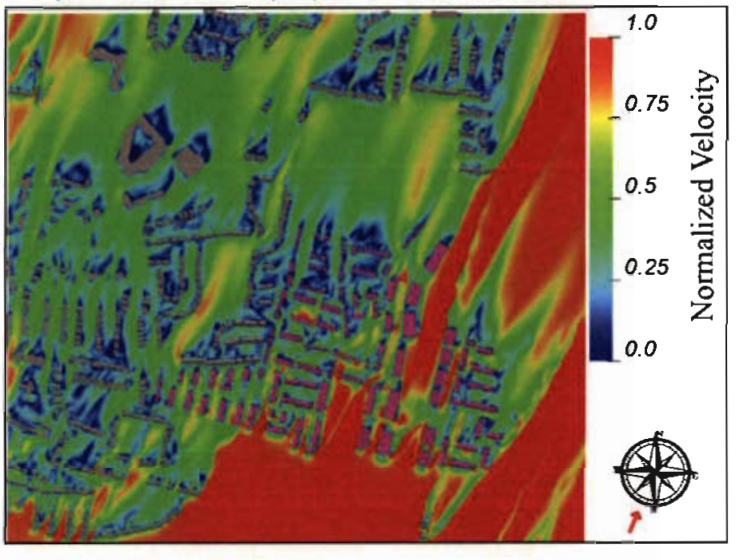


Figure 17.46 Wind at pedestrian level – proposed – direction SW

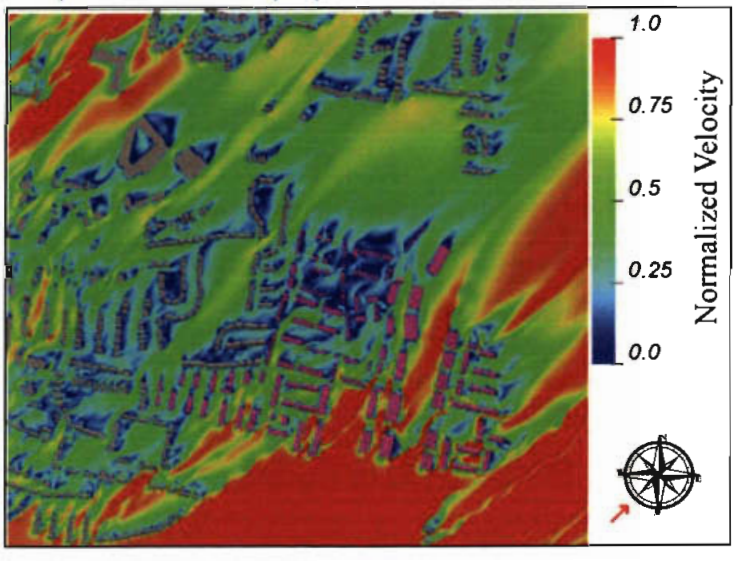


Figure 17.47 Wind at pedestrian level – proposed – direction WSW

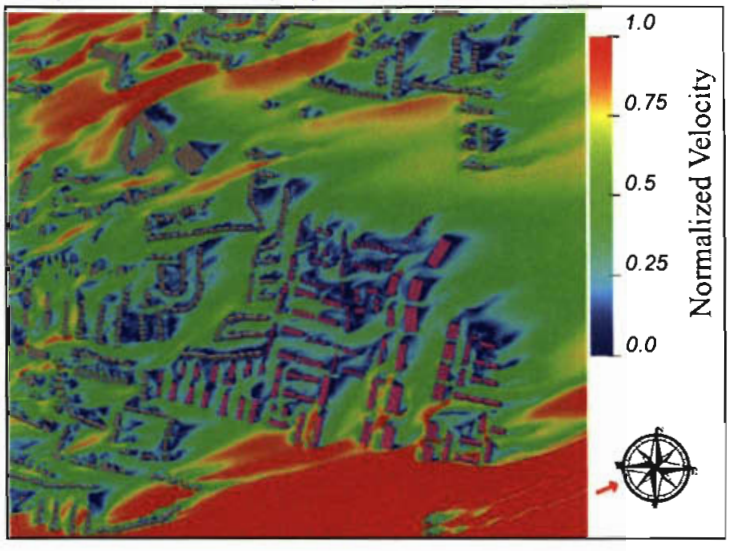


Figure 17.48 Wind at pedestrian level – proposed – direction W

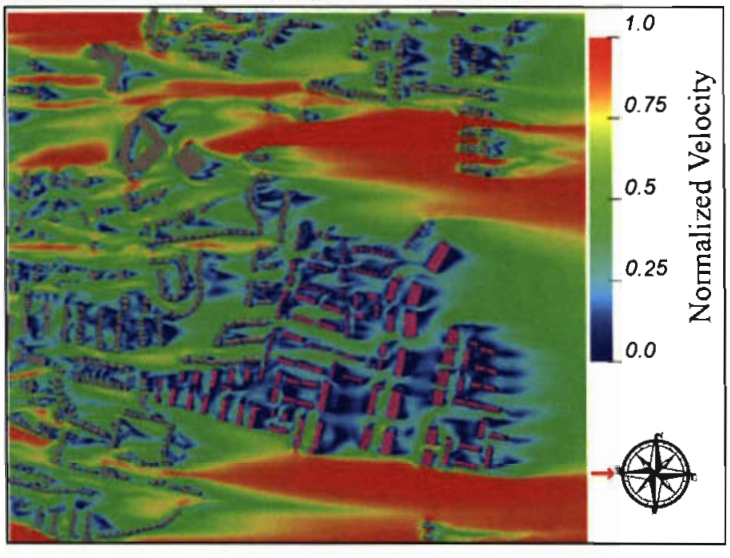


Figure 17.49 Wind at pedestrian level – proposed – direction NWN

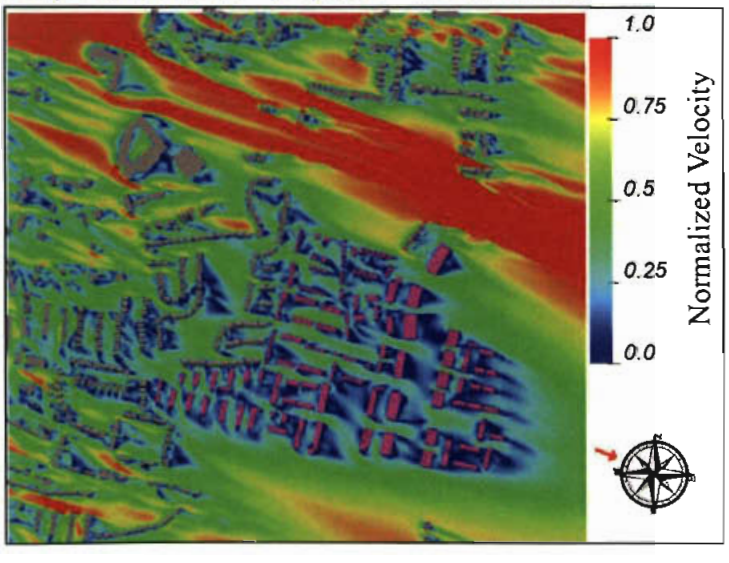


Figure 17.50 Wind at pedestrian level – proposed – direction NW

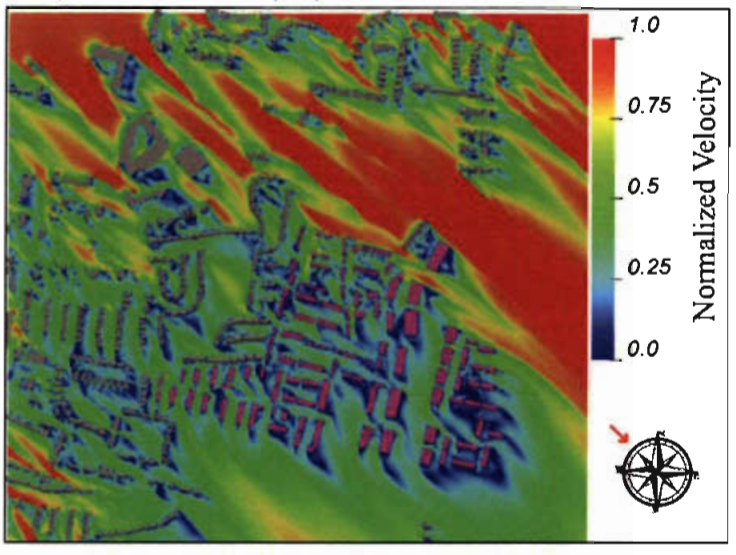
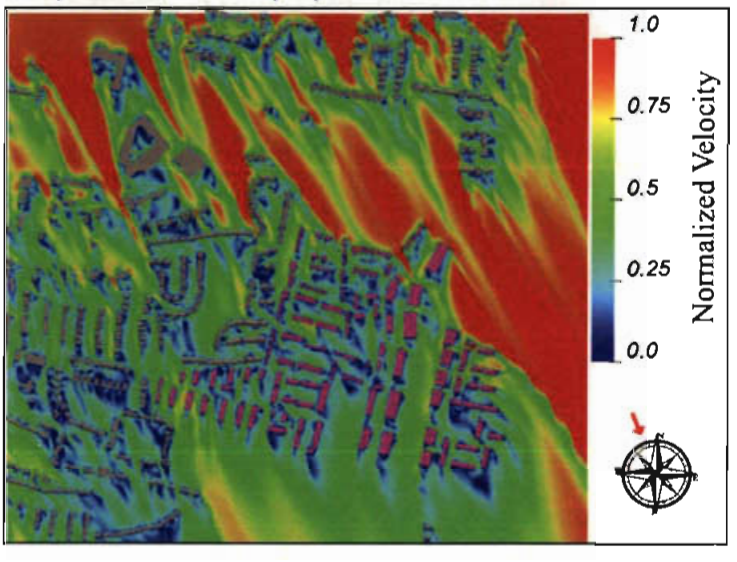


Figure 17.51 Wind at pedestrian level – proposed – direction NNW

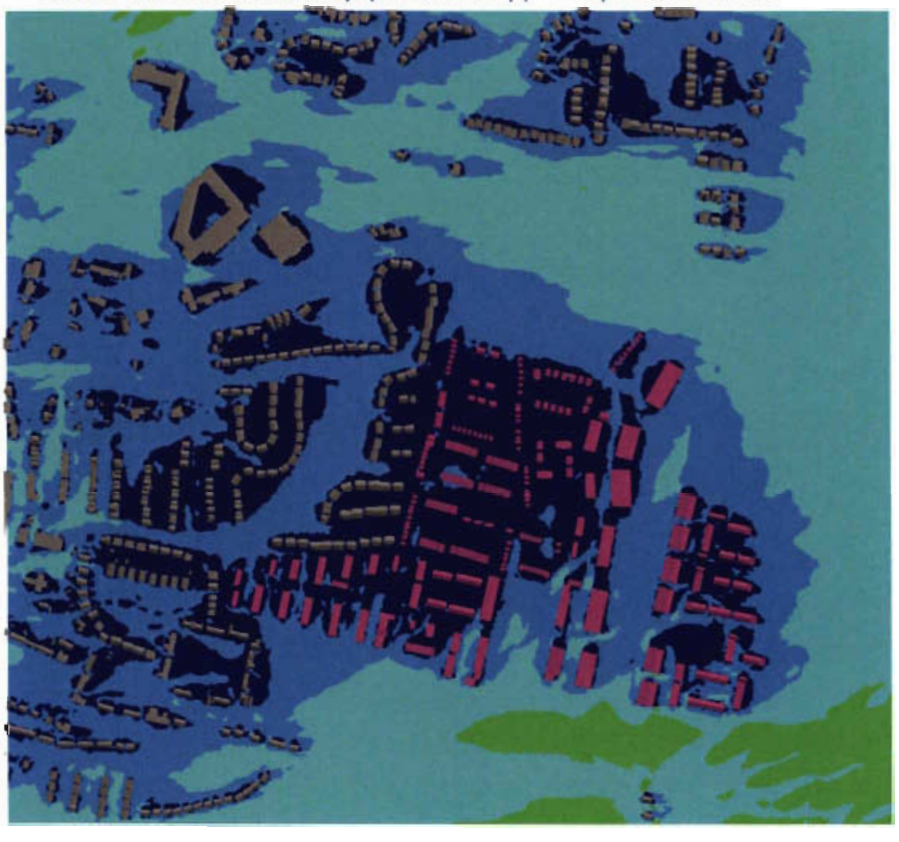


17.5.4.2 Proposed Scenario Wind Microclimate

The wind flow results obtained simulating the different direction and wind speeds, are combined with wind frequencies of occurrence to obtain comfort ratings at pedestrian level in all areas included within the model. The comparison of comfort ratings with intended pedestrian activities is shown in the Lawson Comfort and Distress Map that follows. The comfort/distress conditions are presented using a colour coded diagram below formulated in accordance with the Lawson Criteria.

Figure 17.52 Lawson Criteria scale

Figure 17.53 Wind comfort-distress map (Lawson map) – Proposed scenario



17.5.4.3 Summary

This chapter presents the findings of a wind microclimate study performed for the proposed development (Phase 2 Ballymastone). This study has been carried out to identify the possible wind patterns at the location of the proposed development, under mean and peaks wind conditions typically occurring in Dublin.

The wind profile of the baseline environment has been built using the annual average meteorological data collected at Dublin Airport Weather Station. The prevailing wind directions for the site are identified as West, South-East and West-South-West, with magnitude of approximately 6m/s. A CFD

numerical model was built, where the typical winds conditions were applied on the area around the development, considering the baseline scenario and the impact of the proposed development in a cumulative assessment.

The results of the wind speeds and patterns formed under the different simulated wind conditions were combined with the frequency of occurrence of the same and an overall wind map was produced (Lawson map) which has shown the suitability of each area to a specific pedestrian activity.

The following conclusions can be made observing the results of the wind microclimate analysis and comparing the results obtained, under the same wind conditions for the baseline scenario versus the proposed development scenario in a cumulative assessment:

- The proposed development does not impact or give rise to negative or critical wind speed profiles at the nearby adjacent roads, or nearby buildings. Moreover, in terms of distress, no critical conditions were found for frail persons or cyclists or for members of the general public in the surroundings of the proposed development.
- The development is designed to deliver a high-quality environment for the scope of use intended of each area/building (i.e., comfortable and pleasant for pedestrians).
- The assessment of the proposed scenario has shown that no area is unsafe, and no conditions of distress will be created by the proposed development.

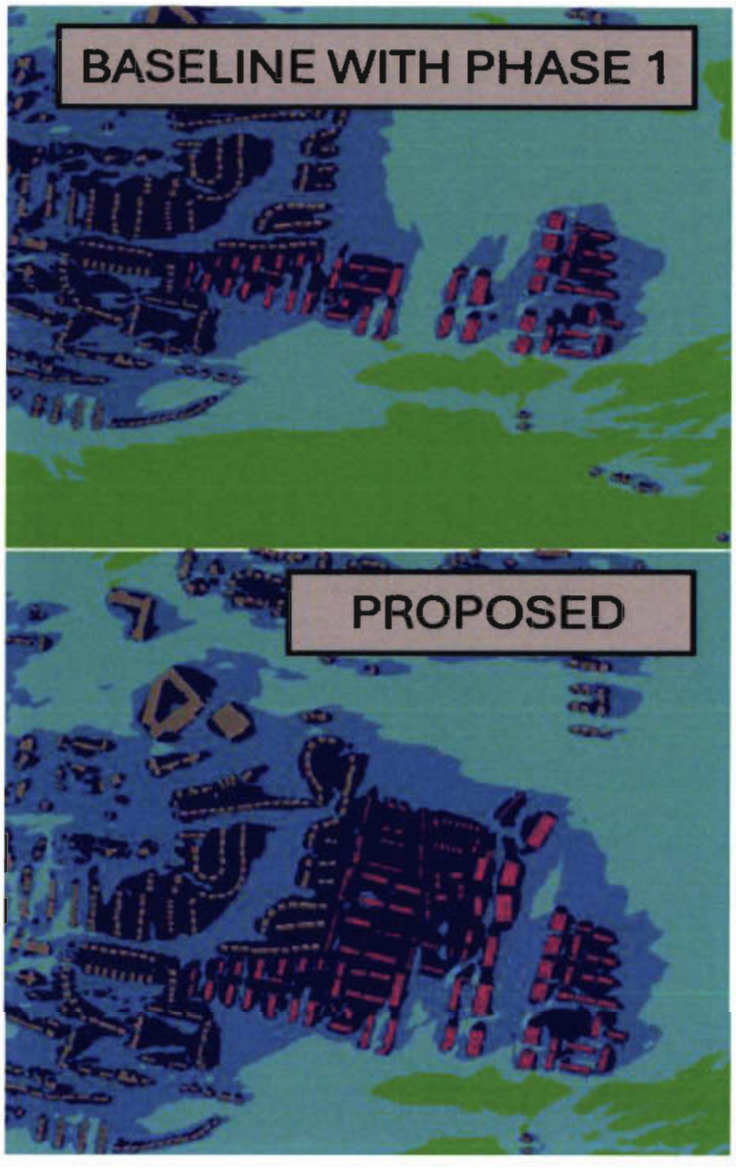
Table 17.10, below, provides an overview of the wind impacts of the proposed development on the on-site receptors (pedestrian areas, roads, entrances) and on the off-site receptors (roads/ pedestrian areas off-site on the north, south, west and east directions). The impacts are evaluated in comparison with the conditions in the same areas for the baseline scenario. As result of the construction of the proposed development, the wind in the surrounding urban context is also mitigated when compared with the baseline situation which includes Phase 1 Ballymastone development. In this sense, the proposed Phase 2 of the development will have a beneficial effect on the surrounding wind microclimate and can create comfortable pedestrian areas and public spaces. Furthermore, the assessment demonstrates that wind microclimate conditions will also improve when the proposed development is analysed in conjunction with the existing developments within an area of 400m radius from the centre of the site.

Table 17.10 Impact of the proposed development – overview

Potential Receptors	Baseline Conditions with Phase 1	Proposed Development Conditions (Phase 2)	Impact Significance
On-site			
Roads	Conditions are "suitable" for the intended pedestrian use.	Conditions are calmer than required for the intended pedestrian use (by at least one comfort category).	Beneficial
Entrances	Not applicable	Conditions are "suitable" for the intended pedestrian use.	Negligible
Pedestrian circulation areas	On the location designated for this use conditions are "suitable" for the intended pedestrian use.	Conditions are calmer than required for the intended pedestrian use (by at least one comfort category).	Beneficial

Park areas	Not applicable	Conditions are "suitable" for the intended use. (short/long-term sitting considering the wind roses of the spring/summer season).	Beneficial
Off-site			
Area-North	Conditions are suitable for the pedestrian activity intended.	Conditions become calmer than required for the intended pedestrian use (by at least one comfort category).	Beneficial
Area-South	Conditions are calmer than required for the intended pedestrian use (by at least one comfort category).	Conditions remain the same as in the baseline scenario.	Negligible
Area-East	Conditions are calmer than required for the intended pedestrian use (by at least one comfort category).	Conditions remain the same as in the baseline scenario.	Negligible
Area-West	Conditions are calmer than required for the intended pedestrian use (by at least one comfort category).	Conditions remain the same as in the baseline scenario.	Negligible

Figure 17.54 Wind comfort-distress map (Lawson map) – Baseline with Phase 1 versus proposed scenario



17.6 Cumulative Impact

This section assesses the impact of the proposed development on the existing environment and also considers projects that have been:

- *(a) granted planning permission but that are not built yet and,*
- *(b) projects that have been submitted for consent but not yet consented.*

In accordance with the 'Wind Microclimate Guidelines for Developments in the City of London' (City of London, 2019), the wind microclimate study should consider the effect of the proposed development together with buildings (existing and/or permitted) that are within 400m from the centre of the site. Other taller buildings outside of this zone that could have an influence on wind conditions within the project site should be included for wind directions where they are upwind of the project site.

The potential and permitted schemes within the vicinity of the proposed developments are listed below and are shown in **Figure 17.55**. The criteria to select the relevance of these schemes for the wind microclimate is based on their distance from the centre of the proposed site. In particular:

- **F20A/0510:** this development was permitted and comprises 154 apartments, one creche and associated site works. Due to the height of the buildings involved it is not anticipated that there will be any significant cumulative impacts on the wind microclimate on site and the proposed development is not going to impact the wind conditions.
- **F17A/0373**: this development was permitted and comprises 151 residential units and crèche with link road, pedestrian / vehicular entrance (x3), playground, temporary foul pumping station, landscaping and all associated site works. As in the project **F20A/0510,** the height of the buildings involved anticipates that no significant cumulative impact on the wind microclimate will be observed on site and the proposed development is not going to impact the wind conditions.
- **Recreational Hub:** this multifunctional campus will provide for an extensive range of sporting and recreational activities as a shared public facility; these include a floodlit 8 lane all-weather athletics track surrounding a grass soccer sized pitch, a full sized all-weather GAA pitch which also provides for 2 all-weather soccer pitches with flood lighting, a combined playground and skate park, car / cycle parking, a 6 meter wide access road, extensive walking and cycling infrastructure, bleacher seating and extensive landscape planting. Given that the facilities involved are mostly flat and with no relevant height it is anticipated that there will not be any cumulative impact on the wind microclimate on site and the proposed development is not going to impact the wind conditions. The proposed application includes all site enabling and development works, landscaping works, PV panels, bin stores, plant, boundary treatments, ESB substations, lighting, servicing, signage, surface water attenuation facilities and associated and ancillary works, including site development works above and below ground.

The above outcomes are also demonstrated by the results of the wind analysis carried out and shown in the following sections.

Figure 17.55 View of the area proposed for consideration of the future/permitted developments for the Cumulative Scenario. Projects F20A/0510 and F17A/0373 (in yellow) and the Recreational Hub (inside the green lines) appears within the area for the cumulative assessment.

17.6.1.1 Wind Microclimate at Pedestrians Level

Results of wind speeds and their circulations at pedestrian level of 1.5m above the development ground are presented in the following images (**Figures 17.56 – 17.71**) in order to assess wind flows at ground floor level of the cumulative development. Wind flow speeds are shown to be within tenable conditions. Higher velocity and recirculation effects are found in the existing site.

Figure 17.56 Wind at pedestrian level – cumulative – direction N

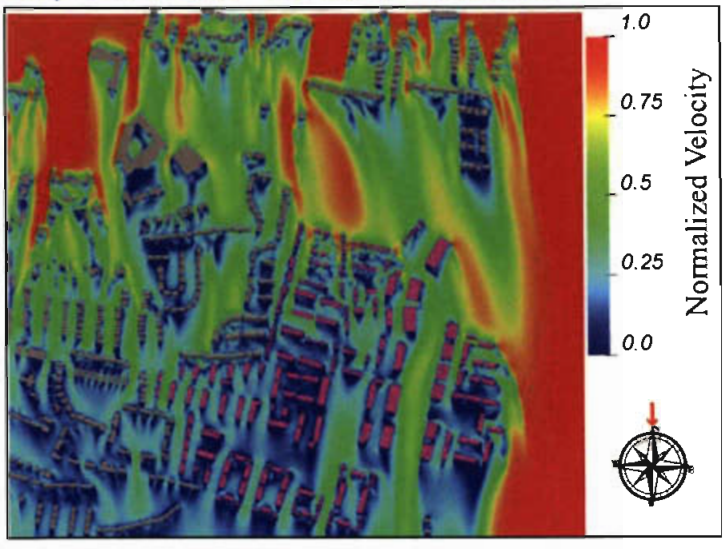


Figure 17.57 Wind at pedestrian level – cumulative – direction NNE

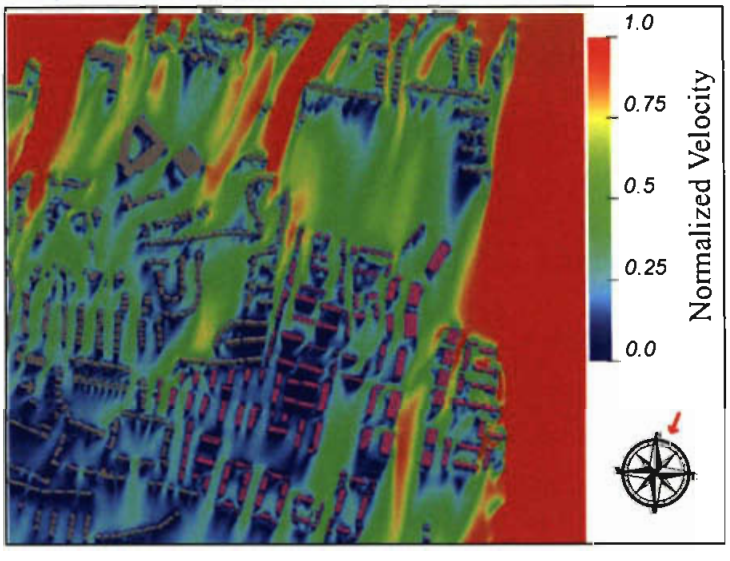


Figure 17.58 Wind at pedestrian level – cumulative – direction NE

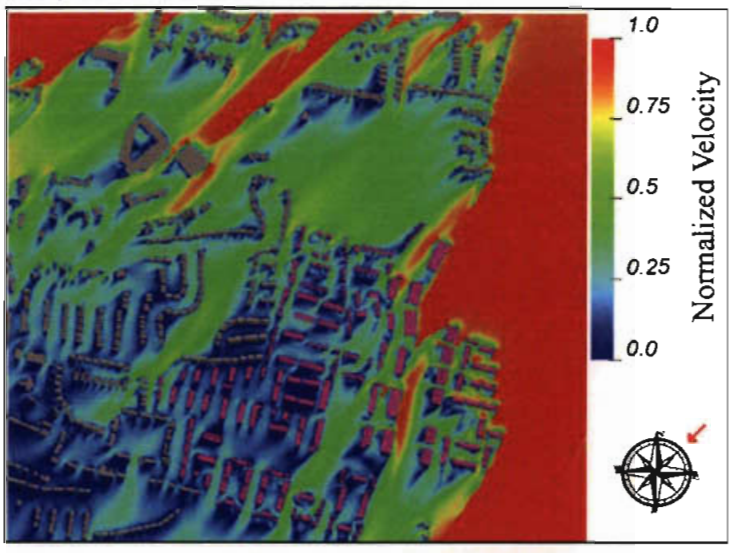


Figure 17.59 Wind at pedestrian level – cumulative – direction ENE

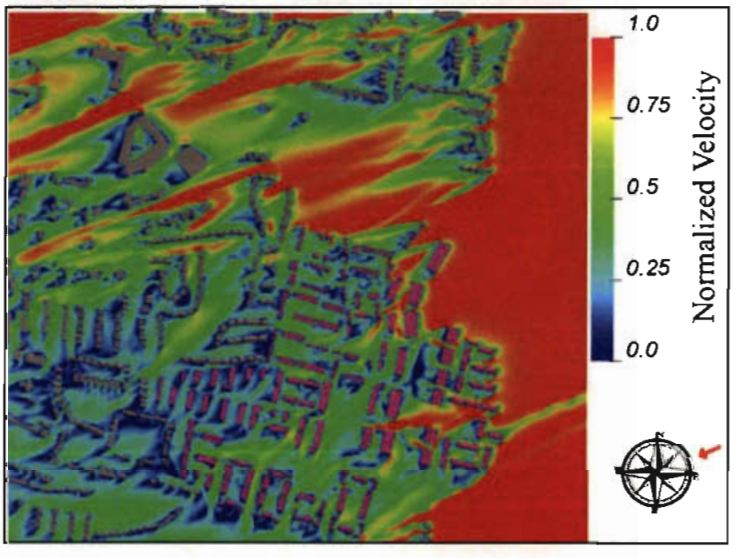


Figure 17.60 Wind at pedestrian level – cumulative – direction E

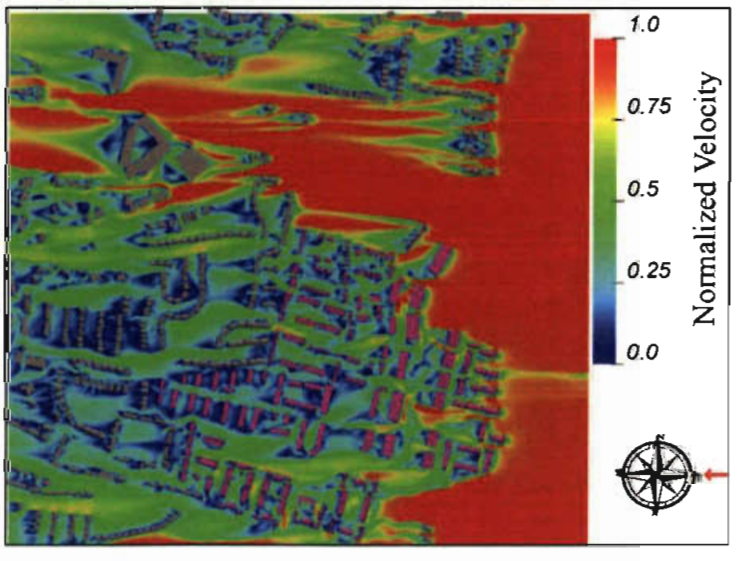


Figure 17.61 Wind at pedestrian level – cumulative – direction ESE

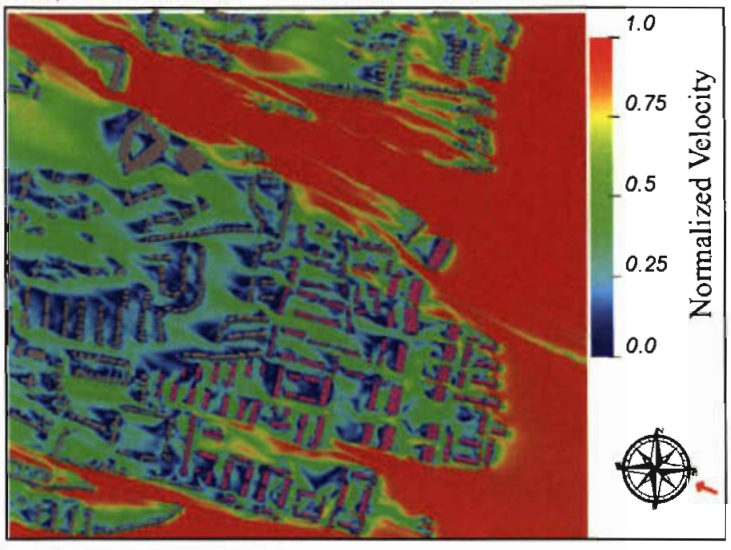


Figure 17.62 Wind at pedestrian level – cumulative – direction SE

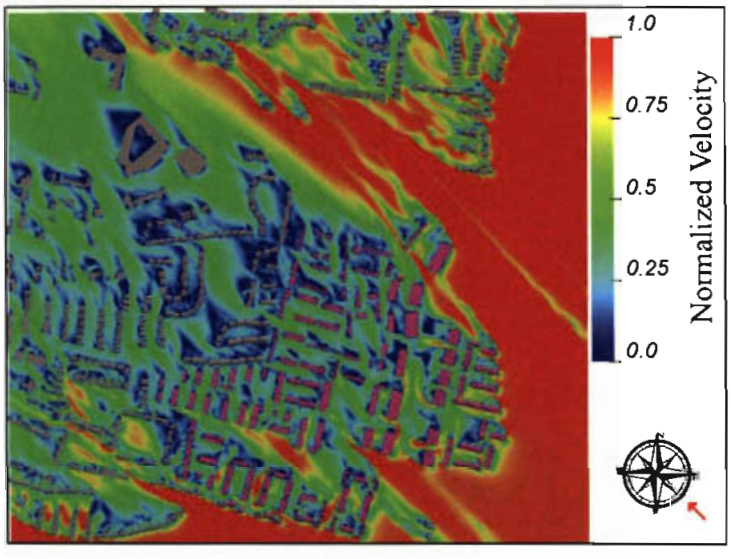


Figure 17.63 Wind at pedestrian level – cumulative – direction SSE

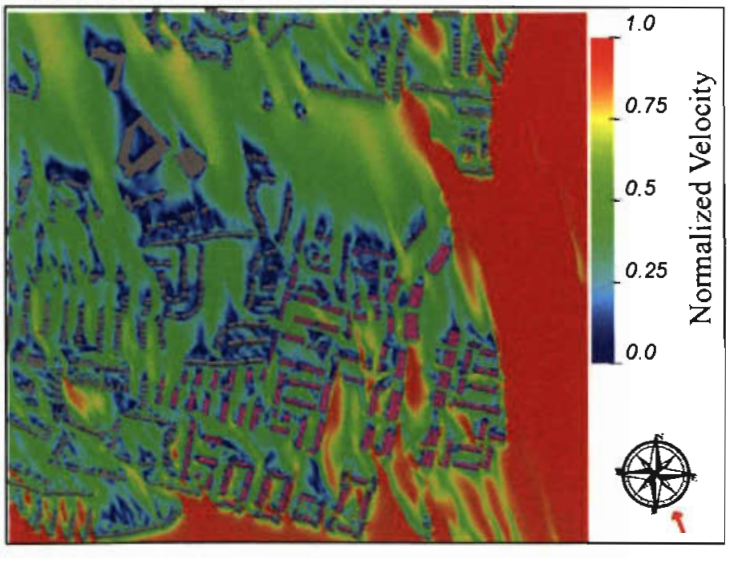


Figure 17.64 Wind at pedestrian level – cumulative – direction S

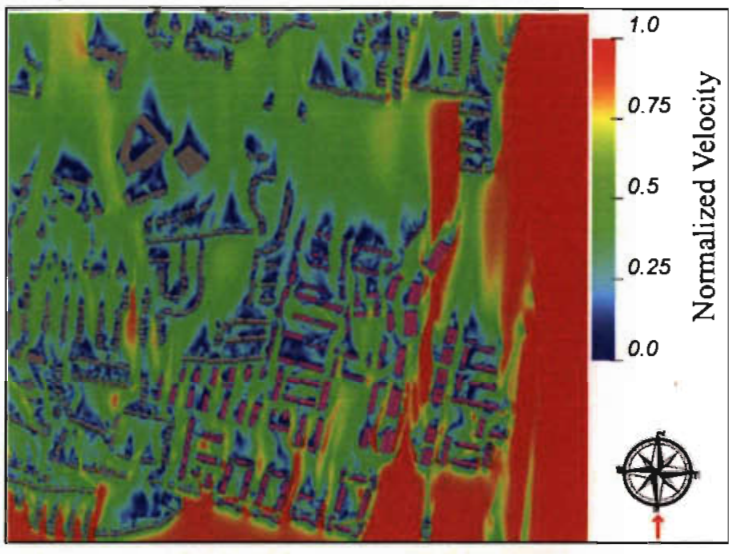


Figure 17.65 Wind at pedestrian level – cumulative – direction SSW

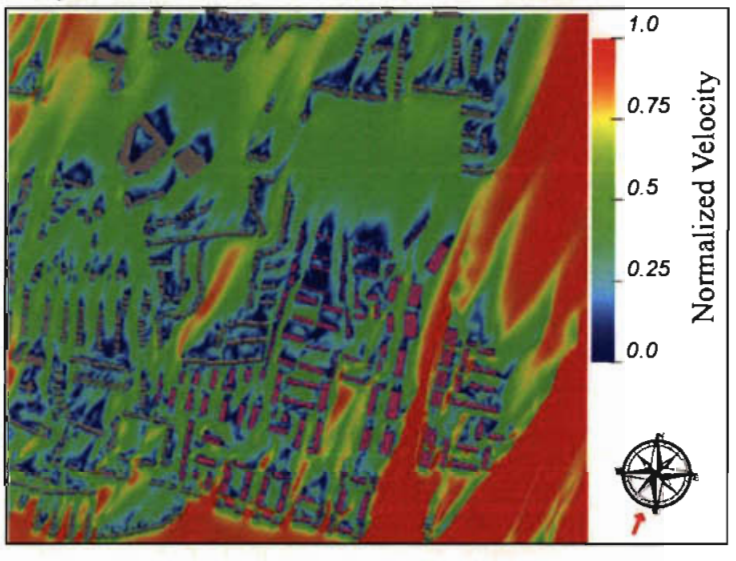


Figure 17.66 Wind at pedestrian level – cumulative – direction SW

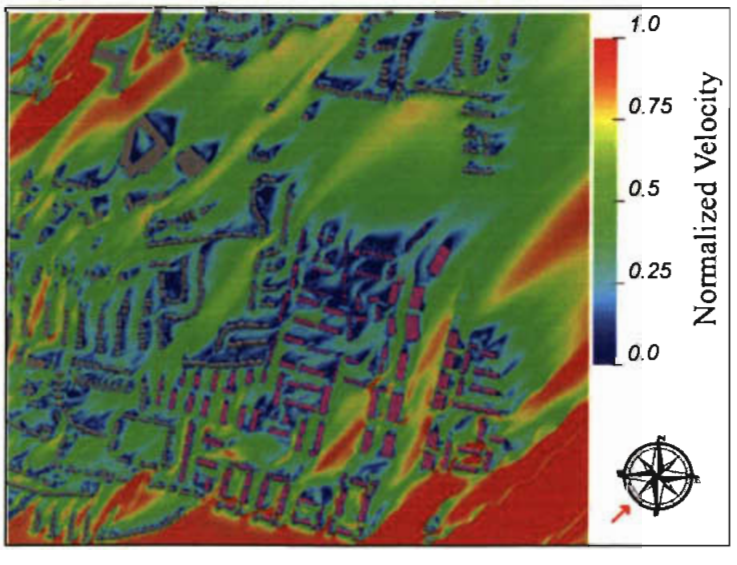


Figure 17.67 Wind at pedestrian level – cumulative – direction WSW

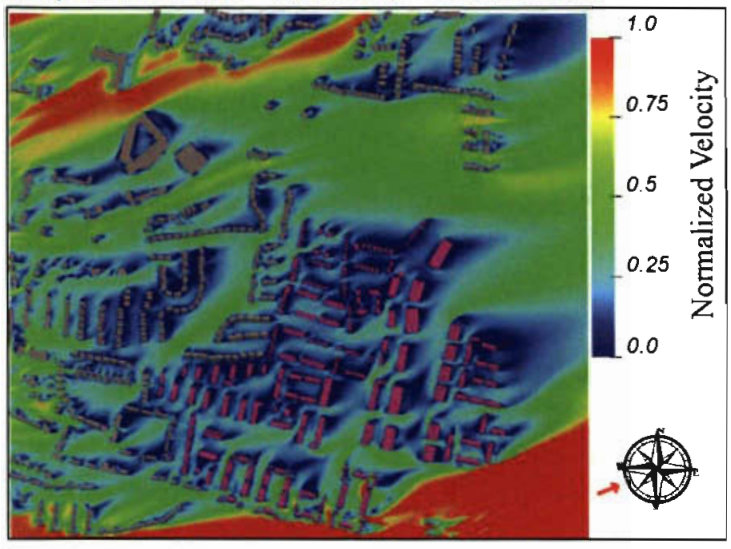


Figure 17.68 Wind at pedestrian level – cumulative – direction W

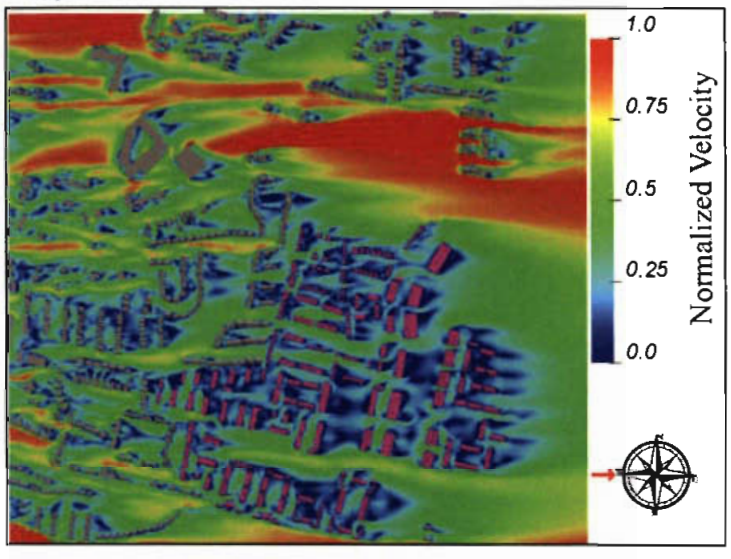


Figure 17.69 Wind at pedestrian level – cumulative – direction NWN

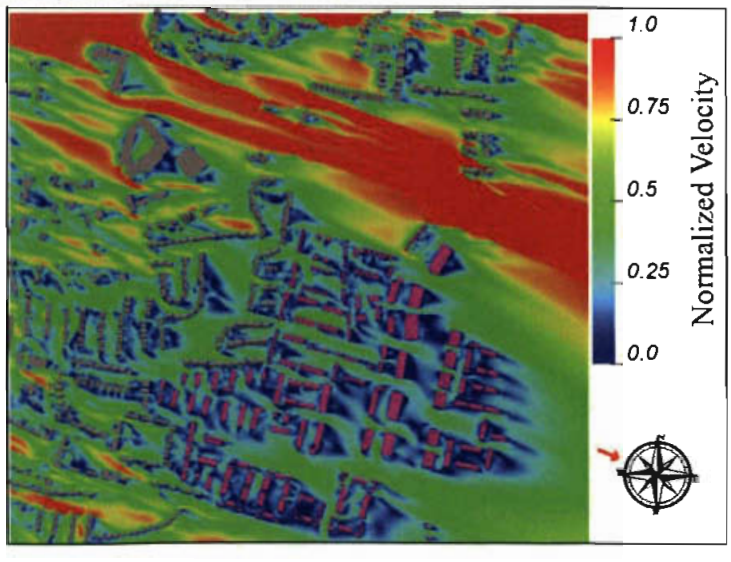


Figure 17.70 Wind at pedestrian level – cumulative – direction NW

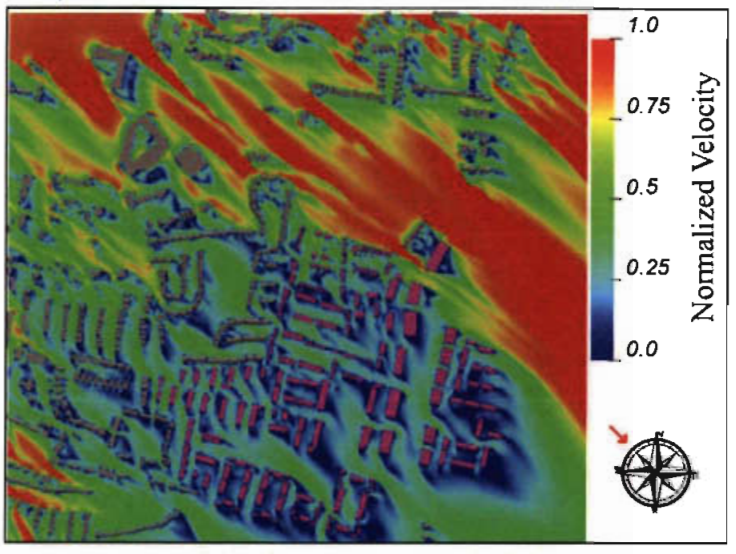
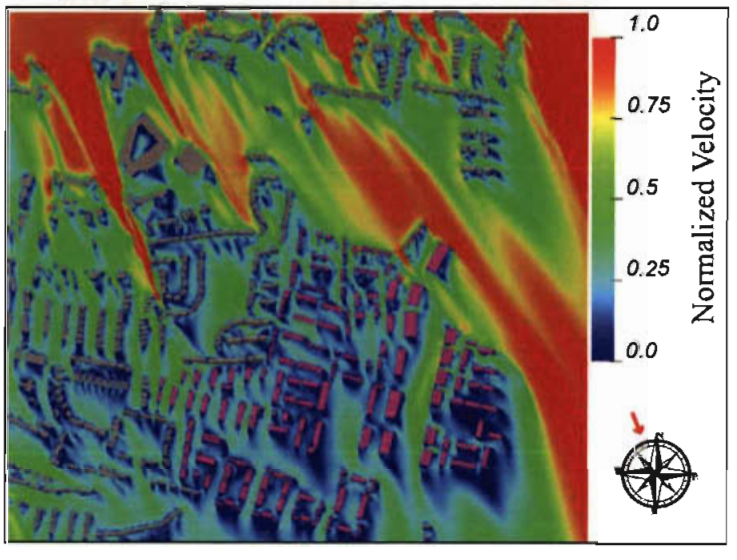


Figure 17.71 Wind at pedestrian level – cumulative – direction NNW



17.6.1.2 Cumulative Scenario Wind Microclimate

The wind flow results obtained simulating the different direction and wind speeds, are combined with wind frequencies of occurrence to obtain comfort ratings at pedestrian level in all areas included within the model. The comparison of comfort ratings with intended pedestrian activities is shown in the Lawson Comfort and Distress Map that follows (**Figure 17.72**). The comfort/distress conditions are presented using a colour coded diagram below formulated in accordance with the Lawson Criteria (**Figure 17.73**).

Figure 17.72 Lawson Criteria Scale

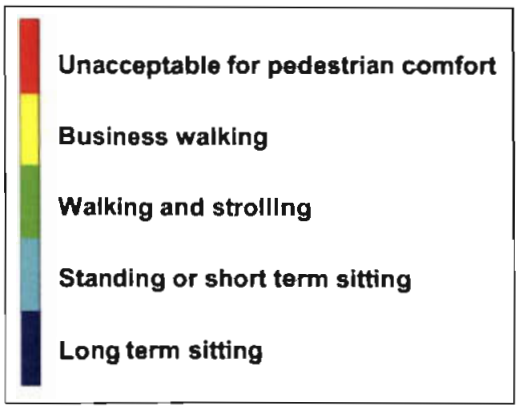
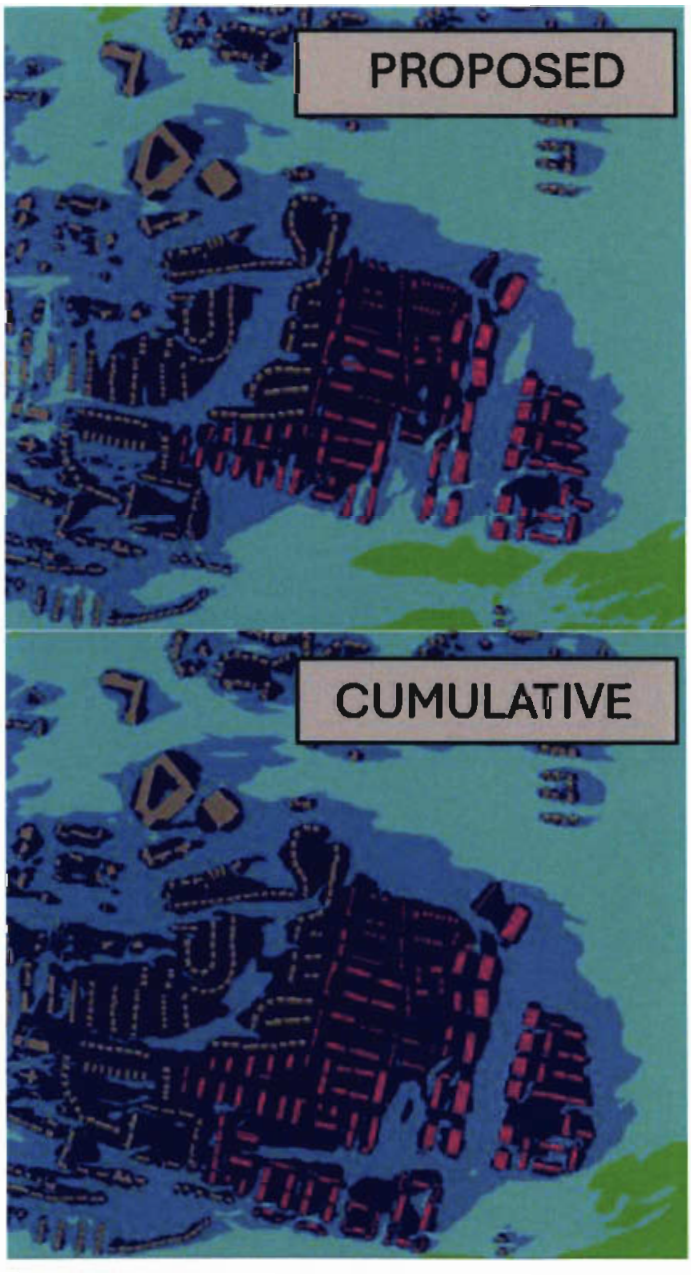


Figure 17.73 Wind comfort-distress map (Lawson map) – Baseline with Phase 1 vs Cumulative scenario



17.6.1.3 Summary

This section presented the analysis of the wind impact on the microclimate for prediction of pedestrian comfort/distress on the cumulative scenario of Ballymastone Phase 2 LRD.

The study has identified the possible wind patterns around the area proposed, under mean and peak wind conditions typically occurring in Dublin.

As done previously for the Baseline and Proposed scenarios, the same wind profile was adopted to simulate wind conditions for the Cumulative scenario. A CFD numerical model was built, to analyse the impact of the proposed development in a cumulative assessment.

The results of the wind speeds and patterns formed under the different simulated wind conditions were combined with its frequency of occurrence and an overall wind map was produced (Lawson map) which has shown the suitability of each area to a specific pedestrian activity.

The following conclusions can be made from observing the results of the wind microclimate analysis and comparing the results, under the same wind conditions for the proposed scenario in a cumulative assessment:

- The assessment has shown that no area is unsafe, and no conditions of distress are created by the proposed development on the site location when considering the cumulative scenario.
- All the roads within the area analysed can be used for their intended scope (walking where required).
- The proposed open areas can be used for long-term sitting/short term-sitting.
- The wind microclimate of the proposed development is comfortable and usable for pedestrians.
- As result of the proposed development construction, the wind on the surrounding urban context (area analysed) is also mitigated in the south-west and south-south-west directions when compared with the proposed scenario, in this sense the cumulative analysed has a beneficial effect on the surrounding wind microclimate and can create comfortable pedestrian areas and public spaces.
- As it can be noted from the viewing of the north-east area on the wind maps that follows, the conditions of the microclimate at the Recreational Hub have remain unchanged when passing from the proposed scenario to the cumulative one, the area is always suitable for short-term sitting.

Table 17.11, below indicates the impact and significance of the proposed development in a Cumulative Scenario on the on-site receptors (pedestrian areas, roads, entrances) and on the off-site receptors (roads/ pedestrian areas off-site on the north, south, west and east directions) The wind comfort distress map showing the baseline, proposed and cumulative scenarios are illustrated below. As a result of the proposed development construction in conjunction with the permitted development considered in the Cumulative Scenario, the wind on the surrounding urban context is also mitigated when compared with the baseline situation and the proposed scenario in the existing context. The proposed development therefore has a beneficial effect on the surrounding wind microclimate and can create comfortable pedestrian areas and public spaces.

Table 17.11 Significance impact of the proposed development versus cumulative conditions

Potential Receptors	Proposed Development Conditions (Phase 2)	Cumulative Development Conditions	Impact Significance
On-site			
Roads	Conditions are calmer than required for the intended pedestrian use (by at least one comfort category).	Conditions are calmer than required for the intended pedestrian use (by at least one comfort category this passing from short-term sitting to long-term sitting category when cumulative is considered).	Beneficial
Entrances	Conditions are "suitable" for the intended pedestrian use.	Conditions remain the same as in the proposed scenario	Negligible
Pedestrian circulation areas	Conditions are calmer than required for the intended pedestrian use (by at least one comfort category).	Conditions are calmer than required for the intended pedestrian use (by at least one comfort category this passing from short-term sitting to long-term sitting category when cumulative is considered).	Beneficial
Park areas	Conditions are "suitable" for the intended use. (short/long-term sitting considering the wind roses of the spring/summer season).	Conditions are calmer than required for the intended pedestrian use (by at least one comfort category this passing from short-term sitting to long-term sitting category when cumulative is considered).	Beneficial
Off-site			
Area-North	Conditions become calmer than required for the intended pedestrian use (by at least one comfort category).	Conditions remain the same as in the proposed scenario	Negligible
Area-South	Conditions remain the same as in the baseline scenario.	Conditions are calmer when compared with the proposed scenario	Beneficial
Area-East	Conditions remain the same as in the baseline scenario.	Conditions remain the same as in the proposed scenario	Negligible
Area-West	Conditions remain the same as in the baseline scenario.	Conditions remain the same as in the proposed scenario	Negligible

Figure 17.74 Wind comfort-distress map: Proposed versus Cumulative scenario

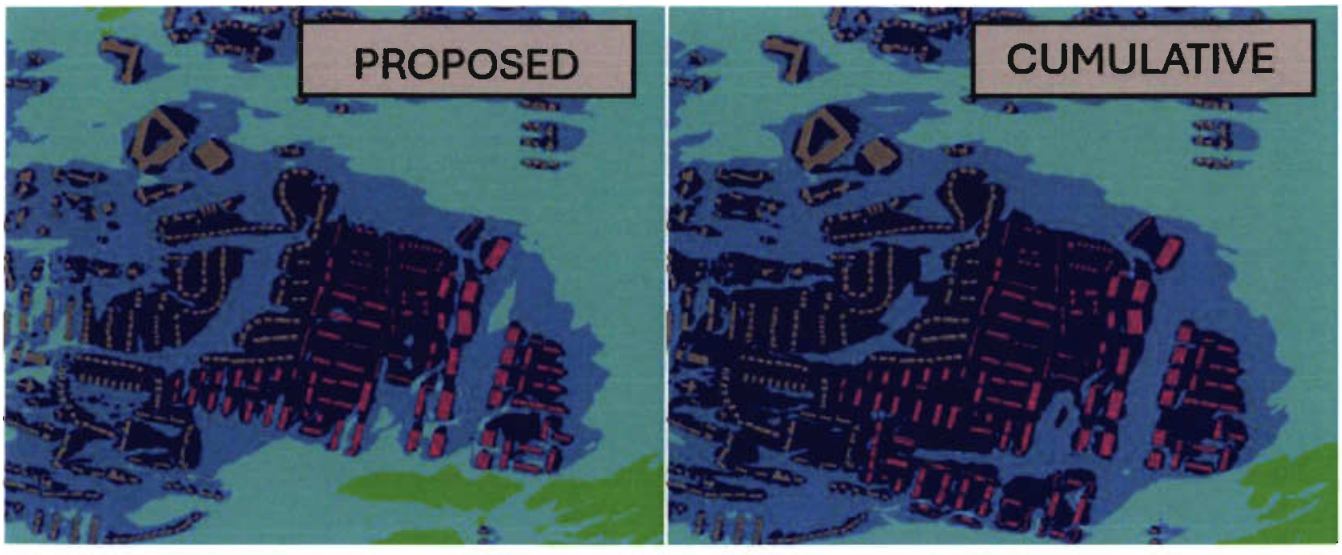
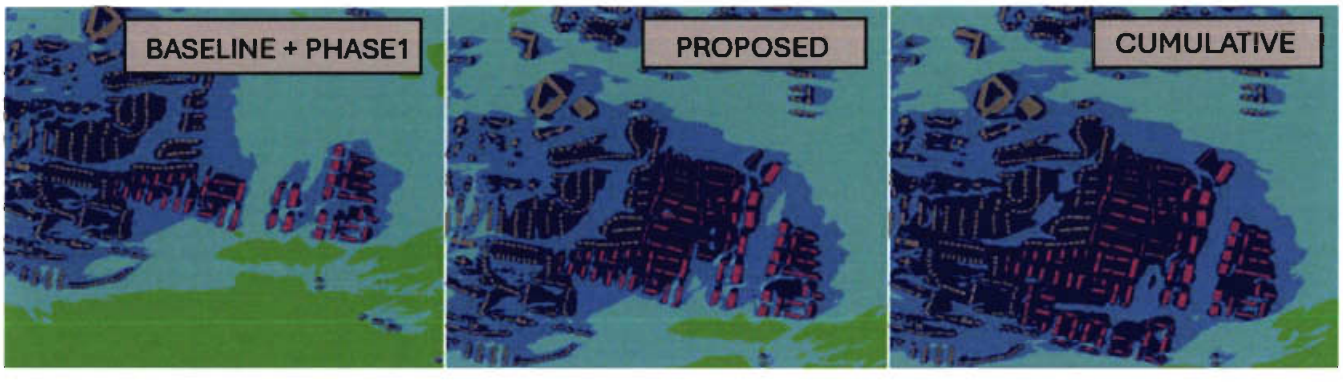


Figure 17.75 Wind comfort-distress map: Baseline WITH Phase 1 versus Proposed versus Cumulative scenario



17.7 Mitigation Measures

Beyond what is already proposed under the scope of the proposed development, no further mitigation is proposed in relation to wind.

The landscaping proposed for the development has been considered within the wind analysis carried out and its effect has been beneficial in reducing the wind speed around the development and creating calmer wind condition in areas such the parks and landscaped areas where pedestrian can be comfortable for long-term sitting. Landscaping is simulated as porous zones within the CFD model.

17.8 Residual Impacts

Wind cannot be eliminated or totally mitigated, as it depends on weather conditions, which could vary. The data of the historical wind conditions collected and reported above, show that the wind speeds likely to occur at the site are below critical values, and that a pleasant and comfortable microclimate can be maintained for most of the time and under the most frequent wind scenarios.

Gusts and storms can still occur, however; and they can create unpleasant and sometimes unsafe conditions. The pedestrian activities concerning the Lawson Comfort and Distress Criteria are not in general carried out during those weather conditions.

Having considered the above, no further changes to the proposed development design or further landscaping are suggested, as safety and pedestrian comfort will be maintained in accordance with Lawson Comfort and Distress Criteria. As observed in the above **Table 17.10** and **17.11** the significance of the impacts of the development are compared versus the baseline scenario and found to be negligible in particular to the evaluation of the entrances of the proposed development and also for the off-site receptors located on the east, south and west areas where the conditions have been shown in line with those obtained prior construction of the development. Furthermore, pedestrian activities will benefit by the construction of the proposed development in the designed roads and amenities areas (such as the proposed Parks) and conditions of microclimate is also improved for the north off site receptor. Residual effects are not significant.

17.9 Indirect and /or Secondary Impacts

The conducted numerical simulation did not evidence any indirect or secondary impact as result of the proposed development for what concerns wind comfort-distress conditions.

17.10 Interactions

The principal interaction is with Chapter 7 (Population & Human Health), since the wind conditions at the proposed development site can affect the amenity and safety of residents and visitors, as discussed above. As set out in **Table 17.10** and **Table 17.11**, above, in all cases, the proposed development will deliver a wind microclimate that is either suitable for all intended pedestrian uses, or calmer than required for the intended uses. In a number of instances, the proposed development will result in an improved (i.e., calmer) wind microclimate relative to the baseline scenario. Therefore, **no significant impacts** on population and human health are predicted as a result of the wind effects of the proposed development.

17.11 Difficulties Encountered

No particular difficulties were encountered in compiling this chapter.

17.12 References

- Wind Microclimate Guidelines for Developments in the City of London '(August 2019)
- BRE Digest (DG) 520, "Wind Microclimate Around Buildings" (BRE, 2011).
- Building Aerodynamics, Tom Lawson Fr.Eng. Imperial College Press, (2001).
- Computational Fluid Dynamics for Urban Physics: Importance, scales, possibilities, limitations and ten tips and tricks towards accurate and reliable simulations. Building and Environment. B.Brocken (2015).
- CFD simulation for pedestrian wind comfort and wind safety in urban areas: General decision framework and case study for the Eindhoven University campus. Environmental Modelling and Software, 30, pp.15–34. Blocken, B., Janssen, W.D. and van Hooff, T., (2012).
- Best Practice Guidelines for the CFD Simulation of Flows in the Urban Environment, University of Hamburg. Franke, J., Hellsten, A., Schlunzen, H., Carissimo, B, Ed.

18 Traffic & Transportation

18.1 Introduction

This chapter of the EIAR assesses the likely effects of the proposed development in terms of vehicular, pedestrian and cycle access during the construction and operational phases of the proposed development.

This Chapter of the EIAR has been prepared by DBFL Consulting Engineers. Refer to **Table 1.4** in Chapter 1 (Introduction) for qualifications of authors.

An overall commentary on the predicted changes in traffic, public transport, pedestrian, and cyclist environmental conditions are discussed in this chapter and inform a number of other assessments undertaken in this EIAR.

18.2 Method

The purpose of this assessment is to quantify the existing transport environment and to detail the results of assessment work undertaken to identify the potential level of transport impact generated as a result of the proposed development. The scope of the assessment covers transport and mobility issues including pedestrian, cyclist and public transport connectivity. Recommendations contained within this chapter are based on existing and proposed road layout plans, site visits, traffic observations and historic junction vehicle turning count data. The methodology incorporated a number of key inter-related stages, including;

- **Site Audit**: A site audit was undertaken to quantify existing road network issues and identify local infrastructure characteristics, in addition to establishing the level of accessibility to the site in terms of walking, cycling and public transport. An inventory of the local road network was also developed during this stage of the assessment.
- **Traffic Counts**: Traffic count surveys were carried out on 18 April 2023 for the surrounding area, the results of which were analysed with the objective of establishing local traffic characteristics in the immediate area of the proposed Ballymastone development.
- **Trip Generation**: A trip generation exercise has been carried out to establish the potential level of future vehicle trips using the proposed development.
- **Trip Distribution**: Based upon both the existing traffic survey characteristics and the network layout in addition to the spatial / land use configuration, a distribution exercise has been undertaken to assign the subject development's generated vehicle trips across the local road network.
- **Network Impact**: The specific level of influence generated by the proposed development upon the local road network was ascertained.
- **Network Analysis**: Further to quantifying the predicted impact of vehicle movements across the local road network for the adopted site access strategy, additional detailed computer simulations have been undertaken to assess the operational performance of key junctions in the post development 2026, 2031 and 2041 development scenarios.

DBFL's approach to the study accords with policy and guidance both at a national and local level. Accordingly, the adopted methodology responds to best practices, current and emerging guidance, exemplified by a series of publications, all of which advocate this method of analysis. Key publications consulted include:

- *'Traffic and Transport Assessment Guidelines'* (May 2014) National Road Authority;
- *'Traffic Monagement Guidelines'* Dublin Transportation Office & Department of the Environment and Local Government (May 2003);
- *'Guidelines for Traffic Impact Assessments'* The Institution of Highways and Transportation (1994);
- Design Manual for Urban Roads and Streets (DMURS) (May 2019);
- Sustainable Urban Housing: Design Standards for New Apartments (July 2023);
- Sustainable Residential Development and Compact Settlement Guidelines for Planning Authorities (2024);
- Greater Dublin Area Transport Strategy 2022-2042 ;
- Donabate Local Area Plan 2016; and
- *Fingal Development Plan 2023 – 2029.*

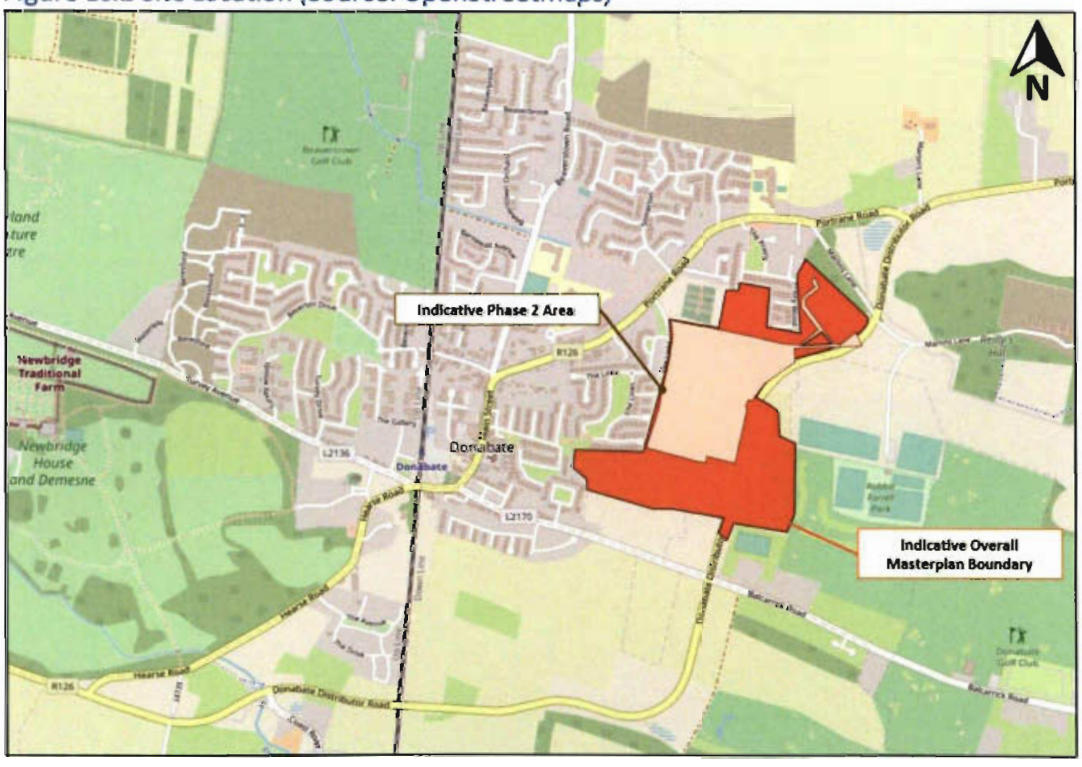
The assessment of effects of the proposed development on material assets (which include traffic and transport infrastructure, as per the EPA *Guidelines on the information to be contained in Environmental Impact Assessment Reports* (2022)) are assessed in terms of quality (positive, neutral or negative effects), significance (imperceptible, not significant, slight, moderate, significant, very significant or profound effects), extent, context, probability (likely, unlikely effects) and duration (temporary, short term, long term or permanent effects) in line with the criteria set out in **Table 1.5** in Chapter 1 (Introduction).

18.3 Baseline Environment

18.3.1 Site Location

The general location of the subject site in relation to the wider Ballymastone Masterplan lands, surrounding region and road network is illustrated in **Figure 18.1**. The subject site is located approximately 21 km north-east of Dublin City centre.

Figure 18.1 Site Location (Source: OpenStreetMaps)



The recently completed Donabate Distributor Road (DDR) runs in a north-south direction to the east of the subject site from the R126 Hearse Road to the R126 Portrane Road. The R126 Hearse Road subsequently provides access to the R132 and Swords to the west and the M1 via Junction 4. The destinations of Drogheda and Dundalk can be reached by following the M1 northbound, whilst Dublin Airport and Dublin can be reached by following the M1 southbound.

To the south of the subject site, New Road runs in an east-west direction and provides access to Donabate Village and subsequently the R132. Travelling north on the R132 access is provided to Lusk and Skerries via the R127.

18.3.2 Existing Road Network

The DDR runs in a north-south direction to the east of the site, comprising a two-way single lane carriageway with 3.75 m wide traffic lanes in both directions in the vicinity of the site. The DDR is subject to a speed limit of 60 kph with street lighting provided on one side of the carriageway. The DDR continues northbound towards the DDR / Portrane Road priority junction, and southbound towards the Hearse Road / DDR signalised junction.

Travelling west onto the R126 from the DDR, motorists can access the M1 Motorway, which provides convenient access to Dublin City centre to the south and the M50, which provides strategic network access across the Greater Dublin Area (GDA). Destinations such as Drogheda and Dundalk can be accessed via the M1 to the north.

The Portrane Road runs in an east-west direction to the north of the site between Portrane and Donabate Village, comprising a two-way single lane carriageway. The Portrane Road is subject to a speed limit of 50 kph with street lighting provided on one side of the carriageway. The Portrane Road connects with Main Street and Beaverstown Road via a priority junction. The northern extents of the site will access the Portrane Road via the Links at a priority junction.

New Road runs in an east-west direction to the south of the site, comprising a two-way single lane carriageway. New Road is subject to a speed limit of 50 kph with street lighting provided on one side of the carriageway. New Road connects with Main Street via a priority junction. **Figure 18.2** below illustrates the location of the Ballymastone Masterplan lands and proposed development site within the context of the existing road network.

Figure 18.2 Existing Road Network (Source: www.google.ie/maps)

18.3.3 Existing Pedestrian and Cycling Facilities

A segregated cycle track and footpath is provided on both sides of the DDR in the vicinity of the subject site, with street lighting provided on one side of the carriageway, as shown in **Figure 18.3**. Pedestrian crossings are provided at a number of locations along the DDR, including the eastern site access, the DDR / New Road junction and the DDR / Hearse Road junction. The pedestrian crossing at the eastern site access is shown in **Figure 18.4**.

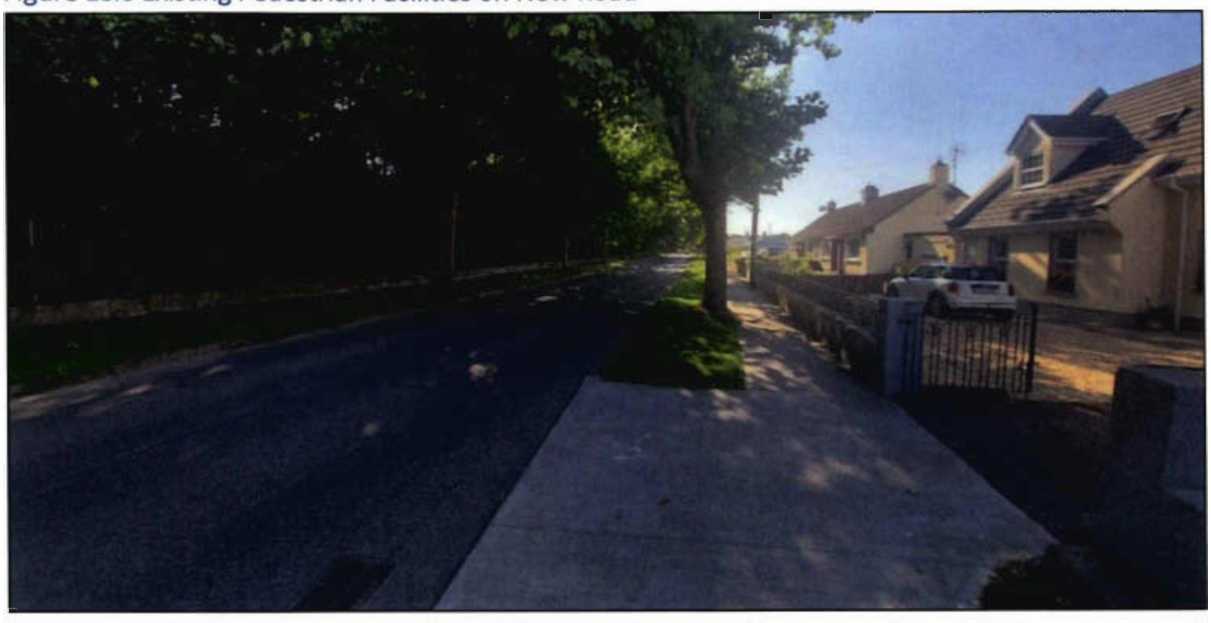
Figure 18.3 Existing Pedestrian/Cycle Facilities on the DDR

Figure 18.4 Pedestrian Crossing on DDR at Eastern Site Access

There is a continuous footpath on the northern side of the carriageway on the Portrane Road, as well as intermittent sections of footpath along the southern side of the carriageway. There is a controlled pedestrian crossing at the Portrane Road / the Links junction located to the north of site, as shown in **Figure 18.5**.

Figure 18.5 Pedestrian Facilities on Portrane Road Adjacent the Portrane Road / The Links Junction

Figure 18.6 Existing Pedestrian Facilities on New Road



There is a continuous footpath on the northern side of the carriageway on New Road as well as sections of the southern side of the carriageway as shown in **Figure 18.6**. There is a pedestrian crossing at the New Road / DDR junction located to the south of the subject site, as shown in **Figure 18.7**.

Donabate currently has limited dedicated cycling facilities but has potential to become a cycling town. The *GDA Cycle Network Plan* currently proposes a number of cycle route networks within Donabate. These include an inter-urban route, an urban/town network and a greenway.

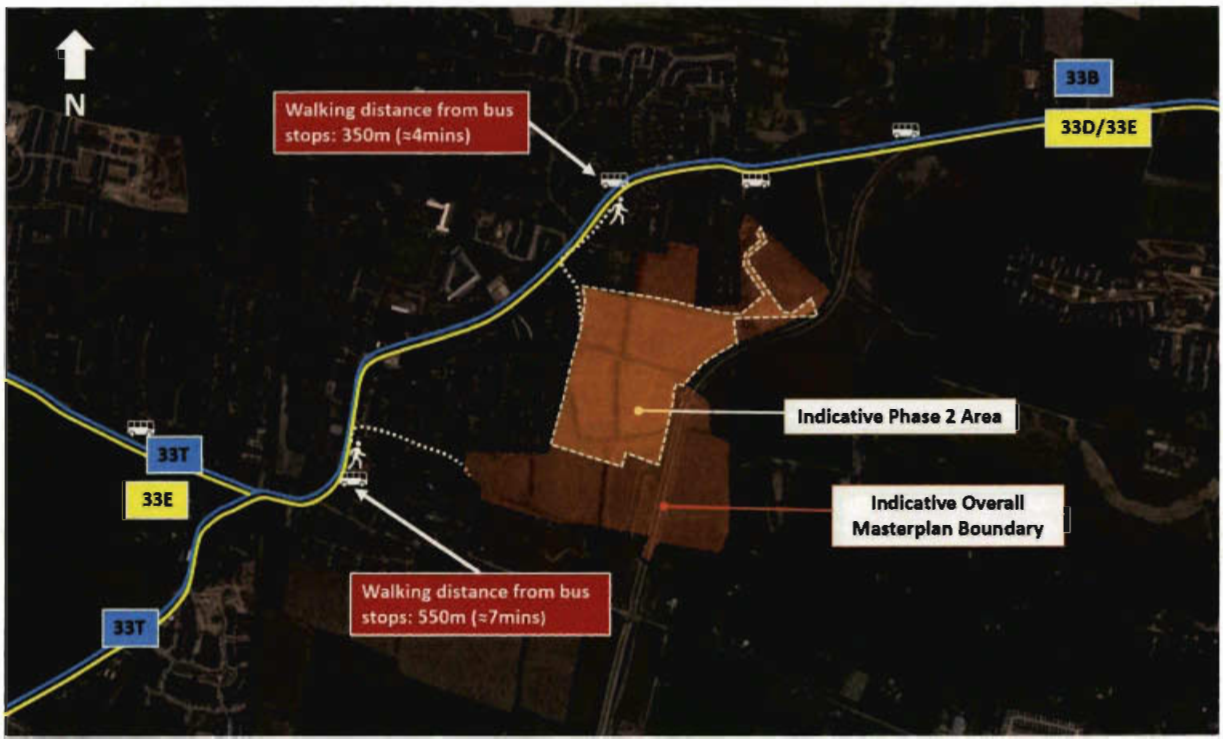
Figure 18.7 Pedestrian Crossing at the DDR/New Road Junction

18.3.4 Existing Public Transport – Bus

Dublin Bus operates route numbers 33d and 33e, and GoAhead operates route number 33b, which serve the subject site locale. The nearest bus interchange opportunities to the subject site are located on the Portrane Road (situated approx. 350 m north of the site) and on Main Street (situated approx.

550 m west of the site), as indicated in **Figure 18.8**. All four bus routes serve the bus stops indicated in **Figure 18.8** and are between ~4-7 minutes walking distance from the site.

Figure 18.8 Existing Bus Routes and Bus Stop walking distance from Subject Site (Source: Google Maps)



Go-Ahead 33b operates daily and offers frequent services (i.e. every 20-30 minutes at peak times) between Portrane and Swords. Go- Ahead 33t operates Monday to Friday only, providing two routes, Donabate Ns to Station Road (PM) and Turvey Avenue to Donabate (AM). Dublin Bus 33d provides a single one-way service and commences at 07:20 from Marsh Lane (Portrane) to Stephen's Green. Dublin Bus 33e provides a single one-way service and commences at 07:00 from Abbey St. Lower to Skerries. A summary of current bus services is provided in **Table 18.1**.

Table 18.1 Bus Routes and Service Frequency in Donabate

Operator	Route No.	Route	Frequency (mins)		
			Mon – Fri	Saturday	Sunday
Go Ahead Ireland	33B	Portrane - Swords	20-30	30-60	30-60
Go Ahead Ireland	33t	Donabate NS – Station Road	2 service		
Dublin Bus	33d	Portrane – St. Stephen's Green	1 Service	-	-
Dublin Bus	33e	Abbey St. Lower to Mourne View (Skerries)	1 Service	-	-

18.3.5 Existing Public Transport – Heavy Rail

The proposed development site is between 850 m – 1,500 m from Donabate Railway Station (measured from the nearest and furthest points of the development site, respectively). The well-established rail infrastructure in Donabate provides linkages to Dublin City centre to the south, and Drogheda to the north, from where further onwards connections can be made to other regional, strategic and intermediate destinations as part of Irish Rail's regional and Dublin commuter services as shown in **Figure 18.9**.

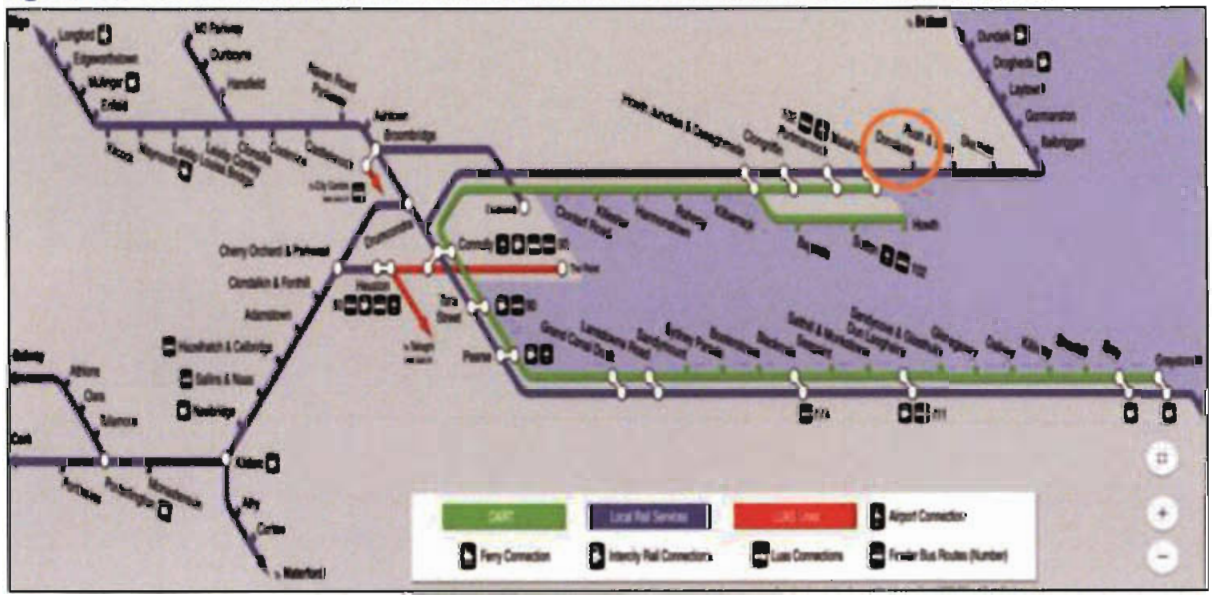
Donabate Railway Station is currently well served by up to 28 no. commuter rail services providing connections to and from Dublin City Centre on a typical weekday, operating at a frequency of 15 – 20 minutes during peak times. **Table 18.2** below presents a summary of rail services available at Donabate Railway Station.

Table 18.2 Rail Services to and from Donabate (No. of Services)

Route	Monday – Friday	Saturday	Sunday
Donabate to Dublin	28	19	15
Dublin to Donabate	25	21	15
Donabate to Drogheda	24	21	15
Drogheda to Donabate	28	19	15
Donabate to Dundalk	8	5	2
Dundalk to Donabate	5	5	1

The availability, convenient access, frequency of services and range of destinations reachable via Donabate Railway station is likely to attract a number of rail users with an ultimate multi-modal trip origin / destination within the potential future development.

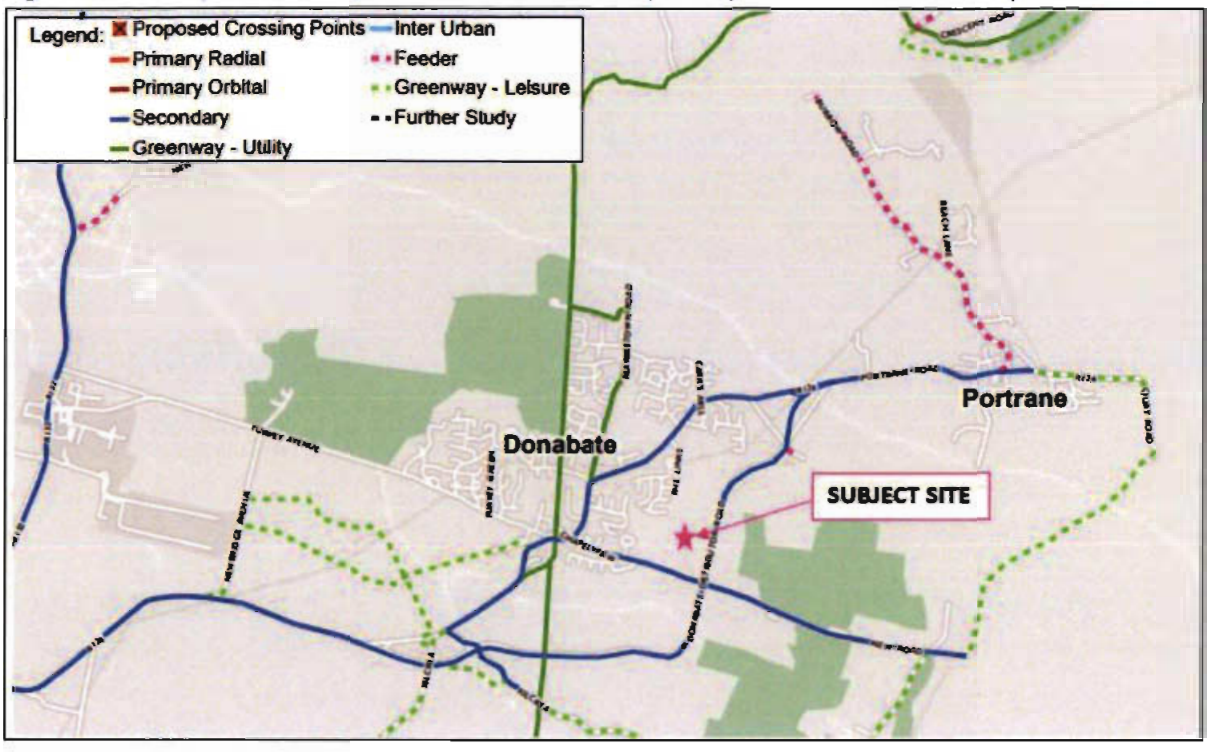
Figure 18.9 Irish Rail Network and Onwards Potential Connections from Donabate Station



18.3.6 GDA Cycle Network Plan

The subject site is located within the "Lusk, Rush & Donabate" Sector as outlined within the Greater Dublin Area Cycle Network Plan (2022). The GDA's Cycle Network Plan proposes two categories of cycle route networks within Donabate Town. These include the introduction of secondary routes and a greenway. The Cycle Network Plan proposes the following route additions as indicated on **Figure 18.10** below.

Figure 18.10 Proposed GDA Cycle Routes in Donabate (GDA Cycle Network Plan 2022)



18.3.7 BusConnects

The National Transport Authority (NTA) has developed a strategic transport plan, known as *BusConnects*, which will transform and overhaul the current bus network to provide a more efficient network. The proposed network will deliver the 'next generation' of bus corridors on the busiest routes and redesign routes with the aim of offering fast, predictable and reliable bus journeys.

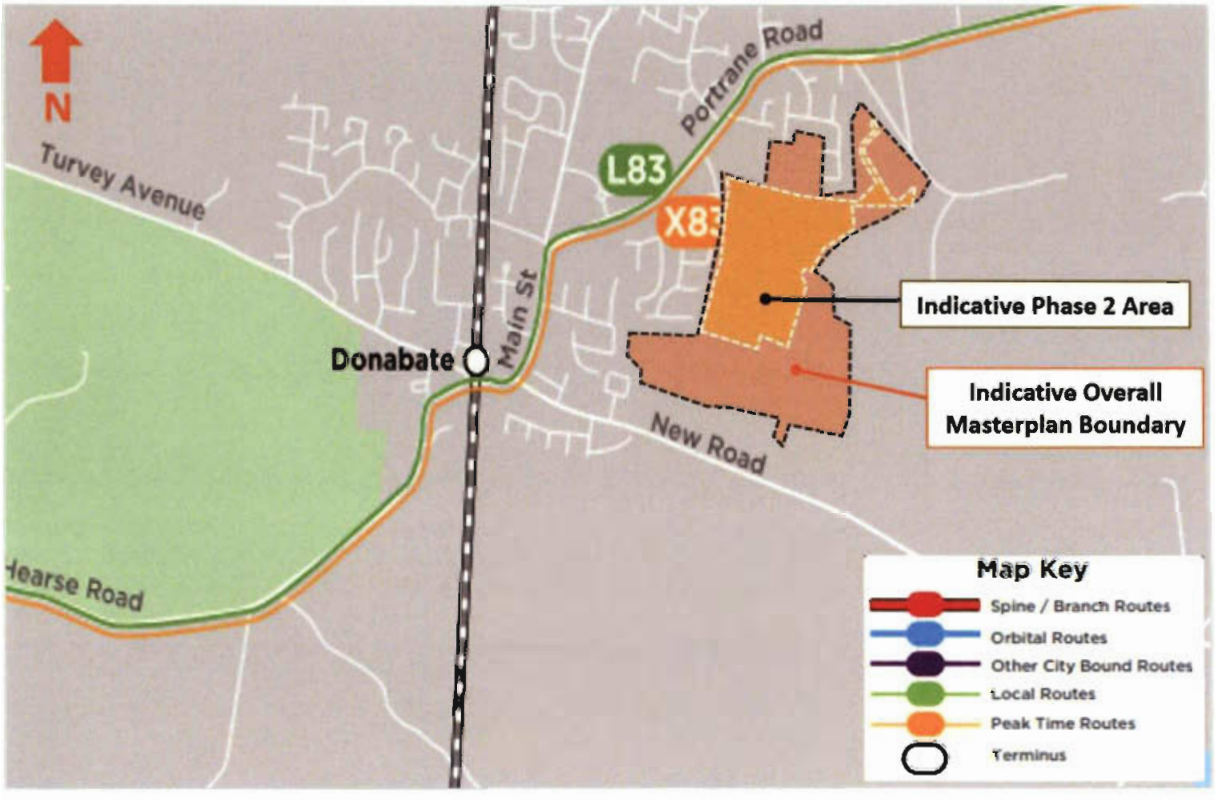
Under the BusConnects proposals, the following routes will serve Donabate and the subject site, as shown below in **Figure 18.11**:

- Route L83: Portrane – Donabate – Swords - Airport
- Route X83: Portrane - Donabate – City Centre - UCD

Route L83 will run every 30 minutes on weekdays and weekends from Portrane to Dublin Airport via Donabate and Swords. It is proposed to operate along the Portrane Road approximately 250 m north of the subject site.

Route X83 is exclusively a peak time route which will run from Portrane to University College Dublin (UCD) via Donabate and Dublin City centre. This route is proposed with one southbound AM trip from Portrane between 8:00 and 9:00, and one northbound PM trip from UCD, starting between 17:00 and 18:00. The routes are proposed to operate along the Portrane Road approximately 250 m north of the subject site.

Figure 18.11 Proposed BusConnects Routes in Donabate (Source: www.busconnects.ie)



18.3.8 Dublin Area Rapid Transit (DART) Expansion Programme

The Dublin Area Rapid Transit (DART+) programme aims to modernise and improve the existing rail network, which radiates from Dublin City centre. It will provide a sustainable, electrified, faster, reliable and user-friendly rail system, which increases train frequencies and customer carrying capacity. It intends to increase the length of the DART network from the currently 50 km to a 150 km railway corridor through the electrification and upgrade of existing lines transforming commuter train travel in the GDA. The DART+ programme also includes the purchase of new train fleet.

The programme will deliver frequent, modern, electrified services between Dublin City centre (Connolly and Spencer Dock) and the following:

- Maynooth and M3 Parkway;
- Hazelhatch and Celbridge;
- Drogheda; and
- Greystones.

This proposed infrastructure will further increase the accessibility of Donabate and its environs. The timeline for the delivery of the DART Expansion is unclear, however the Greater Dublin Area Transport Strategy 2022-2042 states that the strategic transport infrastructure is proposed to be delivered within the Short-Term 2022-2030 time period. **Figure 18.12** below shows the DART+ Programme route map.

Figure 18.12 DART+ Programme Route Map (Source : www.irishrail.ie)

18.3.9 Accident Data

With the objective of ascertaining the road safety record of the immediate routes leading to and from the subject site, the collision statistics as detailed on the Road Safety Authority's (RSA) website (www.rsa.ie) have been examined. The RSA website includes basic information relating to reported collisions over the most recent twelve-year period, from 2005 to 2016 inclusive.

The RSA database records details where collision events had been officially recorded such as the when the Garda were present to formally record details of the incident. As shown in **Figure 18.13** and **Table 18.3**, below, 1 no. fatal incident, 2 no. serious incidents and 26 no. minor incidents were recorded in the vicinity of the subject site during this period.

- The fatal incident (ref. no. 30 in **Table 18.3**) involved a car and pedestrian, and occurred on the Portrane Road (R128). It was reported that 1 no. fatality arose from this incident. The collision occurred between 19:00 to 23:00 on a Thursday, on a road that was subject to a speed limit of 50 kph.

- Incident no. 4 (as listed in **Table 18.3**) was assigned a severity level of 'serious' and involved a car. The incident occurred at the Main Street / Chapel View junction. It was reported that 1 no. serious casualty arose. The collision occurred between 03:00 to 07:00 on a Saturday, on a road that was subject to a speed limit of 50 kph.
- Incident no. 29 (as listed in **Table 18.3**) was also classified as a 'serious' incident and involved a car. The incident occurred at the Portrane Rd (R128) / Carr's Mill junction. It was reported that 1 no. serious casualty arose. The collision occurred between 10:00 to 16:00 on a Tuesday on a road that was subject to a speed limit of 60 kph.

Based on the RSA data and industry standards, the roads and junctions surrounding the site can be described as exhibiting a reasonable safety record with no underlining incident trends evident.

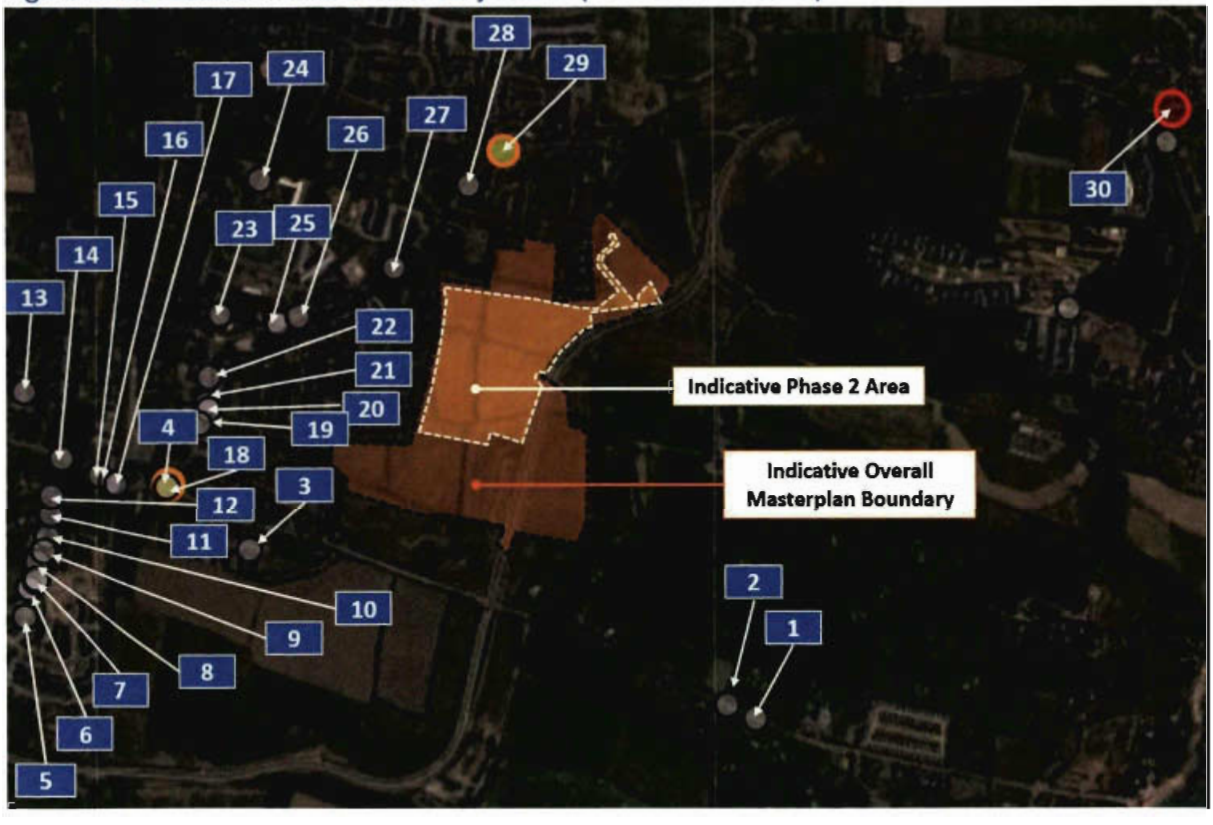
Table 18.3 Collision Reference Points (Source www.rsa.ie)

Ref. No.	Severity	Year	Vehicle	Circumstances	Day	Time	Speed limit	Casualties
1	Minor	2011	Bicycle	Head-on conflict	Thursday	2300-0300	80 KPH	1
2	Minor	2016	Car	Head-on conflict	Tuesday	1000-1600	50 KPH	3
3	Minor	2010	Car	Rear end, straight	Saturday	10:00 - 16:00	30 KPH	1
4	Serious	2005	Car	Single vehicle only	Saturday	0300-0700	50 KPH	1
5	Minor	2011	Car	Head-on conflict	Tuesday	10:00 - 16:00	80 KPH	2
6	Minor	2011	Car	Single vehicle only	Saturday	07:00 - 10:00	60 KPH	2
7	Minor	2012	Goods vehicle	Rear end, straight	Monday	0700-1000	50 KPH	1
8	Minor	2008	Goods vehicle	Pedestrian	Monday	16:00 - 19:00	50 kph	1
9	Minor	2012	Car	Pedestrian	Sunday	10:00 - 16:00	40 KPH	1
10	Minor	2010	Car	Single vehicle only	Monday	10:00 - 16:00	60 KPH	1
11	Minor	2006	Car	Head-on conflict	Wednesday	19:00 - 23:00	60 KPH	2
12	Minor	2009	Car	Head-on conflict	Monday	19:00 - 23:00	50 kph	1

Ref. No.	Severity	Year	Vehicle	Circumstances	Day	Time	Speed limit	Casualties
13	Minor	2005	Bicycle	Rear end, straight	Saturday	10:00 - 16:00	30 KPH	2
14	Minor	2015	Undefined	Head-on conflict	Sunday	10:00 - 16:00	50 kph	1
15	Minor	2010	Car	Rear end, straight	Friday	10:00 - 16:00	50 KPH	1
16	Minor	2015	Bicycle	Other	Thursday	16:00 - 19:00	50 kph	1
17	Minor	2012	Goods vehicle	Rear end, straight	Monday	07:00 - 10:00	50 KPH	1
18	Minor	2012	Car	Single vehicle only	Thursday	16:00 - 19:00	60 KPH	1
19	Minor	2005	Car	Rear end, straight	Thursday	16:00 - 19:00	50 KPH	1
20	Minor	2007	Car	Pedestrian	Sunday	19:00 - 23:00	50 kph	1
21	Minor	2006	Car	Pedestrian	Friday	07:00 - 10:00	50 KPH	1
22	Minor	2008	Car	Rear end, straight	Saturday	10:00 - 16:00	50 kph	2
23	Minor	2012	Car	Pedestrian	Wednesday	07:00 - 10:00	50 KPH	1
24	Minor	2005	Car	Pedestrian	Sunday	03:00 - 07:00	50 KPH	1
25	Minor	2012	Car	Pedestrian	Thursday	23:00 - 03:00	60 KPH	1
26	Minor	2012	Car	Angle, right turn	Monday	16:00 - 19:00	30 KPH	1

Ref. No.	Severity	Year	Vehicle	Circumstances	Day	Time	Speed limit	Casualties
27	Minor	2008	Car	Pedestrian	Wednesday	10:00 - 16:00	50 kph	1
28	Minor	2008	Car	Angle, both Straight	Wednesday	10:00 - 16:00	60 KPH	1
29	Serious	2007	Car	head-on conflict	Tuesday	10:00 - 16:00	60 KPH	1
30	Fatal	2010	Car	Pedestrian	Thursday	1900-2300	50 KPH	1

Figure 18.13 Collision Points around Subject Site (Source: www.rsa.ie)



18.4 Characteristics of the Proposed Development

18.4.1 Proposed Development

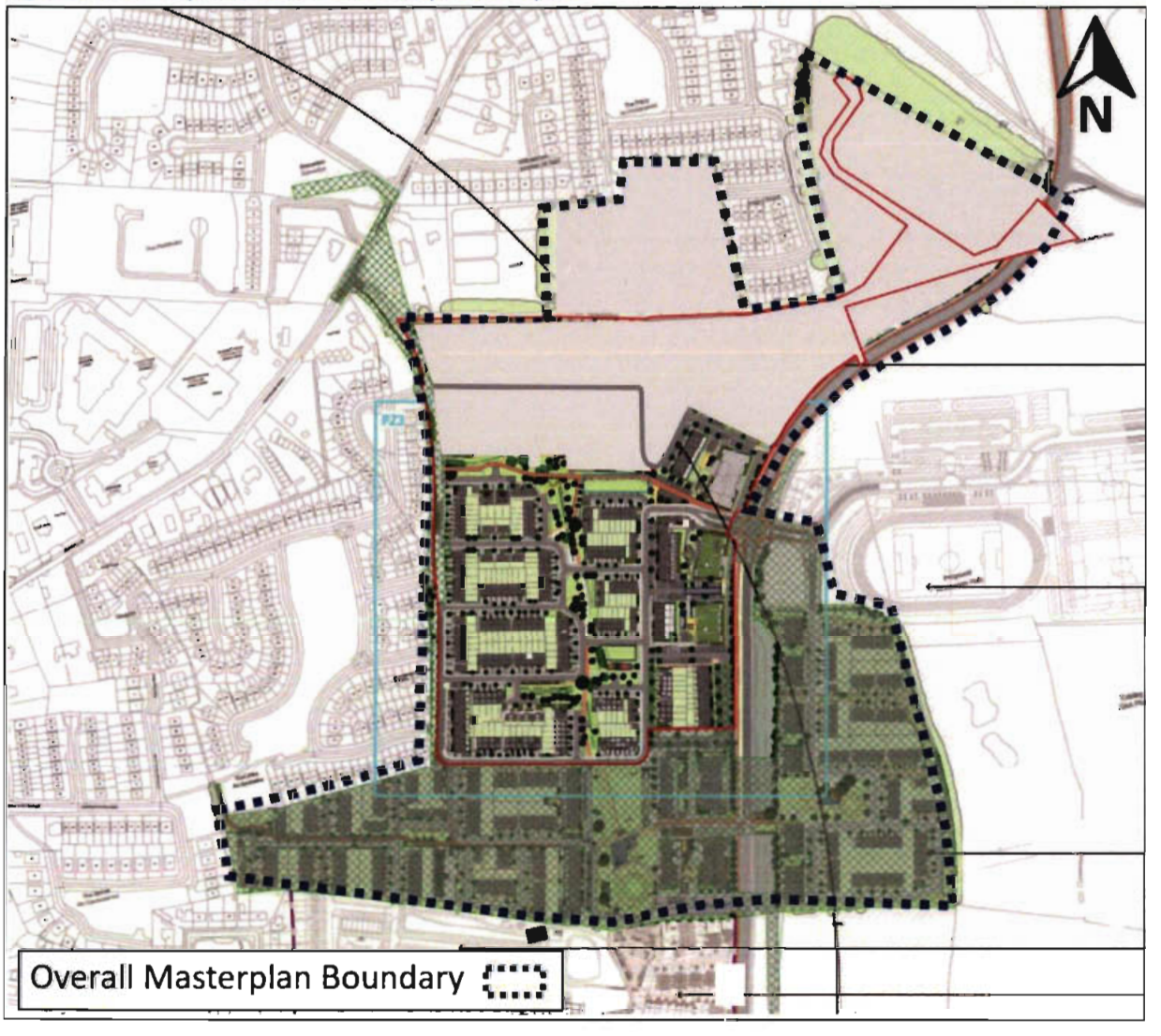
The proposal is for a residential development of 364 no. units located on lands to the west of the Donabate Distributor Road (DDR) between New Road and Portrane Road in Donabate, Co. Dublin. The development comprises 54 no. 2-bed houses, 99 no. 3-bed houses, 5 no. 4-bed houses, 8 no. 1-bed duplexes, 33 no. 2-bed duplexes, 41 no. 3-bed duplexes, 48 no. 1-bed apartment units, 66 no. 2-bed apartment units and 10 no. 3-bed apartment units. The development gains vehicular access from the L2170 New Road (via a Ballisk residential development and Phase 1 lands to the south), L2170 Portrane

Road Via The Links Road and the R126 Donabate Road, well as pedestrian and cyclist links to all access points ensuring high levels of connectivity and permeability.

The development also comprises a total of 278 no. car parking spaces. A total of 1,457 no. cycle parking spaces are also proposed as part of the development (comprising 1,353 no. resident cycle spaces and 104 no. visitor cycle spaces).

Further details of the development proposals including the site layout, internal connections and linkages with neighbouring lands are illustrated in architects' scheme drawings as submitted with this planning application

Figure 18.14 Proposed Phase 2 Development Layout

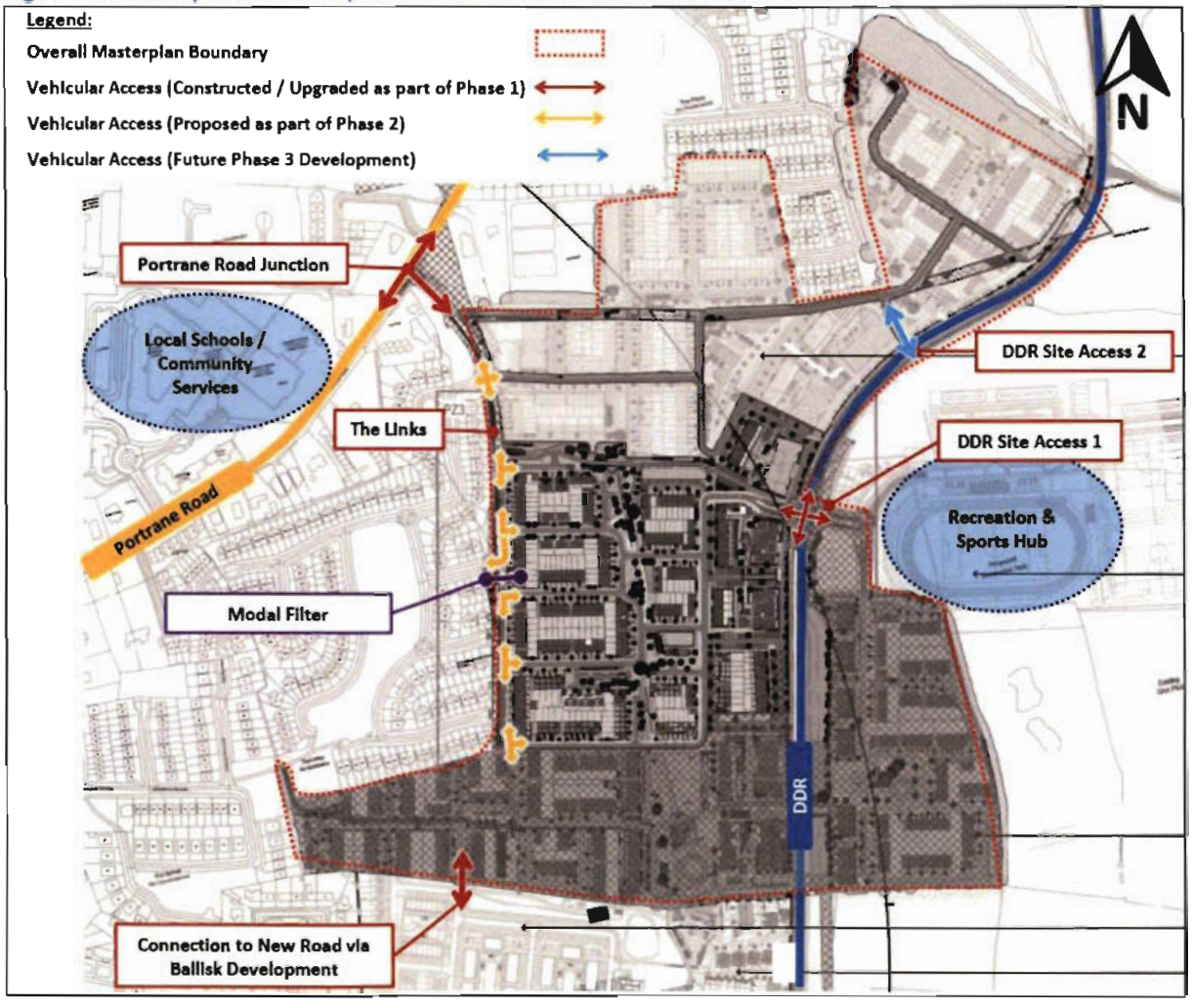


18.4.2 Site Access Arrangements

The proposal represents Phase 2 of the overall Ballymastone development, and includes the provision of several vehicle access points, as shown in **Figure 18.15**, providing an integrated street network between the subject development, the overall Masterplan proposal and existing surrounding streets/developments, these accesses include:

- The Links: The Development will tie into The Links Street which forms part of the western boundary of the site. In turn this will provide a connection to the Portrane Road/The Links junction located to the north of the site. A modal filter is proposed at the point where the 'Links Extension' connects to the existing 'The Links' street. The Portrane Road/The Links junction is a priority controlled junction but at the time this report is being prepared is being upgraded to a signalised junction as part of the permitted Phase 1 works (Ref: LRD0008/S3);
- Donabate Distributor Road: One vehicular access, DDR Site Access 1, is proposed from the DDR in the form of a signalised junction. This comprises an upgrade of the existing signalised junction which is also being delivered as part of the Phase 1 development. An additional future site access from the DDR (DDR Site Access 2) will be constructed as part of Phase 3 which will be a priority controlled junction; and
- Ballisk Residential Development: A vehicular access will be provided via Phase 1 (Ref: LRD0008/S3) of the masterplan lands to the Ballisk residential development (Ref F17A/0373) located south of the subject development, which in turn provides a connection through to New Road.

Figure 18.15 Proposed Development Site Access Location and Internal Streets



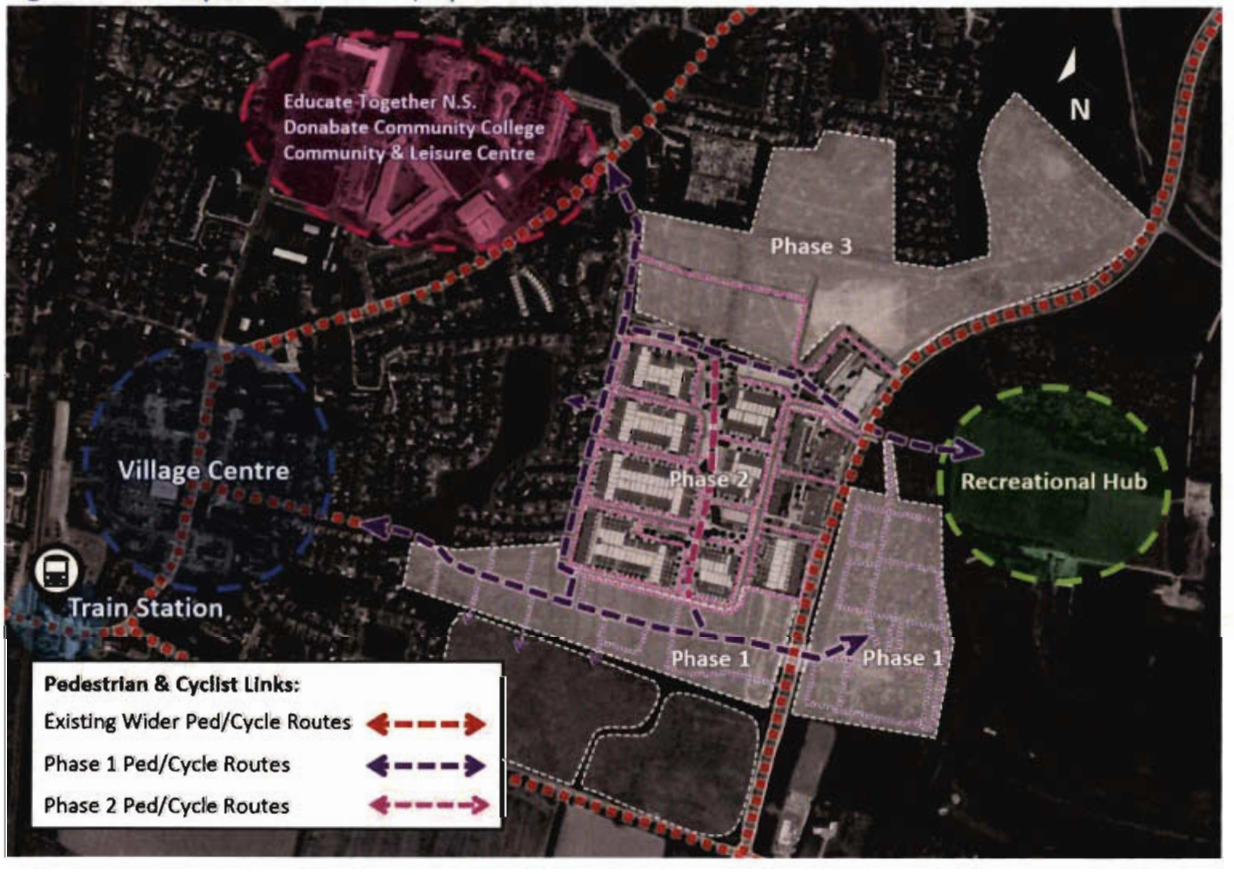
The vehicle connections to The Links will be priority junctions. It is proposed that a number of these junctions will include raised tables to aid both traffic calming and enable pedestrian/cyclist to assert a level of priority when crossing junctions.

18.4.3 Pedestrian / Cyclist Arrangements

The vehicular accesses described in the previous section will also be accessible to both pedestrians and cyclists. There are several additional pedestrian/cyclist access points located along the DDR offering excellent levels of connectivity to/from the pedestrian and cycle facilities along the DDR.

Along the western edge of the development as shown in **Figure 18.16**, several pedestrian/cyclist connections are proposed to The Links which will be delivered as part of the Phase 1 development. These will provide links westwards to Donabate village and key services such as Donabate Train Station. Furthermore, they will provide east-west permeability for people travelling between the village (to the west) and the Recreational Hub (to the east).

Figure 18.16 Proposed Pedestrian / Cyclist Connections



18.4.4 Bicycle Parking Strategy

Reference has been made to Table 14.17 of the Fingal Development Plan which outlines the minimum cycle parking standards. Chapter 14 'Development Management Standards' states that the provision of high quality, safe, secure and convenient bicycle parking is essential to support sustainable transport including cycling, walking and public transport". Reference has also been made to Section 4.22 of the Department of Housing, planning and Local Government (DHPLG) 'Sustainable Urban Housing: Design Standards for New Apartments' and to SPPR 4 of the 'Compact Settlement Guidelines'.

A comparison of the proposed cycle parking provision against the FCC Development Plan, the New Apartment Guidelines, the Compact Settlement Guideline requirements and the proposed provision are shown in **Table 18.4**.

Table 18.4 Proposed Development Cycle Parking (Required and Proposed)

Land Use		No. Units	FCC Development Plan Standards		New Apartment Guidelines		Compact Settlement Guidelines		Proposed Cycle Parking Provision	
			Long Stay	Short Stay	Long Stay	Short Stay	Long Stay	Short Stay	Long Stay	Short Stay
Duplexes	1-Bed	8	16	41	8	41	8	-	16	42
	2-Bed	33	99		66		66		100	
	3-Bed	41	205		123		123		206	
Apts	1-Bed	48	96	62	48	62	48	-	96	62
	2-Bed	66	198		132		132		198	
	3-Bed	10	50		30		30		50	
Houses	2 Bed	54	162	-	n/a	n/a	108	-	162	-
	3 Bed	99	495				297		495	
	4 Bed	5	30				20		30	
Sub Total			1351	103	407	103	832	-	1,353	104
Total			1454		510		832		1,457	

A total of 1,457 no. cycle parking spaces are proposed as part of the Phase 2 subject Ballymastone Development proposals, comprising 1,353 no. 'long term' (residents) bicycle parking spaces and 104 no. 'short term' (visitor) cycle spaces. Therefore, the development proposals regarding the provision of cycle parking for the duplex, apartment and house units is in accordance with the FCC Development Plan standards.

18.4.5 Car Parking Strategy

The proposed Phase 2 Ballymastone development provides a total of 278 no. car park spaces. Of these, 260 no. spaces are provided for the residential units. This level of provision is in accordance with the FCC Development Plan requirements for Zone 1 developments and the car parking management standards as detailed within Table 14.18 of the FCC Development Plan and also previously set out in Table 3.2. The proposed provision of 260 no. spaces is also in accordance with the Compact Settlement Requirements, which permits a maximum of 677 no. spaces.

A further 18 no. spaces are proposed as part of the development, comprising 6 no. accessible spaces, 6 no. E-Car Share and public EV Charging spaces as part of the Mobility Points (discussed later in this section). A Letter of Intent has been obtained from GoCar with respect to providing the 6 no. E-Car Share spaces as part of the Mobility Points. It is noted that the Compact Settlement Guidelines as part of SPPR 3 that the "**maximum car parking standards do not include bays assigned for use by a car club, designated short-stay Electric Vehicle (EV) charging stations or accessible parking spaces**". A breakdown of the total car parking provided on site is shown in **Table 18.5** below.

Table 18.5 Proposed Development Car Parking

Type of Car Parking Space	No. Of Spaces
Duplex	62
Apartments	67

Type of Car Parking Space	No. Of Spaces
Houses	131
Sub-Total	**260**
Accessible Spaces	6
Mobility Points (Car Club)	6
Mobility Points (Short Stay EV Space)	6
Sub-Total	**18**
Total	**278**

Accessible Car Parking Spaces

In regard to the provision of dedicated accessible (disabled) car parking spaces, Section 14.17.8 of the Fingal Development Plan (2023–2029) states that *"A minimum of 5% of car parking spaces should be set aside for disabled car parking in non-residential developments"*. Whilst the Development Plan does not specify a requirement for residential developments, in accordance with national standards and best practice the subject proposals include for 6 no. mobility impaired car parking spaces, which equates to 5% of the off-curtilage / communal parking provided for the apartment & duplex units.

EV Car Parking Provision

The development plan standards require that 20% of the proposed parking spaces incorporate EV charging points and provision of appropriate infrastructure (ducting) to allow fit out a charging point at all parking spaces.

All of the houses will be equipped with the necessary infrastructure to enable the occupier to fit their own charge point if / when needed. As noted previously, a total of 129 no. spaces will be provided for the apartment / duplex units plus 6 no. accessible spaces, equating to a total of 135 no. spaces. These will be located off-curtilage and in communal areas.

Therefore, it is proposed that 20% of these spaces, equating to 27 no. spaces, will be equipped with EV Charge Points upon completion of the development. The remaining spaces will be ducted to allow for the future provision of additional EV parking spaces.

18.4.6 Mobility Points

Rather than one large mobility hub, it is proposed to provide 3 smaller mobility points within Phase 2 of the development. These will be distributed across the site to provide convenient access to units with reduced car parking provision. These mobility points differ from Mobility Hubs in that they are smaller scale, on-street interventions entailing the co-location of sustainable transport measures. The Mobility Points include cycle parking (including cargo bike spaces), car club spaces and public EV Charge Points, but can also be expanded to include a shared bike scheme. Similar example residential Mobility Points are shown in **Figure 18.17** below.

Figure 18.17 Example Residential Mobility Point

The proposed three Mobility Points have been designed / located so that they are clearly visible and accessible to residents and visitors of the development, The EV Charge Point spaces and the car club spaces will be clearly marked for visibility.

Figure 18.18 shows the location of these mobility points while **Table 18.6** illustrates the provision and type of spaces. A Letter of Intent has been obtained from GoCar with respect to providing the 6 no. E-Car Share spaces as part of the Mobility Points.

Figure 18.18 Proposed Mobility Point Locations & Facilities at Each Point

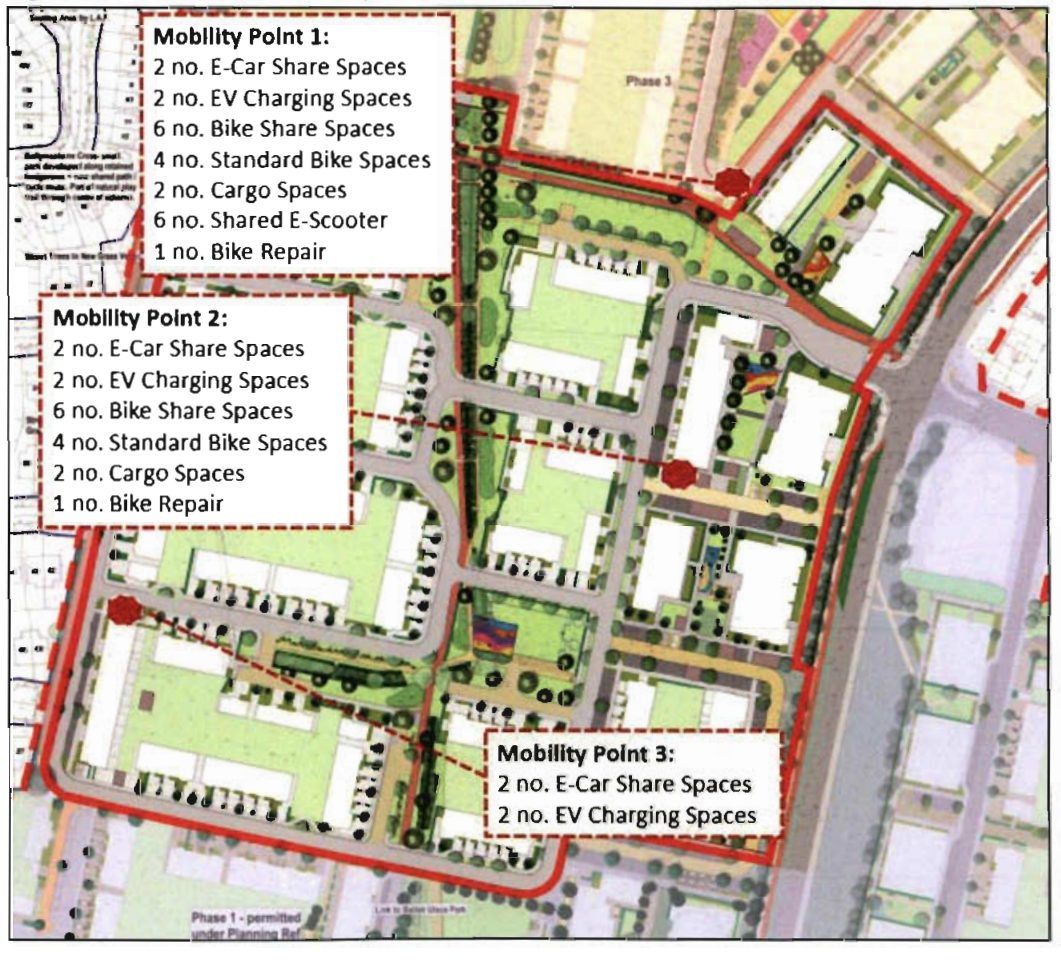


Table 18.6 Mobility Point Services Provided

Proposed Mobility Point Services	
Type of Provision	**Number of Spaces Provided**
E-Car Share Spaces	6
EV Charging Spaces (Public)	6
Bike Share Spaces	12
Standard Bike Spaces (Visitor)	8
Adapted / Cargo Bike Spaces	4
Bike repair / maintenance station	2
Shared E-Scooters	6

18.5 Predicted Impacts of the Proposed Development

18.5.1 Do-Nothing Impact

In the absence of the proposed development, the operational performance of the existing junctions on the surrounding road network will remain relatively unchanged with the exception of the impact caused by the forecast network traffic growth and committed developments.

18.5.2 Construction Phase

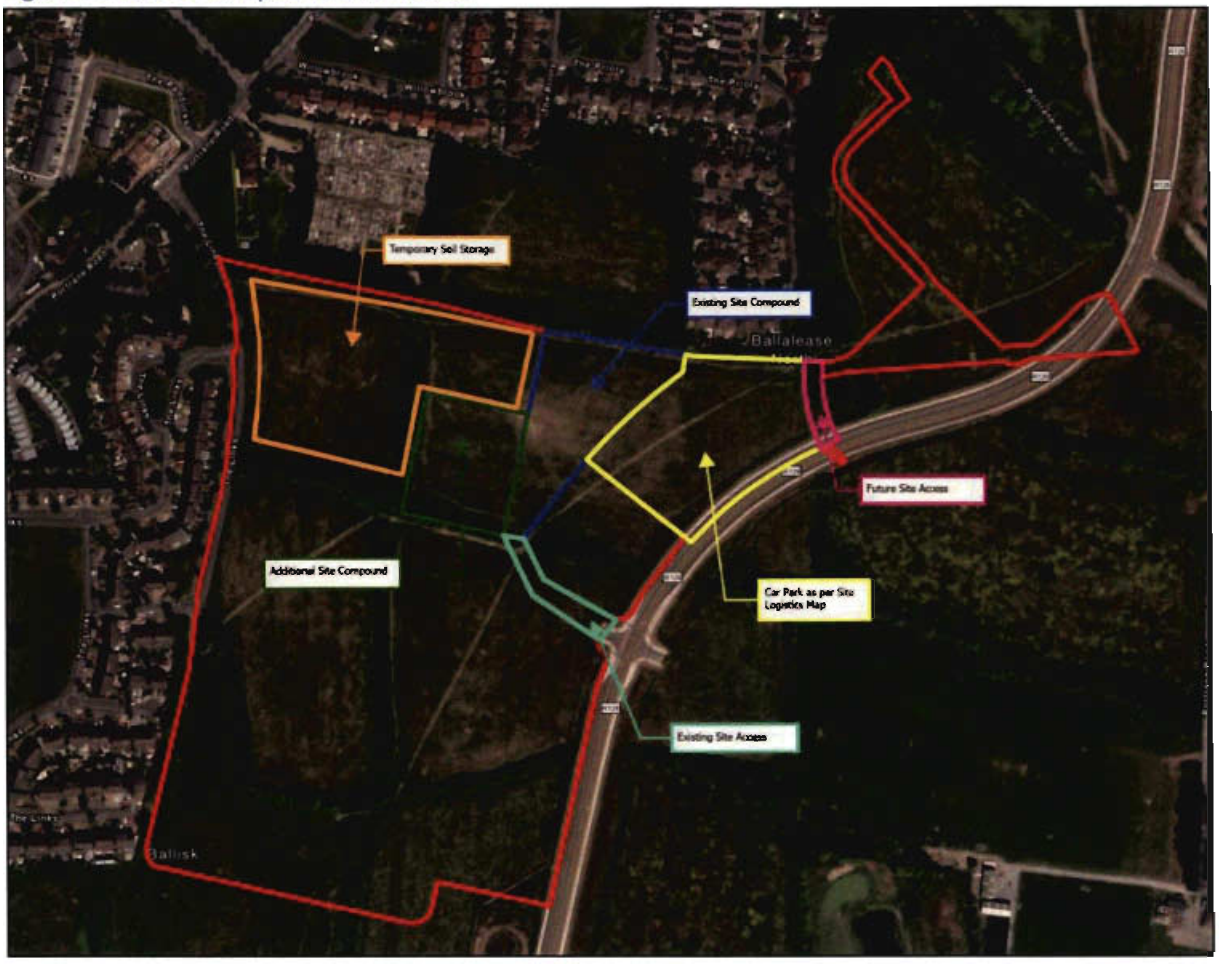
All construction activities will be governed by the traffic management measures outlined in the Construction & Environmental Management Plan (CEMP) prepared by DBFL Consulting Engineers and submitted under separate cover as part of the planning application. The CEMP seeks to ensure that the impacts of all building activities generated during the construction phase upon the public (off-site), visitors to the subject site (on-site) and internal (on-site) workers environments, are fully considered and proactively managed / programmed, thereby ensuring that safety is maintained at all times, disruption is minimised and undertaken within a controlled hazard free / minimised environment. The mitigation measures detailed in the CEMP submitted as part of the planning application will be implemented through a Construction Traffic Management Plan (CTMP), the details of which will be agreed with Fingal County Council prior to the commencement of construction activities on site.

In general, the impact of the construction period will be short-term in nature and less significant than the operational stage. During the construction of the proposed development, all excavated suitable material will be used for construction and fill activities, where possible and appropriate.

There will be traffic generated from deliveries of construction materials and equipment. It should be pointed out that construction traffic generated during the development works tends to be off-peak. Such trips would generally be spread out over the full working day and are unlikely to be higher than the peak hour predicted for the operational stage. Construction traffic access will be via the DDR that runs from north-south to the east of the proposed development. Construction traffic will continue to enter the site via the DDR for the remaining construction phases of the development with construction traffic diverted to internal, temporary haul roads to access construction areas.

The location of the site access, site compound areas and temporary soil storage areas are displayed in **Figure 18.19** below.

Figure 18.19 Site Compound and Access



Construction traffic will consist of private vehicles owned and driven by construction personnel, excavation plant and dumper trucks involved in site development works, and materials delivery vehicles. On-site employees will generally arrive before 08:00, thus avoiding the morning peak hour traffic. These employees will generally depart after 16:00. It is envisaged that a large proportion of construction workers would arrive in shared transport. A significant benefit of the subject development sites characteristics is that all construction traffic vehicle parking demands can be accommodated on-site, thereby minimising the impact upon the operational performance and safety levels of the adjacent public road network.

Based on experience of similar developments, a development of this type and scale is anticipated to require an overall average of c. 130 operatives across the programme with a peak of c. 265, subsequently generating, on average, no more than c. 33 two-way vehicle trips during the peak AM and PM periods over the period of the phased construction works. The peak requirement of c. 265 operatives on site is expected to occur over a relatively short period of the programme, potentially generating up to c. 66 two-way vehicle movements in the peak AM and PM periods.

The anticipated total duration of the construction phase is 30 months, or two and a half years. Following the completion of the initial site clearance works, the generation for HGV movements during the build period is likely to be evenly spread throughout the day and, as such, will not impact significantly during the peak traffic periods. For this scale of development, it is not envisaged that HGV vehicle movements would exceed four vehicles per hour during the busiest period of construction 'build' works.

Based on a preliminary review of the existing survey data and proposed site levels, we estimate that approximately 41,000 m^3 of cut being excavated with all of it being reused on site. In terms of HGV vehicle movements, typically these are not expected to exceed 4 vehicle movements per hour. This may increase slightly to 6-8 HGV vehicle movements per hour during the busiest period of construction activity.

The CTMP will be prepared prior to the commencement of construction work in accordance with the principles set out in Section 3 and Section 4 of the CEMP prepared by DBFL Consulting Engineers and submitted under separate cover with this application. The CTMP will include details of haul routes, and working times. It will be prepared in consultation with Fingal County Council in order to reach full agreement upon the traffic management measures and monitoring measures to be adopted during the entire programme of construction activities on-site.

Table 18.7 below illustrates the significance of the impacts before the proposed mitigation activities are applied (as described in in Section 18.6.2). The impacts of the construction phase prior to mitigation will have slight changes to the surrounding junctions.

Table 18.7 Impact significance – Construction Phase (Prior to Mitigation)

Junction		Sensitivity	Impact		
No.	Name		Quality	Significance	Duration
1	Proposed Site Access (N) / DDR	Low	Negative	Slight Effects	Short Term
2	Proposed Site Access (S) / DDR	Low	Negative	Slight Effects	Short Term
3	DDR / New Road	Low	Negative	Slight Effects	Short Term
4	Chapel View / Main Street	Low	Negative	Slight Effects	Short Term
5	Hearse Road / Main Street (L2170)	Low	Negative	Slight Effects	Short Term
6	Main Street (L2170) / Portrane Road	Low	Negative	Slight Effects	Short Term
7	Portrane Road / The Links	Low	Negative	Slight Effects	Short Term
8	DDR / Portrane Road	Low	Negative	Slight Effects	Short Term

Considering the site's proximity to the strategic road network and following the implementation of the mitigation measures detailed in the CEMP through an appropriately detailed CTMP, it is concluded that construction traffic ***will not give rise to any significant*** traffic concerns or impede the operational performance of the local road network and its surrounding junctions.

18.5.3 Operational Phase

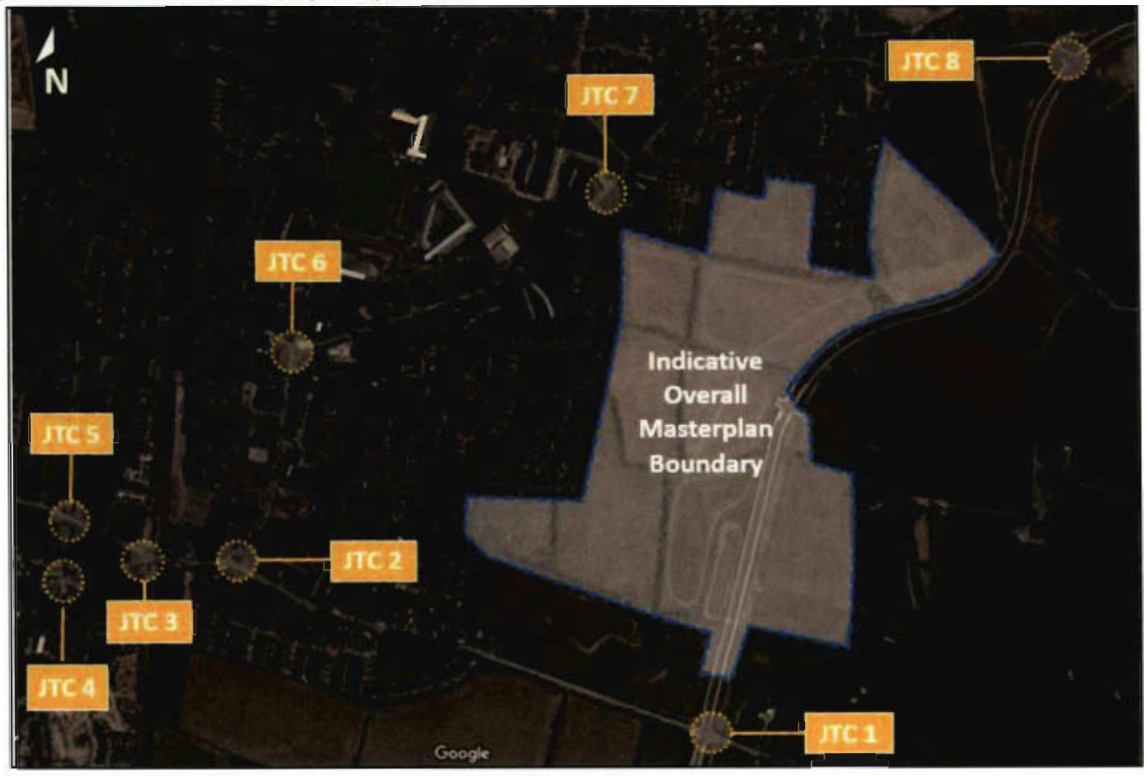
In response to the proposed development's and neighbouring land's specific land uses, the impact generated during the operational phase of the proposed development will be focussed upon the local road network's weekday peak hour periods.

Junction Turning Counts (JTCs) were carried out at five junctions within close proximity to the proposed development site. The following five locations were included within the survey (**Figure 18.20**).

- JTC 1 – New Road / R126 Signal Controlled Junction
- JTC 2 – Main Street / Chapel View Priority Junction
- JTC 3 – Main Street / Turvey Avenue / Hearse Road Priority Junction
- JTC 4 – Hearse Road / The Square Priority Junction
- JTC 5 – Turvey Avenue / The Square Priority Junction

- JTC 6 – Main Street / Portrane Road Priority Junction
- JTC 7 – Portrane Road / The Links Priority Junction
- JTC 8 – R126 / Local Road

Figure 18.20 Junctions Surveyed April 2023



An analysis of the survey results established that the local weekday AM and PM peak hours occurred between 08:00 – 09:00 and 17:00 – 18:00, respectively. In order to analyse and assess the predicted traffic generation from the proposed development upon the local road network, an area wide Excel based generation and distribution traffic model incorporating the aforementioned local junctions has been created.

With regard to generating trips for this development, the TRICS database was referenced as part of this assessment. TRICS data is primarily UK based, however, a number of Irish sites have been included within the last few years with these continuing to expand. The TRICS database provides a reasonable estimation of traffic generation from the proposed development based on previous similar development types of this nature.

Table 18.8 below includes the predicted trip generations and our estimate of the likely traffic flows in and out of the proposed development during the morning and evening peak hour periods using data from TRICS.

Table 18.8 Proposed Development Trip Rates

Period	AM Peak Hour			PM Peak Hour		
Land Use	In	Out	2-way	In	Out	2-way
Apartments / Duplexes	0.070	0.180	0.250	0.172	0.114	0.286
Houses	0.160	0.320	0.480	0.283	0.113	0.396

The overall proposed Masterplan development at Ballymastone will be implemented over three different phases. Therefore, to provide an accurate representation of likely construction and occupational trends for a development of this size the following has been applied for the horizon years:

- 2026 Opening Year = Phase 1 (432 units – complete and occupied) plus the subject Phase 2 development (364 units – complete and occupied)
- 2031+ Years = Full Masterplan development: 1,194 units (344 apartments; 244 duplex units; 606 houses)

Based on the above trip rates, the potential peak hour vehicle traffic flows have been calculated for the proposed development. **Table 18.9** summarise the predicted AM and PM peak hour traffic flows generated by the proposed development for the horizon years, that have been calculated based on the proposed development schedule.

Table 18.9 Proposed Development Vehicle Trips (2026 Opening Year)

Land Use	Units	AM Peak Hour			PM Peak Hour		
		Arrival	Departure	Total	Arrival	Departure	Total
Apartments & duplexes	206	14	37	52	35	23	59
Houses	158	25	51	76	45	18	62

The following committed developments predicted peak hour vehicle trips, as outlined in the Traffic and Transport Assessment, prepared by DBFL Consulting Engineers and submitted under separate cover as part of the planning application, have been incorporated into the traffic assessment:

1. Semple Woods residential development (reg. ref: F17A/0113)
2. New Road residential development (reg. ref.: F17A/0373)
3. Ballalease residential development (reg. ref.: F20A/0510)
4. Ballymastone Phase 1 (reg. ref: LRD0008/S3/ABP-315288-22)
5. Ballymastone Recreational Hub (Part 8)
6. South of Main Street (Aledo) residential development (F20A/0204)
7. Corballis East (Glenveagh) residential development (reg. ref: F22A/0527)
8. Corballis East (Aledo) residential Development (reg. ref: LRD0017/S3)

The significance of each of the projected impacts at each of the key links without the mitigations measures in place at operational phase is detailed within the following table for the worst case (e.g., peak hours) 2041 Future Year scenario.

Table 18.10 worst case (e.g., peak hours) 2041 Future Year scenario

Junction		Impact		
No.	Name	Quality	Significance	Duration
1	Proposed Site Access (N) / DDR	Negative - Low	Slight Effects	Long Term
2	Proposed Site Access (S) / DDR	Negative - Low	Slight Effects	Long Term
3	DDR / New Road	Negative - Low	Slight Effects	Long Term

Junction		Impact		
4	Chapel View / Main Street	Negative – Medium	Slight Effects	Long Term
5	Hearse Road / Main Street (L2170)	Negative - Medium	Slight Effects	Long Term
6	Main Street (L2170) / Portrane Road	Negative - Low	Slight Effects	Long Term
7	Portrane Road / The Links	Negative - Low	Slight Effects	Long Term
8	DDR / Portrane Road	Negative - Low	Slight Effects	Long Term

18.5.3.1 Traffic Growth

An Opening Year of 2026 was assumed for this assessment. In accordance with TII (NRA) Guidance, Future Design years (+5 and +15 years) of 2031 and 2041 have also been adopted. The TII Project Appraisal Guidelines (PAG) have been utilised to determine the traffic growth forecast rates. The traffic growth forecast rates within the PAG ensure local and regional variations and demographic patterns are accounted for in Table 6.2 (Unit 5.3 – Travel Demand Projections) within the TII PAG provides Annual Growth Factors for the different regions within Ireland for light vehicles (LV) and heavy vehicles (HV). The subject site lies within 'County – Dublin' with the growth factors as outlined within **Table 18.11** below.

Table 18.11 National Traffic Growth Forecasts: Annual Growth Factors (Extract from Table 6.1 of Unit 5.3 PAG)

Land Use	Low Sensitivity Growth				Central Growth				High Sensitivity Growth			
	2016-2030		2030-2040		2016-2030		2030-2040		2016-2030		2030-2040	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
Dublin	1.0163	1.0303	1.0046	1.0123	1.0180	1.0317	1.0062	1.0139	1.0211	1.0348	1.0100	1.0170

Applying the annual factors (Metropolitan Area) for the adopted Opening Year of 2026 and the Future Design Years of 2031 (+5 years) and 2041 (+15 years), the following growth rates have been adopted to establish the corresponding 2026, 2031 and 2041 baseline network flows for the 2023 traffic surveys conducted: -

- 2023 to 2026 – 1.0550 (or 5.50%),
- 2023 to 2031 – 1.1400 (or 14.00%) and
- 2023 to 2041 – 1.2112 (or 21.13%).

18.5.3.2 Assessment Scenarios

Two different traffic scenarios have been assessed, namely:

a. The 'Base' ("Do-Nothing") traffic characteristics, and
b. The 'Post Development' ("Do-Something").

The "Do-Nothing" scenario takes into account the potential level of traffic that could be generated by committed developments in addition to the existing flows travelling across the network. The proposed development traffic flows are then added to the network's "Do-Nothing" (Base + Committed

Development) traffic flows to establish the new 'Post Development' traffic flows. In summary the following scenarios are considered: -

- Do Nothing (DN) A1 – 2026 Base Flows + Committed Developments;
- Do Nothing (DN) A2 – 2031 Base Flows + Committed Developments;
- Do Nothing (DN) A3 – 2041 Base Flows + Committed Developments;
- Do Something (DS) B1 – 2026 Do Nothing (A1) + Proposed Development Flows;
- Do Something (DS) B2 – 2031 Do Nothing (A2) + Masterplan Flows; and
- Do Something (DS) B3 – 2041 Do Nothing (A3) + Masterplan Flows.

18.5.3.3 Impact of Proposals

The NRA / TII document entitled *Traffic and Transport Assessment Guidelines* (2014) provides thresholds in relation to the impact of a proposed development upon the local road network. The impact is considered 'material' when the level of traffic generated surpasses the thresholds of 10% and 5% on normal and congested networks, respectively. When such levels of impact are generated, a more detailed assessment should be undertaken to ascertain the specific impact upon the network's operational performance. An assessment was, therefore, undertaken for the relevant links surrounding the site, to determine the percentage level of impact generated by the proposed development, as presented in **Table 18.12**, below.

Table 18.12 Proposed Developments Network Impact

Junction		Design Year	Percentage Impact	
No.	Description		AM	PM
1	Proposed Site Access (N) / DDR	2026	1.2%	1.3%
		2031	14.1%	14.0%
		2041	13.4%	13.3%
2	Proposed Site Access (S) / DDR	2026	10.8%	9.3%
		2031	21.4%	18.2%
		2041	20.5%	17.6%
3	DDR / New Road	2026	8.4%	6.6%
		2031	17.5%	13.6%
		2041	16.8%	13.1%
4	Chapel View / Main Street	2026	2.9%	3.1%
		2031	6.0%	6.2%
		2041	5.6%	5.8%
5	Hearse Road / Main Street (L2170))	2026	2.3%	2.6%
		2031	4.7%	5.3%
		2041	4.4%	5.0%
6	Main Street (L2170) / Portrane Road	2026	1.1%	1.3%
		2031	2.3%	2.7%
		2041	2.2%	2.5%
7	Portrane Road / The Links	2026	2.0%	2.2%
		2031	4.1%	4.4%
		2041	3.9%	4.1%
8	DDR / Portrane Road	2026	1.4%	1.4%

Junction		Design Year	Percentage Impact	
No.	Description		AM	PM
		2031	2.9%	2.8%
		2041	2.7%	2.6%

Based on the scale of impact generated in the assumed worst-case scenario, more detailed assessments regarding the junction's operational performance have been undertaken. **Table 18.12** indicates that the impact on the surrounding road network will exceed the 10% threshold at junctions 1, 2 and 3. It is noted however, that in accordance with Fingal County Council's maximum impact threshold: that is any junctions exceeding the 2.5% threshold within the Fingal administrative area of Fingal is required to be further analysed. Therefore the remaining junctions, 4 – 8 have also been analysed.

The operational assessment of the local road network has been undertaken using the Transport Research Laboratory (TRL) computer package TRANSYT for signal-controlled junctions and PICADY for priority-controlled junctions. When considering signal-controlled junctions, a ratio of flow to capacity (RFC) of greater than 85% (0.85) would indicate a junction is approaching capacity, as operation above this RFC value is poor and deteriorates quickly.

An operational assessment of the DDR / Site Access (north-east) priority controlled junction (junction no. 1) was undertaken using Junctions 9 PICADY software. Under the 'Do-Something' scenario, the results of the analysis found that:

- **2026 Design Year:** both the RFC and Queue are 0.
- **2031 Interim Year:** the highest RFC (15%) and Queue (0.2) passenger car units (PCU) is observed in the AM Peak along Arm B –Site Access.
- **2041 Future Year:** the highest RFC (15%) and Queue (0.2) PCU is observed in the AM Peak along Arm B –Site Access.

An operational assessment of the DDR / Site Access (south-east) priority controlled junction (junction no. 2) was undertaken using Junctions 9 TRANSYT software. Under the 'Do-Something' scenario, the results of the analysis found that:

- **2026 Design Year:** results show a maximum RFC value of 53% occurring on the Site Access (west) arm and a corresponding queue of 3.46 PCU in the AM Peak.
- **2031 Interim Year:** results show a maximum RFC value of 55% occurring on the Site Access (west arm and a corresponding queue of 3.67 PCU in the AM Peak.
- **2041 Future Year:** results show a maximum RFC value of 55% occurring on the Site Access (west) arm and a corresponding queue of 3.67 PCU in the AM Peak.

An operational assessment of the DDR / New Road priority controlled junction (junction no. 3) was undertaken using Junctions 9 TRANSYT software. Under the 'Do-Something' scenario, the results of the analysis found that:

- **2026 Design Year:** results show a maximum RFC value of 60% occurring on the New Road (West) arm and a corresponding queue of 6.98 PCU in the PM Peak.
- **2031 Interim Year:** results show a maximum RFC value of 65% occurring on the New Road (West) arm and a corresponding queue of 7.96 PCU in the PM Peak.

- **2041 Future Year:** results show a maximum RFC value of 64% occurring on the New Road (West) and a corresponding queue of 8.23 PCU in the PM Peak.

An operational assessment of the Chapel View / Main Street priority controlled junction (junction no. 4) was undertaken using Junctions 9 PICADY software. Under the 'Do-Something' scenario, the results of the analysis found that:

- **2026 Design Year:** the highest RFC (78%) and Queue (3.1) PCU is observed in the AM Peak along Arm B – AC.
- **2031 Interim Year:** the highest RFC (103%) and Queue (14.7) PCU is observed in the AM Peak along Arm B – AC.
- **2041 Future Year:** the highest RFC (116%) and Queue (28.3) PCU is observed in the AM Peak along Arm B – AC.

An operational assessment of the Hearse Street / Main Street (L2170) priority controlled junction (junction no. 5) was undertaken using Junctions 9 TRANSYT software. Under the 'Do-Something' scenario, the results of the analysis found that:

- **2026 Design Year:** results show a maximum RFC value of 84% occurring on the arm B-AC and a corresponding queue of 6.7 PCU in the AM Peak.
- **2031 Interim Year:** results show a maximum RFC value of 97% occurring on the arm C-AB and a corresponding queue of 19.5 PCU in the AM Peak.
- **2041 Future Year:** results show a maximum RFC value of 104% occurring on the arm C-AB and a corresponding queue of 34.8 PCU in the AM Peak.

An operational assessment of the Main Street / Portrane Road priority controlled junction (junction no. 6) was undertaken using Junctions 9 PICADY software. Under the 'Do-Something' scenario, the results of the analysis found that:

- **2026 Design Year:** the highest RFC (58%) and Queue (1.3) PCU is observed in the AM Peak along Arm B - Beaverstown Road.
- **2031 Interim Year:** the highest RFC (66%) and Queue (1.9) PCU is observed in the AM Peak along Arm B - Beaverstown Road.
- **2041 Future Year:** the highest RFC (74%) and Queue (2.6) PCU is observed in the AM Peak along Arm B - Beaverstown Road.

An operational assessment of the Portrane Road/The Links junction, which is being upgraded to a signal controlled junction (junction no. 7) was undertaken using TRANSYT software. Under the 'Do-Something' scenario, the results of the analysis found that:

- **2026 Design Year:** the highest DoS (58%) and Queue (2.82) PCU is observed in the AM Peak along Arm 2 – The links.
- **2031 Interim Year:** the highest DoS (61%) and Queue (3.3) PCU is observed in the AM Peak along Arm 2 – The links.
- **2041 Future Year:** the highest DoS (63%) and Queue (3.49) PCU is observed in the AM Peak along Arm 2 – The links.

An operational assessment of the Portrane Road/ DDR priority controlled junction (junction no. 8) was undertaken using Junctions 9 PICADY software. Under the 'Do-Something' scenario, the results of the analysis found that:

- **2026 Design Year:** the highest RFC (46%) and Queue (0.8) PCU is observed in the AM Peak along Arm b – Portrane
- **2031 Interim Year:** the highest RFC (50%) and Queue (1.0) PCU is observed in the AM Peak along Arm b – Portrane
- **2041 Future Year:** the highest RFC (54%) and Queue (1.1) PCU is observed in the AM Peak along Arm b – Portrane

PICADY and TRANSYT analysis was carried out on all junctions included in this assessment which indicated that Junctions 1, 2, 3, 6, 7 and 8 will operate well within capacity for all design years. The assessment indicated that Junctions 4 and 5 will operate at capacity in the 2041 Future Year, however it is noted that these junctions will already be operating near or at capacity even in the Do-Nothing scenarios without the subject development traffic.

18.6 Mitigation Measures

18.6.1 Mitigation by Design

The level of parking provision (comprising 260 no. car parking spaces allocated to residential units and 6 no. accessible spaces plus 12 no. Mobility Point spaces) and bicycle parking (comprising 1,353 no. resident cycle spaces and 104 no. visitor cycle spaces) at the proposed development will act as a powerful mobility management measure, ensuring against an overprovision of car parking and a resultant over reliance on the private vehicle. The car parking provision also includes 27 no. EV charging points for apartment and duplex units, while all in-curtilage spaces will be equipped with the necessary infrastructure for EV charging. The development also proposes provision of high quality dedicated pedestrian footpaths and cycle paths throughout the development site, and will deliver a high degree of permeability and access for pedestrians and cyclists.

18.6.2 Construction Phase

A Construction and Environmental Management Plan (CEMP) has been prepared by DBFL Consulting Engineers as part of this planning application (refer to standalone document submitted under separate cover) which includes the traffic management measures to be implemented to ensure the impacts of all building activities generated during the construction phase are fully considered and proactively managed / programmed thereby ensuring that safety is maintained, disruption is minimised and undertaken in a controlled hazard free / minimised environment. The measures detailed in the CEMP will be implemented through a Construction Traffic Management Plan (CTMP), to be developed in agreement with Fingal County Council in advance of the commencement of on-site works. This CTMP will include measures to promote sustainable mobility and car-sharing among construction personnel.

The following mitigation measures will be implemented to avoid, minimise and / or mitigate against the anticipated construction period impacts:

- During the pre-construction phase, the site will be securely fenced off from adjacent properties, public footpaths and roads;
- Appropriate on-site parking and compound area will be provided to prevent overflow onto the local network. The locations of these areas are displayed in **Figure 18.19;**
- The traffic generated by the construction phase of the development will be strictly controlled in order to minimise the impact of this traffic on the surrounding road network and local properties.

All HGV trips could potentially be restricted from traveling to / from the development during the local road network's peak hours;

- Truck wheel washes will be installed at construction entrances and any specific recommendations with regard to construction traffic management made by Fingal County Council will be adhered to;
- Potential localised traffic disruptions during the construction phase will be mitigated through the implementation of industry standard traffic management measures. These traffic management measures shall be designed and implemented in accordance with the requirements of:
  - Department of Transport, Tourism and Sport (DTTS) (2019). Chapter 8: Temporary Traffic Measures and Signs for Roadworks, in *Traffic Signs Manual*;
  - DTTS (2013). *Design Manual for Urban Roads & Streets* ('DMURS');
  - Department of Transport (2010). *Guidance for the Control and Management of Traffic at Road Works (Second Edition);* and
  - NRA (2015). *Design Manual for Roads and Bridges* ('DMRB').
- Site entrance points from the DDR will be constructed with a bound, durable surface capable of withstanding heavy loads and with a sealed joint between the access and public highway. This durable bound surface will be constructed for a distance of 10m from the public highway.
- Material storage zone will be established in the compound area and will include material recycling areas and facilities;
- 'Way finding' signage will be provided to route staff / deliveries into the site and to designated compound / construction areas;
- The construction works areas will be reinstated following completion of development with landscaped areas provided where proposed. The works will be restricted to the footprint of the site for the proposed development. Excavated topsoil and subsoil will be reused in reinstatement and landscaping where appropriate.
- Dedicated construction haul routes will be identified and agreed with Fingal County Council prior to commencement of activities on-site;
- Construction vehicle routing practices and construction vehicle parking practices will be undertaken if issues with regards to the routing of or parking of construction vehicles arise; and
- On completion of the works, all construction materials, debris, temporary hardstands etc. form the site compound will be removed off-site and the site compound area reinstated in full on completion of the works.

18.6.3 Operational Phase

- A Mobility Management Plan (MMP) has been prepared by DBFL Consulting Engineers, and submitted under separate cover as part of the planning application. The MMP has the aim of guiding the delivery and management of coordinated initiatives by the scheme promotor to be implemented upon occupation of the site. The MMP will ultimately seek to encourage sustainable travel practices for all journeys to and from the proposed development through mode specific measures including:
  - Providing a 'Welcome Pack' to all new residents when they move in with information on all modes of transport to/from the site, details of safe pedestrian and cycle routes, car share facilities and contact details of mobility manager. This 'Welcome Pack' will involve developing a

dedicated MMP website/app that includes information on all travel opportunities to and from the site

- Providing high quality walking & cycling infrastructure and connections to the wider network, develop a walking/cycling accessibility sheet for the site, discounted cycle purchase, bike service workshops, encouraging cycle trains to schools
- Providing information to residents on annual/monthly TaxSaver tickets, develop a public transport accessibility sheet for the site, create a calendar of public transport events and incentives
- Implementing a Car Parking Management Strategy to control and actively manage the availability of on-site car parking for residents as detailed in the Parking Management Strategy, prepared by DBFL Consulting Engineers and submitted under separate cover as part of the application.

18.7 Residual Impacts

18.7.1 Construction Phase

Provided the above mitigation measures are implemented during the construction phase, the residual impact in terms of traffic and transportation will be **short-term** in duration and **neutral** in terms of quality and effect. The significance of predicted impacts on individual junctions during the construction phase are detailed in **Table 18.13**.

Table 18.13 Residual Impacts – Junctions – Construction Phase

Junction		Residual Impact		
No.	Name	Quality / Scale	Significance	Duration
1	Proposed Site Access (N) / DDR	Negative - Low	Not significant	Short-term
2	Proposed Site Access (S) / DDR	Negative - Low	Not significant	Short-term
3	DDR / New Road	Negative - Low	Not significant	Short-term
4	Chapel View / Main Street	Negative - Low	Not significant	Short-term
5	Hearse Road / Main Street (L2170)	Negative - Low	Not significant	Short-term
6	Main Street (L2170) / Portrane Road	Negative - Low	Not significant	Short-term
7	Portrane Road / The Links	Negative - Low	Not significant	Short-term
8	DDR / Portrane Road	Negative - Low	Not significant	Short-term

18.7.2 Operational Phase

The significance of predicted impacts on individual junctions during the operational phase are detailed in **Table 18.14**. PICADY and TRANSYT analysis was carried out on Junctions 1 – 8, as outlined in **Section 18.4**.

Table 18.14 Residual Impacts – Junctions – Operational Phase

Junction		Residual Impact		
No.	Name	Quality / Scale	Significance	Duration
1	Proposed Site Access (N) / DDR	Negative - Low	Not significant	Long-term
2	Proposed Site Access (S) / DDR	Negative - Low	Not significant	Long-term
3	DDR / New Road	Negative - Low	Not significant	Long-term
4	Chapel View / Main Street	Negative - Low	Not significant	Long-term
5	Hearse Road / Main Street (L2170)	Negative - Low	Not significant	Long-term

Junction		Residual Impact		
6	Main Street (L2170) / Portrane Road	Negative - Low	Not significant	Long-term
7	Portrane Road / The Links	Negative - Low	Not significant	Long-term
8	DDR / Portrane Road	Negative - Low	Not significant	Long-term

18.8 Indirect and /or Secondary Impacts

Given the improvements to pedestrian and cycle facilities and connectivity through the development site, there may be a greater uptake in travel by active modes amongst residents in the wider indirect study area. Consequently, this may have positive impacts in terms of operational capacity for junctions in the general area due to a reduced reliance on private cars for short, local trips e.g. accessing schools, services and amenities in the local area.

The general traffic impact assessment undertaken has considered the key junctions most likely to be directly impacted by the subject development traffic in accordance with the TII / FCC thresholds for assessment. It is considered that the effect on junctions outside of the direct study area, and therefore indirectly impacted by the subject development, will have an **Imperceptible / Not Significant** impact.

18.9 Monitoring

18.9.1 Construction Phase

During the construction stage, the following monitoring measures are proposed:

- If issues with regards to the routing of construction vehicles occurs, then compliance with construction vehicle routing practices will be undertaken;
- If issues with regards the parking of construction vehicles on the surrounding network occurs, then compliance with construction vehicle parking practices will be undertaken;
- If issues with regards the condition of the surrounding road network occur, then internal and external road conditions will be monitored; and
- If issues with regards the timing or programming of construction activities occur, then timing of construction activities will be monitored.

The construction works areas will be reinstated following completion of development with landscaped areas provided where proposed. The works will be restricted to the footprint of the site for the proposed development. Excavated topsoil and subsoil will be reused in reinstatement and landscaping where appropriate or dealt with in the appropriate manner i.e. sent for soil recovery as appropriate.

18.9.2 Operational Phase

As part of the MMP process, bi-annual post-occupancy surveys are to be carried out in order to determine the success of the measures and initiatives as set out in the proposed MMP document. The information obtained from the monitoring surveys will be used to identify ways in which the MMP measures and initiatives should be taken forward in order to maintain and further encourage sustainable mobility and a modal shift away from internal combustion engine (ICE) vehicles.

18.10 Interactions

This assessment was based on information contained within this EIAR, the outcome of workshops and consultation with the relevant sub-consultants. The main environmental interactions addressed in relation to traffic and transportation are as follows:

18.10.1 Population and Human Health (Chapter 7)

Construction and operational stage traffic and traffic management measures have the potential to affect journey amenity or economic activity as a result of increased congestion or access restrictions. The upgraded infrastructure provided as part of the scheme can facilitate growth in population and increased infrastructure for sustainable travel modes can contribute towards modal shift in travel patterns and increased physical activity. The scheme provides increased access to local attractions by virtue of reduced congestion and enhanced pedestrian and cycle linkages. Additionally, employment and economic activity will be generated during the construction stage of the project. Chapter 7 (Population & Human Health) further describes the effect of the proposed development on population and human health. The impacts due to interactions with population and human health are anticipated to be **negative, not significant**, over the **short term** for the **construction phase.** The impacts due to the interactions with population and human health are anticipated to be **positive, slight**, over the **long term** for the **operational phase**.

18.10.2 Biodiversity (Chapter 8)

The presence of the proposed development and new traffic flows can have impacts on biodiversity including severance of commuting or feeding routes and direct mortality. Chapter 8 (Biodiversity) assesses the impacts of the proposed development on biodiversity. The impacts due to the interactions with biodiversity are anticipated to be **negative, not significant**, over the **short term** for the **construction phase.** The impacts due to the interactions with biodiversity are anticipated to be **negative, not significant**, over the **long term** for the **operational phase**.

18.10.3 Land, Soils, Geology & Hydrogeology (Chapter 9)

The volumes of surplus soils generated by the proposed development and the earthworks import requirement will affect construction stage traffic generation. Corresponding mitigation measures are set out in Chapter 9 (Land, Soils, Geology & Hydrogeology). During construction, the CEMP and CTMP will ensure that construction traffic impacts are minimised through the control of site access / egress routes and site locations and any temporary lane closure requirements. The impacts due to the interactions with land, soils, geology & hydrogeology are anticipated to be **negative, not significant**, over the **short term** for the **construction phase.** The impacts due to the interactions with land, soils, geology & hydrogeology are anticipated to be **negative, not significant**, over the **long term** for the **operational phase**.

18.10.4 Hydrology (Chapter 10)

Construction and operational stage traffic have the potential to impact on water quality via accidental hydrocarbon spills and leaks and via increased sediment / particle loading on trafficked surfaces. Measures to mitigate against impacts are detailed in Chapters 9 (Land, Soils, Geology & Hydrogeology) and 10 (Hydrology). The impacts due to the interactions with hydrology are anticipated to be **negative, not significant**, over the **short term** for the **construction phase.** The impacts due to the interactions with hydrology are anticipated to be **negative, not significant**, over the **long term** for the **operational phase**.

18.10.5 Air Quality (Chapter 11) & Climate (Chapter 12)

Changes in traffic volumes resulting from the proposed development affects levels of air pollutant emissions, i.e. from internal combustion engines. The presence of construction traffic at the site and on the surrounding road network also contributes to dust generation and deposition. These aspects of the proposed development are addressed under the scope of Chapter 11 (Air Quality) and Chapter 12 (Climate), which is informed by the predicted traffic flows during construction and operation. The impacts due to the interactions with air quality and climate are anticipated to be **negative, not significant**, over the **short term** for the **construction phase.** The impacts due to the interactions with air quality and climate are anticipated to be **negative, not significant**, over the **long term** for the **operational phase**.

18.10.6 Noise & Vibration (Chapter 13)

Changes in the locations and volumes of traffic resulting from the proposed development affect noise levels in the receiving environment. This topic has been addressed under the scope of Chapter 13 (Noise & Vibration), which is informed by the predicted traffic volumes during construction and operation. The impacts due to the interactions with noise & vibration are anticipated to be **negative, not significant,** over the **short term** for the **construction phase.** The impacts due to the interactions with noise & vibration are anticipated to be **negative, not significant**, over the **long term** for the **operational phase**.

18.10.7 Landscape & Visual (Chapter 14)

During the construction phase, the presence of a substantial construction site (including construction traffic entering and exiting the site) negatively affects visual amenity in adjacent areas. This subject is addressed under the scope of Chapter 14 (Landscape & Visual). The impacts due to the interactions with landscape and visual are anticipated to be **negative, not significant**, over the **short term** for the **construction phase**. The impacts due to the interactions with landscape and visual are anticipated to be **positive, not significant** over the **long term** for the **operational phase.**

18.10.8 Material Assets – Waste (Chapter 19)

The generation of waste materials during the construction and operational phases creates the need for waste collection vehicles at the site and on the surrounding road network. Regard has been had to this aspect of the proposed development in the preparation of this Chapter. The impacts due to the interactions with material assets are anticipated to be **negative, not significant**, over the **short term** for the **construction phase.** The impacts due to the interactions with material assets are anticipated to be **negative, not significant** and **long term** for the **operational phase.**

No likely significant effects are predicted in relation to any of the above-listed interactions. For further information, please refer to the other EIAR chapters referred to above.

18.11 Cumulative Impacts

18.11.1 Construction Phase

The analysis detailed above represents an appraisal in terms of potential cumulative impacts for a typical weekday as it is focussed upon the key two busiest periods of the day (e.g. AM and PM peak hours). During the other 22 hours of the day, traffic flows are predicted to be significantly lower,

resulting in the network operating with additional reserve capacity to that forecast for the peak hour periods.

The following committed developments predicted peak hour vehicle trips, as outlined in the Traffic and Transport Assessment, prepared by DBFL Consulting Engineers and submitted under separate cover as part of the planning application, have been incorporated into the traffic assessment:

1. Semple Woods residential development (reg. ref: F17A/0113)
2. New Road residential development (reg. ref.: F17A/0373)
3. Ballalease residential development (reg. ref.: F20A/0510)
4. Ballymastone Phase 1 (reg. ref: LRD0008/S3/ABP-315288-22)
5. Ballymastone Recreational Hub (Part 8)
6. South of Main Street (Aledo) residential development (F20A/0204)
7. Corballis East (Glenveagh) residential development (reg. ref: F22A/0527)
8. Corballis East (Aledo) residential Development (reg. ref: LRD0017/S3)

Chapter 22 of the EIAR Cumulative Impacts lists all the permitted and proposed developments in the receiving environment. The committed developments listed above are considered to have a material effect on the surrounding road network and have been incorporated into the traffic assessment.

If all the adjacent zoned lands in the area were to be developed, this would have an effect on the local road network. However, the scale of potential impact would be fully assessed during the planning procedures for any of these individual third-party developments. Nevertheless, the utilisation of TII's growth rates does take some account of the potential additional traffic that such third party sites could generate.

The completion of the aforementioned committed developments is predicted to have an impact on the surrounding road network. However, the Semple Woods residential development (reg. ref: F17A/0113) has already been completed. Based on our understanding, the construction phases of the above-listed developments 2 – 4 are unlikely to overlap with the peak period of the construction of the proposed Phase 2 development.

Construction of the Ballymastone Recreational Hub is anticipated to begin in 2024/2025. Should construction activity occur simultaneously with construction activity on Phase 2, there is ample capacity at the DDR signalised junction which will be used to access both developments. Therefore, any potential cumulative impact during the construction phase is expected to be negative but not significant.

With regards to developments 6 – 8, it is noted that these are located to the south of the subject and will likely be using the DDR for access to their developments. There is sufficient capacity at the junction likely to be used by both the subject development and committed development traffic (DDR / New Road Junction) to accommodate construction traffic. Therefore, the resulting cumulative impact is expected to have a **negative but not significant impact** on the key off site road network junctions.

18.11.2 Operational Phase

The analysis detailed above in **Section 18.4** represents an appraisal in terms of potential cumulative impacts for a typical weekday as it is focused upon the key two busiest periods of the day (i.e. AM and PM peak hours). During the other 22 hours of the day, traffic flows are predicted to be significantly lower resulting in the network operating with additional reserve capacity to that forecast for the peak hour periods.

The committed developments, as discussed above, have been incorporated into the analysis ensure the cumulative impact of potential additional vehicular movements as a result of the implementation of both the subject proposals and the committed development in the area have been assessed. Furthermore, the utilisation of TII's growth rates also takes some account of the potential additional traffic that third party sites could generate. **Figures 18.21** and **18.22** illustrate the predicted cumulative impacts of the proposed development in combination with committed development.

The results of the TRANYST and PICADY analysis on the key off site junctions (1-3), detailed above in **Section 18.4**, indicate that the junctions will still continue to operate within capacity in both the AM and PM peak hours. The resulting cumulative impact is, therefore, expected to have a **negative** but **slight impact** on the performance of these junctions. The impact generated by the proposed development on the remaining off-site junctions (4-8) did not exceed the 10% thresholds in any of the identified scenarios. Consequently, it is expected that the traffic generated from the proposed development **will not have a significant impact** on the surrounding road network as the percentage impact is low.

Figure 18.21 Increase in Vehicle Trips Generated Through Key Of-Site Junctions (DS 2041 AM Peak)

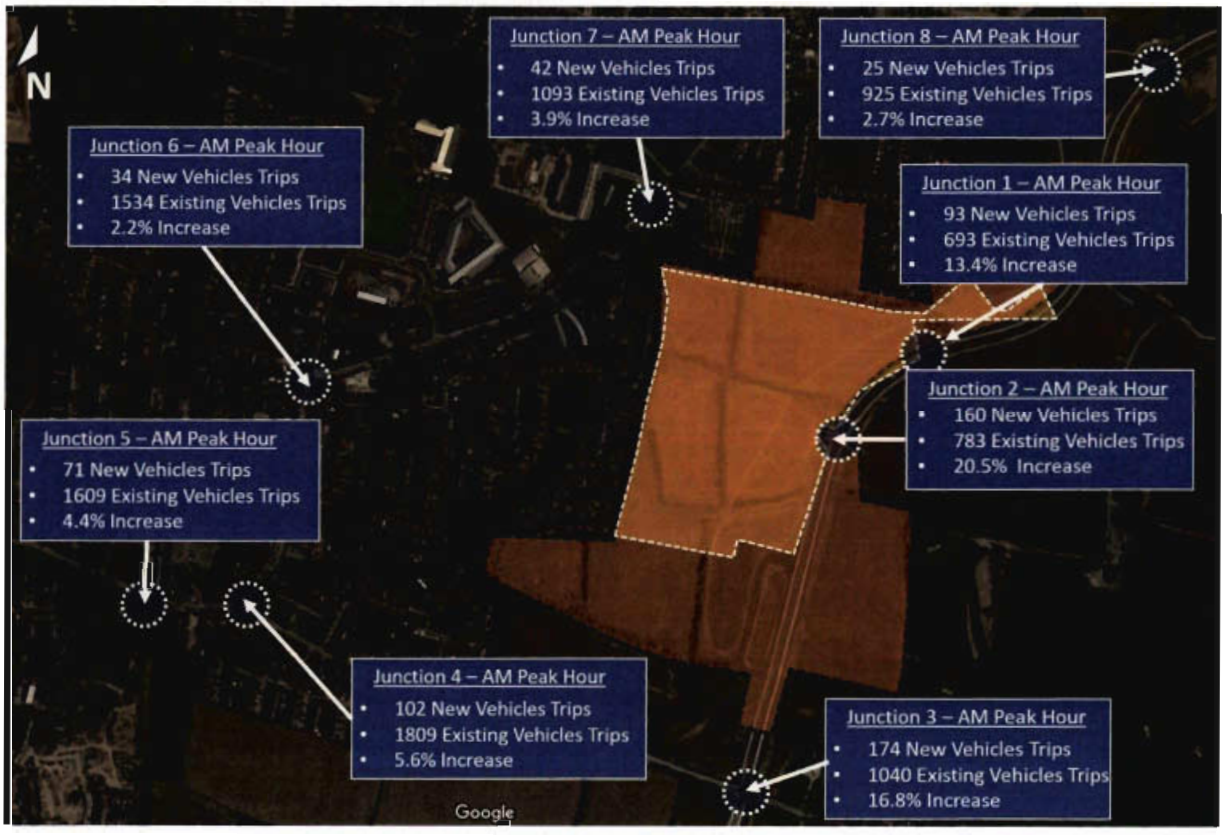
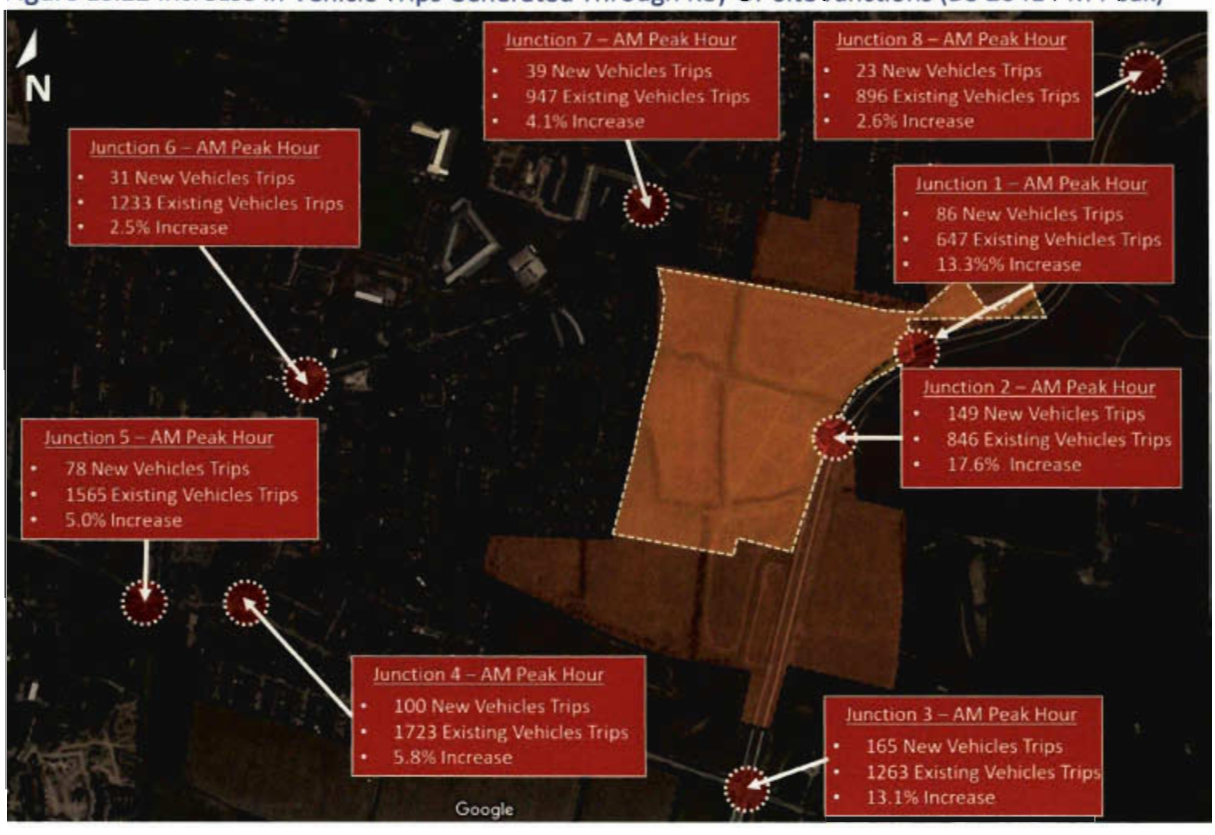


Figure 18.22 Increase in Vehicle Trips Generated Through Key Of-Site Junctions (DS 2041 PM Peak)



18.12 Difficulties Encountered

There were no material difficulties encountered in compiling and assessing the data for this EIAR sufficient to prevent modelling of the likely transport effects of the proposed development. The analysis reported within this chapter is based upon the traffic survey data obtained for this appraisal and undertaken in April 2023.

18.13 References

- Bus Connects website (www.busconnects.ie)
- Department of Transport's Traffic Signs Manual "Chapter 8 Temporary Traffic Measures and Signs for Roadworks"
- Department of Transport's "Guidance for the Control and Management of Traffic at Roads Works – 2nd Edition" (2010)
- Fingal Development Plan (2023-2029)
- 'Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities' The Department of Housing, Planning and Local Government (DHPLG) (July 2023)
- Sustainable Residential Development and Compact Settlements - Guidelines for Planning Authorities-(January 2024)
- Environmental Protection Agency Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (May 2022)
- Irish Rail website (www.irishrail.ie)
- National Transport Authority; Greater Dublin Area Cycle Network Plan (2022)
- NRA 'Traffic and Transport Assessment Guidelines' (2014)

- Ordnance Survey Ireland (www.osi.ie)
- The Institution of Highways and Transportation 'Guidelines for Traffic Impact Assessments' (1994)
- Transport for Ireland (www.transportforireland.ie)
- Transport Infrastructure Ireland (www.tii.ie)

19 Material Assets – Waste

19.1 Introduction

This chapter evaluates the likely impacts, if any, which the proposed development may have on Material Assets (related to waste management) as defined in the EIA Directive (Directive 2011/92/EU as amended by Directive 2014/52/EU) and the Environmental Protection Agency (EPA) Guidelines on the information to be contained in Environmental Impact Assessment Reports (2022).

This chapter has also been prepared to address the issues associated with waste management during the construction and operational phases of the proposed development as described in Chapter 5 (Description of Proposed Development).

This Chapter was prepared by Chonaill Bradley (Bsc ENV,PG Dip Circ Econ, AssocCIWM) of AWN Consulting. Chonaill Bradley is a Principal Environmental Consultant in the Environment Team at AWN. He holds a BSc in Environmental Science from Griffith University, Australia and a Postgraduate Diploma in Circular Economy Leadership for the Built Environment from the Atlantic Technological University, Galway. He is an Associate Member of the Institute of Waste Management (AssocCIWM). Chonaill has over nine years' experience in the environmental consultancy sector and specialises in sustainability, resource and waste management. Refer to **Table 1.4** in Chapter 1 (Introduction) for qualifications of authors and reviewers.

A site-specific Resource & Waste Management Plan (RWMP) has been prepared by AWN to deal with waste generation during the excavation and construction phases of the proposed development and has been included as **Appendix 19.1** in Volume 3 of the EIAR. The RWMP was prepared in accordance with the Environmental Protection Agency's (EPA) document *Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects* (2021).

A separate Operational Waste Management Plan (OWMP) has also been prepared by AWN for the operational phase of the proposed development and is included as **Appendix 19.2** in Volume 3 of the EIAR.

The Chapter has been prepared in accordance with European Commissions Guidelines, Guidance on the preparation of the Environmental Impact Assessment Report (2017) and the EPA Guidelines on the Information to be contained in EIAR (2022).

These documents will ensure the management of wastes arising at the proposed development site in accordance with legislative requirements and best practice standards.

19.1.1 Legislation and Guidance

Waste management in Ireland is subject to EU, national and regional waste legislation and control, which defines how waste materials must be managed, transported and treated. The overarching EU legislation is the Waste Framework Directive (2008/98/EC) as amended which is transposed into national legislation in Ireland. The cornerstone of Irish waste legislation is the Waste Management Act 1996 (as amended). European and national waste management policy is based on the concept of 'waste hierarchy', which sets out an order of preference for managing waste (prevention > preparing for reuse > recycling > recovery > disposal) (**Figure 19.1**).

Figure 19.1 Waste Hierarchy (Source: European Commission)

EU and Irish National waste policy also aims to contribute to the circular economy (CE) by extracting high-quality resources from waste as much as possible. CE is a sustainable alternative to the traditional linear (take-make-dispose) economic model, reducing waste to a minimum by reusing, repairing, refurbishing and recycling existing materials and products (**Figure 19.2**).

Figure 19.2 Circular Economy (Source: Repak)

The Irish government issues policy documents that outline measures to improve waste management practices in Ireland and help the country to achieve EU targets in respect of recycling and disposal of waste. The most recent policy document, A *Waste Action Plan for a Circular Economy – Ireland's National Waste Policy* (WAPCE), was published in 2020 and shifts focus away from waste disposal and moves it back up the production chain. The move away from targeting national waste targets is due to

the Irish and international waste context changing in the years since the launch of the previous waste management plan, *A Resource Opportunity, Waste Management Policy in Ireland*, in 2012.

One of the first actions to be taken from the WAPCE was the development of the *Whole of Government Circular Economy Strategy 2022-2023 'Living More, Using Less'* (2021) to set a course for Ireland to transition across all sectors and at all levels of Government toward circularity and was issued in December 2021.

The Circular Economy and Miscellaneous Provisions Act 2022 was signed into law in July 2022. The Act underpins Ireland's shift from a "take-make-waste" linear model to a more sustainable pattern of production and consumption, that retains the value of resources in our economy for as long as possible and that will to significantly reduce our greenhouse gas emissions. The Act defines Circular Economy for the first time in Irish law, incentivises the use of recycled and reusable alternatives to wasteful, single-use disposable packaging, introduces a mandatory segregation and incentivised charging regime for commercial waste, streamlines the national processes for End-of-Waste and By-Products decisions.

The strategy for the management of waste from the construction phase is in line with the requirements of the EPA's *Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects* (2021). The guidance documents, *Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects* and *Construction and Demolition Waste Management: A Handbook for Contractors and Site Managers* (FÁS & Construction Industry Federation, 2002), were also consulted in the preparation of this assessment.

There are currently no Irish guidelines on the assessment of operational waste generation, and guidance is taken from industry guidelines, plans and reports including the *National Waste Management Plan for a Circular Economy 2024 - 2030* (NWMPCE) (2023), the Fingal County Council (FCC) *Segregation, Storage and Presentation of Household and Commercial Waste Bye-Laws, 2020*, the EPA National Waste Database Reports 1998 – 2020, the Circular Economy and National Waste Database Report 2021 (2023) and the EPA National Waste Statistics Web Resource.

19.1.2 Terminology

Note that the terminology used herein is consistent with the definitions set out in Article 3 of the Waste Framework Directive. Key terms are defined as follows:

- **Waste:** Any substance or object which the holder discards or intends or is required to discard.
- **Prevention:** Measures taken before a substance, material or product has become waste, that reduce:
  - the quantity of waste, including through the re-use of products or the extension of the life span of products;
  - the adverse impacts of the generated waste on the environment and human health; or
  - the content of harmful substances in materials and products.
- **Reuse:** Any operation by which products or components that are not waste are used again for the same purpose for which they were conceived.
- **Preparing for Reuse:** Checking, cleaning or repairing recovery operations, by which products or components of products that have become waste are prepared so that they can be re-used without any other pre-processing.
- **Treatment:** Recovery or disposal operations, including preparation prior to recovery or disposal.

- **Recovery:** Any operation the principal result of which is waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function, in the plant or in the wider economy. Annex II of the Waste Framework Directive sets out a non-exhaustive list of recovery operations.
- **Recycling:** Any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations.
- **Disposal:** Any operation which is not recovery even where the operation has as a secondary consequence the reclamation of substances or energy. Annex I sets out a non-exhaustive list of disposal operations.

19.2 Method

The assessment of the impacts of the proposed development, arising from the consumption of resources and the generation of waste materials, was carried out taking into account the methodology specified in relevant guidance documents, along with an extensive document review to assist in identifying current and future requirements for waste management; including national and regional waste policy, waste strategies, management plans, legislative requirements and relevant reports.

This chapter is based on the proposed development, as described in Chapter 5 (Description of the Proposed Development) and considers the following aspects:

- Legislative context;
- Construction phase (including site preparation and excavation); and
- Operational phase.

A desktop study was carried out which included the following:

- Review of applicable policy and legislation which creates the legal framework for resource and waste management in Ireland;
- Description of the typical waste materials that will be generated during the construction and operational phases; and
- Identification of mitigation measures to prevent waste generation and promote management of waste in accordance with the waste hierarchy.

Estimates of waste generation during the construction and operational phases of the proposed development have been calculated and are included in **Section 19.3.1** of this chapter. The waste types and estimated quantities are based on published data by the EPA in the National Waste Reports and National Waste Statistics, data recorded from similar previous developments, Irish and US EPA waste generation research.

Mitigation measures are proposed to minimise the effect of the proposed development on the environment during the construction and operational phases, to promote efficient waste segregation and to reduce the quantity of waste requiring disposal.

A detailed review of the existing ground conditions on a regional, local and site-specific scale are presented in Chapter 9 of this EIAR (Land, Soils, Geology and Hydrogeology).

19.3 Baseline Environment

In terms of waste management, the receiving environment is in the jurisdiction of FCC as the local authority responsible for setting and administering waste management activities in the area. This is governed by the requirements set out in the *NWMPCE* and the WAPCE.

The Regional Waste Management Planning Offices have issued the National Waste Management Plan for a Circular Economy 2024 - 2030 in March 2024, which supersedes the Eastern Midlands Region (EMR) waste management plan and the two other regional waste management plans. The NWMPCE does not however dissolve the three regional waste areas. The NWCPCE sets the ambition of the plan to have a 0% total waste growth per person over the life of the Plan with an emphasis on non-household wastes including waste from commercial activities and the construction and demolition sector.

The FCC *Fingal Development Plan 2023-2029* also set out policies and objectives for the FCC area which reflect those set out in the regional waste management plan.

In terms of physical waste infrastructure, FCC no longer operates any municipal waste landfill in the area. There are a number of waste permitted and licensed facilities located in the EMR, in the surrounding counties and over Ireland and Northern Ireland, for management of waste from the construction industry as well as municipal sources. These include soil recovery facilities, inert C&D waste facilities, hazardous waste treatment facilities, municipal waste landfills, material recovery facilities, waste transfer stations and two waste-to-energy facilities.

However, these sites may not be available for use when required or may be limited by the waste contractor selected to service the development in the appropriate phase. In addition, there is potential for more suitably placed waste facilities or recovery facilities to become operational in the future which may be more beneficial from an environmental perspective.

The ultimate selection of waste contractors and waste facilities would be subject to appropriate selection criteria proximity, competency, capacity and serviceability at the time of works being undertaken.

19.3.1 Characteristics of the Proposed Development

A full description of the proposed development can be found in Chapter 5 (Description of the Proposed Development). The characteristics of the proposed development that are relevant in terms of waste management are summarised below.

19.3.1.1 Demolition Phase

There is no demolition associated with the proposed development.

19.3.1.2 Construction Phase

During the construction phase, waste will be produced from surplus materials such as broken or off-cuts of timber, plasterboard, concrete, tiles, bricks, etc. Waste from packaging (cardboard, plastic, timber) and oversupply of materials may also be generated. The appointed Contractor will be contractually required to ensure that oversupply of materials is kept to a minimum and opportunities for reuse of suitable materials is maximised.

There will be topsoil and subsoil excavated to facilitate construction of new foundations and the installation of underground services. The project engineers, DBFL Consulting Engineers, have estimated

that c. 41,000 m^3 of material (topsoil and subsoil) will need to be excavated to do so. It is currently envisaged that all of the excavated material will be able to be retained and reused on site. It is currently envisaged that no material will need to be removed off-site. If material is required to be taken offsite it will be taken for appropriate off-site reuse, recovery, recycling and / or disposal.

If any material that requires removal from the site is deemed to be a waste, removal and reuse / recycling / recovery / disposal of the material will be carried out in accordance with the Waste Management Act 1996 (as amended), the Waste Management (Collection Permit) Regulations 2007 (as amended) and the Waste Management (Facility Permit & Registration) Regulations 2007 (as amended). The volume of waste requiring recovery / disposal will dictate whether a Certificate of Registration (COR), permit or licence is required for the receiving facility. Alternatively, the material may be classed as by-product under Regulation 27 (By-products), as amended, of S.I. No. 323/2020 - European Union (Waste Directive) Regulations 2011-2020, (previously Article 27 of the European Communities (Waste Directive)). For more information in relation to the envisaged management of by-products, refer to the RWMP (**Appendix 19.1**).

In order to establish the appropriate reuse, recovery and / or disposal route for the soils and stones to be removed off-site, it will first need to be classified. Waste material will initially need to be classified as hazardous or non-hazardous in accordance with the EPA publication *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* (2018).

Waste will also be generated from construction phase workers, e.g. organic / food waste, dry mixed recyclables (waste paper, newspaper, plastic bottles, packaging, aluminium cans, tins and Tetra Pak cartons), mixed non-recyclables and, potentially, sewage sludge from temporary welfare facilities provided on-site during the construction phase. Waste printer / toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated in small volumes from site offices.

Further detail on the waste materials likely to be generated during the excavation and construction works are presented in the project-specific RWMP (**Appendix 19.1**). The RWMP provides an estimate of the main waste types likely to be generated during the construction phase of the proposed development. These are summarised in **Table 19.1**.

Table 19.1 Predicted on and off-site reuse, recycle and disposal rates for construction waste

Waste Type	Tonnes	Reuse		Recycle / Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Mixed C&D	828.7	10	82.9	80	663.0	10	82.9
Timber	703.1	40	281.3	55	386.7	5	35.2
Plasterboard	251.1	30	75.3	60	150.7	10	25.1
Metals	200.9	5	10.0	90	180.8	5	10.0
Concrete	150.7	30	45.2	65	97.9	5	7.5
Other	376.7	20	75.3	60	226.0	20	75.3
Total	2511.2		570.0		1705.1		236.1

19.3.1.3 Operational Phase

As noted in **Section 19.1**, an OWMP has been prepared for the proposed development and is included as **Appendix 19.2**. The OWMP provides a strategy for segregation (at source), storage and collection of

all wastes generated within the building during the operational phase including dry mixed recyclables (DMR), organic waste and mixed non-recyclable waste (MNR), as well as providing a strategy for management of waste glass, batteries, WEEE, printer / toner cartridges, chemicals, textiles, waste cooking oil and furniture.

The total estimated waste generation for the proposed development for the main waste types, based on the AWN waste generation model (WGM), is presented in **Table 19.2 and 19.3**, below, and is based on the uses and areas as advised by the project architects. Further unit breakdowns can be found in **Appendix 19.2**.

Table 19.2 Estimated waste generation during the operational phase

Waste Type	Waste Volume (m^3/week)
Organic Waste	6.22
DMR	44.11
Glass	1.20
MNR	23.19
Total	**74.73**

The residents will be required to provide and maintain appropriate waste receptacles within their units to facilitate segregation at source of these waste types. As required, the residents will need to bring these segregated wastes from their units to their allocated Waste Storage Areas (WSAs). The locations of WSAs can be viewed on the plans submitted with the application under separate cover.

The OWMP seeks to ensure the development contributes to the targets outlined in the NWMPCE and the FCC waste Bye-laws.

19.4 Predicted Impacts of the Proposed Development

This section details the potential waste effects associated with the proposed development.

19.4.1 Do-Nothing Impact

If the proposed development were not to go ahead (i.e. in the Do-Nothing scenario) there would be no excavation or construction or operational waste generated at this site. There would, therefore, be a **neutral** effect on the environment in terms of waste.

The site is zoned for development, and it is likely that in the absence of this subject proposal, that a development of a similar nature would be progressed on the site that accords with national and regional policies and, therefore, the likely effects would be similar to this proposal, as described in the following sections.

19.4.2 Construction Phase

The proposed Development will generate a range of non-hazardous and hazardous waste materials during site excavation and construction (see **Appendix 19.1** for further detail). General housekeeping and packaging will also generate waste materials, as well as typical municipal wastes generated by

construction employees, including food waste. Waste materials will be required to be temporarily stored in the construction site compound or adjacent to it, on-site pending collection by a waste contractor. If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues at the Development Site and in adjacent areas. The indirect effect of litter issues is the presence of vermin in areas affected. In the absence of mitigation, the effect on the local and regional environment is likely to be **indirect, short-term, significant and negative**.

The use of non-permitted waste contractors or unauthorised waste facilities could give rise to inappropriate management of waste, resulting in indirect negative environmental impacts, including pollution. It is essential that all waste materials are dealt with in accordance with regional and national legislation, as outlined previously, and that time and resources are dedicated to ensuring efficient waste management practices. In the absence of mitigation, the effect on the local and regional environment is likely to be **indirect, long-term, significant and negative**.

Wastes arising will need to be taken to suitably registered / permitted / licenced waste facilities for processing and segregation, reuse, recycling, recovery, and / or disposal, as appropriate. There are numerous licensed waste facilities in the EMR which can accept hazardous and non-hazardous waste materials, and acceptance of waste from the Development Site would be in line with daily activities at these facilities. At present, there is sufficient capacity for the acceptance of the likely C&D waste arisings at facilities in the region. The majority of construction materials are either recyclable or recoverable. However, in the absence of mitigation, the effect on the local and regional environment is likely to be **indirect, short-term, significant and negative.**

There is a quantity of topsoil and subsoil will need to be excavated to facilitate the proposed Development. A detailed review of the existing ground conditions on a regional, local site-specific scale are presented in Chapter 9 (Land, Soils, Geology and Hydrogeology). Excavated material that cannot be reused onsite will need to be removed off-site. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site. However, in the absence of mitigation, the effect on the local and regional environment is likely to be **indirect, short-term, significant** and **negative**.

19.4.3 Operational Phase

The potential impacts on the environment of improper, or a lack of, waste management during the operational phase would be a diversion from the priorities of the waste hierarchy which would lead to small volumes of waste being sent unnecessarily to landfill. In the absence of mitigation, the effect on the local and regional environment is likely to be **indirect, long-term, significant** and **negative**.

The nature of the development means the generation of waste materials during the operational phase is unavoidable. Networks of waste collection, treatment, recovery and disposal infrastructure are in place in the region to manage waste efficiently from this type of development. Waste that is not suitable for recycling can be sent for energy recovery. There are also facilities in the region for segregation of municipal recyclables, which is typically exported for conversion in recycled products (e.g. paper mills and glass recycling).

If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues at the development site and in adjacent areas. The knock-on effect of litter issues is the presence of

vermin in affected areas. However, in the absence of mitigation, the effect on the local and regional environment is likely to be **indirect, long-term, significant** and **negative**.

Waste contractors will be required to service the proposed development on a scheduled basis to remove waste. Further details can be found in **Appendix 19.2**. The use of non-permitted waste contractors or unauthorised facilities could give rise to inappropriate management of waste and result in negative environmental impacts or pollution. It is essential that all waste materials are dealt with in accordance with regional and national legislation, as outlined previously, and that time and resources are dedicated to ensuring efficient waste management practices. However, in the absence of mitigation, the effect on the local and regional environment is likely to be **long-term, significant** and **negative**.

19.5 Mitigation Measures

This section outlines the measures that will be employed in order to reduce the amount of waste produced, manage the wastes generated responsibly and handle the waste in such a manner as to minimise the effects on the environment.

The concepts of the 'waste hierarchy' and "circular economy" are employed when considering all mitigation measures. The waste hierarchy states that the preferred option for waste management is prevention and minimisation of waste, followed by preparing for reuse and recycling / recovery, energy recovery (i.e. incineration) and, least favoured of all, disposal. A circular economy is a model of resource production and consumption in any economy that involves sharing, leasing, reusing, repairing, refurbishing, and recycling existing materials and products for as long as possible.

19.5.1 Construction Phase

The following mitigation measures will be implemented during the construction phase of the proposed development:

- As previously stated, a project specific RWMP has been prepared in line with the requirements of the requirements of the EPA 'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021) and is included as **Appendix 19.1**. The mitigation measures outlined in the RWMP will be implemented in full and form part of the mitigation strategy for the site. The mitigation measures presented in this RWMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the excavation and construction phases of the proposed development.
- Prior to commencement, the appointed Contractor(s) will be required to refine / update the RWMP (**Appendix 19.1**) in agreement with FCC, or submit an addendum to the RWMP to FCC, detailing specific measures to minimise waste generation and resource consumption, and provide details of the proposed waste contractors and destinations of each waste stream.
- The Contractor will be required to fully implement the RWMP throughout the duration of the proposed construction phase.
- A quantity of topsoil and sub soil will need to be excavated to facilitate the proposed development. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site.

In addition, the following mitigation measures will be implemented:

- Building materials will be chosen with an aim to 'design out waste';
- On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling and recovery. The following waste types, at a minimum, will be segregated:
  - Concrete rubble (including ceramics, tiles and bricks);
  - Plasterboard;
  - Metals;
  - Glass; and
  - Timber.
- Left over materials (e.g. timber off-cuts, broken concrete blocks / bricks) and any suitable construction materials shall be re-used on-site, where possible; (alternatively, the waste will be sorted for recycling, recovery or disposal);
- All waste materials will be stored in skips or other suitable receptacles in designated areas of the site;
- Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required);
- A Resource Manager (RM) will be appointed by the main Contractor(s) to ensure effective management of waste during the excavation and construction works;
- All construction staff will be provided with training regarding the waste management procedures;
- All waste leaving site will be reused, recycled or recovered, where possible, to avoid material designated for disposal;
- All waste leaving the site will be transported by suitably permitted contractors and taken to suitably registered, permitted or licenced facilities; and
- All waste leaving the site will be recorded and copies of relevant documentation maintained.

Nearby sites requiring clean fill material will be contacted to investigate potential reuse opportunities for clean and inert material, if required. If any of the material is to be reused on another site as by-product (and not as a waste), this will be done in accordance with Regulation 27 (By-products), as amended, European Union (Waste Directive) Regulations 2011-2020. EPA approval will be obtained prior to moving material as a by-product.

These mitigation measures will ensure that the waste arising from the construction phase of the proposed development is dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated Regulations and the Litter Pollution Act 1997 and the NWCPE. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will promote more sustainable consumption of resources.

19.5.2 Operational Phase

The following mitigation measures will be implemented during the operational phase of the proposed development:

All waste materials will be segregated into appropriate categories and will be temporarily stored in appropriate bins or other suitable receptacles in a designated, easily accessible areas of the site.

As previously stated, a project specific OWMP has been prepared and is included as **Appendix 19.2**. The mitigation measures outlined in the OWMP will be implemented in full and form part of the mitigation

strategy for the site. Implementation of this OWMP will ensure a high level of recycling, reuse and recovery at the development. All recyclable materials will be segregated at source to reduce waste contractor costs and ensure maximum diversion of materials from landfill, thus achieving the targets set out in the NWMPCE, Waste Action Plan for a Circular Economy – Waste Management Policy in Ireland and the FCC waste bye-laws.

The Facilities Management Company / Residents of the site during the operational phase will be responsible for ensuring – allocating personnel and resources, as needed – the ongoing implementation of this OWMP, ensuring a high level of recycling, reuse and recovery at the site of the proposed development.

In addition, the following mitigation measures will be implemented:

- The Residents / Facilities Management will ensure on-site segregation of all waste materials into appropriate categories, including (but not limited to):
  - Organic waste;
  - Dry Mixed Recyclables;
  - Mixed Non-Recyclable Waste;
  - Glass;
  - Waste electrical and electronic equipment (WEEE);
  - Batteries (non-hazardous and hazardous);
  - Cooking oil;
  - Light bulbs;
  - Cleaning chemicals (pesticides, paints, adhesives, resins, detergents, etc.);
  - Furniture (and from time to time other bulky waste); and
  - Abandoned bicycles.
- The Residents / Facilities Management will ensure that all waste materials will be stored in colour coded bins or other suitable receptacles in designated, easily accessible locations. Bins will be clearly identified with the approved waste type to ensure there is no cross contamination of waste materials;
- The Residents / Facilities Management will ensure that all waste collected from the site of the proposed development will be reused, recycled or recovered, where possible, with the exception of those waste streams where appropriate facilities are currently not available; and
- The Residents / Facilities Management will ensure that all waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licensed facilities.

These mitigation measures will ensure the waste arising from the development is dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated Regulations, the Litter Pollution Act 1997, The NWMPCE and the FCC waste bye-laws. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved.

19.6 Residual Impacts

The implementation of the mitigation measures outlined in **Section 19.5** will ensure that targeted rates of reuse, recovery and recycling are achieved at the site of the proposed development during the construction and operational phases. It will also ensure that EU, national and regional legislative waste

requirements with regard to waste are met and that associated targets for the management of waste are achieved.

19.6.1 Construction Phase

A carefully planned approach to waste management as set out in **Section 19.5.1** of this chapter, and adherence to the RWMP (which includes mitigation) (**Appendix 19.1**) during the construction phase will ensure that the predicted effect on the environment will be **short-term, imperceptible** and **neutral.**

19.6.2 Operational Phase

During the operational phase, a structured approach to waste management as set out in **Section 19.5.2** of this chapter, and adherence to the OWMP (which includes mitigation) (**Appendix 19.2**), will promote resource efficiency and waste minimisation. When the mitigation measures are implemented and a high rate of reuse, recycling and recovery is achieved, the predicted impact of the operational phase on the environment will be **long-term, imperceptible** and **neutral.**

19.7 Indirect and /or Secondary Impacts

It is not envisaged that there will be any indirect and/or secondary impacts outside of the items covered in section 19.3 as a result of the proposed development in relation to this chapter.

19.8 Monitoring

The management of waste during the construction phase will be monitored by the Contactor's appointed Resource Manager to ensure compliance with the above-listed mitigation measures, and relevant waste management legislation and local authority requirements, including maintenance of waste documentation.

The management of waste during the operational phase will be monitored by the Operator / Facilities Management to ensure effective implementation of the OWMP internally and by the nominated waste contractor(s).

19.8.1 Construction Phase

The objective of setting targets for waste management is only achieved if the actual waste generation volumes are calculated and compared. This is particularly important during the excavation and construction works, where there is a potential for waste management objectives to become secondary to other objectives, i.e. progress and meeting construction schedule targets. The mitigation measures in the RWMP specify the need for a Resource Manager to be appointed, who will have responsibility for monitoring the actual waste volumes being generated and ensuring that contractors and sub-contractors are segregating waste as required. Where targets are not being met, the Resource Manager will identify the reasons for this and work to resolve any issues. Recording of waste generation during the construction phase of the proposed development will enable better management of waste contractor requirements and identify trends. The data should be maintained to advise on future developments.

19.8.2 Operational Phase

During the operational phase, waste generation volumes will be monitored by the Operator / Facilities Management against the predicted waste volumes outlined in the OWMP. There may be opportunities

to reduce the number of bins and equipment required in the WSAs, where estimates have been too conservative. Reductions in bin and equipment requirements will improve efficiency and reduce waste contractor costs.

19.9 Interactions

This section discusses interactions between this Chapter and other specialist environmental topics considered in this EIAR.

19.9.1 Land, Soils, Geology & Hydrogeology

During the construction phase, excavated topsoil and subsoil (c. 41,000 m^3) will be generated from the excavations required to facilitate site levelling and construction of new foundations. It is anticipated that all will be reused on site. If material is deemed unsuitable or is not required it will be taken off-site, for reuse or recovery, where practical, with disposal as a last resort. Adherence to the mitigation measures in Chapter 9 and the requirements of the RWMP (Appendix 19.1), will ensure the effect is **long-term, imperceptible** and **neutral.**

19.9.2 Traffic & Transportation

Local traffic and transportation will be impacted by the additional vehicle movements generated by removal of waste from the site during the construction and operational phases of the proposed development. The increase in vehicle movements as a result of waste generated during the construction phase will be **temporary** in duration. There will be an increase in vehicle movements in the area as a result of waste collections during the operational phase but these movement will be **imperceptible** in the context of the overall traffic and transportation increase. Traffic-related impacts during the construction and operational phases are addressed in Chapter 18 (Traffic & Transportation). Provided the mitigation measures detailed in Chapter 18 and the requirements of the OWMP (included as **Appendix 19.2**) are adhered to, the predicted effects are **short to long-term**, **imperceptible** and **neutral.**

19.9.3 Population & Human Health

The potential impacts on human beings are in relation to incorrect management of waste during construction and / or operation, which could result in littering and presence of vermin – with associated potential for negative impacts on human health and residential amenity. A carefully planned approach to waste management and adherence to the project specific RWMP and OWMP (**Appendices 19.1** and **19.2**, respectively), will ensure appropriate management of waste and avoid any negative impacts on the local population. The effects predicted are **long-term, imperceptible** and **neutral**.

19.10 Cumulative Impacts

As has been identified in the receiving environment section, all cumulative developments that are already built and in operation contribute to our characterisation of the baseline environment. As such, any further environmental impacts that the proposed development may have in addition to these already constructed and operational cumulative developments has been assessed in the preceding sections of this chapter.

19.10.1 Construction Phase

There are existing residential and commercial developments close by, along with the multiple permissions remaining in place in the area. In a worst-case scenario, multiple developments in the area could be developed concurrently or overlap in the construction phase. The following permitted or proposed developments (as described in Chapter 22 – Cumulative Impacts) could potentially overlap with the construction phase of the proposed development:

Table 19.3 Potential Overlapping Developments (Construction Phase)

Ref.	Applicant	Location	Status
F19A/0243/ ABP-307657-20	Irish Water	Balcarrick Road, Ballymastone, Donabate, Co. Dublin.	Permission granted by An Bord Pleanàla on 23 November 2020.
LRD0008/S3/ ABP-315288-22	Glenveagh Living Limited	Ballymastone, Donabate, Co. Dublin	Permission granted by An Bord Pleanàla on 28 March 2023.
LRD0017/S3	Aledo Donabate Ltd	Corballis East, Donabate, Co Dublin	Permission granted by Fingal County Council on 23 February 2024.
F22A/0527	Glenveagh Homes Limited	Corballis East, Donabate, Co Dublin	Permission granted by Fingal County Council on 30 August 2023.
F20A/0510/ ABP-311447-21	Cairn Homes Properties Ltd	Lands at Ballymastone, Donabate, Co Dublin	Permission granted by An Bord Pleanàla on 11 February 2022.
F20A/0204/ ABP-308446-20	Aledo Donabate Limited	Lands to the South of Main Street, Corballis East, Donabate, Co Dublin	Permission granted by An Bord Pleanàla on 6 September 2021.
F17A/0373	Tilberry Limited	Lands at New Road, Ballisk, Donabate, Co. Dublin.	Permission granted by An Bord Pleanàla on 17 April 2019.
F23A/0134	St Patrick's GAA Clubhouse Donabate	On lands at, Robbie Farrell Park, Ballymastone, Donabate, Co Dublin	Permission granted by Fingal County Council on 05 July 2023.
YA06F.304624	Fingal County Council	Malahide Demesne, Kilcrea, Newbridge Demesne, Donabate, Fingal, County Dublin	Permission granted by An Bord Pleanàla on 19 April 2020.
Not available (Part 8)	Fingal County Council	Ballymastone, Donabate, Co. Dublin	Approved on 14 September 2021.
F22A/0165	Glenveagh Homes Limited	Hearse Road, Donabate, Co Dublin	Permission granted by Fingal County Council on 24 August 2022.

Ref.	Applicant	Location	Status
F21A/0113	Glenveagh Homes Limited	Semple Woods, Off Hearse Road, Donabate, Co. Dublin	Permission granted by Fingal County Council on 02 February 2022.
F21A/0056	Glenveagh Homes Limited	Semple Woods, Hearse Road, Donabate, Dublin	Retention permission and planning permission granted by Fingal County Council on 31 August 2021
F17A/0113	McGarrell Reilly Homes	Lands at Hearse Road, Donabate, Co. Dublin	Permission granted by Fingal county Council on 15 January 2018.
TA06F.306794	Elchoir Construction Limited	Lands adjacent to the existing residential development known as 'The Gallery', Turvey Walk, off Turvey Avenue, To the west of Donabate Train Station, Donabate, Co. Dublin	Permission granted by An Bord Pleanàla on 10th August 2020.
F20A/0630	Drumargh Ltd	Lands at Turvey Walk, fronting Turvey Avenue, adjacent to Donabate Train Station, and the residential development of The Gallery, Donabate, Co Dublin	Permission granted by Fingal County Council on 09 June 2021.
F21A/0257	Loughglynn Developments Limited	Beresford, Donabate, Co. Dublin	Permission granted by Fingal County Council on 05 August 2021.
F24A/0169	Marshall Yards Development Company Limited	Corballis East, Donabate, Co Dublin	Lodged on 29 February 2024

Due to the high number of waste contractors in the FCC area and the EMR, as provided from the National Waste Collection Permit Office and the EPA, there would be sufficient contractors available to handle waste generated from a large number of these sites simultaneously, if required. Similar waste materials would be generated by all of the developments.

Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will mitigate against any potential cumulative effects associated with waste generation and waste management. As such the cumulative effect will be **short-term, not significant** and **neutral**.

19.10.2 Operational Phase

There are existing residential and commercial developments close by, along with the multiple permissions remaining in place, as discussed above. All of the current and potential developments will generate similar waste types during their operational phases. Authorised waste contractors will be

required to collect waste materials segregated, at a minimum, into recyclables, organic waste and non-recyclables. An increased density of development in the area is likely improve the efficiencies of waste collections in the area.

Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will mitigate any potential cumulative impacts associated with waste generation and waste management. As such the cumulative effect will be a **long-term**, **imperceptible** and **neutral**.

19.11 Difficulties Encountered

Until final materials and detailed construction methodologies have been confirmed, it is difficult to predict with a high level of accuracy the construction waste that will be generated from the proposed works as the exact materials and quantities may be subject to some degree of change and variation during the construction process.

While it is possible to initially select a licensed waste facility for soil disposal, there is potential to encounter contaminated material or material with naturally occurring variations in minerals and chemicals that necessitates sending it to a different suitably licensed facility. The sampling and testing carried out in the Site Investigation (SI) process provides spot samples, and further testing may be required during the excavation process, as the true condition of all excavated materials cannot be ascertained with certainty until this is undertaken.

There is a number of licensed, permitted and registered waste facilities in the FCC region, in the surrounding counties, the eastern midlands waste region and in Ireland and Northern Ireland. However, these sites may not be available for use when required or may be limited by the waste contractor selected to service the development in the appropriate phase. In addition, there is potential for more suitably placed waste facilities or recovery facilities to become operational in the future which may be more beneficial from an environmental perspective.

Licensed waste facilities have annual limitations on material that they can imported as part of their license agreements. Because of this it would not make it possible to commit to a singular specific receiving facility as it is not available throughout the excavation phase. It would not be viable to cease a development and wait until a receiving facilities annual receiving quotas are reset. In a normal development waste facilities would switch between facilities with available capacity.

The ultimate selection of waste contractors and waste facilities would be subject to appropriate selection criteria proximity, competency, capacity, serviceability, and cost.

19.12 References

- Waste Management Act 1996 (No. 10 of 1996) as amended.
- Environmental Protection Agency Act 1992 as amended.
- Litter Pollution Act 1997 (S.I. No. 12 of 1997) as amended.
- Regional Waste Management Planning Offices, The National Waste Management Plan for a Circular Economy 2024 – 2030 (2024).
- Department of Environment and Local Government (DoELG) Waste Management – Changing Our Ways, A Policy Statement (1998).

- European Commission, Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (2017).
- Environmental Protection Agency (EPA) 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' (2022).
- Forum for the Construction Industry – Recycling of Construction and Demolition Waste.
- Department of Communications, Climate Action and Environment (DCCAE), Waste Action Plan for the Circular Economy - Ireland's National Waste Policy 2020-2025 (Sept 2020).
- DCCAE, Whole of Government Circular Economy Strategy 2022-2023 'Living More, Using Less' (2021).
- Environmental Protection Agency (EPA) 'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021).
- FÁS and the Construction Industry Federation (CIF), Construction and Demolition Waste Management – a handbook for Contractors and site Managers (2002).
- Fingal County Council (FCC), Fingal Development Plan 2023-2029 (2022).
- FCC, Fingal County Council Segregation, Storage and Presentation of Household and Commercial Waste Bye-Laws (2020).
- BS 5906:2005 Waste Management in Buildings – Code of Practice.
- Planning and Development Act 2000 (No. 30 of 2000) as amended.
- Environmental Protection Agency (EPA), Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous (2018).
- Council Decision 2003/33/EC, establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC.
- EPA, European Waste Catalogue and Hazardous Waste List (2002).
- Environmental Protection Agency (EPA), National Waste Database Reports 1998 – 2020 and the Circular Economy and National Waste Database Report 2021 -
- US EPA, Characterisation of Building Uses (1998).
- EPA and Galway-Mayo Institute of Technology (GMIT), EPA Research Report 146 – A Review of Design and Construction Waste Management Practices in Selected Case Studies – Lessons Learned (2015)

20 Material Assets – Services

20.1 Introduction

The subject application (Phase 2) forms part of a wider Masterplan for lands within the Ballisk, Ballymastone, Ballalease North & Portrane Demesne Townlands and represents Phase 2 of a wider development of the Ballymastone Lands (as identified in the Donabate Local Area Plan 2016 (as extended)) and is a continuation of Phase 1 of the Masterplan lands (permitted under LRD0008/S3).

The proposed development, comprises a Large-Scale Residential Development (LRD) including the provision of 364 residential units consisting of:

- 158 No. Houses (54 No. 2 Bed; 99 No. 3 Bed, 5 No 4 Bed),
- 82 No. Duplex in 9 No. Blocks (8 No. 1 Bed; 33 No. 2 Bed, 41 No 3 Bed),
- 124 No. Apartments in No. 3 Blocks (48 No. 1 Bed; 66 No. 2 Bed, 10 No 3 Bed).

This chapter addresses issues relating to the material assets of surface water drainage, wastewater drainage, water supply and utilities (Power, Gas & Telecommunications) in respect of the subject lands and assesses the impact of the proposed development on these aspects of the existing environment.

The EPA's *'Guidelines on the information to be contained in an Environmental Impact Assessment Reports'* (2022) describes material assets to be taken to mean 'built services' (i.e., utilities networks including electricity, telecommunications, gas, water supply and sewerage), 'waste management' and 'infrastructure' (i.e., roads and traffic).

Traffic-related impacts have been addressed under the scope of **Chapter 18** (Traffic & Transportation). Water quality, land / soils and other hydrological / hydrogeological impacts of the proposed development have been assessed under the scope of **Chapters 9** (Land, Soils, Geology & Hydrogeology) and **10** (Hydrology). Waste management infrastructure has been addressed under **Chapter 19** (Material Assets – Waste) and built historic environment is covered under **Chapter 15** (Cultural Heritage, Archaeology and Architectural Heritage). A site-specific Resource & Waste Management Plan (RWMP) has been prepared by AWN to deal with waste generation during the excavation and construction phases of the proposed development and has been included as **Appendix 19.1** in Volume 3 of the EIAR. A separate Operational Waste Management Plan (OWMP) has also been prepared by AWN for the operational phase of the proposed development and is included as **Appendix 19.2** in Volume 3 of the EIAR.

This chapter will assess the potential effects associated with the Proposed Development, if any, with regards to the following built services:

- Water Supply Infrastructure
- Surface Water Drainage Infrastructure
- Wastewater Drainage Infrastructure
- Electricity
- Gas; and
- Telecommunications.

Ethos Engineering are Mechanical and Electrical Engineers for the development and the text for this chapter has been prepared by Susan Cormican Chartered Engineer, Ethos Engineering covering

Electrical Power, Public Lighting, Natural Gas and Telecommunications with inputs from Brendan Curran Chartered Engineer, DBFL Consulting Engineers on water supply & drainage infrastructure.

20.2 Method

Baseline information on existing services has been obtained from Utility providers as referenced within specific sections including:

- Uisce Éireann utility plans (for surface water drainage, foul water drainage and water supply);
- ESB Networks utility plans;
- Gas Networks Ireland (GNI) service plans;
- Eir e-maps; and
- Virgin Media maps.

The methodology is consistent with the following relevant guidance:

- EPA (2022). Guidelines on the information to be contained in Environmental Impact Assessment Reports; and
- National Roads Authority (NRA) (2008). Environmental Impact Assessment of National Road Schemes – A Practical Guide.

Effects and impacts have been characterised in accordance with the criteria set out in the EPA guidelines (as reproduced in **Table 1.5** in Chapter 1 (Introduction)).

Surface water run-off, foul drainage discharge and water usage calculations have been carried out in accordance with the following guidelines:

- Greater Dublin Strategic Drainage Study (GDSDS).
- Method outlined in Irish Water's Code of Practice for Wastewater Infrastructure (2020).
- Method outlined in Irish Water's Code of Practice for Water Infrastructure (2020).

20.3 Baseline Environment

20.3.1 Electrical Power

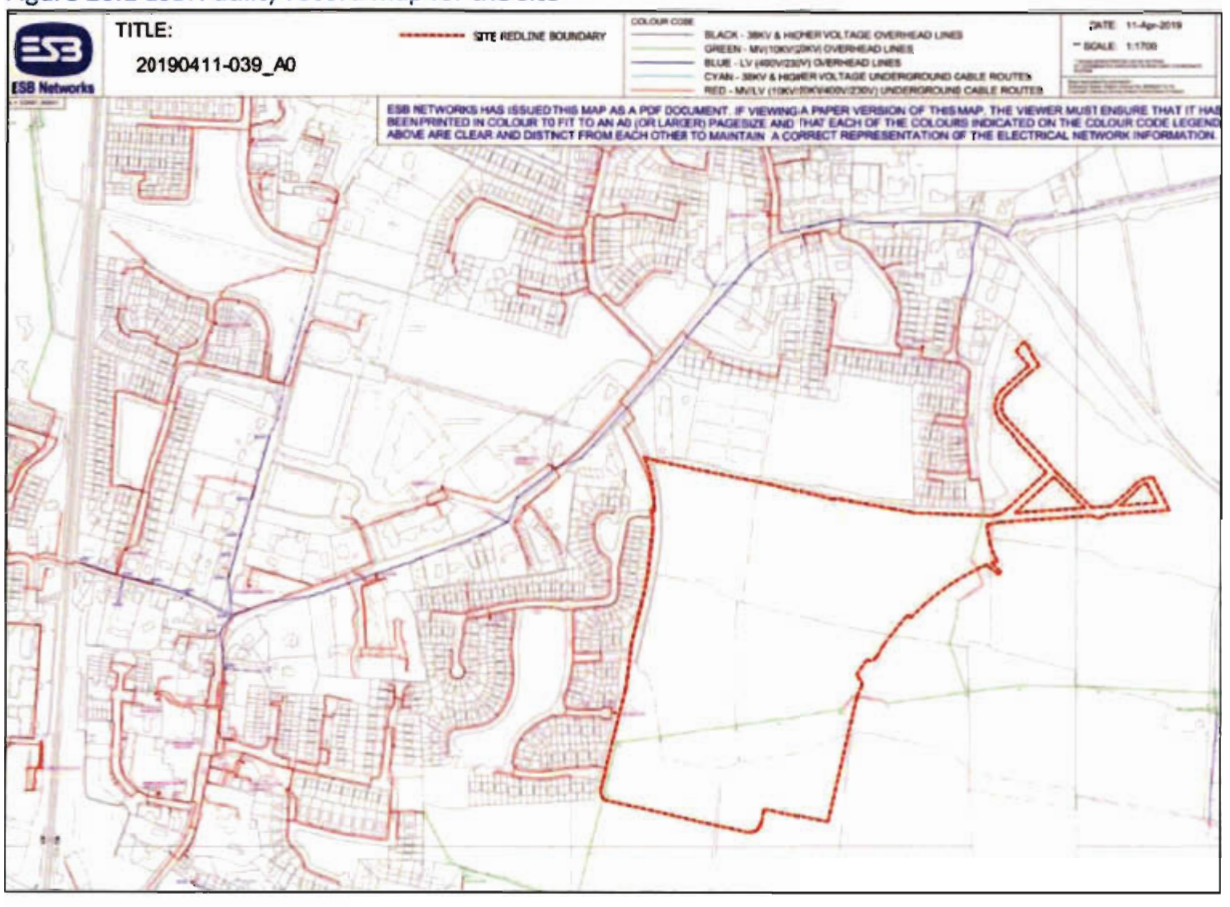
There is existing Electricity Supply Board Networks (ESBN) medium voltage infrastructure on the site, in the form of overhead (OH) 10/20kV cables (indicated in green) and underground 10/20kV/400V/230V cables (indicated in red) on the ESBN map at **Figure 20.1** below.

The ESBN record drawing illustrates existing infrastructure surrounding the site from which the connection to the ESBN network for supply to the proposed development will be made. Discussions with the ESBN have not indicated any issue with availability of supply. Formal application for supply has been made to ESBN.

20.3.1.1 Diversion of Existing ESBN Infrastructure

An application has been formally submitted to ESBN to divert the OH lines on the site.

Figure 20.1 ESBN utility record map for the site



20.3.2 Public Lighting

There is no existing public lighting infrastructure on the site.

New public lighting will be installed as part of the new development.

20.3.3 Natural Gas

There is existing natural gas infrastructure on the site in the form of an undergound (UG) medium pressure Gas Networks Ireland (GNI) gas main. Refer to **Figure 20.2** below.

The development does not require a supply of natural gas for any of the proposed buildings. No new supply will be taken onto the site as part of the development.

20.3.3.1 Diversion of Existing GNI Infrastructure

An application has been formally submitted to GNI to divert the UG pipework on the site.

Figure 20.2 GNI utility record map for the site

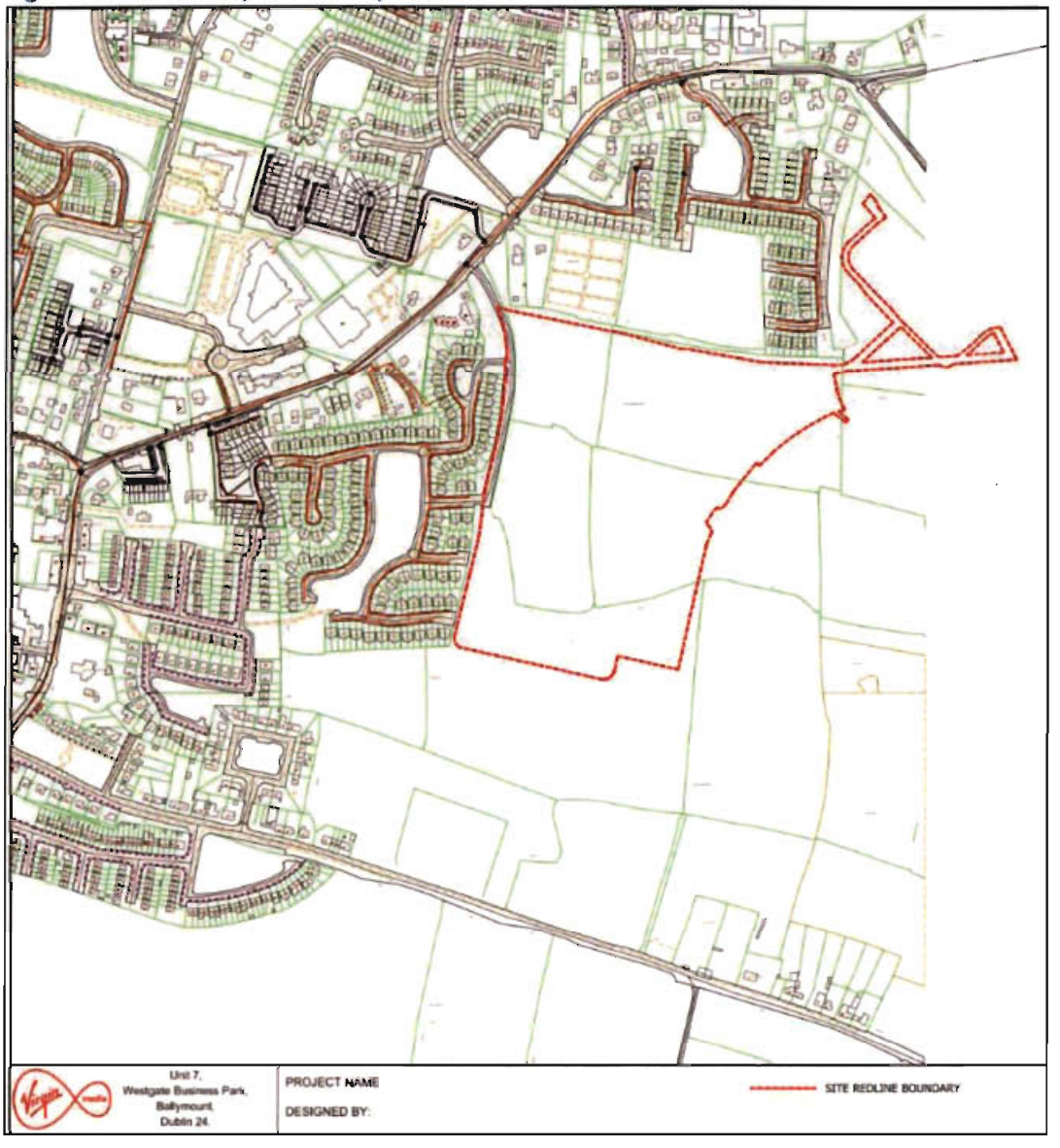
20.3.4 Telecommunications

20.3.4.1 Telecommunications – Virgin Media (VM)

There is no existing VM telecommunication infrastructure traversing the site. Refer to VM record map at **Figure 20.3** below.

There is infrastructure adjacent to the site, which will be brought onto the site to supply all parts of the development.

Figure 20.3 VM utility record map for the site



20.3.4.2 Telecommunications – EIR

There is no existing telecommunication infrastructure traversing the site. Refer to EIR record maps at **Figures 20.4 to 20.8** below.

There is infrastructure adjacent to the site, which will be brought onto the site to supply all parts of the development.

Figure 20.4 Eir utility record map for the site (1 of 5)

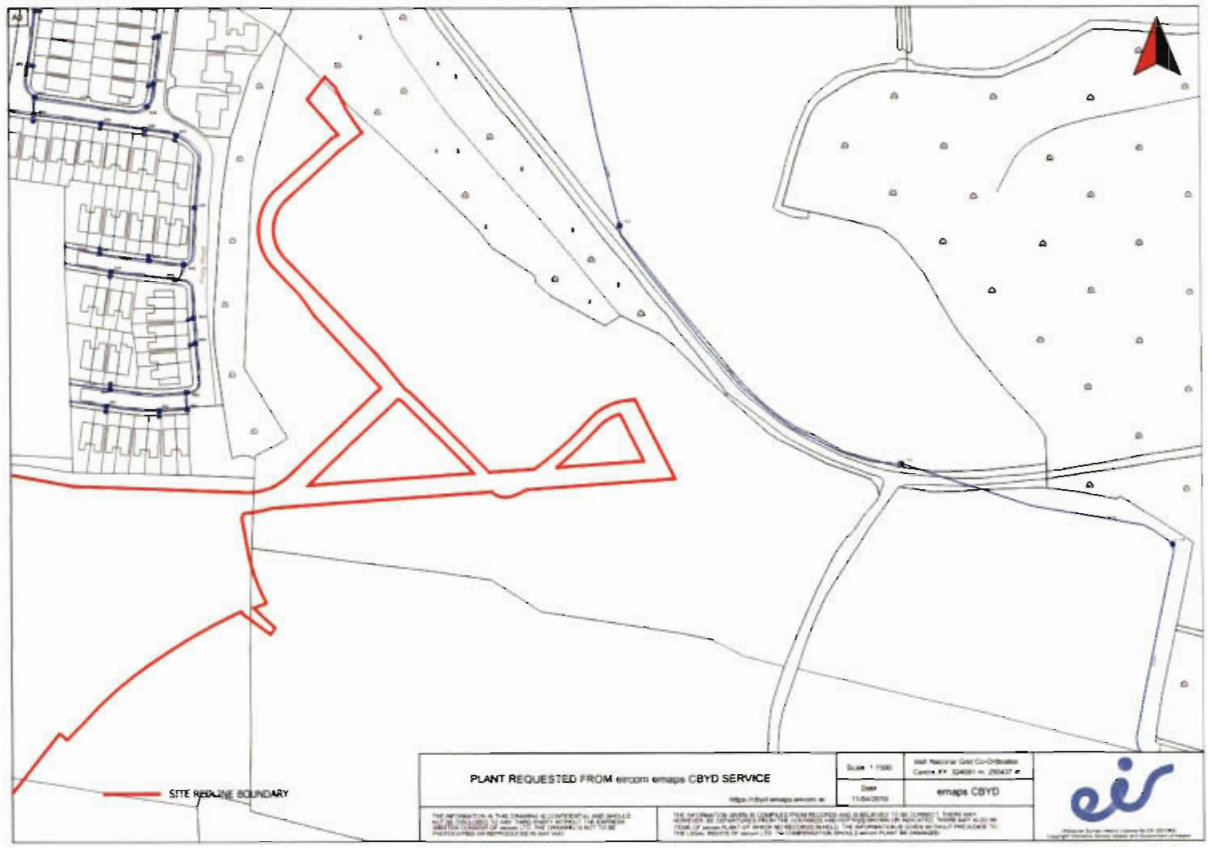


Figure 20.5 Eir utility record map for the site – 2 of 5

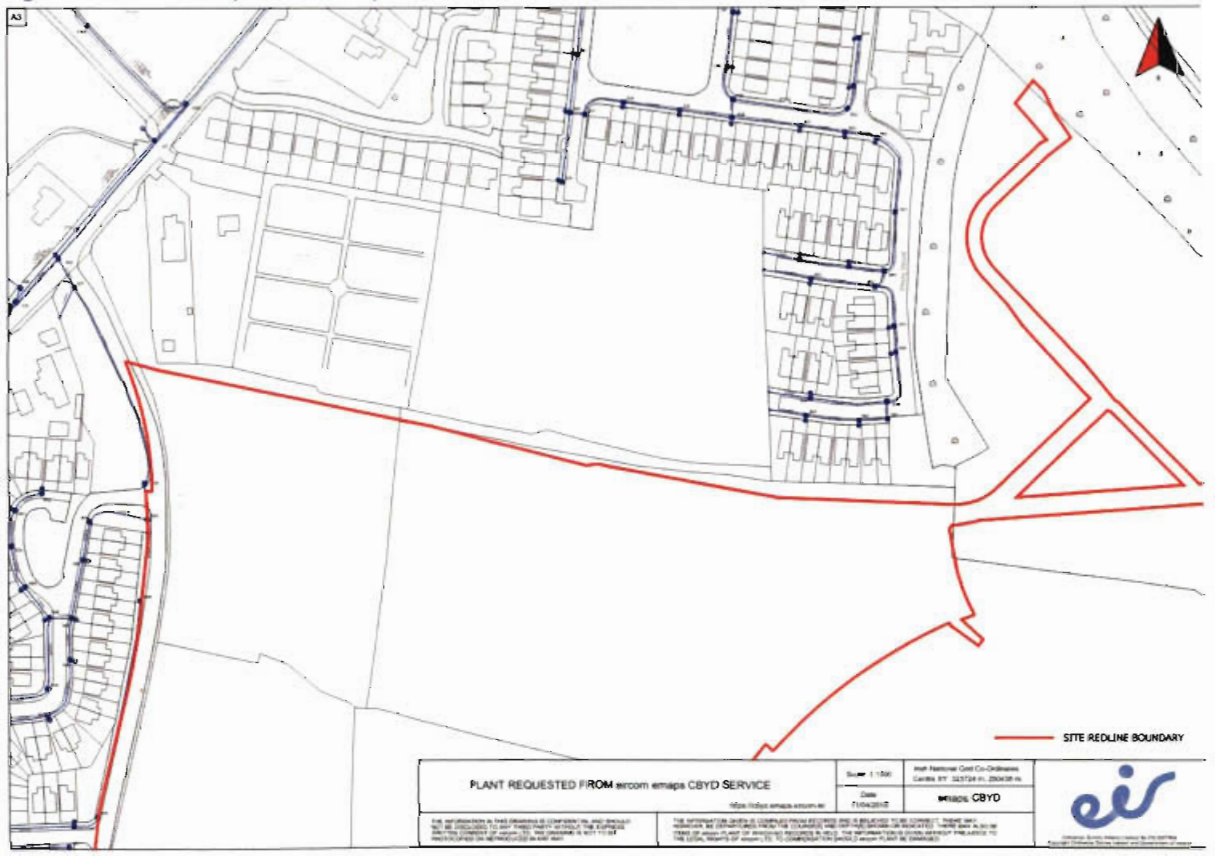


Figure 20.6 Eir utility record map for the site (3 of 5)

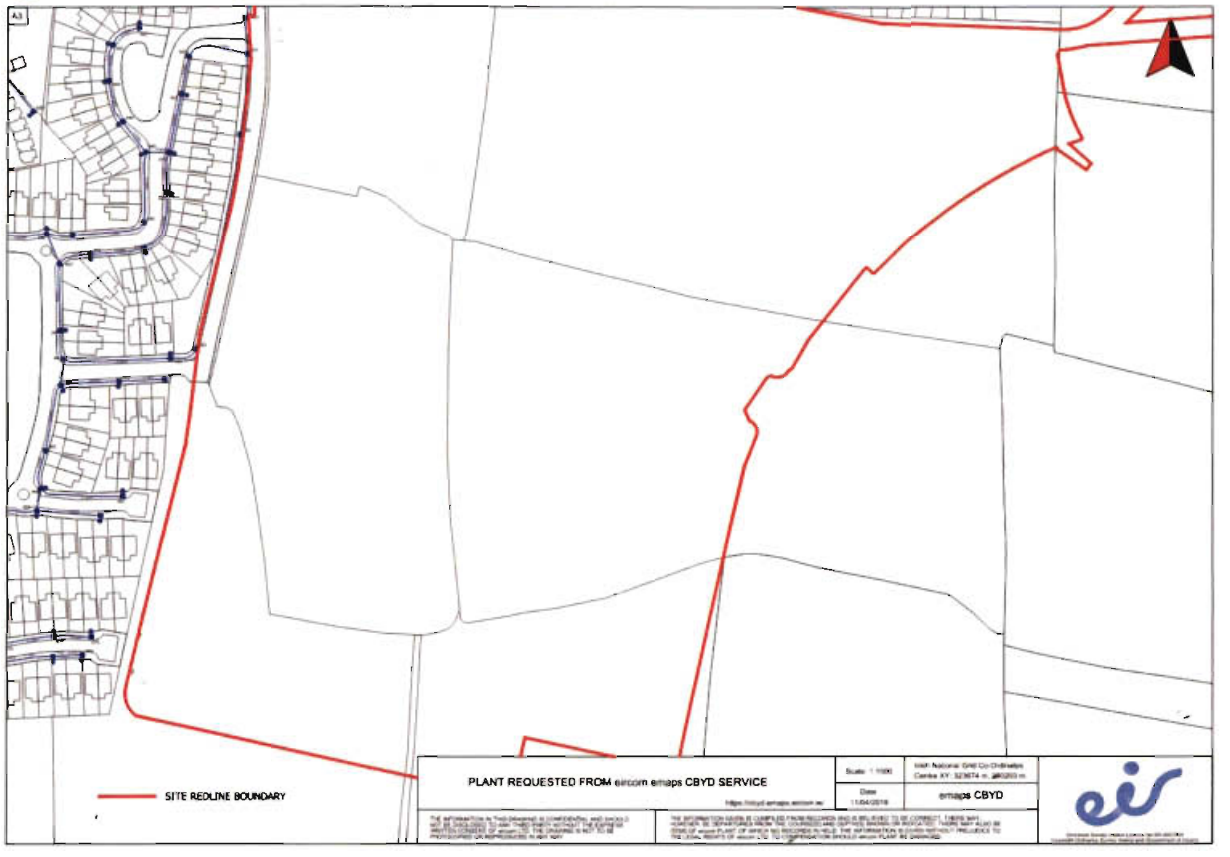


Figure 20.7 Eir utility record map for the site (4 of 5)

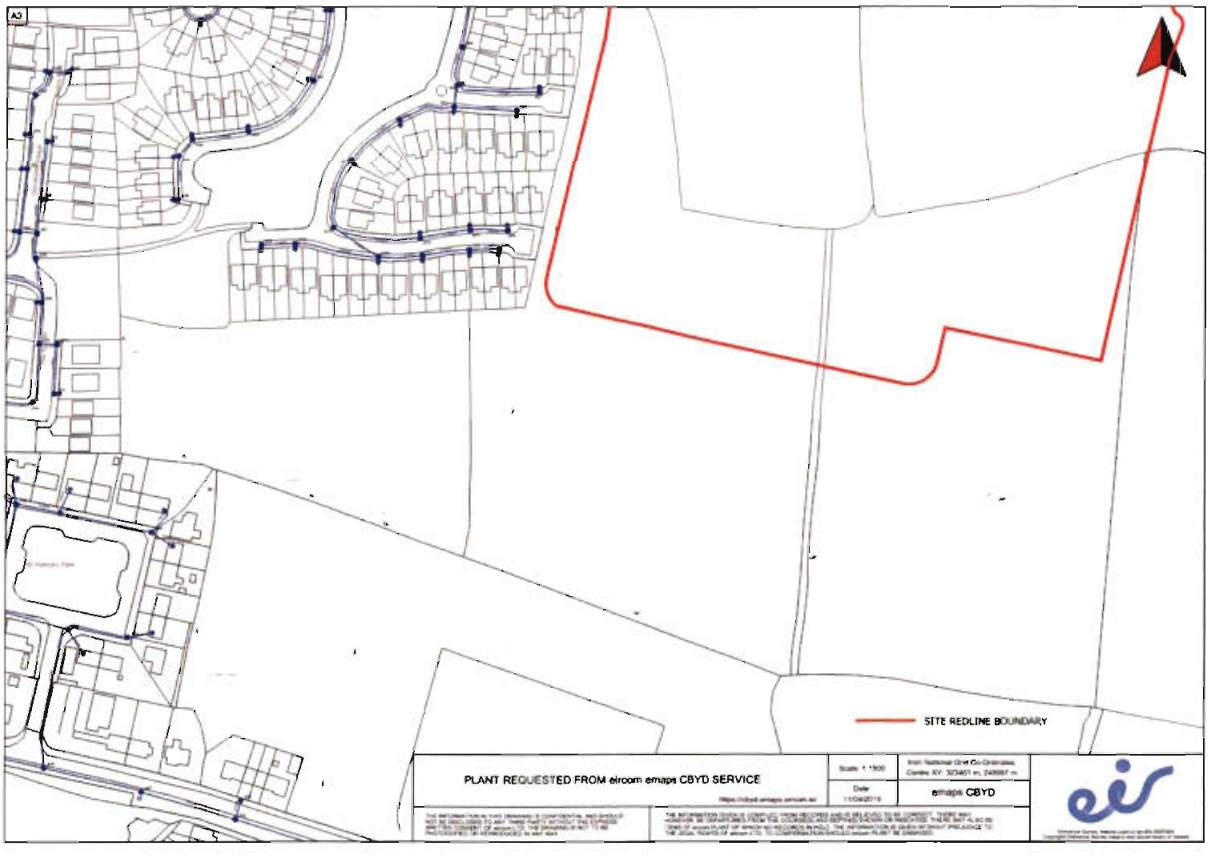
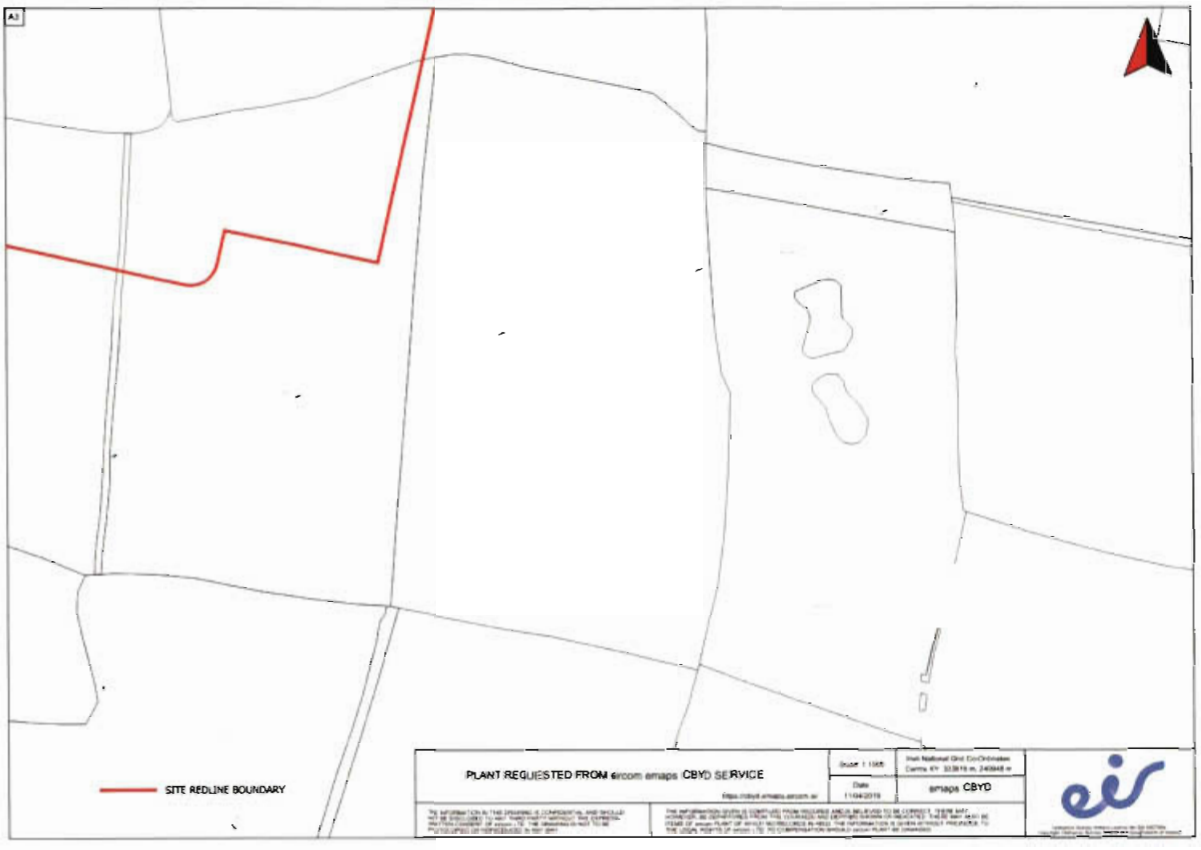


Figure 20.8 Eir utility record map for the site (5 of 5)



20.3.5 Water Supply

There is an existing 400mm diameter water main in DDR and a 225mm diameter watermain also exists within the Links Road to the north-west of the site. Primarily the 400mm watermain on the DDR will be utilised to serve the Phase 2 development. See **Figure 20.9** for Existing Water Supply Networks.

Figure 20.9 Existing Water Supply Networks

20.3.6 Surface Water Drainage

The existing site is predominantly greenfield excluding the existing DDR, and the topography of the site is generally flat with a high point in the middle of the site adjacent to the DDR with a slight fall from the east to the west. Currently, the site is drained by a network of drainage ditches which traverses the site and feed into the Beaverstown stream catchment and Portrane Canal catchment.

Surface water runoff from the existing DDR is collected via road gullies into existing carrier drains running along the road and transferred into 5 attenuation ponds along the length of the DDR.

See **Figure 20.10** for Existing Surface Water Networks.

Figure 20.10 Existing Surface Water Networks

20.3.7 Foul Water Drainage

The subject site has no existing foul loading as it is mainly greenfield. According to the records, there is an existing 300mm foul sewer running through the recently constructed DDR. See **Figure 20.11**

Figure 20.11 Existing Foul Networks

20.4 Predicted Impacts of the Proposed Development

20.4.1 Do-Nothing Impact

In the do-nothing scenario (i.e. assuming the proposed development were not progressed), the built services and infrastructure at the site of the proposed development would likely remain unchanged.

It is noted that the site is zoned for development, and it is likely that in the absence of this subject proposal that a development of a similar nature, with similar demand requirements, would be progressed on the site that accords with National policy for compact growth, housing requirements and consolidation of existing built-up areas in the short-medium term. Any such development would require connections to utilities infrastructure.

It is not possible to identify the loadings that would be associated with an alternate future development proposal in the absence of a planned project. However, it is anticipated that it would be similar to the proposed development and the effects would be similar to those described in this chapter.

20.4.2 Construction Phase

The proposed development includes the diversion of existing services and the supply of new services to the development as set out below.

20.4.2.1 Diversion of existing services

Diversion of Power

Existing Medium Voltage 10kV overhead lines crossing the site will be diverted by ESBN. An application has been made to ESBN. Without knowing the specific detail of the ESBN diversion design we would

anticipate that the impact of this diversion will have **neutral and not significant effect** on the environment. The frequency and duration of the diversion works would be a one-off exercise with a duration in the region of weeks.

Diversion of Natural Gas

Existing Natural Gas medium pressure lines crossing the site will be diverted by GNI. An application has been made to GNI. Without knowing the specific detail of the GNI diversion design we would anticipate that the impact of this diversion will have **neutral and not significant effect** on the environment. The frequency and duration of the diversion works would be a one-off exercise with a duration in the region of weeks.

20.4.2.2 Installation of new electricity infrastructure to serve the development

The proposed infrastructure includes ESBN supplies to Substations and ESB Unit Substations located throughout the site. Low Voltage Supplies will emanate from these to supply the various Houses, Duplexes and Apartments.

The proposed infrastructure will include ESB substations, Unit substation (kiosks), Mini pillars, EV charging points and public lighting mini pillars.

The electrical load analysis includes for the required Electric Vehicle Charging and the Heat Pump technology applied to all units.

In the absence of mitigation measures **negative, slight and short-term impacts** are predicted in relation to built services or infrastructure during the construction phase. The duration and frequency of the works to construct the new installation would be over a period of months completed in phases.

Installation of new public lighting infrastructure to serve the development

The proposed site lighting installation comprises of 6-meter-high post top column lighting to light up the roadways and pedestrian paths. The columns proposed to be stepped tubular columns.

The proposed 6-meter column with post top luminaires will illuminate the secondary roadways, pathways, cycle routes and parks to achieve an average illumination level of 5-7.5 lux and minimum of 1 lux as per FCC specification, IS EN 13201 and BS 5489. The photometric curve for the proposed LED luminaire indicates how the light output is directed downwards with no risk of "Sky Glow". The anticipated impact of the new public infrastructure would be considered **not significant** due to the adherence to Fingal County Council requirements in relation to limiting Sky Glow and automatic switchoff in relation to daylight levels. The duration and frequency of the works to construct the new installation would be over a period of months completed in phases.

Installation of Telecommunications

Figures 20.3 to **20.8** shows the proposed telecoms infrastructure on the site. Connections to the Eir and Virgin Media infrastructure have been agreed with these utility companies with dedicated ducting to all apartment blocks, duplexes and houses. Siro service will also be provided and this runs within the ESB ducting. The proposed infrastructure will include new roadway/footpath chambers in conjunction with surface mounted distribution boxes. Underground ducting will be distributed throughout the development to provide telecoms services to each of the buildings. The impact of the proposed infrastructure would be considered neutral as there has been no issue with availability of capacity raised

by the utility provider. The duration and frequency of the works to construct the new installation would be over a period of months completed in phases.

In the absence of mitigation measures **negative, slight and short-term impacts** are predicted in relation to built services or infrastructure during the construction phase.

Installation of Gas

No new gas supply is proposed for the development.

Installation of Water Mains and Drainage

The lands comprising the proposed development are in the ownership of the applicant. There are no known rights of way across the proposed development site. Potential impacts that may arise during the construction of the watermain and drainage include:

- Contamination of surface water runoff due to construction activities.
- Improper discharge of foul drainage from contractor's compound.
- Cross contamination of potable water supply to construction compound.
- Damage to existing underground and over-ground infrastructure and possible contamination of the existing systems with construction related materials.
- Potential loss of connection and/or interruption to the Gas Networks Ireland; and
- Potential loss of connection and/or interruption to the telecommunications infrastructure while carrying out works to provide service connections.

Without the consideration of mitigation measures the construction phase of the proposed development will likely have a **neutral, short-term, moderate impact**.

20.4.3 Operational Phase

Electricity

The Proposed Development will require electricity supplies during the operational phase of the scheme and these will be provided by the installation of new substations within the development all in agreement with ESB Networks. As the new cable services will be located underground, this will result in a **permanent but imperceptible effect**.

The likely impact from the operational phase on the electricity supply network is considered to provide a **positive effect** as key infrastructure is provided to the neighbourhood.

The indirect impact will allow ESB Networks to provide additional resilience in their network through the provision of a new sub-stations which in turn should have a **slight permanent impact of positive effect** on the wider area's electrical infrastructure.

The power demands during the operational phase on the existing electricity network are considered to be low due to the energy efficient design including LED lighting and high-performance heating equipment.

The design and construction of the required electrical services infrastructure in accordance with the relevant guidelines and codes of practice is likely to mitigate any potential impacts during the operational phase of the development, with the exception of any routine maintenance of the site services.

Natural Gas

The gas demands during the operational phase on the existing gas network are considered to be none due to no new gas supply being proposed for the development. This is possible due to the NZEB energy efficient design, thermal performance of the buildings and the use of renewable technology to reduce the heating demand. The apartment heating system is proposed to be exhaust air heat pump which does not require gas.

Telecommunications

The proposed development will require telecommunication connections during the operational phase of the scheme and given the number of telecommunication providers with infrastructure available within the area, this will provide the building users with a greater choice of service and will result in a positive effect for the end users. As the new services will be located underground this will result in an **imperceptible impact of long term and positive effect**.

The additional demand on the telecoms network is not deemed to have any material impact on the surrounding area as there is sufficient capacity in the telecoms network system to manage the additional demand created by the development. The likely impact from the operational phase on the telecoms network is likely to be **imperceptible impact of long term and neutral effect.**

The design and construction of the required telecommunication services infrastructure in accordance with the relevant guidelines and codes of practice is likely to mitigate any potential service outage impacts during the operational phase of the development, with the exception of any routine maintenance of the site services.

There is no existing telecommunication equipment on the site but given the suburban location of the site there it would be expected that there are other telecommunications equipment sites in the locality.

It is predicted that most providers will be able to reconfigure their equipment to compensate for any proposed structures on the site.

Water Supply and Drainage

Potential operational phase impacts on the water infrastructure are noted below:

- Increased impermeable surface area will reduce local ground water recharge.
- Accidental hydrocarbon leaks and subsequent discharge into piped surface water drainage network (e.g., along roads and in driveway areas).
- Increased maximum discharge to foul drainage network (Maximum Daily Foul Discharge Volume = 163m^3).
- Increased potable water consumption (Average Day / Peak Week Demand = 148m^3 /185m^3).
- Contamination of surface water runoff from foul sewer leaks.

Demand from the proposed development during the operational phase is not predicted to impact negatively on the existing water, surface water and foul networks.

Without the consideration of mitigation measures the operational phase of the proposed development will likely have a **neutral, permanent, slight impact**.

20.5 Mitigation Measures

20.5.1 Construction Phase

Electrical

Utility Records identify the location of power lines and have informed detailed design. The exact locations of the below ground ESB Networks infrastructure will be confirmed through excavation by the Contractor, including slit trenches, in order to determine the exact location of the below ground network. This will mitigate against the risk of damage to underground electricity network during the excavation phase prior to diverting the ESB network. The ESB diversion shall be carried out by ESB and its new location clearly documented to mitigate the risk of a cable duct damage during the construction phase.

The Contractor will be obliged to put measures in place to ensure that there are no interruptions to existing services in compliance with Safe Construction and the Electricity Network published by ESBN and all services and utilities are maintained unless this has been agreed in advance with ESB Networks.

All works in the vicinity of ESB Networks infrastructure will be carried out in ongoing consultation with ESB Networks and will be in compliance with any requirements or guidelines they may have including procedures to ensure safe working practices are implemented when working near live overhead/underground electrical lines. Works will be in compliance with Health & Safety Authority (HSA) *Code of Practice for Avoiding Danger from Underground Services* (2016), and the *ESB Networks & Health and Safety Authority Code of Practice for Avoiding Danger from Overhead Electricity Lines* (2019).

Natural Gas

Existing Gas Networks Ireland gas main requires a diversion as per Section 20.4.2.1 above. This will be carried out by GNI in accordance with *HSA Code of Practice for Avoiding Danger from underground services*.

No new gas supply connection points to the existing infrastructure are being proposed for the proposed development. No construction works relating to new or the existing gas infrastructure are envisioned for the construction phase.

Telecoms

Utility Records identify the location of power lines and have informed detailed design. Prior to excavation the Contractor will carry out additional site investigation, including slit trenches, in order to determine the exact location of the telecommunications networks in close proximity to the works area. This will ensure that the underground telecommunications network will not be damaged during the construction phase.

The Contractor will be obliged to put measures in place to ensure that there are no interruptions to existing services and all services and utilities are maintained unless this has been agreed in advance with the relevant telecommunication provider.

All works in the vicinity of the telecommunications providers infrastructure will be carried out in ongoing consultation with the relevant provider and will be in compliance with any requirements or guidelines they may have. Consultation has been undertaken between the applicant and both Eir and Virgin Media with both utility companies providing information on their design to allow this be integrated into the overall design of site services.

Where new services are required, the Contractor will apply to the relevant provider for a connection permit where appropriate and will adhere to their requirements to ensure safety of installation.

Water Supply & Drainage

Mitigation measures proposed in relation to the drainage and water infrastructure include the following:

- A site-specific Construction and Environmental Management Plan (CEMP) will be developed and implemented during the construction phase. Site inductions will include reference to the procedures and best practice as outlined in the CEMP.
- Surface water runoff from areas stripped of topsoil and surface water collected in excavations will be directed to on-site settlement ponds where measures will be implemented to capture and treat sediment laden runoff prior to discharge of surface water at a controlled rate.
- Weather conditions and seasonal weather variations will be taken into account when planning stripping of topsoil and excavations, with an objective of minimizing soil erosion and silt run-off. Short term weather forecasts will also be taken into account.
- In order to mitigate against spillages contaminating the surrounding surface water and hydrogeological environments, all oils, fuels, paints and other chemicals shall be stored in a secure bunded hardstand area in the construction compound. Refuelling and servicing of construction machinery will take place in a designated hardstand area which will be remote from any surface water inlets and outlets (where it is not possible to carry out such activities off site). Hydrocarbon spill kits will be available and to hand for refuelling crews in the event of any spills.
- Concrete batching will take place off site and wash out of concrete chutes will take place at designated locations in the site and the washout of truck drums will take place after back at the batching plant to minimise pollution release within the subject site.
- Discharge from any vehicle wheel wash areas will be directed to on-site settlement ponds for treatment prior to discharge to the local environment.
- Groundwater pumped from excavations is to be directed to on-site settlement ponds for treatment prior to discharge to the local environment.
- The construction compound will include adequate staff welfare facilities including foul drainage and potable water supply. Foul drainage discharge from the construction compound will be tinkered off site to a licensed facility until a connection to the public foul drainage network has been established.
- The construction compound's potable water supply shall be located where it is protected from contamination by any construction activities or materials.

20.5.2 Operational Phase

Electrical

The ESB review the electrical demand requirements for all proposed developments and confirm if the public network has capacity to cater for same, with or without network upgrades, prior to connection to the public network. This review is undertaken following a grant of planning permission. Should network upgrades be required these would benefit the local community as it would modernise the network in this area.

As part of the planning submission a detailed Energy Statement has been completed to summarise the mitigation undertaken in the design to reduce energy consumption and carbon emissions. The main points from this are summarised as follows:

- U-values for floor and roof will exceed the building regulation backstops.
- Using Glazing U-Value target outlined in this report.
- Better performance air permeability than the backstop, adding to building air tightness and ventilation effectiveness.
- Efficient lighting design.
- Ventilation strategy to mitigate the risk of overheating. Exhaust Air Heat Pump (EAHP) for apartments and Air Source Heat Pump for houses to provide space Heating (via radiators) and domestic hot water.
- The proposed development will meet or exceed where feasible the requirements of Part L of the Building Regulations.

Natural Gas

The Proposed Development won't be utilising any gas supply, therefore no mitigation is required.

Telecommunications

No mitigation measures are anticipated during the operational phase.

Water Supply & Drainage

The design of proposed site levels (roads, finished floor levels etc.) was completed to replicate existing surface contours, break lines etc., therefore replicating existing overland surface water flow paths, to minimise changes to the site characteristics and not concentrating water run-off in any particular location(s).

Surface water runoff from the site will be attenuated to the existing greenfield runoff rate as outlined in the Greater Dublin Strategic Drainage Study (GDSDS). Surface water discharge rates will be controlled by Hydrobrake type vortex flow control devices, located at all attenuation areas, in conjunction with attenuation storage in both locations.

The design of the proposed development incorporates the following SuDS surface water treatment train solutions:

- Permeable paving in driveway areas.
- Surface water runoff from roofs will be routed to the proposed surface water pipe network via the porous aggregates beneath permeable paved driveways.
- Surface water runoff from roads, where allowable, will drain to swales for treatment and runoff reduction.
- Attenuation of the 100-year return event storms with a 20% allowance for climate change.
- Installation of flow control devices (Hydrobrake or similar) limiting surface water discharge from the site to greenfield runoff rates
- Surface water discharge to pass via Class 1 fuel / oil separator (sized in accordance with permitted discharge from the site).
- Non-Return Valve fitted at outlet locations to prevent any water from the drainage ditches from draining back into the systems.

All new foul drainage pipes will be pressure tested and will be subject to an internal CCTV survey in order to identify any possible defects prior to being made operational.

No additional mitigation measures are proposed in relation to water supply, however water conservation measures such as dual flush water cisterns and low flow taps will be included in the design.

20.6 Residual Impacts

Electrical

Taking into account the above-mentioned mitigation measures, which are designed to avoid and prevent any adverse issues arising during construction, any residual effects on electrical services during the construction phase are considered to be **unlikely, brief/temporary and imperceptible**, where supply is unavoidably disrupted to facilitate the construction phase

All excavations will be fully reinstated to the requirements of ESB Networks ensuring there are no residual impacts to the electrical infrastructure remaining on the site.

Residual impacts during the operational phase are likely to be imperceptible as the infrastructure in the area will be augmented by the utility company.

Natural Gas

Neutral Impact -Taking into account the above mentioned mitigation measures, there will be no residual impact to the gas mains following the construction phase. Any residual impacts on the built services during the construction phase is considered to be **temporary in nature and imperceptible**, where service is unavoidably disrupted to facilitate the construction phase

There will be no residual impact from the operational phase.

Telecommunications

Neutral Impact - Taking into account the above-mentioned mitigation measures there will be no residual impact to the telecommunications infrastructure following the construction phase. Any residual impacts on the built services during the construction phase are considered to be **temporary in nature and imperceptible**, where service is unavoidably disrupted to facilitate the construction phase.

All excavations will be fully reinstated to the requirements of the relevant telecommunications provider ensuring there are no residual impacts to the telecoms infrastructure remaining on the site

Residual impacts during the operational phase are likely to be imperceptible as the infrastructure in the area will be augmented by the utility company. Any other providers in the area will be able to reconfigure the networks to compensate for any impact.

Water Supply & Drainage

Implementation of the measures outlined above will ensure that the potential impacts of the proposed development on water supply, drainage and utilities do not occur during the construction phase and that any residual impacts will be **slight, short term** and will have a **neutral effect** on the proposed development. As surface water drainage, foul water drainage and watermain design have been carried out in accordance with the relevant guidelines, there are **no predicted residual impacts** on the drainage and water supply arising from the operational phase.

20.7 Indirect and /or Secondary Impacts

There are unlikely to be any indirect or secondary impacts as a result of the proposed development as there is no interconnection/interface between the utilities or other utility networks in the area.

20.8 Monitoring

Electrical

All works shall be carried out in accordance with ESB Code of Practice for Electrical Infrastructure. Laying of cables and testing of same will be in accordance with ESB standard details. The works shall be inspected on an ongoing basis during construction by both the applicant's engineers and ESB site Engineer. Applicable testing shall be carried out prior to connection to the electrical Grid. ESB metering will be provided to all units.

Natural Gas

No new natural gas supply is proposed for the development. Diversion of existing natural gas on the site will be carried out by GNI the utility provider.

Telecommunications

All works shall be carried out in accordance with the relevant telecoms providers code of Practice. Building Specification for Open eir's Telecoms Infrastructure requirements Version 2.0 February 2021 and Virgin Media New Development handbook Version 1.63 Dec 2019.

Laying of ducts and cables and testing of same will be in accordance with their standard details. The works shall be inspected on an ongoing basis during construction by both the applicant's engineers and relevant telecommunication provider. Applicable testing shall be carried out prior to connection to the network.

Water Supply & Drainage

Proposed monitoring in relation to the water and hydrogeological environment are as follows:

- Inspection and maintenance of fuel / oil separators.
- Inspection and maintenance of the internal road network for wear and tear that could cause silt release.
- Inspection and maintenance of attenuation and hydrobrake infrastructure.
- During the operational phase, an inspection and maintenance contract is to be implemented in relation to the proposed Class 1 fuel / oil separators, hydrobrakes and attenuation facilities.

No specific monitoring is proposed in relation to the Foul and Water supply infrastructure.

20.9 Reinstatement

Electricity

Reinstatement after the diversion of the above ground and below ground electricity cables will be carried out by the Utility company.

Gas

Reinstatement after the diversion of the below ground gas pipework will be carried out by the Utility company.

Telecoms

No reinstatement required as all installation is new infrastructure

The design team have undertaken a Health and Safety Risk assessment as part of the design deliverables which identify any residual mitigated H&S risks to the contracting team who then mitigate these risks further during construction.

20.10 Interactions

There is interaction with Ch 7 Population & Human Heath during construction phase. This interaction will likely be neutral as all relevant health and safety guidelines will be put in place.

There is also interaction with Ch 9 Land, Soils, Geology & Hydrogeology & Ch 10 Hydrology due to excavation and laying down of services which will also be neutral post mitigation measures.

There is also interaction with Ch 10 Hydrology due to the development of the site altering the current drainage of the site.

No significantly likely impacts are predicted in relation to built services or infrastructure. Likewise, no interactions are predicted to occur in this regard such that significant impacts would arise in relation to other environmental media / EIA topics

20.11 Cumulative Impacts

The list of plans and projects set out in Chapter 22 has been considered in terms of the potential for significant negative cumulative impacts to arise as a result of one or more of these in combination with the proposed development.

Electrical

The ESB review the electrical demand requirements for all proposed developments and confirm if the public network has capacity to cater for same, with or without network upgrades, prior to connection to the public network. This review is undertaken following a grant of planning permission. Should network upgrades be required these would benefit the local community as it would modernise the network in this area. Therefore, it is considered that the likely cumulative impact of the proposed development on electricity supply infrastructure is **not significant, with neutral long-term effects.**

Based on the advice of ESB during two consultation meetings the existing ESB network has capacity to cater for the developments electrical demand without network upgrades and the above-mentioned mitigation measures, there should be **no residual cumulative impact** to the electrical supply network.

All works shall be carried out in accordance with ESB code of Practice for electrical Infrastructure. Laying of cables and testing of same will be in accordance with ESB standard details. The works shall be inspected on an ongoing basis during construction by both the applicant's engineers and ESB site Engineer. Applicable testing shall be carried out prior to connection to the electrical Grid. ESB metering will be provided to all units

Natural Gas

There should be no residual cumulative impact to the gas supply infrastructure. The proposed diversion of GNI is around the proposed buildings and as such there is no expected residual cumulative impact from same. The cumulative impact on the gas supply infrastructure will be **neutral with no long-term effects** or impact.

All works, if any are required, shall be carried out in accordance with GNI code of Practice for gas Infrastructure. Laying of gas main and testing of same will be in accordance with GNI's standard details. The works, if any required, shall be inspected on an ongoing basis during construction by both the applicant's engineers and the GNI's Area Engineer. Applicable testing shall be carried out prior to connection to the public network.

Telecoms

Eir and Virgin Media have been contacted and utility maps received from both utility providers. Eir and Virgin Media have not raised any concerns about availability of network in the area. Therefore, it is considered that the likely cumulative impact of the proposed development on the telecom's infrastructure is **not significant, with neutral long-term effects**.

Based on the advice of the telecommunications providers that the existing networks have capacity to cater for the developments telecommunication demand without network upgrades and the above-mentioned mitigation measures, there should be **no residual cumulative impact** to the telecommunication supply infrastructure. All works shall be carried out in accordance with the relevant telecoms providers code of practice. Laying of ducts and cables and testing of same will be in accordance with their standard details. The works shall be inspected on an ongoing basis during construction by both the applicant's engineers and relevant telecommunication provider. Applicable testing shall be carried out prior to connection to the network

Eir and Virgin Media have been contacted and utility maps received from both utility providers. Eir and Virgin Media have not raised any concerns about availability of network in the area. Therefore, it is considered that the cumulative impact of the proposed development on the telecom's infrastructure will **not be significant, with neutral long-term effect.** Most providers will be able to reconfigure the networks to compensate for any potential impact.

Water Supply & Drainage

The proposed surface water drainage infrastructure has been designed in accordance with the relevant guidelines. Any other future development in the vicinity of the site would have to be similarly designed in relation to permitted surface water discharge, surface water attenuation and SuDS, therefore, no potential cumulative impacts are anticipated in relation to surface water drainage and flooding.

No potential cumulative impacts are anticipated in relation to wastewater as Irish Water have advised that provision of a wastewater connection is feasible.

No potential cumulative impacts are anticipated in relation to water supply as Irish Water have advised that provision.

Without the consideration of mitigation measures the construction phase of the proposed development will likely have a **neutral, short-term, slight cumulative impact**.

Without the consideration of mitigation measures the operational phase of the proposed development will likely have a **neutral, permanent, imperceptible cumulative impact**.

20.12 Difficulties Encountered

Electricity

We don't anticipate any difficulties with the electrical infrastructure. There has been significant engagement with the utility on all aspects of diversions and proposed infrastructure. We do note that the ESB electrical distribution maps indicate substantial infrastructure in the area with MV distribution cables. In addition, the ESB raised no concerns about availability of power during consultation with them.

Gas

We don't anticipate any difficulties with the natural gas diversion. There has been significant engagement with the utility on same.

Telecommunications

We don't anticipate any difficulties with the telecommunications infrastructure. There has been significant engagement with the utility on all aspects of the proposed infrastructure.

Water Supply & Drainage

We don't anticipate any issues with the water supply and drainage infrastructure. There has been significant engagement with the proposed infrastructure on all aspects.

20.13 References

- ESB Construction Standards for MV Sub-Station Buildings Version 1.0 Date 18/4/2019
- ESB electrical services handbook for housing schemes Rev 5 Jan 2014 ESBN Asset Management
- Building Specification for Open eir's Telecoms Infrastructure requirements Versio 2.0 February 2021
- Virgin Media New Development handbook Version 1.63 Dec 2019
- HAS Code of Practice for Avoiding Danger from Underground Services
- Greater Dublin Strategic Drainage Study (2005)
- IS EN 752 (2017) Drain and sewer systems outside buildings - sewer system management
- IS EN 12056 (2000) Gravity drainage systems inside buildings. Sanitary pipework, layout and calculation
- Irish Water Code of Practice for wastewater infrastructure
- Irish Water Standard Details for wastewater infrastructure
- Irish Water Code of Practice for water infrastructure
- Irish Water Standard Details for water infrastructure
- Directive 2014/52/EU of the European parliament and of the council of 16 April 2014

21 Interactions

21.1 Introduction

This chapter provides an overview of the key interactions identified and addressed in the foregoing chapters of the EIAR.

It is a requirement of the EIA Directive that, not only are the impacts in respect of the individual specialist topics (hydrology, biodiversity, air quality and climate, etc.) to be addressed in the EIAR, but so too must the interactions and inter-relationships between these topics be addressed. As stated in Article 3 of the amended Directive:

> *"The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors:*
>
> *(a) population and human health;*
>
> *(b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;*
>
> *(c) land, soil, water, air and climate;*
>
> *(d) material assets, cultural heritage and the landscape;*
>
> *(e) the **interaction** between the factors referred to in points (a) to (d)."*

The EPA guidelines state that interactions should be addressed, where relevant, in the corresponding specialist EIAR chapters, with an 'interactions matrix' and brief text provided by way of summary:

> *"The interactions between effects on different environmental factors should be addressed as relevant throughout the EIAR. For example, where it is established in the Hydrology section that there will be an increase in suspended solids in discharged surface waters during construction, then the Biodiversity section should assess the effect of that on sensitive aquatic receptors. [...] It is general practice to include a matrix to show where interactions between effects on different factors have been addressed. [...] This is typically accompanied by text describing the interactions." (Section 3, p. 56).*

A brief description of these interactions is presented below, as is an interactions matrix (**Table 21.1**).

Note that this chapter provides an overview of the potential impacts that may arise as a result of interactions between environmental topics, and as a direct or indirect result of the proposed development. It does not repeat the detailed characterisation of these impacts, or reiterate any mitigation measures that have been prescribed in relation to them. These are addressed under the scope of the corresponding EIAR chapters, as referenced below.

Table 21.1 Interactions matrix

Source \ Receptor	Population & Human Health	Biodiversity	Land, Soils, Geology & Hydrogeology	Hydrology	Air Quality	Climate	Noise & Vibration	Landscape & Visual	Cultural Heritage, Archaeology & Architectural Heritage	Microclimate – Daylight & Sunlight	Microclimate - Wind	Traffic & Transportation	Material Assets - Waste	Material Assets - Services
Population & Human Health					✓		✓	✓		✓	✓	✓	✓	✓
Biodiversity			✓	✓	✓			✓						
Land, Soils, Geology & Hydrogeology		✓		✓	✓				✓				✓	
Hydrology		✓	✓		✓								✓	
Air Quality	✓	✓	✓			✓						✓		
Climate			✓		✓						✓	✓	✓	
Noise & Vibration	✓	✓										✓		
Landscape & Visual	✓	✓							✓					
Cultural Heritage, Archaeology & Architectural Heritage			✓											
Microclimate – Daylight & Sunlight	✓													
Microclimate – Wind	✓													
Traffic & Transportation	✓	✓	✓	✓	✓		✓	✓					✓	
Material Assets – Waste	✓		✓									✓		
Material Assets - Services	✓	✓	✓											

21.2 Summary of Interactions

Interactions addressed in this EIAR are discussed under the headings of the corresponding receptor topics / media, below.

21.2.1 Population and Human Health

Population and human health is an EIA topic which tends to interact with numerous other environmental topics addressed elsewhere in the EIAR. Where the potential for impacts on population and human health has been identified as a result of such interactions, these have been addressed comprehensively in Chapter 7 (Population & Human Health). In respect of the proposed development, the noteworthy interactions between population and human health and other topics, in the absence of mitigation, may be summarised as follows:

Air Quality (Chapter 11)

There is potential for nuisance impacts on the local receptors due to dust-generating activities of proposed development during construction phase. With appropriate mitigation measures in place the interaction will be **negative, not significant and short-term impact.** During operation phase of the proposed development the predicted impact on population and health due to air quality and climate will be **long-term, not significant and negative**.

Noise & Vibration (Chapter 13)

The interaction between population and human health and noise and vibration during construction phase is due to potential nuisance and disturbance due to noisy construction activities, plant and equipment and construction traffic noise. Appropriate mitigation measures will be implemented in this regard. The predicted impact will be **negative, significant and short-term** at the closest noise sensitive locations and will reduce to **negative, not significant and short-term** at receptors greater than 30m.

During the operational phase there is no potential for significant nuisance and potential disturbance due to additional operational phase traffic. With appropriate mitigation measures in place, **no significant impacts** are predicted in relation to these interactions.

Landscape & Visual (Chapter 14)

During the construction phase there is potential for interaction between population and human health and landscape and visual due to negative impacts due to presence of construction site and effects of construction activities (e.g. dust, dirt, stockpiling of soils, removal of vegetation, etc.). The predicted impact will be **slight to moderate, negative and short-term**.

The operational phase will result in positive contribution to the emerging residential community of the wider area, as well as enhancing green infrastructure and green space connectivity. The predicted impact will be **neutral to beneficial, low to significant** as the landscape (including replacement tree planting) matures and the views become more residential.

Traffic & Transportation (Chapter 18)

There is potential for impacts on population and human health during the construction phase due to negative impacts on journey characteristics due to additional (construction) traffic on road network and the potential for nuisance and disturbance due to construction traffic noise. With appropriate

mitigation measures in place such as warning signage and designated haul route for HGVs the predicted impact will be **negative, not significant**, over the **short term**.

During the operational phase there is potential for negative impacts on population and human health due to journey characteristics and additional traffic on road network during the operational phase. However, the development will create additional road network and enhance connectivity in the area with the provision of active travel measures. With appropriate mitigation measures in place the predicted impact will be **positive, slight and long-term**.

Microclimate- Daylight & Sunlight (Chapter 16)

There is potential impacts due to changes to daylight and sunlight availability on the population and human health e.g. overshadowing of neighbouring buildings, can negatively or positively affect residential amenity in the receiving environment. Following the BRE Guide's recommendations for essential daylight and sunlight, internal daylighting is required to meet more than 50% of the targeted illuminance in lux throughout the year. As detailed above, 99.8% of rooms assessed were in excess of the BRE Guide recommendation for daylight and 100% of the assessed units exceeded the minimum guideline recommendation. In terms of sunlight, each unit needs to receive over 1.5 hours of sunlight on March 21st. The results demonstrate each of the amenity open spaces easily achieve compliance with the BRE guidance, with 100% of amenity open space across the site receiving two hours or more of sunlight on 21st March and the shared residential amenity spaces for the Apartment and Duplexes were all fully compliant. **No significant impacts** to neighbouring residential areas are predicted, and the proposed development itself will provide well-lit homes and amenity areas.

Microclimate – Wind (Chapter 17)

There is a potential interaction between Chapter 7 (Population & Human Health) and Chapter 17 (Microclimate – Wind), since the wind conditions at the proposed development site can affect the amenity and safety of residents and visitors. The proposed development will deliver a wind microclimate that is either suitable for all intended pedestrian uses, or calmer than required for the intended uses. In a number of instances, the proposed development will result in an improved (i.e., calmer) wind microclimate relative to the baseline scenario. Therefore, **no significant impacts** on population and human health are predicted as a result of the wind effects of the proposed development.

Material Assets- Waste (Chapter 19)

During the construction and operational phase there is potential for impacts on human beings in relation to the generation of waste and if wastes are not managed correctly and in accordance with the RWMP or the OWMP could result in fly-tipping, littering and reduced recycling, and re-use opportunities which could cause a nuisance to the public and attract vermin. The implementation of the RWMP and the OWMP, will ensure appropriate the impact of waste arisings are impacts on the local population and human health are **neutral, imperceptible and long-term**.

Material Assets- Services (Chapter 20)

In worst-case scenarios (e.g. where works are not carried out safely or in accordance with the applicable codes and standards), accidents during works (e.g. contact with live powerline or gas explosions) or water quality impacts resulting from works to utilities infrastructure, have the potential to result in human health impacts. Service outages resulting from works can temporarily affect the residential

amenity of local residents and / or the operation of local businesses. The mitigation measures that will be put in place at the proposed development will ensure that the impact of the proposed development complies with all the specifications and guidelines of the relevant service providers. Therefore, the predicted impact **no likely significant impact** is envisaged with respect to population and human health during construction or operational phase.

21.2.2 Biodiversity

Where the potential for impacts on biodiversity has been identified as a result of interactions with other EIA topics, these have been addressed comprehensively in Chapter 8 (Biodiversity) and / or the corresponding other specialist chapter. In respect of the proposed development, the noteworthy interactions between biodiversity and other topics, in the absence of mitigation, may be summarised as follows:

Land, Soils, Geology & Hydrogeology (Chapter 9)

Effects and impacts in relation to the geological and hydrogeological environment have the potential to negatively affect biodiversity. For example, soil stripping and excavations on the site will result in the loss of existing habitats. There is also the potential for negative impacts on aquatic ecology due to discharge of sediment-laden run-off and / or groundwater pollution during the proposed works. With the mitigation measures in place, the predicted impact during construction phase due to this interaction will be **negative, imperceptible and short-term.** This is further addressed in the Natura Impact Statement that accompanies the planning application.

There are no potentially significant interactions identified between Land, Soils and Hydrogeology, and Biodiversity during the operational phase.

Hydrology (Chapter 10)

Effects and impacts in relation to surface water have the potential to negatively affect biodiversity. For example, unmitigated water quality impacts may result in negative impacts on aquatic ecology. With the mitigation measures in place, the predicted impact during construction phase due to this interaction will be **negative, imperceptible and short-term.** This is further addressed in the Natura Impact Statement that accompanies the planning application.

There are no potentially significant interactions identified between Hydrology, and Biodiversity during the operational phase.

Air Quality (Chapter 11)

Dust emissions from construction works have the potential to impact vegetation in the vicinity of the site. Vehicular emissions during construction and operation also have the potential to impact vegetation as a result of NOx emissions leading to nitrogen deposition. With the mitigation measures in place, the predicted impact during construction phase due to this interaction will be **neutral, imperceptible and short-term.**

There are no potentially significant interactions identified between Air Quality and Biodiversity during the operational phase.

Landscape & Visual (Chapter 14)

The landscape design for the proposed development takes into account the requirements to maximise the benefits to biodiversity, both locally and within the wider landscape. The landscape scheme, prepared by Bernard Seymour Landscape Architects and submitted as part of this application under separate cover) proposes significant ecologically sensitive planting to provide for potentially diverse habitats. With the mitigation measures in place, the predicted impact during construction phase due to this interaction will be **negative, slight and short-term** and during operational phase will be **neutral to positive over time, slight and long term.**

21.2.3 Land, Soils, Geology and Hydrogeology

The main interactions of importance to land, soils, geology, and hydrogeology relate to Biodiversity (Chapter 8), Hydrology (Chapter 10), Material Assets – Waste (Chapter 19), Cultural Heritage, Archaeology & Architectural Heritage (Chapter 15) and Air Quality (Chapter 11) as follows:

Hydrology

As mentioned above, there is a close inter-relationship between soils, geology, hydrogeology and Chapter 10 - Hydrology. Therefore, all mitigation measures discussed are considered applicable to both components. Adherence to the mitigation measures presented above and in Chapter 10 – Hydrology will ensure the effect is **negative, imperceptible and short-term.**

There are no potentially significant interactions identified between land, soils, geology and hydrogeology, and Hydrology during the operational phase.

Waste Management

Chapter 19 - Material Assets – Waste is also considered as an interaction in some sections. During the construction phase, excavated topsoil and subsoil (c. 41,000 m^3) will be generated from the excavations required to facilitate site levelling and construction of new foundations). It is anticipated that all excavated topsoil material and subsoil material will be reused on site. Where material has to be taken off-site, it will be taken for reuse or recovery, where practical, with disposal as a last resort. Adherence to the mitigation measures presented above and the requirements of the RWMP (Chapter 19 – Material Assets, **Appendix 19.1**), will ensure the effect is **negative, imperceptible and short-term.**

There are no potentially significant interactions identified between land, soils, geology and hydrogeology, and waste during the operational phase.

Air Quality

There is a risk of dust impacts associated with the proposed development. The dust mitigation measures outlined in Section 11.8 of Chapter 11 will be applied during the construction phase which will avoid significant cumulative impacts on air quality. With appropriate mitigation measures in place, the predicted cumulative impacts on air quality associated with the proposed development and the permitted cumulative developments are deemed **negative, imperceptible,** and **short-term.**

There are no potentially significant interactions identified between land, soils, geology and hydrogeology, and air quality and climate during the operational phase.

Cultural Heritage, Archaeology & Architectural Heritage

There is an interaction with Chapter 15 - Cultural Heritage, Archaeology & Architectural Heritage. Earthworks, i.e. topsoil stripping and subsoil excavations, have the potential to interfere with subsurface archaeology. However, no subsurface archaeology has been identified. As stated in Chapter 15 – Cultural Heritage, Archaeology & Architectural Heritage, should archaeological material be recorded in the course of monitoring, this may necessitate areas being left open to the elements for a period in order to facilitate consultation with DHLGH, processing of licences and/or full excavation/preservation-by-record of archaeological features. Consequently, in this scenario, during the construction phase there could be **slight, short-term and negative effects** on land and soils (Chapter 9 – Land, Soils, Geology & Hydrogeology). These would be confined in extent to the putative new archaeological area. During the operational phase of the proposed development, adherence to the mitigation measures set out in Chapter 15 will ensure the effect is **negative**, **imperceptible** and **short-term**.

Biodiversity

A hydrological connection exists between the site and Natura sites (Rogerstown Estuary SAC/SPA and Malahide Estuary SAC/SPA). With the mitigation measures in place, the predicted impact during construction phase due to this interaction will be **negative**, **imperceptible** and **short-term**. There are no potentially significant interactions identified between land, soils, geology and hydrogeology and Biodiversity during the operational phase.

21.2.4 Hydrology

The main interactions of importance to Hydrology relate to Biodiversity (Chapter 8), Hydrogeology (Chapter 9), Material Assets - Waste (Chapter 19) and dust (Air Quality) (Chapter 11) as follows;

Biodiversity

Effects and impacts in relation to surface water have the potential to negatively affect biodiversity. For example, unmitigated water quality impacts may result in negative impacts on aquatic ecology. With the mitigation measures in place, the predicted impact during construction phase due to this interaction will be **negative, imperceptible and short-term.**

There are no potentially significant interactions identified between Hydrology, and Biodiversity during the operational phase.

Hydrogeology

Discharge of any collected perched water during construction has the potential to impact on receiving water quality in terms of suspended solids content. Adherence to the mitigation measures presented in section 10.4 will ensure the effect is **negative, imperceptible and short-term during construction.**

There are no potentially significant interactions identified between Hydrology, and Hydrogeology during the operational phase.

Material Assets – Waste

During the construction phase, excavated topsoil and subsoil (c. 41,000 m^3) will be generated from the excavations required to facilitate site levelling and construction of new foundations). It is anticipated that all excavated topsoil material and subsoil material will be reused on site. During construction

stockpiling of material may result in runoff water being sediment laden. Adherence to the mitigation measures presented above and the requirements of the RWMP (Chapter 19 – Material Assets, **Appendix 19.1**), will ensure the effect is **negative, imperceptible and short-term.**

There are no potentially significant interactions identified between Hydrology, and Waste during the operational phase.

Air – Dust

There is a risk of dust impacts associated with the proposed development. With the appropriate mitigation measures for dust as described in Section 11.8, to prevent fugitive dust emissions, it is predicted that there will be a **negative, imperceptible and short-term.**

There are no potentially significant interactions identified between Hydrology, and Air during the operational phase.

21.2.5 Air Quality

The interactions between Air Quality and other disciplines are as follows:

Population and Human Health

Air quality does not have a significant number of interactions with other topics. The most significant interactions are between population and human health (Ch 7 Population & Human Health) and air quality. An adverse impact due to air quality in either the construction or operational phase has the potential to cause health and dust nuisance issues. The mitigation measures that will be put in place by the proposed development will ensure that the effects of the proposed development complies with all ambient air quality legislative limits. Therefore, the predicted effect is **direct, short-term, negative** and **not significant** with respect to population and human health during the construction phase and **direct, long-term, negative** and **not significant** during the operational phase, which is overall not significant in EIA terms.

Traffic and Transportation

Interactions between air quality and traffic (Ch 18 Traffic & Transportation) can be significant. With increased traffic movements and reduced engine efficiency, i.e. due to congestion, the emissions of vehicles increase. The effects of the proposed development on air quality are assessed by reviewing the change in annual average daily traffic on roads close to the site. In this assessment, the effects of the interactions between traffic and air quality are considered to be **direct, long-term, negative** and **not significant**, which is overall not significant in EIA terms.

Climate

Air quality and climate have interactions due to the emissions from the burning of fossil fuels during the construction and operational phases generating both air quality and climate effects. Air quality modelling outputs are utilised within Chapter 12 Climate. There is no impact on climate due to air quality however the sources of impacts on air quality and climate are strongly linked.

Land, Soils and Geology

Construction phase activities such as land clearing, excavations, stockpiling of materials etc. have the potential for interactions between air quality and land and soils in the form of dust emissions. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that there will be **no**

significant interactions between air quality and land, soils and geology (Ch 9 Land, Soils, Geology & Hydrogeology.

Biodiversity

There is the potential for interactions between air quality and biodiversity (Ch 8 Biodiversity). Dust generation can occur during extended dry weather periods as a result of construction traffic. Dust suppression measures (e.g. dampening down) will be implemented as necessary during dry periods and vehicle wheel washes will be installed, for example. The works involve stripping of topsoil and excavations, which will remove some vegetation such as trees and scrub. It will also generate dust and potentially effect on the air quality in the locality. However, the generation of dust will be temporary during construction phase and is not anticipated to have a significant effect on biodiversity. Once the mitigation measures outlined within Section 11.8 are implemented dust related effects are predicted to be **direct, short-term, negative** and **imperceptible**, which is overall not significant in EIA terms.

21.2.6 Climate

Climate has the potential to interact with a number of other environmental attributes as follows:

Land, Soils, Geology and Hydrology

The impact of flood risk has been assessed and the surface water drainage network will be designed to cater for increased rainfall in future years as a result of climate change. The effect of the interactions between climate and land, soils, geology and hydrology (Ch.9) are **direct, short-term, negative** and **imperceptible** during the construction phase and **direct, long-term, negative** and **imperceptible** during the operational phase, which is overall **not significant** in EIA terms.

Air Quality

Air quality (Ch 11) and climate have interactions due to the emissions from the burning of fossil fuels during the construction and operational phases generating both air quality and climate impacts. Air quality modelling outputs are utilised within the Climate Chapter. There is no impact on climate due to air quality; however, the sources of impacts on air quality and climate are strongly linked.

Microclimate – Wind

There is the potential for the proposed development to be impacted by the local wind microclimate. More detail can be found in Ch 17 Microclimate – Wind. This chapter identified no significant effects on the proposed development as a result of the wind microclimate. Therefore, in this assessment the effects of the interactions between microclimate - wind and climate are considered to be **direct, short-term, negative** and **imperceptible** during the construction phase and **direct, long-term, negative** and **imperceptible** during the operational phase, which is overall **not significant** in EIA terms.

Traffic and Transportation

During the construction and operational phase, there is the potential for interactions between climate and traffic (for more information see Ch 18 Traffic and Transportation). Vehicles accessing the site will result in emissions of CO_2, a greenhouse gas. The effects of the proposed development on air quality are assessed by reviewing the change in annual average daily traffic on roads close to the site. In this assessment, the effects of the interactions between traffic and climate are considered to be **direct, short-term, negative** and **not significant** during the construction phase and **direct, long-term, negative** and **not significant** during the operational phase, which is overall **not significant** in EIA terms.

Material Assets- Waste

Material Assets - Waste (Ch 19) management measures will be put in place to minimise the amount of waste entering landfill, which has higher associated embodied carbon emissions than other waste management such as recycling. The effect of the interactions between waste and climate are considered to be **direct, short-term, negative** and **not significant** during the construction phase and **direct, long-term, negative** and **not significant** during the operational phase, which is overall **not significant** in EIA terms.

21.2.7 Noise & Vibration

The key interactions of Chapter 13 Noise & Vibration with other chapters of this Environmental Impact Assessment Report are as follows:

- **Chapter 7 (Population & Human Health):** Elevated noise levels during the construction and operational phases have the potential to result in nuisance / disturbance to the local population and / or human health impacts, as assessed above and in Chapter 7.
- **Chapter 8 (Biodiversity):** Elevated noise levels during the construction and operational phases have the potential to result in disturbance of wildlife, as addressed under the scope of Chapter 8.
- **Chapter 18 (Traffic & Transportation):** Additional traffic generated by the proposed development during the construction and operational phases has the potential to perceptibly alter noise levels in the receiving environment, as assessed above.

The above-listed interactions have been addressed comprehensively in this Environmental Impact Assessment Report. **No significant impacts** are predicted in relation to any of these interactions.

21.2.8 Landscape & Visual

The pertinent environmental interactions for landscape and visual are with:

- Chapter 7: Population & Human Health;
- Chapter 8: Biodiversity., and
- Chapter 15: Cultural Heritage, Archaeology & Architectural Heritage.

In this regard, landscape proposals for the scheme have been developed in consultation with the Project Ecologist and the cultural heritage consultants. In the preparation of Chapter 7 (Population & Human Health), regard has been had to results of the LVIA, as impacts on landscape and visual amenity can in turn negatively affect residential amenity in affected areas. The Phase 2 site partly lies within an ACA. Appropriate measures have been taken to mitigate impact on the ACA. For further information, refer to Chapter 15 (Cultural Heritage, Archaeology & Architectural Heritage).

No significant impacts are predicted in relation to any of the above-listed interactions.

21.2.9 Cultural Heritage, Archaeology & Architectural Heritage

Should archaeological material be recorded in the course of monitoring, this may necessitate areas being left open to the elements for a period in order to facilitate consultation with DHLGH, processing of licences and/or full excavation/preservation-by-record of archaeological features. Consequently, in this scenario, there could be **slight, short-term and negative effects** on land and soils (Chapter 9 – Land, Soils, Geology & Hydrogeology). These would be confined in extent to the putative new archaeological area.

21.2.10 Microclimate – Daylight & Sunlight

The key interaction between this chapter and other specialist chapters of the EIAR is with Chapter 7 (Population & Human Health), since impacts in relation to daylight and sunlight availability, e.g. overshadowing of neighbouring buildings, can negatively or positively affect residential amenity in the receiving environment. Following the BRE Guide's recommendations for essential daylight and sunlight, internal daylighting is required to meet more than 50% of the targeted illuminance in lux throughout the year. As detailed above, 99.8% of rooms assessed were in excess of the BRE Guide recommendation for daylight and 100% of the assessed units exceeded the minimum guideline recommendation. In terms of sunlight, each unit needs to receive over 1.5 hours of sunlight on March 21st. The results demonstrate each of the amenity open spaces easily achieve compliance with the BRE guidance, with 100% of amenity open space across the site receiving two hours or more of sunlight on 21st March and the shared residential amenity spaces for the Apartment and Duplexes were all fully compliant. **No impacts** to neighbouring residential areas are predicted, and the proposed development itself will provide well-lit homes and amenity areas.

21.2.11 Microclimate – Wind

The principal interaction is with Chapter 7 (Population & Human Health), since the wind conditions at the proposed development site can affect the amenity and safety of residents and visitors, as discussed in Chapter 17 Microclimate - Wind. The proposed development will deliver a wind microclimate that is either suitable for all intended pedestrian uses, or calmer than required for the intended uses. In a number of instances, the proposed development will result in an improved (i.e., calmer) wind microclimate relative to the baseline scenario. Therefore, **no significant impacts** on population and human health are predicted as a result of the wind effects of the proposed development.

21.2.12 Traffic & Transportation

The main environmental interactions addressed in relation to traffic and transportation are as follows:

Population and Human Health (Chapter 7)

Construction and operational stage traffic and traffic management measures have the potential to affect journey amenity or economic activity as a result of increased congestion or access restrictions. The upgraded infrastructure provided as part of the scheme can facilitate growth in population and increased infrastructure for sustainable travel modes can contribute towards modal shift in travel patterns and increased physical activity. The scheme provides increased access to local attractions by virtue of reduced congestion and enhanced pedestrian and cycle linkages. Additionally, employment and economic activity will be generated during the construction stage of the project. Chapter 7 (Population & Human Health) further describes the effect of the proposed development on population and human health. The impacts due to interactions with population and human health are anticipated to be **negative, not significant**, over the **short term** for the **construction phase.** The impacts due to the interactions with population and human health are anticipated to be **positive, slight**, over the **long term** for the **operational phase**.

Biodiversity (Chapter 8)

The presence of the proposed development and new traffic flows can have impacts on biodiversity including severance of commuting or feeding routes and direct mortality. Chapter 8 (Biodiversity) assesses the impacts of the proposed development on biodiversity. The impacts due to the interactions

with biodiversity are anticipated to be **negative, not significant**, over the **short term** for the **construction phase.** The impacts due to the interactions with biodiversity are anticipated to be **negative, not significant**, over the **long term** for the **operational phase**.

Land, Soils, Geology & Hydrogeology (Chapter 9)

The volumes of surplus soils generated by the proposed development and the earthworks import requirement will affect construction stage traffic generation. Corresponding mitigation measures are set out in Chapter 9 (Land, Soils, Geology & Hydrogeology). During construction, the CEMP and CTMP will ensure that construction traffic impacts are minimised through the control of site access / egress routes and site locations and any temporary lane closure requirements. The impacts due to the interactions with land, soils, geology & hydrogeology are anticipated to be **negative, not significant**, over the **short term** for the **construction phase.** The impacts due to the interactions with land, soils, geology & hydrogeology are anticipated to be **negative, not significant**, over the **long term** for the **operational phase**.

Hydrology (Chapter 10)

Construction and operational stage traffic have the potential to impact on water quality via accidental hydrocarbon spills and leaks and via increased sediment / particle loading on trafficked surfaces. Measures to mitigate against impacts are detailed in Chapters 9 (Land, Soils, Geology & Hydrogeology) and 10 (Hydrology). The impacts due to the interactions with hydrology are anticipated to be **negative, not significant**, over the **short term** for the **construction phase.** The impacts due to the interactions with hydrology are anticipated to be **negative, not significant**, over the **long term** for the **operational phase**.

Air Quality (Chapter 11) & Climate (Chapter 12)

Changes in traffic volumes resulting from the proposed development affects levels of air pollutant emissions, i.e. from internal combustion engines. The presence of construction traffic at the site and on the surrounding road network also contributes to dust generation and deposition. These aspects of the proposed development are addressed under the scope of Chapter 11 (Air Quality) and Chapter 12 (Climate), which is informed by the predicted traffic flows during construction and operation. The impacts due to the interactions with air quality and climate are anticipated to be **negative, not significant**, over the **short term** for the **construction phase.** The impacts due to the interactions with air quality and climate are anticipated to be **negative, not significant**, over the **long term** for the **operational phase**.

Noise & Vibration (Chapter 13)

Changes in the locations and volumes of traffic resulting from the proposed development affect noise levels in the receiving environment. This topic has been addressed under the scope of Chapter 13 (Noise & Vibration), which is informed by the predicted traffic volumes during construction and operation. The impacts due to the interactions with noise & vibration are anticipated to be **negative, not significant**, over the **short term** for the **construction phase.** The impacts due to the interactions with noise & vibration are anticipated to be **negative, not significant**, over the **long term** for the **operational phase**.

Landscape & Visual (Chapter 14)

During the construction phase, the presence of a substantial construction site (including construction traffic entering and exiting the site) negatively affects visual amenity in adjacent areas. This subject is

addressed under the scope of Chapter 14 (Landscape & Visual). The impacts due to the interactions with landscape and visual are anticipated to be **negative, not significant**, over the **short term** for the **construction phase.** The impacts due to the interactions with landscape and visual are anticipated to be **positive, not significant** over the **long term** for the **operational phase.**

Material Assets – Waste (Chapter 19)

The generation of waste materials during the construction and operational phases creates the need for waste collection vehicles at the site and on the surrounding road network. Regard has been had to this aspect of the proposed development in the preparation of this Chapter. The impacts due to the interactions with material assets are anticipated to be **negative, not significant**, over the **short term** for the **construction phase.** The impacts due to the interactions with material assets are anticipated to be **negative**, **not significant** and **long term** for the **operational phase.**

No likely significant effects are predicted in relation to any of the above-listed interactions. For further information, please refer to the other EIAR chapters referred to above.

21.2.13 Material Assets – Waste

This interactions between Material Assets – Waste and other specialist environmental topics considered in this EIAR are as follows:

Land, Soils, Geology & Hydrogeology

During the construction phase, excavated topsoil and subsoil (c. 41,000 m^3) will be generated from the excavations required to facilitate site levelling and construction of new foundations. It is anticipated that all will be reused on site. If material is deemed unsuitable or is not required it will be taken off-site, for reuse or recovery, where practical, with disposal as a last resort. Adherence to the mitigation measures in Chapter 9 and the requirements of the RWMP (**Appendix 19.1**), will ensure the effect is **long-term, imperceptible** and **neutral.**

Traffic & Transportation

Local traffic and transportation will be impacted by the additional vehicle movements generated by removal of waste from the site during the construction and operational phases of the proposed development. The increase in vehicle movements as a result of waste generated during the construction phase will be **temporary** in duration. There will be an increase in vehicle movements in the area as a result of waste collections during the operational phase but these movement will be **imperceptible** in the context of the overall traffic and transportation increase. Traffic-related impacts during the construction and operational phases are addressed in Chapter 18 (Traffic & Transportation). Provided the mitigation measures detailed in Chapter 18 and the requirements of the OWMP (included as **Appendix 19.2**) are adhered to, the predicted effects are **short to long-term**, **imperceptible** and **neutral.**

Population & Human Health

The potential impacts on human beings are in relation to incorrect management of waste during construction and / or operation, which could result in littering and presence of vermin – with associated potential for negative impacts on human health and residential amenity. A carefully planned approach to waste management and adherence to the project specific RWMP and OWMP (**Appendices 19.1** and

19.2, respectively), will ensure appropriate management of waste and avoid any negative impacts on the local population. The effects predicted are **long-term, imperceptible** and **neutral**.

21.2.14 Material Assets - Services

There is interaction with Ch 7 population & human heath during construction phase. This interaction will likely be neutral as all relevant health and safety guidelines will be put in place.

There is also interaction with Ch 9 Land, Soils, Geology & Hydrogeology & Ch 10 Hydrology due to excavation and laying down of services which will also be neutral post mitigation measures.

There is also interaction with Ch 10 Hydrology due to the development of the site altering the current drainage of the site.

No significantly likely impacts are predicted in relation to built services or infrastructure. Likewise, no interactions are predicted to occur in this regard such that significant impacts would arise in relation to other environmental media / EIA topic.

22 Cumulative Impacts

22.1 Introduction

This chapter discusses the potential for cumulative impacts to arise as a result of the proposed development in combination with other projects.

Annex III (3)(g) of the EIA Directive requires the EIAR to include the potential for significant cumulative effects of projects on the environment and it states to include "*the cumulation of the impact with the impact of other existing and/or approved projects.*" Annex IV (5)(e) of the EIA Directive states that EIAR should include "*the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources.*"

The European Commission *Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions* (1999) define cumulative impacts as "*Impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project*" (p. iii).

Similarly, the EPA guidelines define cumulative effects as *"The addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects"* (Section 3, p. 52). The EPA guidelines further state that:

> *"While a single activity may itself result in a minor impact, it may, when combined with other impacts (minor or insignificant), result in a cumulative impact that is collectively significant. For example, effects on traffic due to an individual industrial project may be acceptable; however, it may be necessary to assess the cumulative effects taking account of traffic generated by other permitted or planned projects. It can also be prudent to have regard to the likely future environmental loadings arising from the development of zoned lands in the immediate environs of the proposed project."* (Section 3, p. 54)

22.2 Assessment of Cumulative Impacts

Cumulative impacts have been assessed by taking account of the baseline environment and the predicted impacts of the construction and operation of the proposed development in combination with those of any other existing and / or permitted projects in the zone of influence.

Each of the specialist contributors to this EIAR have considered the potential for cumulative impacts to arise, with particular reference to the projects listed in this Chapter.

This EIAR has considered three categories of plans / projects in the vicinity of the proposed development based on the following:

- Existing or commenced projects with a valid planning permission within the vicinity of the proposed development that have the potential for significant cumulative effects with the proposed development;
- Approved projects with a valid planning permission that have not commenced construction within the vicinity of the proposed development that have the potential for significant cumulative effects with the proposed development; and

- Proposed projects that do not have planning permission but have the potential for significant cumulative effects with the proposed development.

22.3 Key Plans & Developments

A search for other developments that may have the potential to result in cumulative impacts with the proposed development was carried out, and a list of key developments for consideration was developed (**Table 22.1**). In identifying these developments, the following principal sources were consulted (as of March 2024):

- Fingal County Council planning portal;
- Fingal County Council weekly lists of applications received;
- An Bord Pleanála (ABP) website;
- Department of Housing, Local Government and Heritage EIA Portal;
- *Fingal Development Plan 2023-2029;*
- *Donabate Local Area Plan 2016 (as extended).*

Table 22.1 provides a list of relevant permitted and proposed developments in the vicinity of the site, which have been given due consideration in the assessment of potential cumulative impacts. **Figure 22.1** maps these developments in relation to the proposed development site.

It is noted that the list of developments in this Chapter is non-exhaustive. There are a wide variety of other applications and permissions in the area. However, minor developments, such as one-off housing, erection of signage and other minor structures and extensions, have been excluded due to the absence of potential for significant cumulative impacts. Lapsed and refused permissions have also been excluded.

22.4 Conclusion

For topic-specific assessments of the potential for cumulative impacts, please refer to the foregoing specialist EIAR chapters. Assuming the full and proper implementation of the mitigation measures set out in this EIAR, no significant negative cumulative impacts are likely to arise during the construction or operational phases of the proposed development.

Table 22.1 Permitted and proposed developments to which regard has been had in the assessment of potential cumulative impacts

Ref.	Applicant	Location	Description - overview	Status	Environmental Assessments
Permitted Developments / Under Construction					
F19A/0243/ ABP-307657-20	Irish Water	Balcarrick Road, Ballymastone, Donabate, Co. Dublin.	**Underground Wastewater Pump Station** An underground wastewater pump station (a wetwell) with roof level up to 0.35m above ground level; an underground emergency storage tank, capacity c. 650m^3 with roof level up to 0.35m above ground level; An underground water tank, net capacity c. 6m^3 with roof level up to 0.15m above ground level; valve and flowmeter chambers; a chemical dosing facility for odour control; Kiosks; Landscaping, fencing and access off Balcarrick Road. The proposed development includes all necessary ancillary pipework and manholes, diversion of existing utilities; new power supply and water connection for the pump station, ducting, mechanical and electrical services, plant, instrumentation, automation, controls and equipment. It also includes all associated site development works, hardstanding areas and access, site drainage and lifting arrangements.	Permission granted by An Bord Pleanàla on 23 November 2020.	EIA Screening; AA Screening
LRD0008/S3/ ABP-315288-22	Glenveagh Living Limited	Ballymastone, Donabate, Co. Dublin	**Ballymastone PHASE 1** The development consists of the construction of a residential development, which represents Phase 1 of the wider development of the Ballymastone Lands (as identified in the Donabate Local Area Plan 2016 (as extended)), ranging in height from 2 to 6 storeys to accommodate 432 no. residential dwellings (including a mix of apartments, duplexes and houses), a crèche and public open space. The site will accommodate 554 no. car parking spaces, 831 total no. bicycle parking spaces, new pedestrian/cycle links, road	Permission granted by An Bord Pleanàla on 28 March 2023.	EIAR; NIS; SSFRA

Ref.	Applicant	Location	Description - overview	Status	Environmental Assessments
			improvements, storage, services and plant areas. Landscaping will include communal amenity areas, and a significant public open space provision.		
LRD0017/S3	Aledo Donabate Ltd	Corballis East, Donabate, Co Dublin	**Aledo Donabate Residential Development** The development consists of the construction of 1,020 no. new residential dwellings on the Main Residential Development Site, provision of 2 no. childcare facilities, provision of 3 no. retail units, 2 no. café units, a community use unit and a medical centre at the proposed local centre area, total of 902 no. car parking spaces are proposed, 39 no. on-street visitor parking spaces, together with a total of 3,013 bicycle parking spaces, series of public parks, open spaces, pocket parks and communal open spaces are proposed throughout the Main Residential Development Site, provision of the Corballis Nature Park, vehicular access to the Main Development Site will be via two existing junctions from the DDR to the south and a new vehicular entrance to the north-east at New Road and all other ancillary works above and below ground on a site of approximately 41.9 ha.	Permission granted by Fingal County Council on 23 February 2024.	EIAR; NIS; SSFRA
F22A/0527	Glenveagh Homes Limited	Corballis East, Donabate, Co Dublin	**Residential Development at Corballis East** The development, which will consist of: the construction of 96 No. residential units, 1 No. two storey creche, vehicular access from the Donabate Distributor Road; internal roads, footpaths and a shared pedestrian and cyclist link, 166 No. car parking spaces bicycle and bin stores; hard and soft landscaping; boundary treatments; green roof; solar panels; plant; 2 No. ESB substations;	Permission granted by Fingal County Council on 30 August 2023.	AA; NIS; EclA; Archaeological Assessment; SSFRA; EIA Screening

Ref.	Applicant	Location	Description - overview	Status	Environmental Assessments
			lighting; signage; drainage works; and all other associated site and development works above and below ground.		
F20A/0510/ ABP-311447-21	Cairn Homes Properties Ltd	Lands at Ballymastone, Donabate, Co Dublin	**Residential Development at Ballymastone – Balcarrick Road** The development comprises construction of 36 no. houses, 28no. apartment /duplex units, 1800sqm public open space area, new vehicular entrance from New Road along the site's southern boundary and all associated site, landscaping and infrastructural works, including tree planting, boundary treatments; street lighting; ESB substations; internal roadways, footpaths and shared surfaces; and foul/SuDS drainage, necessary to facilitate the development.	Permission granted by An Bord Pleanàla on 11 February 2022.	EIA Screening; AA Screening; Bat Assessment; Archaeological Feasibility Assessment; SSFRA.
F20A/0204/ ABP-308446-20	Aledo Donabate Limited	Lands to the South of Main Street, Corballis East, Donabate, Co Dublin	**Residential Development at lands South of Main Street, Corballis East** The development will consist of 55 residential units, 3 no. retail units, public open spaces, upgrades to the public road, reconstruction of the existing car park serving Smyths Bridge House (a Protected Structure), upgrade of the existing entrance onto Main Street, internal access roads, water services including a pumping station, surface water attenuation tank and detention basin, public lighting, 1 no. ESB substation and utilities.	Permission granted by An Bord Pleanàla on 6 September 2021.	AA; Bat Assessment; Archaeological Impact Assessment
F17A/0373	Tilberry Limited	Lands at New Road, Ballisk, Donabate, Co. Dublin.	**Residential Development at Ballymastone – Balcarrick Road** A residential development of 151 no. residential units and 1 no. crèche/childcare facility to include: 41 no. 2.5 storey, 3 bedroom terrace dwellings; 2 no. 2.5 storey, 3 bedroom semi-detached dwellings; 9 no. 2 storey, 2 bedroom detached dwellings; 9 no. 2 storey, 3 bedroom detached dwellings; 90 no. 2 bedroom duplex	Permission granted by An Bord Pleanàla on 17 April 2019. .	EIA Screening, EcIA, AA Screening, SSFRA,

Ref.	Applicant	Location	Description - overview	Status	Environmental Assessments
			units arranged in a split level design over three storeys; and 1 no. 2 storey crèche/childcare facility all with associated car parking. Planning permission is also sought for 1 no. new link road with new pedestrian and vehicular entrance from existing New Road connecting to 'The Links' (existing residential estate to the north) along with 2 no. additional vehicular and pedestrian entrances to the proposed development from New Road and associated upgrade works.		
F23A/0134	St Patrick's GAA Clubhouse Donabate	On lands at, Robbie Farrell Park, Ballymastone, Donabate, Co Dublin	**St Patrick's GAA Clubhouse Donabate** Planning Permission for an extension to their existing detached, single storey clubhouse. The proposed development will see the reconfiguration of the existing building and the construction of an extension to the east, south and west elevations at ground floor level and a new first floor level to provide for additional dressing rooms, shower rooms and toilets, meeting rooms, sports hall/ gymnasium, physio room, club offices and club shop, storage and 2no. balconies at first floor level; along with all associated site, drainage, including new wastewater treatment system and engineering works necessary to facilitate the development.	Permission granted by Fingal County Council on 05 July 2023.	
YA06F.304624	Fingal County Council	Malahide Demesne, Kilcrea, Newbridge Demesne, Donabate, Fingal, County Dublin	**Broadmeadow Way - Greenway between Malahide Demesne and Newbridge Demesne** The greenway would travel along a linear site extending c. 6km in length between Malahide Castle and Newbridge House and their surrounding parklands. The site travels through various landscapes including demesne landscapes and parklands, estuarine/coastal landscape (foreshore), rural/agricultural lands and urban and residential environments. It commences at Malahide Demesne,	Permission granted by An Bord Pleanàla on 19 April 2020.	EIAR; NIS

Ref.	Applicant	Location	Description - overview	Status	Environmental Assessments
			then travels along the northern side of the R106 regional road, through a residential laneway (O'Hanlon's Lane) and onto Bissets Strand. At that point it rises to the same level as the Dublin to Belfast railway embankment and crosses Malahide Estuary alongside the existing railway line. The site continues through agricultural lands at Kilcrea and crosses the River Pill at two locations. It continues onwards to Corballis road and then travels westwards through agricultural lands, after which it crosses the new Donabate Distributor Road (Phase1). Thereafter it crosses Hearse Road and travels onwards to its finishing point at Newbridge Demesne.		
Not available (Part 8)	Fingal County Council	Ballymastone, Donabate, Co. Dublin	**Ballymastone Recreational Hub** This multifunctional campus will provide for an extensive range of sporting and recreational activities as a shared public facility; these include a floodlit 8 lane all-weather athletics track surrounding a grass soccer sized pitch, a full sized all-weather GAA pitch which also provides for 2 all-weather soccer pitches with flood lighting, a combined playground and skate park, car / cycle parking, a 6 meter wide access road, extensive walking and cycling infrastructure, bleacher seating and extensive landscape planting .	Approved on 14 September 2021.	AA Screening; EIA Screening; SSFRA
F22A/0165	Glenveagh Homes Limited	Hearse Road, Donabate, Co Dublin	**Semple Woods, Hearse Road Residential Development** Permission for development at a 3.22 Ha site. The lands are partially bounded to the north-east by an existing residential development at Semple Woods (permitted under FCC Reg. Ref. F17A/0113 and subsequently amended under FCC Reg. Ref. F21A/0056), to the south by the Donabate Distributor Road and to the west by Hearse Road. The development will consist of	Permission granted by Fingal County Council on 24 August 2022.	NIS, EcIA

Ref.	Applicant	Location	Description - overview	Status	Environmental Assessments
			amendments to the permitted residential development as granted under FCC Reg. Ref. F21A/0113 comprising - increase in the number of residential dwellings by 4 No. (2 No. 2 bed units and 2 No. 3 bed units ranging in size from 81 sq m to 114 sq m) from 65 No. to 69 No. dwellings (in lieu of the 5 No. residential units omitted under Condition No. 2 of the permitted development); 6 No. associated car parking spaces; amendments to private and public open spaces, boundary treatments, hard and soft landscaping and internal roadways; change in house type of Unit No. 20; and all associated site and development works above and below ground.		
F21A/0113	Glenveagh Homes Limited	Semple Woods, Off Hearse Road, Donabate, Co. Dublin	**Semple Woods, Hearse Road Residential Development** The development which will have a total gross floor area of 7,892 sq.m. will consist of an extension to the Semple Woods housing development comprising: the construction of 76 No. residential units including 56 No. two storey houses and a three storey building comprising 20 No. duplex units. The development will also comprise: vehicular access to the subject lands from Semple Woods to the north which includes partial demolition of a wall; pedestrian connections to Semple Woods; 130 No. car parking spaces; bicycle parking; bin storage plant; photovoltaic panels; boundary treatments; lighting; pump station; attenuation basin; hard and soft landscaping (including class 1 and class 2 open space); changes in levels; and all other associated site works above and below ground.	Permission granted by Fingal County Council on 02 February 2022.	NIS, EcIA, SSFRA

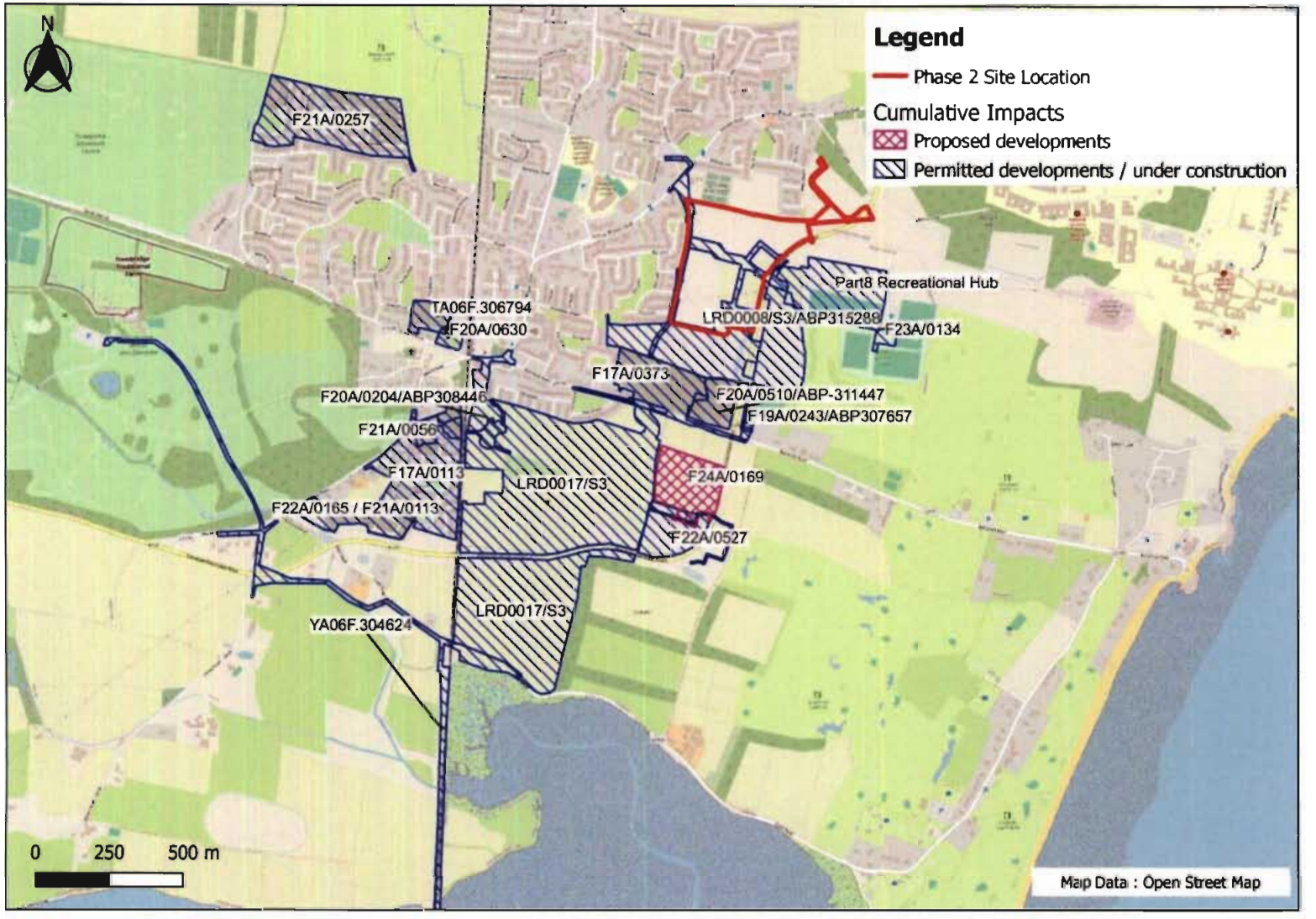
Ref.	Applicant	Location	Description - overview	Status	Environmental Assessments
F21A/0056	Glenveagh Homes Limited	Semple Woods, Hearse Road, Donabate, Dublin	**Semple Woods, Hearse Road Residential Development** The proposed development consists of amendments to the northern portion (0.9 ha) of the permitted residential development under Fingal County Council Ref. F17A/0113, including the following: Replacement of the permitted Apartment Block 2 and 3 no. three bed houses to the west thereof with a new part three, part four storey Apartment Block containing 29 units (14 no. 1 bed apartments and 15 no. 2 bed apartments) and a bicycle storage area at ground floor level; Internal and external amendments to the eastern section of the permitted Apartment Block 1, including the replacement of 8 no. 2 bed apartments with 8 no. 1 bed apartments and 4 no. 2 bed apartments from ground to third floor, with associated revisions to building elevations to provide additional balconies and windows, together with a revised roof design. Internal and external amendments to the western section of the permitted Apartment Block 1; Revision of the layout of the vehicular parking areas to the north and south of Apartment Blocks 1 and 2. A total of 90 no. car parking spaces are provided, with 80 no. spaces allocated to serve the future residents of Apartment Blocks 1, 2 and 3, 8 no. spaces serving visitors, and 2 no. spaces serving the permitted childcare facility at the ground floor level of Block 3; Retention and completion of 2 no. ESB substations located along the north-western and eastern boundary; The provision of 4 no. bicycle and bin storage structures, a revised landscaping and public lighting design, and all associated and ancillary site development works. The proposed amendments will provide 12 no. additional apartment units, increasing the	Retention permission and planning permission granted by Fingal County Council on 31 August 2021	AA Screening

Ref.	Applicant	Location	Description - overview	Status	Environmental Assessments
			number of units on the overall development site from 251 units to 263.		
F17A/0113	McGarrell Reilly Homes	Lands at Hearse Road, Donabate, Co. Dublin	**Semple Woods, Hearse Road Residential Development** The construction of 196 houses, 62 apartments and a crèche, with two vehicular access points from Hearse Road, and access to two houses only from Prospect Hill. The proposal includes a route through the development to the future pedestrian bridge over the railway. Works to Hearse Road include two access points, new footpaths and a new pedestrian and cycle entrance to Newbridge Demesne and also the provision of 1.075 Ha open space in the proposed nature park on the coast road at Corballis, Donabate. The proposed development includes all associated site works and infrastructure which includes landscaped open spaces, internal roads, paths, cycle-paths, public lighting, utilities, pump station, drainage and surface water attenuation and works to Hearse Road and associated entrance to Newbridge Demesne.	Permission granted by Fingal county Council on 15 January 2018.	AA Screening; EIA Screening (Schedule 7A information) SSFRA
TA06F.306794	Elchoir Construction Limited	Lands adjacent to the existing residential development known as 'The Gallery', Turvey Walk, off Turvey Avenue, To the west of Donabate Train Station, Donabate, Co. Dublin	**Residential Development at Turvey Avenue** Elchoir Construction Limited lodged a SHD planning application to An Bord Pleanàla on 4th March 2020 at lands adjacent to the existing residential development known as 'The Gallery', Turvey Walk, off Turvey Avenue, to the west of Donabate Train Station, Donabate, Co. Dublin. The development consists of 144 no. apartments and 1 no. retail unit in three blocks, all over a single basement. The site has a total area of 1.16ha with a density of 124 units per hectare and is 3-5 storeys in height over basement.	Permission granted by An Bord Pleanàla on 10th August 2020.	EIA Screening; AA Screening

Ref.	Applicant	Location	Description - overview	Status	Environmental Assessments
F20A/0630	Drumargh Ltd	Lands at Turvey Walk, fronting Turvey Avenue, adjacent to Donabate Train Station, and the residential development of The Gallery, Donabate, Co Dublin	**Mixed-use Development at Turvey Walk** Permission for a mixed use (Retail convenience foodstore, 4 retail units and a café unit) development in 2 Blocks as follows: 1) Block 01: Two storey structure (with plant room at roof level) comprising 4no. retail units at ground floor level, internal ESB substation, car park at ground floor level, providing for car and bicycle parking spaces, and a licensed retail convenience foodstore at first floor level (1,187m^{2}net floor area) including an off licence. 2) Block 02: Change of use of existing residential dwelling and provision of an extension to now provide for a single storey café unit. 3) Demolition of shed structure, removal of portacabin and construction of a public plaza development with landscaping, seating and bicycle parking to serve Block 2. 4) Utilisation of existing vehicular and pedestrian access with associated widening and improvements, including provision of a right hand turn on Turvey Avenue. 5) New internal access roundabout with associated landscaping. 6) Loading Bay. 7) Landscaping. 8) Boundary Treatments. 9) And all ancillary site and engineering works necessary to facilitate the development.	Permission granted by Fingal County Council on 09 June 2021.	
F21A/0257	Loughglynn Developments Limited	Beresford, Donabate, Co. Dublin	**Revisions to Previously Permitted Residential Development at Beresford** Revisions to previously permitted development Reg Ref. F16A/0535. The proposed revisions comprise of the provision of an additional ESB substation and the replacement of the 10 no. House Type D 5 Bed units with a new House Type H 4 bed unit, on a site bounded to the north and east by Beaverstown Golf Club, to	Permission granted by Fingal County Council on 05 August 2021.	

Ref.	Applicant	Location	Description - overview	Status	Environmental Assessments
			the South by Beresford residential development and to the west by Turvey Golf Club lands at Turvey Ave, Donabate, Co. Dublin.		
Proposed Developments					
F24A/0169	Marshall Yards Development Company Limited	Corballis East, Donabate, Co Dublin	**Proposed Residential Development at Corballis East** The proposed development, which will have a total Gross Floor Area of 8,028 sq m, will consist of: the construction of a Residential Development comprising 98 No. units including 70 No. two storey houses, 4 No. three storey 4 bed houses, and 6 No. two storey maisonette buildings comprising a total of 24 No. 1 bed units. The development will also comprise of: alterations to the access road associated with the Residential Development permitted under Fingal County Council Reg. Ref. F22A/0527; the provision of internal roads and footpaths; pedestrian connections to the Donabate Distributor Road; pedestrian and vehicular connections to the adjoining site to the west (subject to a Live Planning Application for a Large-Scale Residential Development as per Fingal County Council Reg. Ref. LRD0017/S3); 73 No. car parking spaces; 5 No. car club spaces; bicycle and bin stores; hard and soft landscaping; balconies and terraces; boundary treatments; solar panels; 2 No. ESB substations; public lighting; and all other associated site and development works above and below ground.	Lodged on 29 February 2024	EIA Screening, NIS

Figure 22.1 Permitted and proposed developments to which regard has been had in the assessment of potential cumulative impacts



23 Mitigation Measures & Monitoring

23.1 Introduction

This chapter collates the mitigation measures and monitoring set out in the preceding chapters of the EIAR. Note that this section does not include 'mitigation by design', i.e. features already integrated into the proposed development (as assessed) that mitigate environmental impacts.

23.2 General Mitigation Measures

Table 23.1 Mitigation measures - General

Ref.	Mitigation measure
Construction phase	
GE01	In order to minimise the volume of material being exported off-site, excavated material will be reused on-site (e.g. as fill material) where feasible.
GE02	Hydrocarbons, solvents and other such hazardous substances will be stored in secure, bunded hardstanding areas.
GE03	Re-fuelling and servicing of construction plant and machinery will only be permitted at suitably located, designated hardstanding areas.
GE04	Spill kits will be present on-site at all times.
GE05	The proposed construction phase working hours are as follows, subject to conditions of the planning authority: ▪ Monday – Friday: 07:00 – 18:00 ▪ Saturday: 08:00 – 14:00 ▪ Sundays and Bank Holidays: No works Any works proposed outside of these hours, e.g. for water mains / foul drainage connections, will be subject to prior approval by Fingal County Council.
GE06	**Construction & Environmental Management Plan** A Construction & Environmental Management Plan (CEMP) has been prepared in respect of the proposed development by DBFL Consulting Engineers (2024) (refer to standalone document submitted under separate cover). It contains best practice measures and protocols to be implemented during the construction phase of the proposed development to avoid / minimise environmental impacts. In the preparation of this Environmental Impact Assessment Report, regard has been had to the mitigation measures and protocols proposed in the CEMP. The appointed contractor will be responsible for the implementation of the CEMP. The contractor will appoint a suitably qualified Site Environmental Manager (SEM) with responsibility for overseeing the implementation of the CEMP (and all construction phase environmental commitments). To ensure the CEMP remains fit for purpose, it will be maintained as a live document. The appointed contractor will be responsible for updating the CEMP, as required; e.g. to reflect the publication of relevant new or revised guidelines and / or new statutory requirements. The full schedule of environmental commitments (i.e. all mitigation measures set out in the CEMP and Environmental Impact Assessment Report submitted as part of the planning application, as well as any applicable conditions of development consent) will be included in the CEMP by the appointed contractor.
GE07	**Construction Traffic Management Plan** Prior to works commencing on-site, a Construction Traffic Management Plan will be prepared by the appointed contractor in accordance with the following guidance documents:

Ref.	Mitigation measure
	▪ Department of Transport, Tourism and Sport (DTTS) (2019). Chapter 8: Temporary Traffic Measures and Signs for Roadworks, in *Traffic Signs Manual*; ▪ DTTS (2013). Design Manual for Urban Roads & Streets ('DMURS'); ▪ Department of Transport (2010). Guidance for the Control and Management of Traffic at Road Works (Second Edition); and ▪ NRA (2015). Design Manual for Roads and Bridges ('DMRB').
GE08	**Resource & Waste Management Plan** A project-specific Resource & Waste Management Plan (RWMP) has been prepared by AWN Consulting (2024) in line with the requirements of the EPA *'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021)* and is included as **Appendix 19.1** Volume 3 of the EIAR. The implementation of the mitigation measures presented in the RWMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the excavation and construction phases of the proposed development. Prior to commencement, the appointed Contractor(s) will be required to refine / update the RWMP in agreement with FCC, detailing specific measures to minimise waste generation and resource consumption, and provide details of the proposed waste contractors and destinations of each waste stream. The Contractor will be required to fully implement the RWMP throughout the duration of the proposed construction phase.
GE09	**Arboricultural Impact Assessment & Method Statement** An Arboricultural Impact Assessment & Method Statement has been prepared in respect of the proposed development by John Morris Arboricultural Consultancy (2024) and submitted under separate cover as part of the planning application. It contains an Arboricultural Impact Assessment, Method Statement and recommendations in relation to tree protection on construction sites. The method statement and recommendations contained in the Arboricultural Impact Assessment & Method Statement shall be integrated into the final CEMP, and implemented in full during the proposed construction works.
Operational phase	
GE10	**Mobility Management Plan** A Mobility Management Plan (MMP) has been prepared by DBFL Consulting Engineers (2024) for the operational phase of the proposed development (refer to standalone document submitted under separate cover), to promote sustainable mobility among the residents of the proposed development through a range of measures. The Operator of the site during the operational phase will be responsible for ensuring – allocating personnel and resources, as needed – the ongoing implementation of the MMP. This is intended to be a live document, to be updated by the Applicant / Operator, where appropriate, e.g. to ensure the Plan remains fit for purpose and up-to-date with relevant policy.
GE11	**Operational Waste Management Plan** An Operational Waste Management Plan (OWMP) has been prepared by AWN Consulting (2024), containing measures to promote operational phase waste management in accordance with the waste hierarchy, i.e. high rates of reuse, recycling and recovery. Refer to **Appendix 19.2** Volume 3 of the EIAR. The Operator / Facilities Management of the site during the operational phase will be responsible for ensuring – allocating personnel and resources, as needed – the ongoing implementation of the OWMP. This is intended to be a live document, to be updated by the Applicant / Operator, where appropriate, e.g. to ensure the Plan remains fit for purpose and up-to-date with relevant policy.

23.3 Specific Mitigation & Monitoring Measures

23.3.1 Population & Human Health

Table 23.2 Mitigation measures - Population and Human Health

Ref.	Mitigation measure
Construction phase	
PHH01	A Construction and Environmental Management Plan (CEMP) has been prepared in respect of the proposed development by DBFL Consulting Engineers (2024) (refer to document submitted under separate cover). The CEMP will remain a 'live document' and will be further updated by the Contractor (subject to planning approval) in advance of the proposed works, in agreement with Fingal County Council. The CEMP will be fully implemented throughout the proposed works. It will set out the measures to be implemented during the proposed works to mitigate potential impacts on the environment and local population, e.g. measures in relation to good housekeeping, site hoarding and security, traffic management, pollution control and safety.
PHH02	A Community Liaison Officer (CLO) will be appointed by the contractor for the duration of the construction phase. They will be responsible for keeping the local community and businesses informed of the timing and duration of potentially disruptive works, and for receiving and addressing concerns of local residents and businesses in relation to the proposed works.
PHH03	Chapter 11 (Air Quality) & Chapter 12 (Climate) includes a suite of mitigation measures to minimise air quality (including dust) impacts during the construction phase. Dust minimisations measures are included in Chapter 11 and shall be finalised by the appointed contractor in agreement with Fingal County Council, and implemented during the proposed works. Other mitigation measures are included in relation to community liaison, site management, maintenance of site, control of construction machinery, waste management especially earthworks and measures specific to trackout.
PHH04	Chapter 13 (Noise & Vibration) includes a suite of mitigation measures to minimise noise impacts during the construction phase. Mitigation measures are included in relation to selection of quiet plant, noise control at source, screening, adherence to noise limits, community liaison and project programme / phasing.
PHH05	Chapter 14 (Landscape & Visual) includes a number of mitigation measures to minimise the impacts of the proposed works on landscape and visual amenity. These include measures in relation to visual impact of construction works, landscape character and existing vegetation.
PHH06	Chapter 18 (Traffic & Transportation) includes a suite of measures in relation to construction traffic and parking management to minimise the impacts of construction traffic on the local community and the operation of the existing road network in the area. It requires the implementation of a Construction Traffic Management Plan, to be prepared by the appointed contractor during pre-construction phase in agreement with Fingal County Council.
PHH07	Chapter 19 (Material Assets - Waste) includes a suite of measures in relation to management of construction waste to minimise the impacts of all site construction activities. A Resource and Waste Management Plan (**Appendix 19.1**, Volume 3 of the EIAR) prepared as part of the application shall be implemented throughout the construction phase of the proposed development.
PHH08	Chapter 20 (Material Assets – Services) includes a suite of measures in relation to management of services in the vicinity of the works and regard shall be had to the Gas

Ref.	Mitigation measure
	Networks Ireland Guidelines for Designers and Builders – Industrial and Commercial (Non-Domestic) Sites (2018), the Health & Safety Authority (HSA) Code of Practice for Avoiding Danger from Underground Services (2016), and the ESB Networks & Health and Safety Authority Code of Practice for Avoiding Danger from Overhead Electricity Lines (2019).
Operational phase	
PHH09	Chapter 18 (Traffic & Transportation) includes a suite of measures in relation to mobility management and car parking management during the operational phase. It requires the implementation of a Mobility Management Plan, to encourage sustainable travel patterns among residents of the proposed development.
PHH10	Chapter 14 (Landscape & Visual) includes a number of mitigation measures to minimise the impacts of the proposed works on landscape and visual amenity. These include measures in relation to good quality architectural design, provision of open spaces, retention, enhancement and management of existing hedgerows, enhanced and additional tree planting etc.
PHH11	Chapter 11 (Air Quality) & Chapter 12 (Climate) includes a suite of mitigation measures to minimise future climate change impacts during the operational phase. These measures have been incorporated into the design of the development to mitigate against the impacts of future climate change. For example, adequate attenuation and drainage have been incorporated into the design of the development to avoid potential flooding impacts as a result of increased rainfall events in future years. The proposed development has been designed to reduce the impact on climate as a result of energy usage during operation.
PHH12	Chapter 19 (Material Assets- Waste) includes a suite of measures in relation to management of operational phase waste to minimise the impacts of the operational phase of the proposed development. An Operational Waste Management Plan (**Appendix 19.2**, Volume 3 of the EIAR) prepared as part of the application shall be implemented throughout the operational phase of the proposed development.
PHH13	Chapter 16 (Microclimate – Daylight & Sunlight) includes compensatory measures for one room (in block BZ03) which does not comply with the BRE Guide recommendation for daylight and these measures assess daylight adjacency, sunlight, dual aspect, aspect, unit size and communal open space.

Table 23.3 Monitoring - Population and Human Health

Phase	Monitoring measure
Construction	Monitoring and maintenance recommended in Chapters 11 (Air Quality), 13 (Noise & Vibration), 14 (Landscape & Visual), 18 (Traffic & Transportation), 19 (Material Assets - Waste) and 20 (Material Assets – Services) shall be implemented in full during the construction and / or operational phases of the proposed development, as specified in those respective chapters. Beyond that which has been recommended elsewhere in this EIAR, no additional monitoring is considered necessary in respect of population and human health.

23.3.2 Biodiversity

Table 23.4 Mitigation measures - Biodiversity

Ref.	Mitigation measure
Construction phase	
BIO01	Specific mitigation measures for the European sites are contained within the accompanying Natura Impact Statement (prepared by Brady Shipman Martin) and the Construction and Environmental Management Plan (CEMP) (prepared by DBFL Consulting Engineers) for the proposed development. These include strict measures to ensure the protection of water quality as well as measures to ensure no impact occurs outside the working area and in particular on the habitats and bird species that are the Qualifying Interests and Special Conservation Interests of the Rogerstown Estuary SAC / SPA and Malahide Estuary SAC / SPA.
BIO02	**Water Quality, Dust and Other Emissions** - Section 5 (Soils and Geology), Section 6 (Water) and Section 11 (Air, Dust and Climate Factors) of the CEMP and Chapter 9 (Lands, Soils, Geology & Hydrogeology), Chapter 10 (Hydrology) and Chapter 11 (Air Quality) of this EIAR all address the proposed erosion and sediment control measures. The following measures will be implemented for stripping of topsoil, excavation of subsoil layers, surface water runoff, dust suppression and accidental spills and leaks: ▪ Measures shall be implemented to capture and treat sediment laden surface water runoff within additional sediment retention ponds where waters are not directed to the Phase 1 permitted attenuation ponds. ▪ Surface water runoff from areas stripped of topsoil and rainwater collected in excavations shall be directed to on-site settlement ponds/settlement tanks where measures will be implemented to capture and treat sediment laden runoff prior to discharge of surface water at a controlled rate. ▪ Groundwater pumped from excavations is to be directed to on-site settlement ponds/ distilling tanks. ▪ Discharge from any vehicle wheel wash areas is to be directed to on-site settlement ponds/ distilling tanks. ▪ On-site settlement ponds are to include geotextile liners and riprapped inlets and outlets to prevent scour and erosion. ▪ Surface water discharge points during the construction phase are to be agreed with Fingal County Council's Environment Section prior to commencing works on site. ▪ Weather conditions and seasonal weather variations shall also be taken account of when planning stripping of topsoil and excavations, with an objective of minimizing soil erosion. ▪ All oils, fuels, paints and other chemicals will be stored in a secure bunded hardstand area. ▪ Refuelling and servicing of construction machinery shall take place in a designated hardstand area which is also remote from any surface water inlets (when not possible to carry out such activities off site). ▪ Discharge from any vehicle wheel wash areas is to be directed to on-site settlement ponds. ▪ A response procedure shall be put in place to deal with any accidental pollution events and spillage kits shall be available and construction staff will be familiar with the emergency procedures and use of the equipment. ▪ Concrete batching will take place off site, wash down and wash out of concrete trucks will take place off site and any excess concrete is not to be disposed on site. ▪ Pumped concrete will be monitored to ensure there is no accidental discharge.

Ref.	Mitigation measure
	▪ Mixer washings are not to be discharged into surface water drains.
BIO03	**Noise, Vibration and Visual Effects-** ▪ Noise and vibration during the construction phase will be controlled with reference to the best practice control measures within *BS 5228 (2009 +A1 2014) Code of Practice for Noise and Vibration Control on Construction and Open Sites Parts 1 and 2*. The contractor will ensure that all best practice noise and vibration control methods will be used as necessary in order to ensure impacts to nearby noise sensitive locations are not significant. This will be particularly important during site preparation works and piling works. ▪ The best means practicable, including proper maintenance of plant, will be employed to minimise the noise produced by on site operations. All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract. ▪ Existing trees and woodlands to be retained and are shown in the Landscape Design Report prepared by Cunnane Stratton Reynolds (CSR) (included separately as part of this planning submission) and arboricultural drawings and report prepared by John Morris Arboricultural Consultancy Limited (included separately as part of this planning submission). All tree protection measures as set out in the Arboricultural Impact Assessment & Method Statement will be implemented in full.
BIO04	**Lighting**- Increased artificial lighting has the potential to impact on bat feeding and commuting behaviour, as well as on badgers. The proposed lighting for the proposed development (prepared by Ethos Engineering), has been designed in accordance with the following guidelines: ▪ Bats and Lighting – Guidance Notes for Planners, Engineers, Architects and Developers (Bat Conservation Ireland, 2010)[37]; ▪ Bats and Artificial Lighting at Night, Institute of Lighting Professionals, 2023[38]; ▪ Guidance Notes for the Reduction of Obtrusive Light GN01-21 (Institute of Lighting Professionals, 2021)[39]; ▪ Dark Sky Ireland's Environmentally Friendly Lighting Guide[40]. The proposed lighting will have the following characteristics: ▪ The minimum level of lighting will be provided within the developed areas, within the lux level criteria required by Fingal County Council. ▪ The light temperature of all fittings will comply with the specifications required by FCC. ▪ No flood lighting will be provided within the proposed development and all light fittings will be LED and are designed to shine downwards and will avoid sky glow and light spill. ▪ Lighting will be directed onto the roadways and paths – and away from the retained hedgerows and open space network.
BIO05	**Badgers**- There are no badger setts within the Ballymastone Phase 2 site area. Nevertheless, badgers are known to be present in the wider site and all works relating to badgers and badger

[37] https://www.batconservationireland.org/wp-content/uploads/2013/09/BCIrelandGuidelines_Lighting.pdf
[38] https://theilp.org.uk/publication/guidance-note-8-bats-and-artificial-lighting/
[39] https://theilp.org.uk/publication/guidance-note-1-for-the-reduction-of-obtrusive-light-2021/
[40] https://www.darksky.ie/lighting-documents/#guidelines

Ref.	Mitigation measure
	setts will be carried out in accordance with the NRA *Guidelines for the Treatment of Badgers Prior to the Construction of National Road Schemes* (n.d.). Prior to the commencement of any construction works a pre-construction badger survey will be carried out by a suitably qualified badger specialist in order to establish the current status of the badger setts in the wider area. Should any setts be found, within the Phase 2 area, a badger specialist will prepare a construction phase badger management plan to be agreed with NPWS. The tree protection fencing will be retained in situ for the duration of the construction phase and extensive new planting of tree and shrub species, including holly, blackthorn, hawthorn and other species, will take place – the planting of these species within the landscaped areas will benefit the badgers in the wider area and will also provide pollinator-friendly habitat. Additionally, the following mitigation measures are proposed for the general protection of badgers: ■ Day-to-day measures to ensure the welfare of badgers is maintained will be implemented as follows: □ Good house-keeping measures will be maintained and no loose netting, fencing or other materials that could trap badgers will be left out on site; □ Food waste will be secured so as not to attract badgers to the construction site at night; □ Ramps will be included in any excavation deeper than 500mm to allow animals to escape if necessary.
BIO06	No bat roosts will be removed as part of the proposed development and it will not be necessary to apply for a derogation licence under Regulation 54 or 55 of the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended). Nevertheless, bats are mobile creatures, and the absence of bat roosts at the time of surveys does not preclude the presence of future bat roosts at the site. Therefore, as a precautionary measure, any trees to be removed shall be examined for the presence of bats prior to felling.
BIO07	The high value hedgerows / treelines will be retained and protected where feasible. In particular all of the retained hedgerows will be treated in accordance with British Standard BS5837:2012 Trees in Relation to Design, Demolition and Construction – Recommendations, with protective fencing being installed prior to commencement of development.
BIO08	All site clearance and landscaping works will comply with current legislative requirements and best practice. The clearance of any vegetation that may be suitable for use by nesting birds will be undertaken outside the bird nesting season (avoiding the period 1 March to 31 August). Should the construction programme require vegetation clearance between March and August, and this is unavoidable, bird nesting surveys will be undertaken by suitably qualified ecologists. If no active nests are recorded, vegetation clearance will take place within 24 hours. In the event that active nests are observed, an appropriately sized buffer zone (up to 5 m radius around the nest) will be maintained around the nest until such time as all the eggs have hatched and the birds have fledged – a period that may be three weeks from the date of the survey. Once it is confirmed that the birds have fledged and no further nests have been built or occupied, vegetation clearance may take place immediately.
BIO09	The planting proposed for the development will, wherever possible, comprise an appropriate mixture of native trees and shrubs, preferably of local provenance. The planting will also

Ref.	Mitigation measure
	incorporate a range of species that will attract feeding invertebrates, including moths, butterflies and bees. It will take account of and implement the relevant objectives of the All-Ireland Pollinator Plan 2021-2025.
BIO10	Species listed on Schedule 3 of the Birds and Habitats Regulations, 2011-2015, such as Japanese knotweed and giant hogweed, have not been recorded on the site. Nevertheless, appropriate biosecurity measures will be implemented during the construction phase of the proposed development to ensure that no invasive species are introduced, either deliberately or inadvertently, to the site.
BIO11	The following recommendations from Inland Fisheries Ireland 'Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters' (2016) will be implemented as necessary: ▪ No direct discharges be made to waters where there is potential for cement or residues in discharge. ▪ The pH of any and all discharges made from and during construction works shall be in the range of 6.0 – 9.0 units and not alter the pH of any receiving fisheries waters by more than+/- 0.5 pH units. ▪ The level of suspended solids in any discharges to fisheries waters as a consequence of construction works shall not exceed 25 mg/l, nor result in the deposition of silts on gravels or any element of the aquatic flora or fauna.
Operational phase	
BIO12	**Loss of, or Disturbance to Habitat within the Site-** ▪ As detailed in the Landscape Strategy and Design Statement (prepared by CSR and submitted under separate cover as part of this application), it is intended to retain a significant proportion of the hedgerows as ecological features within the open space network, verges and / or site boundaries. While the removal of trees, groups of trees and hedgerow sections is unavoidable, it is proposed to provide new planting of new, high quality trees and shrubs as part of the landscape strategy. This new planting will include a diverse mix of native species as set out in the accompanying Cunnane Stratton Reynolds drawings; ▪ Replacement trees and hedgerows shall be of appropriate age, structure and species to provide an immediate positive impact, and in the long term offer significant benefits that see an improvement upon the pre-development baseline. ▪ Although not necessary in order to mitigate roost loss (no bat roosts will be lost) a total of 6 x 2FN Schwegler bat boxes or equivalent are proposed for erection on suitable trees or poles or alternatively the provision of access for bats to elements of buildings. This may be by purpose-built incorporated bat boxes or by providing appropriate access gaps. If this option is chosen rather than specific boxes, a bat specialist shall provide advice on access options. All boxes or access points shall be away from illumination. ▪ Bird boxes and insect hotels will be provided throughout the proposed development site. A total of 10 no. assorted wooden or woodcrete bird boxes and 5 no. wooden insect hotels (to be located within the proposed parks) will be included. ▪ Where possible, it is also proposed to install small openings (in the order of 130mm square) at the base of property boundaries within the proposed development in order to facilitate the movement of wildlife, including hedgehogs, between gardens and to connect them to the wider countryside.

Ref.	Mitigation measure
BIO13	**Surface Water Quality** - The proposed development is designed in accordance with the principles of SuDS as embodied in the recommendations of the GDSDS, which addresses the issue of sustainability by requiring designs to comply with a set of drainage criteria that aim to minimise the impact of urbanization, by replicating the run-off characteristics of the greenfield site. The criteria provide a consistent approach to addressing the increase in both rate and volume of run-off, as well as ensuring the environment is protected from any pollution from roads and buildings. Therefore, beyond that which is already proposed under the scope of the design for the proposed development, no further mitigation is required in this regard.

Table 23.5 Monitoring- Biodiversity

Phase	Monitoring measure
Construction	A suitably experienced Project Ecologist will be appointed for the duration of the construction phase and regular monitoring of all related works will take place to ensure the correct and full implementation of all mitigation measures. The Project Ecologist will ensure that all construction works take place in accordance with planning conditions, the project CEMP and the mitigation measures set out in this EIAR and the NIS.
	The active badger sett located within the Phase 1 lands, which, despite the ongoing construction of Ballymastone Phase 1 and evidence of vandalism (fire damage) that took place prior to the commencement of construction of Phase 1, is still active, will continue to require monitored protection, in accordance with the parameters set out in best practice guidance including the NRA *Guidelines for the Treatment of Badgers Prior to the Construction of National Road Schemes*, for the entire duration of the construction phase. Should any additional badger setts be discovered within the site (e.g. that establish at a later stage but prior to construction), it may be necessary to exclude and close these setts, in consultation with NPWS.
	Vegetation clearance will only be permitted outside the bird-nesting season. Should vegetation clearance be required during the bird nesting season, and should this work be unavoidable, such clearance will take place only after the Project Ecologist has undertaken a survey to ensure that no active bird nests or recently fledged birds are present. Pre-construction surveys will be required to ensure that any necessary tree felling or works to buildings continue to have no impact on roosting bats.
	Monitoring of construction dust deposition along the site boundary to nearby sensitive receptors during the construction phase of the proposed development is recommended to ensure mitigation measures are working satisfactorily
	Monitoring of all fuel / oil storage areas will also be undertaken to ensure that all related mitigation measures are being implemented effectively.
Operational	No long-term ecological monitoring is required, other than post-construction monitoring of the bat and bird boxes, insect hotels and artificial setts installed. The bat and bird boxes, and insect hotels installed on the site will be checked annually for a period of two years post-completion of the works, to ensure that they continue to be accessible to these species. If necessary, they will be repositioned within the site.
	On completion of construction, the lighting installed will be reviewed by the Project Ecologist and a bat specialist, to ensure that it is operating according to the approved specifications.

Phase	Monitoring measure
	The landscape architect will similarly ensure that all works undertaken are in full compliance with the landscape specification. The arborist will ensure that all hedgerow and tree management measures are fully implemented. All monitoring tasks will be recorded and logged for inspection by the site manager.

23.3.3 Land, Soils, Geology & Hydrogeology

Table 23.6 Mitigation measures - Land, Soils, Geology & Hydrogeology

Ref.	Mitigation measure
Construction phase	
LSG01	A Construction & Environmental Management Plan (CEMP) has been prepared in respect of the proposed development by DBFL Consulting Engineers (refer to standalone document submitted under separate cover). It contains best practice measures and protocols to be implemented during the construction phase of the proposed development to avoid / minimise environmental impacts. To ensure the CEMP remains fit for purpose, it will be regarded as a live document. The appointed contractor will be responsible for updating the CEMP, as required; e.g. to reflect the publication of relevant new or revised guidelines and / or new statutory requirements. The full schedule of environmental commitments (i.e. all mitigation measures set out in the CEMP, Environmental Impact Assessment Report and Natura Impact Statement submitted as part of the planning application, as well as any applicable conditions of development consent) will be included in the CEMP by the appointed contractor. The CEMP was formulated in accordance with best international practice including but not limited to: ▪ CIRIA, (2001), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors; ▪ Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (C650), 2005; ▪ BPGCS005, Oil Storage Guidelines; ▪ Eastern Regional Fisheries Board, (2006), Fisheries Protection Guidelines: Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites; ▪ CIRIA 697, The SUDS Manual, 2007; and ▪ UK Pollution Prevention Guidelines (PPG) UK Environment Agency, 2004.
LSG02	Site preparation, excavations and levelling works required to facilitate construction of foundations, access roads and the installation of services will require imported material. ▪ Suitable soils will be reused on site as backfill in the grassed areas, where possible. ▪ Contractors shall be required to submit and adhere to a method statement indicating the extent of areas likely to be affected and demonstrating that this is the minimum disturbance necessary to achieve the required works. ▪ Temporary storage of soil will be carefully managed in such a way as to prevent any potential negative impact on the receiving environment and the material will be stored away from any open surface water drains. No soil storing will be allowed within 30 m of

Ref.	Mitigation measure
	the open water where sufficient working areas are available within the site boundaries, which is in line with Inland Fisheries Ireland guidelines. ▪ Movement of material will be minimised in order to reduce degradation of soil structure and generation of dust. ▪ Although there is no evidence of historical contamination in the proposed development area, all excavated materials will be visually assessed for signs of possible contamination such as staining or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of possible contaminants in order to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be disposed of by a licensed waste disposal contractor. ▪ Stockpiles have the potential to cause negative impacts on air and water quality. Stockpiles will be formed within the proposed development site boundary and the contractor will ensure that there are no direct links or pathways from stockpiles to any surface water body. ▪ Overburden material will be protected from exposure to wind by storing the material in sheltered parts of the site, where possible.
LSG03	All fill and aggregate for the proposed development will be sourced from reputable suppliers. All suppliers will be vetted for: ▪ Aggregate compliance certificates/declarations of conformity for the classes of material specified for the proposed development; ▪ Environmental management status; and ▪ Regulatory and legal compliance status of the company.
LSG04	To minimise any impact on the underlying subsurface strata from material spillages, all oils, solvents and paints used during construction will be stored within temporary bunded areas. Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be bunded to a volume of 110% of the capacity of the largest tank/container within the bunded area(s) (plus an allowance of 30 mm for rainwater ingress). Drainage from the bunded area(s) shall be diverted for collection and safe disposal.
LSG05	Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area (or, where possible, off the site) that will be away from surface water gullies or drains. In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in this area. All relevant personnel will be fully trained in the use of this equipment. Guidelines such as 'Control of Water Pollution from Construction Sites: Guidance for Consultants and Contractors' (CIRIA 532, 2001) will be complied with.
LSG06	Where feasible, all ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out, which will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to the underlying subsoil. Wash down and washout of concrete transporting vehicles will take place at an appropriate facility off-site.
LSG07	In the case of drummed fuel or other chemical which may be used during construction, containers should be stored in a dedicated internally bunded chemical storage cabinet and labelled clearly to allow appropriate remedial action in the event of a spillage.

Ref.	Mitigation measure
LSG08	Emergency response procedures will be outlined in the CEMP. All personnel working on the site will be suitably trained in the implementation of the procedures.
LSG09	Care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts.
LSG10	Should any discharge of construction water be required during the construction phase, discharge will be to foul sewer. Pre-treatment and silt reduction measures on site will include a combination of silt fencing, settlement measures (silt traps, 20 m buffer zone between machinery and watercourses, refuelling of machinery off-site) and hydrocarbon interceptors (as per Fingal Development Plan, 2023 – 2029).
LSG11	Any minor ingress of groundwater and collected rainfall in the excavation will be pumped out during construction. It is estimated that the inflow rate of groundwater will be low. Water be discharged via the existing stormwater sewer network following attenuation within the permitted attenuation pond for the Phase 1 development.
LSG11	The use of additional slit traps will be adopted if the monitoring indicates the requirements for the same with no silt or contaminated water permitted to discharge to the sewer.
Operational phase	
LSG12	The proposed development does not include for any bulk chemical storage including fuel storage. As the site will be paved and drained, any fuel spills from cars will drain to the hydrocarbon interceptors on the stormwater drainage system. All stormwater drainage is through the permitted attenuation pond. No further mitigation measures are required during the operational phase.

Table 23.7 Monitoring- Land, Soils, Geology & Hydrogeology

Phase	Monitoring measure
Construction	During construction phase the following monitoring measures will be implemented: ▪ Regular inspection of surface water run-off and sediments controls (e.g., discharge from permitted attenuation pond silt traps); ▪ Soil sampling to confirm disposal options for excavated soils in order to avoid contaminated run-off; and ▪ Regular inspection of construction / mitigation measures (e.g., concrete pouring, refuelling, etc).
Operational	Maintenance of the surface water drainage system, including hydrocarbon interceptors, and foul sewers as per normal urban developments is recommended to minimise any accidental discharges to soil or groundwater.

23.3.4 Hydrology

Table 23.8 Mitigation measures - Hydrology

Ref.	Mitigation measure
Construction phase	
HYD01	A Construction Environmental Management Plan (CEMP) has been prepared in respect of the proposed development by DBFL Consulting Engineers (2024) (refer to standalone document submitted under separate cover). It contains best practice measures and protocols to be implemented during the construction phase of the proposed development to avoid / minimise environmental impacts, including in relation to surface water. To ensure the CEMP remains fit for purpose, it will be regarded as a live document. The appointed contractor will be responsible for updating the CEMP, as required; e.g. to reflect the publication of relevant new or revised guidelines and / or new statutory requirements. The full schedule of environmental commitments (i.e. all mitigation measures set out in the CEMP, Environmental Impact Assessment Report and Natura Impact Statement submitted as part of the planning application, as well as any applicable conditions of development consent) will be included in the CEMP by the appointed contractor. The CEMP was formulated in accordance with best international practice including but not limited to: ▪ CIRIA, (2001), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors, (C532) Construction Industry Research and Information Association; ▪ CIRIA (2002) Control of water pollution from construction sites: guidance for consultants and contractors (SPI56) Construction Industry Research and Information Association ▪ CIRIA (2005), Environmental Good Practice on Site (C650); Construction Industry Research and Information Association ▪ BPGCS005, Oil Storage Guidelines; ▪ Eastern Regional Fisheries Board, (2006), Fisheries Protection Guidelines: Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites; ▪ CIRIA 697, The SUDS Manual, 2007; and ▪ UK Pollution Prevention Guidelines (PPG) UK Environment Agency, 2004.
HYD02	Run off may contain sediment and accidental hydrocarbon leakage for contractor vehicles, however there is no likely discharge from the site (without settlement and treatment) as most drainage is directed to the permitted attenuation pond and interceptor installed during the Phase 1 development. The following additional mitigation measures will be implemented during the construction phase. ▪ Measures shall be implemented to capture and treat sediment laden surface water runoff within additional sediment retention ponds where waters are not directed to the Phase 1 permitted attenuation ponds. ▪ During earthworks and excavation works care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts. ▪ Run-off water containing silt will be contained on site via settlement tanks and treated to ensure adequate silt removal.

Ref.	Mitigation measure
	▪ Silt reduction measures on site will include a combination of silt fencing and settlement measures (silt traps, silt sacks and settlement tanks/ponds). ▪ Any hard surface site roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only. ▪ A power washing facility or wheel cleaning facility will be installed near to the site compound for use by vehicles exiting the site when appropriate. ▪ A stabilised entranceway consisting of an aggregate on a filter cloth base that is located at any entry or exit point of the construction site. ▪ Aggregate will be established at the site entrance points from the construction site boundary extending for at least 10 m. ▪ The temporary storage of soil will be carefully managed. Stockpiles will be tightly compacted to reduce runoff and graded to aid in runoff collection. ▪ Aggregate materials such as sands and gravels will be stored in clearly marked receptacles within a secure compound area to prevent contamination. ▪ Movement of material will be minimised to reduce the degradation of soil structure and generation of dust. ▪ Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise the potential for water ingress into excavations. ▪ Weather conditions will be considered when planning construction activities to minimise the risk of run-off from the site. ▪ Any surface water run-off collecting in excavations will likely contain a high sediment load. This will not be allowed to directly discharge directly to the stormwater sewer.
HYD03	Where feasible all ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to the underlying subsoil. No wash-down or wash-out of ready-mix concrete vehicles during the construction works will be carried out at the site within 10 metres of an existing surface water drainage point. Washouts will only be allowed to take place in designated areas with an impervious surface where all wash water is contained and removed from site by road tanker or discharged to foul sewer submit to agreement with UÉ. The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.

HYD04	The following mitigation measures will be implemented during the construction phase in order to prevent any spillages to ground of fuels and other construction chemicals and prevent any resulting to surface water and groundwater systems:
	
	▪ Designation of bunded refuelling areas on the Site.
	▪ Provision of spill kit facilities across the Site.
	▪ Where mobile fuel bowsers are used, the following measures will be taken:
	  ◻ Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use.
	  ◻ The pump or valve will be fitted with a lock and will be secured when not in use.
	  ◻ All bowsers to carry a spill kit and operatives must have spill response training.

Ref.	Mitigation measure
	▫ Portable generators or similar fuel containing equipment will be placed on suitable drip trays.
HYD05	In the case of drummed fuel or other potentially polluting substances which may be used during the construction phase, the following measures will be adopted: ▪ Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded area; ▪ Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be stored within temporary bunded areas, doubled skinned tanks or bunded containers to a volume of 110% of the capacity of the largest tank/container. Drainage from the bunded area(s) shall be diverted for collection and safe disposal. ▪ Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage. ▪ All drums to be quality approved and manufactured to a recognised standard. ▪ If drums are to be moved around the Site, they will be secured and on spill pallets; and ▪ Drums will be loaded and unloaded by competent and trained personnel using appropriate equipment.
HYD06	Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area or within the construction compound. In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in this area. All relevant personnel will be fully trained in the use of this equipment. Guidelines such as "*Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors*" (CIRIA 532, 2001) will be complied with. The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.
HYD07	As set out in the CEMP prepared by DBFL Consulting Engineers the following surface water runoff mitigation measures will be implemented: ▪ Rainfall and all stormwater at the construction site will be managed and controlled for the duration of the construction works. The discharge of this treated water will occur to the storm water network and eventually to the Rogerstown Estuary. ▪ Surface water runoff from areas stripped of topsoil and surface water collected in excavations will be directed to on-site settlement ponds/ distilling tanks where measures will be implemented to capture and treat sediment laden runoff prior to discharge of surface water at a controlled rate. Monitoring of these sediment control measures will be undertaken throughout the construction phase. ▪ Discharge from any vehicle wheel wash areas is to be directed to on-site settlement ponds/distilling tanks. ▪ On-site settlement ponds are to include geotextile liners and riprapped inlets and outlets to prevent scour and erosion. ▪ Concrete batching will take place off site, wash down and wash out of concrete trucks will take place off site and any excess concrete is not to be disposed on site.

Ref.	Mitigation measure
	▪ Surface water discharge points (not directed to the Phase 1 permitted attenuation pond) during the construction phase are to be agreed with Fingal County Council's Environment Section prior to commencing works on site.
HYD08	According to in the CEMP produced by DBFL Consulting Engineers the following mitigation measures will be implemented: ▪ Rainwater pumped from excavations is to be directed to on-site settlement ponds / distilling tanks. ▪ Groundwater pumped from excavations is to be directed to on-site settlement ponds / distilling tanks. ▪ On-site settlement ponds are to include geotextile liners and riprapped inlets and outlets to prevent scour and erosion. Monitoring of same will be undertaken. ▪ Surface water discharge points during the construction phase are subject to agreement with Fingal County Council's Environment Section prior to commencing works on site.
HYD09	Foul wastewater discharge from the site will be managed and controlled for the duration of the construction works. Site welfare facilities will be established to provide sanitary facilities for construction workers on site. The main contractor will ensure that sufficient facilities are available at all times to accommodate the number of employees on site. Foul water from the offices and welfare facilities on the site will discharge into the existing sewer on site (the cabins may initially need to have the foul water collected by a licensed waste sewerage contractor before connection to the sewer line can be made). The construction contractor will implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.
Operational phase	
HYD10	The proposed development stormwater drainage network design includes sustainable drainage systems (SuDS) these measures by design ensure the stormwater leaving the site is to be attenuated and treated within the new development site boundary to ensure suitable quality, before discharging to the existing public surface water network which subsequently outfalls to the Rogerstown Estuary. The purpose of the proposed design is to: ▪ Treat runoff and remove pollutants to improve quality ▪ Restrict outflow and to control quantity ▪ Increase amenity value The layout of the proposed surface water drainage network is shown on the DBFL Consulting Engineers Drawing Set included with this Application. It is proposed to separate the surface water and wastewater drainage networks, which will serve the proposed development, and provide independent connections to the local public surface water and wastewater sewer networks respectively. Wastewater will be discharged in accordance with the UÉ licence requirements.

Table 23.9 Monitoring - Hydrology

Phase	Monitoring measure
Construction	During construction phase the following monitoring measures will be implemented: ▪ Regular inspection of surface water run-off and sediments controls e.g. silt traps will be carried during the construction phase. ▪ Soil sampling to confirm disposal options for excavated soils in order to avoid contaminated run-off. ▪ Regular inspection of construction/mitigation measures will be undertaken e.g. concrete pouring, refuelling etc.
Operational	Maintenance of the surface water drainage system, including hydrocarbon interceptors, and foul sewers as per normal urban developments is recommended to minimise any accidental discharges to surface water.

23.3.5 Air Quality

Table 23.10 Mitigation measures – Air Quality

Ref.	Mitigation measure
Construction phase	
AQ01	The measures in this table are appropriate for sites with a high risk of dust impacts and aim to ensure that no significant nuisance occurs at nearby sensitive receptors. The mitigation measures draw on best practice guidance from Ireland, *Air Quality Monitoring and Noise Control Unit's Good Practice Guide for Construction and Demolition* (DCC, 2018), the UK, *Guidance on the Assessment of Dust from Demolition and Construction Version 2.2* (IAQM, 2024), *Controlling Particles, Vapours & Noise Pollution from Construction Sites* (BRE, 2003), *Planning Advice Note PAN50 Annex B: Controlling The Environmental Effects Of Surface Mineral Workings Annex B: The Control of Dust at Surface Mineral Workings* (The Scottish Office, 1996), *Controlling the Environmental Effects of Recycled and Secondary Aggregates Production Good Practice Guidance* (ODPM, 2002)) and the USA, *Fugitive Dust Technical Information Document for the Best Available Control Measures* (USEPA, 1997).
AQ02	<u>Communications</u> ▪ Develop and implement a stakeholder communications plan that includes community engagement before works commence on site. Community engagement includes explaining the nature and duration of the works to local residents and businesses. ▪ The name and contact details of a person to contact regarding air quality and dust issues shall be displayed on the site boundary, this notice board should also include head/regional office contact details.
AQ03	<u>Site Management</u> ▪ During working hours, dust control methods will be monitored as appropriate, depending on the prevailing meteorological conditions. Dry and windy conditions are favourable to dust suspension therefore mitigations must be implemented if undertaking dust generating activities during these weather conditions. ▪ A complaints register will be kept on site detailing all telephone calls and letters of complaint received in connection with dust nuisance or air quality concerns, together with details of any remedial actions carried out. Make the complaints log available to the local authority when asked.

Ref.	Mitigation measure
	▪ Record any exceptional incidents that cause dust and/or air emissions, either on- or off-site, and the action taken to resolve the situation in the log book. ▪ Hold regular liaison meetings with other high risk construction sites within 250 m of the site boundary where feasible, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes.
AQ04	<u>Preparing and Maintaining the Site</u> ▪ Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible. ▪ Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site. ▪ Avoid site runoff of water or mud. ▪ Keep site fencing, barriers and scaffolding clean using wet methods. ▪ Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below. ▪ Cover, seed or fence stockpiles to prevent wind whipping.
AQ05	<u>Operating Vehicles / Machinery and Sustainable Travel</u> ▪ Ensure all vehicles switch off engines when stationary - no idling vehicles. ▪ Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable. ▪ Impose and signpost a maximum-speed-limit of 15 kph haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate). ▪ Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials. ▪ Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing)
AQ06	<u>Operations</u> ▪ Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g., suitable local exhaust ventilation systems. ▪ Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate. ▪ Use enclosed chutes and conveyors and covered skips. ▪ Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate. ▪ Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.
AQ07	<u>Waste Management</u> ▪ Avoid bonfires and burning of waste materials.
AQ08	<u>Measures Specific to Earthworks</u>

Ref.	Mitigation measure
	▪ Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable. ▪ Use Hessian, mulches or tackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable. ▪ Only remove the cover in small areas during work and not all at once. ▪ During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser will operate to ensure moisture content is high enough to increase the stability of the soil and thus suppress dust.
AQ09	<u>Measures Specific to Construction</u> ▪ Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place. ▪ Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery. ▪ For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.
AQ10	<u>Measures Specific to Trackout</u> ▪ A speed restriction of 15 kph will be applied as an effective control measure for dust for on-site vehicles. ▪ Avoid dry sweeping of large areas. ▪ Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. ▪ Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable. ▪ Record all inspections of haul routes and any subsequent action in a site log book. ▪ Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned. ▪ Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable). ▪ Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits. ▪ Access gates to be located at least 10 m from receptors where possible.
Operational phase	
There is no mitigation required for the operational phase of the development	

Table 23.11 Monitoring- Air Quality

Phase	Monitoring measure
Construction	▪ Undertake daily on-site and off-site inspections, where receptors (including roads) are nearby, to monitor dust, record inspection results in the site inspection log. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of site boundary, with cleaning to be provided if necessary. Carry out regular site inspections to monitor compliance with the CEMP, record inspection results, and make an inspection log available to the local authority when asked.

Phase	Monitoring measure
	▪ Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions. ▪ Agree dust deposition monitoring locations with Fingal County Council. Where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. ▪ During working hours, dust control methods will be monitored as appropriate depending on the prevailing meteorological conditions. ▪ Monitoring of construction dust deposition at nearby sensitive receptors during the construction phase of the proposed development will be carried out to ensure mitigation measures are working satisfactorily. This will be done using the Bergerhoff method in accordance with the requirements of the German Standard VDI 2119. The Bergerhoff Gauge consists of a collecting vessel and a stand with a protecting gauge. The collecting vessel is secured to the stand with the opening of the collecting vessel located approximately 2m above ground level. ▪ Dust deposition monitoring will be carried out on a monthly basis (between 28 - 32 days) for at least one month (ideally three months) in order to capture baseline conditions pre enabling works, as well as for the duration of the enabling works and construction period. An independent contractor will be appointed to carry out this monitoring. The TA Luft limit value is 350 mg/m^2/day during this monitoring period. Following the laboratory analysis of the monthly monitoring samples (typically 15 day turnaround), results will be reported on a monthly basis. If requested by Fingal County Council this monitoring report will be made available. If dust deposition rates exceed 350 mg/m^2/day, Fingal County Council will be notified of any exceedance within 24 hours. In the event of an exceedance the procedures, site activities and appropriate application of dust mitigation measures will be reviewed in consultation with Fingal County Council and improved to achieve a level below 350 mg/m^2/day in future monitoring.

23.3.6 Climate

Table 23.12 Mitigation measures – Climate

Ref.	Mitigation measure
Construction phase	
C01	During the construction phase the following best practice measures shall be implemented on site to prevent significant GHG emissions and reduce impacts to climate: ▪ Creating a construction program which allows for sufficient time to determine reuse and recycling opportunities for construction wastes; ▪ Appointing a suitably competent contractor who will undertake a pre-construction audit detailing resource recovery best practice and identify materials/building components that can be reused/recycled; ▪ Materials will be reused on site where possible; ▪ Prevention of on-site or delivery vehicles from leaving engines idling, even over short periods; ▪ Ensure all plant and machinery are well maintained and inspected regularly; ▪ Minimising waste of materials due to poor timing or over ordering on site will aid to minimise the embodied carbon footprint of the site;

Ref.	Mitigation measure
	▪ Material choices and quantities will be reviewed during detailed design, to identify and implement lower embodied carbon options where feasible. ▪ Sourcing materials locally where possible to reduce transport related CO_2 emissions; and ▪ The project shall review and determine compliance with the requirements set out in the EU Taxonomy Regulation (Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088 (Text with EEA relevance)) in relation to circular economy. This is specific to reuse, recycling and material recovery of construction wastes.
C02	These measures are supported by Glenveagh Properties PLC's Net Zero Transition Plan 2023, published in March 2023, which identifies the sources of Glenveagh Properties PLC's emissions and proposes measures to reduce these. A commitment to achieve a 55% reduction in Scope 3 (construction methods) emissions intensity (tCO2e per 100 m2 of complete floor area) by 2031 (using 2021 as the baseline year) will involve supplier engagement to make informed procurement decisions, engaging with subcontractors to support their transition to less carbon intensive fuels (diesel and gas oil is currently the norm) and investing in innovation of designing and building homes to reduce their associated embodied carbon. A reduction target of 46.2% by 2031 is also set in the plan for Scope 1 and 2 emissions (company operations). All targets have been validated by the Science Based Targets initiative (SBTi).
C03	Specific measures are proposed to reduce GHG emissions during the construction phase: ▪ An estimated total of approx. 41,000 tonnes of excavated material generated during the construction phase of the development site can be reused. This material re-use represents GHG savings of 378 tCO_2e (if avoidance of worst-case landfill disposal is assumed); ▪ Other materials such as concrete, bricks, tiles and ceramics, metals and timber may be diverted from waste processing by recycling or disposal in landfill, and can instead be reused on-site. This will reduce the associated CO_2 by approximately 32.6 tonnes; and ▪ Use of timber as a lower carbon option for frames for the house units.
C04	The Contractor will be required to mitigate against the effects of extreme rainfall/flooding through site risk assessments and method statements. The Contractor will also be required to mitigate against the effects of extreme wind/storms, temperature extremes through site risk assessments and method statements. All materials used during construction will be accompanied by certified datasheets which will set out the limiting operating temperatures. Temperatures can affect the performance of some materials, and this will require consideration during construction. During construction, the Contractor will be required to mitigate against the effects of fog, lighting and hail through site risk assessments and method statements.
Operational phase	
C05	As per the Residential Climate Action Energy Statement (Ethos Engineering, 2024) and the Life Cycle Report (McCauley Daye O'Connell Architects Ltd., 2024) (both submitted under separate cover with this planning application) the development will be a Nearly Zero Energy Building (NZEB) in accordance with the Building Regulations Technical Guidance Document L 2021 and the relevant sustainability policies within the Fingal Development Plan 2023-2028. Both

Ref.	Mitigation measure
	reports detail a number of design mitigation measures that have been incorporated into the design of the development to reduce the impact on climate wherever possible.
C06	Measures included in the proposed development to reduce the impact to climate from energy usage are: ▪ The residential units will aim to achieve a Building Energy Ratio (BER) of A2 (25-50 kwh/m2/yr with CO2 emissions <10 kg CO2/m2 per year).; ▪ Achieve air tightness standards of 3 m3/m2/hr; ▪ Ensure thermal bridging details are designed to achieve thermal bridging factors of 0.08W/m2K (0.15 W/m2k required in Part L); ▪ Energy Performance Coefficient (EPC) < 0.30; ▪ Carbon Performance Coefficient (CPC) < 0.35; ▪ Renewable Energy Ratio (RER) > 0.20; ▪ Meet or exceed minimum U-Value standards identified in Part L 2022 Dwellings; ▪ A combination of low energy strategies such as air to water heat pumps, mechanical ventilation heat recovery and/or natural ventilation will be decided and implemented to achieve A2 BER Rating; ▪ Provide an appropriate combination of technologies to ensure energy consumption is in line with Part L 2022 Dwellings requirements; ▪ Use of natural daylight will be maximised to reduce the need for artificial lighting; ▪ Where artificial lighting is required this will be in the form of energy efficient LED lighting within in the dwellings and common areas, with latter being on dusk-dawn profiles; ▪ White goods package planned for the houses and apartments will all have energy ratings ranging from B to A+++; ▪ Efficient water fittings to sanitaryware such as flow restrictors will be fitted to reduce water consumption; ▪ Solar gains will be optimised to reduce space heating demands during the winter months, whilst limiting summertime solar gains to reduce space cooling demands; ▪ Natural/passive ventilation in circulation areas, car parks and other common areas removes need for mechanical ventilation; ▪ All in-curtilage parking spaces will be capable of being fitted with EV charging points. All off-curtilage spaces will be ducted for EV charging, with 20% fitted out from the outset, equating to 27 no. spaces; ▪ High quality secure short-term and long-term bicycle parking facilities will be provided and the connectivity of onsite pedestrian and cycle infrastructure has been incorporated into the design of the proposed development; and ▪ The proposed development location maximises connectivity to existing and proposed public transport bus services, as well as by its proximity to Donabate railway station, providing sustainable alternative to private vehicles.
C07	Some measures have been incorporated into the design of the development to mitigate the impacts of future climate change. For example, adequate attenuation and drainage have been incorporated to avoid potential flooding impacts due to increased rainfall events in future years. These measures have been considered when assessing the vulnerability of the proposed development to climate.

23.3.7 Noise & Vibration

Table 23.13 Mitigation measures – Noise & Vibration

Ref.	Mitigation measure
Construction phase	
NV01	Best practice noise and vibration control measures will be employed by the contractor during the construction phase in order to avoid significant impacts at the nearest sensitive buildings. The best practice measures set out in BS 5228 Parts 1 and 2 will be complied with. This includes guidance on several aspects of construction site mitigation measures, including, but not limited to: ■ Selection of quiet plant; ■ Noise control at source; ■ Screening, and; ■ Liaison with the public. Noise control measures that will be employed include the selection of quiet plant, enclosures and screens around noise sources, limiting the hours of work and noise monitoring, where required.
NV02	The potential for any item of plant to generate noise will be assessed prior to the item being brought onto the site. The least noisy item will be selected wherever possible. Should a particular item of plant already on the site be found to generate high noise levels, the first action will be to identify whether said item can be replaced with a quieter alternative.
NV03	If replacing a noisy item of plant is not a viable or practical option, then consideration will be given to noise control at source. This refers to the modification of an item of plant or the application of improved sound reduction methods in consultation with the supplier. For example, resonance effects in panel work or cover plates can be reduced through stiffening or application of damping compounds; rattling and grinding noises can often be controlled by fixing resilient materials in between the surfaces in contact. The following best practice migration measures will be considered: ■ Site compounds will be located away from noise sensitive boundaries within the site constraints. ■ Lifting bulky items, dropping and loading of materials within these areas will be restricted to normal working hours. ■ For mobile plant items such as cranes, dump trucks, excavators and loaders, maintaining enclosure panels closed during operation can reduce noise levels over normal operation. Mobile plant will be switched off when not in use and not left idling. ■ For steady continuous noise, such as that generated by diesel engines, it may be possible to reduce the noise emitted by fitting a more effective exhaust silencer system. ■ For percussive tools such as pneumatic breakers, a number of noise control measures include fitting muffler or sound reducing equipment to the breaker tool and ensuring any leaks in the air lines are sealed. ■ Erecting localised screens around breaker or drill bit when in operation in close proximity to noise sensitive boundaries. ■ For concrete mixers, control measures will be employed during cleaning to ensure no impulsive hammering is undertaken at the mixer drum. ■ For all materials handling, ensure that materials are not dropped from excessive heights, lining drops chutes and dump trucks with resilient materials.

Ref.	Mitigation measure
	▪ For compressors, generators and pumps, these can be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation. ▪ All items of plant will be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures.
NV04	Screening is an effective method of reducing the noise level at a receiver location and can be used successfully as an additional measure to all other forms of noise control. Standard construction site hoarding (2.4 m in height) with a mass per unit of surface area greater than 7 kg/m^2 can provide adequate sound insulation. This will be installed along boundaries with residential receptors.
NV05	A designated Community Liaison Officer (CLO) will be appointed to site during construction works. Any noise complaints will be logged and followed up in a prompt fashion by the CLO. In addition, prior to particularly noisy construction activity (e.g. piling), the CLO will inform the nearest noise sensitive locations of the time and expected duration of the noisy works.
NV06	The phasing programme will be arranged so as to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity. If piling works are in progress on another site at the same time as other works of construction that themselves may generate significant noise and vibration, the working programme will be phased so as to ensure noise limits are not exceeded due to cumulative activities. This will be reviewed in relation to other potential cumulative works occurring on adjacent construction site in close proximity to noise sensitive properties which have the potential to lead to significant construction noise impacts.
Operational phase	
NV07	As part of the detailed design of the development, plant items and, where necessary, appropriately selected remedial measures (e.g. enclosures, silencers etc.) will be specified in order that the adopted plant noise criteria presented in Chapter 13 are complied with at the façades of noise sensitive properties, including those within the development itself.

Table 23.14 Monitoring – Noise & Vibration

Phase	Monitoring measure
Construction	During the construction phase, noise monitoring will be undertaken at the nearest sensitive locations to ensure construction noise limits outlined in Chapter 13 are not exceeded. Noise monitoring will be conducted in accordance with the International Standard ISO 1996: *Acoustics – Description, measurement and assessment of environmental noise Part 1* (2016) and *Part 2* (2017). The selection of monitoring locations will be based on the nearest sensitive buildings to the working areas. It is recommended that noise control audits are conducted at regular intervals throughout the construction programme in conjunction with noise monitoring. The purpose of the audits will be to ensure that all appropriate steps are being taken to control construction noise emissions and to identify opportunities for improvement, where required.

23.3.8 Landscape & Visual

Table 23.15 Mitigation measures – Landscape & Visual

Ref.	Mitigation measure
Construction phase	
LV01	The remedial measures proposed revolve around the implementation of appropriate site management procedures – such as the control of site lighting, storage of materials, placement of compounds, delivery of materials, car parking, etc. Visual impact during the construction phase will be mitigated somewhat through appropriate site management measures and work practices to ensure the site is kept tidy, dust is kept to a minimum, and that public areas are kept free from building material and site rubbish.
LV02	Site hoarding will be appropriately scaled, finished and maintained for the period of construction of each section of the works as appropriate. To reduce the potential negative impacts during the construction phase, good site management and housekeeping practices will be adhered to. The visual impact of the site compound and scaffolding visible during the construction phase are of a temporary nature only and therefore require no remedial action other than as stated above. It is noted that a Construction Environmental Management Plan (CEMP) has been prepared by DBFL Consulting Engineers (2024), as submitted under separate cover.
LV03	Existing trees and woodlands to be retained and are shown in the Landscape Design Report prepared by CSR (included under separate cover as part of this planning application) and Arboricultural Impact Assessment & Method Statement and associated drawings prepared by John Morris Arboricultural Consultancy (included under separate cover as part of this planning application). Existing trees to be retained are particularly sensitive to negative impacts during the construction phase if proper protection measures are not adhered to. With regard to the protection of the retained trees on site during proposed construction works, reference should be made to 'BS5837: Trees in relation Design, Demolition and Construction – Recommendations' (BSI, 2012). Tree protection details have been included in the Arboricultural Impact Assessment & Method Statement and associated drawings (included under separate cover as part of this planning application).
LV04	Reducing the footprint of all construction works wherever feasible and ensuring the remainder of the land is retained as green field will also limit any adverse effects during the construction phase.
LV05	**Visual impact of construction works** - Follow appropriate site management procedures, including control of site lighting, storage of materials, placement of compounds, delivery of materials, car parking, etc.
LV06	**Landscape character** - Maintain the character of the site by installing proposed planting in accordance with the proposed landscape plans by CSR Landscape Architects, included separately as part of this planning application.
LV07	**Existing vegetation** - To protect trees to be retained, fell adjacent trees to be removed and grind out stumps in accordance with BS5837:2012. Tree / hedgerow protection works to be carried out in accordance with Arboricultural Impact Assessment & Method Statement and associated drawings prepared by John Morris Arboricultural Consultancy (included under separate cover as part of this planning application).
Operational phase	

Ref.	Mitigation measure
LV08	The design of the proposed development incorporates significant consideration in respect of best practice layouts and for successful integration into the receiving environment. The architectural layout aims to address visual impacts by proposing variety in scale and massing of buildings. Elevations and materiality complement local styles and character.
LV09	The retention of hedgerows and trees, where feasible, and the planting of additional trees and shrubs throughout the site and open spaces, where possible, will reduce the visual mass of the buildings, soften and partially screen the development over time from various viewpoints, as identified in the assessment, thereby minimising the visual impacts while creating quality of place and residential amenity. The landscape design strategy creates an open space system through the wider masterplan area and centrally through Phase 2, using the retained hedgerow system, creating a total of 13,646 sqm of public open space and imparting a maturity to the new development.
LV10	Landscape works necessary for the creation of a development of quality are proposed with the effect of also avoiding or minimising adverse effects generated due to the proposed development. The planting of substantial numbers of new trees and other planting in the open spaces, the site boundaries and internal roads, both native and ornamental varieties, will enhance the overall appearance of the proposed development and compensate for the removal of hedgerows and trees, where needed, for the construction works, and increase the overall landscape capacity of the site to accommodate development. Native and appropriate planting for biodiversity has been incorporated into the scheme in accordance with the advice of the Project Ecologist.
LV11	Public open spaces have been designed as part of an overall design strategy that focuses on creating a 'sense of place' and individual character for the development area. The quality of the public realm scheme is of a high standard and the quality of materials proposed is similarly high and robust.
LV12	Best practice horticultural methods will be applied to ensure that mitigation measures establish and grow appropriately. Landscape tender drawings and specifications will be produced to ensure that the landscape work is implemented in accordance with best practice. This document will include tree work procedures, soil handling, planting and maintenance

Table 23.16 Monitoring – Landscape & Visual

Phase	Monitoring measure
Construction	The contract works will be supervised by a suitably qualified landscape architect. The planting works will be undertaken in the next available planting season after completion of the main civil engineering and building work.
Operational	This will consist of weed control, replacement planting, pruning etc. All landscape works will be in an establishment phase for the initial three years from planting. The company or public agency responsible for site management of the scheme will be responsible for the ongoing maintenance of the site after this three-year period is complete.

23.3.9 Cultural Heritage, Archaeology & Architectural Heritage

Table 23.17 Mitigation measures - Cultural Heritage, Archaeology & Architectural Heritage

Ref.	Mitigation measure
Construction phase	
CAA01	All ground disturbance works across the remainder of the development site will be monitored by a suitably qualified archaeologist. In the event that archaeological material is recorded during monitoring, further discussion/consultation with the DHLGH will be sought in order to ascertain the appropriate treatment (i.e. preservation by record/preservation *in situ*) of any additional archaeological remains.
CAA02	Should the DHLGH recommend preservation by record/full archaeological excavation, this work will be undertaken under the appropriate licence. The DHLGH may recommend preservation *in situ*, should avoidance of any newly discovered archaeological remains be possible.
Operational phase	
No mitigation is required as part of the operation of the proposed development.	

Table 23.18 Monitoring – Cultural Heritage, Archaeology & Architectural Heritage

Phase	Monitoring measure
Construction	Construction groundworks will be monitored by a suitably qualified archaeologist as per the above-listed mitigation. Any future licensed archaeological works will require an application process including approval of proposed methodologies by the National Monuments Service of DHLGH in consultation with the NMI and notification of works.

23.3.10 Microclimate – Daylight & Sunlight

Ref.	Mitigation measure
Construction phase	
No construction phase mitigation measures are proposed in relation to daylight & sunlight.	
Operational phase	
DL1	It was found that one room (in block BZ03) does not comply with the BRE Guide recommendation for daylight, and the compensatory measures have been outlined below: ▪ Daylight adjacency - In cases where a room falls below the target, adjacent rooms within the unit were found to be comfortably compliant. Therefore, each unit has well-daylit rooms, even if the assessed room is slightly below the target. ▪ Sunlight - The KLD with below target Spatial Daylight Autonomy receive over 1.5 hours of sunlight (Minimum exposure). Therefore, whilst the room was found to be non-compliant for daylight, its unit achieves the above the requisite sunlight availability for compliance. ▪ Dual Aspect - The unit has the added benefit of dual aspect ensuring multiple options for aspect and sunlight / daylight availability. ▪ Aspect - In addition to the private amenity space, this unit has direct aspect out onto landscaped communal or public open space providing an excellent view from the KLD space.

Ref.	Mitigation measure
	▪ Unit Size- The Sustainable Urban Housing – Design Standards for New Apartments 2023 require that the majority of units in a development exceed the minimum floor area standards by 10%. This unit exceeds the minimum floor areas by >10%. ▪ Communal Open Space- Compensatory measures have been provided outside of the individual units with a large portion of the site being landscaped for communal open space. The proposed development includes the provision of a large quantum of communal open space. The standards in the Apartment Guidelines would require 1,432m^2 of communal open space and the proposal includes 46% more than that at 3,142m^2.
No operational phase mitigation measures for are proposed in relation to sunlight.	

23.3.11 Microclimate – Wind

Beyond what is already proposed under the scope of the proposed development, no further mitigation is proposed in relation to wind.

The landscaping proposed for the development has been considered within the wind analysis carried out and its effect has been beneficial in reducing the wind speed around the development and creating calmer wind condition in areas such the parks and landscaped areas where pedestrian can be comfortable for long-term sitting. Landscaping is simulated as porous zones within the CFD model.

23.3.12 Traffic & Transportation

Table 23.19 Mitigation measures – Traffic & Transportation

Ref.	Mitigation measure
Construction phase	
TT01	A Construction and Environmental Management Plan (CEMP) has been prepared by DBFL Consulting Engineers as part of this planning application (refer to standalone document submitted under separate cover) which includes the traffic management measures to be implemented to ensure the impacts of all building activities generated during the construction phase are fully considered and proactively managed / programmed thereby ensuring that safety is maintained, disruption is minimised and undertaken in a controlled hazard free / minimised environment. The measures detailed in the CEMP will be implemented through a Construction Traffic Management Plan (CTMP), to be developed in agreement with Fingal County Council in advance of the commencement of on-site works. This CTMP will include measures to promote sustainable mobility and car-sharing among construction personnel.
TT02	During the pre-construction phase, the site will be securely fenced off from adjacent properties, public footpaths and roads.
TT03	Appropriate on-site parking and compound area will be provided to prevent overflow onto the local network.
TT04	The traffic generated by the construction phase of the development will be strictly controlled in order to minimise the impact of this traffic on the surrounding road network and local properties. All HGV trips could potentially be restricted from traveling to / from the development during the local road network's peak hours.

Ref.	Mitigation measure
TT05	Truck wheel washes will be installed at construction entrances and any specific recommendations with regard to construction traffic management made by Fingal County Council will be adhered to.
TT06	Potential localised traffic disruptions during the construction phase will be mitigated through the implementation of industry standard traffic management measures. These traffic management measures shall be designed and implemented in accordance with the requirements of: ▪ Department of Transport, Tourism and Sport (DTTS) (2019). Chapter 8: Temporary Traffic Measures and Signs for Roadworks, in *Traffic Signs Manual*; ▪ DTTS (2013). *Design Manual for Urban Roads & Streets* ('DMURS'); ▪ Department of Transport (2010). *Guidance for the Control and Management of Traffic at Road Works (Second Edition);* and ▪ NRA (2015). *Design Manual for Roads and Bridges* ('DMRB').
TT07	Site entrance points from the DDR will be constructed with a bound, durable surface capable of withstanding heavy loads and with a sealed joint between the access and public highway. This durable bound surface will be constructed for a distance of 10m from the public highway.
TT08	Material storage zone will be established in the compound area and will include material recycling areas and facilities.
TT08	Way finding' signage will be provided to route staff / deliveries into the site and to designated compound / construction areas.
TT10	The construction works areas will be reinstated following completion of development with landscaped areas provided where proposed. The works will be restricted to the footprint of the site for the proposed development. Excavated topsoil and subsoil will be reused in reinstatement and landscaping where appropriate.
TT11	Dedicated construction haul routes will be identified and agreed with Fingal County Council prior to commencement of activities on-site.
TT12	Construction vehicle routing practices and construction vehicle parking practices will be undertaken if issues with regards to the routing of or parking of construction vehicles arise.
TT13	On completion of the works, all construction materials, debris, temporary hardstands etc. form the site compound will be removed off-site and the site compound area reinstated in full on completion of the works.
Operational phase	
TT14	A **Mobility Management Plan** (MMP) has been prepared by DBFL Consulting Engineers, and submitted under separate cover as part of the planning application. The MMP has the aim of guiding the delivery and management of coordinated initiatives by the scheme promotor to be implemented upon occupation of the site. The MMP will ultimately seek to encourage sustainable travel practices for all journeys to and from the proposed development through mode specific measures including: ▪ Providing a 'Welcome Pack' to all new residents when they move in with information on all modes of transport to/from the site, details of safe pedestrian and cycle routes, car share facilities and contact details of mobility manager. This 'Welcome Pack' will involve developing a dedicated MMP website/app that includes information on all travel opportunities to and from the site;

Ref.	Mitigation measure
	▪ Providing high quality walking & cycling infrastructure and connections to the wider network, develop a walking/cycling accessibility sheet for the site, discounted cycle purchase, bike service workshops, encouraging cycle trains to schools; ▪ Providing information to residents on annual/monthly TaxSaver tickets, develop a public transport accessibility sheet for the site, create a calendar of public transport events and incentives; and ▪ Implementing a **Car Parking Management Strategy** to control and actively manage the availability of on-site car parking for residents as detailed in the Parking Management Strategy, prepared by DBFL Consulting Engineers and submitted under separate cover as part of the application.

Table 23.20 Monitoring- Traffic & Transportation

Phase	Monitoring measure
Construction	During the construction stage, the following monitoring measures are proposed: ▪ If issues with regards to the routing of construction vehicles occurs, then compliance with construction vehicle routing practices will be undertaken; ▪ If issues with regards the parking of construction vehicles on the surrounding network occurs, then compliance with construction vehicle parking practices will be undertaken; ▪ If issues with regards the condition of the surrounding road network occur, then internal and external road conditions will be monitored; and ▪ If issues with regards the timing or programming of construction activities occur, then timing of construction activities will be monitored. The construction works areas will be reinstated following completion of development with landscaped areas provided where proposed. The works will be restricted to the footprint of the site for the proposed development. Excavated topsoil and subsoil will be reused in reinstatement and landscaping where appropriate or dealt with in the appropriate manner i.e. sent for soil recovery as appropriate.
Operation	As part of the MMP process, bi-annual post-occupancy surveys are to be carried out in order to determine the success of the measures and initiatives as set out in the proposed MMP document. The information obtained from the monitoring surveys will be used to identify ways in which the MMP measures and initiatives should be taken forward in order to maintain and further encourage sustainable mobility and a modal shift away from internal combustion engine (ICE) vehicles.

23.3.13 Material Assets – Waste

Table 23.21 Mitigation measures - Material Assets – Waste

Ref.	Mitigation measure
Construction phase	
WA01	A project specific RWMP has been prepared in line with the requirements of the requirements of the EPA *'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects'* (2021) and is included as **Appendix 19.1**. The mitigation measures outlined in the RWMP will be implemented in full and form part of the mitigation strategy for the site. The mitigation measures presented in this RWMP will ensure

Ref.	Mitigation measure
	effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the excavation and construction phases of the proposed development.
WA02	Prior to commencement, the appointed Contractor(s) will be required to refine / update the RWMP (**Appendix 19.1**) in agreement with FCC, or submit an addendum to the RWMP to FCC, detailing specific measures to minimise waste generation and resource consumption, and provide details of the proposed waste contractors and destinations of each waste stream.
WA03	The Contractor will be required to fully implement the RWMP throughout the duration of the proposed construction phase.
WA04	A quantity of topsoil and sub soil will need to be excavated to facilitate the proposed development. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site.
WA04	In addition, the following mitigation measures will be implemented: ▪ Building materials will be chosen with an aim to 'design out waste'; ▪ On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling and recovery. The following waste types, at a minimum, will be segregated: □ Concrete rubble (including ceramics, tiles and bricks); □ Plasterboard; □ Metals; □ Glass; and □ Timber. ▪ Left over materials (e.g. timber off-cuts, broken concrete blocks / bricks) and any suitable construction materials shall be re-used on-site, where possible; (alternatively, the waste will be sorted for recycling, recovery or disposal); ▪ All waste materials will be stored in skips or other suitable receptacles in designated areas of the site; ▪ Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required); ▪ A Resource Manager (RM) will be appointed by the main Contractor(s) to ensure effective management of waste during the excavation and construction works; ▪ All construction staff will be provided with training regarding the waste management procedures; ▪ All waste leaving site will be reused, recycled or recovered, where possible, to avoid material designated for disposal; ▪ All waste leaving the site will be transported by suitably permitted contractors and taken to suitably registered, permitted or licenced facilities; and ▪ All waste leaving the site will be recorded and copies of relevant documentation maintained.
WA05	Nearby sites requiring clean fill material will be contacted to investigate potential reuse opportunities for clean and inert material, if required. If any of the material is to be reused on

Ref.	Mitigation measure
	another site as by-product (and not as a waste), this will be done in accordance with Regulation 27 (By-products), as amended, European Union (Waste Directive) Regulations 2011-2020. EPA approval will be obtained prior to moving material as a by-product.
WA06	These mitigation measures will ensure that the waste arising from the construction phase of the proposed development is dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated Regulations and the Litter Pollution Act 1997 and the NWCPE. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will promote more sustainable consumption of resources.
Operational phase	
WA07	All waste materials will be segregated into appropriate categories and will be temporarily stored in appropriate bins or other suitable receptacles in a designated, easily accessible areas of the site.
WA08	As previously stated, a project specific OWMP has been prepared and is included as **Appendix 19.2**. The mitigation measures outlined in the OWMP will be implemented in full and form part of the mitigation strategy for the site. Implementation of this OWMP will ensure a high level of recycling, reuse and recovery at the development. All recyclable materials will be segregated at source to reduce waste contractor costs and ensure maximum diversion of materials from landfill, thus achieving the targets set out in the NWMPCE, Waste Action Plan for a Circular Economy – Waste Management Policy in Ireland and the FCC waste bye-laws.
WA09	The Facilities Management Company / Residents of the site during the operational phase will be responsible for ensuring – allocating personnel and resources, as needed – the ongoing implementation of this OWMP, ensuring a high level of recycling, reuse and recovery at the site of the proposed development.
WA10	In addition, the following mitigation measures will be implemented: ▪ The Residents / Facilities Management will ensure on-site segregation of all waste materials into appropriate categories, including (but not limited to): ▫ Organic waste; ▫ Dry Mixed Recyclables; ▫ Mixed Non-Recyclable Waste; ▫ Glass; ▫ Waste electrical and electronic equipment (WEEE); ▫ Batteries (non-hazardous and hazardous); ▫ Cooking oil; ▫ Light bulbs; ▫ Cleaning chemicals (pesticides, paints, adhesives, resins, detergents, etc.); ▫ Furniture (and from time to time other bulky waste); and ▫ Abandoned bicycles. ▪ The Residents / Facilities Management will ensure that all waste materials will be stored in colour coded bins or other suitable receptacles in designated, easily accessible locations. Bins will be clearly identified with the approved waste type to ensure there is no cross contamination of waste materials; ▪ The Residents / Facilities Management will ensure that all waste collected from the site of the proposed development will be reused, recycled or recovered, where possible, with

Ref.	Mitigation measure
	the exception of those waste streams where appropriate facilities are currently not available; and ■ The Residents / Facilities Management will ensure that all waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licensed facilities.
WA11	These mitigation measures will ensure the waste arising from the development is dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated Regulations, the Litter Pollution Act 1997, The NWMPCE and the FCC waste bye-laws. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved.

Table 23.22 Monitoring- Material Assets – Waste

Phase	Monitoring measure
Construction	The objective of setting targets for waste management is only achieved if the actual waste generation volumes are calculated and compared. This is particularly important during the excavation and construction works, where there is a potential for waste management objectives to become secondary to other objectives, i.e. progress and meeting construction schedule targets. The mitigation measures in the RWMP specify the need for a Resource Manager to be appointed, who will have responsibility for monitoring the actual waste volumes being generated and ensuring that contractors and sub-contractors are segregating waste as required. Where targets are not being met, the Resource Manager will identify the reasons for this and work to resolve any issues. Recording of waste generation during the construction phase of the proposed development will enable better management of waste contractor requirements and identify trends. The data should be maintained to advise on future developments.
Operation	During the operational phase, waste generation volumes will be monitored by the Operator / Facilities Management against the predicted waste volumes outlined in the OWMP. There may be opportunities to reduce the number of bins and equipment required in the WSAs, where estimates have been too conservative. Reductions in bin and equipment requirements will improve efficiency and reduce waste contractor costs.

23.3.14 Material Assets – Services

Table 23.23 Mitigation measures - Material Assets – Services

Ref.	Mitigation measure
Construction phase	
SE01	The exact locations of the below ground ESB Networks infrastructure will be confirmed through excavation by the Contractor, including slit trenches, in order to determine the exact location of the below ground network. This will mitigate against the risk of damage to underground electricity network during the excavation phase prior to diverting the ESB network. The ESB diversion shall be carried out by ESB and its new location clearly documented to mitigate the risk of a cable duct damage during the construction phase.
SE02	The Contractor will be obliged to put measures in place to ensure that there are no interruptions to existing services in compliance with Safe Construction and the Electricity

Ref.	Mitigation measure
	Network published by ESBN and all services and utilities are maintained unless this has been agreed in advance with ESB Networks.
SE03	All works in the vicinity of ESB Networks infrastructure will be carried out in ongoing consultation with ESB Networks and will be in compliance with any requirements or guidelines they may have including procedures to ensure safe working practices are implemented when working near live overhead/underground electrical lines. Works will be in compliance with Health & Safety Authority (HSA) *Code of Practice for Avoiding Danger from Underground Services* (2016), and the *ESB Networks & Health and Safety Authority Code of Practice for Avoiding Danger from Overhead Electricity Lines* (2019).
SE04	Existing Gas Networks Ireland gas main requires a diversion and this will be carried out by GNI in accordance with *HSA Code of Practice for Avoiding Danger from underground services*.
SE05	Utility Records identify the location of power lines and have informed detailed design. Prior to excavation the Contractor will carry out additional site investigation, including slit trenches, in order to determine the exact location of the telecommunications networks in close proximity to the works area. This will ensure that the underground telecommunications network will not be damaged during the construction phase.
SE06	The Contractor will be obliged to put measures in place to ensure that there are no interruptions to existing services and all services and utilities are maintained unless this has been agreed in advance with the relevant telecommunication provider.
SE07	All works in the vicinity of the telecommunications providers infrastructure will be carried out in ongoing consultation with the relevant provider and will be in compliance with any requirements or guidelines they may have. Consultation has been undertaken between the applicant and both Eir and Virgin Media with both utility companies providing information on their design to allow this be integrated into the overall design of site services.
SE08	Where new services are required, the Contractor will apply to the relevant provider for a connection permit where appropriate and will adhere to their requirements to ensure safety of installation.
SE09	Mitigation measures proposed in relation to the drainage and water infrastructure include the following: ▪ A site-specific Construction and Environmental Management Plan (CEMP) will be developed and implemented during the construction phase. Site inductions will include reference to the procedures and best practice as outlined in the CEMP. ▪ Surface water runoff from areas stripped of topsoil and surface water collected in excavations will be directed to on-site settlement ponds where measures will be implemented to capture and treat sediment laden runoff prior to discharge of surface water at a controlled rate. ▪ Weather conditions and seasonal weather variations will be taken into account when planning stripping of topsoil and excavations, with an objective of minimizing soil erosion and silt run-off. Short term weather forecasts will also be taken into account. ▪ In order to mitigate against spillages contaminating the surrounding surface water and hydrogeological environments, all oils, fuels, paints and other chemicals shall be stored in a secure bunded hardstand area in the construction compound. Refuelling and servicing of construction machinery will take place in a designated hardstand area which will be remote from any surface water inlets and outlets (where it is not possible to carry out

Ref.	Mitigation measure
	such activities off site). Hydrocarbon spill kits will be available and to hand for refuelling crews in the event of any spills. ■ Concrete batching will take place off site and wash out of concrete chutes will take place at designated locations in the site and the washout of truck drums will take place after back at the batching plant to minimise pollution release within the subject site. ■ Discharge from any vehicle wheel wash areas will be directed to on-site settlement ponds for treatment prior to discharge to the local environment. ■ Groundwater pumped from excavations is to be directed to on-site settlement ponds for treatment prior to discharge to the local environment. ■ The construction compound will include adequate staff welfare facilities including foul drainage and potable water supply. Foul drainage discharge from the construction compound will be tinkered off site to a licensed facility until a connection to the public foul drainage network has been established. ■ The construction compound's potable water supply shall be located where it is protected from contamination by any construction activities or materials.
Operational phase	
SE10	As part of the planning submission a detailed Energy Statement has been completed to summarise the mitigation undertaken in the design to reduce energy consumption and carbon emissions. The main points from this are summarised as follows: ■ U-values for floor and roof will exceed the building regulation backstops. ■ Using Glazing U-Value target outlined in this report. ■ Better performance air permeability than the backstop, adding to building air tightness and ventilation effectiveness. ■ Efficient lighting design. ■ Ventilation strategy to mitigate the risk of overheating. Exhaust Air Heat Pump (EAHP) for apartments and Air Source Heat Pump for houses to provide space Heating (via radiators) and domestic hot water. ■ The proposed development will meet or exceed where feasible the requirements of Part L of the Building Regulations.
SE11	The ESB review the electrical demand requirements for all proposed developments and confirm if the public network has capacity to cater for same, with or without network upgrades, prior to connection to the public network. This review is undertaken following a grant of planning permission. Should network upgrades be required these would benefit the local community as it would modernise the network in this area.
SE12	The design of proposed site levels (roads, finished floor levels etc.) was completed to replicate existing surface contours, break lines etc., therefore replicating existing overland surface water flow paths, to minimise changes to the site characteristics and not concentrating water run-off in any particular location(s). Surface water runoff from the site will be attenuated to the existing greenfield runoff rate as outlined in the Greater Dublin Strategic Drainage Study (GDSDS). Surface water discharge rates will be controlled by Hydrobrake type vortex flow control devices, located at all attenuation areas, in conjunction with attenuation storage in both locations.
SE13	The design of the proposed development incorporates the following SuDS surface water treatment train solutions:

Ref.	Mitigation measure
	▪ Permeable paving in driveway areas. ▪ Surface water runoff from roofs will be routed to the proposed surface water pipe network via the porous aggregates beneath permeable paved driveways. ▪ Surface water runoff from roads, where allowable, will drain to swales for treatment and runoff reduction. ▪ Attenuation of the 100-year return event storms with a 20% allowance for climate change. ▪ Installation of flow control devices (Hydrobrake or similar) limiting surface water discharge from the site to greenfield runoff rates ▪ Surface water discharge to pass via Class 1 fuel / oil separator (sized in accordance with permitted discharge from the site). ▪ Non-Return Valve fitted at outlet locations to prevent any water from the drainage ditches from draining back into the systems.
SE14	All new foul drainage pipes will be pressure tested and will be subject to an internal CCTV survey in order to identify any possible defects prior to being made operational.

Table 23.24 Monitoring- Material Assets – Services

Phase	Monitoring measure
Construction	All works shall be carried out in accordance with ESB Code of Practice for Electrical Infrastructure. Laying of cables and testing of same will be in accordance with ESB standard details. The works shall be inspected on an ongoing basis during construction by both the applicant's engineers and ESB site Engineer. Applicable testing shall be carried out prior to connection to the electrical Grid. ESB metering will be provided to all units.
	Diversion of existing natural gas on the site will be carried out by GNI the utility provider.
	All works shall be carried out in accordance with the relevant telecoms providers code of Practice. Building Specification for Open eir's Telecoms Infrastructure requirements Version 2.0 February 2021 and Virgin Media New Development handbook Version 1.63 Dec 2019. Laying of ducts and cables and testing of same will be in accordance with their standard details. The works shall be inspected on an ongoing basis during construction by both the applicant's engineers and relevant telecommunication provider. Applicable testing shall be carried out prior to connection to the network.
	Proposed monitoring in relation to the water and hydrogeological environment are as follows: ▪ Inspection and maintenance of fuel / oil separators. ▪ Inspection and maintenance of the internal road network for wear and tear that could cause silt release. ▪ Inspection and maintenance of attenuation and hydrobrake infrastructure. During the operational phase, an inspection and maintenance contract is to be implemented in relation to the proposed Class 1 fuel / oil separators, hydrobrakes and attenuation facilities

Brady Shipman Martin

DUBLIN
Mountpleasant Business Centre
Mountpleasant Avenue Upper
Ranelagh
Dublin 6

CORK
Penrose Wharf Business Centre
Penrose Wharf
Cork

LIMERICK
11 The Crescent
Limerick

+353 1 208 1900
mail@bradyshipmanmartin.com
www.bradyshipmanmartin.com