Volume 2

Environmental Impact Assessment Report

FOR

SHD Residential Development

AT

Balscadden, Howth,

Co. Dublin.

March 2022

ON BEHALF OF

Balscadden GP3 Ltd

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPENDICES

1 INTRODUCTION AND METHODOLOGY

1.1 Introduction

This Environmental Impact Assessment Report (**EIAR**) has been commissioned by the applicant, Balscadden GP3 Limited, in respect of a proposed Strategic Housing Development. This EIAR has been compiled in accordance with all current legislation and best practice guidance. This Chapter describes the methodology by which the Environmental Impact Assessment (**EIA**) was carried out and the EIAR was completed. The methodology used is broadly consistent across all chapters in order to ensure the EIAR is clear and easy to navigate.

The Proposed Development (as defined in Chapter 2) relates to:

Lands located to the south of the Martello Tower on Balscadden Road & the former Baily Court Hotel, Main Street, Howth, County Dublin. The development will consist of the demolition of existing structures on the proposed site including the disused sports building and the former Baily Court Hotel buildings and the construction of a residential development set out in 4 no. residential blocks, ranging in height from 2 to 5 storeys to accommodate 180 no. apartments with associated internal residential tenant amenity and external courtyards and roof terraces, 1 no. retail unit and 2 no. café/retail units. The site will accommodate car parking spaces at basement level and bicycle parking spaces at basement and surface level. Landscaping will include new linear plaza which will create a new pedestrian link between Main St and Balscadden Rd to include the creation of an additional 2 no. new public plazas and also maintains and upgrades the pedestrian link from Abbey Street to Balscadden Road below the Martello Tower.

1.2 Definition of EIA and EIAR

EIA is a systematic examination of the potential impacts of a Proposed Development on the environment. In assessing the environmental impacts this EIAR will evaluate the existing situation and assess any potential impacts of the Proposed Development. Where potential impacts are identified proposed mitigation measures will be identified. In addition, the in-combination effects of any other known plans or projects will be identified and assessed.

Under Schedule 5 of the Planning and Development Regulations 2001, as amended, (the **Planning Regulations**), an EIAR is required to accompany certain planning applications for specified projects as part of the EIA process.

The EIAR describes the outcomes of the iterative EIA process which was progressed in parallel with the Proposed Development design process. In doing so, it forms the first part of the EIA process that will be completed by the Planning Authority, as the competent authority, which in turn will be required to examine, analyse, and evaluate the direct and indirect effects of the development on the various factors listed in Directive 2011/92/EU, as amended by 2014/52/EU (the **EIA Directive**).

> *"The EIAR should be prepared at a stage in the design process where changes can still be made to avoid adverse effects. This often results in the modification of the project to avoid or reduce effects through redesign" (EPA, 2017)*

Where significant and likely environmental effects are identified that are unacceptable, the EIA process aims to quantify and minimise the effects of the impact that the specified development has on the environment through appropriate mitigation measures and where necessary, subsequent monitoring.

This process is illustrated in Fig 1-1.

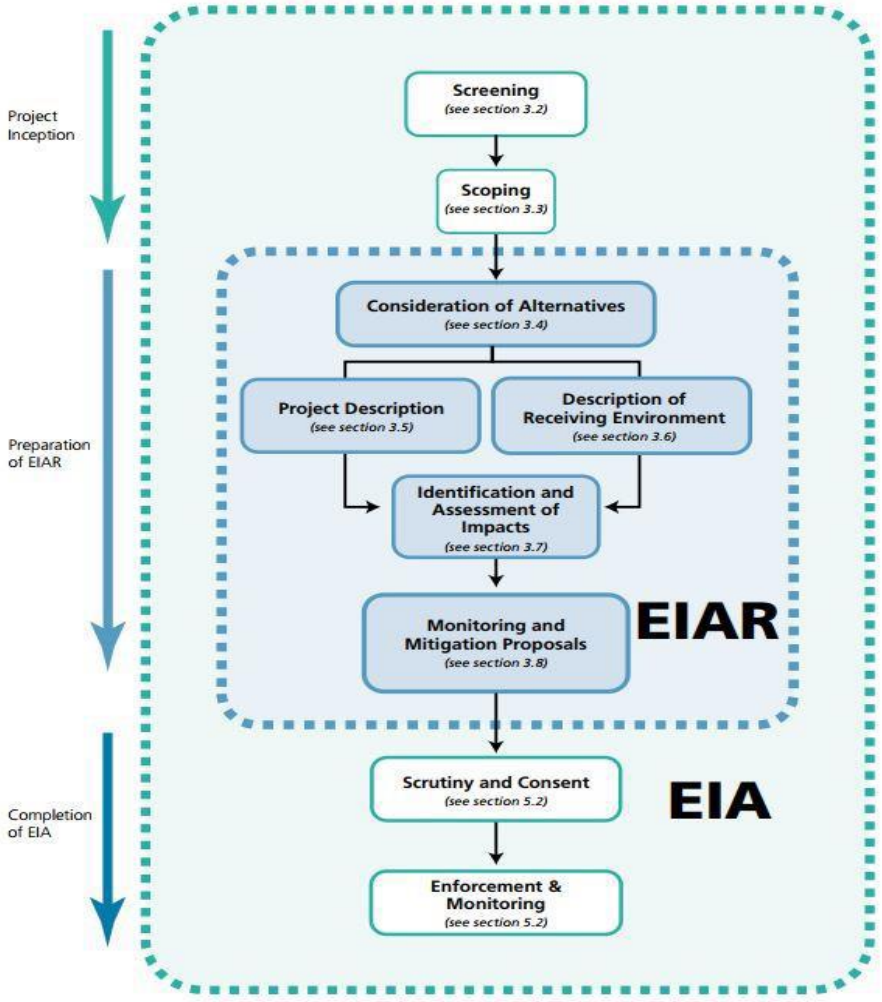


Figure 1-1 EIA Process

The purpose of the EIAR is to provide the Planning Authority with information on the likely and significant effects on the environment by the Proposed Development. This EIAR was prepared in parallel with the Proposed Development design process and reflects the potential cumulative impact of other developments.

1.3 EIA Legislation

The EIA Directive requires EIA to be carried out for certain projects as listed in Annex I of the Directive. The EIA Directive is transposed into Irish law through the Planning and Development Act 2000 (as amended) (the **Planning Act**) and the Planning Regulations.

1.4 EIA Guidelines

This EIAR has been prepared in accordance with all relevant guidance. The documents listed below are common to all chapters. Additional specific guidelines will be referred to in each specific chapter.

- Guidelines on the Information to be contained in Environmental Impact Statements (EPA 2002);
- Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (EPA 2003);
- Draft Advice Notes for Preparing Environmental Impact Statements (EPA draft September 2015a);
- Draft Revised Guidelines on the Information to be Contained in Environmental Impact Statements (EPA draft September 2015b);
- Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA draft August 2017);
- Environmental Assessments of Plans, Programmes and Projects – Rulings of the Court of Justice of the European Union (European Union 2017);
- Environmental Impact Assessment of Projects – Guidance on Scoping (Directive 2011/92/EU as amended by 2014/52/EU) (European Union 2017);
- Guidance of Integrating Climate Change and Biodiversity into Environmental Impact Assessment (European Union 2013);
- Environmental Impact Assessment of Projects – Guidance on the preparation of the Environmental Impact Assessment Report (European Union 2017);
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Environment, Community and Local Government 2013);
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Government of Ireland 2018);
- Key Issues Consultation Paper on the Transposition of 2014 EIA Directive (2014/52/EU) in the Land Use Planning and EPA Licencing Systems; (Department of Housing, Planning, Community and Local Government 2017);
- Circular PL 05/2018 -Transposition into Planning Law of Directive 2014/52/EU amending Directive 2011/92/EU on the effects of certain public and private projects on the environment (the EIA Directive) And Revised Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning and Local Government 2018);

- Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions (European Communities 1999);
- Implementation of Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (European Communities 2003); and
- Appropriate Assessment Screening for Development Management; OPR Practice Note PN01(Office of the Planning Regulator March 2021).

The EIA Directive defines EIA as a process. Article 1(2)(g) states that EIA means:

> *"(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".*

The EIA Directive requires the EIAR to identify, describe and assess, in an appropriate manner and in light of each individual case, the direct, indirect and cumulative significant effects of the Proposed Development on factors of the environment including:

- Population and human health
- Biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC (respectively, the Habitats Directive and the Birds Directive)
- Land, soil, water, air, and climate
- Material assets, cultural heritage, and the landscape
- The interaction between the factors referred to in points (a) to (d)

1.5 Screening for EIA

'Screening' is the term used to describe the process for determining whether a Proposed Development requires an EIA by reference to mandatory legislative threshold requirements or in the case of sub threshold development, by reference to the type and scale of the Proposed Development and the significance or the environmental sensitivity of the receiving baseline environment.

Annex 1 of the EIA Directive requires as mandatory an EIA for all development projects listed therein.

Schedule 5, Part 1, of the Planning Regulations transposes Annex 1 of the EIA Directive directly into Irish planning legislation. An EIAR is required to accompany a planning application for development of a class set out in Schedule 5, Part 1 of the Planning Regulations which exceeds a limit, quantity or threshold set for that class of development.

Schedule 5, Part 2 of the Planning Regulations defines projects that are assessed on the basis of set mandatory thresholds for each of the project classes including:

> *"Schedule 5, Part 2 - Infrastructure projects*
>
> *10(b)(i) Construction of more than 500 dwelling units.*

As the number of dwelling units proposed is less than 500, the Proposed Development does not require a mandatory EIA. In the circumstances, although a mandatory EIA is not triggered for the Proposed Development, if it is likely to have a significant effect on the environment, having regard to the criteria set out in Schedule 7, an EIA will be required. The criteria set out in Schedule 7 require regard to be had to:

- The characteristics of the Proposed Development;
- The location of the Proposed Development; and
- The characteristics of potential impacts.

Having regard to those criteria and the matters more particularly set out in Schedule 7, and considering the features of this site, an EIAR has been prepared to accompany the Strategic Housing Development application to An Bord Pleanála.

1.6 Scope of the EIAR

'Scoping' is a process of deciding what information should be contained in an EIAR and what methods should be used to gather and assess that information. It is defined in EC Guidance on EIA Scoping 2001[1] as:

> *'Determining the content and extent of the matters which should be covered in the environmental information to be submitted in the EIAR'*

[1] Guidance on EIA Scoping European Commission June 2001

The content of this EIAR was informed by a scoping process carried out by the applicant, design team and EIAR consultants to identify the core issues likely to be most important during the EIA process.

The EIAR prepared for the Proposed Development has endeavoured to be as thorough as possible and therefore all of the issues listed in Schedule 6, Sections 1 and 2 of the Planning Regulations have been addressed.

The scope of this EIAR has had regard to the documents listed in Section 1.4 above, together with:

- The requirements of Part X of the Planning Act and also Part 10 of the Planning Regulations;
- The requirements of the Fingal Development Plan 2017-2023;
- The requirements of the Draft Fingal Development Plan 2023-2029;
- Relevant Regional and National Planning Policy Documents;
- The receiving environment and any vulnerable or sensitive local features and current uses;
- Previous relevant planning history and applications that have been submitted on the subject and adjoining lands;
- The likely and significant impacts of the Proposed Development on the environment; and
- Available mitigation measures for reducing or eliminating any potentially significant undesirable impacts.

In addition, the individual chapters of this EIAR should be referred to for further information on the documents consulted by each individual consultant.

1.7 Purpose and Objectives of the EIAR

The purpose of this EIAR is to assist in the EIA process, by identifying likely significant environmental impacts resulting from the Proposed Development, to describe the means and extent by which they can be reduced or mitigated, to interpret and communicate information about the likely impacts and to provide an input into the decision making and planning process.

The fundamental principles to be followed when preparing an EIAR are:

- Anticipating, avoiding, and reducing significant effects;
- Assessing and pursuing preventative action;
- Maintaining objectivity;

- Ensuring clarity and quality;
- Providing relevant information to decision makers; and
- Facilitating public and stakeholder consultation.

EIA is an iterative process. The EIAR captures this assessment process and describes its outcomes. The EIAR documents the consideration of environmental effects and provides transparent, objective and replicable documentary evidence of the EIA evaluation and decision-making processes.

The EIAR provides information on any identified effects arising as a consequence of the Proposed Development and which:

- Are environmentally based;
- Are likely to occur; and
- Have significant and adverse effects on the environment.

It also documents how the design of the Proposed Development incorporates measures for the purposes of impact avoidance, reduction or amelioration; as well as to explain how significant adverse effects will be avoided.

The key objective of this EIAR is to inform the Planning Authority on the acceptability of the Proposed Development, in carrying out an EIA, in order to reach a decision in the full knowledge of the Proposed Development's likely significant impacts on the environment, if any.

1.8 Format and Structure of this EIAR

The formation of an EIAR necessitates the co-ordination and collation of associated, yet diverse specialised areas of assessment. The EIA approach involves the examination of each environmental factor, describing the existing baseline environment, the Proposed Development, its likely impacts and direct and indirect significant effects pertaining to that environmental factor and mitigation measures, where appropriate.

The topics examined in this EIAR are categorised under the environmental factors prescribed under the EIA Directive:

- Population and Human Health
- Biodiversity
- Land & Soils
- Water
- Air

- Climate
- Material Assets
- Cultural Heritage
- Landscape

The expected effects deriving from the vulnerability of the Proposed Development to risks of major accidents and/or disasters must also be examined.

The structure of the EIAR is set out in Table 1-1 below.

Table 1-1: Structure of the EIAR

Chapter	Title	Content
1	Introduction and Methodology	Chapter 1 sets out the purpose, methodology and scope of the document.
2	Description of the Proposed Development & Assessment of Alternatives	As required under Article 5(1)(a), Chapter 2 provides a description of the site, design and scale of Proposed Development, and as required under Article 5(d), an evaluation of the reasonable alternative design approaches.
3	Planning and Development Context	Chapter 3 sets the national, regional and local policy framework for the Proposed Development.
4	Population and Human Health	Chapter 4 covers the requirement for assessment on potentially significant effects to population and human health as required under Article 3(1)(a).
5	Biodiversity	Chapter 5 covers the requirement of Article 3(1)(b) to assess potentially significant effects on biodiversity (which previously referred only to 'fauna and flora'), having particular attention to species and habitats protected under the Habitats Directive and the Birds Directive.
6	Land and Soils	Chapter 6 covers the requirement under Article 3(1)(c) on Land and Soil to assess the type of soil and geology in the area of the Proposed Development and identifies any potentially significant effects.
7	Hydrology	Chapter 7 covers the requirement under Article 3(1)(c) to assess potentially significant effects to water quality arising from the Proposed Development. This chapter will assess any potential effects from pollution and discharges to surface water.

8	Air Quality and Climate	Chapter 8 covers the requirement under Article 3(1)(c) on Air and Climate to assess potentially significant effects to air quality in the surrounding environment.
9	Noise and Vibration	Chapter 9 covers the requirement to assess potentially significant effects from airborne noise and vibration as required under Article 3(1)(a) on Human Health.
10	Landscape and Visual Amenity	Chapter 10 covers the requirement under Article 3(1)(d) to assess potentially significant effects on the landscape. This chapter will assess any potential visual impacts to landscape caused by the Proposed Development.
11	Archaeology and Cultural Heritage.	Chapter 11 covers the requirement under Article 3(1)(d) to assess potentially significant effects on cultural heritage.
12	Material Assets _Traffic, Utilities and Waste Management	Chapter 12 covers the requirement under Article 3(1)(d) to assess potentially significant effects on material assets. This chapter will identify impacts to existing utilities and infrastructure from the development of the Proposed Development. Article 5(1), Annex IV, point 1(d) requires estimates of quantities and types of waste produced during construction and operation phase. Chapter 12 will also present an assessment of how resources and waste will be managed for the Proposed Development.
13	Risk Management	Chapter 13 covers the requirement under Article 3(2) to include the expected effects deriving from the vulnerability of the Proposed Development to risks of major accidents and/or disasters.
14	Interactions	As required under Article 3(1)(e), Chapter 14 provides an assessment of the interaction between all of the environmental aspects referred to in this EIAR.
15	Mitigation and Monitoring	Chapter 15 describes mitigation and monitoring as required under Article 5(1) in order to avoid, prevent, reduce, or if possible, offset any identified significant adverse effects on the environment and, where appropriate, describes any proposed monitoring arrangements.

Table 1-2: Requirements of 2014/52/EU Annex IV and where these have been addressed in this EIAR

No.	Annex IV requirements	Addressed with the EIAR
1(a)	A description of the physical characteristics of the whole project and the land-use requirements during the construction and operational phases	Volume 2 - Chapter 2
1(b)	A description of the main characteristics of the production processes, for instance, the nature and quantity of the materials used;	N/A
1(c)	An estimate, by type and quantity, of expected residues and emissions (water, air and soil pollution, noise, vibration, light, heat, radiation, etc.) resulting from the operation of the proposed project.	Volume 2 - Technical Chapters 4-12
2	An outline of the main alternatives studied by the developer and an indication of the main reasons for this choice, taking into account the environmental effects.	Volume 2 - Chapter 2 – Section 2.8
3	A description of the aspects of the environment likely to be significantly affected by the proposed project, including, in particular, population, fauna, flora, soil, water, air, climatic factors, material assets, including the architectural and archaeological heritage, landscape and the interrelationship between the above factors.	Volume 2 - Technical Chapters 4-12
4(a)	A description of the likely significant effects of the proposed project on the environment resulting from the existence of the project;	Volume 2 - Technical Chapters 4-12
4(b)	A description of the likely significant effects of the proposed project on the environment resulting the use of natural resources	Volume 2 - Technical Chapters 4-12
4(c)	A description of the likely significant effects of the proposed project on the environment resulting from the emission of pollutants, the creation of nuisances and the elimination of waste.	Volume 2 - Technical Chapters 4-12
5	The description by the developer of the forecasting methods used to assess the effects on the environment referred to in point 4.	Volume 2 - Technical Chapters 4-12
6	A description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment.	Volume 2 - Technical Chapters 4-12
7	A non-technical summary of the information provided under headings 1 to 6.	Volume 1 - Non-Technical Summary

8	An indication of any difficulties (technical deficiencies or lack of know-how) encountered by the developer in compiling the required information.	Volume 2 - Technical Chapters 4-12

1.9 Methodology Used to Produce this EIAR

The methodology employed to produce this EIAR is detailed in Table 1-2. The objective is to evaluate each environmental topic, both individually and collectively, in a systematic and objective manner.

The methodology will outline the methods used to describe the baseline environmental conditions as well as predict the likely impacts on the environment of the Proposed Development. The data and survey requirements for each chapter will vary depending on the environmental topic and will be chosen by the particular specialist based on relevant legislation, best practice guidance, policy requirements, and professional judgement. Similarly, the study area is also defined for each environmental topic based on professional judgement and experience.

All environmental topics require desktop reviews of all relevant data at a minimum. These desktop studies are then supplemented by field studies and consultations with relevant stakeholders, for example interested parties, statutory bodies, and local authorities, as required for each environmental topic.

An outline of the methodology employed consistently in each chapter of the EIAR to examine each environmental topic is provided below:

Table 1-3: Methodology Employed to Produce each EIAR Chapter

Introduction	Provides an overview of the specialist area and specifies the specialist who prepared the assessment.
Study Methodology	This subsection outlines the method by which the relevant impact assessment has been conducted within that chapter.
The Existing Receiving Environment (Baseline Situation)	This section will describe and assess the receiving environment, the context, character, significance, and sensitivity of the baseline receiving environment into which the Proposed Development will fit. This analysis also takes account of any other Proposed Developments that are likely to proceed in the immediate surroundings.
Characteristics of the Proposed Development	Consideration of the '*Characteristics of the Proposed Development'* allows for a projection of the '*level of impact'* on any particular aspect of the environment that could arise. For each chapter those characteristics of the Proposed Development which are relevant to the area of study are described; for example, the chapter on landscape and visual impact addresses issues such as height, design and impact on the surrounding landscape.
Potential Impact of the Proposed Development	This section provides a description of the specific, direct and indirect, effects that the Proposed Development may have. This analysis is provided with reference to both the Existing Receiving Environment and

	Characteristics of the Proposed Development sections, while also referring to the: (i) magnitude and intensity, (ii) integrity, (iii) duration and (iv) probability of impacts. The assessment addresses whether the impacts are direct, indirect, secondary or cumulative in nature. It also looks at the timescale of such impacts e.g. are they short, medium, long-term, and are they of a temporary, permanent, continuous or intermittent nature, and are they positive or negative impacts. The impact interactions are also addressed.
Do Nothing Impact	In order to provide a qualitative and equitable assessment of the Proposed Development, this section considers the Proposed Development in the context of the likely impacts upon the receiving environment should the Proposed Development not take place.
Avoidance, Remedial and Mitigation Measures	This section of each chapter describes the mitigation measures which are required. The requirement to describe mitigation measures is laid out in the EIA Directive, as implemented by the Planning Act and the Planning Regulations. Avoidance, remedial and mitigation measures describe any corrective or mitigative measures that are either practicable or reasonable, having regard to the potential impacts of the Proposed Development. This includes avoidance, reduction and remedy measures as set out in Section 4.7 of the Development Management Guidelines 2007, to reduce or eliminate any significant adverse impacts identified.
Residual Impacts of the Proposed Development	This section allows for a qualitative description of the resultant specific direct, indirect, secondary, cumulative, short, medium and long-term, temporary, permanent, continuous, or intermittent, positive and negative effects as well as impact interactions which the Proposed Development may have, assuming all mitigation measures are fully and successfully applied.
Monitoring	This involves a description of monitoring in a post-development phase, if required. This section addresses the effects that require monitoring, along with the methods and the agencies that are responsible for such monitoring.
Reinstatement	While not applicable to every aspect of the environment considered within the EIAR, certain measures may need to be proposed to ensure that in the event of the proposal being discontinued, there will be minimal impact to the environment.
Interactions	This section provides a description of impact interactions together with potential indirect, secondary and cumulative impacts.
Difficulties Encountered in Compiling Information	The EIA Directive requires that the EIAR includes *'details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information, and the main uncertainties involved'* (EIA Directive, Annex IV, Part 6). Each chapter that contains an environmental baseline and assessment contains a section outlining any difficulties encountered in compiling that chapter.

1.10 EIAR Project Team

Table 1-4: EIAR Project Team

Chapter	Consultant Name and address	Specialist Area
1.0 Introduction and Methodology including Non-Technical Summary	Enviroguide Consulting, 3D Core C, The Plaza, Park West, D12F9TN Louise Hewitt	Multidisciplinary Environmental Consultants
2.0 Project Description and Alternatives Examined	Enviroguide Consulting, 3D Core C, The Plaza, Park West, D12F9TN Nikita Coulter BSc Zoology MSc Biodiversity & Conservation Postgraduate Diploma in Environmental Engineering Postgraduate Diploma in Environmental Risk Management	Multidisciplinary Environmental Consultants
3.0 Planning & Policy Context	Enviroguide Consulting, 3D Core C, The Plaza, Park West, D12F9TN Mairead Foran BSc in Environmental Sciences Advanced Diploma in Planning and Environmental Law	Multidisciplinary Environmental Consultants
4.0 Population and Human Health	Enviroguide Consulting, 3D Core C, The Plaza, Park West, D12F9TN Kamala Yagubova BSc Biology	Multidisciplinary Environmental Consultants
5.0 Biodiversity	Enviroguide Consulting, 3D Core C, The Plaza, Park West, D12F9TN Dr Siobhán Atkinson B.Sc. (Hons) Environmental Biology Ph.D. in Freshwater Biology from University College Dublin	Multidisciplinary Environmental Consultants
6.0 Land and Soils	Waterman Moylan, EastPoint Business Park, Alfie Byrne Rd, East Wall, Dublin 3, D03 H3F4	Engineering and Environmental Consultants
7.0 Hydrology & Water	Enviroguide Consulting, 3D Core C, The Plaza, Park West, D12F9TN Fionnuala Joyce BSc., MSc., Hydrogeologist Claire Clifford BSc., MSc., PGeo., EurGeol, Technical Director - Contaminated Land and Hydrogeology	Multidisciplinary Environmental Consultants

8.0 Air Quality & Climate	**Air Quality** Enviroguide Consulting, 3D Core C, The Plaza, Park West, D12F9TN Aoife Grogan BA Arts- English and Geography MSc in Climate Change Laura Griffin BA Arts- English and Geography MSc in Climate Chang **Microclimate** B-Fluid Ltd, 18 Herbert Street, Dublin 2, D02FK19 Dr Cristina Paduano CEng BEng & MEng Aerospace Engineering PhD Mechanical Engineering Dr Patrick Okolo CEng MSc & BSc Mechanical Engineering PhD Aeroacoustics Dr Arman Safdari MSc & BSc Mechanical Engineering PhD Mechanical Engineering	Multidisciplinary Environmental Consultants Buildings Fluid Dynamics Consultants
9.0 Noise and Vibration	Enviroguide Consulting, 3D Core C, The Plaza, Park West, D12F9TN Laura Griffin BA Arts- English and Geography MSc in Climate Change	Multidisciplinary Environmental Consultants
10.0 Landscape & Visual Amenity	Macro Works Ltd, Cherrywood Business Park, Bray Rd, Cherrywood, Loughlinstown, Co. Dublin. Jamie Ball	Landscape and Visual (LVIA) Consultants
11.0 Archaeology, Architectural, and Cultural Heritage	Enviroguide Consulting, 3D Core C, The Plaza, Park West, D12F9TN Laura Griffin BA Arts- English and Geography MSc in Climate Change	Multidisciplinary Environmental Consultants
12.0 Material Assets: Traffic, Waste, and Utilities	**Traffic** Waterman Moylan, EastPoint Business Park, Alfie Byrne Rd, East Wall, Dublin 3, D03 H3F4 Fernando Silva B Eng, MIEI, Senior Traffic Engineer	Engineering and Environmental Consultants

	Luke Byrne, BEng, MEng, Traffic Engineer Reviewed by Joe Gibbons, Chartered Engineer, Director, **Waste & Utilities** Enviroguide Consulting, 3D Core C, The Plaza, Park West, D12F9TN Nikita Coulter BSc Zoology MSc Biodiversity & Conservation Postgraduate Diploma in Environmental Engineering Postgraduate Diploma in Environmental Risk Management	Multidisciplinary Environmental Consultants
13.0 Risk Management	Enviroguide Consulting, 3D Core C, The Plaza, Park West, D12F9TN Nikita Coulter BSc Zoology MSc Biodiversity & Conservation Postgraduate Diploma in Environmental Engineering Postgraduate Diploma in Environmental Risk Management	Multidisciplinary Environmental Consultants
14.0 Interactions	Enviroguide Consulting, 3D Core C, The Plaza, Park West, D12F9TN Louise Hewitt BSc Biology MSc Environmental Resource Mnagement	Multidisciplinary Environmental Consultants
15.0 Mitigation and Monitoring Measures	Enviroguide Consulting, 3D Core C, The Plaza, Park West, D12F9TN Louise Hewitt BSc Biology MSc Environmental Resource Mnagement	Multidisciplinary Environmental Consultants

1.11 Non-Technical Summary

A Non-Technical Summary of the EIAR has been prepared which summarises the key environmental impacts and is provided as a separately bound document. The EIA Directive states that one of the objectives of the EIA process is to ensure that the public are fully aware of the environmental implications of any decisions. EPA Guidelines note that the non-technical summary of the EIAR should facilitate the dissemination of the information contained in the EIAR and that the core objective 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 An Bord Pleanála.

1.12 Links between EIAR and Appropriate Assessment

A Screening Report for Appropriate Assessment (**AA**) has been carried out for the Proposed Development to determine if there is a risk of effects to any Natura 2000 site. As the AA screening could not exclude the possibility of likely significant impacts on two European Sites, Howth Head SAC (000202) and Howth Head Coast SPA (004113), a Natura Impact Statement (NIS) was also prepared. As a result of the complete, precise and definitive findings in of the NIS, it has been concluded, beyond reasonable scientific doubt, that the Proposed Development will have no adverse effects on the qualifying interests, special conservation interests and on the integrity and extent of Howth Head SAC and Howth Head Coast SPA. Accordingly, the Proposed Development will not adversely affect the integrity of any relevant European site.

While AA is required by the proposer of any plan or project likely to have an adverse effect on a Natura 2000 site, EIA is required for projects listed in Annex I of the EIA Directive. The requirement for EIA relative to projects listed in Annex II of the EIA Directive is determined on a case by case basis. While these two different types of assessment are independent and are required by separate legislation, namely the Birds and Habitat Directives (i.e. AA) and the EIA Directive (i.e. EIAR) there is a degree of overlap, particularly in the biodiversity chapter of the EIAR.

1.13 Availability of EIAR Documents.

A copy of this EIAR document and Non-Technical Summary is available for purchase at the offices of An Bord Pleanála at a fee not exceeding the reasonable cost of reproducing the document.

1.14 Statement of Difficulties Encountered

No exceptional difficulties were experienced in compiling the necessary information for this EIAR. Where any specific difficulties were encountered these are outlined in the relevant chapter of the EIAR.

1.15 Quotations

The application is also accompanied by a Non-Technical Summary of the EIAR, which is laid out in a similar, but condensed format to the main EIAR. 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 is to ensure that the public and local community are aware of the likely environmental impacts of the Proposed Development prior to the granting of consent.

However, it is important to acknowledge that the EIAR by its nature contains statements about the Proposed Development, some of which are positive and some less positive. Selective quotation or quotations out of context can give a very misleading impression of the findings of the study. Therefore, the study team urge that quotations should, where reasonably possible,

be taken from the conclusions of specialists' sections or from the Non-Technical Summary and not selectively.

2 DESCRIPTION OF THE PROPOSED DEVELOPMENT

2.1 Introduction and Terms of Reference

This Chapter provides a detailed description of the Proposed Development together with details of the existing environment. In accordance with Article 5(1)(a) of the EIA Directive, the description of the Proposed Development should comprise:

'information on the site, design, size and other relevant features of the project'.

A description of the Proposed Development and its surroundings is provided in this Chapter, together with the proposed design parameters. This description sets the basis against which the specialist assessments presented in this EIAR have been undertaken.

The EIAR must contain information in relation to the environmental impact of both the Proposed Development and all other "reasonable" alternatives studied. An indication of the main reasons for the option chosen must be given, taking into account the effects of the Proposed Development on the environment.

This Chapter was prepared by Enviroguide Senior Environmental Consultant Nikita Coulter. Nikita Coulter has a B.Sc. in Zoology (Hons) from University College Dublin, an M.Sc in Biodiversity and Conservation and a Postgraduate Diploma in Environmental Engineering from Trinity College Dublin, and a NEBOSH accredited International Diploma in Environmental Risk Management. Nikita has 8 years professional experience as an Environmental Compliance Specialist.

2.2 Site Location and Description

The Site of the Proposed Development occupies an area of approximately c. 1.43 hectares (ha) within Howth Village. Howth is in the Electoral Division of Howth ED 1901, in the Civil Parish of Howth, in the Barony of Coolock, in the County of Dublin.

The Site of the Proposed Development was originally three separate plots which have been consolidated into a single entity under one landowner.

The largest plot of land, on Balscadden Road, south of the Martello tower, was formerly the EDROS centre, comprising a community hall and tennis courts. The Site is undeveloped, overgrown and fenced off. It offers no visual or physical amenity to Howth and provides a poor setting for the Martello Tower. It is a relatively flat site, surrounded on 3 sides by steep embankments. A right-of-way from Abbey Street to Balscadden Road exists along the bottom of the mound but this pathway is isolated from neighbouring properties. South of the Balscadden site are the 'Cluxton' lands, which are also overgrown with grass and shrubs. The site slopes steeply upwards to the Asgard Park estate on the southern boundary, c. 15m higher than the Balscadden plateau. The third plot of land is the former Baily Court Hotel, which has been closed since circa 2007. The rear of the hotel backs directly onto the Cluxton lands.

The Site of the Proposed Development is bounded to the east by the Balscadden Road, to the west by residential and commercial buildings fronting onto Main Street and Abbey Street, and

to the north by Martello Tower and Tower Hill, and to the south by rear gardens to residential properties. Of particular importance with respect to the Site of the Proposed Development are:

- The protected Martello Tower & Tower Hill of historical importance
- Howth Head Special Area of Conservation (SAC)
- Howth Head proposed Natural Heritage Area (pNHA)
- Historical Howth Sewer Tunnel that traverses the site
- Existing embankments and slopes stability conditions adjacent to the site

2.3 Site History / Background

Howth has been a prominent shipping village since medieval times, with records dating back to the 1400's. The stone harbour at Howth was constructed in the early 1800's as a harbour for mail packet boats, which were small sailing ships. A railway was constructed along what was to become Balscadden Road to carry the stone required for the construction of the harbour. The Martello Tower was built in 1804-05 to protect the landing place at the harbour from a possible Napoleonic invasion.

The Martello Tower in Howth was one of the first in Ireland to be relinquished by the military. In 1852 the first telegraph cable was laid between Great Britain and Ireland, coming ashore at Howth, where the Martello Tower acted as the receiving station. Telegraph was succeeded by radio, when the Martello Tower was used for demonstrations of transmissions between Howth and Holyhead in 1903 and 1905. The Martello Tower remained in the ownership of successive telecommunications operators until the late 1980s, when it was sold to the Dublin City Council. In 2001 the Martello Tower was refurbished and in 2003 it was opened as the "Ye Olde Hurdy-Gurdy Museum of Vintage Radio", dedicated to communications heritage. Since 2020 the Martello Tower has been owned by Fingal County Council.

Hotels were important at passenger ship ports in the days of sail boats, as it was usually necessary to wait for suitable weather conditions before a ship could sail, and this could extend to several weeks. An inn was built on the eastern side of Main Street in Howth to cater for passengers on the mail packet boats. The name "Royal Hotel" was adopted by the inn in August 1821. During the 1900's the hotel was enlarged on a number of occasions, with a major and sustained programme of enlargement taking place from the mid-1940's. The Royal Hotel survived the transition from sailing ships to steamships by catering for those for whom Howth was their holiday destination. More recently the name of the hotel was changed to the "Baily Court Hotel", and it closed for business circa 2007.

2.4 Project Overview

The Proposed Development will consist of the demolition of existing structures on site including the disused sports building (c. 604 sq m) on the Balscadden Rd. portion of the site and the Former Baily Court Hotel Buildings on Main St (c. 2051 sq m) and the construction of a residential development set out in 4 no. residential blocks, ranging in height from 2 to 5 storeys to accommodate 180 no. apartments and duplexes with associated residential tenant amenity, 1 no. retail unit and 2 no. café/retail units. The Site will accommodate a total of 139 no. car parking spaces and 410 no. bicycle parking spaces. Landscaping will include a new linear plaza which will create a new pedestrian link between Main St and Balscadden Rd to include the creation of an additional 2 no. new public plazas

and also maintains and upgrades the pedestrian link from Abbey Street to Balscadden Road below the Martello Tower. This is set out as follows:

1. The 4 no. residential buildings range in height from 2 storeys to 5 storeys, accommodating 180 no. apartments comprising 4 no. studios, 62 no. 1 bed units, 89 no. 2 bed units and 25 no. 3 bed units. The breakdown of residential accommodation is as follows:
   - Block A is a 3 storey building, including balconies, accommodating 2 no. units;
   - Block B is a 2 to 5 storey building, including setbacks, balconies, and external roof terraces at 3rd and 4th floors accommodating 126 no. units;
   - Block C is a 3 to 5 storey building, including setbacks and balconies, accommodating 43 no. units;
   - Block D is a 3 storey building, including balconies , accommodating 9 no. units;
   - Residential Tenant Amenity Space is provided in Blocks B and C, totalling c.427.1 sq.m and Communal External Amenity Space is provided at throughout the scheme including at roof level on Block B, totalling c.4,108 sq.m.

2. Non-residential uses retail unit of c. 106.4 sq.m in Block A at ground level, café/retail unit of c.142.7 sq.m in Block C at ground and first floor, café/retail unit of c. 187.7 sq.m in Block D resulting in a total of c. 436.8 sq.m of non-residential other uses.

3. The development will include a single level basement under Block B, accessed from Main St only, containing 139 car spaces including 7 accessible spaces, plant, storage areas, waste storage areas and other associated facilities. A total of 410 cycle parking spaces are provided for at both basement and ground level, comprising 319 resident spaces and 91 visitor spaces

4. The scheme provides for a new linear plaza which will create a new pedestrian and cycle link between Main St and Balscadden Rd to include the creation of an additional 2 no. new public plazas and also maintains and upgrades the existing pedestrian link from Abbey Street to Balscadden Road below the Martello Tower.

5. All other ancillary site development works to facilitate construction and the provision of the basement car park, site services, piped infrastructure, a sub-station, public lighting, plant, signage, bin stores, bike stores, boundary treatments and hard and soft landscaping.

6. It is proposed to reduce the ground levels on the Site from c. 34.5m OD to c. 19.975m OD locally under Block C. A single storey basement is proposed under Block B with the existing ground level reduced from c.20m OD to c.17.1m OD. occurring at formation level.

Refer to Figure 2-1 for the Location of the Proposed Development and Figure 2-2 for the Proposed Site Layout.

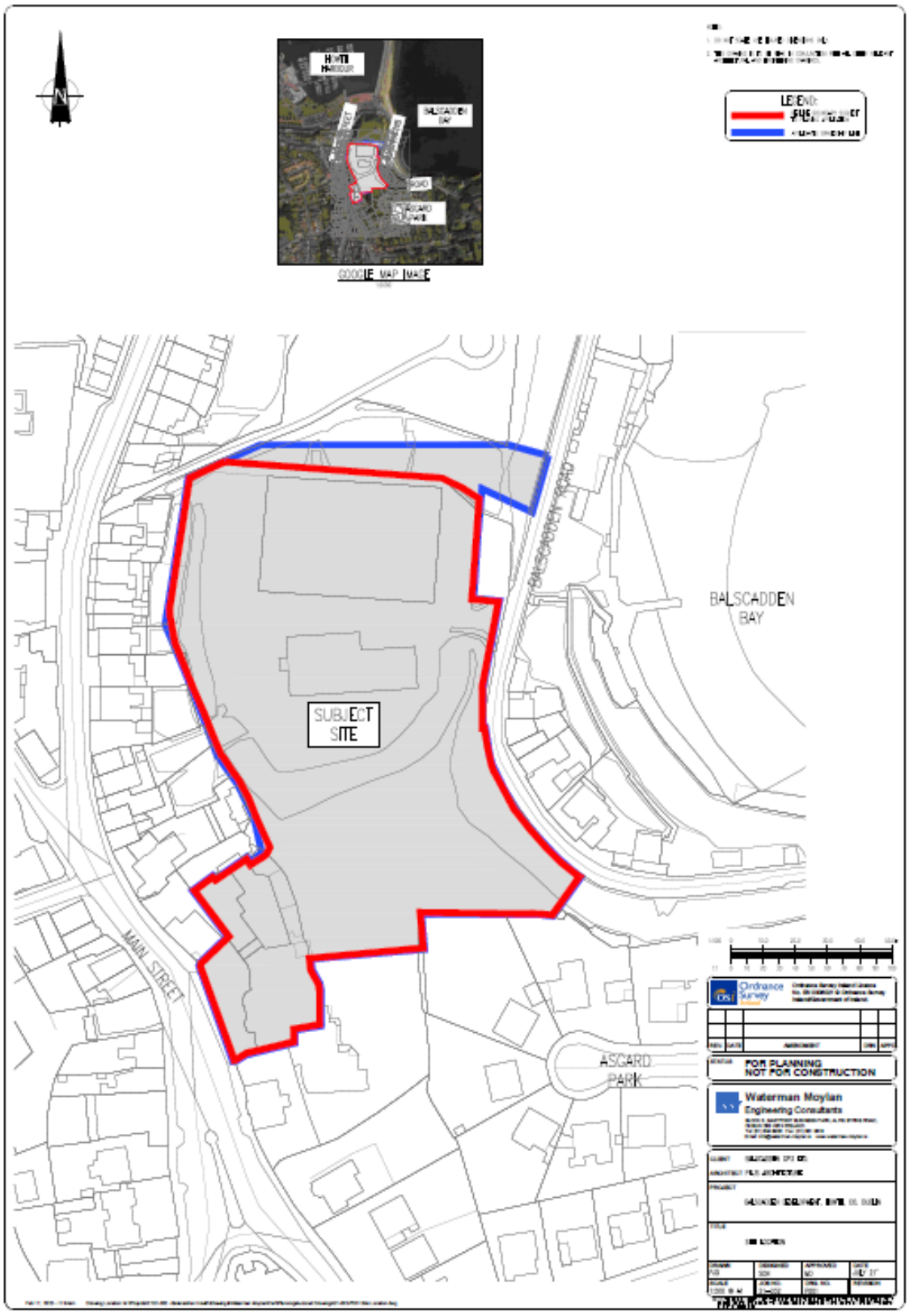


Figure 2-1: Location of the Proposed Development

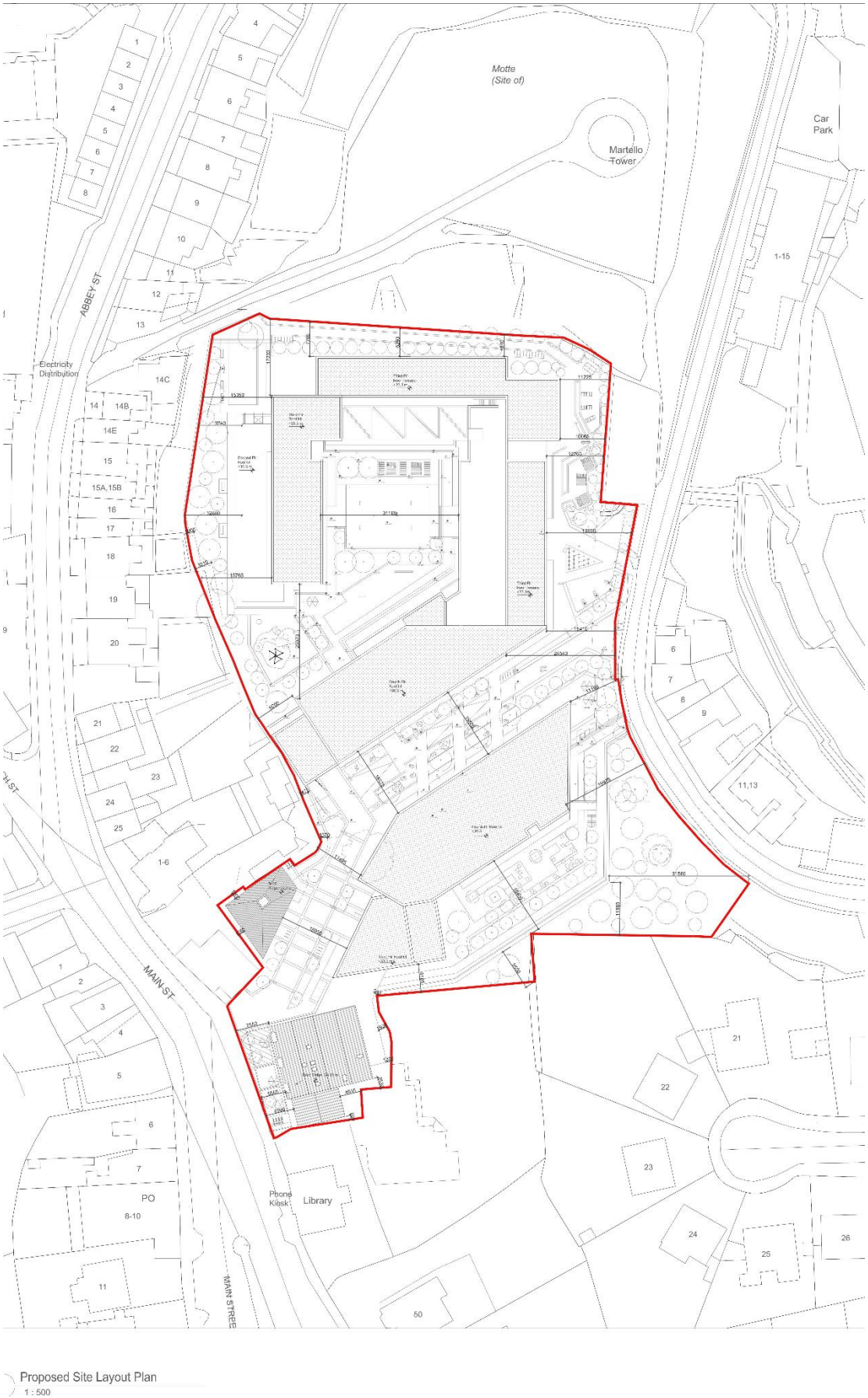


Figure 2-2: Proposed Site Layout (Plus Architecture)(Refer to Appendix A Drawings)

There are significant changes in level within the Site of the Proposed Development. From the northern end of the site, where it adjoins the site of the Martello tower, the ground falls away into a hollow, before climbing back up again towards the south, while the ground falls sharply away on both the eastern and western sides. The Baily Court Hotel is at a lower level than much of the rest of the application Site, though it is relatively high up on the slope of Main Street.

The Proposed Development involves a significant degree of cutting into the ground to alter the levels, reducing them to ensure that the Proposed Development does not dominate the landscape. The buildings will vary in height, with three-storey buildings at the entry to the site from Main Street, to three/four-storey over two levels of car parking elsewhere within the site.

2.5 Construction Phase

The duration of the Construction Phase of the Proposed Development will be approximately 3 years, and it will take place in the following sequence of works (*Outline Construction and Demolition Management Plan, Waterman Moylan, 2022*):

- **Site Preparation: Site Clearance, Demolition & Enabling Work (8 weeks)**
  - Demolition of the existing EDROS Building & former Baily Court Hotel.
  - Removal of site vegetation and installation of site set-up.
  - Installation of temporary silt trench to eastern boundary to protect SAC/pNHA (as required under the Outline Environmental Management Plan)
  - Provision of a temporary piling mat and berms between levels.
- **Construction: Piled Retaining Walls**
  - Secant piled walls installed to allow for the bulk excavation and reduced level dig.
- **Construction: Bulk Excavation (12 weeks)**
  - Temporary works installed to temporarily restrain the secant piled walls during excavation.
  - Basement battered open-cut excavation to the North and East boundaries with a safe angle of repose.
- **Construction: Building Foundations & Basement (78 weeks)**
  - Installation of the building raft foundation and basement retaining walls.
  - Tower crane installation for the construction of the building frame.
- **Construction: Building Superstructure Frame**
  - Bottom-up construction sequence of the floor slabs and vertical elements.
  - Elements of the building frame may be premanufactured off site in precast construction for speed of construction, less formworks and on-site waste.
- **Construction: Cladding & Fit-out Works (24 weeks)**
  - Temporary scaffolding may be required around each building during the construction of the building envelope.
  - Elements of the building facade may be premanufactured off site using modular construction for speed of construction and less on-site waste.

2.6 Operational Phase

The Operational Phase of the Proposed Development will consist of the normal day-to-day operations necessary for the management of a residential development and a café/retail space, and the ongoing maintenance of the dwellings and units.

2.7 Statutory Planning Context

The site of the Proposed Development is subject to National, Regional and Local level planning policy. The Planning Report prepared by Brady Shipman Martin that accompanies the application sets out the planning context in detail. The following outlines the key planning policy documents of relevance to the Proposed Development.

2.7.1 National

- Project Ireland 2040: National Planning Framework (2018)
- Sustainable Urban Housing: Design Standards for New Apartments (2020)
- Urban Development and Building Heights Guidelines for Planning Authorities (2018)
- Rebuilding Ireland - Action Plan for Housing & Homelessness (2016)
- Housing for All – A New Housing Plan for Ireland (2021)
- Design Manual for Urban Roads & Streets (2013)
- National Policy Position on Climate Action & Low Carbon Development and Climate Act (2021)
- The Planning System & Flood Risk Management (2009)
- Sustainable Residential Development in Urban Areas, Guidelines for Planning Authorities, 2009 and Urban Design Manual, A Best Practice Guide
- Urban Design Manual (A Best Practice Guide) (2009)
- National Investment Framework for Transport in Ireland (NIFTI)

2.7.2 Regional

- Eastern & Midland Regional Assembly - Regional Spatial & Economic Strategy (2019)

2.7.3 Local

- Fingal County Council Development Plan 2017-2023

This section will not address in detail the policies and objectives contained in the various plans / policies that are relevant to the Proposed Development. These are addressed in Chapter 3 (Planning and Policy Context) of this EIAR.

2.8 Description of Alternatives

2.8.1 Introduction

Consideration of reasonable alternatives is an important aspect of the EIA process and is necessary to evaluate the likely environmental consequences of a range of development strategies for the site of the Proposed Development within the constraints imposed by environmental and planning conditions. This section provides a description of the reasonable alternatives that have been considered.

Article 5 of the EIA Directive requires that that the EIAR contain:

"*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 Development and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects*."

This section of the EIAR provides an explanation of the reasonable alternatives examined throughout the design and consultation process. This serves to indicate the main reasons for choosing the Proposed Development, taking into account and providing a comparison of the environmental effects. The alternatives may be described at four levels:

- Alternative locations
- Alternative designs
- Alternative layouts
- Alternative processes

Pursuant to Section 3.4.1 of the Draft Environmental Protection Agency (EPA) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (*EPA, 2017*), the consideration of alternatives also needs to be cognisant of the fact that "*in some instances some of the alternatives described below will not be applicable - e.g. there may be no relevant 'alternative location'…*"

In accordance with Draft EPA Guidelines (*EPA, 2017*), different types of alternatives may be considered at several key phases 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 Draft EPA Guidelines (EPA, 2017) states:

"*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 is deciding on the selected option. A detailed assessment (or 'mini-EIA') of each alternative is not required*."

Thus, the consideration and presentation of the reasonable alternatives studied by the Proposed Development design team is an important requirement of the EIA process.

2.8.2 Alternative Locations

Three possible alternatives have been considered in terms of alternative locations for the Proposed Development

1. The Do-Nothing Alternative
2. Develop a greenfield site
3. Purchase another existing site with current planning permission for a similar development

The Do-Nothing Alternative would see the Site remain undeveloped, overgrown and fenced off, offering no visual or physical amenity to Howth. The former Baily Court Hotel would remain boarded up and would continue to deteriorate.

Another theoretical greenfield site was developed on the assumption that such a site was available. It was deemed that a greater impact would be created by the siting of a residential development, with retail and café units, at this scale on such a site, given that the existing Site of the Proposed Development lies within lands that have already been paved and built upon, and are currently underutilised and overgrown. Additionally, if the theoretical greenfield site was in an area of outstanding natural beauty, the impact would be worse.

The Site of Proposed Development is already owned by the applicant, hence purchasing another existing site with current planning permission was discounted due to the unlikely availability of such a site on the market and the levels of capital that would be required to purchase such a site.

Having regard to the above alternatives, the selected location is considered the most suitable location for the Proposed Development.

2.8.3 Alternative Uses

The Site of the Prosed Development is located in Zone '*TC - Town and District Centre*' under the Fingal County Development Plan 2017-2023. Town and District Centres offer a range of services, facilities and retail for the immediate neighbourhood. The objective of TC zoning is to '*Protect and enhance the special physical and social character of town and district centres and provide and/or improve urban facilities.',* which permits the following uses on the zoned lands:

Permitted in Principle		
Bed and Breakfast	Betting Office	Carpark - Non-Ancillary
Childcare Facilities	Community Facility	Cultural Facility
Dancehall/Nightclub	Education	Exhibition Centre
Fast Food Outlet/Take-Away	Funeral Home/Mortuary	Garden Centre
Guest House	Health Centre	Health Practitioner
Holiday Home/Apartments	Home-Based Economic Activity	Hospital
Hotel	Office Ancillary to Permitted Use	Office ≤ 100sqm
Office > 100sqm and < 1,000sqm	Office ≥ 1,000sqm	Open Space
Petrol Station	Place of Worship	Public House
Public Transport Station	Recreational Facility/Sports Club	Research and Development
Residential	Residential Care Home/ Retirement Home	Residential Institution
Restaurant/Café	Retail - Local < 150 sqm nfa	Retail - Convenience ≤ 500 sqm nfa
Retail - Comparison ≤ 500 sqm nfa	Retail - Comparison >500sqm nfa[27]	Retail - Supermarket ≤ 2,500 sqm nfa
Retirement Village	Sheltered Accommodation	Taxi Office
Telecommunications Structures	Training Centre	Traveller Community Accommodation
Utility Installations	Vehicle Sales Outlet - Small Vehicles	Vehicle Servicing/Maintenance Garage
Veterinary Clinic		

Figure 2-3: *Use Classes Related to Zoning Objective TC (Fingal County Development Plan 2017-2023)*

The Proposed Development consisting of residential dwellings, retail units, a café unit, car parking and a public plaza, is in accordance with the Permitted in Principle uses under Zoning Objective TC.

There is the potential for the Site of the Proposed Development to be alternatively used for multiple other uses under the Zoning objective, including health care, offices or recreational development, however, as stated in the Department of Housing, Local Government and Heritage's (DoHLGH) Plan 'Housing for All – A New Housing Plan for Ireland' (2021), Ireland needs an average of 33,000 homes to be constructed per annum until 2030 to meet targets set out for additional households. Considering these objectives and targets, along with the fact that the village of Howth is an extremely sought-after place to live in Co. Dublin, the Proposed Development has emerged as the best option for the Site.

2.8.4 Alternative Design & Layouts

Both the context and approach to the application site and the emerging design rationale for the Proposed Development, have been subject to consultation with the Fingal County Council Planning Department under Section 247. The Statement of Consistency prepared by Brady Shipman Martin (2022) notes that the Proposed Development will provide an appropriate form of high-quality residential development, which is consistent with the national, regional and local planning policy framework, for an effective and efficient use of this highly accessible under-utilised site.

The Site of the Proposed Development has been subject to a significant level of planning activity in recent years. While previous applications included the adjacent HA - High Amenity lands for the purposes of providing landscaping works, these lands have been excluded from the application boundary for the purposes of this application, and all of the Proposed Development will take place within the lands zoned TC - Town and District Centre.

2.8.4.1 Site Planning History:

2.8.4.1.1 Strategic Housing Development Application: ABP Ref: TA06F.305828

Permission was granted by An Bord Pleanala for Demolition of existing structures, construction of 177 no. residential units, commercial/retail space, community room and associated site works. The application was subsequently quashed under Judicial Review.

2.8.4.1.2 Strategic Housing Development Application: ABP Ref: PL06F.301722

Permission was granted by An Bord Pleanala for Demolition of existing structures, construction of 164 no. residential units, commercial/retail space, community room and associated site works. The application was subsequently quashed under Judicial Review.

2.8.4.1.3 Fingal County Council Planning Ref.: F14A/0108

Permission was granted by Fingal County Council (FCC) for Demolition of the disused sports building (c.640sq.m.) and the provision of 23 no. residential units comprising 13 no. 4 bed 2.5 storey houses; 4 no. 3 bed 2.5 storey houses; 3 no. 3 bed apartment units; and 3 no. 2 bed apartment units with associated car parking spaces. Permission is also sought for 1 no. commercial kiosk unit; hard and soft landscaping works; upgrade works to the existing vehicular access to Balscadden Road; and all other associated site development works. The scheme also provides for a pedestrian link from Abbey Street to Balscadden Road.

2.8.4.1.4 Fingal County Council Planning Ref.: F07A/1349 & ABP Ref.: PL 06F.227972

Permission was granted by FCC for Demolition of a disused sports building and the development of 64 dwellings and 1 cafe of 303m² on lands south of the Martello Tower. The

development comprises 52 two-bedroom units and 12 three bedroom units, of which 15 are own-door units, in one block of 2 storeys, three bedroom units, of which 15 are own- door units, in one block of 2 storeys, three blocks of three storeys and one block of 4 storeys, with private patios, terraces and balconies on all elevations, all over private basement car parking. The scheme provides for a pedestrian street from Abbey Street to Balscadden Road and improved access to the Martello Tower, a central sunken garden, landscaping to the boundaries and 15 visitor carpark spaces at ground level. Vehicle access is from Balscadden Road; road improvement works include conversion to a two-way system, installation of traffic lights, the widening of footpaths, and resurfacing of the roadway. The development was subsequently refused by An Bord Pleanala on appeal.

2.8.4.1.5 Fingal County Council Planning Ref.: F06A/1897 [F06A/1897/E1] & ABP Ref.: PL06F.224372

Permission was granted by both FCC and An Bord Pleanala for the development of 6 no. detached houses, a new vehicular entrance from Balscadden Road and associated site works.

2.8.4.1.6 Fingal County Council Planning Ref.: F15A/0545 & ABP Ref.: PL06F.246183

Permission was refused by both FCC and An Bord Pleanala for a residential development comprising a total of 9 no. 3 storey dwellings, consisting of 1 no. detached 3 bed dwelling, 4 no. detached 4 bed dwellings and 4 no. terraced 4 bed dwellings, all with associated car parking spaces. The Proposed Development will also consist of the provision of a new vehicular and pedestrian entrance to Balscadden Road, landscaping, boundary treatment, refuse drop-off area and all associated site and engineering works necessary to facilitate the development including the provision of a new surface water main for a distance of approximately 50 metres along Balscadden Road to connect to the existing public main.

2.8.4.1.7 Fingal County Council Planning Ref.: F13A/0110 & ABP Ref.: PL06F.242595

Permission was granted by FCC and An Bord Pleanala for demolition of the existing three storey hotel and all associated buildings on site and to construct a four storey mixed use development (including set back penthouse level) consisting of 4 no. ground floor retail/services units, 7 no. apartments (6 no. two bed and 1 no. 3 bed) with balconies/private terraces; semi- private communal kitchen garden deck including 7 no. greenhouses over car parking area, 22 no. car parking spaces, vehicular entrance from Main Street, SUDS drainage, all signage, landscaping, gates, boundary treatments and ancillary site development works necessary to facilitate the development.

2.8.4.1.8 Fingal County Council Planning Ref.: F15A/0072 (expired)

Permission granted by FCC for amendments to a previously permitted development (Reg. Ref. F13A/0110, ABP Ref. PL 06F.245295), comprising the subdivision of the permitted 1 no. 3 bedroom apartment at third floor level to provide for 2 no. 3 bedroom apartments. This will increase the total number of residential units on the site from 7 no. units to 8 no. units. The Proposed Development will also provide for all associated elevational changes and site development works necessary to facilitate the development.

2.8.5 Alternative Process

Due to the nature of the current proposal, where the planning application will be submitted to FCC, it was not considered necessary to consider alternative processes for the Proposed Development.

2.9 The Existence of the Proposed Development

The Construction Phase will last approximately 3 years. During the Construction Phase of the Proposed Development there will be approximately 80-100 jobs created, with a maximum of 200-250 construction workers at the peak of the construction works. Hence, for the duration of the Construction Phase of the Proposed Development there will be a short-term increase in construction employment in the area, which will have a positive impact, both directly and indirectly, on the local economy.

The Operational Phase of the Proposed Development will result in an increase in the population of the area, and it will have a positive impact on the long-term supply needs of housing in Howth village and the Greater Dublin Area. In additional to housing, the Operational Phase of the Proposed Development will have the potential to create employment in the retail and café units, and in the maintenance and management of the Proposed Development, which will have a long-term, positive impact on the local socio-economic environment.

The primary likely significant environmental impacts of the Proposed Development are fully addressed in the relevant specialist Chapters of this EIAR. These impacts relate to Population & Human Health, Land & Soil, Hydrology and Hydrogeology, Landscape & Visual, Noise and Air Quality & Climate associated with the Proposed Development.

The Proposed Development has the potential for cumulative, secondary, and indirect impacts, these can be difficult to quantify due to complex inter-relationships. All interactions and cumulative impacts have been addressed in Chapter 14 (Interactions) with cumulative impacts and interactions fully addressed in the relevant specialist Chapters of this EIAR.

3 PLANNING AND POLICY

This Chapter of the EIAR gives an overview of the relevant legislation that supports the Proposed Development at a local, regional and national level and sets out the strategic and statutory context governing the planning and development of the Proposed Development and was prepared by Mairéad Foran (BS Hons.), Environmental Consultant, Enviroguide Consulting.

Balscadden GP3 Ltd. intend to apply to Fingal County Council for the Proposed Development.

The proposed development relates to lands located to the south of the Martello Tower on Balscadden Road & the former Baily Court Hotel, Main Street, Howth, County Dublin. The development will consist of the demolition of existing structures on the proposed site including the disused sports building and the former Baily Court Hotel buildings and the construction of a residential development set out in 4 no. residential blocks, ranging in height from 2 to 5 storeys to accommodate 180 no. apartments with associated internal residential tenant amenity and external courtyards and roof terraces, 1 no. retail unit and 2 no. café/retail units. The site will accommodate car parking spaces at basement level and bicycle parking spaces at basement and surface level. Landscaping will include new linear plaza which will create a new pedestrian link between Main St and Blackadder Rd to include the creation of an additional 2 no. new public plazas and also maintains and upgrades the pedestrian link from Abbey Street to Balscadden Road below the Martello Tower.

The Site is located within the administrative area of Fingal County Council (FCC). The relevant local planning policy with which the Proposed Development complies primarily comprises the Fingal County Council 2017 – 2023. The Chapter describes how the Proposed Development complies with the stated and statutory requirements of the Fingal County Council (FCC) Development Plan with respect to planning and sustainable development.

The Proposed Development falls under the definition of a Strategic Housing Development (SHD) as set out under Section 3 of the Planning and Development (Housing) and Residential Tenancies Act 2016 as it is a development '*of 100 or more houses on land zoned for residential use or for a mixture of residential and other uses'*.

The Proposed Development site is located on land zoned Town and District Centre (TC), and Residential (RS). While previous applications included the adjacent HA- High Amenity lands north of the site, for the purposes of providing landscaping works- these lands have been excluded from the application boundary for the purposes of this Strategic Housing Development application.

Three sites have been consolidated into one entity which has provided for a great opportunity to develop a scheme that is fully integrated with Howth Village. The joining of the sites has enabled the development to be designed around a new street, which will join Howth Village Core with Balscadden Road. It has enabled the creation of new civic plaza and a pedestrian friendly street which will promote a very high standard of residential accommodation and will contribute to the public realm of Howth Village core. This chapter details how the Proposed Development accords with the proper planning and sustainable development of the area.

Planning permission has been previously approved on the site by An Bord Pleanala under Planning Reference PL06F.301722 and TA06F.305828 however both have been quashed under Judicial Review. Residential development is Permitted in Principle in accordance with

the zoning objectives, and consistent with the proper planning and sustainable development of the area.

3.1 Material Contravention

This Strategic Housing Development Application includes a Material Contravention Statement which seeks to address the issue of material contraventions of the Fingal County Development Plan 2017-2023 (Development Plan), as required under Section 8 of the Planning and Development (Housing) and Residential Tenancies Act 2016. This Statement provides a rationale for An Bord Pleanála, as the consenting authority, to conclude that there is justification for material contravention in relation to Chapter 2 of the Development Plan and a potential material contravention of Section 12.10.

Section 9 (6) of the Planning and Development (Housing) and Residential Tenancies Act, 2016 confirms that An Bord Pleanála may grant permission for a development which materially contravenes a Development Plan, other than in relation to the zoning of land having regard to the considerations specified in section 37(2)(b) of the Act of 2000.

The Material Contravention Statement provides a justification for the proposed material contraventions of the above referenced statutory planning documents, in relation to the Local Area Plan: (i) core strategy and, (ii) parking provision.

(i) Core Strategy

- Chapter 2 of the Fingal Development Plan 2017- 2023, as varied by Variation No.2 sets out the Core Strategy and Settlement Strategy for County Fingal. The Development Plan outlines the Remaining Capacity Residential Units for Howth, which has already been exceeded.

(ii) Parking Provision

- Section 12.10 of the Fingal Development Plan 2017- 2023 identifies parking standards for residential development. The Sustainable Urban Housing, Design Standards for New Apartments (2020) establish the principle for the re-examination of car parking provision and should be considered over the Development Plan parking standards on a site specific contextual basis.

It is considered, as is set out in the accompanying Material Contravention Statement and the supporting planning application documentation, that sufficient justification exists for An Bord Pleanála to grant permission for the Proposed Development notwithstanding the proposed material contraventions having regard to the considerations specified in section 37(2)(b) of the Act of 2000.

3.2 National and Regional Planning Policy Context

3.2.1 National Planning Context

3.2.1.1 National Framework Plan

The *Project Ireland 2040: National Planning Framework* (NPF), published on 16th February 2018, replaces the previous National Spatial Strategy. It is the Government's high-level

strategic plan for shaping the future growth of the country to the year 2040. It will guide public and private investment and create and promote opportunities for people, and to protect and enhance the environment.

The NPF outlines key future planning and development place-making policies for the Eastern and Midland Regions, including a major new policy emphasis on renewing and developing existing settlements with the target of achieving at least 40% of all new housing to be delivered within the existing built-up areas of cities, towns and villages on infill and/or brownfield sites.

The National Strategic Outcomes as set out in the NPF are:

- Compact Growth;
- Enhanced Regional Accessibility;
- Strengthened Rural Economies and Communities;
- High-Quality International Connectivity;
- Sustainable Mobility;
- A Strong Economy, supported by Enterprise, Innovation and Skills;
- Enhanced Amenities and Heritage;
- Transition to a Low Carbon and Climate Resilient Society;
- Sustainable Management of Water, Waste, and other Environmental Resources; and
- Access to Quality Childcare, Education and Health Services.

The NPF - Project Ireland 2040 requires delivery of a baseline of 25,000 homes annually to 2020, followed by a likely level of 30-35,000 annually up to 2027. To achieve the objective of compact growth, 40% of future housing delivery is to be delivered within and close to the existing built-up areas. Within Dublin, the NPF states that the city needs to '*accommodate a greater proportion of the growth it generates within its metropolitan boundaries and to offer improved housing choice*.'

National Policy **Objective 4** in this regards states:

'*Ensure the creation of attractive, liveable, well designed, high-quality urban places that are home to diverse and integrated communities that enjoy a high quality of life and well-being*.'

The Proposed Development supports and assists in achieving the following objectives:

National Policy **Objective 11** in this regards states:

'In meeting urban development requirements, there will be a presumption in favour of development that can encourage more people and generate more jobs and activity within existing cities, towns and villages, subject to development meeting appropriate planning standards and achieving targeted growth.'

National Policy **Objective 13** in this regards 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 achieve 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.'

The NPF also includes the following objective in relation to social infrastructure needs:

National Policy **Objective 33**:

Prioritise the provision of new homes at locations that can support sustainable development and at an appropriate scale of provision relative to location.

As defined in the NPF, ideally, future homes will be located in places that can support sustainable development - places which support growth, innovation and the efficient provision of infrastructure, are accessible to a range of local services, can encourage the use of public transport, walking and cycling, and help tackle climate change. The Proposed Development Site is located in close proximity to high quality bus and DART services and an established social infrastructure – it is inherently in line with National as well as Regional sustainable planning principles.

The Proposed Development supports the policies and goals outlined in the NPF. Further details on how the Proposed Development supports and complies with planning policy and legislation are detailed in the Planning Report by Brady Shipman Martin submitted separately as part of this application. This Strategic Housing Development Application also includes a Material Contravention Statement which seeks to address the issue of material contraventions of the Fingal County Development Plan 2017-2023 (Development Plan), as required under Section 8 of the Planning and Development (Housing) and Residential Tenancies Act 2016.

3.2.1.2 Sustainable Urban Housing: Design Standards for New Apartments (2018)

The Sustainable Urban Housing: Design Standards for New Apartments guidelines update the previous version published in 2015. These Guidelines promote sustainable living patterns with the objective to curb urban sprawl. The Proposed Development has been designed to these current standards.

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

The Urban Development and Building Heights – Guidelines for Planning Authorities set out national planning policy guidance on building heights with regard to urban areas. The Guidelines supports the strategic policy framework set out in Project Ireland 2040 by strengthening policies for consolidation of existing built-up areas, rather than an unsustainable development pattern whereby many cities and towns continue to grow outwards.

In relation to individual Planning Applications, the Guidelines identify a presumption favouring buildings of increased height in our town/city cores and other urban locations with good public transport accessibility. In addition, the Guidelines set out national planning policy that '*Applies those requirements in setting out relevant planning criteria for considering increased building height in various locations but principally (a) urban and city-centre locations and (b) suburban and wider town locations*.' The Guidelines seek to secure '*…compact and sustainable urban growth,* which means '*..either reusing or redeveloping existing sites and buildings, in well-serviced urban locations, particularly those served by good public transport and supporting services, including employment opportunities*.

The Proposed Development will assist in achieving growth within an already built-up commuter area such Howth Town Centre. In the context of the Proposed Development, this application is considered to meet the criteria of the Guidelines. The Site of the Proposed Development is well served by public transport - '*frequent service and good links to other modes of public transport*' and it is designed '*to integrate into/ enhance the character and public realm of the area, having regard to topography, its cultural context, setting of key landmarks, protection of key views'*.

3.2.3 Housing for All - A New Housing Plan for Ireland (2021)

Housing for All - a New Housing Plan for Ireland' is the government's housing policy to 2030. It is a multi-annual, multi-billion euro plan which will improve Ireland's housing system and deliver more homes of all types for people with different housing needs.

The overall aim of Housing for All is : "*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*." Housing for All provides four pathways to achieving four overarching objectives:

- *"Supporting Homeownership and Increasing Affordability;*
- *Eradicating Homelessness, Increasing Social Housing Delivery and Supporting Social Inclusion;*
- *Increasing New Housing Supply; and*
- *Addressing Vacancy and Efficient Use of Existing Stock."*

To meet the targets as set out in the National Planning Framework and the measures discussed in the Housing Plan, Ireland needs an average of 33,000 homes constructed per annum until 2030

The Proposed Development will contribute to the number of residential homes being constructed and will assist in achieving the Housing Policy Objectives outlined in the Plan. The Government's *Housing for All Plan* as well as the policies outlined in the National Planning Framework support the delivery of residential development, such as that proposed. The Proposed Development is located in close proximity to quality public transport routes (the area is well serviced with public transport, including access to rail, buses, and established walking and cycling paths) and within an existing urban area.

3.2.4 Design Manual for Urban Roads & Streets (DMURS) (2013)

The Design Manual was prepared by the Department of Transport, Tourism and Sport, together with the DoECLG for Urban Roads and Streets, and sets out design guidance and standards for urban roads/streets in Ireland. It also outlines practical design measures to encourage more sustainable travel patterns in urban areas. The Engineering Assessment Report prepared by Waterman Moylan Consulting Engineers Limited provides further detail regarding the compliance of the Proposed Development with this Design Manual.

3.2.5 National Policy Position on Climate Action & Low Carbon Development and Climate Act 2021

The EU, in 2014, agreed to the "2030 Climate and Energy Policy Framework" (EU 2014). The European Council endorsed an EU target of at least a 40% domestic reduction in greenhouse gas emissions by 2030 compared to 1990. The Paris Agreement was established in 2015 and is an important milestone in international climate change agreements. To meet the Paris Agreement's objectives and assist in reducing Ireland's GHG emissions, the Irish government has established and outlined several policies at a national level.

In 2014, the Government adopted the National Policy Position on Climate Action and Low Carbon Development. The Climate Action and Low Carbon Development Act 2015 was adopted to provide for the approval of plans by the government in relation to climate change. This Act establishes the fundamental national objective of achieving the transition to a competitive, low carbon, climate-resilient and environmentally sustainable economy by 2050. It sets out the context for the objective, clarifies the level of greenhouse gas (GHG) mitigation ambition envisaged and establishes the process to pursue and achieve the overall objective. Specifically, the Policy Position envisages that policy development will be guided by a long-term vision based on:

- an aggregate reduction in carbon dioxide (CO2) emissions of at least 80% (compared to 1990 levels) by 2050 across the electricity generation, built environment and transport sectors; and
- in parallel, an approach to carbon neutrality in the agriculture and land-use sector, including forestry, which does not compromise capacity for sustainable food production.

The National Mitigation Plan (DCCAE, 2017) and the National Adaptation Framework (DCCAE, 2018) were also established under this Act.

In addition, on the 4th of November 2021, the Irish government launched the Climate Action Plan 2021, an ambitious plan to put Ireland on a more sustainable path, cutting emissions, creating a cleaner, greener economy and society and protecting us from the devastating consequences of climate change.

The Climate Action Plan follows the Climate Act 2021, which commits Ireland to a legally binding target of net-zero greenhouse gas emissions no later than 2050, and a reduction of 51% by 2030. These targets are a key pillar of the Programme for Government. By 2030, the government aims to achieve the following:

- Cutting greenhouse gas emissions by at least 30%
- Reaching a target of at least 32.5% energy efficiency
- Delivering 70% renewable electricity

The Proposed Development is compliant with the objectives of the National Policy Position on Climate Action and Low Carbon Development and policies of the Climate Act 2021, through maximising the passive benefits of the buildings fabric, orientation, etc. followed by the inclusion of highly efficient M&E systems to achieve a design that will meet the Renewable Energy Ratio (RER) target of 20% outlined in the Part L 2021 Regulations. Further details are available in the Sustainability and Energy Report (JV Tierney & Co, 17/02/2022), and included in Appendix B of the EIAR.

3.2.5.1 The Planning System & Flood Risk Management (2009)

The Planning System and Flood Risk Management Guidelines were issued under Section 28 of the Planning & Development Act 2000 (as amended). The Planning System and Flood Risk Management Guidelines require the planning system at all levels to avoid development in areas at risk of flooding, particularly floodplains unless there are proven wider sustainability grounds that justify appropriate development and where the flood risk can be reduced or managed to an acceptable level without increasing flood risk elsewhere; adopt a sequential approach to flood risk management when assessing the location for new development based on avoidance, reduction and mitigation of flood risk; and incorporate flood risk assessment into the process of making decisions on planning applications and planning appeals.

A Flood Risk Assessment (FRA) has been prepared in accordance with these guidelines by Waterman Moylan Consulting Engineers Limited and is enclosed with the planning application.

3.2.5.2 Sustainable Residential Development in Urban Areas, Guidelines for Planning Authorities, 2009 and Urban Design Manual, A Best Practice Guide

The Sustainable Residential Development in Urban Areas guidelines details the key principles for new residential developments in urban areas while its accompanying Urban Design Manual translates the guidelines into practice. The Guidelines encourage increased densities in appropriate zoned residential land within inner suburban areas of cities, proximate to existing and due to be improved public transport corridors.

The Proposed Development is located within 700m walking distance to Howth Dart Station and has a Bus Connect H Spine stop directly adjacent.

3.2.5.3 Urban Design Manual (A Best Practice Guide) (2009)

The Urban Design Manual was published as a companion document to the Guidelines for Sustainable Residential Development in Urban Areas. The Manual is intended to assist in the assessment of residential applications, to identify the principles and criteria that are important in the design of housing and to set out a design framework for a new residential neighbourhood. These guidelines are also incorporated in the relevant development plan and/or local area plans and outline key considerations in planning application assessments.

The Manual sets out 12 key urban design criteria that all new residential developments should be tested against in order to establish if the scheme is a well-designed proposal, including Context, Connections, Inclusivity, Variety, Efficiency, Distinctiveness, Layout, Public Realm, Adaptability, Privacy / Amenity, Parking and Detailed Design.

In accordance with the Guidelines, the Proposed Development has been assessed against these criteria by Brady Shipman Martin in the Planning Report and should be read in conjunction with the Architect's Design Statement.

3.2.5.4 National Investment Framework for Transport in Ireland (NIFTI)

The National Investment Framework for Transport in Ireland (NIFTI) sets out clear principles for the consideration of future transport investment and is closely aligned with key Government policy priorities and commitments, such as the Climate Action Plan and the National Development Plan.

The strategic investment priorities articulated by NIFTI have been developed to support the realisation of the NPF and address key transport challenges identified through extensive supporting analysis. The four NIFTI priorities for future land transport investment are:

- Decarbonisation
- Protection and Renewal
- Mobility of People and Goods in Urban Areas
- Enhanced Regional and Rural Connectivity

The Proposed Development aligns with the principles as set out by NIFTI. In particular, the Proposed Development assists in achieving one of the key outcomes of the NPF – Compact Growth. NIFTI Investment Priority: Mobility of People and Goods in Urban Areas' outlines importance measures such as '*walking and cycling infrastructure expansion, and the provision of better and more comprehensive public transport services'* in order to tackle spatial constraints and urban congestion issues.

"Transport should be a central consideration for future development, reducing the need for new infrastructure and optimising existing transport capacity, mitigating the need to travel and ensuring that the most sustainable modes are encouraged."

The Proposed Development meets these needs - the proposed residential development will promote sustainable travel patterns due to its location, layout, design and proximity to the public transport and cycle networks. These are complemented with a Residential Travel Plan and the appointment of a Mobility Manager to promote sustainable travel patterns by residents. The proposed residential development is located such that it will not have any traffic impact on the existing residential development in the area. The access and internal layout is designed in accordance with the Design Manual for Urban Roads & Streets (DMURS) and includes for good permeability and will promote and facilitate sustainable travel patterns as part of the overall development. See the accompanying Waterman Moylan Travel Plan and Traffic and Transport Assessment that demonstrate the consistency of the Proposed Development with these policy objectives.

3.2.6 Regional Planning Context

3.2.6.1 Eastern & Midland Regional Assembly - Regional Spatial & Economic Strategy (2019)

The Eastern & Midland Regional Assembly (EMRA) Regional Spatial & Economic Strategy 2019-2031 (hereafter RSES) were adopted in 2019 to ensure the policies and objectives of the NPF are implemented at a regional level.

The Strategy identifies that the Region '*is home to over 800,000 households, with 4 out of 5 living in conventional housing while apartments account for around 18% of our housing stock. One of the challenges facing the Region is 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'*.

The RSES sets out an ambitious target to achieve compact growth with 50% of housing to be provided within or contiguous to the built-up area of Dublin city and suburbs.

RPO 4.3: to "*support the consolidation and reintensification of infill / brownfield sites to provide high density and people intensive uses within the existing built up area of Dublin city and suburbs and ensure that the development of future development areas is co-ordinated with the delivery of key water infrastructure and public transport projects."*

The Proposed Development will contribute to the target to achieve compact growth with 50% of housing to be provided within or contiguous to the built-up area of Dublin City and suburbs.

The Proposed Development has been designed in accordance with the above guidelines, objectives of the NPF and the RSES EMRA.

3.2.7 Local Level

3.2.7.1 Fingal County Council Development Plan 2017-2023

The Fingal County Council Development Plan is the statutory planning policy document for the County and sets out the policies and objectives for the proper planning and sustainable development of the County from 2017 to 2023. The Site is located within the administrative area of Fingal County Council.

3.2.7.1.1 Zoning

The subject site is zoned 'Objective RS - Residential' and 'Objective TC – Town and District Centre'.

The site is subject to Specific Objective 115 – '*Ensure the layout, scale, height and design respects the high amenity status of the surrounding area, the Martello Tower and the village character*'.

Figure 3-1 details the zoning of the Site of the Proposed Development.

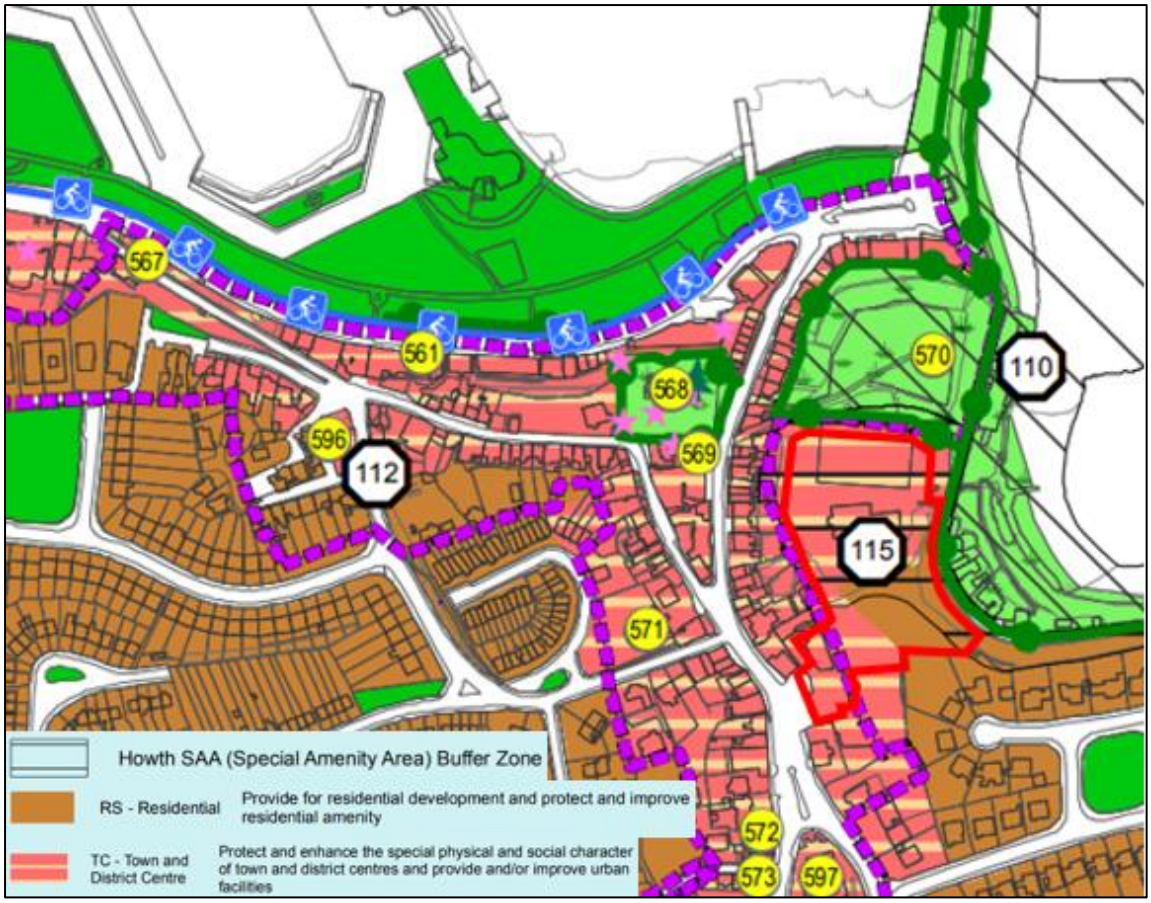


Figure 3-1: Extract from the Fingal Development Plan Zoning Map 10 – indicative site outline in red (Source: FCC).

The map extract shows a broken purple line surrounding the town centre. This indicates the Howth Historic Core architectural conservation area (ACA). The Baily Court Hotel is within the boundary of this ACA, while the ACA boundary runs along western and northern boundaries of the application site.

The northern part of the site (and a part of the eastern site area) is also located adjacent to the Howth SAA (Special Amenity Area) Buffer Zone.

The following uses are considered permitted in principle in 'RS' Residential zoned lands:

Bed and Breakfast, Childcare Facilities, Community Facility, Education, Guest House, Office Ancillary to Permitted Use, Open Space, Residential, Residential Care Home/ Retirement Home, Retirement Village, Sheltered Accommodation, Traveller Community Accommodation Utility Installations

The following uses are considered permitted in principle in 'TC' Town and District Centre zoned lands:

Bed and Breakfast Betting Office Car park – Non-Ancillary, Childcare Facilities Community Facility, Cultural Facility, Dancehall/Nightclub, Education, Exhibition Centre, Fast Food Outlet/Takeaway, Funeral Home/Mortuary, Garden Centre, Guest House, Health Centre, Health Practitioner, Holiday Home / Apartments, Home-based Economic Activity, Hospital, Hotel, Office Ancillary to Permitted Use Office ≤ 100sqm, Office > 100sqm and < 1,000sqm, Open Space, Petrol Station, Place of Worship Public House, Public Transport Station Recreational Facility/Sports Club Residential, Residential Care Home/ Retirement Home, Residential Institution, Restaurant/Café, Retail - Local < 150 sqm nfa Retail - Convenience ≤ 500 sqm nfa Retail - Comparison ≤ 500 sqm nfa, Retail - Comparison >500 sqm nfa** Retail - Supermarket ≤ 2,500 sqm nfa, Retirement Village Sheltered Accommodation Taxi Office, Telecommunications Infrastructure, Training Centre, Traveller Community Accommodation Utility Installations, Vehicles Sales Outlet – Small Vehicles, Vehicle Servicing/Maintenance Garage, Veterinary Clinic*

**Proposals for this use class are only permitted in principle for TC zonings listed in Level 3 of the Fingal Retail Hierarchy

Further detail provided in the Fingal County Council Development Plan states: '*Ensure 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. Provide an appropriate mix of house sizes, types and tenures in order to meet household needs and to promote balanced communities*.'

3.2.7.1.2 Quantitative Standards

The Fingal County Development Plan sets out a range of quantitative standards for residential units in order to achieve a high standard of accommodation for future residents. The following general standards apply:

Objective DMS24: Require that new residential units comply with or exceed the minimum standards as set out in Tables 12.1, 12.2 and 12.3.

Objective DMS25: Require that the majority of all apartments in a proposed scheme of 100 or more apartments must exceed the minimum floor area standard for any combination of the relevant 1, 2 or 3 bedroom unit types, by a minimum of 10%.

Objective DMS26: For apartment schemes between 10 and 99 units, require that the majority of all apartments in a proposed scheme must exceed the minimum floor area standard for any combination of the relevant 1, 2 or 3 bedroom unit types, by a minimum of 10%. This may be redistributed throughout the scheme, i.e. to all proposed units.

Objective DMS27: Require that all planning applications for residential development include floor plans for each room indicating typical furniture layouts and door swings.

The Proposed Development meets or exceeds the above standards.

The Fingal County Development Plan also draws attention to the following areas, which have been carefully considered by the design team, in particular:

Residential Zoning: the subject lands are appropriately zoned for the Proposed Development and will, in turn, create a new high quality residential environment.

Mix of Dwelling Types: the Proposed Development will provide a sustainable mix of unit types and sizes enabling a choice of housing for a broad section of the population.

Residential Density: the proposed density has been carefully considered in the context of the emerging urban area, the presence of key public transport facilities and in reference to guidelines including: Sustainable Residential Development in Urban Areas Guidelines for Planning Authorities (2009), the Sustainable Urban Housing Design Standards for New Apartments (2020) and the Urban Development and Building Heights Guidelines for Planning Authorities (2018).

The Fingal County Development Plan sets out a range of standards in relation to residential developments including: separation distance, daylight and sunlight, acoustic design, communal facilities and refuse facilities. The Proposed Development meets these relevant standards, with further information available within the Planning Report (Brady Shipman Martin) submitted with the planning application.

3.3 The EIA Directive

The EIA Directive (85/337/EEC) has been in force since 1985 and applies to a wide range of defined public and private projects. The EIA Directive was amended in 1997, 2003, 2009, 2011 and 2014 by Directives 97/11/EC; 2003/35/EC, 2009/31/EC, 2011/92/EU and 2014/52/EU. The EIA Directive requires environmental impact assessments to be carried out for certain projects as listed in Annex I of the Directive. The EIA Directive, and amendments, are transposed into Irish law through the Planning and Development Acts 1996 to 2019 in particular S.I. No. 296 of 2018.

Schedule 5, Part 1, of the Planning Regulations transposes Annex 1 of the EIA Directive directly into Irish planning legislation. An EIAR is required to accompany a planning application for development of a class set out in Schedule 5, Part 1 of the Planning Regulations which exceeds a limit, quantity or threshold set for that class of development.

Schedule 5, Part 2 of the Planning Regulations defines projects that are assessed on the basis of set mandatory thresholds for each of the project classes including:

"10*(b) (i) Construction of more than 500 dwelling units.*

(ii) Construction of a car-park providing more than 400 spaces, other than a car-park provided as part of, and incidental to the primary purpose of, a development.

(iii) Construction of a shopping centre with a gross floor space exceeding 10,000 square metres.

(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."

While the scheme is sub-threshold it was considered, at design stage, that given the site's characteristics, an EIAR should be carried out and submitted with the SHD application.

Draft "*Guidelines on the Information to be contained in Environmental Impact Assessment Reports"* published by the Environmental Protection Agency (EPA) in August 2017 detail the key changes made by the amended 2014 EIA Directive. This document has also been used in the preparation of this EIAR. In August 2018 the Department of Housing, Planning and Local Government published a document entitled 'Guidelines for Planning Authorities and An Bord Pleanála' on carrying out Environmental Impact Assessment. This document has also been used in the preparation of this EIAR.

The Revised EIA Directive defines EIA as a process. Article 1(2) (g) states that EIA means:

"(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".

The Revised EIA Directive requires the EIA to identify, describe and assess, in an appropriate manner and in light of each individual case, the direct and indirect significant effects of the Proposed Development on factors of the environment including:

(a) population and human health;
(b) biodiversity, with particular attention to species and habitats protected under the Habitats and Birds Directives;
(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 requirements of the Revised EIA Directive in relation to each chapter are addressed in the EIAR as follows;

- Chapter 2: Description of Development
- Chapter 3: Planning and Policy Context
- Chapter 4: Population and Human Health
- Chapter 5: Biodiversity;
- Chapter 6: Land and Soils;

- Chapter 7: Hydrology;
- Chapter 8: Air Quality and Climate;
- Chapter 9: Noise and Vibration;
- Chapter 10: Landscape and Visual Amenity;
- Chapter 11: Archaeology and Cultural Heritage;
- Chapter 12: Material Assets including Traffic;
- Chapter 13: Risk Management;
- Chapter 14: Interactions;
- Chapter 15: Mitigation and Monitoring Measures.

4 POPULATION AND HUMAN HEALTH

4.1 Introduction

This Chapter of the EIAR provides a description and assessment of the likely impact of the Proposed Development on Population and Human Health and was prepared by Kamala Yagubova (BS Hons.), Environmental Consultant, Enviroguide Consulting.

This chapter of the EIA Report considers the potential impacts of the Proposed Development on human beings, living, working, and visiting in the vicinity of a Proposed Development at Balscadden, Howth, Co. Dublin. The Chapter details the potential direct and indirect effects of the Proposed Development on population and human health.

Human beings are one of the most significant elements of the environment to be considered, therefore any potential impact on the status of humans by a development proposal must be comprehensively addressed. One of the principal concerns in any Proposed Development is that the local population experiences no reduction in the quality of life as a result of the development on either a permanent or temporary basis. This chapter also examines the socio-economic impacts of the development proposal focusing on pertinent issues such as residential amenity, economic activity, tourism and population levels.

The section on Population and Human Health is broad ranging and covers the existence, wellbeing, and activities of people through the format of considering people as ‘groups’ or ‘populations. The assessment of impacts on Population and Human Health involves the identification of relevant key populations that may be affected by the Proposed Development and quantifiable documentary research.

Key populations have been identified as persons residing and engaging in activities near the application site, persons with a stake in the general economy of the local and regional area, and persons enjoying the recreational and cultural amenities of the area.

4.2 Study Methodology

A desk-based study was undertaken to assess information regarding population, age structure, economic activity, employment, and unemployment within the vicinity of the Proposed Development.

The scope of the evaluation is based on a review of data available from the Central Statistics Office (CSO), legislation, guidance documents and EIARs. The aim of the study was to assess the current baseline environment.

The potential impact of the Proposed Development on the local population is assessed in this EIAR in relation to:

- Population;
- Settlement patterns;
- Socio Economic impacts;
- Tourism and Amenity;
- Air quality;
- Water;
- Noise;

- Traffic; and
- Risk

4.2.1 Information Sources

The principal sources of information are as follows;

- Census and employment information published by the Central Statistics Office (CSO). Available at https://data.cso.ie/#
- Fingal County Council Development Plan (2017-2023), Available at: https://www.fingal.ie/council/service/development-plans
- Regional Planning Guidelines of the Greater Dublin Area 2010-2022, and
- Ordinance Survey Ireland (OSI) mapping and aerial photography.

In line with the EPA Guidelines (EPA, 2017), the following terms are defined when quantifying the quality of effects. See table 4.1.

Table 4-1: Definition of Quality of Effects

Quality	Definition
Positive Effects	A change which improves the quality of the environment
Neutral Effects	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error
Negative/adverse Effects	A change which reduces the quality of the environment

In line with the EPA Guidelines (EPA, 2017), the following terms are defined when quantifying the significance of impacts. See Table 4.2.

Table 4-2: Definition of Significance of Effects

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

In line with the EPA Guidelines (EPA, 2017), the following terms are defined when quantifying duration and frequency of effects. See Table 4.3.

Table 4-3: Definition of Duration of Effects

Quality	Definition
Momentary Effects	Effects lasting from seconds to minutes
Brief Effects	Effects lasting less than a day
Temporary Effects	Effects lasting less than a year
Short-term Effects	Effects lasting one to seven years.
Medium-term Effects	Effects lasting seven to fifteen years.
Long-term Effects	Effects lasting fifteen to sixty years
Permanent Effects	Effects lasting over sixty years
Reversible Effects	Effects that can be undone, for example through remediation or restoration

In line with the EPA Guidelines (EPA, 2017), the following terms are defined when quantifying the extent and context of effects. See Table 4.4.

Table 4-4: Definition of the Extent and Context of Effects

Quality	Definition
Extent	Describe the size of the area, the number of sites, and the proportion of a population affected by an effect.
Context	Describe whether the extent, duration, or frequency will conform or contrast with established (baseline) conditions (is it the biggest, longest effect ever?)

In line with the EPA Guidelines (EPA, 2017), the following terms are defined when quantifying the probability of effects. See table 4.5.

Table 4-5: Definition of the Probability of Effects

Quality	Definition
Likely Effects	The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.
Unlikely Effects	The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.

4.3 Characteristics of the Proposed Development

The proposed development relates to lands located to the south of the Martello Tower on Balscadden Road & the former Baily Court Hotel, Main Street, Howth, County Dublin. The development will consist of the demolition of existing structures on the proposed site including the disused sports building and the former Baily Court Hotel buildings and the construction of a residential development set out in 4 no. residential blocks, ranging in height from 2 to 5 storeys to accommodate 180 no. apartments with associated internal residential tenant amenity and external courtyards and roof terraces, 1 no. retail unit and 2 no. café/retail units. The site will accommodate car parking spaces at basement level and bicycle parking spaces at basement and surface level. Landscaping will include new linear plaza which will create a new pedestrian link between Main St and Balscadden Rd to include the creation of an additional 2 no. new public plazas and also maintains and upgrades the pedestrian link from Abbey Street to Balscadden Road below the Martello Tower.

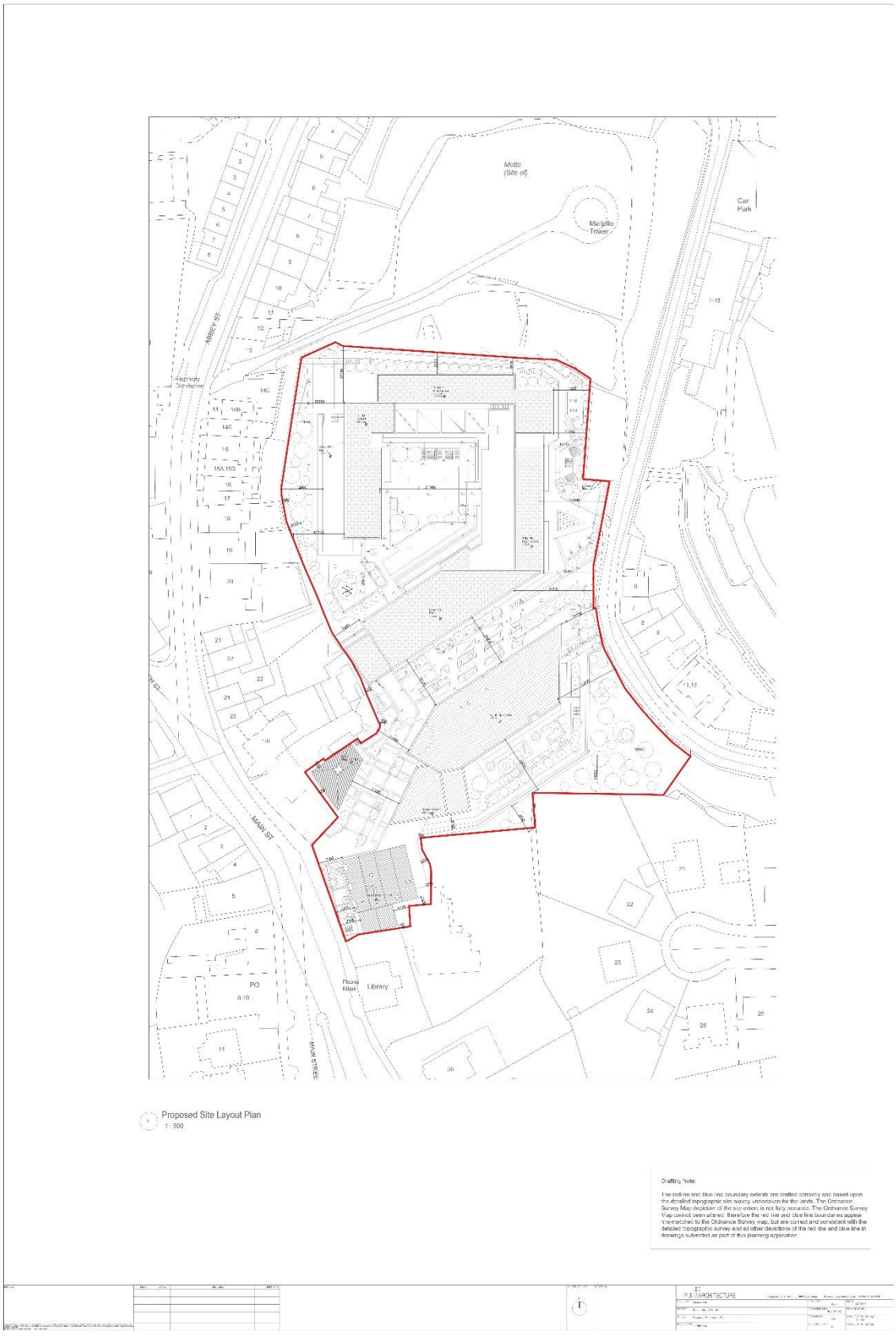


Figure 4-1: Proposed Development Site Layout (Plus Architecture, 2022)

4.3.1 Details of Construction Phase

The duration of the Construction Phase of the Proposed Development will be approximately 3 years, and it will take place in the following sequence of works (*Outline Construction Management Plan, Waterman Moylan, 2021*):

- Demolition of the existing EDROS Building & former Baily Court Hotel.
- Removal of site vegetation and installation of site set-up.
- Installation of temporary silt trench to eastern boundary to protect SAC/pNHA as required under the Preliminary Environmental Management Plan
- Provision of a temporary piling mat and berms between levels.
- Secant piled walls installed to allow for the bulk excavation and reduced level dig.
- Temporary works installed to temporarily restrain the secant piled walls during excavation.
- Basement battered open-cut excavation to the North and East boundaries with a safe angle of repose.
- Installation of the building raft foundation and basement retaining walls.
- Tower crane installation for the construction of the building frame.
- Bottom-up construction sequence of the floor slabs and vertical elements.
- Elements of the building frame may be premanufactured off site in precast construction for speed of construction, less formworks and on-site waste.
- Temporary scaffolding may be required around each building during the construction of the building envelope.
- Elements of the building facade may be premanufactured off site using modular construction for speed of construction and less on-site waste.

4.3.2 Details of Operational Phase

The Operational Phase of the Proposed Development will consist of the normal day-to-day operations necessary for the management of a residential development and a café/retail space, and the ongoing maintenance of the dwellings and units.

It is proposed to discharge surface water from the site by gravity to the existing surface water sewer in Main Street. Surface water discharging to the public network will be restricted to the greenfield equivalent runoff rate via a Hydrobrake or similar approved flow control device. The surface water network will be designed to accommodate the 1-in-5 year storm, with attenuation storage provided for the 1-in-100 year storm.

It is proposed to incorporate a Storm Water Management Plan through the use of various SuDS techniques to treat and minimise surface water runoff from the site. The methodology involved in developing a Storm Water Management Plan for the subject site is based on recommendations set out in the Greater Dublin Strategic Drainage Study (GDSDS) and in the SuDS Manual (Ciria C753).

4.4 The Existing and Receiving Environment (Baseline Situation)

The Site occupies an area of 1.43 hectares (ha) and is located within Howth Village, north Dublin. The Site of the Proposed Development is bounded to the east by the Balscadden Road, to the west by residential and commercial buildings fronting onto Main Street and Abbey Street, and to the north by Martello Tower and Tower Hill, and to the south by rear gardens to

residential properties. The Site comprises areas of scrub, hardstanding and a large derelict building in the centre of the site.

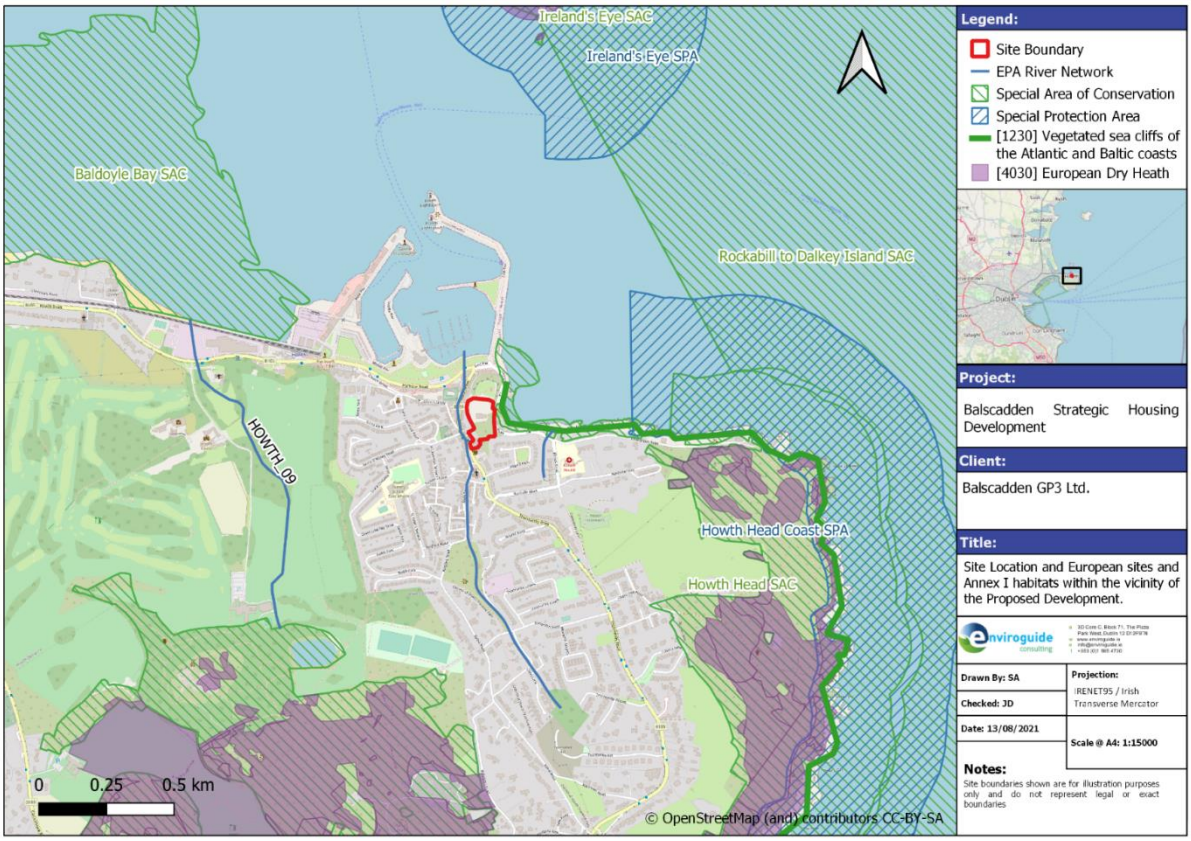


Figure 4-2: Site Location

4.4.1 Population & Settlement Patterns

4.4.1.1 Population & Demographic Analysis

In terms of the County, Region and the State, population structure and change are more strongly influenced by migration and emigration rates than by birth and death rates. The mid to late 1980s in Ireland was a period of heavy population outflow, mainly due to the poor economic and employment situation in the country at that time. The most recent population estimates published by the Central Statistics Office in April 2017, indicate that the combination of a net inward migration and high birth rates has resulted in the largest annual population increase since 2008. Population projections for Ireland up to 2046 anticipate a population of approximately five million under the most pessimistic scenario and over 6.7 million under the most optimistic scenario. Population projections for Northern Ireland up to 2034 anticipate a population of approximately two million.

The Greater Dublin Area (GDA) which includes Dublin City and County, showed a significant population growth of 18.7% between 2006 and 2016. Significant population pressures have been exerted on certain parts of the GDA particularly those areas which are within close commuting distance of Dublin.

In the case of the GDA, population levels specified in the Greater Dublin Regional Planning Guidelines 2010 – 2022 are projected to be in excess of 2 million by the year 2022.

According to Census 2016, the total population of Dublin is 1,345,359

- Between 2006 and 2016 the population increased by 160,183 or 13.49% compared to an average for the State of 12.3%;
- Relatively speaking, there are high levels of young people and fewer older people in Fingal as detailed in Table 4-6.

Table 4-6: Population Change in Greater Dublin Area, 2006 to 2016 Census (Source: CSO)

County	Population 2006 Census Date	Population 2016 Census Data	Change in Number of Persons	Percentage change in Population
Dublin	1,187,176	1,347,359	160,183	13.49
Kildare	186,335	222,504	36,169	19.41
Meath	162,831	195,044	32,213	19.78
Wicklow	126,194	142,425	16,231	12.86
	1,662,536	**1,907,332**	**244,796**	**14.72**

4.4.1.2 Population & Age

CSO data for 2016, recorded 1,347,359 persons in living in Dublin City and County, 296,020 of which are living in the Fingal County area. As the Proposed Development is located within Howth Electoral Division (ED), a population from this ED was analysed and is shown in Table 4-7. A total of 8,294 persons are living in this ED.

Table 4-7 shows the breakdown of the population of ED based on their age range during the 2016 Census against the Fingal County and State average. This table is further broken down into percentages of the population within these age ranges.

Table 4-7: Howth Electoral Division, Fingal County and National Population Categorisation by Age

Age Range	Howth Electoral Division		Fingal		Ireland	
	No. of People	% of People	No. of People	% of People	No. of People	% of People
0-4 years	401	4.8	24,899	8.4	331,515	7.0
5-24 years	1,946	23.5	81,221	27.4	1,251,489	26.3
25-44 years	1,676	20.2	99,377	33.6	1,406,291	29.5
45-64 years	2,228	26.9	63,488	21.4	1,135,003	23.8
65-69 years	554	6.7	10,133	3.4	211,236	4.4
70 years and over	1,489	18.0	16,902	5.7	426,331	9.0
Total	**8,294**		**296,020**		**4,761,865**	

As evident from Table 4-7, there is a large variance in age profile. The population of Howth ED has an aging population with a higher percentage of aging persons (70 years and over) and smaller percentage of younger people (0-4 years) than the Fingal County and State averages.

Population ranging from 5-24 years in the ED comprise 23.5%, which is lower than the State average of 26.3% and the average for Fingal County of 27.4%.

The largest portion of the population ranges between 45 to 64 years in the ED (26.9% in total) which is slightly higher than the State average of 23.8%. 20.2% of the population in ED range between 25 to 44 years which is lower than the State average of 29.5%. 6.7% of the population in ED range between 65 to 69 years which is higher than the State average of 4.4%. 18% of the population in ED are over 70 years, which is higher that the Fingal County (5.7%) and twice the State average of 9%.

4.4.2 Socio Economic

4.4.2.1 Economic Activity & Employment

The labour force is defined by number of people above the legal working age that are available to work. The labour force participation rate is the number of people who are employed and unemployed but looking for a job, divided by the total working-age population.

In 2016, there were 2,304,037 persons in the labour force in Ireland. This represented an increase of 71,834 (3.2%) on 2011 statistics. The substantial increase in retired persons (up 19.2% to 545,407) has impacted on the labour force participation rate, which fell to 61.4%.

Table 4-8 shows the percentage of the total population aged 15+ who were in the labour force during the 2016 Census. This figure is further broken down into the percentages that were at work or unemployed. It also shows the percentage of the total population aged 15+ who were not in the labour force, i.e. those who were students, retired, unable to work or performing home duties.

Table 4-8: Economic Status of the Population Aged 15+ in 2016 (Source: CSO)

Status		Howth Electoral Division		Fingal		Ireland	
% of population aged 15+ who are in the labour force		**No. of People**	**% of People**	**No. of People**	**% of People**	**No. of People**	**% of People**
% of which are	At work	3,222	46.8	133,776	59.9	2,001,953	53.3
	Unemployed looking for first regular job	27	0.4	1,850	0.8	31,434	0.8
	Unemployed having lost or given up previous job	216	3.1	13,565	6.1	265,962	7.1
	Assisting relative	0	0	195	0.1	4,688	0.1
Total population aged 15+ who are in the labour force		3,465	50.3	149,386	66.9	2,304,037	**61.4**
% of population aged 15+ who are not in the labour force		**No. of People**	**% of People**	**No. of People**	**% of People**	**No. of People**	**% of People**
% of which are	Student or pupil	827	12	24,273	10.9	427,128	11.4
	Looking after home/family	742	10.8	17,677	7.9	305,556	8.1
	Retired	1,698	24.7	24,434	10.9	545,407	14.5
	Unable to work due to permanent sickness or disability	142	2.1	7,102	3.2	158,348	4.2
	Other economic status	13	0.2	535	0.2	14,837	0.4
Total of population aged 15+ who are not in the labour force		3,422	49.7	74,021	33.1	1,451,276	**38.6**

When assessing the percentage of people in the labour force, it is noted that 50.3% of the population in the Howth ED are in the labour force. This reflects a moderate number of people of a working profile living within the area, which is lower than 66.9% in the Fingal area and the national percentage of 61.4%.

The percentage of people in Howth ED who are at work (46.8%) is lower than the national percentage of people at work of 53.3%.

The percentage of people who are unemployed having lost or given up previous job is 3.1% in Howth ED, which is lower than 6.1% in Fingal and the State average of 7.1%. The percentage of people who are unemployed and looking for first regular job is 0.4% in Howth ED, which is lower than 0.8% in Fingal and the State average of 0.8%.

The percentage of people in the Howth ED area that are unable to work due to permanent sickness or disability is 2.1% which is lower than the percentage for the State of 4.2%.

The percentage of people who are retired in the Howth ED area is 24.7% which is higher than the percentage for the Fingal of 10.9% and for the State of 14.5%.

The most recent publication of monthly unemployment statistics was issued by the CSO in January 2022 for reference month December 2021. The monthly unemployment release contains a series of monthly unemployment rates and volumes. These series are based primarily on the Labour Force Survey and are compiled in accordance with agreed international practice. These statistics are the definitive measure of monthly unemployment. The Live Register is used to provide a monthly series of the numbers of people (with some exceptions) registering for Jobseekers Benefit or Jobseekers Allowance or for various other statutory entitlements at local offices of the Department of Social Protection.

Table 4-9 details the most recent information available from the CSO from January 2022 on the number of persons on the Live Register in Swords Social Welfare Office. The Swords Social Welfare Office is the nearest Welfare Office to the Proposed Development. In December 2021, 2,114 people were on the Live Register in Swords area.

Table 4-9: Number of Persons on Live Register, Swords (Source: CSO)

Month	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21
Number of Persons on Live Register, Swords	2,782	2,635	2,353	2.288	2,208	2,114

As with employment, the number of persons in the labour force is also influenced by changes in the size of the working age population (demographic effect). Up to the start of 2008 this demographic effect had been adding at least 30,000 to the labour force, nationally, on an annual basis, primarily driven by net inward migration. The decline in inward migration saw the positive demographic effect starting to fall in the second half of 2007. Inward migration continued to decline throughout 2008 and 2009 before becoming negative in Q3 2009. The negative demographic effect continued for each quarter until Q1 2014. The demographic effect has been positive since Q2 2014 and in Q1 2019 a positive demographic effect contributed an increase of 36,000 to the overall change in the labour force.

Tables 4-10 and 4-11 show the level of education and the area of study of the ED population at the time of the 2016 Census.

Table 4-10: Level of Education in the Howth ED (Source CSO)

Level of Education in Howth Electoral Division	Total No. of People	Total Percentage
Upper secondary	1,151	19.69%
Postgraduate diploma or degree	1,013	17.33%
Honours bachelor's degree, professional qualification or both	997	17.06%
Ordinary bachelor's degree or national diploma	616	10.54%
Lower secondary	508	8.69%
Technical or vocational qualification	345	5.90%
Primary education	326	5.58%
Higher certificate	308	5.27%
Advanced certificate/Completed apprenticeship	227	3.88%
Not stated	194	3.32%
Doctorate (Ph.D.) or higher	120	2.05%
No formal education	40	0.68%

Table 4-11: Areas of Study in the Howth Electoral Division (Source CSO)

Area of Study Howth Electoral Division	Total No. of People	Total Percentage
Not stated	2,063	35.3%
Social sciences, business and law	1,592	27.2%
Health and welfare	454	7.8%
Engineering, manufacturing and construction	435	7.4%
Science, mathematics and computing	351	6.0%
Services	233	4.0%
Education and teacher training	232	4.0%
Arts	222	3.8%
Humanities	208	3.6%
Agriculture and veterinary	52	0.9%
Other subjects	3	0.1%

Employment in wholesale and retail trade; repair of motor vehicles and motorcycles is the most prevalent broad industrial area of employment in Fingal as detailed in Table 4-12. Human health and social work activities, transportation and storage, education and Financial and insurance activities are also predominant areas of employment in Fingal. Table 4-12 also shows that 1,850 people in Fingal are unemployed looking for first regular job and 13,565 are unemployed, having lost or given up previous job.

Table 4-12: Population Aged 15+ in the Labour Force Fingal by Broad Industrial Group (Source CSO 2016)

Broad Industrial Group	No. of People
Wholesale and retail trade; repair of motor vehicles and motorcycles	18,675
Human health and social work activities	13,771
Unemployed, having lost or given up previous job	13,565
Industry not stated	11,146
Transportation and storage	10,693
Education	10,258
Financial and insurance activities	9,764
Information and communication	8,305
Manufacturing	7,900
Professional, scientific and technical activities	7,801
Public administration and defence; compulsory social security	7,730
Accommodation and food service activities	7,139
Administrative and support service activities	6,399
Construction	5,866
Other service activities	2,625
Arts, entertainment and recreation	2,361
Unemployed looking for first regular job	1,850
Agriculture, forestry and fishing	1,193
Electricity, gas, steam and air conditioning supply	840
Real estate activities	695
Water supply; sewerage, waste management and remediation activities	479
Activities of households as employers producing activities of households for own use	189
Activities of extraterritorial organisations and bodies	91
Mining and quarrying	51
Total in labour force	**149,386**

4.4.2.2 Travel & Commuting

An assessment of commuter duration and commuter times by people in the Howth ED area are summarised in Tables 4-13 and 4-14. A total of 1,294 (27.3%) people commute to work or school for a duration less than 15 minutes. In total 42.8% of people spend less than 30 minutes commuting to work or school. The remaining 36.8% people spend between 30- 60 minutes commuting to work or school and 14.9% of people spend 1-hour and longer commuting to work or school.

Table 4-13: Duration of Commute from Howth Electoral Division (Source CSO Census 2016)

Duration of Travel Times	No. of People (Total)
< ¼ hour	1,294
¼ hour - < ½ hour	736
½ hour - < ¾ hour	1,034
¾ hour - < 1 hour	713
1 hour - < 1½ hours	593
1½ hours and over	112
Not stated	265

The majority of people (21.2% of people) leave home to travel to school or work between 8:00 and 08:30. A total of 1,959 people (41.3% of people) leave home before 08:00. A further 978 people (20.6% of people) leave home between 08:31 and 09:00.

Table 4-14: Time Leaving Home, from Howth Electoral Division (Source CSO Census 2016)

Time of Travel	No. of People (Total)
Before 06:30	199
06:30 - 07:00	406
07:01 - 07:30	543
07:31 - 08:00	811
08:01 - 08:30	1,005
08:31 - 09:00	978
09:01 - 09:30	230
After 09:30	385
Not stated	190

Table 4-15 shows the most popular means of transport in Howth ED. A total of 575 people (11.6%) travel by foot and 362 people (7.3%) by bus, minibus or coach. The most popular means of transport is travel by motor car as a driver (36.9%). Train, DART or LUAS is the next most popular means of transport (18.3%).

Table 4-15: Means of Travel from Howth Electoral Division (Source CSO Census 2016)

Means of Travel	All persons
Car Driver	1,828
Train, DART or LUAS	908
Car passenger	681
On Foot	575
Bus, minibus or coach	362
Work mainly at or from home	212
Not stated	174
Bicycle	105
Van	69
Motorcycle or scooter	30
Other (incl. lorry)	15
All means of travel	4.959

4.4.3 Tourism and Amenities

Tourism and recreation make a positive contribution to the economic and social wellbeing of Dublin City and Council. In 2016, income from tourists and visitors from overseas to Dublin was in the region of €1,975m. The income from domestic visitors was € 278.2m in the same year. Fáilte Ireland, the national tourism development authority, aims to guide and promote tourism as a leading indigenous component of the Irish economy.

The Site of the Proposed Development is located in Howth village, which is in close proximity to Dublin City Centre and Dublin Airport which is used by overseas visitors travelling to and from Ireland. Dublin City Centre, is a highly developed and concentrated area of residential, community and leisure receptors. Dublin City has a range of community facilities including parks / open spaces, sports / recreational, playgrounds, youth centres and libraries.

Dublin is a vibrant and cosmopolitan city. The medieval city has an abundance of tourist attractions and offers tourists an opportunity to experience historical attractions, sporting events, cultural life, parks and walks of the coastline. Some popular tourist attractions include The Guinness Storehouse, The Book of Kells and Trinity College, Dublin Castle, St Patrick's and Christ Church Cathedrals, Dublin Zoo as well as various galleries, Dublin bay cruises and walks. Some popular city parks include St Stephen's Green, Phoenix Park, St. Annes Park, Iveagh Gardens, Dubh Linn Gardens, Garden of Remembrance. The numerous cultural and man-made attractions are easy to access via national roads, airports, and ports.

Howth is an Irish village on the Howth Peninsula, east of central Dublin. It is located 15 km from Dublin city centre and is a very popular coastal destination for day-trippers, in particular; both those resident in Dublin and tourists visiting Dublin. Howth harbour is a popular visitor location owing to its scenic setting, its wildlife (including numerous harbour seals) and the range of cafes, restaurants and bars the village and West Pier offer. There is a mix of a working fishing fleet with multiple recreational or sailing craft, including Howth Yacht Club at the base of the harbour's middle pier. The village is often used by day-trippers as the start and end

point for cliff-top and hillside walks across the peninsula, which provide panoramic views of Dublin Bay, the Leinster coastline and the Irish Sea. Year-round, the peninsula is a popular destination for cyclists, joggers, walkers, sailors and kayakers alike. Howth is one of Dublin's oldest working harbours with it ranking as one of Ireland's busiest fishing ports to date and with its spectacular coastal walks and amazing natural environments for adventure and the great outdoors.

The most notable amenities in the village is the Howth Castle. The grounds of 15th-century Howth Castle have rhododendron gardens and a transport museum with local trams. The 19th-century Martello Tower (40m north of site) is one of the numerous heritage sites and houses a vintage radio museum. Further north of Martello Tower is the East Pier of Howth Harbour, which serves as a well-known destination for walkers and runners. Both East and West Piers of Howth harbour were constructed in the first quarter of the 19th Century, but the Middle Pier is less than a half-century old. The medieval ruins of St. Mary's Abbey heritage site lie nearby (50 m west of the site). 1km north of Howth Harbour located a 21.5 ha uninhabited island - Ireland's Eye which is a designated Special Amenity Area. It is an island bird sanctuary with an ancient ruined church.

The Proposed Development site is located centrally in Howth. Howth has wide range of community, cultural, and social facilities. The southwest boundary of the site faces onto Main Street Howth which has a range of social and community facilities. There are 3 no. key retail locations and service locations on the Main Street, Sutton Cross and Bayside Square. Bayside key retail and service location is on the border of the 5km catchment area and includes bank services, post office, health and beauty services, convenience stores and a Montessori. There are 18 no. healthcare facilities within the 5km from the site. Healthcare is provided by a range of different organisations including public, voluntary, and private agencies. HSE Howth Healthcare Centre is 0.11km from the site. There are 12 no. public parks and gardens, 7 no. religious facilities, 20 no. sports club and sports facilities including gyms, sports clubs, sports pitches and golf courses within the 5km from the site for the future residents to avail.

4.4.4 Landscape and Visual

The Howth Martello Tower is located 36m north of the northern extent of the site. Both the tower and the motte are protected structures/monuments. Elevated views of the site are experienced near Tower, along with more aesthetic/compelling seaward views across Howth harbour. Further north of the Martello Tower is the East Pier of Howth Harbour. Within 50m east of the site is Balscadden Bay, a popular short, stony beach used by sea swimmers. South and southeast of the site, and on a higher elevation, is the late 20th Century residential development of Asgard Park. Immediately south west and west of the site is the Howth village centre, where it aligns the Main street. The coastal setting of Howth peninsula consists of a series of cliffs, deep inlets, stony coves and rocky caves and outcrops. The shoreline generally rises in high and steep cliffs and coastal spurs.

The Proposed Development located on the Howth peninsula beside the Balscadden Bay. Balscadden Bay lies south of the Hill of Howth which is designated as a Special Area of Conservation (SAC) and Howth Head Coast Special Protection Area (SPA). Balscadden Bay is recognised for its substantive geological and geomorphological interest. The coastal rock formations comprise of Carboniferous dark muddy limestone from the Ballysteen Formation and Cambrian of the Elsinore Formation. A 'fault bresccia' is observed along the beach where

the contact between these two rock formations occur. The site is a County Geological Site due to the structural Geology present. A viewing point for the public is provided further north centred upon Balscadden Bay with information panels on aspects of heritage, geology and local interest. An observation deck or platform is provided here with the views of Balscadden bay and toward Irelands Eye. This is intended to integrate the development into the setting which could be interpreted as extending the 'observatory' nature which the Martello Tower provides. External public seating with tables offers the public an opportunity to enjoy the panorama view of the bay also along the promenade. The promenade fronting onto the Bay references the ladies bathing beach promenade from the nineteenth century with public spaces to enjoy the view and take refreshments at Balscadden Bay.

According to the Fingal CDP, the Landscape Character Type for the Howth peninsula is designated 'coastal'. *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, architectural and natural heritage and is of high ecological value."*

There are multiple protected views within 600-700m of the site, including those bounding the site's eastern and northern boundaries. The protected views in proximity to the site include:

• Views to sea on Balscadden Road

• Views from Howth Piers

• The existing Martello Tower area with views towards the sea

• Views from St. Mary's Abbey

• Views from upper Main Street

• Views from Seaview Terrace

4.4.5 Human Health

Health, as defined by the World Health Organization (WHO), is "*a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity*". The Healthy Ireland Framework 2013-2025 defines health as '*everyone achieving his or her potential to enjoy complete physical, mental and social wellbeing. Healthy people contribute to the health and quality of the society in which they live, work and play'*. This framework also states that health is much more than an absence of disease or disability, and that individual health, and the health of a country affects the quality of everyone's lived experience.

Health is an essential resource for everyday life, a public good and an asset for health and human development. A healthy population is a major asset for society and improving the health and wellbeing of the nation is a priority for Government. Healthy Ireland Framework 2013-2025 is a collective response to the challenges facing Ireland's future health and wellbeing.

Table 4-16: Health Status of Fingal & Howth Electoral Division (Source: CSO)

Health Status	Fingal	% of People	Howth ED	% of People
General health - Very good	184,048	62.2	5,375	64.8%
General health - Good	77,917	26.3	2,048	24.7%
General health - Fair	18,376	6.2	610	7.4%
General health - Bad	3,109	1.1	90	1.1%
General health - Very Bad	695	0.2	14	0.2%
Not stated	11,875	4.0	157	1.9%
Total Number of People	**296,020**		**39,248**	

Table 4-16 shows that the majority of people in Fingal (88.5%) and ED (89.5%) have self-identified themselves in the 2016 Census as having 'very good health' or 'good health'.

4.4.5.1 COVID-19

The COVID-19 pandemic has affected Ireland's economy and society since the first case of the virus was confirmed in Ireland at the end of February 2020. On 11th March 2020, the World Health Organisation (WHO) declared COVID-19 to be a global pandemic.

Infection with the virus that causes COVID-19 can result in illness, ranging from mild to severe. In some cases the virus can be life threatening or even fatal. It can take up to 14 days for symptoms to show. Symptoms can be similar to symptoms of cold and flu.

Exposure to COVID-19 is a public health risk, which affects every member of society. The COVID-19 pandemic has implications for all workplaces as it may present a health risk to workers.

The Work Safely Protocol, which was originally published in November 2020 (and has since been periodically updated) reflected the Government's Resilience and Recovery 2020-2021: Plan for Living with COVID19 as well as updating the public health advice available at that time. Since its publication, Ireland has faced additional measures, introduced nationally and locally, to address the continued risks from COVID-19, in particular the new variants of concern identified. The Work Safely Protocol is the result of a collaborative effort, led by the Department of Enterprise, Trade and Employment, and involving primarily the Health and Safety Authority (HSA), with significant input by public health from the Department of Health and the Health Services Executive (HSE).

Irelands society continues to adhere to the public health advise, if any is in place. All public health advise that will be in place, at the time of commencement of the construction and operational phases of this Proposed Development, will be adhered to in order to protect human and public health.

4.4.6 Social Health

According to the World Health Organisation, poor social and economic circumstances affect health throughout life. '*Good health involves reducing levels of educational failure, reducing insecurity and unemployment, and improving housing standards'*.

Health is influenced, either positively or negatively, by a variety of factors. Some of these factors are genetic or biological and are relatively fixed. '*Social determinants of health*' arise from the social and economic conditions in which people live. They are not so fixed such as type of housing and environments, access to health or education services, incomes generated and the type of work people do, can all influence a person's health, and the lifestyle decisions people make.

A range of factors have been identified as social determinants of health, these generally include the wider socio-economic context, inequality; poverty, social exclusion, socio-economic position, income, public policies, health services, employment, education, housing, transport, the built environment, health behaviours or lifestyles, social and community support networks and stress.

People who are less well off or who belong to socially excluded groups tend to fare badly in relation to these social determinants. Being at work on the other hand provides not only an income, but also access to social networks, a sense of identity and opportunities for development or progression.

Figure 4-3 presents the social determinants of health adapted from Dalghren and Whitehead (1991) and Grant and Barton (2006) as presented in Healthy Ireland.

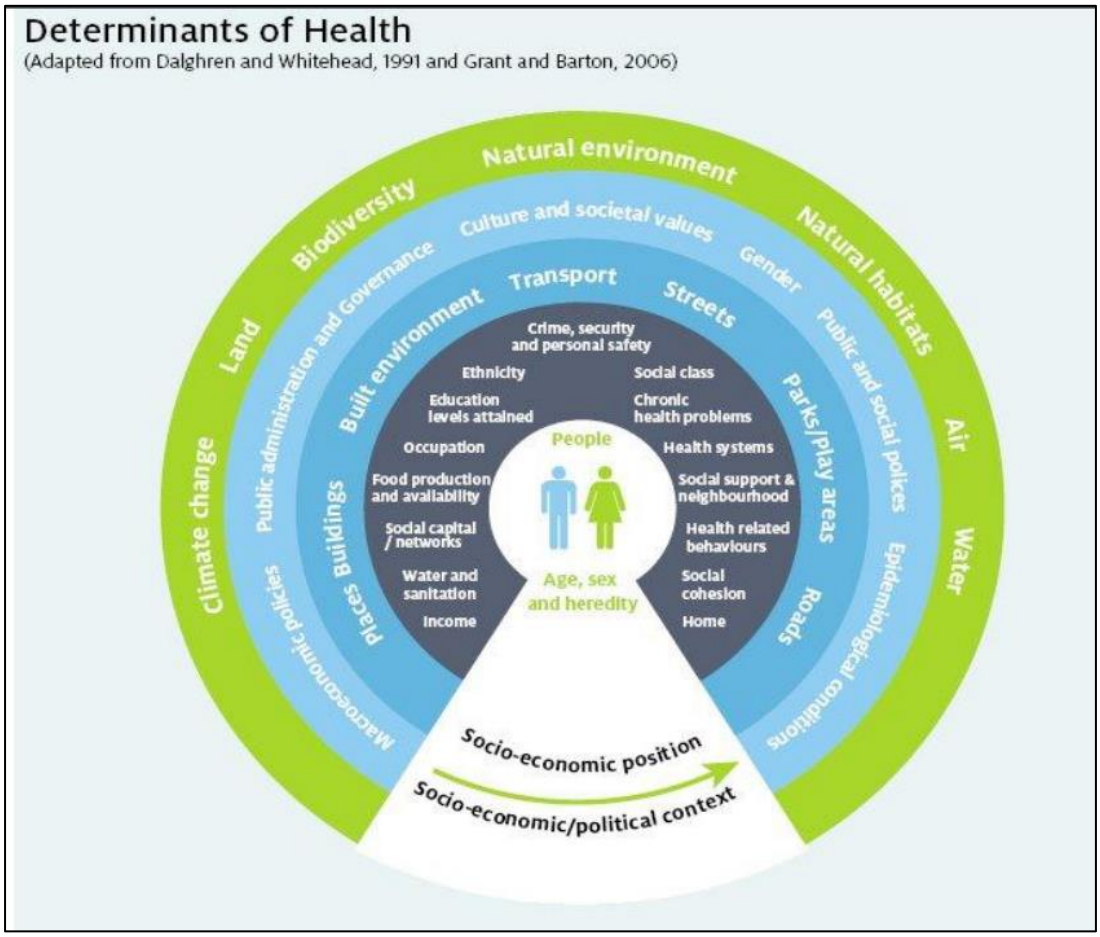


Figure 4-3: Social Determinants of Health (Healthy Ireland, DOH 2013)

Section 4.4.2 of this Chapter states 50.3% of the population in the Howth ED area are in the labour force. This reflects the moderate number of people of a working profile living within the area. The percentage of people at work is 46.8% for the Howth ED area, which is slightly lower than the percentage for the State of 53.3%.

As detailed in Table 4-16, the majority of people in Fingal (88.5%) and Swords (89.5%) have self-identified themselves in the 2016 Census as having 'very good health' or 'good health'. The moderate employment levels, coupled with the self-identification of health status in both Howth ED and Fingal, indicating that positive social health conditions exist.

4.5 Potential Impact of the Proposed Development

The population in the vicinity of the Site of the Proposed Development has been assessed in terms of demography, economic activity and employment, tourism and amenity, landscape and visual, human health and social health.

'Environmental factors play a central role in human development, health and disease. Broadly defined, the environment, including infectious agents, is one of three primary factors that affect human health. The other two are genetic factors and personal behaviour. As the impact of the environment on human health is so great, protecting the environment has long been a mainstay of public health practice. National and local efforts to ensure clean air and safe supplies of food and water, to manage sewage and municipal wastes, and to control or eliminate vector-borne illnesses have contributed a great deal to improvements in public health' (Centre for Environmental Research, 2010).

The Proposed Development has the potential to provide employment opportunities and health improvements. Employment and income are among the most significant determinants of long-term health, influencing a range of factors including the quality of housing, education, diet, lifestyle, coping skills, access to services and social networks. The provision of a residential accommodation development consisting of 180 No. apartments on Balscadden Road, Howth, Co. Dublin, will contribute towards easing the housing crisis in Ireland, population increase will support the Howth Electoral Division economy during the Operational Phase and will result in jobs being created.

The Proposed Development will result in a significant number of new jobs being created. During the Construction Phase of the Proposed Development there will be approximately 80-100 jobs created, with a maximum of 200-250 construction workers at the peak of the construction works. There will be approximately 50 workers directly employed during the Operational Phase of this development having both a direct and indirect positive impact on the Howth Electoral Division economy and employment. The Proposed Development will also create additional indirect employment for example at shops, cafes, fuel stations etc in the vicinity of the Proposed Development.

Therefore the Proposed Development will have a significant positive effect on Population and Human Health in terms of additional direct and indirect employment and on the Howth Electoral Division socio-economic environment.

4.5.1 Construction Phase

The Proposed Development has the potential to cause additional traffic, air emissions from increased traffic, noise, or visual impact. Each of these impacts has been assessed in full in

the respective chapters of this EIAR - Chapter 8 (Air Quality) Chapter 9 (Noise and Vibration) and Chapter 10 (Landscape and Visual Amenity).

The impact of these on the population or human health during the Construction Phase will be negative, significant and short-term in duration.

4.5.1.1 Socio-Economic

As stated, the Proposed Development will allow for the creation of direct employment. During the Construction Phase of the Proposed Development there will be approximately 80-100 jobs created, with a maximum of 200-250 construction workers at the peak of the construction works. The creation of jobs as a result of the Proposed Development is considered to be a significant positive impact, both directly and indirectly to the Howth Electoral Division economy and employment.

The Proposed Development has the potential to increase the level of direct and indirect employment associated with the on-site activities. The development will have economic benefits such as positive effect in terms generating economic activity with spin-off economic activity created for retail and service providers in the Howth Electoral Division.

This will have a significant, positive socio-economic effect with the short-term in duration.

4.5.1.2 Human Health

The Proposed Development has the potential to provide health improvements due to the creation of additional employment and supply of housing in Howth village and the Greater Dublin Area. Employment and income are among the most significant determinants of long-term health. It is anticipated that up to 250 no. construction personnel will be employed either directly or indirectly during the Construction Phase which is anticipated to extend over a period of approximately 3 years. This will be a positive, short term impact due to the creation direct and indirect employment during the Construction Phase.

The Proposed Development has the potential to result in the spread of COVID-19 if social distancing and hygiene measures are not adhered to at the facility.

During the construction phase of this Proposed Development Health Service Executive (HSE) guidelines in place at the time of the construction works will be adhered to in relation to social distancing, cough and sneeze etiquette, face masks and hand washing. Appropriate welfare facilities will be provided at the facility. Frequently touched objects and surfaces such as door handles, machine steering wheels and gear levers will be cleaned and disinfected frequently.

The impact from the construction works are considered to be negligible. Once all COVID-19 safety protocols and hygiene measures are adhered to it is considered that the development poses no additional COVID-19 risk.

4.5.2 Operational Phase

The Proposed Development has the potential to cause additional traffic, air emissions from increased traffic, noise, or visual impact.

Operation of the site will not result in significant adverse impacts on residential amenity in relation to traffic, air, noise or visual amenity. As detailed in Volume 2 Section 12 the overall impact of the Proposed Development in transportation terms will be slight to moderate. The

existing road links and junctions have adequate capacity to cater for post development traffic flows. As detailed in Volume 2 Section 8 the impact of the Proposed Development in relation to air emissions from the increased traffic flows will not result in significant impact on air quality or human health.

The proposed changes to the site will alter the character of its immediate setting. The Proposed Development will appear as a suitably scaled, contemporary addition to this multi-faceted peninsula. The most notable landscape/townscape impacts of the application site will result from the proposed 4 no. residential blocks, ranging in height from 2 to 5 storeys. While this will represent an increased vertical imprint into the site, it also represents a broader residential compatibility with the townscape fabric of Howth village; replacing a dilapidated, derelict, non-aesthetic and cordoned off site with one that is publicly accessible with high-end residential values. The impact on landscape character in the long term would be neutral, moderate and long term.

There is a possibility of some foul water ingress into the surface water drainage system due to poor workmanship and result in pollution of the surface water network. Surface water will be attenuated privately and will discharge to the public network at a controlled rate limited to the greenfield equivalent runoff rate. The SuDS treatment train will treat the surface water discharging to the public network, removing pollutants form the surface water runoff.

The development is considered to have a significant positive impact in terms of employment generation, supply of housing and sustainable development.

4.5.2.1 Population & Settlement Patterns

4.5.2.1.1 Population and Demographic

During the Operational Phase of the Proposed Development, the demographic profile will change with additional people moving into the locality. The Schools demand and childcare facilities assessment conducted by Brady Shipman Martin, concluded that, both primary and secondary schools within the catchment area will be able to easily facilitate the anticipated increase in demand for school places as a result of the Proposed Development.

The Proposed Development will have a positive effect in terms of maintaining a sustainable demographic, slight in significant and permanent in duration.

4.5.2.1.2 Population and Age

The changing demographic profile during the Operational Phase of the Proposed Development is likely to ensure a balanced age profile within the Howth Electoral Division area. The Proposed Development will have a positive effect in terms of changing age profile, imperceptible in significance and permanent in duration.

4.5.2.2 Socio-Economic

4.5.2.2.1 Economic Activity & Employment

The Proposed Development will allow for the creation of new employment during the operational phase having a positive impact, both directly and indirectly to the Howth Electoral Division economy and employment.

The Proposed Development will provide 180 No. residential units and will cater for a wide cohort of persons who will utilise existing services and amenities in the local area which will ultimately be a positive impact on the Howth Electoral Division economy. Furthermore, there are a high number of persons who are not in the workforce e.g. retirement age and cohort aged 70 years and over (18%) in the ED who could significantly benefit from the Proposed Development and may welcome the opportunity to downsize to a smaller apartment in Howth Electoral Division area. This would relieve pressure on the market sector by opening up larger family dwellings for sale in the surrounding areas.

The Proposed Development will benefit the Howth Electoral Division economy as a result of the increase in population at the site, as they will bring significantly increased spending power into the local economy and create a stronger and more vibrant community in the centre of Howth village.

The Proposed Development will have a positive, slight, long term socio-economic effect.

4.5.2.2.2 Traffic

A full assessment of traffic and transport effects are presented in Chapter 12 of this EIA Report. A Traffic and Transport Assessment (TTA) was carried out by Waterman Moylan, and results are presented in Chapter 12 of this EIA Report.

Howth is a popular tourist destination during the weekend for short stay visits during the summer months. Therefore, for the purposes of the traffic and transport assessment, both a weekday and weekend surveys were taken in order to obtain a full assessment of the local traffic network. The TTA details an estimated increase of 54 car trips in the AM peak hour (11 arrivals and 43 departures) and 27 in the PM peak hour (16 arrivals and 11 departures). The Proposed Development will generate a number of trips by various modes of travel including vehicular, pedestrian, cycle and public transport. These trips may have an impact on the surrounding road network and could contribute to increased congestion.

The Proposed Development is located at the Howth Village which comprises various amenities and services. It is adjacent to two existing bus routes serving Howth and located within 10-minute walk from Howth Railway Station with frequent services to the City Centre and a number of other destinations. Car and Bicycle parking are proposed in accordance with the current Development Plan and the National Standards. As such, the Proposed Development is expected not to have a significant traffic associated impact on population and human health in terms of noise, air quality, vibrations.

Therefore, the impact of the Proposed Development is considered neutral, moderate and long-term.

4.5.2.3 Tourism and Amenities

All of the local amenities referenced in Section 4.4.4 above will remain in place during the Construction and Operational Phase of the Proposed Development. Furthermore, the potential viability of these amenities going forward will be strengthened from the increased accessibility, permeability and population of the area as a result of opening up and securing stronger, safer pedestrian/cyclist access between the Main Street and Balscadden Road. In addition, the proposal will create 1,470 msq of public open space within the site, where none currently exists, as well as a further 700 msq between formal play area and lawn games area.

Therefore, the effects on community and amenities is deemed to be positive or neutral, slight and long-term.

4.5.2.4 Landscape & Visual Effects

A full assessment of the potential impact of the Proposed Development on the landscape and visual effects, heritage sites and surrounding areas is carried out under Chapter 10 (Landscape and Visual) and Chapter 11 (Archaeology and Cultural Heritage) of the EIAR.

Following the completion of the proposed works, landscape/townscape impacts will relate entirely to the development's impact on the character of the receiving landscape/townscape.

The most notable landscape/townscape impacts of the application site will result from the proposed 4 no. residential blocks, ranging in height from 2 to 5 storeys. While this will represent an increased vertical imprint into the site, it also represents a broader residential compatibility with the townscape fabric of Howth village; replacing a dilapidated, derelict, non-aesthetic and cordoned off site with one that is publicly accessible with high-end residential values. Along Main Street, the proposal's 1 no. retail unit and 2 no. café/retail units will be compatible with and supportive of the long-established retail sector in the village centre.

Therefore, landscape and visual impacts are considered neutral, moderate, and long term for the Operational Phase.

4.5.2.5 Human Health

The Proposed Development has the potential to provide health improvements due to the creation of additional employment. Employment and income are among the most significant determinants of long-term health. Jobs will be created during the Operational Phase of this development. This will be a positive, slight and long-term impact.

There will be a positive, major, permanent impact on Howth Electoral Division settlement as a result of the Proposed Development. The Proposed Development will provide additional housing options to a densely populated area and seeks to achieve the objectives of the 'Housing for All' plan by supporting homeownership and increasing affordability, increasing social housing delivery, and increasing new housing supply. Once operational, the commercial and retail units in the Proposed Development, along with the maintenance and management of the Proposed Development, will also have the potential to create employment within the area.

The Proposed Development could result in the spread of COVID-19 if the requisite measures are not adhered to at the facility during the operational phase, if in place. During the operational phase of this Proposed Development HSE guidelines will be adhered to, where appropriate.

All workers employed during the operational phase of the Proposed Development will comply with the relevant HSE guidelines and any Government protocols that will be in place at that point in time in relation to Covid-19.

If all COVID-19 safety protocols and hygiene measures are adhered to it is considered that the development poses no additional COVID-19 risk.

4.5.3 Potential Cumulative Impacts

Cumulative Impacts can be defined as "*impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project*". Effects which are caused by the interaction of effects, or by associated or off-site projects, are classed as indirect effects. Cumulative effects are often indirect, arising from the cumulation of different effects that are individually minor. Such effects are not caused or controlled by the project developer.

The cumulative effects of the Proposed Development on the Population and Human Health have been assessed taking other planned, existing and permitted developments in the surrounding area into account.

It is noted that the majority of developments within the vicinity of the Site of the Proposed Development are applications granted more than 5 years ago and that have since been completed. The larger, more recent applications are detailed below:

F18A/0023: (1) Demolition of existing family dwelling (7 East Pier) and its replacement with 12 guestrooms and storage areas in a 2.5 storey building (2) Reconfiguration of the roof to the existing guesthouse (3) Reconfiguration of the existing internal layout of stairs, kitchens and stores including the installation of a lift (4) Addition of storage areas at first floor behind the restaurant (5) Addition of an extra guestroom on the flat roof above the restaurant and (6) All associated site works. (Decision: Grant Permission. Decision Date: 19/06/2018).

F19A/0405: Development will consist of 1) Demolition of existing 3 storey dwelling house. 2) Construction of a new 3 storey over basement apartment development consisting of 8 no. 2 bedroom apartments. 3) New vehicular entrance, roads, footpaths, landscaping, services consisting of storm and foul water disposal, mains water supply and all associated site works. (Decision: Grant Permission. Decision date: 04/03/2020. Appeal Decision: Grant Permission. Appeal Decision Date: 26/03/2021).

SHD/009/19: Demolition of all structures on site (c8,162sq.m. GFA) and excavation of a basement. The Proposed Development comprises of the provision of a mixed-use development of residential/retail/restaurant/cafe uses and a creche in 4 no. blocks (A to D), over part basement Blocks A, B, C and D with a height up to a maximum of seven storeys of apartments over lower ground floor and basement car parking levels (a total of eight storeys over basement level). The residential component will consist of 512 no. residential units. (Decision: Grant Permission. Decision date: 03/04/2020).

SHD/009/20: The development will consist of 162 no. residential units distributed across 3 no. blocks (A, B & C) ranging in height from 5-6 storeys, with a cumulative gross floor area (GFA) of 13,337.10 sq.m. (Decision: Grant Permission. Decision date: 21/09/2021).

The above-listed SHD developments are accompanied by EIAR Population & Human Health Chapters, which will ensure no significant negative effects on local population will occur as a result of the developments. Operational stage impacts on air quality in Chapter 8 – Air Quality involved traffic data which is inclusive of traffic associated with other existing and permitted developments in the vicinity of the Site. Therefore, cumulative impacts have been assessed in this regard and the impact has been determined as negligible.

The increased accessibility and permeability of the site will also impact the character of movement in the wider village, opening up and securing stronger, safer pedestrian/cyclist access between the Main Street and Balscadden Road. In addition, the proposal will create 1,470 msq of public open space within the site, where none currently exists, as well as a further 700 msq between formal play area and lawn games area. This will all, long term, add to a healthy, contemporary and vibrant residential character of the wider village. Therefore, it is predicted that the Proposed Development will have positive cumulative effects on urban settlements in the form of employment, access and transport infrastructure by allowing movement through a previously impermeable area.

4.5.4 "Do Nothing" Impact

A 'do nothing scenario' is not considered to be of any benefit to Population and Human Health.

If the Proposed Development were not to proceed there would be no immediate impact on the existing population, or economic activity for residents living in the area. However, the additional direct employment predicted as a result of the Construction and Operational phase would not be created. This may result in a negative socio-economic impact.

In addition to a negative socio-economic impact there would be lack of available housing for people in Howth village and the Greater Dublin Area.

If the lands were to remain undeveloped, this would be an under-utilisation of zoned and serviceable urban lands from a sustainable planning and development perspective.

4.6 Avoidance, Remedial & Mitigation Measures

4.6.1 Construction Phase

During the Construction Phase of this Proposed Development HSE guidelines will be adhered to in relation to social distancing, cough and sneeze etiquette, face masks and hand washing. Appropriate welfare facilities will be provided at the facility. Frequently touched objects and surfaces such as door handles, machine steering wheels and gear levers will be cleaned and disinfected frequently.

The Governments 'Work Safely Protocol' and the Construction Industry Federation 'Back to Work Resource Pack ' will be adhered to.

No specific mitigation measures are required during the Construction Phase of the Proposed Development in relation to population and settlements, given the lack of direct effects resulting from the Proposed Development. However, where required, mitigation measures in relation to air emissions (dust), noise, traffic, waste etc. are identified in their respective chapters in this EIA Report.

4.6.2 Operational Phase

All HSE guidelines published to protect against the spread of COVID-19 will be adhered to during the Operational Phase of the Proposed Development, if relevant. These HSE guidelines may relate to social distancing, cough and sneeze etiquette, face masks and hand washing.

All workers employed during the Operational Phase of the Proposed Development will comply with the relevant HSE guidelines and any Government protocols that will be in place at that point in time in relation to Covid-19.

No specific mitigation measures are required in relation to population and settlements, given the lack of direct effects resulting from the Proposed Development. However, where required, mitigation measures in relation to air emissions, noise, traffic etc. are identified in their respective chapters in this EIA Report.

4.6.3 "Worst Case" Scenario

If mitigations measures relating to COVID-19 fail there is a risk that there may be an outbreak of COVID-19 at the facility. An outbreak of COVID-19 is when two or more cases of the disease are linked by time, place or person. The '*General Guide on Management of COVID-19 Outbreaks in the Workplace'*, published in June 2021 by the HSE (or other updated HSE and Government protocols that are in place at that point in time) will be adhered to if any employees test positive for COVID-19. In some instances, it may be necessary to close the workplace in order to control the spread of COVID-19.

4.7 Residual Impacts

Residual Impacts are defined *as 'effects that are predicted to remain after all assessments and mitigation measures'*. They are the remaining 'environmental costs' of a project and are the final or intended effects of a development after mitigation measures have been applied to avoid or reduce adverse impacts. Potential residual impacts from the Proposed Development were considered as part of this environmental assessment.

No negative residual impacts in the context of population and human health are anticipated regarding this Proposed Development.

The Construction Phase will create construction employment in the area which will have a positive effect on local businesses who might benefit from increased custom to their services (e.g. petrol stations, food, retail and hardware supplies services). The increased employment will also enhance the Howth Electoral Division economy within the area which will have a slight, *positive, short-term* impact on local settlement as a result.

Operational Phase of the Proposed Development will have the potential to create employment (maintenance and management of the Proposed Development) which will have a *long-term positive* impact on the Howth Electoral Division socio-economic environment.

The development will also provide additional housing options for those already employed in the area, which will reduce commute times. There will be a *'permanent major positive'* impact on Howth Electoral Division settlement as a result of the Proposed Development.

4.8 Monitoring

4.8.1 Construction Phase

No specific monitoring measures are proposed or required in relation to Population and Human Health for the Construction Phase of the Proposed Development.

Monitoring activities proposed for the Construction Phase in accordance with the CEMP that will be prepared by contractor once appointed.

A full traffic assessment has been completed as part of Chapter 12 (Material Assets) and a Noise Impact Assessment as part of Chapter 9 (Noise and Vibration). Please refer to these specific Chapters for any proposed monitoring.

4.8.2 Operational Phase

No specific monitoring measures are required in relation to Population and Human Health, given the lack of direct effects resulting from the Proposed Development. However, where required, monitoring in relation to air emissions, water, noise and traffic are identified in their respective chapters in this EIAR.

4.9 Interactions

4.9.1 Air Quality

Interactions between Air Quality and Population and Human Health have been considered as the Operational Phase has the potential to cause health issues as a result of impacts on air quality from dust nuisances and potential traffic derived pollutants. However, the mitigation measures employed at the Proposed Development will ensure that all impacts are compliant with ambient air quality standards and human health will not be affected. The Air Quality and Climate Chapter notes that the impact of the Proposed Development on air quality and climate is predicted to be negligible with respect to the Operational Phase in the long term. Furthermore, traffic-related pollutants which may affect Population & Human Health have been deemed as slight to moderate, therefore are not expected to have a significant impact on population and human health.

4.9.2 Hydrology

Hydrology has been fully assessed in Volume 2, Chapter 7 of this EIAR. No public health issues associated with the water (hydrology and hydrogeology) conditions at the Site have been identified for the Construction Phase or Operational Phase of the Proposed Development.

Appropriate industry standards and health and safety legislative requirements will be implemented during the Construction Phase that will be protective of site workers.

4.9.3 Noise

Noise is fully assessed in Volume 2, chapter 9.

The nearest noise sensitive locations are residential properties which are located approximately 20m from the Proposed Development Site Boundary.

Once the development is completed, the potential noise impacts to the surrounding environment are 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 (estate vehicle movements, children playing etc.) and hence no significant impact are expected from this area of the development site.

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

Proposed Development. Potential noise impacts also relate to operational plant serving the apartment buildings such as heat pumps.

The impact assessment of noise and vibration has concluded that additional noise associated with the operation of the facility will not create any noise nuisance beyond the Site boundary. No human health impacts are anticipated as a result of noise during the Operational Phase of the Proposed Development.

4.9.4 Landscape & Visual

There are no protected views, rights of way or planned pieces of strategic infrastructure or any important tourist sites effected in any way by the Proposed Development. A photomontages were prepared by Macroworks to access the visual effect of the Proposed Development on surrounding receptors. Based on the assessment criteria and matrices outlined in Chapter 10 the significance of residual visual impact are summarise as High-medium, medium to medium-low. The visual impacts are considered neutral, moderate, and long term for the Operational Phase.

4.9.5 Traffic

There can be a significant interaction between population and human health and traffic. This is due to traffic-related pollutants that may arise. The Proposed Development will have moderate impact on traffic volumes in the local network. A Travel Plan has been prepared by Waterman Moylan Consulting Engineers Limited (February 2022), in support of a planning application for the Proposed Development. This document summarised the accessibility of the site by active and public transport modes of transport and focused on how residents could be encouraged to use sustainable means of transport to and from the site and to minimise the number of residents who will drive to work.

Therefore, impact on Population and Human Health is deemed to be neutral, moderate and long-term.

4.9.6 Land and soil

The Construction Phase of the Proposed Development could give rise to short-lived dust from the site and from soil spillages on the existing road network around the site which may impact population and human health, especially during dry conditions. Dust suppression will be carried out to ensure that dust nuisance affecting population and human health and neighbouring properties is minimised. Good construction management practices, as detailed in the CEMP will minimise the risk of pollution from construction activities at the Site.

During the Operational Phase, due to best management practices, good housekeeping, and adherence to all health and safety procedures, it is not foreseen that there will be any negative impacts to population and human health.

4.9.7 Waste and utilities

The Construction Phase of the Proposed Development will result in an increase in demand for waste collections and waste treatment in the area, however, due to the nature of this phase, the impact will be temporary, negative and moderate.

There will be an increase in waste generation and in the amount of water used and wastewater produced during the Operational Phase of the Proposed Development.

The building management company, tenants and residents will be required to maintain the resident bins and storage areas in good condition as required by the FCC Waste Bye-Laws. The waste strategy presented in the OWMP will provide sufficient storage capacity for the estimated quantity of segregated waste. Communal bin stores will be provided for each apartment building. Bin stores will be located conveniently for access for residents.

In terms of water supply, Irish Water have confirmed that connection to the existing water supply network is feasible without any upgrades to the existing infrastructure. The proposed surface water flow control device is to be limited to the greenfield equivalent runoff rate, and SuDS measures are proposed to maximise the infiltration. The net runoff volume from the site will therefore remain unchanged.

Therefore, impact on Population and Human Health is deemed to be neutral, moderate and long-term.

4.10 Difficulties Encountered When Compiling

No difficulties were encountered in the preparation of this Chapter of the EIAR.

4.11 References

The Central Statistics Office (CSO)

Fingal County Development Plan 2017-2022,

The Regional Planning Guidelines of the Greater Dublin Area 2010-2022

Ordinance Survey Ireland (OSI)

WHO. Ottawa Charter for Health Promotion First International Conference on Health Promotion Ottawa, 21 November 1986 - WHO/HPR/HEP/95.1. 1986.

WHO. Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, 19-22 June, 1946; signed on 22 July 1946 by the representatives of 61 States (Official Records of the World Health Organization, no. 2, p. 100) and entered into force on 7 April 1948. 1946.

Healthy Ireland Framework 2013-2025

Farrell, C., McAvoy, H., Wilde, J. and Combat Poverty Agency (2008), Tackling Health Inequalities – An All-Ireland Approach to Social Determinants. Dublin: Combat Poverty Agency/Institute of Public Health in Ireland.

Wilkinson, Richard; Marmot, Michael, eds. (2003). The Social Determinants of Health: The Solid Facts (PDF) (2nd ed.). World Health Organization Europe.

Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions (European Communities 1999)

Work Safely Protocol COVID-19 National Protocol for Employers and Workers (Government of Ireland, V14, May 2021)

General Guide on Management of COVID-19 Outbreaks in the Workplace' (HSE, June 2021)

EPA Guidelines on the information to be contained in environmental impact assessment reports (Draft, August 2017)

5 BIODIVERSITY

5.1 Introduction

This Chapter describes the Biodiversity of the Site of the Proposed Development and surrounding environs, with emphasis on habitats, flora, and fauna, and details the methodology of assessment used in each case. It provides an assessment of the impacts of the Proposed Development on habitats and species, particularly those protected by national and international legislation, or considered to be of Conservation Importance; and proposes measures for the mitigation of these impacts, where appropriate.

The Chapter has been completed having regard to the *Guidelines for Ecological Impact Assessment in the UK and Ireland*, by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2018), together with the guidance outlined in the Environmental Protection Agency documents *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* (Draft, August 2017) and *Advice Notes for Preparing Environmental Impact Statements* (Draft, September 2015). The value of the ecological resources, the habitats, and species present or potentially present, was determined using the ecological evaluation guidance given in the National Roads Authority's (NRA) *Ecological Assessment Guidelines* (NRA, 2009).

5.1.1 Quality Assurance and Competence

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

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

All surveying and reporting have been carried out by qualified and experienced ecologists and environmental consultants. Dr Tina Aughney, Professional Bat Ecologist with Bat Eco Services undertook the on-site bat surveys. Siobhán Atkinson, Ecologist with Enviroguide wrote this chapter and undertook the desktop research and habitat surveys. Eric Dempsey, Senior Ecologist and Ornithologist with Enviroguide Consulting, undertook the breeding bird surveys. Dr. Siobhán Atkinson, Senior Ecologist, Liam Gaffney Senior Ecologist and Brian McCloskey, Graduate Ecologist and Ornithologist with Enviroguide Consulting undertook the flightline bird surveys at the Site.

Siobhán has a B.Sc. (Hons) in Environmental Biology and a Ph.D. in Freshwater Biology from University College Dublin, and extensive experience in desktop research, literature review and reporting, as well as practical field and laboratory experience including environmental DNA analysis, freshwater macroinvertebrate sampling and identification, fish sampling and processing and habitat surveying, as well as extensive experience in GIS analysis. Siobhán

has prepared Ecological Impact Assessments (EcIA), Stage I and Stage II Appropriate Assessment Reports, Habitat Surveys and Invasive Species Surveys and input and reviewed Ecological and Environmental assessments for several EIA Reports.

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

Brian McCloskey is a graduate Ecologist and experienced Ornithologist with 11 years of birding experience. Brian holds a degree in Planning and Environmental management from Technological University Dublin. Brian is a longstanding and active member of Bird Watch Ireland and has provided Ornithology survey work for ecological consultancies, e.g., Vantage points surveys of Gulls, Terns, Raptors, Waders and Wildfowl; hinterland surveys of the above as well as riverine species; and breeding waders and country birds. Brian is highly experienced with all survey methodologies and with surveying all species groups of Irish birds and migrants.

Dr Tina Aughney has worked as a Professional Bat Ecologist since 2000 and is director of Bat Eco Services, an independent, professional environmental consultancy. Dr Aughney has a wealth of academic qualification having studied both a B.Sc. Hons. in Environmental Science from NUI Galway and a PhD in Environmental Science. A member of The Heritage Council Bat Panel, Dr Aughney is also the co-ordinator of large-scale bat monitoring projects e.g. The All-Ireland Daubentons Bat Waterways Survey. Bat Eco Services operatives are fully licenced by the NPWS to survey, capture and handle all Irish Bat Species.

Eric Dempsey is an Environmental Consultant and Ornithologist who has worked on a wide range of conservation, research and ecological monitoring projects across Ireland. Eric is the author of the best-selling books, The Complete Field Guide to Ireland's Birds and Finding Birds in Ireland and is experienced in coordinating and undertaking surveys along with being highly proficient in report writing and data management. Eric is very experienced with all survey methodology and has inputted in various Environmental Impact Assessment Reports, Environmental Assessments and Appropriate Assessments. Eric is currently part of the team of field ornithologists undertaking the long-term Dublin Bay Wetlands Survey.

5.1.2 Relevant Legislation and Policy

5.1.2.1 National Legislation

Wildlife Act 1976 and amendments

The Wildlife Act 1976 was enacted to provide protection to birds, animals, and plants in Ireland and to control activities which may have an adverse impact on the conservation of wildlife. With regard to the listed species, it is an offence to disturb, injure or damage their breeding or resting place wherever these occur without an appropriate licence from the National Parks and Wildlife Service (NPWS). This list includes all birds along with their nests and eggs.

Intentional destruction of an active nest from the building stage up until the chicks have fledged is an offence. This includes the cutting of hedgerows from the 1st of March to the 31st of August. The act also provides a mechanism to give statutory protection to Natural Heritage Areas (NHAs). The Wildlife Amendment Act 2000 widened the scope of the Act to include most species, including the majority of fish and aquatic invertebrate species which were excluded from the 1976 Act.

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

EC (Birds and Natural Habitats) Regulations 2011

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

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

Invasive Species Legislation

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

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

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

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

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

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

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

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

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

5.1.2.2 International Legislation

EU Birds Directive

The Birds Directive constitutes a level of general protection for all wild birds throughout the European Union. Annex I of the Birds Directive includes a total of 194 bird species that are considered rare, vulnerable to habitat changes or in danger of extinction within the European Union. Article 4 establishes that there should be a sustainable management of hunting of listed species, and that any large scale non-selective killing of birds must be outlawed. The Directive requires the designation of Special Protection Areas (SPAs) for: listed and rare species, regularly occurring migratory species and for wetlands which attract large numbers of birds. There are 25 Annex I species that regularly occur in Ireland and a total of 153 Special Protection Areas have been designated.

EU Habitats Directive

The Habitats Directive aims to protect some 220 habitats and approximately 1000 species throughout Europe. The habitats and species are listed in the Directives annexes, where Annex I covers habitats and Annex II, IV and V cover species. There are 59 Annex I habitats in Ireland and 33 Annex IV species which require strict protection wherever they occur. The Directive requires the designation of Special Areas of Conservation for areas of habitat deemed to be of European interest. The SACs together with the SPAs from the Birds Directive form a network of protected sites called Natura 2000. An Appropriate Assessment is required under Article 6 of the Habitats Directive where a project or plan may give rise to significant effects upon a European site. This is dealt with further in the AA Screening Report and Natura Impact Statement accompanying this application.

Water Framework Directive

The EU Water Framework Directive (WFD) 2000/60/EC is an important piece of environmental legislation which aims to protect and improve water quality. It applies to rivers, lakes, groundwater, estuaries, and coastal waters. The Water Framework Directive was agreed by all individual EU member states in 2000, and its first cycle ran from 2009 – 2015. The Directive runs in 6-year cycles, so the second (current) cycle runs from 2016 – 2021.The aim of the WFD is to prevent any deterioration in the existing status of water quality, including the

protection of good and high water quality status where it exists. The WFD requires member states to manage their water resources on an integrated basis to achieve at least 'good' ecological status, through River Basin Management Plans (RBMP), by 2027.

Bern and Bonn Convention

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

Ramsar Convention

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

5.1.2.3 Fingal County Council Development Plan

Policies of the Fingal County Council Development Plan that are of relevance to this Biodiversity Chapter are outlined below:

Objective GI20: Require all new development to contribute to the protection and enhancement of existing green infrastructure and the delivery of new green infrastructure, as appropriate.

Objective GI21: Require all new development to address the protection and provision of green infrastructure for the five GI themes set out in the Development Plan (Biodiversity, Parks, Open Space and Recreation, Sustainable Water Management, Archaeological and Architectural Heritage, and Landscape) in a coherent and integrated manner.

Objective GI24: Ensure biodiversity conservation and/or enhancement measures, as appropriate, are included in all proposals for large scale development such as road or drainage schemes, wind farms, housing estates, industrial parks or shopping centres.

Objective GI25/NH02: Integrate provision for biodiversity with public open space provision and sustainable water management measures (including SuDS) where possible and appropriate.

Objective GI33: Seek the provision of green roofs and green walls as an integrated part of Sustainable Drainage Systems (SuDS) and which provide benefits for biodiversity, wherever possible.

Objective NH03: Implement the Fingal Biodiversity Action Plan 2015 and any revisions thereof in partnership with all relevant stakeholders

Objective NH07: Actively support the aims and objectives of the All-Ireland Pollinator Plan 2015-2020 by encouraging bee keeping and other measures to protect and increase the population of bees and other pollinating insects in Fingal.

Objective NH13: Ensure that proposals for development do not lead to the spread or introduction of invasive species. If developments are proposed on sites where invasive species are or were previously present, the applicants will be required to submit a control and management program for the particular invasive species as part of the planning process and to comply with the provisions of the European Communities Birds and Habitats Regulations 2011 (S.I. 477/2011).

Objective NH15: Strictly protect areas designated or proposed to be designated as Natura 2000 sites (i.e. Special Areas of Conservation (SACs) and Special Protection Areas (SPAs); also known as European sites) including any areas that may be proposed for designation or designated during the period of this Plan.

Objective NH16: Protect the ecological integrity of proposed Natural Heritage Areas (pNHAs), Natural Heritage Areas (NHAs), Statutory Nature Reserves, Refuges for Fauna, and Habitat Directive Annex I sites.

Objective NH17: 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.

Objective NH18: Protect the functions of the ecological buffer zones and ensure proposals for development have no significant adverse impact on the habitats and species of interest located therein.

Objective NH27: 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.

Objective DMS78: Ensure during the course of development, trees and hedgerows that are conditioned for retention are fully protected in accordance with 'BS5837 (2012) Trees in relation to the Design, Demolition and Construction – Recommendations' or as may be updated.

DMS79: Require the use of native planting where appropriate in new developments in consultation with the Council.

DMS82: Promote the planting of large canopy trees on public open space and where necessary provide for constructed tree pits as part of the landscape specification.

5.2 Study Methodology

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

5.2.1 Scope of Assessment

The specific objectives of the study were to:

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

5.2.1.1 Zone of Influence

The 'zone of influence' (ZOI) for a project is the area over which ecological features may be affected by changes as a result of the Proposed Development and associated activities. This is likely to extend beyond the development site, for example where there are ecological or hydrological links beyond the site boundaries (CIEEM, 2018). The ZOI will vary with different ecological features, depending on their sensitivities to an environmental change. Given the urban context of the Proposed Development, the ZOI is regarded to be relatively limited and within the redline boundary for most ecological receptors (with the exception of designated sites, e.g. European sites, Ramsar sites, Natural Heritage Areas and proposed Natural Heritage Areas – see below).

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

In addition, the guidance document published by the Department of Housing, Planning and Local Government (then DEHLG) 'Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities' (2009) was considered, which recommends an arbitrary distance of 15km as the precautionary ZOI for a plan or project being assessed for likely significant effects on European Sites, stating however that this should be evaluated on a case-by-case basis.

As such, the 15km ZOI is used in this report as an initial starting point for collating *designated sites* for this Biodiversity Chapter.

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

- Use of up-to-date GIS spatial datasets for designated sites and water catchments – downloaded from the NPWS website (www.npws.ie) and the EPA website (www.epa.ie) to identify designated sites which could potentially be affected by the Proposed Development;

- The catchment data were used to establish or discount potential hydrological connectivity between the project boundary and any designated sites.

- All designated sites within the ZOI (within 15km of the Proposed Development Site) were identified and are shown in Figure *5-2* and Figure 5-3.

- The potential for connectivity with designated sites at distances greater than 15km from the Proposed Development was also considered in this initial assessment. In this case, there is no potential connectivity between the Proposed Development Site and designated sites located at a distance greater than 15km based on the Source-Pathway-Receptor model.

- Table 5-7 provides details of all relevant designated sites as identified in the preceding steps. The potential for pathways between designated sites and the Proposed Development Site was assessed on a case-by-case basis using the Source-Pathway-Receptor framework as per the OPR Practice Note PN01 (March 2021). Pathways considered included:

    a. Direct pathways (e.g. proximity (i.e. location within the designated site), water bodies, air (for both air emissions and noise impacts).

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

5.2.2 Desk Study

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

- Information on species records and distributions, obtained from the National Biodiversity Data Centre (NBDC) at www.maps.biodiversityireland.ie ;
- Information on waterbodies, catchment areas and hydrological connections obtained from the Environmental Protection Agency (EPA) at www.gis.epa.ie ;
- Information on bedrock, groundwater, aquifers and their statuses, obtained from Geological Survey Ireland (GSI) at www.gsi.ie ;
- Information on the network of designated conservation sites, boundaries, qualifying interests and conservation objectives, obtained from the National Parks and Wildlife Service (NPWS) at www.npws.ie ;
- Satellite imagery and mapping obtained from various sources and dates including Google, Digital Globe, Bing and Ordnance Survey Ireland;
- Information on the existence of permitted developments, or developments awaiting decision, in the vicinity of the Proposed Development from Fingal County Council available at: https://planning.agileapplications.ie/fingal
- Information on the extent, nature and location of the Proposed Development, provided by the applicant and/or their design team;
- The current conservation status of birds in Ireland taken from Gilbert et al. (2021).
- The pollinator friendly planting code provided by The All-Ireland Pollinator Plan (2015-2020) available at www.pollinators.ie
- Fingal Biodiversity Action Plan 2010 - 2015
- Fingal Development Plan 2017-2023

- The AA Screening Report, Natura Impact Statement and Ecological Impact Assessment prepared for a previous application at the Site (SHD00419) were considered in the preparation of this Biodiversity Chapter.

5.2.3 Field Surveys

A range of field surveys have been carried out at the Site of the Proposed Development to inform this Biodiversity Chapter. The following sections provide details of the field surveys carried out and a summary of ecological surveys is provided in Table 5-1.

Table 5-1: Summary of ecological surveys carried out at the Site.

Survey	Survey Date(s)	Surveyor
Habitat and Flora Surveys	16th August 2021	Enviroguide Consulting
Non-volant Mammal Surveys	16th August 2021	Enviroguide Consulting
Bat Surveys	12th to 25th August 2021	Dr Tina Aughney
Breeding Bird Surveys	27nd July 2021	Eric Dempsey
Flight-Line Bird Surveys	13th and 25th November 2020 9th and 16th December 2020 6th, 13th, 20th, 26th January 2021 3rd, 10th, 17th, 24th February 2021 3rd, 12th, 19th, 30th March 2021 25th November 2021 2nd,14th, 28th December 2021 4th, 13th, 17th, 27th January 2022 2nd, 8th, 17th, 23rd February 2022 1st, 8th March 2022	Enviroguide Consulting

5.2.3.1 Bird Surveys

Expert Ornithologist Eric Dempsey carried out a breeding bird survey of the Site on the 27nd July 2021. Flightline surveys were carried out at the Site of the Proposed Development between the 13th of November 2020 and 30th March 2021, and between the 25th November 2021 and 8th March 2022 by Enviroguide Consulting. The objective of these surveys was to determine the composition, numbers, frequency and heights of species in passage over the Site of the Proposed Development, if any, in order to inform decisions on potential disturbance to flight-lines of birds commuting to/from roost sites and/or between feeding sites as a result of the construction of the Proposed Development. Each survey day commenced at either dawn or 6 hours prior to dusk and continued for a minimum of 15-minute intervals every hour for 6 hours. Surveys were concentrated at dawn and dusk to gather information on potential flight-lines of birds commuting to/from roost sites and/or between feeding sites. A total of 180 fifteen minute to 1-hour observations were undertaken from a pre-determined vantage point over a total of 30 days throughout the 2020/21 and 2021/22 survey periods. The full report can be found in Appendix II of the AA Screening Report.

5.2.3.2 Bat Surveys

A range of bat surveys of the Site were carried out by Bat Eco Services between the 12th and 25th August 2021. Table 5-2 extracted from the Bat Survey Report (presented in Appendix C) summarises the bat surveys undertaken. Refer to the Bat Survey Report for full details.

Table 5-2: Bat Survey Effort and Constraints.

Category	Discussion
Timing of surveys	Summer bat survey: 12th to 25th August 2021 Surveying meets Collins, 2016 guidelines.
Survey Type Full suite of surveys completed to ensure sufficient information was collated for bat assessment. Surveys completed according Collins, 2016 guidelines.	Bat Survey Duties Completed (Indicated by red shading) Tree PBR Survey ● Static Detector Survey ● Dusk Bat Survey ● Walking Transect ● Trapping/Mist Netting ○ Endoscope Inspection ● Daytime Building Inspection ● Daytime Bridge Inspection ○ Dawn Bat Survey ● Driving Transect ○ IR Camcorder filming ○ Other (Thermal Imagery) ●
Weather conditions	Suitable for bat surveys.
Survey Constraints	Only the ground floor of the main hotel building was accessible. Fire damage prevented the upper floors being inspected. However, the static surveillance provided the required information to determine if this area was used by bats.
Survey effort Daytime – 2 hrs Bat surveys – 18 hrs Static surveillance – 360 hrs TOTAL = 380 hrs	Summer bat survey: Daytime inspection – 2 hrs Dusk Surveys (x2, 2-3 surveyors) – 10 hrs Dawn Surveys (x1, 2 surveyors) – 4 hrs Walking Transects (x2, 1 surveyor) – 4 hrs Static Surveillance (x5 units, 8 nights) – 360 hrs
Extent of survey area	Summer bat survey: proposed development area and local road network
Equipment	Full suite of bat survey equipment as list under Section 2.2. All in good working order.

5.2.3.3 Habitat

A habitat survey was undertaken on the 16th August 2021. Habitats were identified and classified according to Fossitt (2000) and Smith et al. (2011).

5.2.3.4 Mammal Surveys

Mammal surveys of the Site were carried out in conjunction with the habitat and bird surveys. The Site was searched for tracks and signs of non-volant mammals (i.e., mammals which are incapable of flight). Bat surveys were carried out separately as described above. The habitat types recorded throughout the survey area were used to assist in identifying the fauna considered likely to utilise the area. During this survey, the Site was searched for tracks and signs of mammals as per Bang and Dahlstrom (2001).

5.2.3.5 Invasive Species Surveys

The Site was assessed for the presence of invasive plant species during the habitat surveys undertaken on the 16th of August 2021.

5.2.4 Consultation

Ecological assessments of the Site carried out previously by Altemar (2019a) were consulted for the preparation of this chapter. A meeting was held with Hans Visser the Biodiversity Officer of Fingal County Council on the 11th November 2021 to discuss the potential impact of the Proposed Development on Howth Head SAC/pNHA. The issues and challenges faced by the council in restoring habitats within the SAC/pNHA were discussed. It was agreed that the mitigation measures that the development could undertake to restore habitats/address the issue of visitors to the SAC/pNHA were limited. However, it was agreed that signage could be erected to improve public knowledge of the habitats and their sensitives to educate visitors to the protected site.

5.2.5 Assessment

The value of the ecological resources – the habitats and species present or potentially present was determined using the ecological evaluation guidance provided in the National Roads Authority's Ecological Assessment Guidelines (NRA, 2009). This evaluation scheme, with values ranging from locally important to internationally important, seeks to provide value ratings for habitats and species present that are considered ecological receptors of impacts that may ensue from a proposal (Table 5-3). The NRA (2009) defines key ecological receptors as those ecological features which are evaluated as Locally Important (higher value) or higher, that are likely to be impacted significantly by the Proposed Development. Internationally important receptors would include Special Areas of Conservation (SAC) or Special Protected Areas (SPA) while those of national importance would include Natural Heritage Areas (NHA).

This evaluation scheme has been adapted here to assess the value of habitats and fauna within the Site of the Proposed Development. The value of habitats is assessed based on the condition, size, rarity, conservation, and legal status. The value of fauna is assessed on its biodiversity value, legal status, and conservation status. Biodiversity value is based on its national distribution, abundance or rarity, and associated trends.

Using the evaluation criteria as described above, the habitats and species identified as being present or potentially present were assessed. As per the NRA guidelines, impact assessment is only undertaken of Key Ecological Receptors (KERs).

Table 5-3: Description of values for ecological resources based on geographic hierarchy of importance (NRA, 2009b).

Importance	Criteria
International Importance	- 'European Site' including Special Area of Conservation (SAC), Site of Community Importance (SCI), Special Protection Area (SPA) or proposed Special Area of Conservation. - Proposed Special Protection Area (pSPA). - Site that fulfils the criteria for designation as a 'European Site' (see Annex III of the Habitats Directive, as amended). - Features essential to maintaining the coherence of the Natura 2000 Network

Importance	Criteria

	- Site containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive.
	- Resident or regularly occurring populations (assessed to be important at the national level) of the following:
	  o Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and/or
	  o Species of animal and plants listed in Annex II and/or IV of the Habitats Directive
	- Ramsar Site (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971).
	- World Heritage Site (Convention for the Protection of World Cultural & Natural Heritage, 1972).
	- Biosphere Reserve (UNESCO Man & The Biosphere Programme)
	- Site hosting significant species populations under the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals, 1979).
	- Site hosting significant populations under the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 1979).
	- Biogenetic Reserve under the Council of Europe.
	- European Diploma Site under the Council of Europe.
	- Salmonid water designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988, (S.I. No. 293 of 1988).

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

County Importance	- Area of Special Amenity. - Area subject to a Tree Preservation Order. - Area of High Amenity, or equivalent, designated under the County Development Plan. - Resident or regularly occurring populations (assessed to be important at the County level) of the following: o Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;

Importance	Criteria
	○ Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; ○ Species protected under the Wildlife Acts; and/or ○ Species listed on the relevant Red Data list. ○ Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance. - County important populations of species; or viable areas of semi-natural habitats; or natural heritage features identified in the National or Local BAP; if this has been prepared. - Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county. - Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.
Local Importance (higher value)	- Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP, if this has been prepared; - Resident or regularly occurring populations (assessed to be important at the Local level) of the following: ○ Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; ○ Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; ○ Species protected under the Wildlife Acts; and/or ○ Species listed on the relevant Red Data list. ○ Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality; - Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value.
Local Importance (lower value)	- Sites containing small areas of semi-natural habitat that are of some local importance for wildlife; - Sites or features containing non-native species that is of some importance in maintaining habitat links.

5.2.5.1 Impact Assessment Criteria

Once the value of the identified Key Ecological Receptors (KERs) was determined, the next step was to assess the potential effect of the Proposed Development on these KERs. This was carried out with regard to the criteria outlined in various impact assessment guidelines (NRA, 2009b; CIEEM, 2018) that set down a number of parameters such as quality, magnitude, extent and duration that should be considered when determining which elements

of the Proposed Development could constitute impact or sources of impacts. Once impacts are defined, their significance was categorised using EPA Guidelines (EPA, 2017).

Identification of a risk does not constitute a prediction that it will occur, or that it will create or cause significant impact. However, identification of the risk does mean that there is a possibility of ecological or environmental damage occurring, with the level and significance of the impact depending upon the nature and exposure to the risk and the characteristics of the ecological receptor.

5.2.5.2 Criteria used to define the quality, significance and duration of effects

In line with the EPA Guidelines (EPA, 2017), the following terms are defined when quantifying the quality of effects. See Table 5-4.

Table 5-4: Definition of Quality of Effects

Quality	Definition
Positive Effects	A change which improves the quality of the environment (for example, by increasing species diversity; or the improving reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).
Neutral Effects	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error
Negative/adverse Effects	An effect which causes noticeable changes in the character of the environment but without significant consequences. (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance).

In line with the EPA Guidelines (EPA, 2017), the following terms are defined when quantifying the significance of effects. See Table 5-5.

Table 5-5: Definition of Significance of Effects

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

In line with the EPA Guidelines (EPA, 2017), the following terms are defined when quantifying duration and frequency of effects. See Table 5-6.

Table 5-6: Definition of Duration of Effects

Quality	Definition
Momentary Effects	Effects lasting from seconds to minutes
Brief Effects	Effects lasting less than a day
Temporary Effects	Effects lasting less than a year
Short-term Effects	Effects lasting one to seven years.
Medium-term Effects	Effects lasting seven to fifteen years.
Long-term Effects	Effects lasting fifteen to sixty years
Permanent Effects	Effects lasting over sixty years
Reversible Effects	Effects that can be undone, for example through remediation or restoration

5.3 The Existing and Receiving Environment (Baseline Situation)

5.3.1 Site Overview

The Site occupies an area of approximately 1.43 hectares (ha) and is located within Howth village. The Site lies immediately south of the Martello Town, to the west of Balscadden Road and to the east of Abbey Street. The Site comprises areas of scrub, grassland, hardstanding, and an abandoned warehouse.

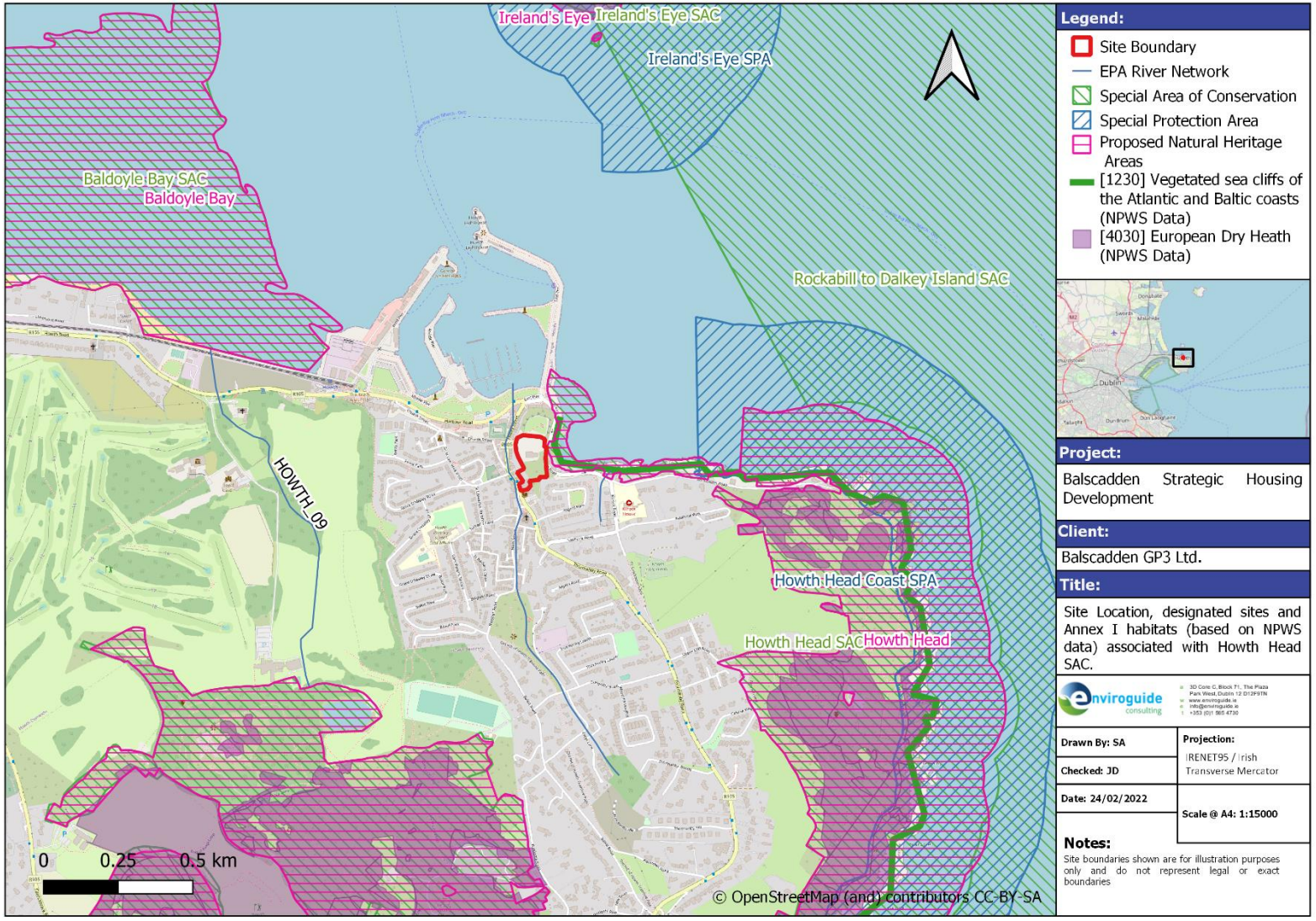


Figure 5-1: Site Location, designated sites and Annex I habitats(based on NPWS data) within the vicinity of the Proposed Development.

5.3.2 Geology, Hydrology and Hydrogeology

The Site of the Proposed Development is within the Liffey and Dublin Bay catchment and Mayne_SC_010 sub catchment (EPA, 2021).

A small stream (Gray's Brook Stream, IE_EA_09H230880) is located approx. 20-25m to the west of the Site. This stream rises on Thornamby Hill and flows in a northerly direction towards Howth Harbour. The stream appears to enter a culvert at Balglass Road, and flows through this culvert along Main Street and Abbey Street before discharging into Howth Harbour. A second, very short coastal stream is located approx. 155-160m to the east of the Site (Coolcur Brook Stream, IE_EA_09H230880). The Water Framework Directive status of these streams is "unassigned".

The Site of the Proposed Development is situated on the Dublin (IE_EA_G_008) groundwater body. Two bedrock aquifer types and a fault line are in the Site area. The bedrock aquifer at the north of the Site is a *Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones.* The bedrock aquifer to the south of the Site is a *Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones* (GSI, 2021). The groundwater rock units underlying the aquifer are classified as *Dinantian Lower Impure Limestones* and *Cambrian Metasediments*. The level of vulnerability to groundwater contamination from human activities is *High* at the western boundary of the Site, *Extreme* within the centre and east of the Site and *X – Rock at or Near the Surface* at the eastern boundary of the Site.

The subsoil is predominately *man made*, with a small area of *Bedrock at Surface* to the east of the Site (EPA, 2021). The soil is predominantly *urban* (GSI, 2021).

5.3.3 Designated Sites

The Habitats Directive (92/43/EEC) seeks to conserve natural habitats and wild fauna and flora by the designation of Special Areas of Conservation (SACs) and the Birds Directive (79/409/EEC) seeks to protect birds of special importance by the designation of Special Protection Areas (SPAs). It is the responsibility of each member state to designate SPAs and SACs, both of which will form part of Natura 2000, a network of protected sites throughout the European Community. SACs are selected for the conservation of Annex I habitats (including priority types which are in danger of disappearance) and Annex II species (other than birds). SPAs are selected for the conservation of Annex I birds and other regularly occurring migratory birds and their habitats. The annexed habitats and species for which each site is selected correspond to the qualifying interests of the sites; from these the conservation objectives of the site are derived.

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

Table 5-7 presents details of the key ecological features of the designated sites within a 15km radius of the Proposed Development. The result of this preliminary screening concluded that there is a total of nine SACs, seven SPAs and 18 pNHAs located within the ZOI of the Proposed Development Site. The distances to each site listed are taken from the nearest

possible point of the Proposed Development Site boundary to nearest possible point of each Natura 2000 site or pNHA. In addition, Dublin Bay is designated as a UNESCO Biosphere. Dublin Bay Biosphere contains three different zones, which are managed in different ways:

- The core zone of Dublin Bay Biosphere comprises 50km² of areas of high natural value. Key areas include the Tolka and Baldoyle Estuaries, Booterstown Marsh, Howth Head, North Bull Island, Dalkey Island and Ireland's Eye.
- The buffer zone comprises 82km² of public and private green spaces such as parks, greenbelts and golf courses, which surround and adjoin the core zones.
- The transition zone comprises 173km² and forms the outer part of the Biosphere. It includes residential areas, harbours, ports and industrial and commercial areas.

The Site of the Proposed Development is within the terrestrial buffer zone of Dublin Bay Biosphere.

There are two Ramsar Sites within the zone of influence of the Proposed Development, namely North Bull Island (site ID 406) and Sandymount Strand/Tolka Estuary (site ID 832).

Table 5-7: Designated sites within the precautionary Zone of Influence of the Proposed Development (15km)

Site Name & Code	Qualifying Interests (*= priority habitats)	Distance to Site
Special Areas of Conservation		
Howth Head SAC (000202)	[1230] Vegetated sea cliffs of the Atlantic and Baltic coasts; [4030] European dry heaths	Adjacent to site boundary
Rockabill to Dalkey Island SAC (003000)	[1170] Reefs; [1351] Harbour Porpoise (*Phocoena phocoena*)	0.8 km
Baldoyle Bay SAC (000199)	[1140] Tidal Mudflats and Sandflats; [1310] Salicornia Mud; [1330] Atlantic Salt Meadows; [1410] Mediterranean Salt Meadows	0.7 km
North Dublin Bay SAC (000206)	[1140] Tidal Mudflats and Sandflats; [1210] Annual Vegetation of Drift Lines; [1310] Salicornia Mud; [1330] Atlantic Salt Meadows; [1410] Mediterranean Salt Meadows; [2110] Embryonic Shifting Dunes ; [2120] Marram Dunes (White Dunes) ; [2130] Fixed Dunes (Grey Dunes)* ; [2190] Humid Dune Slacks ; [1395] Petalwort Petalophyllum ralfsii	2.4 km
Ireland's Eye SAC (002193)	[1220] Perennial vegetation of stony banks; [1230] Vegetated sea cliffs of the Atlantic and Baltic coasts	1.3 km
Malahide Estuary SAC (000205)	[1140] Mudflats and sandflats not covered by seawater at low tide; [1310] Salicornia and other annuals colonising mud and sand; [1320] Spartina swards (Spartinion maritimae); [1330] Atlantic salt meadows (Glauco-Puccinellietalia maritimae); [1410] Mediterranean salt meadows (Juncetalia maritimi); [2120] Shifting dunes along the	6.5 km

Site Name & Code	Qualifying Interests (*= priority habitats)	Distance to Site
	shoreline with Ammophila arenaria (white dunes); [2130] Fixed coastal dunes with herbaceous vegetation (grey dunes)*	
South Dublin Bay SAC (000210)	[1140] Tidal Mudflats and Sandflats; [1210] Annual vegetation of drift lines; [1310] Salicornia and other annuals colonising mud and sand; [2110] Embryonic shifting dunes	8.5 km
Lambay Island SAC (000204)	[1170] Reefs; [1230] Vegetated sea cliffs of the Atlantic and Baltic coasts; [1364] Grey seal *Halichoerus grypus*; [1365] Harbour *seal Phoca vitulina*	10.8 km
Rogerstown Estuary SAC (000208)	[1130] Estuaries; [1140] Mudflats and sandflats not covered by seawater at low tide; [1310] Salicornia and other annuals colonising mud and sand; [1330] Atlantic salt meadows (Glauco-Puccinellietalia maritimae); [1410] Mediterranean salt meadows (Juncetalia maritimi); [2120] Shifting dunes along the shoreline with Ammophila arenaria (white dunes); [2130] Fixed coastal dunes with herbaceous vegetation (grey dunes)*	12.0 km
Special Protection Areas		
Howth Head Coast SPA (004113)	[A188] Kittiwake *Rissa tridactyla*	0.5 km
Ireland's Eye SPA (004117)	[A017] Cormorant *Phalacrocorax carbo;* [A184] Herring Gull *Larus argentatus;* [A188] Kittiwake *Rissa tridactyla;* [A199] Guillemot *Uria aalge;* [A200] Razorbill *Alca torda*	0.9 km
North Bull Island SPA (004006)	[A046] Light-bellied Brent Goose *Branta bernicla hrota* **;** [A048] Shelduck *Tadorna tadorna*; [A052] Teal *Anas crecca;* [A054] Pintail *Anas acuta ;* [A056] Shoveler *Anas clypeata;* [A130] Oystercatcher *Haematopus ostralegus;* [A140] Golden Plover *Pluvialis apricaria;* [A141] Grey Plover *Pluvialis squatarola;* [A143] Knot *Calidris canutus;* [A144] Sanderling *Calidris alba;* [A149] Dunlin *Calidris alpina alpine;* [A156] Black-tailed Godwit *Limosa limosa;* [A157] Bar-tailed Godwit *Limosa lapponica;* [A160] Curlew *Numenius arquata;* [A162] Redshank *Tringa tetanus;* [A169] Turnstone *Arenaria interpres;* [A179] Black-headed Gull *Chroicocephalus ridibundus;* [A999] Wetlands	2.4 km
South Dublin Bay and River Tolka Estuary SPA (004024)	[A046] Light-bellied Brent Goose *Branta bernicla hrota ;* [A130] Oystercatcher *Haematopus ostralegus ;* [A137] Ringed Plover *Charadrius hiaticula ;* [A141] Grey Plover *Pluvialis squatarola ;* [A143] Knot *Calidris canutus* **;** [A144] Sanderling *Calidris alba* **;** [A149] Dunlin *Calidris alpina alpina* **;** [A157] Bar-tailed Godwit *Limosa lapponica ;* [A162] Redshank *Tringa tetanus ;* [A179] Black-headed Gull *Chroicocephalus ridibundus* **;** [A192] Roseate Tern *Sterna dougallii ;* [A193] Common Tern *Sterna hirundo* **;** [A194] Arctic Tern *Sterna paradisaea* **;** [A999] Wetlands	7.2 km
Baldoyle Bay SPA (004016)	[A046] Light-bellied Brent Goose *Branta bernicla hrota;* [A048] Shelduck *Tadorna tadorna;* [A137] Ringed Plover *Charadrius hiaticula;* [A140] Golden Plover *Pluvialis apricaria;* [A141] Grey Plover *Pluvialis squatarola;* [A157] Bar-tailed Godwit *Limosa lapponica;* [A999] Wetlands	2.8 km

Site Name & Code	Qualifying Interests (*= priority habitats)	Distance to Site
Malahide Estuary SPA (004025)	[A005] Great Crested Grebe *Podiceps cristatus;* [A046] Brent Goose *Branta bernicla hrota;* [A048] Shelduck *Tadorna tadorna;* [A054] Pintail *Anas acuta;* [A067] Goldeneye *Bucephala clangula;* [A069] Red-breasted Merganser *Mergus serrator;* [A130] Oystercatcher *Haematopus ostralegus;* [A140] Golden Plover *Pluvialis apricaria;* [A141] Grey Plover *Pluvialis squatarola;* [A143] Knot *Calidris canutus;* [A149] Dunlin *Calidris alpina alpina;* [A156] Black-tailed Godwit *Limosa limosa;* [A157] Bar-tailed Godwit *Limosa lapponica;* [A162] Redshank *Tringa tetanus;* [A999] Wetlands	7.0 km
Lambay Island SPA (004069)	[A009] Fulmar *Fulmarus glacialis;* [A017] Cormorant *Phalacrocorax carbo;* [A018] Shag *Phalacrocorax aristotelis;* [A043] Greylag Goose *Anser answer;* [A183] Lesser Black-backed Gull *Larus fuscus;* [A184] Herring Gull *Larus argentatus;* [A188] Kittiwake *Rissa tridactyla;* [A199] Guillemot *Uria aalge;* [A200] Razorbill *Alca torda;* [A204] Puffin *Fratercula arctica*	10.5 km
Rogerstown Estuary SPA	[A043] Greylag Goose *Anser answer;* [A046] Brent Goose *Branta bernicla hrota*; [A048] Shelduck *Tadorna tadorna*; [A056] Shoveler *Anas clypeata*; [A130] Oystercatcher *Haematopus ostralegus*; [A137] Ringed Plover *Charadrius hiaticula*; [A141] Grey Plover *Pluvialis squatarola*; [A143] Knot *Calidris canutus*; [A149] Dunlin *Calidris alpina alpina*; [A156] Black-tailed Godwit *Limosa limosa*; [A162] Redshank *Tringa totanus*; [A999] Wetlands	11.5 km
Dalkey Islands SPA (004172)	[A192] Roseate Tern *Sterna dougallii;* [A193] Common Tern *Sterna hirundo;* [A194] Arctic Tern *Sterna paradisaea*	11.9 km
Natural Heritage Areas (NHAs)		
	There are no NHAs within 15km of the proposed development	
Proposed Natural Heritage Areas (pNHAs)[2]		
Howth Head (000202)	Refer to qualifying interests of Howth Head SAC and Howth Head Coast SPA.	Adjacent to site Boundary
Baldoyle Bay (000199)	Refer to qualifying interests of Baldoyle Bay SAC and SPA.	0.7 km
Ireland's Eye (000203)	Refer to qualifying interests of Ireland's Eye SAC and SPA.	1.3 km
North Dublin Bay (000206)	Refer to qualifying interests for North Dublin Bay SAC.	2.4 km
Malahide Estuary (000205)	Refer to qualifying interests for Malahide Estuary SAC & SPA.	6.5 km

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

Site Name & Code	Qualifying Interests (*= priority habitats)	Distance to Site
Sluice River Marsh (001763)	This site is located about 1 km west of Portmarnock village. This site is of importance as a relatively intact freshwater marsh, a habitat that is now rare in County Dublin.	6.6 km
South Dublin Bay (000210)	Refer to qualifying interests of South Dublin Bay SAC and South Dublin Bay and River Tolka Estuary SPA.	8.4 km
Feltrim Hill (001208)	No site synopsis available.	9.5 km
Dolphins, Dublin Docks (000201)	Dolphins, Dublin Docks pNHA is comprised of two mooring 'dolphins' in the River Liffey near Pigeon House Harbour. These 'dolphins' are used by nesting terns with approximately 350 pairs of Common Tern *Sterna hirundo* recorded in 2006 (Dublin City Biodiversity Action Plan, 2008 – 2012).	9.7 km
Portraine Shore (001215)	This site is located about 3km east of Donabate. The site is mostly a stretch of rocky shore, with some intertidal sands at the south end. This site is a good example of a rocky bedrock shore with a typical flora and fauna. The grassy vegetation above the shore adds habitat diversity. The site is also an important geological site.	10.5 km
Lambay Island (000204)	No site synopsis available.	11.0 km
Dalkey Coastal Zone And Killiney Hill (001206)	This site includes the coastal stretch from Scotman's Bay to south of White Rock, the Dalkey Island group and Dalkey Sound, and Killiney Hill. This site represents a fine example of a coastal system with habitats ranging from the sub-littoral to coastal heath. The flora is well developed and includes some scarce species. The islands are important bird sites. The site also has geological importance.	11.1 km
Santry Demesne (000178)	This site is located immediately north of old Santry village, Co. Dublin, and comprises the remnants of a former demesne woodland. A species legally protected under the Flora Protection Order 1987, Hairy St. John's wort *Hypericum hirsutum*, was recorded here in 1991. The primary importance of this site is that it contains a legally protected plant species. The woodland, however, is of general ecological interest as it occurs in an area where little has survived of the original vegetation.	11.8 km
Rogerstown Estuary (000208)	Refer to qualifying interests of Rogerstown Estuary SAC and SPA.	12.0 km
Grand Canal (002104)	The Grand Canal is a man-made waterway linking the River Liffey at Dublin with the Shannon at Shannon Harbour and the Barrow at Athy. A number of different habitats are found within the canal boundaries - hedgerow, tall herbs, calcareous grassland, reed fringe, open water, scrub and woodland. The rare and legally protected Opposite-leaved Pondweed *Groenlandia densa* (Flora Protection Order 1987) is present at a number of sites in the eastern section of the Main Line, between Lowtown and Ringsend Basin in Dublin. The ecological value of the canal lies more in the diversity of species it supports along its linear habitats than in the presence of rare species. It	12.0 km

Site Name & Code	Qualifying Interests (*= priority habitats)	Distance to Site
	crosses through agricultural land and therefore provides a refuge for species threatened by modern farming methods.	
Booterstown Marsh (001205)	Booterstown Marsh lies approximately 5km south of Dublin City. It is separated from Merrion Strand to the east by an embankment which carries the Dublin to Wexford railway, and to the west it is bounded by the road from Dublin to Blackrock. Booterstown Marsh is the only saltmarsh in south Dublin and, despite some concerns about the increasing salinity of the site, it remains a valuable habitat for many birds as well as containing a diverse flora including the protected plant Borrer's Saltmarsh grass *Puccinellia fasciculata*.	12.1 km
Royal Canal (002103)	The Royal Canal is a man-made waterway linking the River Liffey at Dublin to the River Shannon near Tarmonbarry. A number of different habitats are found within the canal boundaries - hedgerow, tall herbs, calcareous grassland, reed fringe, open water, scrub and woodland. The rare and legally protected Opposite-leaved Pondweed *Groenlandia densa* (Flora Protection Order 1987) is present at one site in Dublin, between Locks 4 and 5. *Tolypella intricata* (a stonewort listed in the Red Data Book as being vulnerable) is also in the Royal Canal in Dublin, the only site in Ireland where it is now found. The ecological value of the canal lies more in the diversity of species it supports along its linear habitats than in the presence of rare species. It crosses through agricultural land and therefore provides a refuge for species threatened by modern farming methods.	12.2 km

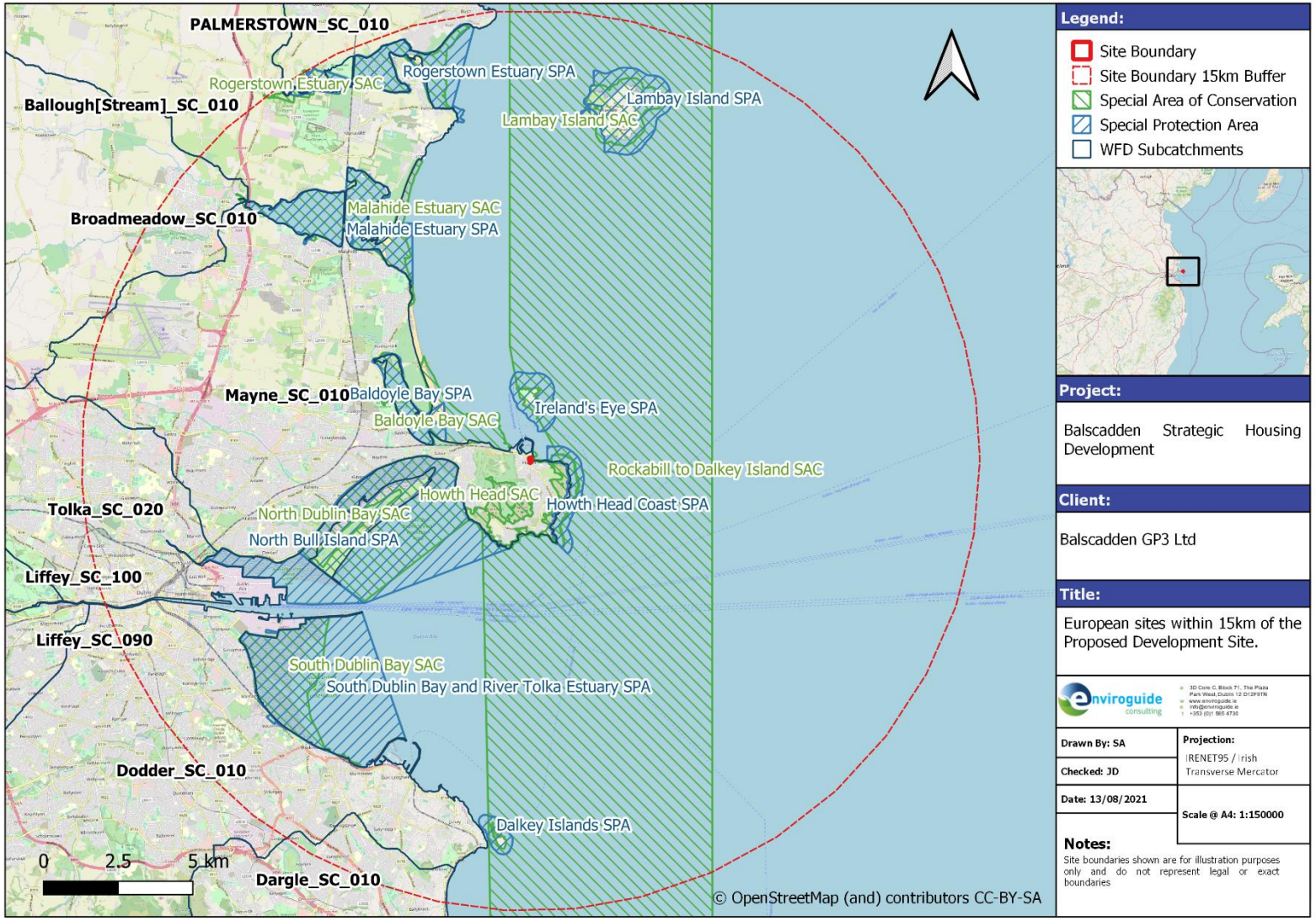


Figure 5-2: Designated sites within 15km of the Site of the Proposed Development

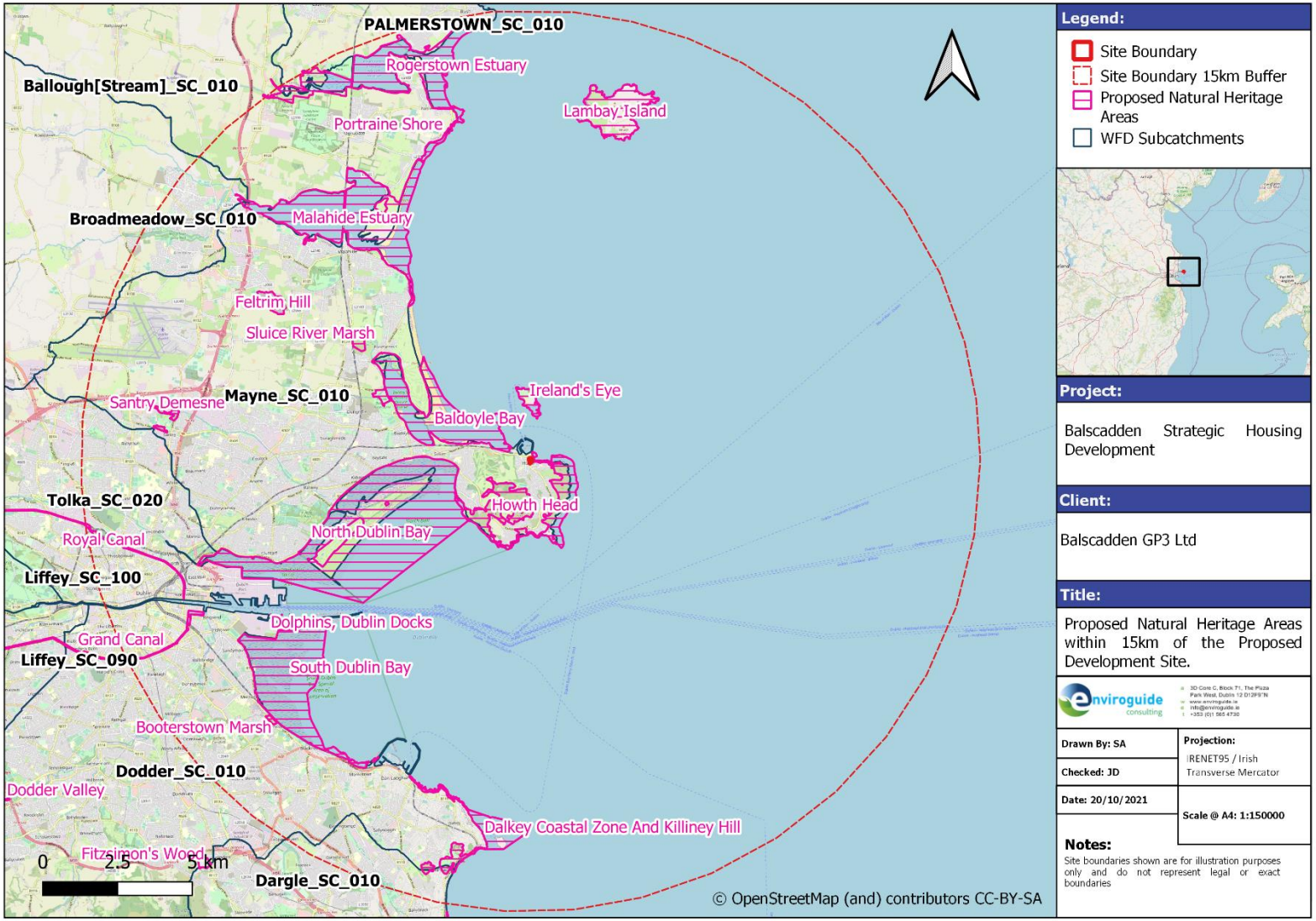


Figure 5-3: Proposed Natural Heritage Areas within 15km of the Site

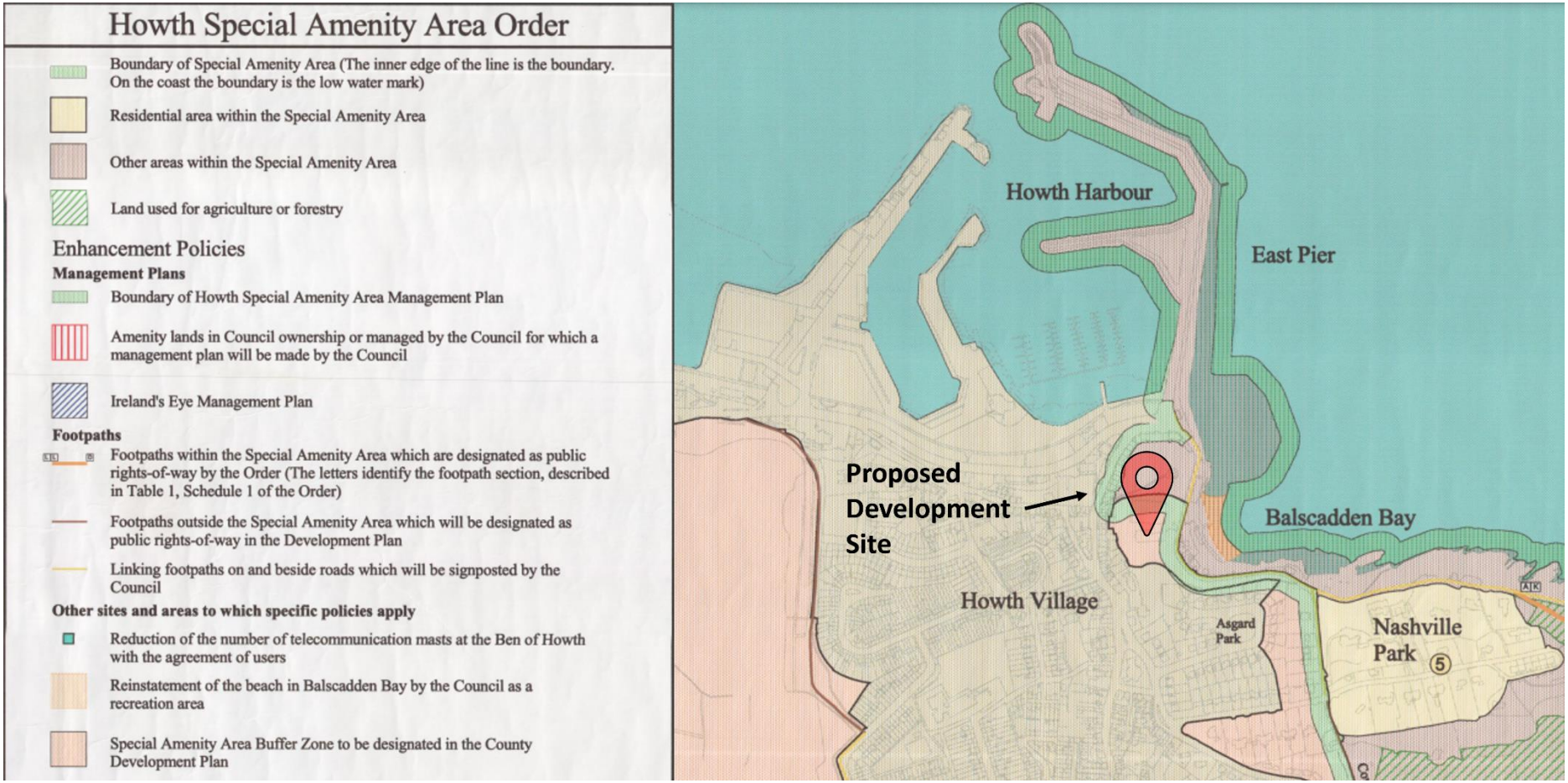


Figure 5-4: Proposed Development location in relation to the Howth Special Amenity Area Order (modified from Howth Special Amenity Area Order Map A)

5.3.4 Howth Head Special Amenity Area Order

In 1999 the Minister for the Environment signed the Special Amenity Area Order (SAAO) for Howth. This order sets out a framework for the conservation and protection of the area designated in accordance with the Planning Act and Planning Regulations. The Howth Special Amenity Area covers a total of 547 hectares. It includes Ireland's Eye (28 hectares) as well as heathland, woods, cliffs and wooded residential areas of the south-eastern half of the peninsula (519 hectares) (Fingal Co. Co., n.d.). Approximately 8,000 residents and approximately 750,000 visitors/tourists use/visit the area[3]. The Proposed Development is located immediately adjacent to the Special Amenity Area boundary and occurs within the Special Amenity Area Buffer Zone (Figure 5-4). According to Map B of the Howth SAAO, the Special Amenity Area Buffer Zone is to be designated in the County Development Plan. According to the Fingal Development Plan (2017-2023) the Site lands are zoned as "RS – Residential" with the objective to "*provide for residential development and protect and improve residential amenity*".

An Operational Plan (2021-2025) has been prepared for Howth SAAO, with 59 actions listed under 10 different headings namely Wetlands, Redrock Management Plan, Invasive Species Control, Heathland Management, Wildfire Management, Irelands Eye Management Plan, Planning and Development, Visitor Management, Communication and Outreach and Resource Allocation. Of relevance to this application are the actions relating to visitor management (outlined in Table 5-8 below), as the Proposed Development could lead to an increase in visitor numbers to Howth Head.

[3] Howth Special Amenity Area Order (SAAO) Operational Plan 2021-2025

Table 5-8: Actions relating to visitor management extracted from the Howth SAAO Operational Plan 2021-2025. Actions highlighted in green are the priority actions for the next 5 years as determined by the SAAO committee and Fingal County Council. Key Performance Indicators (KPI's) will be used to indicate the success of each targeted action.

No.	Action	Once off or Ongoing	Year	Project lead	KPI
Visitor Management					
46	Conduct a review of the footpath network with specific regard to areas of erosion, particularly at Bellinghams Farm/Redrock	Ongoing	2022	Biodiversity Officer	Pathway review carried out and recommendations implemented.
47	Upgrade pathway network where necessary	Ongoing	yearly	Parks and Landscape officer OPS	Number of pathway locations upgraded per year in report format
48	Add additional signage along pathway network and remove obsolete signage where necessary	Ongoing	yearly	Parks and Landscape officer OPS	Number of new signs installed and excessive signs removed
49	Restore heathland where damaged by excessive trampling	Ongoing	2024-2025	Biodiversity Officer	Acreage of heathland restored
50	Pedestrian Counter Balscadden	Once off	2021	Parks and Landscape officer OPS	Counter installed and number of visitors monitored
51	Balscadden beach access study	Once off	2021	Senior Engineer, Transportation	Study completed and presented to SAAO committee
52	Assess impacts of new pathways and determine what options are available to stop new pathways being created	Once off		Biodiversity Officer	Impact Assessment carried out and report prepared
53	Liaise with horse owners on a regular basis	Ongoing		Chair subcommittee	At least 4 meetings with horse owners per year
54	Carry out a study on how to address mountain biking on Howth	Once off		Biodiversity Officer	Study carried out and report prepared

5.3.5 Habitats

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

- BL3 - Buildings and Artificial Surfaces
- GS2 – Dry Meadows and Grassy Verges
- WS1 – Scrub
- WL2 – Treeline
- ED1 – Exposed Sand, Gravel or Till
- ED3 – Recolonising Bare Ground

In addition, data available from the NPWS website[4] indicates that the Annex I habitat *[1230] vegetated sea cliffs of the Atlantic and Baltic coasts* occurs along the slope towards Balscadden Bay to the east of the Site (Figure 5-1). The Fingal County Council Development Plan Map Viewer 2017-2023 indicates that an Annex I habitat (referred to as "Rocky Sea Cliffs") occurs 380m east of the Site. A detailed assessment of the slope towards Balscadden Bay to the east of the Site was not carried out as part of the field surveys undertaken in August 2021 by Enviroguide Consulting. However, Altemar (2019a) assessed this slope as per Barron et al (2011) on the 13th May 2019. It should be noted that the author of the Altemar report was involved in the Survey Plan to Assess the Conservation Status of Irish Sea Cliffs (MERC, 2019) and carried out GIS elements for the National Survey and Assessment of the Conservation Status of Irish Sea Cliffs (Barron et al., 2011) (Altemar, 2019).

The following description of the slope is extracted from Altemar (2019a):

"A site visit was carried out on 13/05/19 to assess this easterly facing slope. There were no typical sea cliff habitats such as splash zone (concrete structure was present), crevice and ledge, ungrazed grassland on hard cliffs, grazed grassland on hard cliffs, soft cliff pioneer, flush on soft cliff or coastal heath present. In addition, as outlined by Barron et al. (2011) in relation to coastal grassland on soft cliffs, "This habitat type should only be considered for unstable soft cliffs. It is quite distinct from grasslands on hard cliffs and grasslands which develop on unconsolidated material lying on top of hard cliffs". The habitat on the slope leading to Balscadden Bay is not coastal grassland as the slope is a stable and soil based i.e. not "on top of hard cliffs", that shows no signs of erosion and is protected by the concrete protection works at its base. The habitats on site were relatively uniform with no distinct zones. It is more reminiscent of a terrestrial habitat of primarily Scrub (WS1) within intertwined GS2 Dry meadows and grassy verges. As the site was relatively uniform, no distinct zones relevés were recorded.

*Species observed on the slope were relatively uniform across the slope and consisted of bramble (*Rubus fruticosus *agg.), ground elder (*Aegopodium podagraria*), nettle (*Urtica dioica*), cow parsley (*Anthriscus sylvestris*), goat's beard (*Tragopogon pratensis*), common knapweed (*Centaurea nigra*), cleavers (*Galium aparine*), monbretia (*Crocosmia x crocosmiflora*), bluebell (*Hyacinthoides non-scripta*), dandelion (*Taraxacum *spp.), creeping buttercup (*Ranunculus repens*), plantains (*Plantago *spp.), thistles (*Cirsium arvense *and* C. vulgare*), dock (*Rumex *spp.), hedge bindweed (*Calystegia sepium*), three-cornered garlic*

[4] https://www.npws.ie/maps-and-data/habitat-and-species-data/article-17/2019/habitats/coastal-habitats

*(*Allium triquetrum*), red valerian (*Centranthus ruber*), New Zealand flax (*Phormium *sp.) and several sycamore (*Acer pseudoplatanus*). Towards the base of the slope, several Sea Beet (*Beta vulgaris *ssp.* Maritima) *and common scurvygrass (*Cochlearia officinalis) *were noted.*

The habitat Dry Heath [4030] (feature of interest of Howth Head SAC) was not present. The base of the slope ends in the terrestrial above the high-water mark. A concrete wall and platform are present across the shore in this area. The structures appear to have been in place in this area since early 1900's where postcards of the site show a dwelling on the shore. The SAC was designated November 1996. As the "base of the slope is neither intertidal (littoral) or subtidal (sublittoral)" (as defined by NPWS (2016) and Barron et al. (2011), this is therefore not a Vegetated Sea Cliff. Therefore, the features of interest of Howth Head SAC are not located in this immediate area."

According to Altemar (2019b) the true sea cliffs are not located behind the houses on Balscadden Road. Rather, they occur where the houses cease and the cliffs are more northerly facing i.e., 42m from where the redline boundary is at the Balscadden Road.

According to the metadata accompanying the NPWS data mentioned above, the distribution of sea cliffs data is based on a number of different sources, which are outlined in NPWS (2019) "The Status of EU Protected Habitats and Species in Ireland. Volume 2: Habitat Assessments.". The temporal range of the data is 2005 – 2011. The following is extracted from NPWS (2019):

Barron et al. (2011) and Browne (2005) were used as the basis for the distribution map for 1230 vegetated sea cliffs provided by the NPWS. Oblique photographs, derived from video imagery captured in 2003, were examined by Barron et al. (2011) to draw up a list of 'potential sea cliffs'. Physical characteristics were further assessed using aerial photographs (2005 series) and OSI Discovery Series maps, information on soils from Teagasc soil and parent material maps, and information on bedrock from the Geological Survey of Ireland bedrock maps. The resulting sea cliff locations were transferred to the County boundary line developed from OSI six-inch maps of Ireland. A further 10 cliffs identified by Browne (2005), for which no remote imagery was available, are included in the distribution. These are referred to as 'undocumented sites'.

As the assessment carried out by Altemar (2019a) is more recent and is based on field data, this Biodiversity Chapter draws on the conclusion of Altemar (2019a) that the features of interest of Howth Head SAC are not located in the immediate area of the Proposed Development.

The following paragraphs describe the habitats within the Proposed Development Site boundary.

Dry Meadows and Grassy Verges (GS2)

This habitat type occurred at the centre and south-east of the Site. Grass species within this habitat included Perennial Rye Grass *Lolium perenne,* Yorkshire Fog *Holcus lanatus* and Cock's Foot *Dactylis glomerata*. The herb component included Creeping Thistle *Cirsium arvense*, Dock *Rumex* sp., Creeping Buttercup *Ranunculus repens*, Bush Vetch *Vicia sepium,* Hogweed *Heracleum sphondylium,* Ribwort Plantain *Plantago lanceolata,* Yarrow *Achillea millefolium,* Kidney vetch *Anthyllis vulneraria*, Wild Carrot *Daucus carota*, Black meddick

Medicago lupulina, Hemp agrimony *Eupatorium cannabinum,* Clover *Trifolium* sp., Bird's Foot Trefoil *Lotus corniculatus*, Hedge Bindweed *Calystegia sepium* and Nettle *Urtica dioica.*

Figure 5-5: Dry Meadows and Grassy Verges habitat at the Site of the Proposed Development. Image taken 16th August 2021

Scrub (WS1)

Scrub habitat was common throughout the Site. Plant species growing with this habitat type included Bramble *Rubus fruticosus*, Ivy *Hedera helix*, Rosebay Willow Herb *Chamaenerion angustifolium,* New Zealand Flax *Phormium sp.,* Large Bindweed *Calystegia sepium,* Sycamore saplings *Acer pseudoplatanus, Echium sp.* and Nettle. Several mammal trails were observed leading to/from this habitat.

Figure 5-6: Scrub habitat at the Site of the Proposed Development. Image taken 16th August 2021

Treelines (WL2)

A Monterey Cypress *Cupressus macrocarpa* treeline is located to the south of the site, outside the redline boundary. A number of mammal burrows (likely rabbit or fox) were recorded within this treeline. The treeline at the northern Site boundary is also comprised of Monterey Cypress and a single sycamore.

Buildings and Artificial Surfaces (BL3), Exposed Sand, Gravel or Till (ED1), Recolonising Bare Ground (ED3)

The above sections describe the natural/semi natural habitat types at the Site of the Proposed Development. In addition to these, a large portion of the Site is comprised of buildings and artificial surfaces (e.g. the former Edros Centre), areas of recolonising bare ground and two discrete patches of exposed sand, gravel or till (ED1).

Figure 5-7: Former "Edros Centre", scrub and recolonising bare ground (centre background) at the Site of the Proposed Development. Image taken 16th August 2021

Figure 5-8: Hard standing habitat at the Site of the Proposed Development. Exposed sand, gravel or till habitat is visible in the background. Image taken 16th August 2021

Figure 5-9: Habitats at the Site of the Proposed Development

Table 5-9: Evaluation of habitats within the Proposed Development Site

Habitat	Evaluation	Rationale	Key Ecological Receptor (KER)
Dry Meadows and Grassy Verges (GS2)	Local importance (higher value)	This habitat is unmanaged and may provide habitat for small mammals.	**Yes**
Scrub (WS1)	Local importance (higher value)	Important habitat type for a variety of species of bird and small mammal in terms of connectivity, shelter and foraging.	**Yes**
Treelines (WL2)	Local importance (higher value)	Important habitat type for a variety of species of bird and small mammal in terms of connectivity, shelter and foraging.	**Yes**
Buildings and Artificial Surfaces (BL3)	Local importance (lower value)	Man-made habitat of low biodiversity value.	No
Exposed Sand, Gravel or Till (ED1)	Local importance (lower value)	Low biodiversity value habitat.	No
Recolonising Bare Ground (ED3)	Local importance (higher value)	Man-made habitat of low biodiversity value.	No

5.3.6 Species and species groups

The Site of the Proposed Development is located within the Ordnance Survey Ireland National 023Z tetrad. Species records dated within the last 20 years from the National Biodiversity Data Centre (NBDC) online database for this tetrad were studied for the presence of invasive, rare or protected flora and fauna. These records are presented in Table 5-10.

Table 5-10: National Biodiversity Data Centre records of rare, invasive and protected species in tetrad O23Z

Species Group	Name	Date of last record	Database	Legal Status	Cons status
Invasive Flora	Canadian Waterweed *Elodea canadensis*	24/05/2014	Ireland's BioBlitz	High Impact Invasive Species Regulation S.I. 477 (Ireland)	-
	Rhododendron poticum	13/05/2005	Species Data from the National Vegetation Database	High Impact Invasive Species Regulation S.I. 477 (Ireland)	-
	Sycamore *Acer pseudoplatanus*	13/05/2005	Species Data from the National Vegetation Database	Medium Impact Invasive Species	-
	Three-cornered Garlic *Allium triquetrum*	02/05/2021	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Medium Impact Invasive Regulation S.I. 477 (Ireland)	-
Marine Mammals	Bottle-nosed Dolphin *Tursiops truncatus*	19/08/2012	IWDG Casual Cetacean Sightings	WA, HD	favourable
	Common Dolphin *Delphinus delphis*	17/10/2017	IWDG Casual Cetacean Sightings	WA, HD	favourable
	Common Porpoise *Phocoena phocoena*	27/12/2020	IWDG Casual Cetacean Sightings	WA, HD, OSPAR	favourable
	Common Seal *Phoca vitulina*	25/07/2018	Mammals of Ireland 2016-2025	WA, HD	favourable
	Grey Seal *Halichoerus grypus*	04/01/2018	Mammals of Ireland 2016-2025	WA, HD	favourable
	Risso's Dolphin *Grampus griseus*	12/06/2015	IWDG Casual Cetacean Sightings	WA, HD	favourable
Terrestrial Mammals (Native)	Eurasian Pygmy Shrew *Sorex minutus*	15/04/2014	Atlas of Mammals in Ireland 2010-2015	WA, BC	lc
	Eurasian Red Squirrel *Sciurus vulgaris*	31/12/2007	Irish Squirrel Survey 2007	WA	lc
	West European Hedgehog *Erinaceus europaeus*	30/04/2020	Hedgehogs of Ireland	WA, BC	lc

Species Group	Name	Date of last record	Database	Legal Status	Cons status
Terrestrial Mammals (non-native)	European Rabbit *Oryctolagus cuniculus*	27/06/2018	Mammals of Ireland 2016-2025	Medium Impact Invasive Species	
Bats	Pipistrelle *Pipistrellus pipistrellus sensu lato*	23/05/2014	Ireland's BioBlitz	WA, HD	lc
	Soprano Pipistrelle *Pipistrellus pygmaeus*	23/05/2014	Ireland's BioBlitz	WA, HD	lc
Amphibian	Common Frog *Rana temporaria*	28/06/2018	Amphibians and reptiles of Ireland	WA, HD	lc
Fish	Thornback Ray *Raja clavata*	24/05/2014	Ireland's BioBlitz	OSPAR	lc

*Codes used in the 'legal status' column are as follows: HD – species that are protected under Annexes II, IV or V of the EC Habitats Directive 1993; BD – species that are listed on Annex I of the EC Birds Directive; WA - species that are protected under the Wildlife Act 1976 (as amended); OSPAR – species listed by OSPAR as threatened and/or declining; FPO – species listed on the Flora Protection Order 2015, which receive protection under the Wildlife Act 1976 (as amended).

** Codes in the 'conservation status' column refer to national red lists, using the following supplementary categories: RE (regionally extinct), CR (critically endangered), EN (endangered), VU (vulnerable), NT (near-threatened), lc (least concern), dd (data deficient) or N.A. (not assessed) and/or recent assessments of the status of habitats and species in Ireland (NPWS, 2019), using the following categories: favourable, inadequate, bad, unknown.

*** With the exception of terrestrial mammals, species with "near-threatened", "least concern", "data deficient" and "not assessed" conservation status are not listed. The conservation status of non-native flora and fauna is not listed.

5.3.6.1 Flora

Rare and Protected Flora

Species records from the NBDC online database were studied for the presence of rare of protected flora species. No rare or protected flora were listed within the tetrad associated with the Site. In addition, no rare or protected flora were recorded at the Site. According to the *Flora Protection Order - Bryophytes Map Viewer*[5] provided by the DAHG, there is a record for the protected moss *Scleropodium touretii*, which is listed on the Flora Protection Order approximately 700m east of the Proposed Development. This species was recorded at the end of Balscadden Road, near Kilrock carpark. According to the document accompanying this record "*S. touretii* needs to be refound at this site; it is quite likely that *S. touretii* has disappeared, however, as there has been such a lot of building and other change on Howth over the last century and a half"[6].

Invasive Plant Species

The NBDC have records of four invasive plant species within the tetrad associated with the Proposed Development Site. Two species within the grid square are listed under Schedule III of Regulation S.I. 477, namely Canadian Waterweed *Elodea canadensis* and Three-cornered Garlic *Allium triquetrum.*

The common and widespread sycamore *Acer pseudoplatanus* and Butterfly Bush *Buddleia davidii* were recorded throughout the Site during the walk over survey carried out on the 16th August 2021. No invasive flora listed on Schedule III of the *European Communities (Birds and Natural Habitats) Regulations* 2011 (SI 477 of 2011, as amended) were recorded.

Altemar (2019a) detected Three Cornered Leek *Allium triquetrum* at the Site on the slopes facing the Baily Court Hotel during their Site surveys. This species is listed in Schedule III of the *European Communities (Birds and Natural Habitats) Regulations* 2011 (SI 477 of 2011, as amended). No other invasive species listed on Schedule III of the above-mentioned regulations were found at the Site by Altemar (2019a). It is likely that Three Cornered Leek was not re-found in the August 2021 surveys as this species flowers early in the year with plants dying back completely by June and July[7].

5.3.6.2 Non-volant mammals

Three native non-volant mammals were recorded within the relevant tetrad, namely Eurasian Pygmy Shrew *Sorex minutus*, Eurasian Red Squirrel *Sciurus vulgaris* and West European Hedgehog *Erinaceus europaeus*. The Site does not provide suitable habitat for Red Squirrel (e.g. woodland), however it is deemed that there is suitable habitat for the remaining species at the Site.

Evidence of mammal activity was noted during the field survey carried out on the 16th of August 2021. Several mammal tracks were observed within the scrub habitat and dry meadow habitat. A number of mammal dens were recorded at the Site, which are likely to be Fox or Rabbit. The size and shape of the dens (taller than broad) coupled with the lack of evidence of Badger

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

[6] https://www.npws.ie/sites/default/files/fpo/taxon/Scleropodium_touretii_11_Howth.pdf

[7] https://species.biodiversityireland.ie/profile.php?taxonId=28150&taxonDesignationGroupId=26#Species_Biology

activity at the Site (e.g. snuffle holes or latrines) suggests that the dens are not Badger setts, and that the Site is not significant for badger.

A single fox was observed during the breeding bird survey carried out on the 27th July 2021.

Figure 5-10: Mammal dens at the Site of the Proposed Development. (A) and (b) are likely to be fox dens, whereas (c) and (d) are likely rabbit burrows

5.3.6.3 Bats

Two bat species have been recorded within the relevant tetrad by the NBDC, namely Pipistrelle *Pipistrellus pipistrellus sensu lato* and Soprano Pipistrelle *Pipistrellus pygmaeus*. Three species were recorded within at least one of the 2km grid squares (O14K or O14F), and there are records for Lesser Noctule within the 1km O1442 grid square.

The NBDC maps landscape suitability for bats based on Lundy et al. (2011). The index ranges from 0 to 100 with 0 being least favourable and 100 most favourable for bats. The overall habitat suitability index for bats is 29.44.

5.3.6.3.1 Bat Survey Results Summary

Four species of bat was recorded within the survey area: Leisler's bat *Nyctalus leisleri*, common pipistrelle *Pipistrellus pipistrellus*, brown long-eared bat *Plecotus auritus* and soprano pipistrelle *Pipistrellus pygmaeus*.

No bat roosts were recorded roosting in the buildings surveyed. As buildings tend to be used as more stable roosting sites for bats, particularly in the summer months, the survey results indicate that the buildings are not used as bat roosts. While a brown long-eared bat was recorded in the sports hall briefly, it is deemed that this building is not being used as a bat roost, due to the brief number of bat passes recorded during one of the night's surveillance.

There are no trees deemed as Potential Bat Roosts within the proposed survey area.

A Medium level of bat activity was recorded for common pipistrelles. A low level of bat activity was recorded for the remaining bat species.

The Proposed Development Site is used as a foraging and commuting habitat for local bat populations. However, the level of bat activity and the number of bat encounters do not indicate that the Proposed Development Site is an important area for local bat populations.

5.3.6.4 Birds

Breeding Birds

Bird species recorded during the site visit on 27th July 2021 are shown in Table 5-11.

Table 5-11: Bird species recorded at the Site of the Proposed Development

Species	BoccI	Main Notes
Wren *Troglodytes troglodytes*	Green	Several recorded throughout the site
Chiffchaff *Phylloscopus collybita*	Green	One present feeding in rough scrubland
Chaffinch *Fringilla coelebs*	Green	Several recorded throughout the site
Robin *Erithacus rubecula*	Green	One recorded on the western side
Dunnock *Prunella modularis*	Green	Two heard
Linnet *Linaria cannabina*	Amber	Minimum of four birds recorded
Blue Tit *Cyanistes caeruleus*	Green	Several recorded throughout the site
Starling *Sturnus vulgaris*	Amber	Several recorded throughout the site
Goldfinch *Carduelis carduelis*	Green	Up to eight feeding on scrubland
Blackbird *Turdus merula*	Green	Common
Blackcap *Sylvia atricapilla*	Green	One single bird recorded in scrubland
Song Thrush *Turdus philomelos*	Green	Two in mature trees along the western section
Jackdaw*Corvus monedula*	Green	Common
Rook *Corvus frugilegus*	Green	Common
Magpie *Pica pica*	Green	Common
Hooded Crow *Corvus cornix*	Green	Two on site
Swallow *Hirundo rustica*	Amber	Several Feeding overhead
House Martin *Delichon urbicum*	Amber	Several Feeding overhead
Herring Gull *Larus argentatus*	Amber	Present on and over the site

Red-listed Bird Species

There were no species on the Red List of the Birds of Conservation Concern in Ireland recorded on the Breeding Bird Surveys undertaken on 27th July 2021.

Amber-listed Bird Species

Five species which are on the Amber List of the Birds of Conservation Concern in Ireland were recorded during the Breeding Bird Survey of 27th July 2021, namely House Martin, Swallow, Starling, Linnet and Herring Gull. Two species (Starling and Linnet) were possibly nesting on the Proposed Development Site. No Herring Gulls were recorded breeding at the Site, but according to Altemar (2019a), the roof of the Baily Court Hotel was "occupied by at least four breeding pairs" of Herring Gull in May 2019.

Flight-line Surveys

The results of flight-line surveys at the Proposed Development Site demonstrate that the Site is not situated on an important flight path for any 'at risk' Special Conservation Interest (SCI) species. A single incidence of an 'at risk' SCI species was recorded flying over the Site during the 2020/21 survey season. On the 6th January 2021, a single Curlew *Numenius arquata* was recorded flying over the Site. The Curlew was flying due west, approximately 40m over the Site (Table 5-12). Similarly, a single incidence of Oystercatcher *Haematopus ostralegus* flying over the Site was recorded on 4th January 2022. The Oystercatcher was flying north-east, approximately 75-100m over the Site.

Table 5-12: Summary of the results of 'At Risk' species recorded in-flight over the Site of the Proposed Development during the flight-line surveys carried out in Winter 2020/21 and winter 2021/22

Date	Species	Peak count	Estimated height over Site	Estimated duration over Site
2020/2021 Survey Season				
6th January 2021	Curlew (*Numenius arquata*)	1	40 m	4 seconds
3rd March 2021	Mallard *(Anas platyrhynchos)*	3	40 m	6 seconds
2021/2022 Survey Season				
2nd December 2021	Heron (*Ardea cinerea*)	1	75-100 m	22 seconds
14th December 2021	Heron (*Ardea cinerea*)	1	75 m	19 seconds
28th December 2021	Heron (*Ardea cinerea*)	2	75-100 m	10 – 14 seconds
4th January 2022	Oystercatcher (*Haematopus ostralegus*)	1	75-100 m	10 seconds
2nd February 2022	Heron (*Ardea cinerea*)	1	75-100 m	14 seconds

Gulls (mostly Herring Gull *Larus argentatus* and Black-headed Gull *Larus ridibundus* and occasionally Greater Black-backed Gull *Larus marinus*) were frequently observed flying over the Site lands. However, as gull species are classed as 'low' collision risk species due to their superior manoeuvrability when flying they were therefore not considered for this survey.

Overall frequencies of at-risk SCI species recorded in-flight over the Site were low with Oystercatcher and Curlew recorded once throughout all the flightline surveys carried out.

5.3.6.5 Fish and Marine Mammals

There are no streams or rivers suitable for supporting fish within or within close proximity to the Site of the Proposed Development. Marine mammals and fish are likely to occur along the coast adjacent to the Site.

5.3.6.6 Amphibians

The Common Frog *Rana temporaria* was recorded within the tetrad associated with the Site of the Proposed Development. There is no suitable habitat for frog at the Site.

5.3.6.7 Invertebrates

No invertebrate species listed under the Habitats Directive were recorded within the tetrad associated with the Proposed Development by the NBDC.

5.3.6.8 Common Lizard

Although there are no records of common lizard *Zootoca vivipara* within the relevant tetrad associated with the Proposed Development, there is some suitable habitat for this species at the Site. According to Gandola (2019) common lizard have a widespread distribution throughout the southern and eastern coastal areas of Howth peninsula with the highest densities found along the cliff walks at East Mountain. East Mountain is identified as the area of highest ecological importance for common lizards in terms of availability of appropriate habitats along the ecotone of heathland and clifftop grassland. Overall, the highest abundances of common lizards found by Gandola (2019) were associated with heathland, dry-stone walls, and clifftop grassland respectively. The habitat most suitable for common lizard at the Site would be the dry meadows and grassy verges habitat.

Table 5-13: Evaluation of species at the Proposed Development Site

Species	Evaluation	Key Ecological Receptor (KER)	Rationale
Marine mammals and fish	Local importance (higher value)	**Yes**	Potentially occur along the coast adjacent to the Site.
Bat assemblage	Local importance (higher value)	**Yes**	Various species likely to forage and commute through the Site.
Bird assemblage	Local importance (higher value)	**Yes**	Amber and Green-listed species recorded within a range of habitats across the Site.
Fox	Local importance (higher value)	**Yes**	Not strictly protected in Ireland, but Foxes are possibly breeding at the Site.
Rabbit	Local importance (lower value)	No	Not protected in Ireland. Burrows located outside the red line boundary.
Amphibians	Local importance (lower value)	No	No suitable habitat at the Site for frog or newt species.
Common Lizard *Zootoca vivipara*	Local importance (higher value)	**Yes**	Not recorded at the Site but suitable habitat is present for this species.
Eurasian Pygmy Shrew *Sorex minutus*	Local importance (higher value)	**Yes**	Not recorded at the Site but suitable habitat is present for this species.
Eurasian Red Squirrel *Sciurus vulgaris*	Local importance (lower value)	No	No suitable habitat at the Site for this species.
West European Hedgehog *Erinaceus europaeus*	Local importance (higher value)	**Yes**	Not recorded at the Site but suitable habitat is present for this species.

5.3.7 Conservation evaluation

5.3.7.1 Proposed Development Site

The main ecological value of the Development Site is the value of the semi natural habitats at the Site (dry meadows and grassy verges and scrub) to local passerine bird populations as nesting and foraging habitat and as foraging and commuting habitat for bat species. In addition, two fox dens were recorded at the Site, and the Site potentially has suitable habitat for the common lizard and small non-volant mammals.

Four bat species were recorded at the Site. The Proposed Development Site is used as a foraging and commuting habitat for local bat populations. However, the level of bat activity and the number of bat encounters do not indicate that the Proposed Development Site is an important area for local bat populations. No badger signs (setts, latrines, snuffle holes) were recorded at the Site. Common and widespread species are likely to occur at the Site including hedgehog, pygmy shrew and the common lizard. All these species are protected under the Wildlife Act.

Altemar (2019a) detected Three Cornered Leek *Allium triquetrum* at the Site on the slopes facing the Baily Court Hotel during their Site surveys. This species is listed in Schedule III of the *European Communities (Birds and Natural Habitats) Regulations* 2011 (SI 477 of 2011, as amended). No other invasive species listed on Schedule III of the above-mentioned regulations were found at the Site by Altemar (2019a). It is likely that Three Cornered Leek was not re-found in the August 2021 surveys as this species flowers early in the year with plants dying back completely by June and July[8].

Ecological features (habitats and species) present on the Proposed Development Site were evaluated for their conservation importance having regard for the National Roads Authority's scheme (NRA, 2009b). Habitats and species are evaluated based on their conservation status, distribution and the estimated population size or importance. The outcome of this evaluation exercise is presented in Table 5-9 and Table 5-13.

Overall the Proposed Development Site has been evaluated as of *Local value (lower value)* having regard for the conservation evaluation scheme (NRA 2009) as a site "*containing small areas of semi-natural habitat that are of some local importance to wildlife*".

5.3.7.2 Dublin Bay Biosphere and Ramsar Sites

The Site of the Proposed Development is within the terrestrial buffer zone of Dublin Bay Biosphere, and there are two Ramsar Sites within the zone of influence of the Proposed Development, namely North Bull Island (site ID 406) and Sandymount Strand/Tolka Estuary (site ID 832). These areas are evaluated as having international importance (Table 5-3). The Ramsar Sites are located remote from the Proposed Development and no source-pathway-receptor links exist between them. As such, impacts to Ramsar Sites are not considered further in this Biodiversity Chapter. Potential impacts on Dublin Bay Biosphere are assessed further in section 5.5.

[8] https://species.biodiversityireland.ie/profile.php?taxonId=28150&taxonDesignationGroupId=26#Species_Biology

5.3.7.3 Proposed Natural Heritage Areas

The only Proposed Natural Heritage Area (pNHA) that could be affected by the Proposed Development is Howth Head (000202). This pNHA is of national importance and occurs adjacent to the redline boundary of the Site. The remaining pNHAs within 15km of the Proposed Development Site are remote from the Site and are separated by a substantial marine and/or land buffer.

5.3.7.4 European Sites

European sites are evaluated as having international importance (Table 5-3). A Screening for Appropriate Assessment for the Proposed Development, prepared in accordance with the requirements of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011) as amended and the Planning and Development Act, 2000, is presented separately to this EIAR. The following conclusion is extracted from the Appropriate Assessment Screening Report:

"The Proposed SHD Residential Development at Balscadden, Howth, Co. Dublin has been assessed taking into account:

- *the nature, size and location of the proposed works and possible impacts arising from the construction works.*
- *the qualifying interests and conservation objectives of the European sites.*
- *the potential for in-combination effects arising from other plans and projects.*

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

- *Rockabill to Dalkey Island SAC (003000)*
- *Baldoyle Bay SAC (000199)*
- *Ireland's Eye SAC (002193)*
- *North Dublin Bay SAC (000206)*
- *Malahide Estuary SAC (000205)*
- *South Dublin Bay SAC (000210)*
- *Lambay Island SAC (000204)*
- *Rogerstown Estuary SAC (000208)*
- *Ireland's Eye SPA (004117)*
- *North Bull Island SPA (004006)*
- *Baldoyle Bay SPA (004016)*
- *Malahide Estuary SPA (004025)*
- *South Dublin Bay and River Tolka Estuary SPA*
- *Lambay Island SPA (004069)*
- *Rogerstown Estuary SPA*
- *Dalkey Islands SPA (004172)*

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

On the basis of the screening exercise carried out above, it can be concluded, on the basis of the best scientific knowledge available, that the possibility of any significant effects on the above listed European sites, whether arising from the project itself or in combination with other plans and projects, can be excluded.

However, upon examination of the relevant information including in particular the nature of the potential impact pathways associated with the Proposed Development, ***the possibility cannot be excluded*** *that the Proposed Development will have a likely significant effect on the European sites listed below:*

- *Howth Head SAC (000202)*
- *Howth Head Coast SPA (004113)*

As the likelihood of significant effects on European sites cannot be excluded a Natura Impact Statement (NIS) will be prepared for the Proposed Development. The NIS will assess the impact of the project (alone and in combination with other projects) on the integrity of the European sites, having regard to the conservation objectives of the sites. The NIS will describe proposed mitigation measures to avoid and reduce significant effects and will provide objective scientific information to enable the competent authority to carry out an Appropriate Assessment of the Proposed Development."

A Natura Impact Statement has been prepared which contains a full assessment of potential effects on European sites due to the Proposed Development, as well as a series of mitigation measures to protect them. Nevertheless, the potential effects of the Proposed Development on Howth Head SAC and Howth Head Coast SPA are assessed below in section 5.5.

5.4 Characteristics of the Proposed Development

5.4.1 Site Location

The Site occupies an area of approximately 1.43 hectares (ha) and is located within Howth village. The Site lies immediately south of the Martello Town, to the west of Balscadden Road and to the east of Abbey Street.

5.4.2 General Description

The Proposed Development relates to lands located to the south of the Martello Tower on Balscadden Road & the former Baily Court Hotel, Main Street, Howth, County Dublin. The development will consist of the demolition of existing structures on the proposed site including the disused sports building and the former Baily Court Hotel buildings and the construction of a residential development set out in 4 no. residential blocks, ranging in height from 2 to 5 storeys to accommodate 180 no. apartments with associated internal residential tenant amenity and external courtyards and roof terraces, 1 no. retail unit and 2 no. café/retail units. The site will accommodate car parking spaces at basement level and bicycle parking spaces at basement and surface level. Landscaping will include new linear plaza which will create a new

pedestrian link between Main St and Balscadden Rd to include the creation of an additional 2 no. new public plazas and also maintains and upgrades the pedestrian link from Abbey Street to Balscadden Road below the Martello Tower.

5.4.3 Construction Phase

The following is extracted from the Outline Construction Management Plan (Waterman Moylan, 2021).

The following outlines the construction phase sequence of works:

- Demolition of the existing EDROS Building & former Baily Court Hotel.
- Removal of site vegetation and installation of site set-up.
- Installation of temporary silt trench to eastern boundary to protect SAC/pNHA as required under the Preliminary Environmental Management Plan
- Provision of a temporary piling mat and berms between levels.
- Secant piled walls installed to allow for the bulk excavation and reduced level dig.
- Temporary works installed to temporarily restrain the secant piled walls during excavation.
- Basement battered open-cut excavation to the North and East boundaries with a safe angle of repose.
- Installation of the building raft foundation and basement retaining walls.
- Tower crane installation for the construction of the building frame.
- Bottom-up construction sequence of the floor slabs and vertical elements.
- Elements of the building frame may be premanufactured off site in precast construction for speed of construction, less formworks and on-site waste.
- Temporary scaffolding may be required around each building during the construction of the building envelope.
- Elements of the building facade may be premanufactured off site using modular construction for speed of construction and less on-site waste.

5.4.4 Proposed Foul and Surface Water Networks

The following is extracted from the Engineering Assessment Report (Waterman Moylan, 2021).

It is proposed to discharge wastewater from the site by gravity to the existing foul water sewer in Main Street. Irish Water issued a Confirmation of Feasibility letter for the proposal on 3rd August 2021 (reference number CDS21002487). The letter notes that connection to the existing wastewater network is feasible subject to upgrade works. The required upgrades comprise approximately 100m of network extension, from the site to the existing 300mm sewer in Abbey Street. This upgrade is not currently on Irish Water's investment plan, and the applicant will therefore be required to fund the upgrade works.

A Statement of Design Acceptance (dated 14th February 2022) has also been received from Irish Water for the proposed development.

It is proposed to discharge surface water from the site by gravity to the existing surface water sewer in Main Street.

The Proposed Development will be designed to incorporate best drainage practice. Surface water discharging to the public network will be restricted to the greenfield equivalent runoff rate via a Hydrobrake or similar approved flow control device. The surface water network will be designed to accommodate the 1-in-5 year storm, with attenuation storage provided for the 1-in-100 year storm.

It is proposed to incorporate a Storm Water Management Plan through the use of various SuDS techniques to treat and minimise surface water runoff from the site. The methodology involved in developing a Storm Water Management Plan for the subject site is based on recommendations set out in the Greater Dublin Strategic Drainage Study (GDSDS) and in the SuDS Manual (Ciria C753).

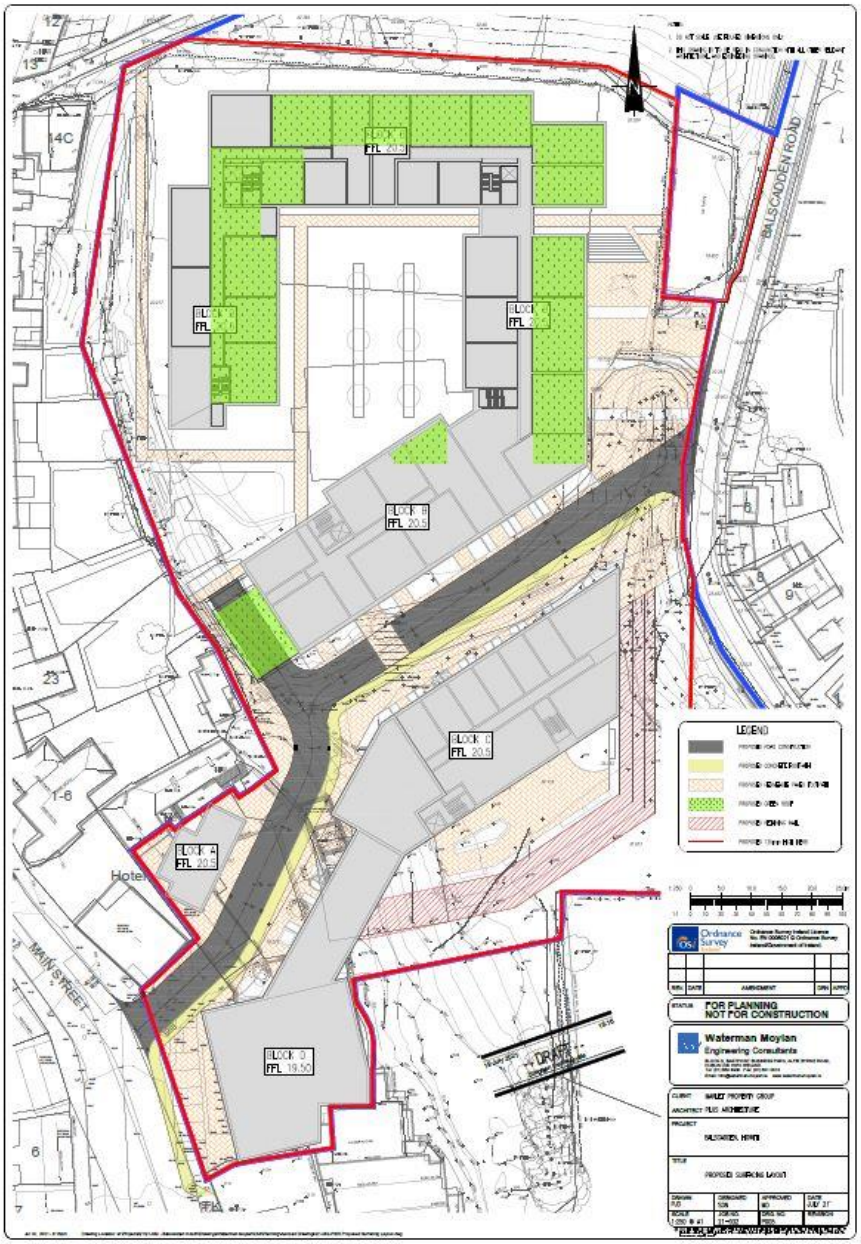


Figure 5-11: Proposed surfacing layout (Waterman Moylan, 2021)

5.5 Potential Impact of the Proposed Development

5.5.1 Construction Phase

5.5.1.1 Potential Impacts on Designated Sites

The Site occurs within the terrestrial buffer zone of Dublin Bay Biosphere, is located adjacent to the terrestrial core area and is hydrologically linked to the marine core zone, marine buffer zone and marine transition zone. The buffer zone of Dublin Bay Biosphere comprises 82km² of public and private green spaces such as parks, greenbelts and golf courses, which surround and adjoin the core zones. The core zone of Dublin Bay Biosphere comprises areas of high natural value. The Proposed Development will result in the loss of semi-natural habitat from the terrestrial buffer zone of Dublin Bay Biosphere. Given the small size of this area (c. 0.4 ha of dry meadows and grassy verges and 0.4 ha of scrub) relative to the total area of the Dublin Bay Biosphere Buffer Zone, this impact is deemed to be ***negative, permanent, imperceptible***.

The Proposed Development is immediately adjacent to the boundary of Howth Head pNHA/SAC. There will be no direct loss or alteration of habitat within the pNHA/SAC as a result of the Proposed Development. However, there is potential for impacts on Howth Head pNHA ***/***SAC due to the excavation, demolition and construction works associated with the Proposed Development, as well as haulage routes which could pass through the pNHA/SAC.

There is potential for surface water run-off impacts to arise as a result of the Proposed Development. There are two potential hydrological pathways linking surface water discharges from the Site to Howth Head pNHA/SAC, Howth Head Coast SPA and Dublin Bay Biosphere. The first is via a surface water sewer located on Abbey St. to the west of the Site, and the second is via the gullies located on Balscadden Road to the east of the Site. It is noted that a clarification was requested by Fingal Co. Co. for a previous application (SHD00419, application date: 4th November 2019) at the Proposed Development Site regarding the drainage network within Howth Village. The following was requested "*clarification should be provided on where specifically the drainage network in Howth village discharges to, or at least clarification of whether this discharges into any part of the Howth Head SAC or any other European site*". In response to this request, Irish Water drawings were consulted and a CCTV survey on all the gullies on Balscadden Road at and downhill of the proposed development (SHD00419) was carried out in August 2019. The Irish Water drawings indicated that there was no surface water sewer on Balscadden Road. According to the CCTV survey, the gullies drained eastwards towards Balscadden Bay and Howth Head SAC. The main series of 4 no. gullies drained (29m) to the base of the steps at the beach in Balscadden Bay and not across the terrestrial habitat (Altemar, 2019). Given the extent of groundworks required for the Proposed Development coupled with the existing groundwater vulnerability at the Site, hydrogeological links via groundwater potentially exist between the Site and Howth Head Coast pNHA/SAC. Therefore, in the absence of standard, appropriate mitigation measures, there is potential for sediments/pollutants from the Site to enter Howth Head pNHA/SAC, Howth Head Coast SPA and Dublin Bay Biosphere via surface water run-off and/or groundwater flows during the Construction Phase of the Proposed Development. This could result in impacts on water quality in these sites, leading to a potential ***negative, short-term,***

significant effect on water quality. The main contaminants arising from construction run-off include silt/sediment, spillages of concrete or other cement-based products, accidental spillages of hydrocarbons from plant and storage areas and contamination from inadequate treatment of on-site toilet and washing facilities. Mitigation is required to address these potential impacts.

Given the proximity of the Proposed Development Site to Howth Head pNHA/SAC and Dublin Bay Biosphere, there is a slight risk that invasive alien plant species within the Site (Sycamore *Acer pseudoplatanus*, Butterfly Bush *Buddleia davidii* and Three-Cornered Leek *Allium triquetrum*) could spread to the SAC as a result of soil disturbance and clearance activities at the Site. This could result in a potential ***localised, negative, long-term, significant*** effect.

Given the separation distance (0.5 km) between Howth Head Coast SPA and the Site, disturbance impacts due to noise or dust on this SPA are deemed ***negative, short-term, slight***. Noise emissions from equipment associated with the Proposed Development are predicted to be between 62dB and 37dB at 250m according to Chapter 9 - Noise and Vibration. According to Cutts, Hemmingway and Spencer (2013) sudden noises of 55-60dB (at the bird) and continuous/repetitive noises 60-72dB (at the bird) can result in moderate disturbance effects.

Excavation, demolition and construction works could result in dust emissions, which, if unmitigated, could affect adjoining habitats by potentially smothering sensitive habitats or plant species. Construction traffic within or adjacent to Howth Head pNHA/SAC and Dublin Bay Biosphere could also result in dust emission within these sites. It is likely that construction traffic will traverse 196m of Howth Head pNHA/SAC during the Construction Phase of the Proposed Development. Two HGV route options were considered. Route 1 via Howth Road and Route 2 via Greenfield Road/Howth Head as per Figure 5-12 below. Route 1 is the shortest route measuring approximately 3.5km from Sutton Cross to the proposed site and is identified as having a good quality carriageway. However, following consultation with Fingal Council, in order to minimise the impact of the construction vehicles at Howth Harbour, the emerging preferred route is Route 2 (c. 7.5km). Route 2 is identified as suitable for construction vehicles and also with potential to reduce the risk of accident with pedestrian and other vehicles. This route traverses 196m of Howth Head pNHA/SAC. The potential effect of both routes in considered below.

In order to assess the potential impact of construction phase dust and emissions on Howth Head pNHA/SAC and Dublin Bay Biosphere, Chapter 8 Air Quality & Climate and Microclimate was consulted. The following is extracted from Chapter 8: "*There is potential for construction related air emissions to impact on local air quality as a result of the Proposed Development. Potential impacts are expected to be short-term and of a temporary nature. The main air quality impacts that may arise during construction activities are:*

- *Dust deposition;*
- *Elevated particulate matter concentrations (PM_{10} and $PM_{2.5}$) as a result of dust generating activities on Site; and*
- *An increase in concentrations of airborne particles, volatile organic compounds, nitrogen oxides, and sulphur oxides due to exhaust emissions from diesel powered*

vehicles and equipment on Site (non-road mobile machinery) and vehicles accessing the Site.

The greatest potential impact on air quality during this phase is from construction dust emissions and the potential for nuisance dust. The dust emissions from a construction site that may result in air quality impacts generally depend on:

- *Site activities and duration;*
- *The size of the site;*
- *The meteorological conditions;*
- *The proximity of receptors to the activities;*
- *The adequacy of applied mitigation measures; and*
- *The sensitivity of receptors to dust.*

The primary sources of dust identified include soil excavation works, demolition, bulk material transportation, loading and unloading, stockpiling materials, cutting and filling, and vehicular movements (HGVs and on-site machinery).”

According to the Air Quality Chapter, wind direction is most likely to prevail from the southwest. Therefore, in the absence of mitigation, it is considered that there is potential for dust impacts to occur at Howth Head pNHA/SAC, which is located to the northeast and east of the Site, as well as Dublin Bay Biosphere.

According to the Air Quality Chapter, “*Air pollutants may increase marginally due to construction-related traffic and machinery from the Proposed Development. However, any such increase is not considered significant and will be well within relevant ambient air quality standards. According to TII (2011), the significance of impacts due to vehicle emissions during the Construction Phase will be dependent on the number of additional vehicle movements, the proportion of HGVs and the proximity of sensitive receptors to Site access routes. If construction traffic would lead to a significant change (> 10%) in Annual Average Daily Traffic (AADT) flows near to sensitive receptors, then concentrations of nitrogen dioxide, PM_{10} and $PM_{2.5}$ should be predicted in line with the methodology as outlined within TII guidance. Construction traffic is not expected to result in a significant change (> 10%) in AADT flows near to sensitive receptors. Therefore, a detailed air quality assessment is not required*.”

As such, the main air quality related impact on Howth Head pNHA/SAC and Dublin Bay Biosphere during Construction will be due to localised dust emissions/deposition within the pNHA/SAC and Dublin Bay Biosphere core areas adjacent to the Site which constitutes a potentially ***negative, short-term, significant*** impact. In addition, if unmitigated, some localised dust deposition could arise due to construction vehicles traversing the pNHA/SAC if route 2 via Greenfield Road/Howth Head is used for construction traffic. Route 1 does not traverse Howth Head pNHA/SAC and therefore, if this route was used, no dust deposition within the pNHA/SAC would arise due to construction vehicles. There is no risk of significant effects on Howth Head pNHA/SAC arising as a result of the usage of route 1 by construction traffic.

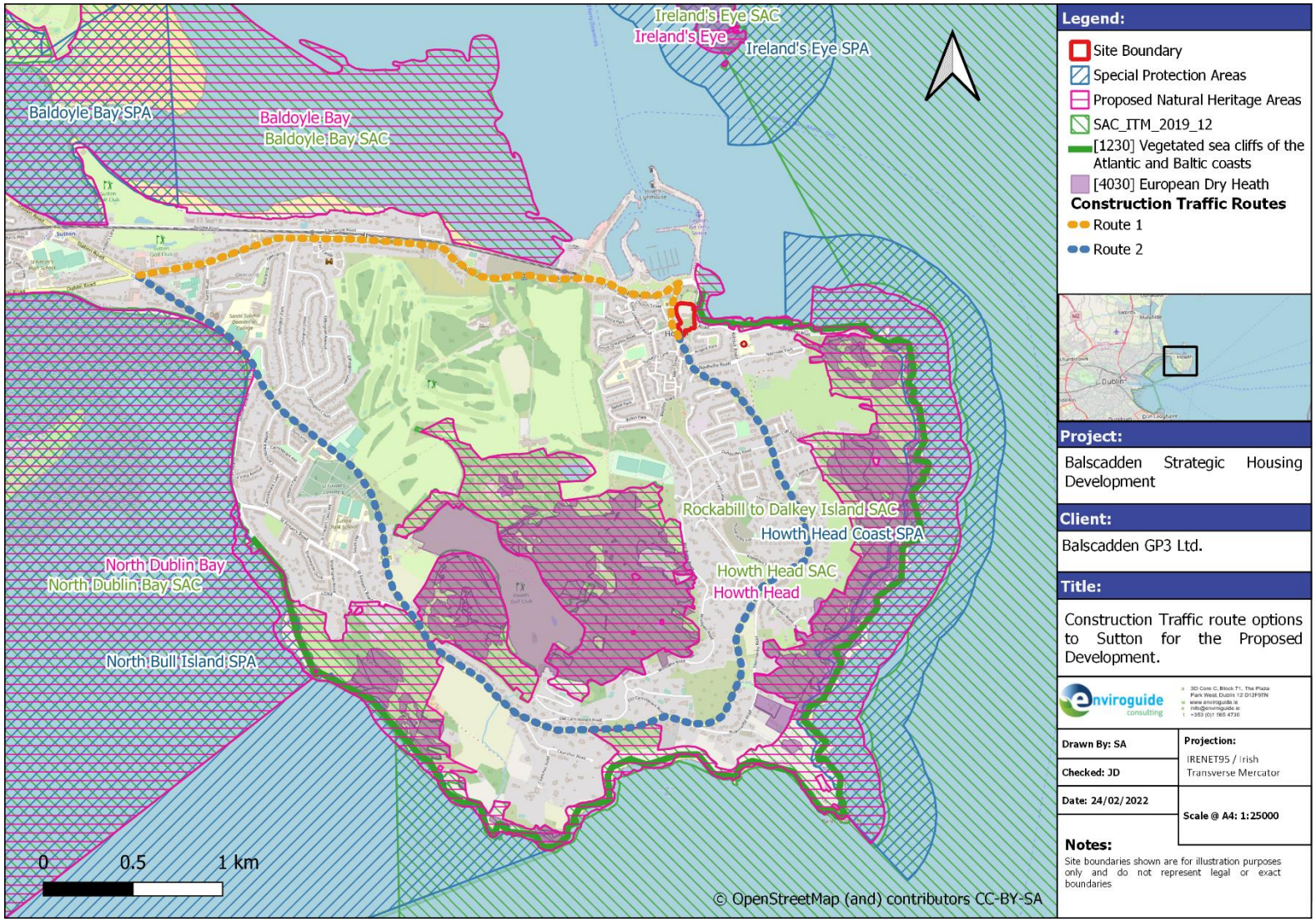


Figure 5-12: Construction traffic route options to Sutton for the Proposed Development

5.5.1.2 Habitats within the Proposed Development Site

The habitats listed as KERs within the Site of the Proposed Development include:

- Dry Meadows and Grassy Verges (GS2)
- Scrub (WS1)
- Treelines (WL2)

Habitat Loss

The Proposed Development will result in the loss of approximately 0.8 ha of habitat assessed as local importance (higher value) as per the NRA (2009b) scheme, comprised of 0.4 ha of dry meadows and grassy verges and 0.4 ha of scrub. The impact of the Proposed Development due to the removal of these habitats is not considered significant and is considered to be ***negative, permanent, moderate*** at a local scale.

There is potential for the loss of treelines along the boundary due to works being carried out within the Root Protection Area (RPA) and canopy of the treelines at the Site. This is considered a ***negative, long-term, moderate*** effect at the local scale. The nature of the development is such that all trees within the red line boundary will require removal. The proposed works will see the loss of 6 no. non-native category "C" trees (mostly Sycamore and one Monterey Cypress group). Most of these are particularly small and were not deemed to have any bat roosting potential (see section 5.3.6.3.1 above). Tree loss as a result of the Proposed Development is considered a ***negative, long-term, slight*** effect at the local scale.

5.5.1.3 Fauna

Non-volant Mammals

The negative impacts to terrestrial mammals will be largely a result of habitat loss and disturbance. No mammals of conservation concern were recorded within the Site of the Proposed Development although common and widespread species such as Pygmy Shrew, and Hedgehog are likely to use it. Both species are listed as of least concern on the Red List of Mammals in Ireland (Marnell et al., 2019). Due to the limited size of the Proposed Development Site, the population of these species on the Site is anticipated to be small. The loss of semi-natural habitat and displacement of these species from the Site is not anticipated to have a significant impact on the conservation status of the local population of hedgehog or pygmy shrew. There is suitable habitat on Howth Head and within adjacent larger gardens for these species. The Proposed Development could have a ***negative, permanent, slight*** effect at a local level on the aforementioned mammal species, if they are present.

Noise and dust generated during the Construction Phase has the potential to cause ***negative, short-term, moderate*** effects in the form of disturbance to mammals at a local level. Increased lighting at the Site also has the potential to cause ***negative, temporary, slight*** disturbance to mammals in the locality.

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

Two burrows which are assumed here to be Fox dens were recorded within the Site of the Proposed Development. Although Foxes are not afforded legal protection in Ireland, care should be taken when disturbing the den and the area around it. Removal of the den in the absence of mitigation could result in mortality of the occupant(s) resulting in a ***negative, permanent, moderate*** impact locally.

Bats

There is potential for a ***negative, short-term, slight*** local impact through the loss of potential bat habitats for foraging and commuting and increased lighting associated with the Construction Phase of the Proposed Development. Temporary site lighting will be installed to provide safe and well-lit walkways around the site compounds and task lighting to the construction sites. High levels of luminance can impair bats' vision resulting in disorientation. Artificial lighting can impact on bats' roosting sites, commuting routes and foraging areas especially along waterways. It is essential that lighting plans for a development site and around known roosts take into consideration the exit points, flight paths and foraging areas for bats and ensure these areas are not illuminated (BCI, 2014).

Birds

Although local birds are likely adapted to a certain degree of urban ambient noise, the Construction Phase of the Proposed Development will likely involve elevated noise levels associated with plant activity at the Site. As a result, there is a potential risk of noise disturbance to birds in the vicinity of the Site, representing a ***negative, short-term, slight*** impact.

There are several areas of dense scrub present at the Site, with several bird species recorded utilising these habitats. Herring Gull were not recorded nesting at the Site during the breeding bird survey carried out in 2021, however, the roof of the Baily Court Hotel was "occupied by at least four breeding pairs" in May 2019 by Altemar (2019a). Should vegetation be cleared or buildings demolished as part of the Construction Phase during the breeding bird season (March 1st to August 31st); there is the potential for nesting birds to be harmed and nests to be destroyed. This would be in contravention of the Wildlife Acts and Amendments (2000) which provides protection to breeding bird species and their nests and young. Therefore, in the absence of any mitigation or precaution, this risk represents a potential ***negative, permanent, significant*** impact to breeding birds.

The loss of potential nesting habitat due to the Proposed Development would be short-term, as it is possible that Herring Gulls may nest on the roof of the proposed new buildings (many of which are flat green roofs). Given the extent of potential nesting habitat in the surrounding area (e.g., buildings within Howth, the cliffs of Howth Head, Ireland's Eye SPA, Lambay Island SPA) impacts to Herring Gull arising from nesting habitat loss are deemed ***negative, short-term, slight***.

Common Lizard

The impact on common lizard, should this species occur at the Site, will be a result of habitat loss and disturbance or direct mortality due to earthworks and vegetation clearance of the Site. The removal of semi-natural habitats on the Site (scrub and dry meadows and grassy verges) is not anticipated to have a significant effect on the conservation status of the local common lizard population. According to Gandola (2019) common lizards on Howth Head show

a strong preference to heathland habitats with south or east aspects. According to a survey of common lizard in Howth carried out by Gandola (2019), 71% of all lizard sightings were associated with heathland, 15% with dry-stone walls, and 14% associated with cliff grassland. There is suitable habitat available for this species adjacent to the Site in the form of coastal cliff habitat associated with Balscadden Bay. Common lizards are listed as Least concern on the Red List (King et al., 2011). In addition, common lizards are highly mobile, and mortality arising as a result of the construction phase is not likely to result in any level of injury or mortality that would affect the species' conservation status. Considering the above, the removal of scrub and dry meadows and grassy verges habitat is anticipated to have a ***negative, permanent, slight*** effect at the local scale on common lizard as a result of mortality of individuals and/or localised displacement.

Fish and Marine Mammals

There is potential for negative impacts on fish and marine mammals within the Irish Sea adjacent to the Site due to potential contaminated surface water run-off arising from the Proposed Development Site. Silt/sediment run off can result in increased turbidity of receiving surface waters. Spillages of concrete or other cement-based products can also lead to increase turbidity of receiving waters as well as increase pH. Hydrocarbon spillages can lead to direct lethal effects or sub-lethal effects on aquatic fauna. Accidental run-off from on-site toilet and washing facilities could lead to localised nutrient enrichment. If the above listed contaminants were to enter the marine environment via the hydrological links outlined above under section 5.5.1.1, it could result in localised effects on marine fish and mammals either directly or via localised reductions in water quality. Suspended sediment and hydrocarbon leaks could also lead to a reduction in the quality of the intertidal habitats and the fauna communities they support. However, this effect would be temporary, and given the mobile nature of marine fish and mammals, the low volume of any surface water run-off relative to the volume of the receiving marine environment in the Irish Sea and the potential for mixing, dilution and dispersion of any surface and/or ground water run-off/discharges in the receiving marine environment, the impact is described as a ***negative, short-term, moderate*** impact in the absence of suitable mitigation.

5.5.2 Operational Phase

5.5.2.1 Potential Impacts on Designated Sites

Howth Head pNHA/SAC and Howth Head Coast SPA contain a number of popular walking trails, namely the Cliff Path Loop. Erosion of habitats arising from walking and horse-riding activities is highlighted in the Site Synopsis for Howth Head SAC (NPWS, 2013). The Proposed Development will result in an increase of a potential c. 320 inhabitants in the local area (based on Fingal County Council population estimates (for open space requirements) Table 5-14). This increase in population has the potential to increase recreational users within the pNHA/SAC and could result in further erosion of habitats within the pNHA/SAC, namely the Annex I habitats vegetated sea cliffs [1230] and European dry heath [4030] and potentially disturbance of SCI bird species associated with Howth Head Coast SPA (Kittiwake *Rissa tridactyla*). However, in the assessment of the potential impact of increased visitors to Howth Head pNHA/SAC and Howth Head Coast SPA, the Howth Head SAAO, along with the Howth Head SAAO Operational Plan must be taken into consideration.

Table 5-14: Estimated number of inhabitats at the Proposed Development. Here, Population equivalent is for open space requirements

Apt type	no.	Population Equivalent	Population Estimate
Studio	4	1.5	6
1-bed	62	1.5	93
2-bed	89	1.5	133.5
3-bed	25	3.5	87.5
Total	180		**320**

The Howth Head SAAO is discussed in section 5.3.4 of this chapter. In summary, this order sets out a framework for the conservation and protection of the area designated in accordance with the Planning Act and Planning Regulations. An Operational Plan (2021-2025) has been prepared for Howth SAAO, which includes a series of actions to be undertaken to protect the area. Of relevance to this application are the actions relating to visitor management.

The following priority actions for the next 5 years as determined by the SAAO committee and Fingal County Council, and outlined in the Howth Head SAAO Operational Plan (2021-2025), will serve to reduce the Operational Phase impacts of increased visitor numbers within the pNHA/SAC:

Action 46. Conduct a review of the footpath network with specific regard to areas of erosion, particularly at Bellinghams Farm/Redrock. To be carried out in 2022 and implemented by the Biodiversity Officer.

Action 47. Upgrade pathway network where necessary. To be carried out yearly and implemented by the Parks and Landscape officer OPS.

Action 48. Add additional signage along pathway network and remove obsolete signage where necessary. To be carried out yearly and implemented by the Parks and Landscape officer OPS.

Action 49. Restore heathland where damaged by excessive trampling. To be carried out in 2024-2025 and implemented by the Biodiversity Officer.

Taking into consideration the above actions to be implemented by Fingal County Council which will serve as mitigation measures to protect Howth Head, the impact of a potential increase in c. 320 inhabitants in the area will not result in significant effects on Howth Head pNHA/SAC. The impact is best described as ***neutral***.

There is potential for ***negative, permanent, slight*** effects as a result of the Operational Phase of the Proposed Development on designated sites within the marine environment (Dublin Bay Biosphere, Howth Head pNHA/SAC and Howth Head Coast SPA) due to the surface discharges from the Site, in the absence of mitigation measures (i.e. Sustainable Urban Drainage Systems). Surface water discharges will be clean roof water as well as run-off from car parking areas, which could contain hydrocarbons from a car leak or suspended sediment. However, this effect would not be a regular occurrence (it may not occur at all), and given the low volume of any surface water run-off relative to the volume of the receiving marine environment in the Irish Sea and the potential for mixing, dilution and dispersion of any surface water run-off/discharges in the receiving marine environment impacts are deemed slight.

In order to assess the potential impact of operational phase traffic emissions on Howth Head pNHA/SAC, Chapter 8 Air Quality & Climate and Microclimate was consulted. The impact of the Proposed Development has been determined by modelling traffic-related air emissions resulting from the presence or absence of Proposed Development. According to this Chapter, "*As per the Traffic and Transport Assessment which has been detailed in Chapter 12, Section 12.1, the criteria presented in Table 8-8 have not been met by the Proposed Development; it is therefore considered unlikely for significant air quality impacts to occur as a result of increased traffic flow, and an associated air quality assessment is not required.*". Given that there are no Annex I habitats potentially sensitive to air emissions (e.g., European Dry Heaths, Vegetated Sea Cliffs) within the vicinity of the Proposed Development Site, Operational Phase air quality impacts are deemed to be ***neutral***.

5.5.2.2 Habitats within the Proposed Development Site

No effects on terrestrial habitats are anticipated during the operational phase.

5.5.2.3 Fauna

Non-volant mammals

The effects of night-time light pollution on nocturnal mammals other than bats are poorly understood (Finch et al., 2020). A study by Finch et al. (2020) demonstrated that there were no significant effects of night-time light pollution on the presence, feeding activity or activity patterns of Hedgehogs in the UK. However, there could be other costs associated with lighting and it is possible that artificial lighting could lead to effects on reproductive success, territory maintenance and natural prey availability (Finch et al., 2020). As such, as a precautionary apprach the impact of light pollution on non-volant mammals cannot be excluded, and the impact is deemed to be a ***negative, permanent, slight*** local impact.

Bats

There is potential for a ***negative, permanent, slight*** local impact through the increased lighting and noise associated with the Operational Phase of the Proposed Development. High levels of luminance can impair bats' vision resulting in disorientation. Artificial lighting can impact on bats' roosting sites, commuting routes and foraging areas especially along waterways. It is essential that lighting plans for a development site and around known roosts take into consideration the exit points, flight paths and foraging areas for bats and ensure these areas are not illuminated (BCI, 2014).

Birds

No significant effects on bird species are anticipated to arise during the operational phase. Overall frequencies of at-risk SCI species recorded in-flight over the Site were low with Oystercatcher and Curlew recorded once throughout all the flightline surveys carried out. The average flight height across the Site for the aforementioned species was between 40m and 100m. Given that the proposed maximum heights of structures to be built at the Site is 16.8m it is not considered that the Proposed Development will have any impact on them, i.e. effects are deemed ***neutral***.

Common Lizard

No effects on common lizard are anticipated during the Operational Phase.

Fish and Marine Mammals

There is potential for ***negative, permanent, slight*** effects as a result of the Operational Phase of the Proposed Development on species within the marine environment due to the surface discharges from the Site. It is proposed to discharge surface water from the Site by gravity to the existing surface water sewer in Main Street. Surface water discharges will be clean roof water as well as run-off from car parking areas, which could contain hydrocarbons from a car leak or suspended sediment. Hydrocarbons can lead to direct lethal effects or sub-lethal effects on aquatic fauna. Suspended sediment and hydrocarbon leaks could also lead to a reduction in the quality of the intertidal habitats and the fauna communities they support. However, this effect would not be a regular occurrence (it may not occur at all), and given the mobile nature of marine fish and mammals, the low volume of any surface water run-off relative to the volume of the receiving marine environment in the Irish Sea and the potential for mixing, dilution and dispersion of any surface water run-off/discharges in the receiving marine environment impacts are deemed slight.

5.5.3 Potential Cumulative Impacts

5.5.3.1 Existing planning permissions

A search of planning applications located within c.150m of the Site of the Proposed Development was conducted using online planning resources such as the National Planning Application Database (NPAD) (MyPlan.ie) and Fingal Co. Co.'s Planning Application Map. In addition, a search for any large-scale residential developments on the Howth Peninsula was carried out. Any planning applications listed as granted or decision pending from within the last five years were assessed for their potential to act in-combination with the Proposed Development and cause likely significant effects on the relevant European Sites. Long-term developments granted outside of this time period were also considered where applicable.

It is noted that the majority of developments within the vicinity of the Site of the Proposed Development are applications granted more than 5 years ago and that have since been completed. The larger, more recent applications are detailed below:

F18A/0023, located approximately 100m north of the Proposed Development Site: (1) Demolition of existing family dwelling (7 East Pier) and its replacement with 12 guestrooms and storage areas in a 2.5 storey building (2) Reconfiguration of the roof to the existing guesthouse (3) Reconfiguration of the existing internal layout of stairs, kitchens and stores including the installation of a lift (4) Addition of storage areas at first floor behind the restaurant (5) Addition of an extra guestroom on the flat roof above the restaurant and (6) All associated site works. (Decision: Grant Permission. Decision Date: 19/06/2018)

F19A/0405, located approximately 150m east of the Proposed Development Site: Development will consist of 1) Demolition of existing 3 storey dwelling house. 2) Construction of a new 3 storey over basement apartment development consisting of 8 no. 2 bedroom apartments. 3) New vehicular entrance, roads, footpaths, landscaping, services consisting of storm and foul water disposal, mains water supply and all associated site works. (Decision: Grant Permission. Decision date: 04/03/2020. Appeal Decision: Grant Permission. Appeal Decision Date: 26/03/2021)

SHD/009/19, located approximately 750m west of the Proposed Development Site: Demolition of all structures on site (c8,162sq.m. GFA) and excavation of a basement. The

Proposed Development comprises of the provision of a mixed-use development of residential/retail/restaurant/cafe uses and a creche in 4 no. blocks (A to D), over part basement Blocks A, B, C and D with a height up to a maximum of seven storeys of apartments over lower ground floor and basement car parking levels (a total of eight storeys over basement level). The residential component will consist of 512 no. residential units. (Decision: Grant Permission. Decision date: 03/04/2020)

SHD/009/20, located approximately 1050m west of the Proposed Development Site: The development will consist of 162 no. residential units distributed across 3 no. blocks (A, B & C) ranging in height from 5-6 storeys, with a cumulative gross floor area (GFA) of 13,337.10 sq.m. (Decision: Grant Permission. Decision date: 21/09/2021).

The above-listed Strategic Housing Developments are accompanied by Natura Impact Statements as well as EIAR Biodiversity Chapters, which will ensure no significant negative effects on local ecology and designated sites will occur as a result of the developments. The NIS for SHD/009/19 concluded "*This Natura Impact Statement details the findings of the Stage 2 Appropriate Assessment conducted to further examine the potential direct and indirect impacts of the proposed development planning application at Claremont, Howth on the following Natura 2000 sites:*

- *Baldoyle Bay SAC [000199]*
- *Howth Head SAC [000202]*
- *Ireland's Eye SPA [004117]*
- *North Bull Island SPA [004006]*
- *Baldoyle Bay SPA [004016]*
- *Malahide Estuary SPA [004025]*
- *Lambay Island SPA [004069]*
- *South Dublin Bay and River Tolka Estuary SPA [004024]*
- *Rogerstown Estuary SPA [004015]*

The above sites were identified by a screening exercise that assessed likely significant effects of a range of effects that may arise from the proposed development. The Appropriate Assessment investigated the potential direct and indirect impacts of the proposed works, both during construction and operation on the integrity and qualifying interests of the above Natura 2000 sites, alone and in combination with other plans and projects, taking into account the site's structure, function and conservation objectives.

Where potentially significant adverse impacts were identified, a range of mitigation and avoidance measures have been suggested to help offset them. As a result of this Appropriate Assessment it has been concluded that, ensuring the avoidance and mitigation measures are implemented as proposed, the proposed development at Claremont, Howth will not have a significant adverse impact on the above Natura 2000 sites."

The NIS for SHD/009/20 concluded *"It has been objectively concluded by Scott Cawley Ltd., following an examination, analysis and evaluation of the relevant information, including in*

particular the nature of the predicted impacts from the proposed development, that the proposed development will not adversely affect (either directly or indirectly) the integrity of any European site, either alone or in combination with other plans or projects."

The Biodiversity Chapter of SHD/009/19 concludes "*It is considered that, provided mitigation measures proposed are carried out in full, there will not be any significant negative impact to any valued habitats, designated sites or individual or group of species as a result of the Proposed Development.*" Similarly, the Biodiversity Chapter of SHD/009/20 concludes with the full and successful implementation of the mitigation measures outlined in the chapter, no long-term significant residual impacts are predicted on any ecological receptors. The Chapter also concludes "*As there are no residual impacts predicted for European sites, nationally designated sites, habitats, bats, terrestrial mammals (excluding bats), breeding birds or wintering birds, there is no potential for them to act in combination with any other plans or projects to form cumulative effects*".

In addition, taking into consideration the range of actions to be implemented by Fingal County Council which will serve as mitigation measures to protect Howth Head from visitors to the area, the impact of increased visitor numbers on Howth Head as a result of the Proposed Development as well as new developments in the area should not result in significant effects on Howth Head pNHA/SAC. Operational stage impacts on air quality in Chapter 8 – Air Quality & Climate and Microclimate involved traffic data which is inclusive of traffic associated with other existing and permitted developments in the vicinity of the Site. Therefore, cumulative impacts have been assessed in this regard and the impact has been determined as neutral.

As such, following a review of the above listed projects and taking into consideration the range of actions to be implemented by Fingal County Council which will serve as mitigation measures to protect Howth Head from visitors to the area, it can be concluded that there is no potential for cumulative impacts with the above listed projects on any ecological receptors.

5.5.3.2 Relevant Plans and Policies

Plans and policies that may result in possible in-combination effects with the Proposed Development include:

- Fingal Biodiversity Action Plan 2010 - 2015
- Fingal Development Plan 2017-2023
- Natura Impact Report for the Fingal Development Plan 2017-2023

The Fingal Development Plan 2017-2025 has directly addressed the protection of European sites through specific policies. The Biodiversity Action Plan is set out to protect and improve biodiversity, and as such will not result in negative in- combination effects with the Proposed Development. As such, it can be concluded that there is no potential for cumulative impacts with the above listed plans on any ecological receptors.

5.5.4 "Do Nothing" Impact

If the Proposed Development were not to go ahead, habitats at the Site of the Proposed Development would continue to evolve. The recolonising bare ground habitat and dry meadows and grassy verges habitat would likely transition to scrub. The Site would likely be used by various fauna such as bats, hedgehog, common lizard, fox and pygmy shrew.

5.6 Avoidance, Remedial & Mitigation Measures

The above sections outlined a range of potential impacts of the Proposed Development in the absence of mitigation measures. Potential impacts arising from the Construction and/or Operational Phases include:

- Water quality impacts in designated sites and the marine environment arising from surface water run-off and potential groundwater flows during the Construction and Operational Phase,
- Dust emissions from the Proposed Development Site and construction vehicle traffic into designated sites during the Construction Phase,
- Spread of invasive alien flora during the construction phase into the Howth Head pNHA/SAC and Dublin Bay Biosphere during the Construction Phase,
- Semi-natural habitat loss
- Disturbance and/or mortality of non-volant mammals and common lizard within the Site during the Construction Phase and Operational Phase
- Disturbance to bats within the Site and potential loss of foraging and/or commuting habitat during the Construction Phase and Operational Phase
- Disturbance and/or mortality of birds within the Site, temporary loss of potential nesting habitat during the Construction Phase

To address impacts on the marine environment and designated sites therein arising from surface water discharges, a range of mitigation measures to protect surface water quality (and therefore marine habitats and species) are provided in section **5.6.1.2, 5.6.2.1** and **5.6.2.8.** These surface water mitigation measure will treat the source (e.g., removal of silt from surface waters via silt fences, incorporation of SuDS into the project design) or remove the pathway (e.g., no release of wastewater generated on site into nearby drains or Balscadden Road during the Construction Phase).

To address impacts on designated sites as a result of dust emissions, a dust management plan (as described in section **5.6.2.1**) will be implemented, which will treat/address the source of the impact (e.g. construction traffic, demolition) to ensure no impacts arise as a result of dust emissions.

The spread of invasive alien flora during the construction phase into the Howth Head pNHA/SAC and Dublin Bay Biosphere during the Construction Phase is addressed in section **5.6.2.11**, and ensures that the source of the impact (i.e., the invasive flora) is removed from the Site and that no pathway for transfer of invasive flora between the Site and the designated sites exists.

The loss of semi-natural habitat at the Site is addressed by retaining a portion of the Site for biodiversity and incorporating tree planting and wildflower meadows into the design (see section **5.6.1.1** for details).

Disturbance and/or mortality of local fauna within the Site (e.g. bats, non-volant mammals, common lizard and birds) is addressed in sections **5.6.1.1, 5.6.2.2, 5.6.2.3, 5.6.2.4, 5.6.2.5, 5.6.2.6, 5.6.2.7, 5.6.2.9, 5.6.2.10** and **5.6.3.1**. The mitigation measures outlined ensure that there will be no significant impact on local fauna at the Site. The mitigation measures address the source of impacts (e.g., night-time light pollution, dust, noise, vegetation clearance).

5.6.1 Mitigation by Design

5.6.1.1 Landscape Plan

According to the Landscape Design Statement, the proposed planting mix is to adhere to the design principles of Special Amenity Area Order for Howth (SAAO). The planting schedule is provided following a pre-planning consultation with the relevant Local Authority Parks Department personnel for consideration on planting mixes and in accordance with principles of SAAO Howth Guidelines, and relevant aspects of current Landscape and Green infrastructure sections of the Fingal County Council Development Plan.

A native, coastal tolerant tree lined boundary condition is proposed to the western boundary along the proposed retaining wall. A mixed understory native hedge is proposed along all of the boundary wall.

To the north, dwarf Scots pine are proposed such that the setting and view of the Martello Tower is not interrupted. To the south the steep embankment of upper strata glacial till on sand and limestone gravel is proposed to be consolidated with mainly native coastal tolerant species.

A sedum capping is proposed upon the top of the retaining walls. The concept proposed is to provide a naturalised tree embankment rather than plantation which would be out of character with the horizon line when viewed elsewhere along the peninsula.

179 trees are proposed to be planted within the Site, of which 79 are native (Table 5-15). It is acknowledged that the coastal setting and urban context of the Site, coupled with the loss of ability to plant ash (due to ash dieback) has limited the use of some native trees in the landscape plan, even in the most sheltered points of the Proposed Development.

Table 5-15: Native species within the proposed landscape plan. Extracted from the Landscape Design Statement (Plus Architecture, 2022)

Species	Comment	Location	Number
Native tree planting			
Arbutus unedo (Strawberry Tree)	Native coastal tolerant	Northern boundary and south-eastern corner	34
Corylus avellana (Hazel)	Native moderate coastal tolerance. Located primarily in sheltered boundary locations	Located primarily in sheltered boundary locations	2
Crataegus monogyna (Hawthorn)	Native, hardy, Coastal tolerant	South-eastern corner	7
Juniperus communis (Common Juniper)	Native Coastal tolerant	Located to seaward embankment	4
Malus sylvestris 'Evereste' (Crab apple 'Evereste')	Native moderate coastal tolerance.	Located in sheltered boundary locations	11
Populus tremula (aspen)	Native coastal tolerant	Western boundary	3
Prunus avium (Wild cherry)	Native moderate coastal tolerant.	Located in sheltered areas.	2
Quercus petraea (sessile oak)	Native oak, must be Irish grown on phytosanitary grounds, moderately coastal tolerant	1 no tree placed in sheltered location to the west of the Site	1

Quercus robur (English oak)	Native oak, must be Irish grown on phytosanitary grounds, moderately coastal tolerant	1 no tree placed in sheltered location to the west of the Site.	3
Sorbus aria 'Majestica' (Whitebeam Majestica)	Coastal, Tolerant Native tree	Set back from front coastal line	9
Sorbus aucuparia (Rowen)	Native hardy tree, modestly coastal tolerant species	Sheltered area of Proposed Development.	3
Native Hedge Planting			
Corylus avellana (hazel)	Hardy dense habit, native and source of food for wildlife.	Western and southern site boundaries	
Crataegus monogyna (hawthorn)	Hardy, dense habit, thorny, native and source of food for wildlife		
Hedra helix (Ivy)	Hardy native climbing evergreen, self clinging plant, source of food for wildlife.		
Ilex aquifolium (holly)	Hardy, dense evergreen habit, spikey, native and source of food for wildlife		
Lonicera periclymenum (honey suckle)	Hardy scrambling native hedgrow plant , attractive scented twining shrub and source of food for wildlife		
Rosa canina 'alba' (dog rose 'alba')	Hardy native hedgerow shrub, attractive flowers and thorny and source of food for wildlife		
Sambucus nigra (elder)	Hardy native hedgerow plant , native and source of food for wildlife		
Viburnum opulus (guelder rose)	Hardy native hedgerow plant, attractive flowers and source of food for wildlife		
Grass area to front of embankment			
Grass flower meadow mixture to wide margins: 'Biodiverse wildflower meadow mixture Ref WF02 @ 1.5g/m2or as otherwise directed by supplier with integrated grass mix 50% 1.5g/m2 as pre mixed by 'Design by Nature' . Required min seed mixture 1.1KG of Native Sourced Irish Wildflower Seed Mixture, without added 'Grass	Front of margin wildflower grass mix. Low maintenance where grass margin pertains.	Front of embankment	

Seeds'. Plus 1.1kg of grass seed mixed into mixture (rate of sowing for grass is also 1.5 grams per square metre). Special mixture of bents and fescues by Design by Nature.			

As part of the landscape plan, it is proposed to manage the area on top of the proposed embankment at the south-eastern corner of the Site for biodiversity (Figure 5-13). Trees to be planted in this area include Strawberry Tree, Common Juniper, Hawthorn, Austrian Pine and Aspen.

Natural regeneration of native and local seeds is the preferred option for re-vegetating the area to be retained for biodiversity. To this end, the following is proposed:

- Topsoil will be carefully stripped and stockpiled in reasonably dry conditions where possible, to avoid unnecessary compaction and damage to the soil structure. The two soil types should be stacked and stored separately.
- Topsoil containing Invasive Alien Species (i.e., Three-cornered Leek, Buddleia, Sycamore) will not be stored. Waste materials containing Three cornered leek must be removed to an approved waste facility (see section 5.6.2.10 below for further details).
- Topsoil heaps should not exceed 3m in height and 6m in width and used within 12 months. If greater time is needed ten precautions and remedial procedures will have to be carried out as per BS 3882:2015.
- No seeding or herbicide application is to be carried out on stored topsoil to be used in the area designated for biodiversity.
- The recycled topsoil for the biodiversity area will be applied as a topsoil layer in the formation of the regraded embankment over the imported soil. Maximum depth to 300mm.
- A method statement will be provided by the main contractor to the local authority and ecologist for the stripping storage and redistribution of soil within this area.
- Soil analysis test results will be submitted in advance of stripping and storage of topsoil for review by the local authority and ecologist. In the event that the topsoil is deemed unsuitable for recycling due to contamination, poor soil structure, texture and composition of soil, the embankment will be grass seeded following embankment works using Seaside Wild flora (Mix) EC06, Native Origin Irish Wildflower Seed Mixtures: Ecotype Range by Design by Nature or E/A by ecologist.

No public lighting will be installed within the area retained for biodiversity. Dead wood will be placed on a pile within this area. As recommended by Browne[9] (n.d.), a 50cm x 150cm hole will be excavated for the log pile and filled with woody vegetation arising from the felling of trees within the Site. To form the log pile, firstly upright logs will be buried under the soil in the excavated hole. Secondly, larger logs will be stacked towards the centre of the pile, with smaller ones on top and around sides. Leaf litter will be added to the pile in autumn.

[9] Browne, J. (n.d.) Gardening for Biodiversity. Laois County Council. (https://laois.ie/wp-content/uploads/Garden-Wildlife-Booklet-WEB-17MB.pdf)

As recommended by the RSPB[10], the log pile will placed in dappled shade to maintain humidity. The log pile will not be located too close to healthy trees and shrubs to avoid the potential spread of fungi.

Management within the area retained for biodiversity will be limited to the following:

- Add leaf litter to decaying wood pile
- No management (e.g. weeding, tidying) to be carried out apart from around newly planted trees/shrubs
- No herbicides or pesticides to be used
- Mowing (if required) to be carried out as per the all-Ireland pollinator plan as follows (five cut and lifts per year, mowing height set to 3 inches, no herbicide or fertiliser application):
    - First cut after the 15th April (Dandelions are a vital food source for pollinators in spring)
    - Second cut at end of May
    - Third cut in mid-late July (maximises growth of Clovers and other wildflowers)
    - Fourth cut at the end August
    - Fifth cut after mid-October

[10] https://www.rspb.org.uk/birds-and-wildlife/advice/gardening-for-wildlife/dead-wood-for-wildlife/

Figure 5-13: Proposed landscape plan (Plus Architecture, 2022). Area retained for biodiversity indicated in red

5.6.1.2 Sustainable Urban Drainage Systems

The following is extracted from the Engineering Services Report prepared by Waterman Moylan (2021):

It is proposed to discharge surface water from the site by gravity to the existing surface water sewer on Main Street.

The Proposed Development will be designed to incorporate best drainage practice. Surface water discharging to the public network will be restricted to the greenfield equivalent runoff rate via a Hydrobrake or similar approved flow control device. The surface water network will be designed to accommodate the 1-in-5-year storm, with attenuation storage provided for the 1-in-100-year storm.

It is proposed to incorporate a Storm Water Management Plan through the use of various SuDS techniques to treat and minimise surface water runoff from the site. The methodology involved in developing a Storm Water Management Plan for the subject site is based on recommendations set out in the Greater Dublin Strategic Drainage Study (GDSDS) and in the SuDS Manual (Ciria C753). Based on three key elements – Water Quantity, Water Quality and Amenity – the targets of the SuDS train concept have been implemented in the design, providing SuDS devices for each of the following:

- Source Control
- Site Control
- Regional Control

It is proposed to introduce several source control measures, including the following:

Green Roof: Green roofing is proposed at portions of each block's roof area. The substrate and the plant layers in a sedum roof absorb large amounts of rainwater and release it back into the atmosphere by transpiration and evaporation. They also filter water as it passes through the layers, so the run-off, when it is produced, has fewer pollutants. Rainfall not retained by green roofs is detained, effectively increasing the time to peak and slowing peak flows.

Permeable Paving: It is proposed to introduce permeable paving in courtyards and along pedestrian circulation paths to facilitate infiltration of surface water from paved areas. The goal of permeable paving is to control stormwater at the source to reduce runoff. In addition to reducing surface runoff, permeable paving has the dual benefit of improving water quality by trapping suspended solids and filtering pollutants in the substrata layers.

Filter Drains: Filter drains are proposed around the perimeter of buildings, consisting of perforated pipes surrounded in filter stone. The filter drains will provide infiltration, optimise the retention time and provide quality improvement to the storm water runoff, in particular the first flush from hardstanding areas.

Bioretention Gardens and Planters: Intensive bioretention gardens and planters are proposed at some public open spaces. These planted areas can absorb large amounts of rainwater and release it back into the atmosphere by transpiration and evaporation. They can also filter water as it passes through the layers, helping to treat pollutants.

Tree Pits: At the subject site, it is proposed to introduce roadside tree pits. Trees can help control storm water runoff because their leaves, stems, and roots slow rain from reaching the ground and capture and store rainfall to be released later. Trees help to attenuate flows, trap silts and pollutants, promote infiltration and prevent erosion. Incorporating tree planting offers multiple benefits, including attractive planting features, improved air quality and increased biodiversity whilst helping to ensure adaptation to climate change.

Attenuation Storage and Flow Control: Attenuation storage for up to the 1-in-100 year storm will be provided in a privately managed and maintained underground attenuation tank. A Hydrobrake or similar approved flow control device will be used to limit the discharge to the greenfield equivalent runoff rate.

5.6.1.3 Operational Phase Lighting Plan

In order to preserve the commuting potential of the treelines/hedgerows remaining and to minimise disturbance to bats utilising the Site in general, the lighting and layout of the Proposed Development is designed to minimise light-spill onto habitats used by the local bat population foraging or commuting.

No lighting is proposed within the area designated for biodiversity at the south eastern corner.

According to JV Tierney and Co, the preliminary lighting design for the Proposed Development has been based upon the following European/British Standards and best practice guidelines:

- Luminaires should be selected to ensure that when installed, there will be zero direct upward light emitted to the sky (all output will be at or below 90°to the horizontal) to help prevent sky glow from light pollution in the night sky.
- The light emitted from these fittings will have no photo biological risk and will be categorised as 'Exempt Group' in relation to emissions of Blue Light, Infrared and Ultra Violet Radiation in accordance with EN 62741:2008.
- All luminaires will have a Luminous Intensity Classification of between G4 and G6 to IS EN 13201-2:2003/BS 5489-1:2013 and recommendations of Institution of Lighting Professionals and Bat Conservation Trust 'Bats and Lighting in the UK' documentation and Bat Conservation Ireland Guidance Notes for Planners, Engineers, Architects and Developers December 2010.
- Guidance note for the Reduction of Obtrusive Light GN01:2011, produced by the Institute of Lighting Professionals (ILP).
- LED technology will be utilised to ensure no UV component as recommended by Bat Conservation Ireland.
- Lighting Standards as issued by Fingal County Council.

The proposed external lighting scheme will be designed using LED fittings with high performance optics to provide visual comfort. The external lighting scheme will specifically respond to the landscape treatment and be sensitively designed to ensure minimum light pollution. Luminaires will be selected to ensure that when installed there will be zero direct upward light emitted to the sky (all output will be at or below 90° to the horizontal) to help prevent sky glow from light pollution in the night sky. The light emitted from these fittings will have no photo biological risk and will be categorised as 'Exempt Group' in relation to emissions of Blue light, Infrared and Ultra Violet Radiation in accordance with EN 62741:2008.

All luminaires will have a Luminous Intensity Classification of between G4 and G6 to IS EN 13201- 2:2003(E)/BS 5489-1:2013 and recommendations of Institution of Lighting Professionals and Bat Conservation Trust 'Bats and Lighting in the UK' documentation and Bat Conservation Ireland Guidance Notes for Planners, Engineers, Architects and Developers December 2010. As also recommended in the above guides and standards, Variable Lighting and Part-Night Lighting will be utilised.

All luminaires used will lack UV/IR elements to reduce impact.

LED luminaires will be used due to the fact that they are highly directional, lower intensity, good colour rendition and dimming capability.

A warm white spectrum (<2700 Kelvins will be used to reduce the blue light component of the LED spectrum).

Luminaires will feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats.

Column heights will be carefully considered to minimise light spill. The shortest column height allowed should be used where possible.

Only luminaires with an upward light ratio of 0% and with good optical control will be used. Luminaires will be mounted on the horizontal, i.e. no upward tilt.

Any external security lighting will be set on motion-sensors and short (1min) timers.

5.6.2 Construction Phase

5.6.2.1 Protection of Designated Sites

Surface water mitigation

Surface water discharges from the Site will not be permitted onto Balscadden road nor into the SAC/pNHA during the works. As such, there will be no surface water discharges to the east of the Site.

Trenched double silt fencing will be installed along the eastern boundary of the Proposed Development Site (along the existing contours of Balscadden Road but outside the boundary of the SAC/pNHA area) on the inside of the hoarding. The silt fencing will act as a temporary sediment control device to protect the SAC/pNHA from sediment and potential surface water run-off from the Site. The fencing will be inspected twice daily based on Site and weather conditions for any signs of contamination or excessive silt deposits and records of these checks will be maintained. Ponded water will be pumped from the trench into a sediment tank and discharged based on site authorisations or disposed of via a permitted wastewater contractor. Under no circumstances will any wastewater generated onsite be released into nearby drains or Balscadden Road.

In addition, the following measures will be undertaken:

- Designated impermeable cement washout areas will be provided.
- Run-off from the working site or any areas of exposed soil will be channelled and intercepted at regular intervals for discharge to silt-traps or lagoons with over-flows directed to land rather than to a drain.
- Silty water generated on site will be treated using silt traps/settlement ponds and temporary interceptors and traps will be installed until such time as permanent facilities are constructed.
- Storm drain inlets which could receive stormwater from the project will be protected throughout the Construction Phase. Inlet protection will be installed before soil disturbing activities begin.
- A regular review of weather forecasts of heavy rainfall will be conducted and a contingency plan will be prepared for before and after such events to minimise any potential

nuisances. As the risk of the break-out of silt laden run-off is higher during these weather conditions, no work will be carried out during such periods where possible.

- Any imported materials will, as much as possible, be placed on Site in their proposed location and double handling will be avoided. Where this is not possible designated temporary material storage areas will be used.
- These temporary storage areas will be surrounded with silt fencing to filter out any suspended solids from surface water arising from these materials.
- Temporary hydrocarbon interceptor facilities will be installed and maintained where Site Works involve the discharge of drainage waters to nearby drains.
- All containment and treatment facilities will be regularly inspected and maintained.
- Refuelling of plant during the Construction Phase will only be carried out at designated refuelling station locations on site. Each station will be fully equipped for spill response and a specially trained and dedicated Environmental and Emergency Spill Response team will be appointed before the commencement of works on site.
- Only emergency breakdown maintenance will be carried out on site. Drip trays and spill kits will be available on site to ensure that any spills from vehicles are contained and removed off site.
- All personnel working on site will be trained in pollution incident control response.
- Any other diesel, fuel or hydraulic oils stored on site will be stored in bunded storage tanks- the bunded area will have a volume of at least 110% of the volume of the stored materials as per best practice guidelines (Enterprise Ireland, BPGCS005).
- If portaloos and/or containerised toilets and welfare units will be used to provide facilities for site personnel, all associated waste will be removed from site by a licenced waste disposal contractor.
- Under no circumstances will any untreated wastewater generated onsite (from equipment washing, road sweeping etc.) be released into nearby drains.

Groundwater Mitigation

Measures set out to protect surface water above regarding storage and usage of hazardous substances (e.g. fuels) on site will serve to protect soil and groundwater.

Where a pollution incident is detected, construction works will be stopped until the source of the construction pollution has been identified and remedied

Groundwater may be encountered during the construction works. Where water must be pumped from the excavations, water will be managed in accordance with best practice standards (i.e., CIRIA – C750) and regulatory consents.

Excavations and potentially contaminated stockpiled soils will be constructed/located/sheeted in a manner that ensures water is contained within the site boundary.

Dust Minimisation Plan

The objective of dust control at the site is to ensure that no significant nuisance occurs at nearby sensitive receptors, including Howth Head SAC and pNHA, and Dublin Bay Biosphere. In order to develop a workable and transparent dust control strategy, the following management plan which has been formulated by drawing on best practice guidance from Ireland, the UK (BRE 2003), (The Scottish Office 1996) (UK Office of Deputy Prime Minister 2002) and the USA (USEPA 1997), (USEPA 1986) will be implemented.

Monitoring of Dust Emissions within Howth Head SAC and pNHA

- Monitoring of dust within the SAC/pNHA one month prior to commencement of any construction works to collate baseline data at a location approved by the project ecologist will be carried out. Monitoring of dust can be carried out by using the Bergerhoff Method. This involves placing Bergerhoff Dust Deposit Gauges at strategic locations along the Site boundaries for a period of 30 +/- 2 days. The selection of sampling point locations should be carried out in consideration of the requirements of the German Standard Method VDI 2119 (Measurement of Dustfall, Determination of Dustfall using Bergerhoff Instrument (Standard Method German Engineering Institute) with respect to the location of the samplers relative to buildings and other obstructions, height above ground, and sample collection and analysis procedures. After the exposure period is complete, the Gauges will be removed from the Site; the dust deposits in each Gauge will then be determined gravimetrically and expressed as a dust deposition rate in mg/m2/day in accordance with the relevant standard. Monitoring of construction dust deposition will be conducted at nearby sensitive receptors and at the Site boundary (i.e., worst-case location), including within the SAC at locations approved by the project ecologist, during the Construction phase of the Proposed Development.
- Regular inspections of the SAC/pNHA adjacent to the Site will be carried out to monitor dust, records and notes on these inspections will be logged.
- The individual(s) responsible for monitoring of dust within the SAC/pNHA will receive work specific induction in relation to dust minimisation measures, visual dust assessment and dust monitoring in the direct area.
- Should dust deposition be deemed to be at a rate which has the potential to cause an impact on the SAC/pNHA/Dublin Bay Biosphere, additional mitigation will be put in place immediately.

General Monitoring

- Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This will 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 DMP, 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, dust flux, or real-time PM_{10} continuous monitoring locations with the Local Authority. Baseline monitoring will commence at least three months before work commences on site or before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.

Communications

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
- Display the name and contact details of person accountable for air quality and dust issues on the site boundary.
- Display the head or regional office contact information.
- Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk and should include as a minimum the measures in this document. The desirable measures should be included as appropriate for the site.

Site Management

- Regular inspections of the Site and boundary will be carried out to monitor dust, records and notes on these inspections should be logged.
- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
- 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 offsite, and the action taken to resolve the situation in the logbook.

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.
- Fully enclose specific operations where there is a high potential for dust production and the Site is active for an extensive period.
- 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 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 20 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.

Measures Specific to Demolition

- Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust)
- Ensure effective water suppression is used during demolition operations. Handheld sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.
- Avoid explosive blasting, using appropriate manual or mechanical alternatives.

- Bag and remove any biological debris or damp down such material before demolition.

Measures Specific to Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
- Use Hessian or mulches 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

- Avoid scabbling (roughening of concrete surfaces) if possible.
- 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

Site roads (particularly unpaved) can be a significant source of fugitive dust from construction sites if control measures are not in place. The most effective means of suppressing dust emissions from unpaved roads is to apply speed restrictions. Studies show that these measures can have a control efficiency ranging from 25 to 80%.

- A speed restriction of 15 km/hr will be applied as an effective control measure for dust for on-site vehicles.
- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.
- 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.

Dust Control – Public Roads

Spillage and blow-off of debris, aggregates and fine material onto public roads will be reduced to a minimum by employing the following measures.

- Vehicles delivering material with potential for dust emissions to an off-site location will be enclosed or covered with tarpaulin always to restrict the escape of dust;
- Public roads outside the Site will be regularly inspected for cleanliness, as a minimum daily, and cleaned as necessary. A road sweeper will be made available to ensure that public roads are kept free of debris.
- If practicable, a wheel wash facility will be employed at the exit of the Site so that traffic leaving the Site compound will not generate dust or cause the build-up of aggregates and fine material in the public domain.

5.6.2.2 Reduction of Noise Impacts

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

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

- Selection of plant with low inherent potential for generating noise.
- Siting of plant as far away from sensitive receptors as permitted by site constraints.
- Avoidance of unnecessary revving of engines and switch off plant items when not required.
- Keep plant machinery and vehicles adequately maintained and serviced.
- Proper balancing of plant items with rotating parts.
- Keep internal routes well maintained and avoid steep gradients.
- Minimise drop heights for materials or ensure a resilient material underlies.
- Use of alternative reversing alarm systems on plant machinery.
- Where noise originates from resonating body panels and cover plates, additional stiffening ribs or materials should be safely applied where appropriate.

- Limiting the hours during which site activities likely to create high levels of noise are permitted.
- Appointing a site representative responsible for matters relating to noise.
- Monitoring typical levels of noise during critical periods and at sensitive locations.

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

5.6.2.3 Protection of Fox

Although Foxes are not afforded legal protection in Ireland, care will be taken when disturbing the den and the area around it. Fox are protected from a variety of hunting/extermination techniques as per the **Wildlife Acts 1976 to 2012**; and from acts of cruelty as per the **Animal Health and Welfare Act 2013**.

The dens should not be disturbed during the breeding/rearing season, which typically lasts from **March to June.** If destroying the den at other times, care will be taken to allow the occupant to escape, and this work will be supervised by an Ecological Clerk of Works.

5.6.2.4 Protection of Hedgehog and Pygmy Shrew

As noted in the British Hedgehog Preservation Society's publication *Hedgehogs and development*, during the Construction Phase of the Proposed Development Hedgehogs have the potential to be impacted through the loss of suitable hibernation and nest sites in the form of piles of dead wood, vegetation and leaves. This can be mitigated through the careful removal of dead wood/leaves to another part of the Site where they will not be affected. Woody debris from the proposed clearance of vegetative areas on site will also be left in this out-of-the way location as compensatory Hedgehog habitat during the Construction Phase (refer to section 5.6.1.1 above).

Vegetation will be removed in sections working in a consistent direction to prevent entrapment of protected fauna potentially present (e.g. Hedgehog).

Hedgehog also frequent long grass for foraging and daytime nesting sites so care will be taken when strimming/ mowing these areas of the Site.

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

Work likely to cause disturbance during hibernation – for example removal of hibernation habitats such as log piles and dense scrub –**will not take place during November to March,** unless a suitability qualified ecologist has deemed the Site to be devoid of Hedgehog.

5.6.2.5 Protection of Bats

To protect bats from lighting associated with the **Construction Phase** of the Proposed Development, the following will be considered when choosing luminaires. This is taken from the most recent BCT Lighting Guidelines (BCT, 2018):

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

Any Construction Phase external lighting will strictly follow the above guidelines.

5.6.2.6 Protection of Birds

Any clearance of vegetation will be carried out outside the main breeding season, i.e. 1st March to 31st August, in compliance with the Wildlife Act 2000. Should any vegetation removal be required during this period, the NPWS will be consulted, and instruction taken from them. If the buildings on Site are to be demolished during the breeding bird season, the buildings will be inspected for breeding birds (e.g. Herring Gull, Swallows) prior to demolition. Should nesting birds be discovered, the nest will be protected until any nesting birds have fledged and departed the site.

5.6.2.7 Protection of Common Lizard

In order to minimise the risk of site clearance and construction works disturbing, or causing the mortality of Common lizard, the following mitigation will be undertaken at the Site:

- A site-specific survey for common lizard will be undertaken prior to the construction phase commencing. Appropriate mitigation measures will be recommended by the surveyor, however, they are likely to include the following, extracted from NRA (n.d.):
    - Any habitats identified as potentially suitable for lizard (e.g., meadow or scrub habitat) will be removed during the winter period, where possible, avoiding potential Common lizard hibernacula sites (dry sites which provide frost-free conditions e.g. underground small mammal burrows, piles of dead wood or rubble)
    - where this is not possible and clearance must be undertaken during the active season (March through to September, inclusive), vegetation will be cut first to approximately 15cm, and then to the ground, under supervision of an ecologist. This will allow the opportunity for lizards to be displaced by the disturbance and leave the affected area
    - potential hibernacula sites identified by the surveyor will be removed during the active season (March through to September, inclusive) under the supervision of an ecologist, when they are less likely to be in use by torpid lizards

5.6.2.8 Protection of Fish and Marine Mammals

The mitigation measures outlined in section 5.6.2.1 (surface water mitigation) above will serve to protect fish and marine mammals.

5.6.2.9 Protection of Retained Trees

An Arboricultural Method Statement and Tree Protection Plan has been prepared by The Tree File (2022) which provides guidance in respect of tree protection on a development site. This Method Statement and Tree Protection Plan will serve to protect any retained trees and trees adjacent to the Site. Refer to the Arboricultural Report accompanying this application for full details.

5.6.2.10 Timing of vegetation clearance

The following table provides guidance for when vegetation clearance and instream works are permissible. Information sources include the British Hedgehog Preservation Society's *Hedgehogs and Development* and *The Wildlife (Amendment) Act, 2000*.

Table 5-16: Seasonal restrictions on vegetation removal. Red boxes indicate periods when clearance/works are not permissible

<table>
<tr><th>Ecological Feature</th><th>January</th><th>February</th><th>March</th><th>April</th><th>May</th><th>June</th><th>July</th><th>August</th><th>September</th><th>October</th><th>November</th><th>December</th></tr>
<tr><td>Breeding Birds</td><td colspan="2">Vegetation clearance permissible</td><td colspan="6"><u>Nesting bird season</u>
No clearance of vegetation or works to relevant structures permitted unless confirmed to be devoid of nesting birds by an ecologist.</td><td colspan="4">Vegetation clearance permissible</td></tr>
<tr><td>Hibernating mammals (namely Hedgehog, excluding bats)</td><td colspan="2"><u>Mammal hibernation season</u>
No clearance of vegetation or works to relevant structures permitted unless confirmed to be devoid of hibernating mammals by an ecologist.</td><td colspan="7">Vegetation clearance permissible</td><td colspan="3"><u>Mammal hibernation season</u>
No clearance of vegetation or works to relevant structures permitted unless confirmed to be devoid of hibernating mammals by an ecologist.</td></tr>
<tr><td>Common Lizard</td><td colspan="2">Vegetation clearance permissible, avoiding potential Common Lizard hibernacula sites (dry sites which provide frost-free conditions e.g. underground small mammal burrows, piles of dead wood or rubble)</td><td colspan="6">Removal of potential hibernacula sites identified by the surveyor under the supervision of an ecologist.

Ideally no vegetation clearance to take place. Where this is not possible, vegetation will be cut first to approximately 15cm, and then to the ground, under supervision of an ecologist. This will allow the opportunity for lizards to be displaced by the disturbance and leave the affected area.</td><td colspan="4">Vegetation clearance permissible, avoiding potential Common Lizard hibernacula sites (dry sites which provide frost-free conditions e.g. underground small mammal burrows, piles of dead wood or rubble)</td></tr>
</table>

The preferred period for vegetation clearance is within the month of October (Table 5-16). Vegetation will be removed in sections working in a consistent direction to prevent entrapment of protected fauna potentially present (e.g. Hedgehog). Vegetation clearance will take place under the supervision of an ecologist to avoid any potential impact on birds, common lizards or mammals.

5.6.2.11 Biosecurity

Altemar (2019a) detected Three Cornered Leek *Allium triquetrum* at the Site on the slopes facing the Baily Court Hotel during their Site surveys. This species is listed in Part 1 of the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011, as amended). No other invasive species listed on Schedule III of the above-mentioned regulations were found at the Site by Altemar (2019a). No invasive alien species (IAS) listed on Schedule III of the above-mentioned regulations were detected during Site surveys undertaken on the 16th August 2021. It is likely that Three Cornered Leek was not re-

found as this species flowers early in the year with plants dying back completely by June and July[11]. It should be noted however that access to the grounds of the Baily Court Hotel was not possible during the field survey carried out. As such, as a precautionary measure, the Site will be re-surveyed for IAS prior to construction, ensuring access to the grounds of the Baily Court Hotel is possible. If any IAS are present, a suitably qualified ecologist will be consulted regarding their treatment and an IAS Management Plan prepared.

Assuming Three Cornered Leek is still at the Site in the location specified above by Altemar (2019a) the following management will be undertaken:

> This species will be removed via chemical and/or mechanical means. Careful mechanical removal of bulbs followed by appropriate off-site disposal will reduce the infestation but is unlikely to destroy the seed bank. Mechanical removal may need to be repeated over a number of years to exhaust the seed bank. Herbicide application may be successful at reducing the spread of the plant. Applications of herbicide should be made in spring before flowering. However, similar to mechanical removal, multiple applications may be required due to the persistence of bulbs and of the soil seed bank. Disposal of material will be undertaken with due caution to prevent accidental spread of the plant. Waste materials containing Three cornered leek must be removed to an approved waste facility. In many cases, it is not possible to control an established stand of IAS with a single herbicide treatment. Therefore, repeated treatments over successive years is typically necessary. Where physical methods are used to control IAS, the treated area will also need to be monitored over a number of years for regrowth.
>
> Monitoring of all IAS stands treated at the Site will be carried out for 2 years following treatment by a suitably qualified ecologist. Further monitoring may be required if treatment has not been successful. A site may be considered remediated after two consecutive growing seasons with no sign of regrowth from all of the previously identified stands (TII, 2020a).

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

- Any material required on the site will be sourced from a stock that has been screened for the presence of any invasive species by a suitably qualified ecologist and where it is confirmed that none are present.
- All machinery will be thoroughly cleaned and disinfected prior to arrival on site to prevent the spread of invasive species.

5.6.3 Operational Phase

5.6.3.1 Provision of nesting and roosting opportunities for bats and birds

Two bat boxes are required to mitigate for the general conservation of local bat populations.

[11] https://species.biodiversityireland.ie/profile.php?taxonId=28150&taxonDesignationGroupId=26#Species_Biology

Two no. rocket bat boxes will be erected along the native hedgerow / area maintained for biodiversity at the south-eastern Site boundary. These are to be located on 5m steel poles in $1m^3$ of 40 newtons cement. An Irish supplier of this type of bat box is: Eire Ecology.[12] (Please note that these are made to order). There will not be any lighting within the area retained for biodiversity and particularly within the area of the proposed locations of the rocket bat boxes.

To enhance the value of the Site for birds, 5 no. artificial nest boxes (for passerine species) will be placed within the area maintained for biodiversity at the south-eastern Site boundary. Nest box placement will be informed by a suitably qualified ecologist.

5.6.3.2 Signage

Notwithstanding Operational Phase impacts on Howth Head pNHA as a result of the Proposed Development are deemed to be ***neutral***, signage will be erected towards the east of the Proposed Development Site overlooking Balscadden Bay, to educate visitors to Howth Head SAAO/pHNA/SAC of the valued flora, habitats and fauna within the area and their sensitivities. This signage will encourage the public to keep their dogs on leads and avoid trampling sensitive flora and habitats.

5.7 Residual Impacts

Residual impacts are impacts that remain once mitigation has been implemented or impacts that cannot be mitigated. Table 5-17 provides a summary of the impact assessment for the identified Key Ecological Resources (KERs) and details the nature of the impacts identified, mitigation proposed and the classification of any residual impacts.

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

[12] Shop - Eire Ecology

Table 5-17: Summary of potential impacts on KER(s), mitigation proposed and residual impacts

Key Ecological Resource	Level of Significance	Potential Impact	Impact Without Mitigation				Proposed Mitigation	Residual Impact
			Quality	Magnitude / Extent	Duration	Significance		
Howth Head pNHA/SAC, Howth Head Coast SPA	National Importance/ International Importance	Potential for surface water run-off or groundwater containing silt and/or pollutants from the Site to negatively impact **Howth Head pNHA/SAC and Howth Head Coast SPA** during the Construction Phase	Negative	Local	Short-term	Significant	Protection of surface waters and groundwaters during the construction phase	**Neutral**
		Dust emissions from the Proposed Development Site and construction vehicle traffic into **Howth Head pNHA/SAC**	Negative	Local	Short-term	Significant	Dust minimisation plan to be implemented	
		Potential for surface water run-off containing silt and/or pollutants from the Site to negatively impact **Howth Head pNHA/SAC and Howth Head Coast SPA** during the Operational Phase	Negative	Local	Permanent	Moderate	SuDS measures incorporated into project design.	
		Spread of invasive alien flora during the construction phase into the **Howth Head pNHA/SAC**	Negative	Local	Long-term	Significant	Careful management of three-cornered leek at the Site	

Key Ecological Resource	Level of Significance	Potential Impact	Impact Without Mitigation				Proposed Mitigation	Residual Impact
			Quality	Magnitude / Extent	Duration	Significance		
		Disturbance to SCI species at Howth Head Coast SPA due to noise	Negative	Local	Short-term	Slight	A suite of Noise control measures are to be included in the CMP/CEMP which will be in place for the duration of the Construction Phase.	
		Overall impact on ambient air quality standards	Neutral				None required	
		Increased visitor numbers to **Howth Head pNHA/SAC** during Operational Phase	Neutral				None required	
Dublin Bay Biosphere	International Importance	Loss in area of 0.8 ha of semi-natural habitat from buffer zone	Negative	Local	Permanent	Imperceptible	Landscape plan includes biodiversity area	**Negative, Permanent, Imperceptible** due to loss in area of 0.6 ha of semi-natural habitat from buffer zone
		Potential for surface water run-off or groundwater containing silt and/or pollutants from the Site to negatively impact the terrestrial core zone to the east of the Site and the marine zones during the Construction phase.	Negative	Local	Short-term	Significant	Protection of surface waters during the phase	

Key Ecological Resource	Level of Significance	Potential Impact	Impact Without Mitigation				Proposed Mitigation	Residual Impact
			Quality	Magnitude / Extent	Duration	Significance		
		Potential for surface water run-off containing silt and/or pollutants from the Site to negatively impact marine zones during the Operational phase.	Negative	Local	Permanent	Moderate	SuDS measures incorporated into project design.	
		Dust emissions from the Proposed Development Site and construction vehicle traffic into Dublin Bay Biosphere	Negative	Local	Short-term	Significant	Dust minimisation plan to be implemented	
		Spread of invasive alien flora during the construction phase into Dublin Bay Biosphere	Negative	Local	Long-term	Significant	Careful management of three-cornered leek at the Site	
Dry meadows and grassy verges (GS2), **Scrub** (WS1), **Treeline (**WL2**)**	Local importance (higher value)	Loss and/or damage to some or all sections of habitat during Construction Phase.	Negative	Local	Permanent	Moderate	Native trees and hedgerows to be planted.	**Negative, permanent, slight at local level due to loss of semi-natural grassland.**
		Removal of 6no. trees within the Site	Negative	Local	Long-term	Slight	Grass flower meadow proposed to front of embankment	
		Accidental damage to Root Protection Area (RPA) during Construction Phase.	Negative	Local	Long-term	Moderate	Lands to the south-eastern corner to be	**Additional tree**

Key Ecological Resource	Level of Significance	Potential Impact	Impact Without Mitigation				Proposed Mitigation	Residual Impact
			Quality	Magnitude / Extent	Duration	Significance		
							retained and managed for biodiversity. An Arboricultural Method Statement and Tree Protection Plan has been prepared for the Site.	**planting and maintenance of biodiversity area will have a positive effect locally.**
Mammals (Hedgehog, Pygmy Shrew)	Local Importance (Higher Value)	Loss of scrub and dry meadow habitat. Disturbance due to noise and dust during Construction Phase. Possible mortality due to construction site hazards (Plastic sheeting etc.).	Negative Negative Negative	Local Local Local	Permanent Short-term Short-term	Slight Moderate Moderate	Planting of shrub and tree species to take place as part of project design. Grass flower meadow proposed to front of embankment Construction related noise control/minimisation measures to be included in CEMP.	**Neutral**

Key Ecological Resource	Level of Significance	Potential Impact	Impact Without Mitigation				Proposed Mitigation	Residual Impact
			Quality	Magnitude / Extent	Duration	Significance		
							Incorporation of protective mitigation measures to reduce impact of Construction Phase.	
Fox	Local Importance (Higher Value)	Possible mortality due to den removal	Negative	Local	Permanent	Moderate	The fox dens will not be disturbed during the breeding/rearing season, which typically lasts from March to June. If destroying the den at other times, care will be taken to allow the occupant to escape.	**Neutral**
Bat assemblage	Local Importance (Higher Value)	Potential loss and/or damage to sections of foraging and commuting habitat. Increased construction phase lighting. Disturbance due to increased lighting as a result of the Proposed Development.	Negative Negative	Local Local	Permanent Short-term/Permanent	Slight Slight	Existing treelines to be retained. Bat boxes to be erected. Bat sensitive lighting measures to be implemented during	**Slight, Negative, Permanent**

Key Ecological Resource	Level of Significance	Potential Impact	Impact Without Mitigation				Proposed Mitigation	Residual Impact
			Quality	Magnitude / Extent	Duration	Significance		
							Construction Phase and Operational Phase.	
Bird assemblage	Local Importance (Higher Value)	Disturbance due to noise, landscaping during Construction Phase. Direct harm and destruction of nests should vegetation clearance be carried out within the breeding bird season (March 1st to August 31st). Loss of nesting habitat on the roof of the Baily Court Hotel Collision with site structures (SCI bird species)	Negative Negative Negative Neutral	Local Local Local	Short-term Permanent Short-term	Slight Significant Slight	A suite of Noise control measures are to be included in the CMP/CEMP which will be in place for the duration of the Construction Phase. Any clearance of vegetation will be carried out outside the main breeding season, i.e. 1st March to 31st August. Should any vegetation removal be required during this period, the NPWS will be consulted, and instruction taken from them. If the buildings on Site are to be demolished during the breeding bird season, the buildings will be	**Neutral**

Key Ecological Resource	Level of Significance	Potential Impact	Impact Without Mitigation				Proposed Mitigation	Residual Impact
			Quality	Magnitude / Extent	Duration	Significance		
							inspected for breeding birds prior to demolition. Should nesting birds be discovered, the nest will be protected until any nesting birds have fledged and departed the site Variety of passerine nest boxes to be placed at south-eastern corner. No mitigation required for collision impacts as this impact is deemed neutral.	
Common Lizard	Local Importance (Higher Value)	Loss of suitable habitat and disturbance. Mortality of individuals	Negative Negative	Local Local	Permanent Long-term	Slight Slight	A site-specific survey for common lizard to be undertaken prior to the construction phase commencing	**Neutral**

Key Ecological Resource	Level of Significance	Potential Impact	Impact Without Mitigation				Proposed Mitigation	Residual Impact
			Quality	Magnitude / Extent	Duration	Significance		
							Any habitats identified as potentially suitable for lizard (e.g., meadow or scrub habitat) will be removed during the winter period, where possible, avoiding potential Common lizard hibernacula sites where this is not possible and clearance must be undertaken during the active season (March through to September, inclusive), vegetation will be cut first to approximately 15cm, and then to the ground, under supervision of an ecologist. Potential hibernacula sites identified by the surveyor will be	

Key Ecological Resource	Level of Significance	Potential Impact	Impact Without Mitigation				Proposed Mitigation	Residual Impact
			Quality	Magnitude / Extent	Duration	Significance		
							removed during the active season (March through to September, inclusive) under the supervision of an ecologist, when they are less likely to be in use by torpid lizards	
Marine mammals and fish	Local Importance (Higher Value)	Potential for surface water run-off containing silt and/or pollutants from the Site to negatively impact surface water quality during the Construction phase Potential for surface water run-off containing silt and/or pollutants from the Site to negatively impact surface water quality during the Operational phase	Negative Negative	Local Local	Short-term Permanent	Moderate Slight	Protection of surface waters during the construction phase SuDS measures incorporated into project design.	**Neutral**

5.8 Monitoring

5.8.1 Construction Phase

Trenched double silt fencing will be installed along the eastern boundary of the Proposed Development Site (along the existing contours or Balscadden Road but outside the boundary of the SAC/pNHA area) on the inside of the hoarding. The fencing will be inspected twice daily based on Site and weather conditions for any signs of contamination or excessive silt deposits and records of these checks will be maintained.

Daily on-site and off-site inspections will be undertaken where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. 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 Dust Management Plan, 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, dust flux, or real-time PM_{10} continuous monitoring locations with the Local Authority. Commence baseline monitoring at least three months before work commences on site or before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.

5.8.2 Operational Phase

The following bat monitoring is recommended post-construction works. This monitoring should involve the following aspects:

- Inspection of rocket bat boxes within one year of erection of bat box scheme/rocket box. Register bat box scheme with Bat Conservation Ireland. This should be undertaken for a minimum of 2 years.
- Monitoring of any other bat mitigation measures. All mitigation measures should be checked to determine that they were successful. A full summer bat survey is recommended post-works.

5.9 Interactions

5.9.1 Hydrology

The key environmental interaction with biodiversity is water. A series of mitigation measures are proposed in Chapter 8 – Hydrology of this EIAR document, as well as in this Chapter, to ensure the quality (pollution and sedimentation) and quantity (surface run-off and flooding) of water is of an appropriate standard. Interactions between hydrology and biodiversity can occur through impacts to water quality, arising, for example, from an accidental pollution event during the construction or operational phase. This interaction has the potential to result in impacts on habitats and fauna that are hydrologically linked to the site.

5.9.2 Land and Soils

An assessment of the potential impact of the Proposed Development on land and soils is outlined in Chapter 6 – Land and Soils. These impacts are considered to be relevant to the ecological sensitivities associated with the Site of the Proposed Development discussed in this Chapter; and mitigation measures addressing these potential impacts are described in full in Chapter 6. The bulk removal of soils at the site can have implications for biodiversity. Natural regeneration of native and local seeds is the preferred option for re-vegetating the area to be retained for biodiversity.

5.9.3 Air Quality and Climate

An assessment of the potential impact of the Proposed Development on air quality and climate is included in Chapter 8 of this EIAR. Dust emissions arising from construction works at the site were identified as having potentially significant effects on local biodiversity, in particular the adjacent Howth Head pNHA/SAC. However, once the dust minimisation measures are implemented, impacts to biodiversity and designated sites are not predicted to be significant.

5.9.4 Noise and Vibration

An assessment of the potential impact of the Proposed Development in the form of excess noise and vibrations associated with the proposed works are laid out in Chapter 9 - Noise and Vibration. These impacts are considered to be relevant to the ecological sensitivities associated with the Site of the Proposed Development discussed in this Biodiversity Chapter. There is potential for interactions between noise and sensitive fauna, e.g., birds, that occur in adjacent habitats from increased noise levels during the construction phase. However, as described, noise related impacts are not deemed to be significant, even in the absence of mitigation. Nevertheless, the noise chapter and biodiversity chapter provides a range of mitigation measures to reduce noise emissions from the site.

5.9.5 Landscape and Visual Amenity

An assessment of the potential impact of the Proposed Development on the surrounding landscape character is outlined in Chapter 10 - Landscape and Visual. These impacts are considered to be relevant to the ecological sensitivities associated with the Site of the Proposed Development discussed in this Chapter; and mitigation measures addressing these potential impacts are both referenced in this Chapter and described in full in Chapter 10. Landscaping at a development site can have significant implications for biodiversity. The landscape plan includes an area to be retained for biodiversity which will help to off-set habitat loss associated with the proposed development. The lighting plan has been sensitively designed to protect bats from light pollution. No significant negative effects are predicted.

5.9.6 Material Assets (Waste and Utilities)

Construction waste arising from site operations could negatively affect local fauna through entrapment, for example. However, appropriate was management practices on a site as described in section 5.6.2.4 will ensure no significant effects occur on local biodiversity.

5.10 Difficulties Encountered When Compiling

An extensive search of available datasets for records of rare and protected species within proximity of the Proposed Development has been undertaken as part of this assessment.

However, the records from these datasets do not constitute a complete species list. The absence of species from these datasets does not necessarily confirm an absence of species in the area. The botanical survey dates in August 2021 were within the standard acceptable timeframe for general botanical field surveying and more than sufficient to complete the objective of habitat classification and general botanical field surveying. Access to the grounds of the Baily Court Hotel was not possible during the field survey carried out. As such, as a precautionary measure, the Site will be re-surveyed for IAS prior to construction, ensuring access to the grounds of the Baily Court Hotel is possible. If any IAS are present, a suitably qualified ecologist will be consulted regarding their treatment and an IAS Management Plan prepared.

5.11 References

Altemar (2019a). Ecological Impact Assessment (EcIA) for a strategic housing development at the Former Baily Court Hotel, Main Street, and at lands located south of the Martello Tower on Balscadden Rd., Howth, County Dublin.

Altemar (2019b). Appropriate Assessment Screening and Natura Impact Statement – Information for a Stage 1 (AA Screening) and Stage 2 (Natura Impact Statement) AA for Rennie Place SHD at the Former Baily Court Hotel, Main Street, and at lands located south of the Martello Tower on Balscadden Rd., Howth, County Dublin.

Barron, S.J., Delaney, A., Perrin, P.M., Martin, J.R. & O'Neill, F.H. (2011). National survey and assessment of the conservation status of Irish sea cliffs. Irish Wildlife Manuals, No. 53. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland.

Browne, A. (2005). National Inventory of Sea cliffs and Coastal Heaths. Report submitted to the National Parks and Wildlife Service, Dublin.

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

Bat Conservation Ireland. (2014). Bats in Buildings, Guidance Notes for: Planners, engineers, architects and developers.

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

Cutts, Hemingway & Spencer (2013). Waterbird Disturbance Mitigation Toolkit Informing Estuarine Planning & Construction Projects. Institute of Estuarine & Coastal Studies (IECS) University of Hull.

Department of Agricultural, Environment and Rural Affairs. (no date). Advice on badgers. [ONLINE]. Available at: https://www.daera-ni.gov.uk/articles/advice-badgers [Accessed October 2020].

Department of the Environment, Heritage and Local Government. (2010). Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities. DEHLG, Dublin. (Rev. Feb 2010).

Dublin Bay Biosphere Partnership (2017). Dublin Bay Biosphere Biodiversity Conservation and Research Strategy 2016-2020. Dublin Bay Biosphere Partnership, Dublin.

Eastern Regional Fisheries Board. (2004). Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites. Blackrock, Dublin, Ireland.

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

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

European Commission. (2000). Managing Natura 2000 Sites: The Provisions of Article 6 of the 'Habitats' Directive 92/43/EEC. European Communities, Luxembourg.

European Communities. (2002). Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC. European Communities, Luxembourg.

Finch, D., Smith, B., Marshall, C., Coomber, F.G., Kubasiewicz, L.M., Anderson, M., Wright, P.G.R. Mathews, F. (2020). Effects of Artificial Light at Night (ALAN) on European Hedgehog Activity at Supplementary Feeding Stations. Animals (Basel). 2020 May; 10(5): 768

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

Gauthreaux, S. A., and Belser, C. G. (2006). Effects of artificial night lighting on migrating birds. Pages 67–93 in C. Rich and T. Longcore, editors. Ecological consequences of artificial night lighting. Island Press, Washington, D.C., USA.

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

Inland Fisheries Ireland. (2016). Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters. Available at: https://www.fisheriesireland.ie/documents/624-guidelines-on-protection-of-fisheries-during-construction-works-in-and-adjacent-to-waters/file.html

Institute of Lighting Professionals (ILP). (2018). Guidance note 08/18: Bats and artificial lighting in the UK. Bats and the Built Environment Series. [Online] Available at: https://cdn.bats.org.uk/pdf/Resources/ilp-guidance-note-8-bats-and-artificial-lighting-compressed.pdf?mtime=20181113114229

Kelleher, C. and Marnell, F. (2006). Bat Mitigation Guidelines for Ireland. Irish Wildlife Manuals, No. 25. National Parks and Wildlife Service, Department of Environment, Heritage

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

NBDC. (2020). National Biodiversity Data Centre online mapping [ONLINE]. Available at: http://maps.biodiversity.ie/Map.aspx. [Accessed August 2021].

NPWS. (2010). Circular NPW 1/10 & PSSP 2/10. Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities. Department of Environment, Heritage and Local Government.

NPWS (2019). The Status of EU Protected Habitats and Species in Ireland. Volume 2: Habitat Assessments. Unpublished NPWS report. Edited by: Deirdre Lynn and Fionnuala O'Neill

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

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

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

Smith, G.F., O'Donoghue, P., O'Hora, K. and Delaney, E. (2011). Best practice guidance for habitat survey and mapping. The Heritage Council, Kilkenny.

Transport Infrastructure Ireland. (2020). The Management of Invasive Alien Plant Species on National Roads – Standard. GE-ENV-01104. December 2020

6 LAND AND SOIL

6.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) provides an assessment of the impact that the Strategic Housing Development (SHD) in Howth, located between the Balscadden Road, Main Street and Abbey Street, will have on the surrounding soil and geology in the vicinity of the site. It also sets out mitigation and remedial measures and methods of monitoring once the development is operational.

A full description of the development can be found in Chapter 3: Description of Proposed Development of this EIAR.

This chapter was completed by Waterman Moylan Consulting Engineers.

6.2 Study Methodology

A desktop study to classify the geological features related to the site was undertaken. Data from the Geological Survey of Ireland (GSI) was reviewed, including the following maps:

- Bedrock Geology Map
- Bedrock Aquifer Map
- Ground Water Vulnerability Map

This information was supplemented by a Geotechnical Report prepared by Byrne Looby and by site specific ground investigations carried out at the site by Site Investigations Ltd. in July 2021, November 2017 and July 2015, and by Ground Investigations Ireland in November 2017.

These ground investigations, and the subsequent Geotechnical Report by Byrne Looby, assessed the soil, rock and groundwater conditions across the site and included cable percussion boreholes up to 20m below ground level, trial pits, soakaway tests and groundwater monitoring, and laboratory testing of representative soil samples.

6.3 The Existing and Receiving Environment (Baseline Situation)

The subject site is located in Howth, Co. Dublin. It is bounded to the east by the Balscadden Road and by residential properties, to the west by residential and commercial buildings fronting onto Main Street and Abbey Street, and to the north by lands around Martello Tower. The overall site is approximately 1.43 Hectares, with a former leisure centre building at the northern portion of the lands.

A topographic survey was carried out to determine the existing topography at the site. The site has two relatively flat areas, at the north and at the south, with a steep slope between the two, and with steep slopes around the boundary of the site. The northern portion of the site is at a level generally between c.20m and c.21m OD Malin, while the southern portion of the site is at a level generally between c.33m and c.34.5m OD Malin. Levels fall away at the east of the site towards the Balscadden Road, while levels at the south of the site continue to rise. The site is higher than the adjacent Main Street and Abbey Street to the west.

6.3.1 Desktop Study

Geological Survey Ireland (GSI) produces a wide range of datasets, including bedrock geology mapping, extracted in Figure 6-1.:

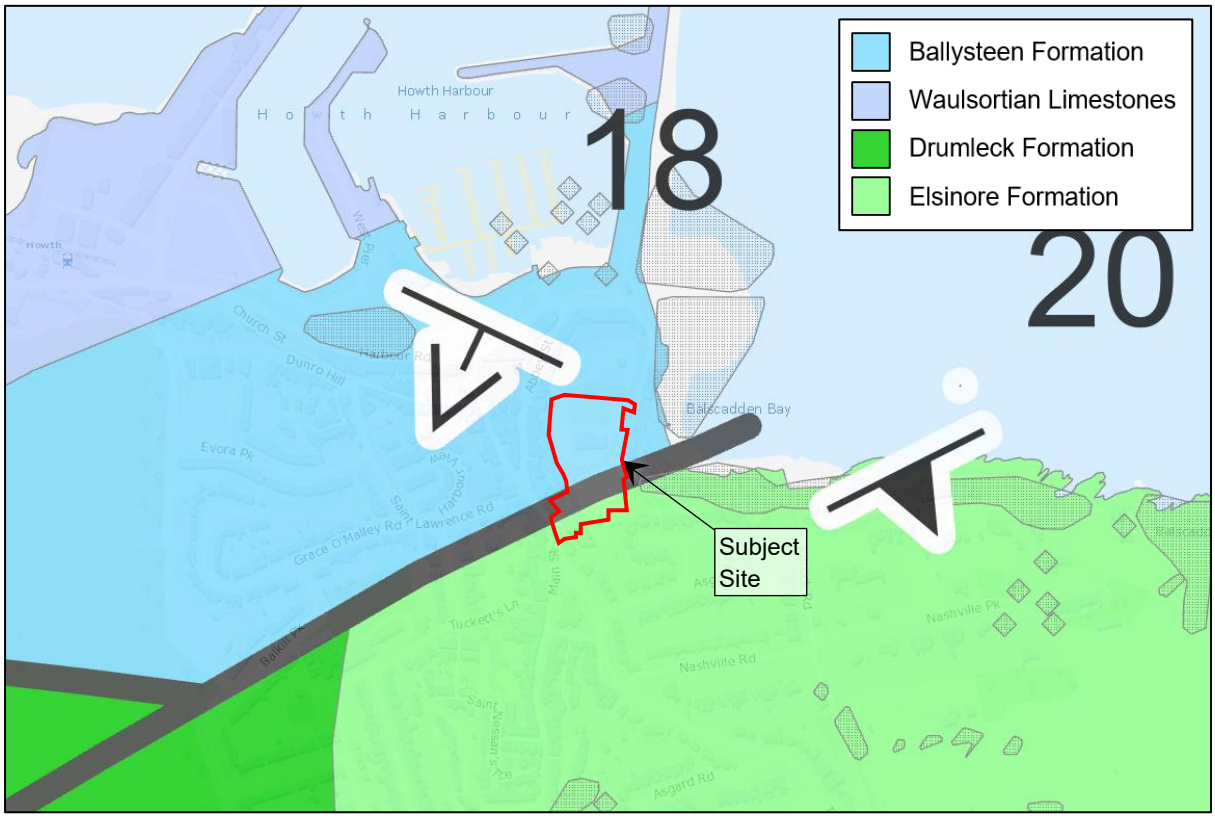


Figure 6-1: Extract from GSI Bedrock Geology Mapyou

From the GSI bedrock map, extracted above, the subject site lies at the boundary of the Ballysteen and Elsinore formations.

The Ballysteen Formation comprises irregularly bedded and nodular bedded argillaceous bioclastic limestones (wackestones and packstones), interbedded with fossiliferous calcareous shales.

The Elsinore Formation comprises a polymict melange of quartzite, greywacke, siltstone, mudstone, and calcareous sandstone in a chaotic mudstone-sandstone matrix. Components vary in size from pebbles to blocks hundreds of metres across.

The National Aquifer Bedrock Map prepared by the Geological Survey of Ireland was also consulted and is extracted below:

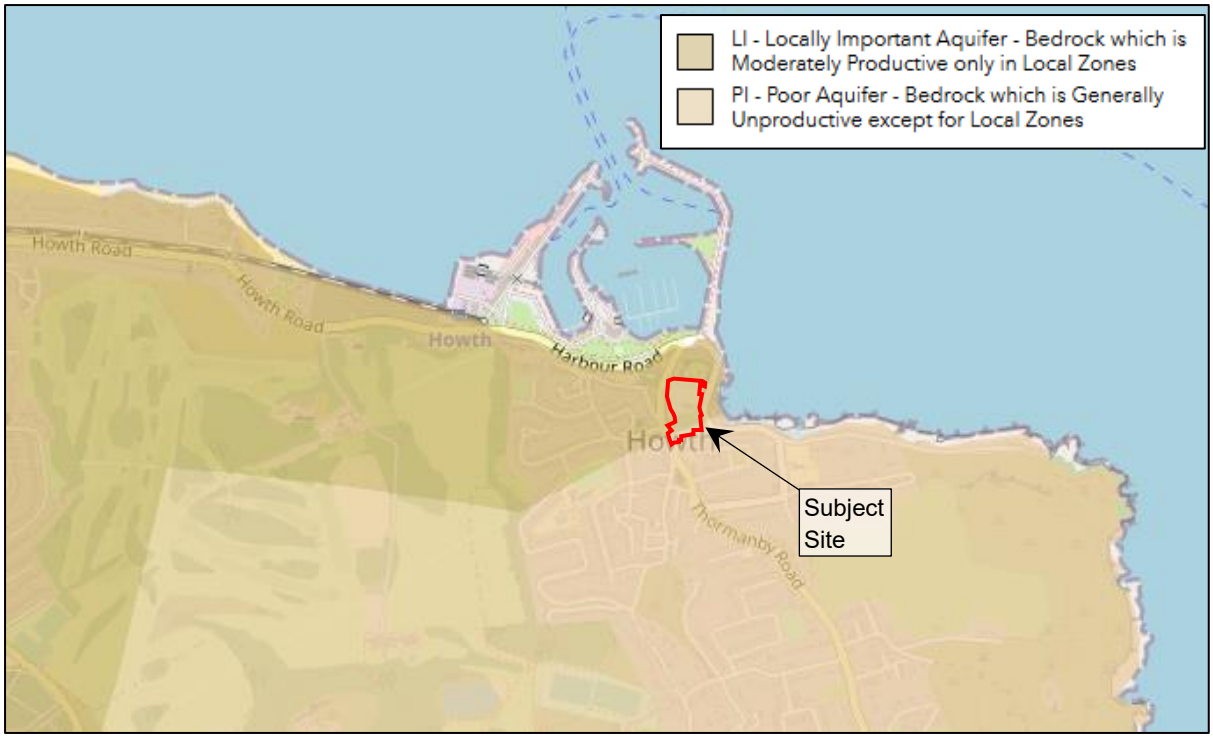


Figure 6-2: Extract from GSI Groundwater Aquifer Map

From this map, it was established that the majority of the site is within the designation LI, which represents locally important moderately productive aquifer, with the very southern portion of the site within the designation PI, which represents poor aquifer which is generally unproductive except for local zones.

From the GSI groundwater vulnerability map, extracted below, the vulnerability of the aquifer in the vicinity of the proposed site is high to extreme:

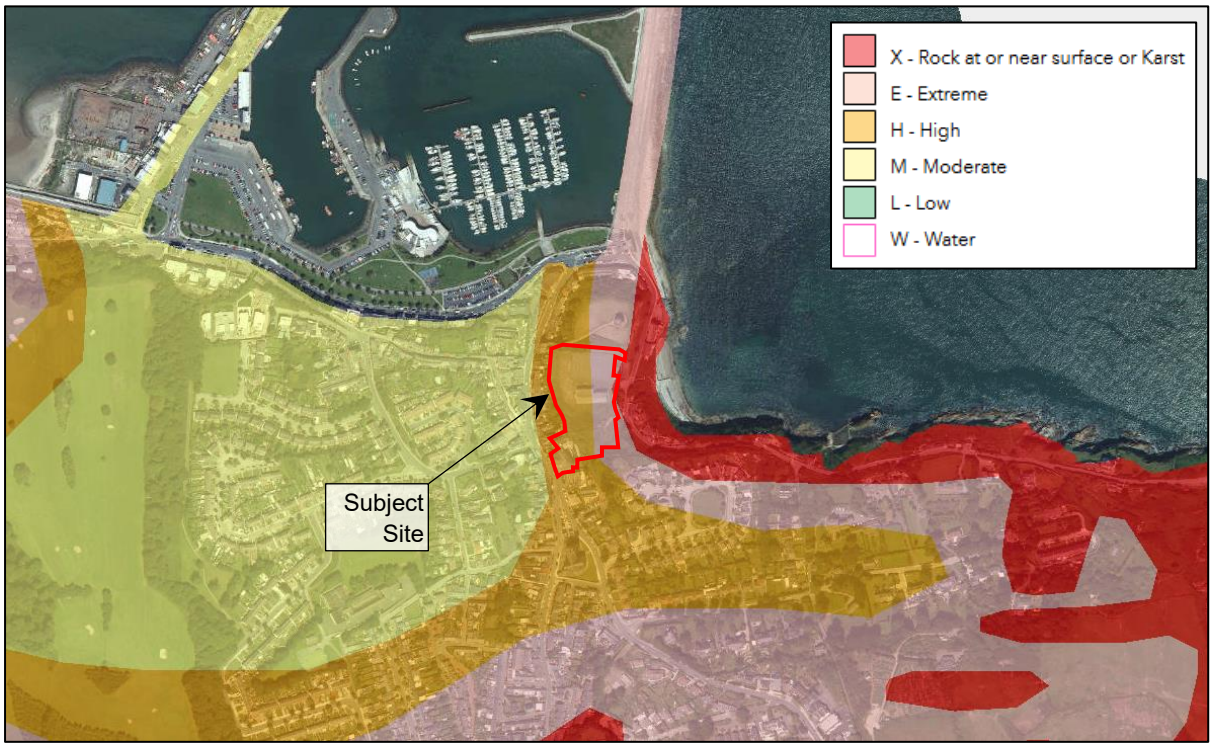


Figure 6-3: Extract from GSI Groundwater Vulnerability Map

6.3.2 Ground Investigations

As noted above, several intrusive ground investigations have been carried out at the site as follows:

- July 2021 – Site Investigations Ltd.
  The fieldwork in July 2021 included 3 no. cable percussion boreholes (to a depth of 17.2m below ground level), 3 no. trial pits and geotechnical laboratory testing.
- November 2017 – Site Investigations Ltd.
  The fieldwork for Site Investigations Ltd.'s November 2017 report was carried out in September and October 2017 and consisted of 1 no. cable percussion borehole (to a depth of 20m below ground level) and geotechnical laboratory testing.
- November 2017 – Ground Investigations Ireland
  Fieldwork carried out by Ground Investigations Ireland in November 2017 included 3 no. trial pits and 3 no. soakaways.
- July 2015 – Site Investigations Ltd.
  The fieldwork in July 2015 included 4 no. boreholes, 4 no. trial pits and geotechnical laboratory testing.

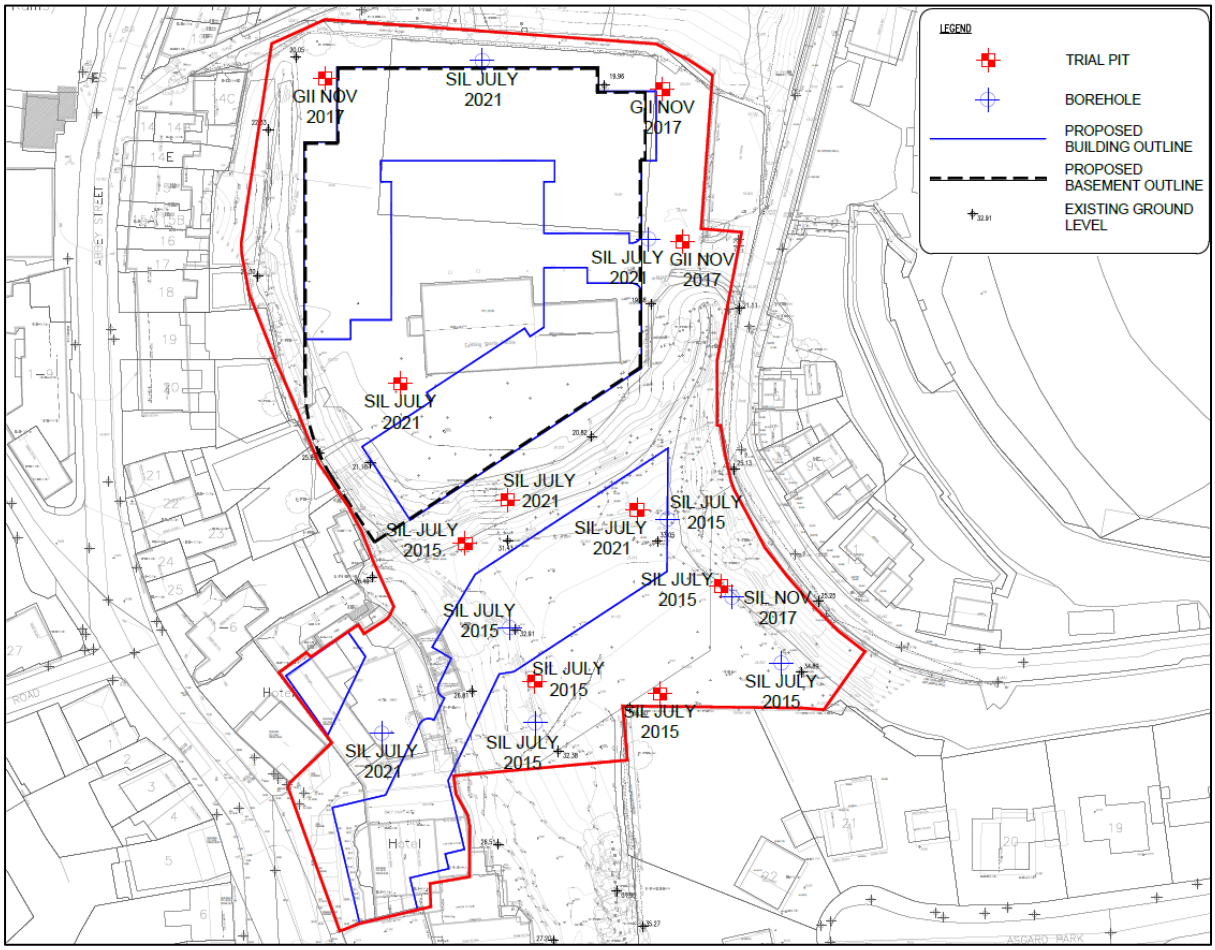


Figure 6-4: Approximate Site Investigation Locations

The ground conditions encountered during the ground investigations generally comprised topsoil overlying medium dense sand overlying very stiff clay. In Site Investigations Ltd.'s 2017

investigations, a 1.2m thick layer of stiff clay was encountered underlying the topsoil near the east of the site.

The medium dense sand was described as medium dense silty very gravelly sand with bands of sandy gravel. The very stiff clay was described as very stiff slightly sandy slightly gravelly silty clay. Bedrock was not proven in any of the boreholes.

The full Geotechnical Report prepared by Byrne Looby is included as an Appendix to this chapter (Appendix D).

6.4 Characteristics of the Proposed Development

The development will consist of the demolition of existing structures on site including the disused sports building (c. 604m^2) on the Balscadden Road portion of the site and the Former Baily Court Hotel Buildings on Main Street (c. 2051m^2) and the construction of a residential development set out in 4 no. residential blocks, ranging in height from 2 to 5 storeys to accommodate 180 no. apartments and duplexes with associated residential tenant amenity, 1 no. retail unit and 2 no. café/retail units.

Non-residential uses retail unit of c. 106.4 sq.m in Block A at ground level, café/retail unit of c.142.7 sq.m in Block C at ground and first floor, café/retail unit of c. 187.7 sq.m in Block D resulting in a total of c. 436.8 sq.m of non-residential other uses

The site will accommodate a total of 139 no. car parking spaces and 410 no. bicycle parking spaces. Landscaping will include a new linear plaza which will create a new pedestrian link between Main St and Balscadden Rd to include the creation of an additional 2 no. new public plazas and also maintains and upgrades the pedestrian link from Abbey Street to Balscadden Road below the Martello Tower.

The schedule of accommodation is set out in the Table:

Table 6-1: Schedule of Accommodation

Description	Studio	1-Bed	2-Bed	3-Bed	Total
Block A	-	-	2	-	2
Block B	-	51	57	18	126
Block C	-	8	28	7	43
Block D	4	3	2	-	9
Total	**4**	**62**	**89**	**25**	**180**

The development will include a single level basement under Block B, accessed from Main St only, containing 139 car spaces including 7 accessible spaces, plant, storage areas, waste storage areas and other associated facilities. A total of 410 cycle parking spaces are provided for at both basement and ground level, comprising 319 resident spaces and 91 visitor spaces.

The scheme provides for a new linear plaza which will create a new pedestrian and cycle link between Main St and Balscadden Rd to include the creation of an additional 2 no. new public plazas and also maintains and upgrades the existing pedestrian link from Abbey Street to Balscadden Road below the Martello Tower.

All other ancillary site development works to facilitate construction and the provision of the basement car park, site services, piped infrastructure, a sub-station, public lighting, plant,

signage, bin stores, bike stores, boundary treatments and hard and soft landscaping.

The proposed development, with respect to soils and geology, includes the following characteristics: -

- Stripping of topsoil.
- Excavation of foundations and basements.
- Excavation of drainage sewers and utilities.
- Regrading and landscaping.
- Disposal of any surplus excavated soils including any contaminated material.
- Some areas of fill in the northern portion of the site.

6.5 Potential Impact of the Proposed Development

6.5.1 Construction Phase

The following potential effects arising from the construction phase of the Proposed Development have been considered:

- Unstable embankments and soil conditions to the surrounding environment during theworks causing slippages and ground movement.
- Unstable excavations and retention systems during the ground works causing soil slippages and ground movement resulting in damage to nearby buildings and surrounding environment.
- Unforeseen ground conditions or obstructions within the ground that have not been identified in the geotechnical investigations.
- Ground borne vibration as a result of the works to the surrounding environment couldcause damage to nearby buildings.
- During excavation surface water runoff from the surface of the excavated areas may result in silt discharges to the public network.
- Ground works causing damage to the existing Howth Sewer Tunnel that runs beneaththe site.
- Ground works causing damage to the adjacent Martello Tower of historic importance.
- The proposed embedded retaining walls and foundations creating hydrogeological ground water cut-offs that could affect the hydrogeology in the surrounding environment and natural ground water paths.
- Excavations for basements, foundations, roadworks and services will result in a surplus of subsoil. Surplus subsoil will be used in fill areas where applicable.
- Dust from the site and from soil spillages on the existing road network around the sitemay be problematic, especially during dry conditions.
- Accidental oil or diesel spillages from construction plant and equipment, in particular

at refuelling areas, may result in oil contamination of the soils and underlying geological structures.

- The installation of the secant pile wall may impact groundwater flows. However, the accompanying hydrological assessment of the proposed development, undertaken by Minerex Environmental Limited, finds that the likelihood of the proposed embedded retaining walls and proposed foundations to disrupt the existing groundwater flow is low. This is further mitigated by the raised female pile toe level within the secant piled walls that terminates at formation level, thereby allowing gaps between the male and female pile to facilitate the passage of ground water.
- The basement is set back sufficiently far from the neighbouring buildings that the excavation works and permanent works of the basement are not considered to have an adverse effect. The neighbouring properties will each be monitored for (ground) movement and vibration throughout the demolition and construction stages of the project.

6.5.2 Operational Phase

During the operational stage of the Proposed Development there will be no likely significant ongoing impacts on the underlying soil and geology.

6.5.3 "Do Nothing" Impact

There is no impact on the soils and geology in the do-nothing scenario.

6.6 Avoidance, Remedial & Mitigation Measures

6.6.1 Construction Phase

A soil retention system comprising a secant piled retaining wall has been designed to the site specific ground investigations and groundwater monitoring to prevent the risk of unstable soil conditions occurring during construction or ground movement causing damage to the surrounding environment.

The predicted ground movements during the ground works and construction phase have been established in the Byrne Looby report. The impact of these movement on adjacent structures/infrastructure have been assessed. Based on the predicted ground movements, the Northern boundary adjacent to the Martello Tower found that the works are outside the zone of sensitivity for the site. A Category 0 (Negligible) and a Category 2 (Slight) has been determined for the Southern and Western boundaries respectively. To further mitigate the risk of ground movement during the works a movement monitoring regime will be established to all boundaries. Details of the movement monitoring regime and trigger limits are outlined in the Byrne Looby report and Outline Construction Management Plan.

Byrne Looby have carried out an assessment on the impact of the development to the underlying Sewer which shows there will only be a minor increase in stress at the location of the development that is considered appropriate with the existing form of construction.

A hydrological assessment of the proposed development has been undertaken by Minerex Environmental Limited. The hydrological assessment finds that the likelihood of the proposed

embedded retaining walls and proposed foundations to disrupt the existing groundwater flow is low. This is further mitigated by the raised female pile toe level within the secant piled walls that terminates at formation level, thereby allowing gaps between the male and female pile to facilitate the passage of ground water.

To minimise ground borne vibrations occurring during the works, low vibration methods have been specified. A vibration monitoring regime is to be established around the site ahead of the works commencing with trigger limits outlined in the Byrne Looby report.

To reduce the quantity of soil to be removed from or imported into the site, the floor levels of the proposed buildings and roads are designed to match existing levels as closely as is feasible, to minimise the cut and fill balance. The number of vehicle movements offsite will be minimised by this optimisation. However, given the prominent location of the site on a hill, given the steep slopes on the site, and given that there is a large basement proposed, it is anticipated that there will be a surplus of soil to be removed from the site. It is currently estimated that there will be approximately 67,000m3 of excess soil to be excavated and removed from the site.

Any surplus subsoil and rock required to be removed from site will be deposited in approved fill areas or to an approved waste disposal facility. Surplus subsoil will be stockpiled on site, in such a manner as to avoid contamination with builders' waste materials, etc., and so as to preserve the materials for future use as clean fill. The Construction Environmental Management Plan will include protocols for soil removal and will be implemented by the development's main contractor during the construction stage.

Soil samples taken from the site during the site investigations showed no evidence of contamination. However, any contaminated soils that are encountered during the works will be excavated and disposed of off-site in accordance with the Waste Management Acts, 1996-2021, and associated regulations and guidance provided in Guidelines for the Management of Waste from National Road Construction Projects published by the National Roads Authority in 2008.

In the case of topsoil, careful planning and on-site storage can ensure that this resource is reused on-site as much as possible. Any surplus of soil not reused on site can be sold. However, topsoil is quite sensitive and can be rendered useless if not stored and cared for properly. It is therefore important that topsoil is kept completely separate from all other construction waste, as any cross-contamination of the topsoil can render it useless for reuse.

It is important to ensure that topsoil is protected from all kinds of vehicle damage and kept away from site-track, delivery vehicle turning areas and site plant and vehicle storage areas.

If topsoil is stored in piles of greater than two metres in height, the soil matrix (internal structure) can be damaged beyond repair. It should also be kept as dry as possible and used as soon as possible to reduce any deterioration through lengthy storage and excess moving around the site.

Records of topsoil storage, movements and transfer from site will be kept by the C&D Waste Manager.

The provision of wheel wash facilities at the construction entrance to the development will minimise the amount of soils deposited on the surrounding road network. The adjoining road network will be cleaned on a regular basis, as required, to prevent the build-up of soils from

the development site on the existing public roads. Dampening down measures with water sprays will be implemented during periods of dry weather to reduce dust levels arising from the development works.

Measures will be implemented throughout the construction stage to prevent contamination of the soil and adjacent watercourses from oil and petrol leakages. Suitable bunded areas will be installed for oil and petrol storage tanks. Designated fuel filling points will be put in place with appropriate oil and petrol interceptors to provide protection from accidental spills. Refuelling will be restricted to these allocated re-fuelling areas. This area is to be an impermeable bunded area designed to contain 110% of the volume of fuel stored.

During excavation works, temporary sumps will be used to collect any surface water run-off thereby avoiding standing water within the excavations. If groundwater is encountered during excavations, mechanical pumps will be required to remove the groundwater from sumps. Sumps should be carefully located and constructed to ensure that groundwater is efficiently removed from excavations and trenches.

Silt traps, silt fences and tailing ponds will need to be provided by the contractor where necessary to prevent silts and soils being washed away by heavy rains during the course of the construction stage. Surface water runoff and water pumped from the excavation works will be discharged via a silt trap / settlement pond to the existing foul drainage network. Straw bales will be used at the outfall to filter surface water to remove contaminants.

After implementation of the above measures, the proposed development will not give rise to any significant long term adverse impact. Moderate negative impacts during the construction stage will be short term only in duration.

A Construction Management Plan, Traffic Management Plan and Waste Management Plan will be implemented by the contractor during the construction stage to control the above remedial measures.

6.6.2 Operational Phase

On completion of the construction phase and following replacement of topsoil, a planting programme will commence to prevent soil erosion. SuDS and filtration devices are proposed to be provided as part of the development. These will help to remove pollutants from rainwater runoff. The SuDS proposals will also encourage infiltration of surface water to the ground.

6.7 Residual Impacts

6.7.1 Construction Phase

With the protective measures noted above in place during excavation works, any potential impacts on soils and geology in the area will not have significant adverse impacts, and no significant adverse impacts on the soils and geology of the subject lands are envisaged.

As noted above, the likelihood of the proposed embedded retaining walls and proposed foundations to disrupt the existing groundwater flow is low. This is further mitigated by the raised female pile toe level within the secant piled walls that terminates at formation level, thereby allowing gaps between the male and female pile to facilitate the passage of ground water.

The proposed development will result in a surplus of excavated material, which may contain contaminants. Any contaminated material will be exported to an approved licensed waste facility.

6.7.2 Operational Phase

On completion of the construction phase and following replacement of topsoil and implementation of a planting programme, no further impacts on the soil are envisaged.

SuDS measures, including permeable paving, bioretention tree pits and open areas with low level planting, will assist with treating surface water runoff while replenishing the natural ground water table.

No significant adverse impacts are predicted on soils or geology.

6.7.3 "Worst Case" Scenario

The worst-case scenario would be for contaminated soils to be encountered during the works. As noted above, any contaminated soils encountered will be excavated and disposed of off-site in accordance with the Waste Management Acts, 1996-2021, and associated regulations and guidance provided in Guidelines for the Management of Waste from National Road Construction Projects published by the National Roads Authority in 2008.

In the worst case scenario, subsoil may be exposed to inclement weather during construction and may result in the erosion of soils. However, with the proposed mitigation measures the quantity of soils exposed and the duration of that exposure will be minimised.

6.8 Monitoring

6.8.1 Construction Phase

Monitoring during the construction phase will be carried out, in particular in relation to the following:

- Adequate protection of topsoil stockpiled for reuse.
- Adequate protection from contamination of soils for removal.
- Monitoring of surface water discharging to any existing watercourses, ditches and the public network.
- Monitoring cleanliness of the adjoining road network.
- Monitoring measures for prevention of oil and petrol spillages.
- Dust control by dampening down measures close to the boundaries of the site, when required due to unusually dry weather conditions.

6.8.2 Operational Phase

During the operational phase, the surface water network (drains, gullies, manholes, AJs, SuDS devices, attenuation system) will be regularly maintained and where required cleaned out. A suitable maintenance regime of inspecting and cleaning will be incorporated into the safety file/maintenance manual for the development.

6.8.3 Reinstatement

Excavations and trenches opened during construction will be backfilled with subsoil to reinstate existing ground levels. Upon completion no impact is foreseen.

6.9 Interactions

The interactions between Chapter 7 (Land and Soils) and the other chapters of the EIAR are set out below:

6.9.1 Population & Human Health

Dust from the site and from soil spillages on the existing road network around the site may impact human health, especially during dry conditions. Dampening down measures with water sprays will be implemented during periods of dry weather to reduce dust levels arising from the development works.

6.9.2 Water

Accidental oil or diesel spillages from construction plant and equipment, in particular at refuelling areas, may result in oil contamination of the soils and underlying geological structures, including surface water and groundwater. Measures will be implemented throughout the construction stage to prevent contamination of the soil and adjacent watercourses from oil and petrol leakages.

6.9.3 Climate (Air Quality & Climate Change)

Dust from the site and from soil spillages on the existing road network around the site may impact air quality, especially during dry conditions. Dampening down measures with water sprays will be implemented during periods of dry weather to reduce dust levels arising from the development works.

Air Quality will be controlled and monitored as set out in Chapter 8 of this EIAR.

6.9.4 Air (Noise & Vibration)

Heavy machinery used for excavations may impact on noise and vibration. Both will be controlled and monitored as set out in Chapter 11 of this EIAR.

6.9.5 Waste Management

Excess soil excavated during construction works, including any potential contaminated soils, will be managed and disposed of in approved locations as provided for in this EIAR.

6.9.6 Biodiversity

Accidental oil or diesel spillages from construction plant and equipment may impact local flora and fauna. Such spills will be mitigated in accordance with Chapter 6 of this EIAR.

6.9.7 Material Assets (Traffic)

Excess soil excavated during construction works for the development will be transported by road for disposal in approved locations as provided for in this EIAR. Movements of construction traffic will be managed in accordance with the Construction Traffic Management Plan.

6.10 Difficulties Encountered When Compiling

There were no difficulties encountered when undertaking this assessment.

6.11 References

The following documents and sources were consulted during the preparation of Chapter 6:

- Geological Survey Ireland (GSI) Public Data Mapping;
- Byrne Looby's Geotechnical Report and the accompanying site investigation reports;
- EPA's Guidance on waste acceptance criteria at authorised soil recovery facilities;
- Waste Management Acts, 1996-2021;
- NRA's Guidelines for the Management of Waste from National Road Construction Projects; and
- European Union (Waste Management (Environmental Impact Assessment) Regulations 2020 S.I. 130 of 2020.

In addition to the sources listed above, design information from the other members of the project team was incorporated in Chapter 6 (Land and Soil).

7 WATER (HYDROLOGY AND HYDROGEOLOGY)

7.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) provides a description of the hydrology and hydrogeology (water) environment within and immediately surrounding the Site of the Proposed Development and an assessment of the potential impacts of the Proposed Development on hydrology and hydrogeology and sets out any required mitigation measures where appropriate.

The principal objectives of this chapter are to identify:

- Hydrological and hydrogeological characteristics of the receiving environment at the Proposed Development Site;
- Potential impacts that the Proposed Development may have on the receiving water environment;
- Potential constraints that the environmental attributes may place on the Proposed Development;
- Required mitigation measures which may be necessary to minimise any adverse impacts related to the Proposed Development; and
- Evaluate the significance of any residual impacts.

7.1.1 Quality Assurance and Competence

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

Enviroguide Consulting as a company remains fully briefed in European and Irish environmental policy and legislation. Professional memberships include the Institute of Geologists of Ireland (IGI), Chartered Institution of Wastes Management (CIWM), the Irish Environmental Law Association and Chartered Institute of Ecology and Environmental Management (CIEEM).

This EIAR Chapter was written by Fionnuala Joyce BSc., MSc., Hydrogeologist with Enviroguide Consulting and Claire Clifford BSc., MSc., PGeo., EurGeol who is Technical Director - Contaminated Land and Hydrogeology with Enviroguide Consulting and is a Professional Geologist with the Institute of Geologists of Ireland and has extensive experience in preparing hydrogeological and environmental assessments for a range of project types and geological and hydrogeological site settings.

7.1.2 Description of the Proposed Development

The proposed development relates to lands located to the south of the Martello Tower on Balscadden Road & the former Baily Court Hotel, Main Street, Howth, County Dublin. The development will consist of the demolition of existing structures on the proposed site including the disused sports building and the former Baily Court Hotel buildings and the construction of a residential development set out in 4 no. residential

blocks, ranging in height from 2 to 5 storeys to accommodate 180 no. apartments with associated internal residential tenant amenity and external courtyards and roof terraces, 1 no. retail unit and 2 no. café/retail units. The site will accommodate car parking spaces at basement level and bicycle parking spaces at basement and surface level. Landscaping will include new linear plaza which will create a new pedestrian link between Main St and Blackadder Rd to include the creation of an additional 2 no. new public plazas and also maintains and upgrades the pedestrian link from Abbey Street to Balscadden Road below the Martello Tower.

A detailed description of the aspects of the Construction and Operational Phases of the Proposed Development and relevant to the hydrological and hydrogeological environment is provided in Section 7.4.

7.2 Study Methodology

7.2.1 Regulations and Guidelines

The methodology adopted for the assessment has regard to the relevant guidelines and legislation including:

- Council Directive 80/68/EEC, 1979. On the protection of groundwater against pollution caused by certain dangerous substances. Council of European Communities.
- Council Directive 2006/118/EEC, 2006. On the protection of groundwater against pollution and deterioration. European Parliament and the Council of European Communities.
- Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy with amendments 2455/2001/EC, 2008/32/EC and 2008/105/EC (Water Framework Directive, WFD);
- Local Government, July 1990. No. 21.1990. Local Government (Water Pollution) (Amendment) Act, 1990.
- Local Government, March 1977. No. 01/1977. Local Government (Water Pollution) Act, 1977.
- S.I. No. 722/2003 – European Communities (Water Policy) with amendment S.I.No. 413/2005.
- S.I. No. 489/2011 – European communities (Technical Specifications for the Chemical Analysis and Monitoring of Water Status) Regulations, 2011.
- S.I. No. 122/2010 – European Communities (Assessment and Management of flood Risks) Regulations 2010 including amendment S.I. No. 495/2015.
- S.I. No. 272/2009 - European Communities Environmental Objectives (Surface Waters) Regulations 2009 including amendments S.I. No. 327/2012, S.I. No. 386/2015 and S.I. No. 77/2019.
- S.I. No. 9 of 2010 - European Communities Environmental Objectives (Groundwater) Regulations 2010 including amendments S.I. No. 149 of 2012 and S.I. No. 366 of 201; and

- WFD Working Group, 2005. Guidance on the Assessment of the Impact of Groundwater Abstractions (WFD, 2005).

Other guidance used in the assessment of potential impacts on the receiving water environment are referenced where relevant in this EIAR Chapter and includes

- Construction Industry Research and Information Association, 2001. Control of Water Pollution from Construction Sites (CIRIA – C532).
- Construction Industry Research and Information Association, 2015. Environmental good practice on site guide (CIRIA – C741).
- Construction Industry Research and Information Association, 2016. Groundwater control: design and practice (CIRIA – C750).
- Department of the Environment, Heritage and Local Government, Environmental Protection Agency and Geological Survey of Ireland, 1999. Groundwater Protection Schemes (DEHLG/EPA/GSI, 1999);
- Department of the Environment, Heritage and Local Government, 2009. Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DEHLG, 2009);
- Department of Housing, Planning and Local Government, August 2018. Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (DHPLG, 2018)
- Environmental Protection Agency, 2014. Guidance on the Authorisation of Direct Discharges to Groundwater.
- Environmental Protection Agency, 2013. Guidance on the Management of Contaminated Land and Groundwater at EPA Licensed Sites.
- Environmental Protection Agency, 2004. Storage and Transfer of Materials for Scheduled Activities
- Environmental Protection Agency, August 2017. Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2017);
- Environmental Protection Agency, September 2015. Draft Advice Notes for preparing Environmental Impact Statements (EPA, 2015);
- Environmental Protection Agency, 2002. Guidelines on Information to be contained in Environmental Impact Statements (EPA, 2002);
- Environmental Protection Agency, 2003. Advice Notes on Current Practice in the preparation of Environmental Impact Statements (EPA, 2003);
- Institute of Geologists of Ireland Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements (IGI, 2013);
- National Roads Authority, 2009. Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (NRA, 2009);

- National Roads Authority, 2007 Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan (undated) in relation to impact mitigation; and
- OPR, June 2021. OPR Practice Note PN02. Environmental Impact Assessment Screening (OPR, 2021).

7.2.1.1 Local Policy and Fingal County Council Development Plan

Policies of the Fingal County Council Development Plan (in line with the Project Ireland 2040 comprising the Department of Housing, Local Government and Heritage (DoHLGH) and Department of Public Expenditure and Reform (DoPER) National Planning Framework, 2019 and the DoPER, 2021 National Development Plan 2021-2030) of relevance to this EIAR Chapter are outlined below:

Objective SS15 of the Fingal Development Plan 2017-2023

Strengthen and consolidate existing urban areas adjoining Dublin City through infill and appropriate brownfield redevelopment in order to maximise the efficient use of existing infrastructure and services.

Objective PM43 of the Fingal Development Plan 2017-2023

Have regard to 'Sustainable Urban Housing: Design Standards for New Apartments' (2007) (or any update or revision of these standards) when assessing apartment developments.

Objective DW06 of the Fingal Development Plan 2017-2023

Promote the sustainable use of water and water conservation in existing and new development within the County and encourage demand management measures among all water users.

Objective WT07 of the Fingal Development Plan 2017-2023

Require all new developments to provide separate foul and surface water drainage systems and to incorporate sustainable urban drainage systems.

Objective WT08 of the Fingal Development Plan 2017-2023

Prohibit the discharge of additional surface water to combined (foul and surface water) sewers in order to maximise the capacity of existing collection systems.

Objective SW04 of the Fingal Development Plan 2017-2023

Require the use of sustainable drainage systems (SuDS) to minimise and limit the extent of hard surfacing and paving and require the use of sustainable drainage techniques where appropriate, for new development or for extensions to existing developments, in order to reduce the potential impact of existing and predicted flooding risks.

Objective SW07 of the Fingal Development Plan 2017-2023

Implement the Planning System and Flood Risk Management-Guidelines for Planning Authorities (DoEHLG/OPW 2009) or any updated version of these guidelines. A site-specific Flood Risk Assessment to an appropriate level of detail, addressing all potential sources of flood risk, is required for lands identified in the SFRA, located in the following areas: Courtlough; Ballymadun; Rowlestown; Ballyboghil; Coolatrath; Milverton, Skerries; Channell

Road, Rush; Blakescross; Lanestown/Turvey; Lissenhall, Swords; Balheary, Swords; Village/Marina Area, Malahide; Streamstown, Malahide; Balgriffin; Damastown, Macetown and Clonee, Blanchardstown; Mulhuddart, Blanchardstown; Portrane; Sutton; and Howth, demonstrating compliance with the aforementioned Guidelines or any updated version of these guidelines, paying particular attention to residual flood risks and any proposed site specific flood management measures.

Objective WQ01 of the Fingal Development Plan 2017-2023

Strive to achieve 'good status' in all waterbodies in compliance with the Water Framework Directive, the Eastern River Basin District Management Plan 2009-2015 and the associated Programme of Measures (first cycle) and to cooperate with the development and implementation of the second cycle national River Basin Management Plan 2017-2021.

Objective WQ02 of the Fingal Development Plan 2017-2023

Protect and develop, in a sustainable manner, the existing groundwater sources and aquifers in the County and control development in a manner consistent with the proper management of these resources in conformity with the Eastern River Basin Management Plan 2009-2015 and the second cycle national River Basin Management Plan 2017-2021 and any subsequent plan and the Groundwater Protection Scheme.

Objective CC01 of the Fingal Development Plan 2017-2023

Comply with the recommendations of the GDSDS Climate Change Policy with regard to the provision and management of drainage services in the County and recognise that climate mitigation and adaption measures are evolving and comply with new national measures as presented in National Plans and Frameworks.

Objective WM02 of the Fingal Development Plan 2017-2023

Facilitate the implementation of national legislation and national and regional waste management policy having regard to the waste hierarchy.

Objective WM03 of the Fingal Development Plan 2017-2023

Implement the provisions of the Eastern Midlands Region Waste Management Plan 2015 - 2021 or any subsequent Waste Management Plan applicable within the lifetime of the Development Plan. All prospective developments in the County will be expected to take account of the provisions of the Regional Waste Management Plan and adhere to the requirements of that Plan.

Objective GI21 of the Fingal Development Plan 2017-2023

Require all new development to address the protection and provision of green infrastructure for the five GI themes set out in the Development Plan (Biodiversity, Parks, Open Space and Recreation, Sustainable Water Management, Archaeological and Architectural Heritage, and Landscape) in a coherent and integrated manner.

Objective GI33 of the Fingal Development Plan 2017-2023

Seek the provision of green roofs and green walls as an integrated part of Sustainable Drainage Systems (SuDS) and which provide benefits for biodiversity, wherever possible.

Objective NH24 of the Fingal Development Plan 2017-2023

Protect rivers, streams and other watercourses and maintain them in an open state capable of providing suitable habitat for fauna and flora, including fish.

Objective DMS16 of the Fingal Development Plan 2017-2023

Promote and encourage the use of green walls and roofs for new developments that demonstrate benefits in terms of SuDS as part of an integrated approach to green infrastructure provision.

Objective DMS17 of the Fingal Development Plan 2017-2023

Promote and encourage the use of green walls and roofs as part of an integrated approach to green infrastructure provision.

Objective DMS74 of the Fingal Development Plan 2017-2023

Underground tanks and storage systems will not be accepted under public open space, as part of a SuDS solution.

7.2.2 Phased Approach

A phased approach was adopted for this EIAR in accordance with Environmental Protection Agency (EPA) and Institute of Geologists of Ireland (IGI) guidelines as set out above and is described in the following sections.

Element 1: An initial Assessment and Impact Determination stage was carried out by Enviroguide Consulting to establish the project location, type and scale of the Proposed Development, the baseline conditions, and the type of hydrological and hydrogeological environment, to establish the activities associated with the Proposed Development and to undertake an initial assessment and impact determination.

This stage of the assessment included a desk top study that comprised a review of published environmental information for the Proposed Development Site. The study area, for the purposes of assessing the baseline conditions for the Hydrology and Hydrogeology Chapter of the EIAR, extends beyond the Site boundaries and includes potential receptors within a 2.0km radius of the Proposed Development Site. The extent of the wider study area was based on the Institute of Geologists of Ireland (IGI) Guidelines (IGI, 2013) that recommends a minimum distance of 2.0km radius from the Proposed Development Site.

A distance of 15km, to identify potentially sensitive habitats which is a distance set out in AA / NIS methodologies (DEHLG, 2009) was applied and designated and protected areas potentially hydraulically connected to the Proposed Development Site were also considered. The purpose of this increased search radius was to ensure that any potential hydrogeological / hydrological connections to sensitive habitats were identified.

The desk study involved collecting all the relevant data for the Proposed Development site and surrounding area including published information and details pertaining to the Proposed Development provided by the Applicant and design team.

The Element 1 stage of the assessment was completed by Enviroguide Consulting and included the review of the following sources of information:

- Environmental Protection Agency (EPA) webmapping (EPA, 2022);
- Geological Survey Ireland (GSI) Datasets Public Viewer and Groundwater webmapping (EPA, 2022);
- National Parks and Wildlife Services (NPWS) webmapping (NPWS, 2022);
- Ordnance Survey Ireland (OSI) webmapping (OSI, 2022);
- Water Framework Directive Ireland (WFD) webmapping (WFD, 2022);
- Teagasc webmapping (Teagasc, 2022);
- Office of Public Works (OPW) database on historic flooding and the Catchment Flood Risk Assessment and Management (CFRAM) maps (OPW, 2022); and
- Information provided by the Applicant pertaining to the Proposed Development including design drawings, design reports, geological and hydrogeological investigation and assessment reports including the following:
    - Byrne Looby, 2022. Balscadden Development, Howth, Co. Dublin Geotechnical Report (report Number: BL800-GEO-R001) (BL, 2022).
    - Waterman Moylan Engineering Consultants Ltd., 2022. Flood risk Assessment Balscadden Development, Howth, Co. Dublin (Waterman Moylan, 2022a).
    - Waterman Moylan Engineering Consultants Ltd., 2022. Engineering Assessment Report Balscadden Development, Howth, Co. Dublin); (Document Reference: 21-032r.002 Engineering Assessment Report (Waterman Moylan, 2022b).
    - Minerex Environmental Limited, 2022. Hydrogeological Assessment report for the proposed development at Balscadden Road, Howth, Co. Dublin (MEL, 2022).

Element 2: The Direct and Indirect Site Investigation and Studies stage was not carried out specifically for this EIAR Chapter as it was deemed that there was adequate information available from the previous site investigations and assessments for the Site that were reviewed during Element 1.

Element 3: Evaluation of Mitigation Measures, Residual Impacts and Final Impact Assessment were based on the outcome of the information gathered in Element 1 of the assessment. Mitigation measures to address all identified adverse impacts that were identified in Element 1 of the assessment were considered in relation to the Construction and Phase and Operational Phase of the Proposed Development. These mitigation measures were then considered in the impact assessment to identify any residual impacts.

Element 4: Completion of the Hydrology and Hydrogeology sections of the EIAR in this Chapter which includes all the associated figures and documents.

7.2.3 Description of Importance of the Receiving Environment

The National Roads Authority (NRA) criteria for estimation of the importance of hydrogeological features at the Proposed Development Site during the Environmental Impact Assessment (EIA) stage, as documented by IGI (IGI, 2013) are summarised in Table 7-1.

Table 7-1 Criteria for Rating Site Importance of Hydrogeological Features

Importance	Criteria	Typical Example
Extremely High	Attribute has a high quality or value on an international scale.	Groundwater supports river, wetland or surface water body ecosystem protected by European Union (EU) legislation e.g., SAC or SPA status.
Very High	Attribute has a high quality or value on a regional or national scale.	Regionally Important Aquifer with multiple wellfields. Groundwater supports river, wetland, or surface water body. ecosystem protected by national legislation – e.g., NHA status. Regionally important potable water source supplying >2500 homes Inner source protection area for regionally important water source.
High	Attribute has a high quality or value on a local scale.	Regionally Important Aquifer. Groundwater provides large proportion of baseflow to local rivers. Locally important potable water source supplying >1000 homes. Outer source protection area for regionally important water source. Inner source protection area for locally important water source.
Medium	Attribute has a medium quality or value on a local scale.	Locally Important Aquifer Potable water source supplying >50 homes. Outer source protection area for locally important water source.
Low	Attribute has a low quality. or value on a local scale.	Poor Bedrock Aquifer. Potable water source supplying <50 homes.

7.2.4 Description and Assessment of Potential Impact

Impacts will vary in quality from negative, to neutral or positive. The effects of impacts will vary in significance on the receiving environment. Effects will also vary in duration. The terminology and methodology used for assessing the 'impact' significance and the corresponding 'effect' throughout this Chapter are described in Table 7-2.

Table 7-2 Assessment of Potential Impacts Terminology and Methodology

Quality of Effects / Impacts	Definition
Negative	A change which reduces the quality of the environment
Neutral	No effects or effects that are imperceptible, within the normal bounds of variation or within the margin of forecasting error.
Positive	A change that improves the quality of the environment
Significance of Effects / Impacts	**Definition**
Imperceptible	An effect capable of measurement but without significant consequences.
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant	An effect which, by its character, magnitude, duration, or intensity alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration, or intensity significantly alters a sensitive aspect of the environment.
Profound	An effect which obliterates sensitive characteristics.
Duration of Effects / Impacts	**Definition**
Momentary	Effects lasting from seconds to minutes
Brief	Effects lasting less than a day
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
Reversible	Effects that can be undone, for example through remediation or restoration

7.3 The Existing and Receiving Environment (Baseline Situation)

7.3.1 Site Location and Description

The Site occupies an area of approximately 1.43 hectares (ha) and is located within Howth village (refer to Figure 7-1). The Site lies immediately south of the Martello Town, to the west of Balscadden Road and to the east of Abbey Street. The Martello Tower and a number of commercial developments are located directly north of the Proposed Development Site.

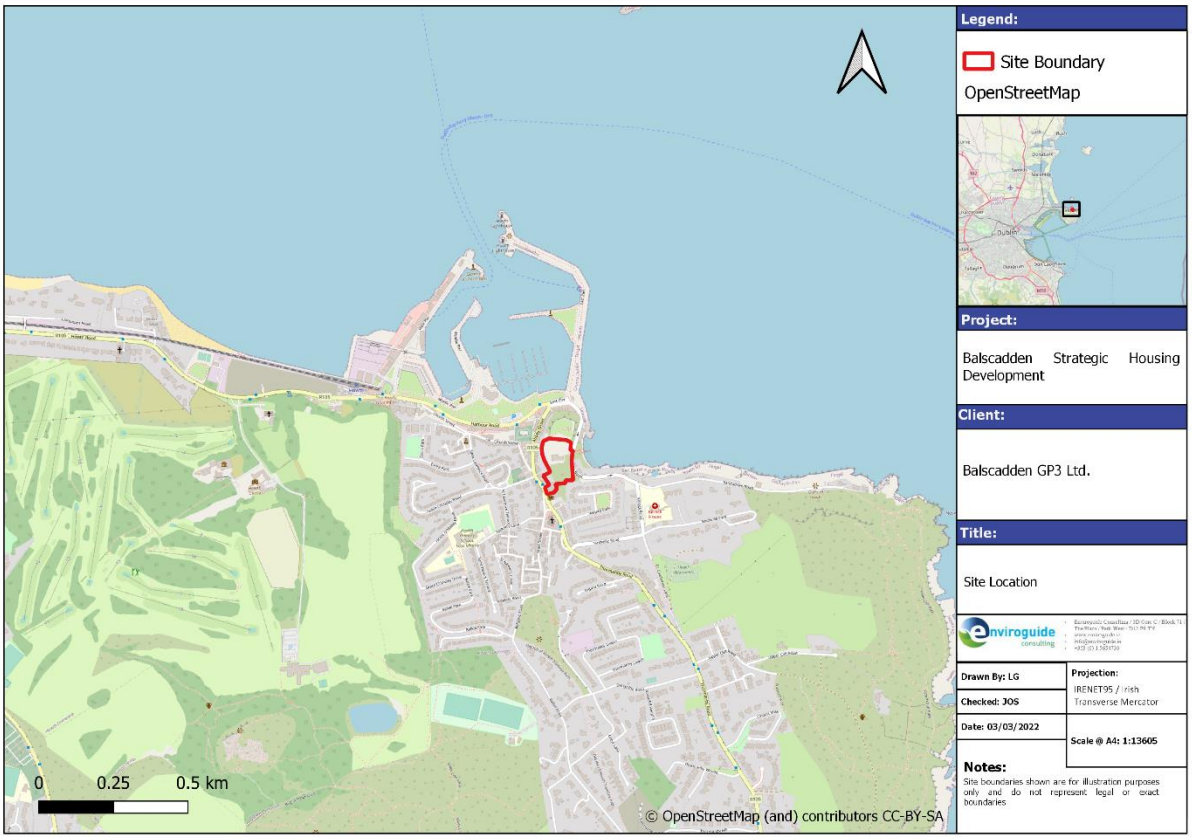


Figure 7-1 Site Location

7.3.2 Topography

A topographic survey was carried out to determine the existing topography at the site (Waterman Moylan, 2022b). The site has two relatively flat areas, at the north and at the south, with a steep slope between the two, and with steep slopes around the boundary of the site. The northern portion of the site is at a level generally between c.20m and c.21m OD Malin, while the southern portion of the site is at a level generally between c.33m and c.34.5m OD Malin. Levels fall away at the east of the site towards the Balscadden Road, while levels at the south of the site continue to rise. The site is higher than the adjacent Main Street and Abbey Street to the west.

7.3.3 Rainfall

Monthly rainfall data available for 1km x 1km grids (for the period 1981 to 2010) was sourced from Met Éireann (Walsh, 2012) and is presented in Table 7-3.

Table 7-3 Long Term Mean Monthly Rainfall Data (mm) (Walsh, 2012)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual
64	49	56	53	59	63	58	68	64	81	76	73	764
Note: 1km x 1km Irish Grid Coordinates selected for the Proposed Development Site = X (Easting): 328000, Y (Northing):239000												

The closest the synoptic meteorological station to the Proposed Development Site for which the average PE is reported is at the Dublin Airport which is located approximately 12.6km west of the Proposed Development Site. A summary of the average PE at Dublin Airport station for the period 2020 to 2021 (Met Éireann, 2022) is presented in Table 7-4.

Table 7-4 Average Potential Evapotranspiration (Met Éireann, 2022)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual
11.4	26.3	37.8	52.8	75.6	90.5	91.0	63.7	47.2	31.9	14.8	11.0	554.0
Note: Potential evaporation data units: mm												

The average annual PE at the Proposed Development Site is 554.0mm/year (Met Éireann, 2022) (refer to Table 7-4). The GSI (GSI, 2022) have calculated an Effective Rainfall (ER) value of 265.3mm/year across the Proposed Development Site.

7.3.4 Soil, Geology

Details of the soil and geology at the Site are provided in Chapter 6 of this EIAR and are summarised below.

Teagasc Soils beneath the Site are mapped as being of Made ground (Made) (GSI, 2022). Quaternary sediments beneath the Site are described as gravels derived from Limestones (GLs) (GSI, 2022).

The bedrock beneath the Site is mapped as being predominantly underlain by the Ballysteen Formation described as irregularly bedded with nodular bedded argillaceous bioclastic limestones (wackestones and packstones), interbedded with fossiliferous calcareous shales (GSI, 2022).

A mapped fault is shown towards the southern edge of the Site separating the Ballysteen formation from the Elsinore Formation.

The Elsinore Formation is mapped beneath the southern portion of the Site and is described as metasediments comprising of a polymict melange of quartzite, greywacke, siltstone, mudstone, and calcareous sandstone in a chaotic mudstone-sandstone matrix. Components vary in size from pebbles to blocks hundreds of metres across (GSI, 2022).

A wide fault zone spans the entire back of Balscadden Bay with fault Breccias evident on the southern end of the beach (MEL, 2022).

Bedrock was not proven in any of the boreholes installed at the Site (MEL, 2022).

7.3.5 Hydrogeology (Groundwater)

7.3.5.1 Regional Hydrogeology

The bedrock aquifers beneath the Proposed Development Site are within the Dublin GWB (EU Code: IE_EA_G_008) (EPA, 2022). The Dublin GWB covers some 837km2 and occupies an area across Co. Dublin, Co. Kildare and Co. Meath (GSI, 2022).

The GSI description of the Dublin GWB identifies that the dominant recharge process will be diffuse recharge from water percolating through the subsoils and into the aquifer with recharge in the Dublin City area of the groundwater body occurring through infiltration at parks, squares and gardens with some recharge occurring through leaking from sewers, mains and storm drains.

Groundwater flow is considered to discharge directly to the Irish Sea along the coast and to the overlying rivers (GSI, 2022).

7.3.5.2 Aquifer Classification and Vulnerability

The bedrock aquifers identified beneath the Site are summarised as follows (GSI, 2022):

- The aquifer of the Ballysteen Formation beneath the north of the Site is mapped as a *Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones.*
- The bedrock aquifer of the Elsinore Formation beneath the south of the Site is a *Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones.*

The Groundwater Vulnerability Rating assigned to groundwater beneath the Site is *High* at the western boundary of the Site, *Extreme* within the centre and east of the Site and *X – Rock at or Near the Surface* at the east of the Site (GSI, 2022).

Bedrock was not encountered during borehole drilling and the MEL (2022) report states:

'While much of the western half of the site is mapped as E/X, the site investigation boreholes (BH01 and BH02) indicate at least 17m of overburden is present at these locations. While the eastern half of the site is regarded as having High vulnerability, the log from BH03 shows there to be at least 12.8 m of overburden. The discrepancy between the vulnerability map and the site investigation is likely attributable to limitations in the vulnerability mapping data and its resolution. Given the findings of the site investigation the vulnerability of the site is likely to be moderate or low'.

The bedrock aquifer classification and groundwater vulnerability rating maps are provided in Fidure 7-2 and Figure 7-3.

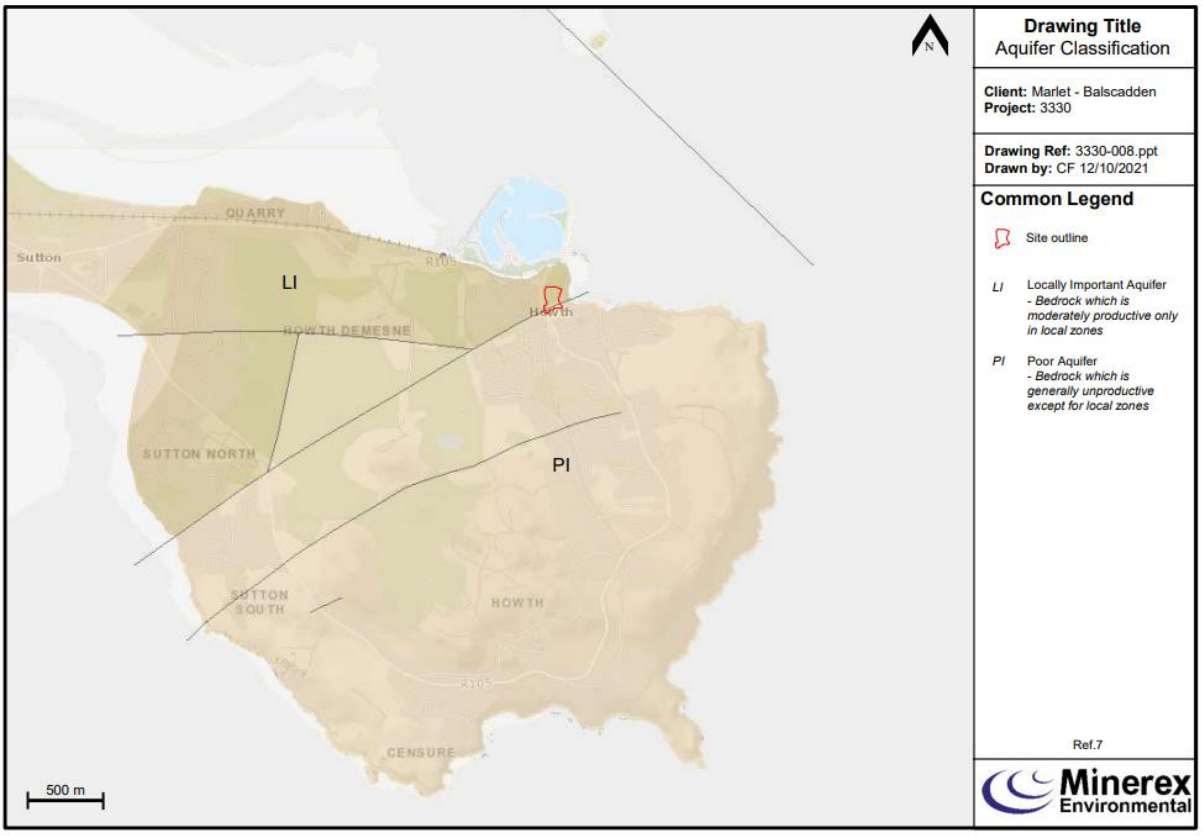


Figure 7-2: Aquifer Classification (Source: MEL, 2022 after GSI, 2022)

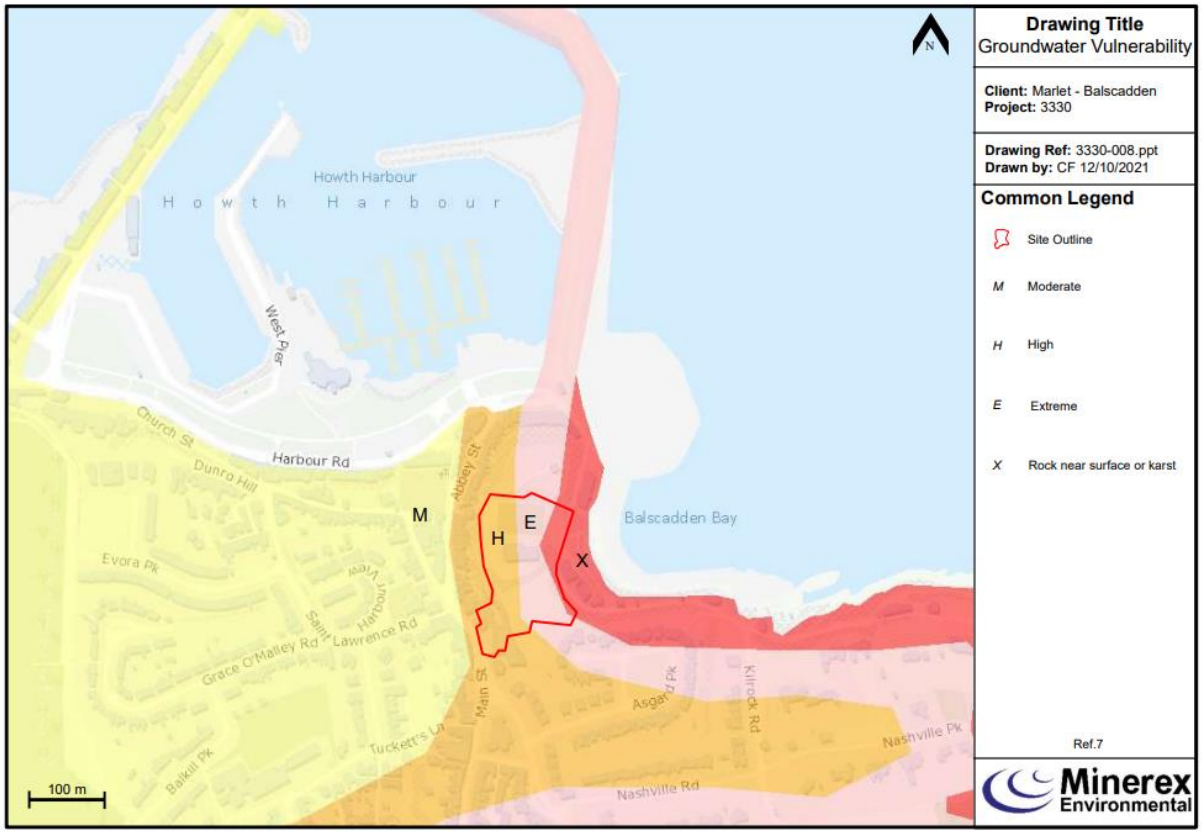


Figure 7-3: Groundwater Vulnerability (Source: MEL, 2022 after GSI, 2022)

7.3.5.3 Recharge

The GSI have calculated the average annual recharge for the aquifer beneath the Proposed Development Site as 53mm/year based on effective rainfall (ER) value of 265.3mm/year and a recharge coefficient of 20% (GSI, 2022).

The MEL Hydrogeological Assessment specific to the Site identifies that due to the nature of the overburden and the capacity of the locally important bedrock aquifer to accept recharge the maximum recharge capacity for the Site is likely between 100 - 200 mm/year (MEL, 2022).

7.3.5.4 Site Groundwater Levels and Flow Direction

The groundwater levels at the Site range from 14.91mOD (BH3) in the southwest to 7.63mOD (BH1) in the north of the Site. The interpreted groundwater flow direction as presented by MEL (MEL, 2022) is to the north and east as shown in Figure 7-4.

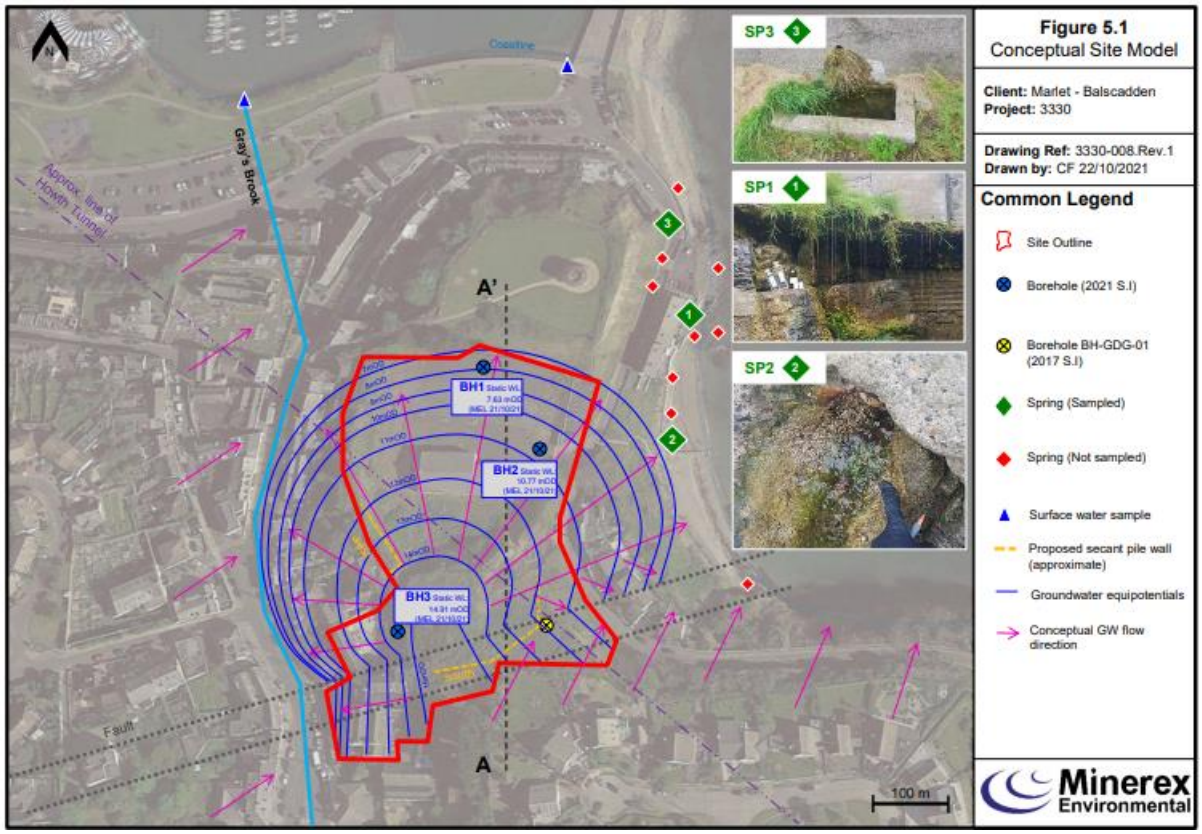


Figure 7-4 Hydrogeological Conceptual Site Model indicating groundwater flow direction (MEL, 2022)

7.3.5.5 Conceptual Hydrogeological Site Model

The conceptual hydrogeological site model for the Site was developed by MEL (MEL, 2022 – refer to Appendix E).

Groundwater flow is likely bound to the west of the Site by Gray's Brook, with baseflow contributions likely from the western boundary of the site towards Gray's Brook. Groundwater flow is to the north with a steep groundwater gradient from BH3 to BH1. Groundwater flow to the east is also apparent as evidenced by the presence of springs along Balscadden Road and Balscadden Bay and supported with the hydrochemical signature data for samples

collected (MEL, 2022 – refer to Section 4.1 of the BL report in Appendix E) Bedrock groundwater flow is likely bounded to the south by the mapped fault.

The influence of the Howth Sewer Tunnel (invert level 5mODm – refer to *Figure 7-5Figure 7-5 Schematic Hydrogeological Cross Section (MEL, 2022)*) on the hydrogeological regime of the site is uncertain and would depend on the integrity of the lined section of the tunnel.

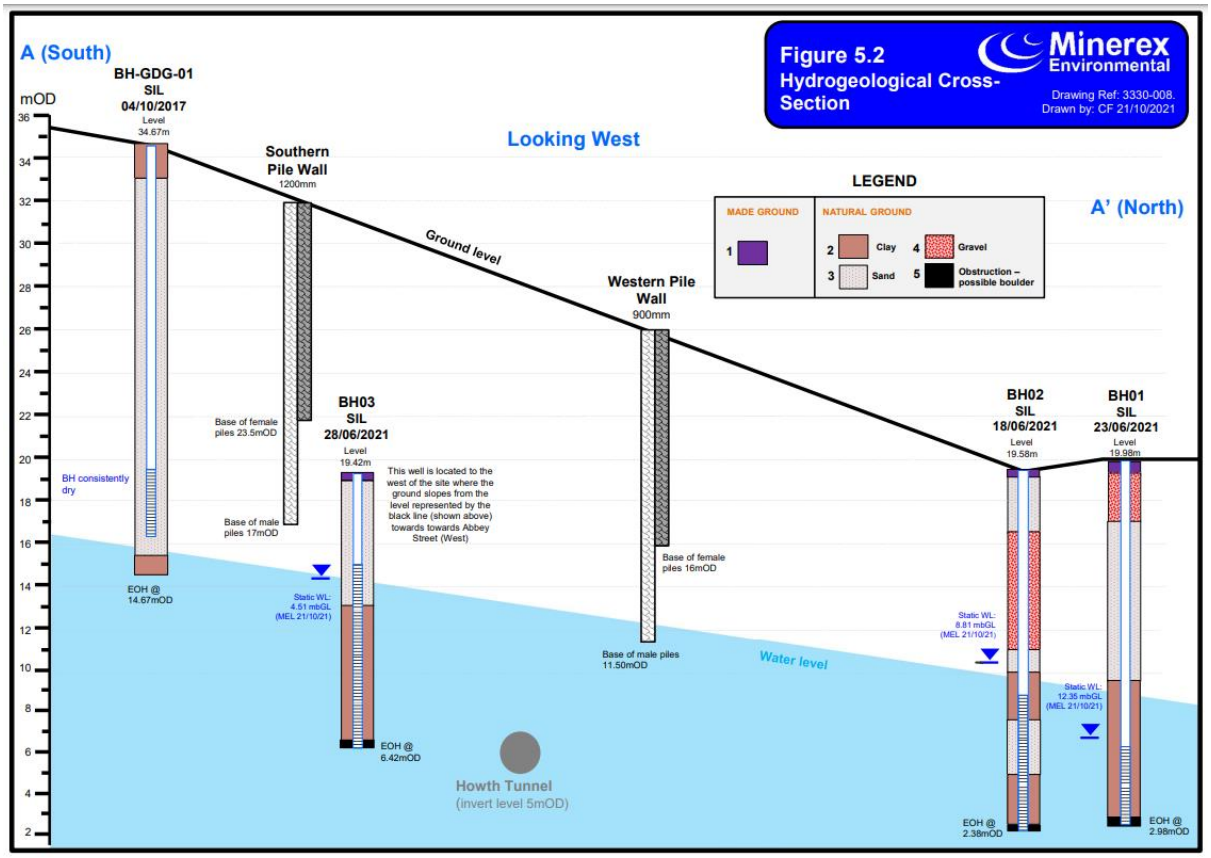


Figure 7-5 Schematic Hydrogeological Cross Section (MEL, 2022)

Due to the nature and depth of the overburden MEL reported that there is little influence or correlation between rainfall and groundwater levels on a short to medium timescale however, significant variation in the water level would not be expected seasonally. The groundwater level and rainfall hydrographs are provided in Figure 4.2, 4.3 and 4.4 of the MEL report (Refer to Appendix E), MEL note monitoring would be required to identify temporal variability in groundwater levels in the long term.

7.3.6 Hydrology (Surface Water)

Four (4 no.) local surface river waterbody features are mapped within a 2km radius of the Proposed Development Site is mapped. These surface waterbodies discharge to the Irish Sea Dublin Coastal Waterbody (Code: IE_EA_G_008). The surface water bodies within 2km of the Site are outlined in detail in Table 7.5 and presented in Figure 7.6.

7.3.7 Drainage

The Site is currently brownfield with derelict buildings and no natural watercourses at the Site. Surface water currently infiltrates the ground, and any excess surface water flows overland and discharges onto the adjacent roads and ultimately to the existing public drainage network.

The following outlines the existing surface water and foul drainage in the vicinity of the Site (Waterman Moylan, 2022b):

- The public surface drainage network comprises of an existing 600mm diameter sewer in Main Street, continuing north along Abbey Street; and it is understood that the surface water drainage sewers discharge to Howth Harbour
- An existing 225mm diameter foul water sewer in Main Street, continuing north along Abbey Street, to the west of the site, where it increases to 300mm.
- An existing 225mm diameter foul water sewer in Balscadden Road to the east of the site, also discharging in a northerly direction.
- There is also a large 1,500mm diameter concrete wastewater sewer (Howth Sewer Tunnel) that traverses the Site. Based on the invert level of the sewer, it has been identified by MEL that the sewer is below the groundwater table.

Irish Water drawings were consulted and a CCTV survey on all the gullies on Balscadden Road at and downhill of the proposed development (SHD00419) was carried out in August 2019 as outlined in the Ecological Impact Assessment for the Proposed Development Site (Altemar, 2019). The Irish Water drawings indicated that there was no surface water sewer on Balscadden Road. According to the CCTV survey, the gullies drained eastwards towards Balscadden Bay and Howth Head SAC. The main series of 4 no. gullies drained (29m) to the base of the steps at the beach in Balscadden Bay.

7.3.8 Flooding

A Site Specific Flood Risk Assessment (SSFRA) Report (Waterman Moylan, 2022a) has been produced for the Proposed Development Site.

The SSFRA concludes that the likelihood of tidal flooding is ‘extremely low’ and no mitigation is required. Similarly, there is no mitigation required for fluvial flooding with a ‘moderate’ likelihood of occurrence identified with an ‘extremely low’ residual risk and therefore no mitigation is required.

The SSFRA identifies that there is a ‘high’ likelihood of pluvial (private and public drainage network) and mechanical / human error (drainage network) associated with the ground and basement levels. Mitigation measures outlined to address the potential risk of pluvial flooding including appropriate drainage design and setting of appropriate floor levels. The SSFRA notes that the flood risk is mitigated by providing attenuation for the development which can store water for the 1 in 100-year storm event plus a 20% allowance for climate change’. (Waterman-Moylan, 2022a). An appropriate maintenance strategy for the drainage network is also required to mitigate flood risk.

The likelihood of groundwater flooding is identified as ‘high’ with moderate consequences identified. The residual risk is identified as ‘low’ with appropriate mitigation measures including adequate waterproofing of the basement structure if necessary.

The SSFRA concludes that ‘As a result of the proposed mitigation measures the residual risk of flooding from any source is low’ (Waterman-Moylan, 2022a).

7.3.9 Water quality

7.3.9.1 Surface Water Quality

There are no recorded Q values or published chemical data monitoring data available for the surface water bodies within the Howth area as identified in *Table 7-5*. The closest groundwater monitoring station with available monitoring data, to the Proposed Development site is Ryewater RW1 – shallow station, which is located 33km west of the Site (EPA, 2022).

Water quality data is available for an EPA monitoring station at Howth Head (DB710 – Casana Rock Howth Head) located 1.6km east of the Site. Water quality is reported as inert status for water quality with reported overall downward trend in the reported analytical results for Chlorophyll, Dissolved inorganic Nitrogen and Ortho-phosphate as P for the period of 2013-2018 (EPA, 2022).

The latest bathing water quality results for monitoring at Claremont Beach in 2020 have been recorded as having “Sufficient Water Quality” (EPA, 2022).

7.3.9.2 Groundwater Quality

No available or published relevant data was identified to identify the groundwater quality beneath the Proposed Development Site (EPA, 2022). The closest groundwater monitoring stations to the Proposed Development Site for which there is available data which are located in the Dublin Groundwater Body and are located 33km west of the Proposed Development Site (EPA, 2022).

The groundwater analytical data for major ions is included in the MEL report (MEL, 2022) for groundwater samples collected from monitoring wells (BH1 and BH2) and springs (SP1, SP2 and SP3) and surface water samples (SW1, SW2 and SW3) report was assessed using the applicable assessment criteria specified in the following regulations:

- SI. No. 122/2014 - European Union (Drinking Water) Regulations 2014 and amendments;
- S.I. No. 9/2010 - European Communities Environmental Objectives (Groundwater) Regulations 2010 and amendments; and
- S.I. No. 272/2009 - European Communities Environmental Objectives (Surface Waters) Regulations 2009 and amendments.

The analytical results for ammoniacal nitrogen were reported as below laboratory method limits of detection (<0.2mg/l as N).

Nitrate results (reported as mg/l as NO_3) were reported to range from 29.4mg/l to 37.1mg/l for groundwater, from <0.35mg/l to 30.7mg/l for spring samples and from 4.27mg/l to 9.27mg/l for surface water samples. All nitrate results were below the groundwater threshold value of 37.5mg/l as NO_3 and drinking water parametric value of 50mg/l as NO_3, there is no surface water regulation value for nitrate.

Reported ortho-phosphate results for groundwater samples were reported as below laboratory method limits of detection (<0.02mg/l as P) for groundwater samples, ranging from <0.02 to 0.028mg/l as P for spring samples and 0.03mg/l to 0.0826mg/l as P for surface water samples. The reported surface water results exceed the Surface Waters regulation values for MRP as

P (which is comparable to ortho-phosphate) of 0.025mg/l for high status and 0.035mg/l (as P) for good status water bodies.

7.3.10 Water Use and Source Protection

There are no recorded groundwater sources recorded within a 2km radius of the Proposed Development Site and no groundwater source protection areas identified within 2km of the Site (GSI, 2022).

Coastal waters located approximately 0.7km north-west of the Site at Claremont Beach are recorded as being used as bathing waters (EPA, 2022). Coastal waters located at Howth Harbour 0.15km north of the Proposed Development Site are mapped as having mixed harbour activities for private use and with commercial use (EPA, 2022).

7.3.11 Licenced Activities and Discharges

There are no EPA licenced facilities recorded within the Site or a 2km radius of the Proposed Development Site (EPA, 2022).

7.3.12 Water Framework Directive Status

The Waterbody Status for river, groundwater and coastal water bodies located within a 2km radius of the Proposed Development Site as recorded by the EPA (2022) in accordance with European Communities (Water Policy) Regulations 2003 (SI no. 722/2003) are provided in *Table 7-5*.

Table 7-5 WFD Risk and Water body Status

Waterbody Name	Water body; EU code	Location from Site	Distance from Site (km)	WFD water body status (for the period of 2013-2018)	WFD 3rd cycle Risk Status	Hydraulic Connection to the Site
Surface Water Bodies						
Gray's Brook Stream	IE_EA_09H 230880; 09_410	West	0.22	Unassigned	Review	Downgradient of Site
Coolcur Brook Stream	IE_EA_09H 230880; 09_2196	East	0.158	Unassigned	Review	Downgradient of Site.
Bloody Stream	IE_EA_09H 230880;m 09_2176	West	0.7	Unassigned	Review	Downgradient of Site.
Whitewater Brook	IE_EA_09H 230880; 09_2190	South	1.52	Unassigned	Review	Upgradient of Site
Balsaggart Stream	IE_EA_09H 230880; 09_5182.0	South-west	2.1	Unassigned	Review	Upgradient of Site
Coastal Water Bodies						
Irish Sea Dublin (HA 09)	IE_EA_070 _0000	East	0.029	Good	Not at Risk	Downgradient of Site
Groundwater Bodies						
Dublin Groundwater Body	IE_EA_G_008	N/A	N/A	Good	Review	Underlying groundwater-body

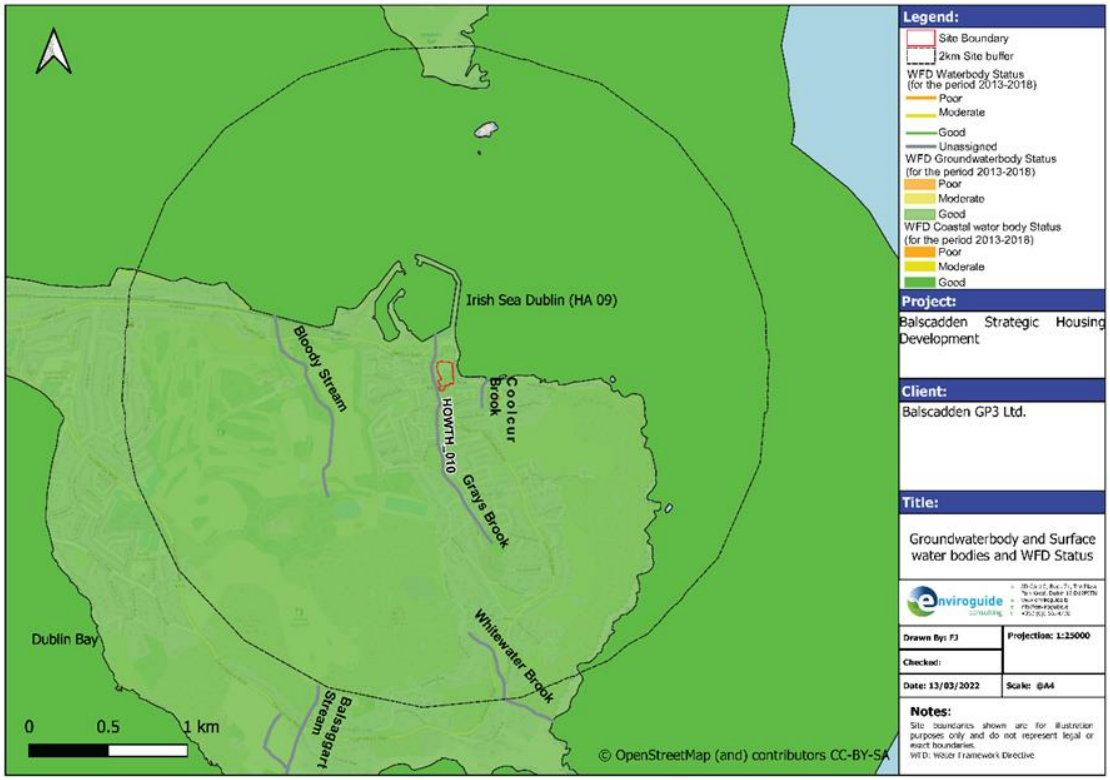


Figure 7-6: Groundwater and Surface Water bodies and WFD Status

7.3.13 Designated Sites

There are a number of designated sites (Natura 2000 sites- Special Areas of Conservation (SAC) and Special Protection Areas (SPA)) and other protected sites including Natural Heritage Areas (NHA) within a 15km radius of influence of the Site and details of these are provided in Chapter 5 (Biodiversity) of this EIAR and the locations of these sites are shown in *Figure 7-7* (Natura 2000) and *Figure 7-8* (pNHA).

The designated and protected sites with a potential hydraulic connection with the Proposed Development Site are summarised in *Table 7-6*.

Table 7-6 Designated and Protected Sites with Hydraulic Connection to the Site

Site Name & Code	Direction from Site	Distance to Site	Hydraulic Connection to Site
Special Areas of Conservation			
Howth Head SAC (000202)	East	Adjacent to Site Boundary	Connection via groundwater/surface water and storm drainage discharge

Site Name & Code	Direction from Site	Distance to Site	Hydraulic Connection to Site
Rockabill to Dalkey Island SAC (003000)	East	0.8 km	Connection via groundwater/surface water and storm drainage discharge
Ireland's Eye SAC (002193)	North	1.3 km	Connection via groundwater/surface water and storm drainage discharge
North Dublin Bay SAC (000206)	South	2.4 km	Connection via foul drainage
South Dublin Bay SAC (000210)	South	8.5 km	Connection via foul drainage
Special Protection Areas			
Howth Head Coast SPA (004113)	East	0.5 km	Connection via groundwater/surface water and storm drainage discharge
Ireland's Eye SPA (004117)	North	0.9 km	Connection via groundwater/surface water and storm drainage discharge
South Dublin Bay and River Tolka Estuary SPA (004024)	South	7.2 km	Connection via foul water drainage discharge
North Bull Island SPA (004006)	South	2.4km	Connection via foul water drainage discharge
Natural Heritage Areas (NHAs)			
There are no NHAs within 15km of the proposed development			

Site Name & Code	Direction from Site	Distance to Site	Hydraulic Connection to Site
Proposed Natural Heritage Areas (pNHAs)			
Howth Head (000202)	East	Adjacent to Site Boundary	Connection via groundwater/surface water and storm drainage discharge
Ireland's Eye (000203)	North	1.3 km	Connection via groundwater/surface water and storm drainage discharge
South Dublin Bay (000210)	South	8.4 km	Connection via foul water drainage discharge
North Dublin Bay (000206)	South	2.4 km	Connection via foul water drainage discharge

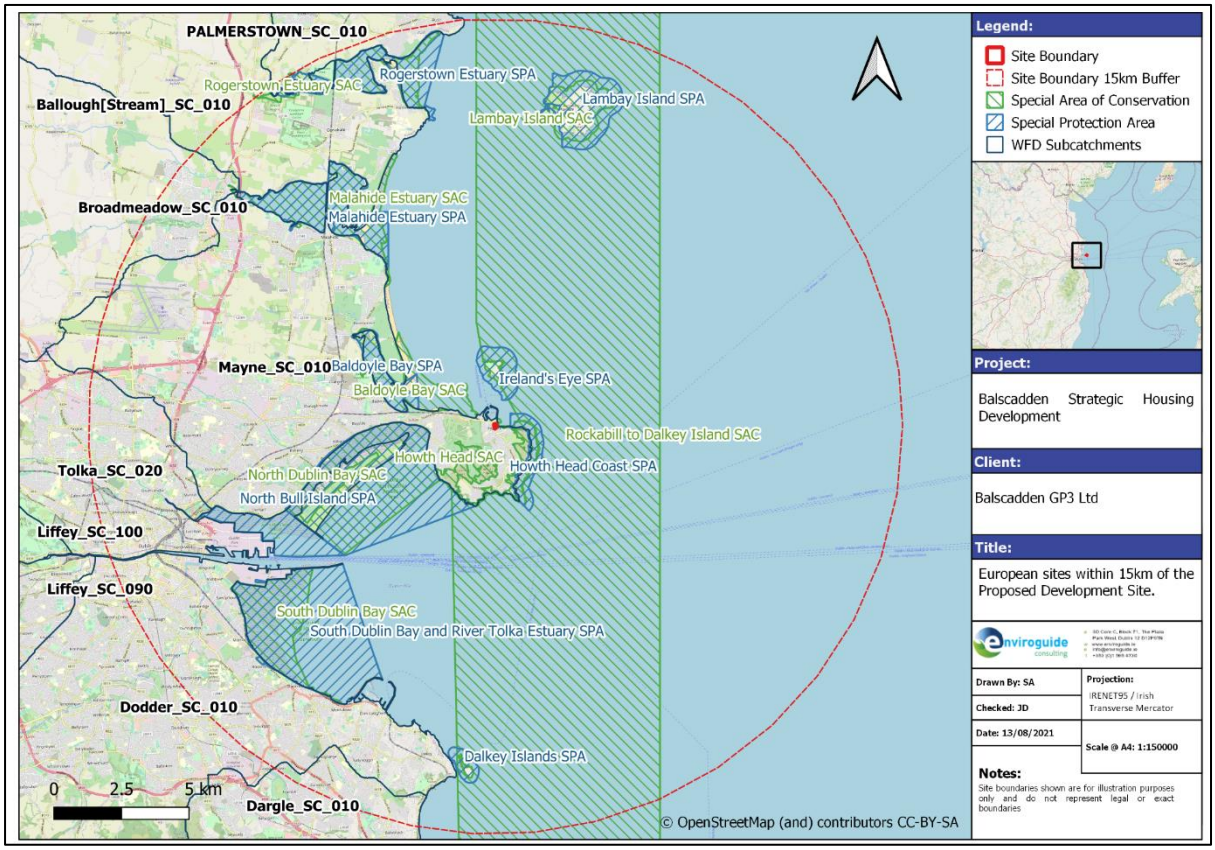


Figure 7-7: European Sites within 15km of the Proposed Development Site

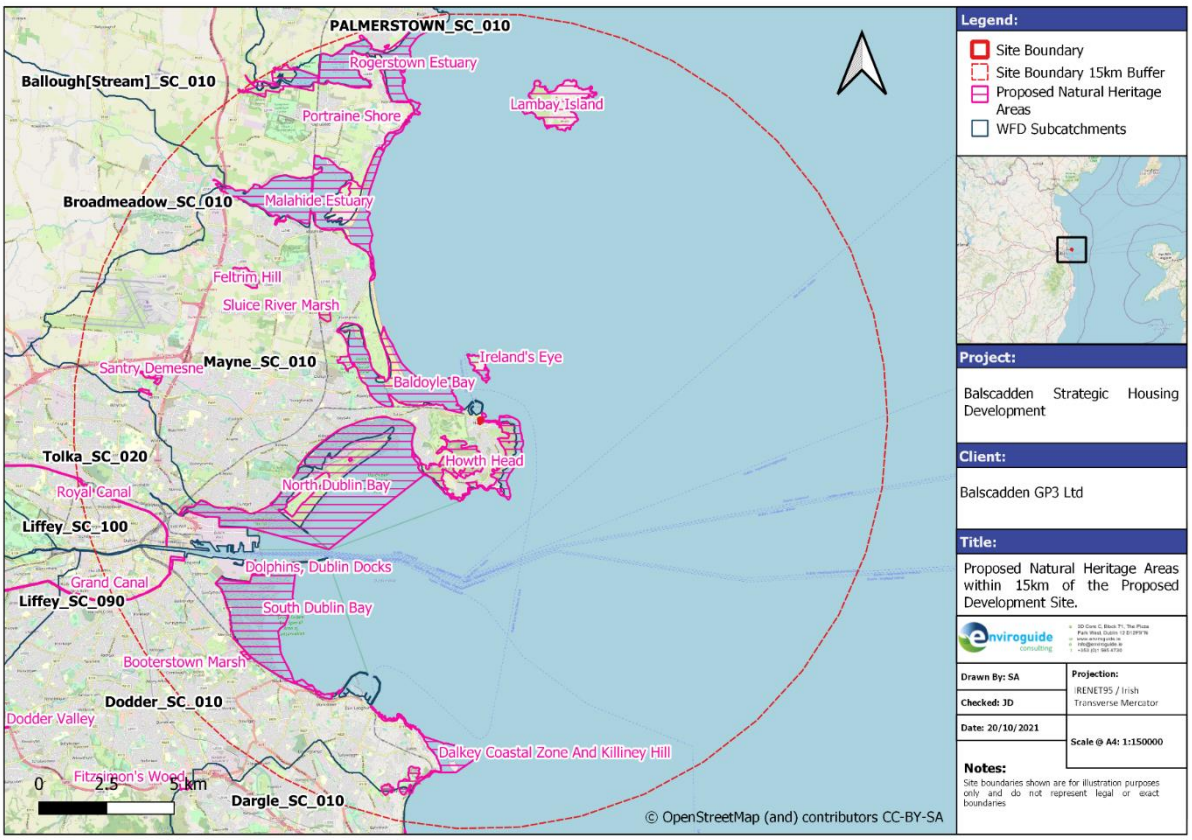


Figure 7-8: Proposed Natural Heritage Areas within 15km of the Proposed Development Site.

7.3.14 Importance and Sensitivity of the Receiving Environment

Surface water at the Site currently either infiltrates the ground or migrates offsite as overland flows. Surface water flows overland discharge onto the adjacent roads and into the existing public drainage network discharging via gullies to the mains sewers and discharging to Howth Harbour and via road gullies on Balscadden Road to Balscadden Bay. As outlined in Section 7.3.5.4 groundwater flow direction beneath the Site is to the north and east discharging to the Sea at Howth harbour and also via springs to Balscadden Bay. Groundwater flow also potentially provides baseflow to Gray's Brook.

In accordance with the criteria outlined in Table 7-1 and taking account of the hydrogeological setting of the Site, the attributes are considered to be of Low to Moderate importance based on the classification of the bedrock aquifers beneath the Site as Locally Important and Poor. It is also noted that the GSI vulnerability rating for the Site is High to Extreme /Rock however, based on site specific data vulnerability is likely to be moderate or low' (MEL, 2022).

The receiving water bodies have been assigned a WFD Status of 'good' for groundwater, and 'good' for coastal water however, the surface water bodies in the vicinity of the Site are 'unassigned'. There are also a number of designated and protected sites within the receiving coastal waterbodies including Howth Head Coastal SPA, Rockabill to Dalkey Island SAC, Baldoyle Bay SAC and SPA and Ireland's Eye SPA. Therefore, receiving water bodies associated with the Site are considered to be sensitive receptors.

7.4 Characteristics of the Proposed Development

7.4.1 General Description

The proposed development relates to lands located to the south of the Martello Tower on Balscadden Road & the former Baily Court Hotel, Main Street, Howth, County Dublin. The development will consist of the demolition of existing structures on the proposed site including the disused sports building and the former Baily Court Hotel buildings and the construction of a residential development set out in 4 no. residential blocks, ranging in height from 2 to 5 storeys to accommodate 180 no. apartments with associated internal residential tenant amenity and external courtyards and roof terraces, 1 no. retail unit and 2 no. café/retail units. The site will accommodate car parking spaces at basement level and bicycle parking spaces at basement and surface level. Landscaping will include new linear plaza which will create a new pedestrian link between Main St and Balscadden Rd to include the creation of an additional 2 no. new public plazas and also maintains and upgrades the pedestrian link from Abbey Street to Balscadden Road below the Martello Tower. This is set out as follows:

- The 4 no. residential buildings range in height from 2 storeys to 5 storeys, accommodating 180 no. apartments comprising 4 no. studios, 62 no. 1 bed units, 89 no. 2 bed units and 25 no. 3 bed units. The breakdown of residential accommodation is as follows:
    - Block A is a 3 storey building, including balconies, accommodating 2 no. units;
    - Block B is a 2 to 5 storey building, including setbacks, balconies, and external roof terraces at 3rd and 4th floors accommodating 126 no. units;
    - Block C is a 3 to 5 storey building, including setbacks and balconies, accommodating 43 no. units;
    - Block D is a 3 storey building, including balconies, accommodating 9 no. units;
    - Residential Tenant Amenity Space is provided in Blocks B and C, totalling c.427.1 sq.m and Communal External Amenity Space is provided at throughout the scheme including at roof level on Block B, totalling c.4,108 sq.m.
- Non-residential uses retail unit of c. 106.4 sq.m in Block A at ground level, café/retail unit of c.142.7 sq.m in Block C at ground and first floor, café/retail unit of c. 187.7 sq.m in Block D resulting in a total of c. 436.8 sq.m of non-residential other uses.
- The development will include a single level basement under Block B, containing 139 car spaces including 7 accessible spaces, plant, storage areas, waste storage areas and other associated facilities. A total of 410 cycle parking spaces are provided for at both basement and ground level, comprising 319 resident spaces and 91 visitor spaces.
- The scheme provides for a new linear plaza which will create a new pedestrian link between Main St and Balscadden Rd to include the creation of an additional 2 no. new public plazas and also maintains and upgrades the existing pedestrian link from Abbey Street to Balscadden Road below the Martello Tower.
- All other ancillary site development works to facilitate construction and the provision of the basement car park, site services, piped infrastructure, a sub-station, public lighting,

plant, signage, bin stores, bike stores, boundary treatments and hard and soft landscaping.

- It is proposed to reduce the ground levels on the site from c. 34.5m OD to c. 19.975m OD locally under Block C. A single storey basement is proposed under Block B with the existing ground level reduced from c.20m OD to c.17.1m OD. occurring at formation level.

7.4.2 Construction Phase

The Construction Proposed Development will require:

- Bulk excavation to reduce levels from approximately 34.5m OD to 19.975mOD locally under Block C and to 17.1m OD under Block B will require excavation of 67,000m3 of soil including and made ground.
- A single storey basement is proposed under Block B.
- construction of surface water drainage including an attenuation tank with invert level of 17.38mOD at the west of the Site (Waterman Moylan, 2022; Drg No P028)
- Water for the Proposed Development will via a new connection to the existing watermain in Main Street adjacent to the proposed site entrance. Irish Water confirmed that connection is feasible without infrastructure upgrades (Waterman Moylan, 2022)
- It is proposed to discharge wastewater from the site by gravity to the existing foul water sewer in Main Street.
- A new foul water drainage system will be constructed at the Proposed Development Site with connection to the existing 300mm sewer on Abbey St with approximately 100m network extension required (ie. to upgrade the existing 225mm sewer in Main St that connects to the 300mm sewer in Abbey St.)
- Drainage from the basement will drain to the foul drainage by gravity to the outfall to the existing 300mm diameter foul manhole on Abbey Street (Waterman Moylan, 2022; Drg No P028).
- Foul water from Proposed Development will ultimately be discharged to Ringsend Wastewater Treatment Plane (WwTP) where treated effluent is discharge to Dublin Bay.

Two secant piled walls are planned as part of the Proposed Development. One is located on the southern boundary of the site with the second located along a short section of the western boundary.

It is proposed that the male and female piles on the southern piled wall will extend to 17mOD and 23.5mOD, respectively. It is proposed that the male and female piles on the western piled wall will extend 11.5mOD and 16mOD, respectively.

An 850mm RC raft slab will be constructed with an SSL of 17.5mOD under a portion of the Proposed Development including Block B.

7.4.3 Operational Phase - Proposed Foul and Surface Water Networks

The following is extracted from the Engineering Assessment Report (Waterman Moylan, 2022), included in Appendix F.

Foul water from the Proposed Development will Capacity within the existing foul sewer network has been confirmed by Irish Water in the Confirmation of Feasibility letter for the proposal on 3 August 2021 and a Statement of Design Acceptance on 14 February 2022 (Refer to Appendix A and Appendix B of the Engineering Assessment Report; Waterman Moylan,2022). Foul water from the Proposed Development will ultimately be treated at Ringsend WwTP and discharged to Dublin Bay. All below ground foul sewers will be constructed in accordance with current Irish Water requirements and all drains will be laid in compliance with current Building Regulations and the recommendations contained in the Technical Guidance Document H.

It is proposed to discharge surface water from the site by gravity to the existing surface water sewer in Main Street.

The Proposed Development will be designed to incorporate best drainage practice. Surface water discharging to the public network will be restricted to the greenfield equivalent runoff rate via a Hydrobrake or similar approved flow control device. The surface water network will be designed to accommodate the 1-in-5 year storm, with attenuation storage provided for the 1-in-100 year storm.

Surface water will pass through a Class 1 a by-pass petrol interceptor prior to discharge to the mains surface water sewer (Waterman Moylan, 2021 Drg No. P024)

It is proposed to incorporate a Storm Water Management Plan through the use of various SuDS techniques to treat and minimise surface water runoff from the site. The methodology involved in developing a Storm Water Management Plan for the subject site is based on recommendations set out in the Greater Dublin Strategic Drainage Study (GDSDS) and in the SuDS Manual (Ciria C753).

7.5 Potential Impact of the Proposed Development

7.5.1 Construction Phase

Hydrogeological Flow Regime

Surface water currently discharges from the Site to adjoining roads and mains sewers or infiltrates to ground through the unpaved areas of the Site. There may be a temporary increase in unpaved areas during demolition and groundworks phases however with some compaction of soil and there will overall be an increase in hardstand areas (buildings, paved surfaces) introduced to the Site during construction of the Proposed Development. This could impact on the recharge potential within a localised area of the aquifer. Taking account of the urban setting of the Site, the presence of clayey strata in the overburden and limited capacity of the bedrock aquifer to accept recharge there will be no overall impact groundwater recharge within the bedrock aquifer at the Site.

There will be no impact on the groundwater flow regime associated with the construction of the proposed development including installation of the piled walls and the basement and other subsurface structures based on the results of the Hydrogeological Assessment prepared by

MEL (2022). The MEL conceptual hydrogeological cross section of the site including groundwater levels and the depth of the proposed piled walls is presented in Figure 7-5.

Based on the available data, there will be no requirement for large-scale dewatering of groundwater or other abstractions required for the construction of the Proposed Development and only localised management of surface runoff and localised perched groundwater may be required.

The male piles of the southern piled wall and the proposed formation level for the basement (male pile toe level and basement are approximately 17mOD) do not intersect the groundwater table (14.91mOD (BH3) in the southwest to 7.63mOD (BH1) in the north of the Site) and therefore there will be no impact on groundwater flows during construction or post construction. The male piles of the western pile wall with a base level of 11.50mOD may intersect the groundwater table however, base of the female piles (16mOD) will provide 'gap and facilitate flow. As identified in the MEL report the inferred groundwater flow direction in that area of the Site is closer to parallel to the wall further reducing the likelihood of any barrier effect of the pile wall to groundwater flow.

There will be no impact on the hydrology or surface water flow regime within receiving surface water bodies.

There will be no abstraction of water for use during works (i.e. dust suppression, welfare facilities). Water supply will be from mains supply in accordance with a connection agreement from Irish Water and therefore there will be no impact on water resources.

Overall, it is considered that any impact on the hydrogeological regime of the locally important aquifer is unavoidable however will be 'negative', 'imperceptible', 'temporary' ('long-term' during post construction/operational phase) within a very localised zone of the aquifer only and there will be no impact on the flow regime of receiving water bodies.

Water Quality

Potential sources of contamination that could impact on water quality will depend on the construction activities required for the Proposed Development based on the design of the Proposed Development and knowledge of construction activities on similar projects. These potential sources include:

- Groundworks including bulk excavation of soil and if required bedrock will be necessary for construction of the basement and other subsurface infrastructure including drainage. The handling, stockpiling, reprofiling and removal offsite of soils could result in generation of excessive suspended solids in surface water runoff.
- Runoff from the Site during earthworks could result in suspended solids entrained in runoff migrating offsite to surface water drains or water bodies via the pathways of surface water drainage gullies on Main Street/Abbey Street and Balscadden Road to the receiving water bodies at Balscadden Bay and Howth Harbour and associated receptors
- Discharge of water that may potentially be contaminated from works areas to groundwater or surface water courses via road gullies and associated receiving water bodies (Gray's Brook, Howth Harbour and Balscadden Bay).

- Storage and use of fuel, oils and chemicals used during construction that are classified as hazardous. If the accidental release of hazardous material including fuels, chemicals and materials being used on-site, through the failure of secondary containment or a materials handling accident, were to occur over open ground then these materials could infiltrate to the underlying groundwater or migrate via surface water runoff to offsite water courses.
- Imported materials including fill materials that are not of the appropriate quality could result in leaching or runoff of contaminants to the water environment.
- Export of waste materials from the Site to unauthorised facilities could result in an impact on water quality at the receiving / destination site.
- Discharges or leaks from welfare facilities could introduce contaminants to the water environment.
- Wheel washing discharges that could be contaminated with hydrocarbons, brake dust, metals, road salt, cleaning agents and other traffic residue.
- Leaks and spills of substances during storage, transport, use and/or disposal. The introduction of drilling fluids through piling (foundation type to be confirmed).
- Piling could introduce a preferential conduit (pathway) for surface contaminants on Site or result in the release of contamination from drilling fluids to the subsurface.
- Release of wash water from the wheel-wash could result in localised introduction of contaminants including hydrocarbons and suspended solids to the receiving water environment. The
- Release of foul water during connection to live sewers. Due to the temporary and phased nature of the Construction Phase the potential impact from an accidental spillage is limited.
- Construction works could impact on the integrity of the Howth Tunnel Sewer that would result in the potential release of contaminants to ground and receiving waters.

The key pathways and pollutant linkages are:

- Infiltration of surface contaminants to ground and groundwater and offsite migration to:
    - Groundwater
    - Surface water (Gray's Brook)
    - Coastal water (Balscadden Bay and Howth Harbour)
- Surface water runoff to road gullies and sewers and migration to:
    - Howth Harbour via road gullies to sewer on Main Street/Abbey Street
    - Balscadden Bay via road gullies and drains to Balscadden Bay

- Foul water discharge to mains sewer and discharge via Ringsend WwTP to Dublin Bay.
- Impact on the integrity of the Howth Sewer Tunnel and release of foul water to ground and receiving water bodies (groundwater, surface water and coastal as listed above).

The potential risk to the receiving water is considered in the absence of standard and appropriate construction management and mitigation measures.

The release of suspended solids entrained in surface runoff directly from the Site or from haul routes to/from Site could enter the receiving water could potentially result in a 'negative', 'significant' 'short-term' impact on receiving water quality.

There is a potential risk associated with the cementitious materials used during construction works including piling, basement and attenuation tank construction, foul water drainage, surface water discharge drainage, permeable pavements and other structures impacting on the underlying groundwater at the Site which may result in a 'negative', 'significant' and 'medium-term' impact on the receiving water environment at the Proposed Development.

All surplus materials and waste that will require removal offsite will be removed in accordance with the requirements and recommendations outlined in the Outline Construction and Demolition Waste Management Plan (referred to hereafter as CDWMP) (Waterman Moylan, 2022c) and managed in accordance with all statutory obligations including where appropriate re-use as by-product in accordance with Article 27 of the European Communities (Waste Directive) Regulations 2011 (SI No. 126 of 2011) as amended (referred to hereafter as Article 27). In the unlikely event that surplus soil or other waste materials are directed to an unauthorised location there is potential to impact on the receiving hydrogeology at that location. Soil at the Site is not considered to be contaminated (EIAR Chapter 6) however, other waste materials will require removal from the Site. In the event of such a scenario it is considered that this could result in a 'negative', 'moderate' and 'medium-term' impact on the hydrogeology at any receiving unauthorised locations. Appropriate controls will be in place to prevent this unlikely scenario.

Byrne Looby (2022) carried out an assessment on the impact of the development to the underlying Howth Sewer Tunnel that concluded there will only be a limited increase in stress at the location of the development that is considered acceptable. It is therefore considered there will be no impact on the integrity of the sewer and no associated potential impact on receiving water quality associated with the Proposed Development

There is a potential risk for the mobilisation or introduction of contaminants (i.e. grout, drilling fluids) during piling works whereby a preferential conduit for contaminants to migrate downwards to groundwater could be introduced with potential for migration off-site. It is considered that there could be a 'negative', 'moderate' and 'medium term' impact on the existing groundwater quality and receiving surface water.

The release of foul water during connection to the live sewers could result in a release of contaminants to ground or as overland runoff. Due to the temporary and phased nature of the Construction Phase the potential impact from an accidental spillage is considered to be 'negative', 'moderate' and 'short-term.'

In the event of a worst-case scenario such as a fuel spill or release of other hazardous compounds occurring it is considered that this could result in a 'negative', 'significant', 'long-

term' impact on the quality of the receiving water course depending on the nature of the incident.

7.5.2 Operational Phase

Hydrogeological Flow Regime

The potential impacts on groundwater flow regime associated with the Proposed Development including the increased hardstand cover, the basement and piled walls are the same for the Construction Phase and Operational Phases and have been assessed and detailed in Section 7.5.

There will be an unavoidable 'negative', 'imperceptible', 'long-term' within a very localised zone of the aquifer only and there will be no impact on the flow regime of receiving water bodies.

Drainage and Flood Risk

As outlined in the Flood Risk Assessment and Engineering Assessment reports prepared by Waterman Moylan (2022a, 2022b) for the Proposed Development Both internal and external flooding have been assessed in the Flood Risk Assessment prepared for the Proposed Development. The Flood Risk Assessment has been carried out in accordance with the DEHLG/OPW Guidelines on the Planning Process and Flood Risk Management published in November 2009. The assessment identifies the risk of both internal and external flooding at the site from various sources and sets out mitigation measures against the potential risks of flooding. The sources of possible flooding assessed in the report include coastal, fluvial, pluvial (direct heavy rain), groundwater and human/mechanical errors.

As a result of the flood risk management and mitigation measures proposed and taking account of climate change, the residual risk of internal or external flooding for the 30-year and 100-year flood events is low (Waterman Moylan, 2022a). Accordingly taking account of the design proposals the potential impact of flooding associated with the Proposed Development result in an overall 'neutral', 'imperceptible' 'long-term' on the Proposed Development and elsewhere.

Water Quality

There will be no risk to water quality including groundwater and surface water associated with the Operational Phase of the Proposed Development. It is considered that the design of the Proposed Development is in line with the objectives of the Water Framework Directive (2000/60/EC) to prevent or limit any potential impact on water quality.

There will be no significant sources of contamination at the Site during the operational phases taking account of the following embedded design considerations:

- There will be no bulk storage of petroleum hydrocarbon-based fuels used during the Operational Phase, thereby removing any potential contaminant sources associated with fuels.
- There will be no discharges to ground from drainage and only rainfall on public open spaces and landscape areas will infiltrate to ground.

- All surface water drainage from paved areas along roads and impermeable roads will be collected and managed within the surface water drainage and SuDS solutions as outlined in the Engineering Report (Waterman Moylan, 2022).

The key pathways and pollutant linkages are:

- Infiltration of surface contaminants to ground and groundwater and offsite migration to:
    - Groundwater aquifer and offsite
    - Surface water (Gray's Brook)
    - Coastal water (Balscadden Bay and Howth Harbour)
- Surface water runoff to road gullies and sewers and migration to:
    - Howth Harbour via road gullies to sewer on Main Street/Abbey Street
    - Balscadden Bay via road gullies and drains to Balscadden Bay
- Foul water discharge to mains sewer and discharge via Ringsend WwTP to Dublin Bay.
- Impact on the integrity of the Howth Sewer Tunnel and release of foul water to ground and receiving water bodies (groundwater, surface water and coastal as listed above).

The potential risk to the receiving water is considered in the absence of standard and appropriate construction management and mitigation measures.

The surface water management strategy includes a number of measures that will capture any potentially contaminating compounds (petroleum hydrocarbons, metals, and suspended sediments) in surface water runoff from roads and the impermeable areas that could potentially otherwise discharge to groundwater or the water courses within the Site and adjoining.

The measures incorporated in the SuDS design include filter drains, swales, bio-retention, storage pond and by-pass interceptors filter drains within the drainage and SuDS system. The filter drains, swales and bio-retention areas will be effective in treating and removal of any contaminants (metals, polycyclic aromatic hydrocarbons (PAHs) and suspended solids) entrained in surface water runoff, the effectiveness of these SuDS measures is documented in TII guidance (TII,2014) and the SuDS Manual (C753). The Proposed Development also includes Class 1 a by-pass petrol interceptor prior to discharge to the mains surface water sewer in Main Street that will be effective in removal of hydrocarbons that may enter the drainage system in particular in the event of worst-case scenario spill incident (e.g. collision on the roadway resulting in the loss of fuel form a vehicle).

Drainage from the basement which contains carparking and is considered the highest risk area, will be collected and discharged to the foul sewer.

Accordingly, any potential impact on receiving surface water and groundwater beneath the Proposed Development Site will be avoided taking account of the design proposals. Therefore, it is considered that the water quality protection criteria and objectives of the GDSDS and Water Framework Directive will be achieved.

Byrne Looby (2022) carried out an assessment on the impact of the development to the underlying Howth Sewer Tunnel that concluded there will only be a limited increase in stress at the location of the development that is considered acceptable. It is therefore considered there will be no impact on the integrity of the sewer and no associated potential impact on receive water quality associated with the Proposed Development.

All foul water will be directed to mains sewer in accordance with agreement from Irish Water and Confirmation of Feasibility for the connection has been received from Irish Water. As specified in the Engineering Assessment Report (Waterman Moylan, 2022b) all below ground foul sewers will be constructed in accordance with current Irish Water requirements and all drains will be laid in compliance with current Building Regulations and the recommendations contained in the Technical Guidance Document H. Therefore, any potential contaminant sources associated with drainage including foul sewers will be eliminated.

Overall, the foul and surface water drainage incorporating the SuDS proposals for the Proposed Development will result in an overall 'neutral', 'imperceptible' 'long-term' impact on receiving surface water quality and groundwater quality and associated receptors compared to the baseline conditions.

7.5.3 Potential Cumulative Impacts

7.5.3.1 Existing planning permissions

A search of planning applications located within c.150m of the Site of the Proposed Development was conducted using online planning resources such as the National Planning Application Database (NPAD) (MyPlan.ie) and Fingal Co. Co.'s Planning Application Map. In addition, a search for any large-scale residential developments on the Howth Peninsula was carried out. Any planning applications listed as granted or decision pending from within the last five years were assessed for their potential to act in-combination with the Proposed Development and cause likely significant effects on the relevant European Sites. Long-term developments granted outside of this time period were also considered where applicable.

It is noted that the majority of developments within the vicinity of the Site of the Proposed Development are applications granted more than 5 years ago and that have since been completed. The larger, more recent applications are detailed below:

F18A/0023, located approximately 100m north of the Proposed Development Site: (1) Demolition of existing family dwelling (7 East Pier) and its replacement with 12 guestrooms and storage areas in a 2.5 storey building (2) Reconfiguration of the roof to the existing guesthouse (3) Reconfiguration of the existing internal layout of stairs, kitchens and stores including the installation of a lift (4) Addition of storage areas at first floor behind the restaurant (5) Addition of an extra guestroom on the flat roof above the restaurant and (6) All associated site works. (Decision: Grant Permission. Decision Date: 19/06/2018)

F19A/0405, located approximately 150m east of the Proposed Development Site: Development will consist of 1) Demolition of existing 3 storey dwelling house. 2) Construction of a new 3 storey over basement apartment development consisting of 8 no. 2 bedroom apartments. 3) New vehicular entrance, roads, footpaths, landscaping, services consisting of storm and foul water disposal, mains water supply and all associated site works. (Decision: Grant Permission. Decision date: 04/03/2020. Appeal Decision: Grant Permission. Appeal Decision Date: 26/03/2021)

SHD/009/19, located approximately 750m west of the Proposed Development Site: Demolition of all structures on site (c8,162sq.m. GFA) and excavation of a basement. The proposed development comprises of the provision of a mixed-use development of residential/retail/restaurant/cafe uses and a creche in 4 no. blocks (A to D), over part basement Blocks A, B, C and D with a height up to a maximum of seven storeys of apartments over lower ground floor and basement car parking levels (a total of eight storeys over basement level). The residential component will consist of 512 no. residential units. (Decision: Grant Permission. Decision date: 03/04/2020)

SHD/009/20, located approximately 1050m west of the Proposed Development Site: The development will consist of 162 no. residential units distributed across 3 no. blocks (A, B & C) ranging in height from 5-6 storeys, with a cumulative gross floor area (GFA) of 13,337.10 sq.m. (Decision: Grant Permission. Decision date: 21/09/2021).

7.5.3.2 Potential Impacts

Capacity within the existing foul sewer network has been confirmed by Irish Water (Waterman Moylan, 2022). The foul water from the Proposed Development will ultimately be treated at Ringsend WwTP that operates under existing statutory consents. Furthermore, Irish Water have completed the first phase of upgrade works to Ringsend WwTP in December 2021, which increased the capacity of the facility by 400,000 P.E. These works, together with the further works will ultimately increase the capacity of the facility from 1.6 million PE to 2.4 million PE. This plant upgrade will result in an overall reduction in the final effluent discharge loading to the receiving waters.

As Irish Water have confirmed that there is capacity within the foul network (refer to Irish Water, 2022 Certificate of Feasibility as Appendix A in Waterman Moylan, 2022b) to accept foul water from the Proposed Development, there are no anticipated cumulative impacts on the receiving water environment associated with the Proposed Development due to discharges from Ringsend WwTP.

The Proposed Development will be connected to the existing mains water supply subject to agreement from Irish Water who issued a Confirmation of Feasibility for the connection on 3 August 2021 (reference number CDS21002487 – included as Appendix A of the Engineering Assessment; Report Waterman Moylan, 2022b). The mains water supply is operated in accordance with relevant existing statutory consents therefore there will be no cumulative impacts associated with the Proposed Development on water resources.

The transport of material to and from the Site if not appropriately managed could result in sediment and debris being tracked offsite on trucks and other site vehicles from the Proposed Development and other development sites in the area. There is a possibility of impact for water courses at offsite locations in the immediate vicinity of the Site (i.e. Balscadden Bay and Howth Harbour) due to sediment that may be entrained in road runoff.

There are no other cumulative impacts associated with the construction phase of the Proposed Development.

7.5.4 "Do Nothing" Impact

In the 'Do Nothing' scenario it is considered that the Proposed Development did not proceed and the potential impact on the receiving hydrological and hydrogeological environment is considered.

If the Proposed Development did not proceed the Proposed Development Site would remain as a derelict brownfield Site and there would be no change to the hydrological and hydrogeological regime at the Proposed Development Site. While there has been no evidence of soil or ground contamination reported for the Site, as with any brownfield Site the potential presence of unidentified contaminants that would be managed should the Proposed Development proceed, would remain at the Site.

7.6 Avoidance, Remedial & Mitigation Measures

These avoidance, remedial and mitigation measures, will ensure that there will be no significant impact on the receiving groundwater and surface water environment. Hence, the Proposed Development will not have any impact on compliance with the EU Water Framework Directive, European Communities (Environmental Objectives) Surface Water Regulations, 2009 (SI 272 of 2009, as amended 2012 (SI No 327 of 2012), and the European Communities Environmental Objectives (Groundwater) Regulations, 2010 (S.I. No. 9 of 2010), as amended 2012 (SI 149 of 2012) and 2016 (S.I. No. 366 of 2016).

7.6.1 Construction Phase

A Construction Management Plan, Traffic Management Plan and Waste Management Plan will be implemented by the contractor to ensure, site-specific procedures and mitigation measures to monitor and control environmental impacts throughout the Construction Phase of the project and ensure that construction activities do not adversely impact the environment. An Outline Construction Environmental Management Plan has been prepared for the Proposed Development (Enviroguide Consulting, 2022).

The construction works will be managed with consideration of applicable regulations and standard 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;
- EPA (2004) IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities;
- CIRIA 697, The SUDS Manual, 2007;
- UK Pollution Prevention Guidelines (PPG) UK Environment Agency, 2004;
- Construction Industry Research and Information Association CIRIA C648: Control of water pollution from linear construction projects: Technical guidance (Murnane et al. 2006);
- CIRIA C648: Control of water pollution from linear construction projects: Site guide (Murnane et al. 2006); and
- Inland Fisheries Ireland (2016). Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters

Monitoring of Groundwater

As outlined in the MEL report, additional groundwater level monitoring is required to identify temporal variability in groundwater levels. This will carried out as part of the detailed geotechnical design prior to construction.

Control and Management of Water

There will be no discharges to groundwater or surface water during the Construction Phase. Water runoff to adjoining roads will not be permitted.

There will be no requirement for groundwater dewatering during construction of the basement and management of water will include control of surface water runoff and pumping of water from excavations.

Where necessary the water will be treated onsite to remove sediment or other potentially contaminating compounds. The treated water will be tankered offsite or discharged to sewer only under licence from Irish Water or Fingal Co. Co. as appropriate.

During earthworks there is the potential for suspended solids entrained in runoff to enter the gullies on the adjoining roads. Straw bales or silt fences will be appropriately located around earthworks areas as appropriate to manage runoff in particular these measures will be incorporated along the site boundary with Balscadden Road. A buffer zone of 10m will be maintained round the Site boundary in particular adjoining Balscadden Road. The Contractor is to ensure that no contaminated water/liquids leave the Proposed Development Site (as surface water and surface water run-off or otherwise), enter the local drainage system or direct discharge drainage ditches or water courses or springs

A regular review of weather forecasts of heavy rainfall will be conducted, and a contingency plan will be prepared for before and after such events to minimise any potential nuisances. As the risk of the break-out of silt laden run-off is higher during these weather conditions, no work will be carried out during such periods where possible.

Any erosion control measures (i.e. silt-traps, silt-fencing and swales) will be regularly maintained during the Construction Phase.

Where water must be pumped from the excavations, water will be managed through robust methodologies in accordance with best practice standards (CIRIA – C750) and regulatory consents.

Temporary hydrocarbon interceptor facilities will be installed and maintained where Site Works involve the discharge of drainage waters to nearby drains.

A monitoring programme will be implemented to ensure that water quality criteria set out in the discharge licence are achieved prior to discharging to the sewer. The monitoring programme will be designed by an appropriately qualified Environmental Consultant.

Groundwater level monitoring prior to construction as part of the detailed design stage is recommended.

Howth Sewer Tunnel

A Build-Over Agreement will be required for the Howth Sewer Tunnel diameter concrete wastewater sewer. Early engagement to proceed with such an agreement is recommended to

ensure that any requirements of the agreement are incorporated in the CEMP to be prepared by the contractor.

Control and Management of Soil and Bedrock

Prior to excavation, a detailed review of the final cut and fill model will be carried out to confirm cut and fill volumes. As outlined in Chapter 6 of this EIAR, soil samples taken from the site during the site investigations showed no evidence of contamination. In the event that contaminated soils are encountered during the works will be managed in accordance with relevant guidelines including EPA 'Guidance on the Management of Contaminated Land and Groundwater at EPA Licensed Sites' (EPA, 2013). Potentially contaminated soil to be excavated and removed and disposed of off-site in accordance with the Waste Management Acts, 1996-2021, and associated regulations and guidance.

Any surplus soil not suitable for re-use as a by-product and other waste materials arising from the Construction Phase will be removed offsite by an authorised contractor and sent to the appropriately authorised (licensed/permitted) receiving waste facilities.

Management of Stockpiles

Stockpiled soil and stone materials pending removal offsite or reuse onsite will be located in in designated areas only and there will be no storage of materials within 10m of any boundary and drains. Where necessary, stockpiles will be surrounded with silt fencing to filter out any suspended solids from surface water arising from these materials (refer to Control and Management of Water above).

Segregation and storage of wastes generated during works will be segregated and temporarily stored on-site in accordance with the OCEMP (Enviroguide, 2022).

While waste classification and acceptance at a waste facility is pending, excavated soil for recovery/disposal will be stockpiled as follows:

- A suitable temporary storage area will be identified and designated;
- All stockpiles will be assigned a stockpile number;
- Soil waste categories will be individually segregated; and all segregation, storage & stockpiling locations will be clearly delineated on the Site drawings;
- Erroneous pieces of concrete will be screened from the stockpiled soils and segregated separately;
- Non-hazardous and hazardous soil (if required to be stockpiled) will be stockpiled only on hard-standing or high-grade polythene sheeting to prevent cross-contamination of the soil below; and
- Soil stockpiles will be sealed to prevent run-off of rainwater and leaching of potential contaminants from the stockpiled material generation and/or the generation of dust.

Waste will be stored on-site, including concrete, asphalt and soil stockpiles, in such a manner as to:

- Prevent environmental pollution (bunded and/or covered storage, minimise noise generation and implement dust/odour control measures, as may be required);

- Maximise waste segregation to minimise potential cross contamination of waste streams and facilitate subsequent re-use, recycling and recovery; and
- Prevent hazards to site workers and the general public during construction phase (largely noise, vibration and dust).

Concrete Works

The use of cementitious grout used during the construction of the basement and other infrastructure will avoid any contamination of ground through the use of appropriate design and methods implemented by the Contractor and in accordance with industry standards.

All ready-mixed concrete will be delivered to the Proposed Development Site by truck. Concrete mixer trucks will not be permitted to wash out onsite with the exception of cleaning the chute into a container which will then be emptied into a skip for appropriate compliant removal offsite.

There is no requirement for wet concrete works.

Piling Methodology

The proposed piling methodology will minimise the potential for introduction of any temporary conduit between surface and potential sources of contamination at the ground surface and underlying groundwater. Details of the construction sequence and specification for the pile walls and basements are provided in the Geotechnical Report (Byrne Looby, 2022) however, construction method will be determined by the appointed specialist piling contractor. The piling method will include procedures to ensure any potential impact to water quality is prevented including preventing surface runoff or other piling/drilling fluids from entering the pile bores. Where there is a requirement to use lubricants, drilling fluids or additives the contractor will be required to use water-based, biodegradable and non-hazardous compounds.

Boreholes

Existing monitoring boreholes that are no longer required at the Site will be decommissioned in accordance with the specifications outlined in EPA Advice Noted 14 (EPA, 2013). This will remove any potential direct conduit for contaminants to enter the groundwater directly.

Importation of Soil and Aggregates

Contract and procurement procedures will ensure that all aggregates and fill material required are sourced from reputable suppliers operating in a sustainable manner and in accordance with industry conformity and compliance standards and statutory obligations.

The importation of aggregates will be subject to management and control procedures which will include testing and assessment of the suitability for use in accordance with engineering and environmental specifications for the Proposed Development including the suitability of material that may be imported in accordance with an Article 27 By-Product Notification. Therefore, any unsuitable material will be identified and avoided prior to importation to the Site.

Handling of Fuels and Hazardous Materials:

Fuel, oils and chemicals used during construction are classified as hazardous.

Storage of fuel hazardous will be undertaken with a view to protecting any essential services (electricity, water etc.) and the receiving land, soil and geology environment.

Bulk quantities of fuel will not be stored at the Site.

Storage areas for any fuel, oils and chemicals will be bunded and clearly marked. Fuel will only be stored in the quantities required for emergency use and re-fuelling. 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 moved on spill pallets. Drums will be loaded and unloaded by competent and trained personnel using appropriate equipment.

Oils and chemicals used and stored on-site will be sealed, secured and stored in a dedicated internally bunded chemical storage cabinet unit or inside concrete bunded areas to prevent any seepage to ground. There will be clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage.

- Bunds will have regard to Environmental Protection Agency guidelines 'Storage and Transfer of Materials for Scheduled Activities' (EPA, 2004) and Enterprise Ireland. Best Practice Guide BPGCS005. Oil Storage Guidelines. All tank and drum storage areas will, as a minimum, be bunded to a volume not less than the greater of the following:
    - 110% of the capacity of the largest tank or drum within the bunded area; or
    - 25% of the total volume of substance that could be stored within the bunded area.
- Vehicle or equipment maintenance work will take place in a designated impermeable area within the Site;
- Emergency response procedures will be put in place, in the unlikely event of spillages of fuels or lubricants;
- Spill kits including oil absorbent material will be provided so that any spillage of fuels, lubricants or hydraulic oils will be immediately contained;
- In the event of a leak or spill from equipment in the instance of a mechanical breakdown during operation, any contaminated soil will be removed from the Site and compliantly disposed off-site. Residual soil will be tested to validate that all potentially contaminated material has been removed. This procedure will be undertaken in accordance with industry best practice procedures and EPA guidelines;
- Site staff will be familiar with emergency procedures for in the event of accidental fuel spillages; and
- All staff on-site will be fully trained on the use of equipment to be used on-site.
- Portable generators or similar fuel containing equipment will also be placed on suitable drip trays or bunds.

Refuelling of plant and vehicles during the Construction Phase will only be permitted at designated refuelling station locations onsite and will be from a road tanker brought to site as required. Each station will be fully contained and equipped for spill response and a specially trained and dedicated Environmental and Emergency Spill Response team will be appointed by the Contractor before the commencement of works onsite.

A procedure will be drawn up by the contractor which will be adhered to during refuelling of on-site vehicles. This will include the following:

- Fuel will be delivered to plant on-site by dedicated tanker;
- All deliveries to on-site vehicles will be supervised and records will be kept of delivery dates and volumes;
- The driver will be issued with, and will carry at all times, absorbent sheets and granules to collect any spillages that may accidentally occur;
- Where the nozzle of a fuel pump cannot be placed into the tank of a machine then a funnel will be used; and
- All re-fuelling will take place in a designated impermeable area. In addition, oil absorbent materials will be kept on-site in close proximity to the re-fuelling area.

Welfare Facilities

Welfare facilities have the potential, if not managed appropriately, to release organic and other contaminants to ground or surface water courses. All waste from welfare facilities will be managed in accordance with the relevant statutory obligations through either a temporary connection to mains foul sewer (subject to receipt of the relevant consent from Irish Water) which will be constructed in accordance with Irish Water and Fingal Co. Co. guidelines or by tankering of waste offsite by an appropriately authorised contractor in compliance with all legislative requirements.

Wheel-Wash and Water Treatment Facilities

The use of wheel-wash and water treatment facilities will be used as required on site. The correct use and management of these will be undertaken by the appointed contractor to ensure that there is no harm to the receiving water environment.

To prevent tracking of dust and debris offsite the following will be undertaken:

- 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).
- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.

To prevent fugitive runoff from the Site the following will be implemented:

- Silt traps, silt fences and tailing ponds will need to be provided by the contractor where necessary to prevent silts and soils being washed away by heavy rains during the course of the construction stage.
- Surface water runoff and water pumped from the excavation works will be discharged via a silt trap / settlement pond to the existing foul drainage network.
- Straw bales will be used at the outfall to filter surface water to remove contaminants.

- Onsite water treatment system will be used if required to remove suspended solids and hydrocarbons.

All sludges, used straw bales, and other waste from wheel-wash and water treatment infrastructure will be removed from the Site by the contractor in accordance with all legislative requirements.

7.6.2 Operational Phase

Ongoing regular operational monitoring and maintenance of drainage and the SuDS measures in accordance with CIRIA SuDS Manual C753 will be incorporated into the overall management strategy for the Proposed Development.

There is no other requirement for mitigation measures for the Operational Phase of the Proposed Development

7.6.3 "Worst Case" Scenario

During the Construction Phase there is a potential risk of accidental release of petroleum hydrocarbons (e.g., a fuel spill) that could migrate to groundwater or surface water would result in in a 'negative', 'significant', 'long-term' impact on the quality of the receiving water depending on the nature of the incident.

During the Operational Phase of the Proposed Development, surface water runoff including runoff of deleterious material (i.e., fuels from vehicles on-site) will be directed to the mains sewer via appropriate treatment (Class 1 by-pass interceptor) and not to groundwater or directly to surface water. In a 'Worst Case' scenario there is a potential risk of accidental release of untreated water via failure or rupture of the drainage system with potential impacts on the receiving water environment. It is considered that the potential risk of the release of untreated water will present a 'negative', 'significant' and 'long-term' impact on the receiving environment.

However, taking account of the avoidance and mitigation measures the worst-case scenarios are deemed to be an unlikely scenario

7.6.4 Water Framework Directive

There are identified potential impacts on water quality identified in the absence of design avoidance and mitigation measures that could impact on the Water Framework Directive Status and Risk Status of receiving water bodies.

Taking account of the fact that the surface water body quality status of the nearby water courses (Gray's Brook, Bloody Stream and Coolcur Stream) are 'Unassigned' by the EPA (EPA, 2022) and the Risk Status is under 'Review' a worst-case scenario was considered where it was assumed the water bodies had a WFD status of 'High' to 'Bad' and were At Risk of not achieving WFD objectives.

Based on a worst-case scenario and the proposed design incorporating avoidance and mitigation measures (discussed in Section 7.6) the Proposed Development will likely not result in deterioration or alteration of the WFD status for water bodies.

7.6.5 Human Health

No public health issues have been identified for the Construction Phase or Operational Phase of the Proposed Development.

Appropriate industry standard and health and safety legislative requirements will be implemented during the Construction Phase that will be protective of site workers in particular associated with the dewatering works and any instream works.

The water supply for the Proposed Development will be via connection to the public supply.

There are no identified groundwater source in the vicinity of the Site however in the event of unidentified groundwater users (i.e. drinking water supply well) taking account of the design of the proposed development and the avoidance and mitigation measures there will be no potential risk to any drinking water sources associated with the Proposed Development.

7.7 Residual Impacts

Residual Impacts are defined as ‘effects that are predicted to remain after all assessments and mitigation measures. They are the remaining ‘environmental costs’ of a project and are the final or intended effects of a development after mitigation measures have been applied to avoid or reduce adverse impacts.

The predicted impacts of the Construction and Operational Phases are described in Section 7.5 and summarised in Table 7-7*Table 7-7* in terms of quality, significance, extent, likelihood, and duration and the residual impacts which take account of the avoidance, remedial and mitigation measures.

There are no likely significant adverse residual impacts on hydrology and hydrogeology anticipated regarding this Proposed Development.

Table 7-7 Summary of Residual Impacts

Activity	Attribute	Predicted Impact	Quality	Significance	Duration	Type	Mitigation	Residual Impact
Construction Phase								
Construction of basement, pile walls and other infrastructure	Hydrogeological Flow Regime	Groundwater flow within the aquifer will not be impacted and dewatering will not be required	Negative	Imperceptible	Temporary	Direct	None	Imperceptible
Use of cementitious materials.	Water Quality	Potential release of cementitious material during the construction of foundations, pavements, basement, pile walls and other structures.	Negative	Significant	Medium Term	Direct	The design will incorporate the use of pre-cast concrete structures where appropriate. The Contractor will carry out works in accordance with industry standards. Detailed design for piling to include methods to prevent impact water quality.	Imperceptible

Activity	Attribute	Predicted Impact	Quality	Significance	Duration	Type	Mitigation	Residual Impact
Construction Phase								
Earthworks – release of suspended solids	Surface Water Quality and Groundwater Quality	Potential for release of sediment to surface water	Negative	Significant	Short-term	Direct	Appropriate measures including silt fences and buffer zones to be used to prevent fugitive runoff including to adjoining roads and drainage gullies (ie on Balscadden Road)	Imperceptible
Earthworks – removal of surplus material and waste	Water quality	Potential for release of sediment to surface water	Negative	Moderate	Medium-Term	In-direct	All surplus material and waste material will be removed offsite in accordance with detailed procedures in strict accordance with all waste management legislation and the procedures outlined in the CEMP	Imperceptible
Construction of the	Integrity of the Howth	No potential impact identified	Neutral	Imperceptible	Temporary	Direct	None	Imperceptible

Activity	Attribute	Predicted Impact	Quality	Significance	Duration	Type	Mitigation	Residual Impact
Construction Phase								
Proposed Development	Sewer Tunnel and water quality							
Accidental release of deleterious materials including fuel and other materials being used on-site.	Groundwater / Surface Water	Potential (albeit low) for uncontrolled release of deleterious materials including fuels and other materials being used on-site, through the failure of secondary and tertiary containment or a materials handling accident.	Negative	Significant	Long Term	Direct / Worst Case	Procedures for the use and handling of all potentially hazardous compounds to be included in the CEMP to be prepared by the Contractor.	Imperceptible
Piling Works	Introduce preferential pathway and impact on water quality	Potential for migration of contaminants during piling works via direct conduit to subsurface.	Negative	Moderate	Medium-Term	Direct	Detailed design piling and method to be prepared by the appointed contractor. Use of water-based, biodegradable non-hazardous substances to be used.	Imperceptible

Activity	Attribute	Predicted Impact	Quality	Significance	Duration	Type	Mitigation	Residual Impact
Construction Phase								
Operational Phase								
Basement, pile walls and other infrastructure	Hydrogeological Flow Regime	Groundwater flow within the aquifer will not be impacted	Negative	Imperceptible	Long-term	Direct	None	Imperceptible
Loading of Proposed Development	Integrity of the Howth Sewer Tunnel and water quality	No potential impact identified	Neutral	Imperceptible	Long Term	Direct	None	Imperceptible
Surface Water Drainage	Water Quality	Surface water drainage at the Proposed Development Site has been designed in accordance with SuDS and therefore it is anticipated that there water quality will not be impacted	Imperceptible	Long Term	Direct	None	Imperceptible	Imperceptible
Surface Water Drainage	Flood Risk and surface water regime	The Site-Specific FRA identified that there is no risk of flood at the Site or elsewhere and	Neutral	Imperceptible	Permanent	Direct	None required.	Imperceptible

Activity	Attribute	Predicted Impact	Quality	Significance	Duration	Type	Mitigation	Residual Impact
Construction Phase								
		the Proposed Development has been designed in accordance with the principles of SuDS and satisfies the requirements of GDSDS (Waterman Moylan, 2022a).						
Discharge to foul sewer	Mains Sewer and receiving water at Ringsend WwTP	Discharges to sewer will only be permitted where authorised by Irish Water. Confirmation of Feasibility received from Irish Water (Irish Water, 2021; Reference CDS21002487)	Neutral	Imperceptible	Permanent	Indirect / Cumulative	None Required.	Imperceptible

7.8 Monitoring

7.8.1 Construction Phase

During construction phase the following monitoring measures will be considered:

- Inspections and monitoring will be undertaken during excavations, piling and other groundworks to ensure that measures protective of water quality are fully implemented and effective.
- Discharges to sewers will be monitoring where required in accordance with statutory consents (discharge licence).
- Monitoring and inspection of Balscadden Road will be undertaken routinely to ensure there is no fugitive runoff from the Site entering the road gullies or other drains in particular during earthworks.
- Routine monitoring and inspections during refuelling, concrete works to ensure no impacts and compliance with ameliorative, remedial and reductive measures.
- Materials management and waste audits will be carried out at regular intervals

7.8.2 Operational Phase

Ongoing regular operational monitoring and maintenance of drainage and the SuDS will be carried out.

No other monitoring is required during the Operational Phase

7.9 Interactions

7.9.1 Population and Human Health

No public health issues associated with the water (hydrology and hydrogeology) conditions at the Proposed Development Site have been identified for the Construction Phase or Operational Phase of the Proposed Development.

Appropriate industry standard and health and safety legislative requirements will be implemented during the construction phase that will be protective of site workers.

It is noted that specific issues relating to Public Heath associated with the Proposed Development are set out in Chapter 4 of this EIAR.

7.9.2 Material Assets - Water

An assessment of the potential impact of the Proposed Development on the Material Assets including built services, infrastructure, traffic, and waste management has been set out in Chapter 12 of this EIAR. Any discharges to the public foul sewer and abstractions from water supply from the Proposed Development will be under consent from Irish Water.

7.9.3 Land, Soil, Geology and Hydrogeology

An assessment of the potential impact of the Proposed Development on the existing land, soils and geological environment during the Operational Phase of the Proposed Development is set out in Chapter 6 Land, Soil and Geology.

7.9.4 Biodiversity

An assessment of the potential impacts of the Proposed Development on the Biodiversity of the Proposed Development Site, with emphasis on habitats, flora and fauna which may be impacted a result of the Proposed Development are included in Chapter 5 of this EIAR. It also provides an assessment of the impacts of the Proposed Development on habitats and species, particularly those protected by national and international legislation or considered to be of particular conservation importance and proposes measures for the mitigation of these impacts.

7.9.5 Traffic

There is a potential of impact on water courses at offsite locations in the vicinity of the Proposed development Site, due to sediment that may be entrained in road runoff due to traffic activities and resulting tracked sediment and debris being tracked offsite during the Construction Phase of the Proposed Development which are addressed in Section 7.5.3.2 of this Chapter. The Proposed Development will have no significant impact on overall traffic volumes at the Proposed Development Site during the Operational Phase and therefore traffic will not result in any significant impacts on water quality or quantity at sensitive water body receptors. Any specific issues relating to Traffic impacts associated with the Proposed Development are set out in Chapter 12 of this EIAR.

7.10 Difficulties Encountered When Compiling

There were no difficulties encountered when compiling the Hydrology and Hydrogeology Chapter of this EIAR.

7.11 References

Altemar Ltd., 2019Ecological Impact Assessment (EcIA) for a strategic housing development at the Former Baily Court Hotel, Main Street, and at lands located south of the Martello Tower on Balscadden Rd., Howth, County Dublin.

Byrne Looby, 2022. Balscadden Development, Howth, Co. Dublin Geotechnical Report (report Number: BL800-GEO-R001).

Council Directive 80/68/EEC, 1979. On the protection of groundwater against pollution caused by certain dangerous substances. Council of European Communities.

Council Directive 2006/118/EEC, 2006. On the protection of groundwater against pollution and deterioration. European Parliament and the Council of European Communities.

Construction Industry Research and Information Association, 2000. Environmental Handbook for Building and Civil Engineering Projects.

Construction Industry Research and Information Association, 2001. Control of Water Pollution from Construction Sites (CIRIA – C532).

Construction Industry Research and Information Association, 2011. Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors.

Construction Industry Research and Information Association, 2005. Environmental Good Practice on Site (CIRIA – C650).

Construction Industry Research and Information Association, 2007. The SuDS Manual (CIRIA – C697).

Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy with amendments 2455/2001/EC, 2008/32/EC and 2008/105/EC.

Enterprise Ireland. Best Practice Guide BPGCS005. Oil Storage Guidelines.

Enviroguide Consulting, February 2022. Outline Construction and Demolition Waste Management Plan. SHD Residential Development. Balscadden, Howth, Co. Dublin.

Enviroguide Consulting, February 2022. Natura Impact Statement. SHD Residential Development. Balscadden, Howth, Co. Dublin**. FINAL REFERENCE TBC**

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

Environmental Protection Agency, September 2015. Draft Advice Notes for preparing Environmental Impact Statements (EPA, 2015).

Environmental Protection Agency, 2013. Guidance on the Management of Contaminated Land and Groundwater at EPA Licensed Sites.

Environmental Protection Agency, 2004. IPC Guidance Note. Guidance Note on Storage and Transfer of Materials for Scheduled Activities.

Environmental Protection Agency, 2022. Catchments webmapping https://www.catchments.ie/maps/. Consulted on 13/03/2022.

Environmental Protection Agency, 2022. EPA HydroNet webmapping and databases. http://www.epa.ie/hydronet/#Water%20Levels. Consulted on 22/01/2022.

Environmental Protection Agency, 2022. EPA Envision Maps. https://gis.epa.ie/EPAMaps/. Consulted on 13/03/2022.

Fingal County Development Plan 2017-2023 (Fingal County Council, 2016).

Geological Society of Ireland, 2022. GSI webmapping. https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aaac3c228. Consulted on 13/03/2022.

Geological Survey of Ireland, 2022. Groundwater Body Reports, Dublin GWB. https://secure.dccae.gov.ie/GSI_DOWNLOAD/Groundwater/Reports/GWB/DublinGWB.pdf. Consulted on Consulted on 13/03/2022.

Google Earth Pro, 2022. Consulted on 13/03/2022.

Ground Investigations Ireland Ltd., 2017. Balscadden Howth ground Investigation Report (Project No/ 7241-11-17)

Institute of Geologists of Ireland, 2013. Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements.

Met Éireann, 2012. Séamus Walsh, 'Long-term climate averages for Ireland 1981 - 2010', [IE_RR_8110_V1] (Walsh, 2012).

Minerex Environmental Limited, 2022. Hydrogeological Assessment report for the proposed development at Balscadden Road, Howth, Co. Dublin.

National Parks and Wildlife Services (NPWS) webmapping 2022. https://dahg.maps.arcgis.com/apps/webappviewer/index.html?id=8f7060450de3485fa1c1085536d477ba. Consulted on 13/03/2022.

National Roads Authority, 2009. Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes.

Ordnance Survey Ireland, 2022. Ordnance Survey Ireland webmapping http://map.geohive.ie/mapviewer.html. Consulted on 13/03/2022.

Office of Public Works, 2022. OPW Flood Risk webmapping. https://www.floodinfo.ie/map/floodmaps/. Consulted on 13/03/2022.

Site Investigations Ltd., November 2017. Balscadden, Howth, Dublin 13 Site Investigations Report (Contract No. 5836).

Site Investigations Ltd., November 2017. Balscadden, Howth, Dublin 13 Site Investigations Report (Contract No. 5417).

Site Investigations Ltd., August 2015. Cluxton, Howth, Dublin 13 Site Investigations Report (Contract No. 5228).

Water Framework Directive, 2022. Water Framework Directive web mapping - http://watermaps.wfdireland.ie/NsShare_Web/. Consulted on 13/03/2022.

Waterman Moylan Engineering Consultants Ltd., 2022a. Flood risk Assessment Balscadden Development, Howth, Co. Dublin (document Reference: 21-032r.007 Flood risk Assessment.

Waterman Moylan Engineering Consultants Ltd., 2022b. Engineering Assessment Report Balscadden Development, Howth, Co. Dublin); (Document Reference: 21-032r.002 Engineering Assessment Report.

Waterman Moylan Engineering Consultants Ltd., 2022. Outline Construction & Demolition Management Plan Balscadden Development, Howth, Co. Dublin); (Document Reference: 21-032r.004) (Waterman Moylan, 2022c).

8 AIR QUALITY & CLIMATE AND MICROCLIMATE

8.1 Air Quality and Climate

8.1.1 Introduction

This Chapter will describe and assess the potential impacts on air quality and climate associated with the Proposed Development at Howth, Dublin 13. The chapter was prepared by Aoife Grogan (BA Hons, MSc) & Laura Griffin (BA Hons, MSc), Environmental Consultants, Enviroguide Consulting.

Taking into account Ambient Air Quality Standards, the baseline air quality will be examined along with the potential for release of emissions to the atmosphere and associated effects prior to and following mitigation measures. This Chapter will also describe and assess the potential impacts on micro and macro-climate as a result of the Proposed Development. Attention will be focused on Ireland's obligations under the Kyoto Protocol and the Paris Agreement in the context of the overall climatic impact of the presence and absence of the Proposed Development.

8.1.1.1 Ambient Air Quality Standards

For the protection of health and ecosystems, EU Directives apply air quality standards in Ireland and other EU member states for a range of pollutants. These rules include requirements for monitoring, assessment and management of ambient air quality. The first major instrument in tackling air pollution was the Air Quality Framework Directive 96/62/EC and its four daughter Directives, which prescribed standards for various pollutants:

- **1st Daughter Directive:** Sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter, and lead (Council Directive 1999/30/EC)
- **2nd Daughter Directive:** Carbon monoxide and benzene (Directive 2000/69/EC)
- **3rd Daughter Directive:** Ozone (2002/3/EC)
- **4th Daughter Directive:** Polyaromatic hydrocarbons, arsenic, nickel, cadmium, and mercury in ambient air (2004/107/EC).

The Air Quality Framework Directive set out a number of objectives as follows;

- Implements an EU-wide system for setting and binding air quality objectives for specified pollutants to protect human health and the environment;
- Requires Member States to put systems in place for assessing the quality of ambient air in accordance with common assessment criteria;
- Requires Member States to maintain ambient air quality where it is good and improve it in other cases through plans and programmes of action;
- Lays down requirements for a system of gathering, reporting and publicising information inclusive of data to be reported to the European Commission and information to be circulated to the public.

Ambient air quality monitoring and assessment in Ireland is carried out in accordance with the requirements of the Ambient Air Quality and Cleaner Air for Europe (CAFE) Directive (2008/50/EC) which was published in May 2008. This Directive replaced the Air Quality Framework Directive and the first, second and third Daughter Directives. The CAFE Directive has been transposed into Irish legislation by the Air Quality Standards Regulations (S.I. No. 180 of 2011); replacing the Air Quality Standards Regulations (2002) and the Ozone in Ambient Air Regulations (2004). The CAFE Directive required EU member states to designate 'Zones' reflective of population density for the purpose of managing air quality. Four zones were defined in the Air Quality Standards Regulations (2011) and subsequently amended in 2013 to account for 2011 census population counts and to align with coal restricted areas in the 2012 Regulations (S.I. No. 326 of 2012).

The main areas defined in each zone are:

- **Zone A:** Dublin Conurbation
- **Zone B:** Cork Conurbation
- **Zone C:** Other cities and large towns comprising Limerick, Galway, Waterford, Drogheda, Dundalk, Bray, Navan, Ennis, Tralee, Kilkenny, Carlow, Naas, Sligo, Newbridge, Mullingar, Wexford, Letterkenny, Athlone, Celbridge, Clonmel, Balbriggan, Greystones, Leixlip and Portlaoise.
- **Zone D:** Rural Ireland, i.e., the remainder of the State excluding Zones A, B and C.

The Site of the Proposed Development is located in Howth, Dublin 13 and falls under the 'Zone A' category based on the Environmental Protection Agency's (EPA) designation under the CAFE Directive.

The Cleaner Air for Europe (CAFE) Directive outlines certain limit or target values specified by the five published directives that apply limits to specific air pollutants. These limits, outlined in Table 8-1, will be referred to as part of the proposed facility assessment with respect to air quality.

Table 8-1: Limit Values of Cleaner Air for Europe (CAFE) Directive 2008/50/EC (Source: EPA, 2020)

Pollutant	Limit Value Objective	Averaging Period	Limit Value µg/m3	Limit Value ppb	Basis of Application of the Limit Value	Limit Value Attainment Date
SO_2	Protection of Human Health	1 hour	350	132	Not to be exceeded more than 24 times in a calendar year	1 Jan 2005
SO_2		24 hours	125	47	Not to be exceeded more than 3 times in a calendar year	1 Jan 2005
SO_2		Calendar year	20	7.5	Annual mean	19 July 2001

Pollutant	Limit Value Objective	Averaging Period	Limit Value µg/m3	Limit Value ppb	Basis of Application of the Limit Value	Limit Value Attainment Date
SO_2	Protection of vegetation	1 Oct to 31 Mar	20	7.5	Winter mean	19 July 2001
NO_2	Protection of human health	1 hour	200	105	Not to be exceeded more than 18 times in a calendar year	1 Jan 2010
NO_2		Calendar year	40	21	Annual mean	1 Jan 2010
NO + NO_2	Protection of ecosystems	Calendar year	30	16	Annual mean	19 July 2001
PM10	Protection of human health	24 hours	50	-	Not to be exceeded more than 35 times in a calendar year	1 Jan 2005
PM10		Calendar year	40	-	Annual mean	1 Jan 2005
PM2.5 - Stage 1		Calendar year	25	-	Annual mean	1 Jan 2015
PM2.5 - Stage 2		Calendar year	20	-	Annual mean	1 Jan 2020
Lead		Calendar year	0.5	-	Annual mean	1 Jan 2005
Carbon Monoxide		8 hours	10,000	8,620	Not to be exceeded	1 Jan 2005
Benzene		Calendar year	5	1.5	Annual mean	1 Jan 2010

The EPA is the competent authority for the purpose of the CAFE Directive and is required to send an annual report to the Minister for Environment and the European Commission. The regulations further provide for the distribution of public information. This includes information on any exceedances of target values, the reasons for exceedances, the area(s) in which they occurred, and the relevant information regarding effects on human health and environmental impacts.

8.1.1.2 Climate Agreements

Climate change is recognised as one of the most serious global environmental problems and arguably the greatest challenge facing humanity today. While natural variations in climate over time are normal, anthropogenic activities have interfered greatly with the global atmospheric system by emitting substantial amounts of greenhouse gases (GHGs). This has caused a discernible effect on our global climate system, with continued change expected due to current and predicted trends of GHG emissions. In Ireland this is demonstrated by rising sea levels, changes in the ecosystem, and extreme weather events.

In March 1994, the United Nations Framework Convention on Climate Change (UNFCCC) was established as an intergovernmental effort to tackle the challenges posed by climate change. The Convention membership is almost universal, with 197 countries having ratified. Under the Convention, governments gather and share information on GHG emissions, national policies, and best practices. This information is then utilised to launch national strategies and international agreements to address GHG emissions. Following the formation of the UNFCCC, two major international climate change agreements were adopted: The Kyoto Protocol, and the Paris Agreement.

In April 1994, Ireland ratified the United Nations Framework Convention on Climate Change (UNFCCC) and subsequently signed the Kyoto Protocol in 1997. The Kyoto Protocol is an international agreement linked to the UNFCCC which commits its parties to legally binding emission reduction targets. In order to ensure compliance with the protocol, the Intergovernmental Panel on Climate Change (IPCC) has outlined detailed guidelines on compiling National Greenhouse Gas Inventories. These are designed to estimate and report on national inventories of anthropogenic GHG emissions and removals. Under Article 4 of the Kyoto Protocol, Ireland agreed to limit the net anthropogenic growth of the six named GHGs to 13% above the 1990 level, spanning the period 2008 to 2012.

The second commitment period of the Kyoto Protocol, the Doha amendment, was adopted in extremis on the 8th of December 2012, to impose quantified emission limitation and reduction commitments (QELRCs) to Annex I (developed country) Parties during a commitment period from 2013 to 2020. 38 developed countries, inclusive of the EU and its 28 member states, are participating. Under the Doha amendment, participating countries have committed to an 18% reduction in emissions from 1990 levels. The EU has committed to reducing emissions in this period to 20% below 1990 levels. Ireland's QELRCs for the period 2013 to 2020 is 80% of its base year emissions. Ireland's compliance with the Doha amendment will be assessed based on the GHG inventory submission in 2022 for 1990-2020 data. As of October 2020, the Doha Amendment has received the required number of ratifications to enter force. Once in force, the emission reduction commitments of participating developed countries and economies in transition (EITs) become legally binding.

In principle, industrialised countries still have obligations under the Kyoto Protocol, but a later treaty, the Paris Climate Agreement of 2015, has now superseded it. In December 2015, the Paris Climate Conference (COP21) took place and was an important milestone in terms of international climate change agreements. The Paris Agreement sets out a global action plan to put the world on track to mitigate dangerous climate change by setting a global warming limit not to exceed 2°C above pre-industrial levels, with efforts to limit this to 1.5°C. As a

contribution to the objectives of the agreement, countries have submitted comprehensive national climate action plans (nationally determined contributions, NDCs). Under this agreement, governments agreed to come together every 5 years to assess the collective progress towards the long-term goals and inform Parties in updating and enhancing their nationally determined contributions. Ireland will contribute to the Agreement through the NDC tabled by the EU on behalf of Member States in 2020, which commits to a 55% reduction in EU-wide emissions by 2030 compared to 1990. This is considered to be the current NDC maintained by the EU and it's Member States under Article 4 of the Paris Agreement.

In November 2021, the UK hosted the 26th UN Climate Change Conference of the Parties (COP 26) in Glasgow. The COP26 summit brought parties together to accelerate action towards the temperature goals of the Paris Agreement and the UN Framework Convention on Climate Change. As part of the Glasgow Climate Pact, all agreed to revisit and strengthen their current emissions targets to 2030 in 2022. A new work programme on mitigation ambition was created and countries agreed to hold an annual high-level event on 2030 ambition. The Glasgow Climate Pact also drives further action on long-term strategies and the need to keep them up to date.

The EU has set itself targets for reducing its GHG emissions progressively up to 2050, these are outlined in the 2020 climate and energy package and the 2030 climate and energy policy framework. These targets are defined to assist the EU in transitioning to a low-carbon economy, as detailed in the 2050 low carbon roadmap. The 2020 package is a set of binding legislation to ensure that the EU meets its climate and energy targets for the year 2020. There are three key targets outlined in the package which were set by the EU in 2007 and enacted in legislation in 2009:

- 20% reduction in GHG emissions from 1990 levels.
- 20% of EU energy to be from renewable sources.
- 20% improvement in energy efficiency.

The 2030 climate and energy framework builds on the 2020 climate energy package and was adopted by EU leaders in October 2014. The framework sets three key targets for the year 2030:

- At least 40% cuts in GHG emissions from 1990 levels;
- At least 32% share for renewable energy;
- At least 32.5% improvement in energy efficiency.

The EU has acted in several areas in order to meet these targets, including the introduction of the Emissions Trading System (ETS). The ETS is the key tool used by the EU in cutting GHG emissions from large-scale facilities in the power, industrial, and aviation sectors. Around 45% of the EU's GHG emissions are covered by the ETS.

As part of the European Green Deal the Commission proposed in September 2020 to raise the 2030 greenhouse gas emission reduction target, including emissions and removals, to at least 55% compared to 1990.

8.1.1.3 National Policy Position and Greenhouse Gas Emissions in Ireland

National climate policy in Ireland recognises the threat of climate change to humanity and supports mobilisation of a comprehensive international response to climate change, and global transition to a low-carbon future. A fundamental national objective aims to achieve transition to a competitive, low-carbon, climate-resilient and environmentally sustainable economy by 2050.

The Climate Action and Low Carbon Development (Amendment) Act 2021 was adopted in 2021 and sets Ireland on a legally binding path to net-Zero emissions no later than 2050, and to a 51% reduction in emissions by the end of this decade. The Act provides the framework for Ireland to meet its international and EU climate commitments and to become a leader in addressing climate change.

The Irish Government recently published its Climate Action Plan (2021) which provides a detailed framework for taking decisive action to achieve a 51% reduction in overall greenhouse gas emissions by 2030 and setting Ireland on a path to reach net-zero emissions by no later than 2050, as committed to in the Programme for Government and set out in the Climate Act 2021. The Plan lists the actions needed to deliver on national climate targets and sets indicative ranges of emissions reductions for each sector of the economy. It will be updated annually, including in 2022, to ensure alignment with Ireland's legally binding economy-wide carbon budgets and sectoral ceilings.

Ireland's latest greenhouse gas (GHG) emissions 1990-2020 are provisional figures based on the SEAI's final energy balance released in September 2021 (EPA, 2021). In 2020, Ireland's GHG emissions are estimated to be 57.70 million tonnes carbon dioxide equivalent (Mt CO2eq), which is 3.6% lower (or 2.14 Mt CO2 eq) than emissions in 2019 (59.84 Mt CO2 eq). There was a decrease of 4.0% in emissions reported for 2019 compared to 2018. Emissions reductions have been recorded in six of the last ten years of inventory data (2010-2020). In 2020, national total emissions decreased by 3.6%, emissions in the stationary ETS sector decreased by 6.4% and emissions under the ESD (Effort Sharing Decision) decreased by 2.7%. In 2020, the energy industries, transport and agriculture sectors accounted for 70.1% of total GHG emissions. Agriculture is the single largest contributor to the overall emissions, at 37.1%. Transport, energy industries and the residential sector are the next largest contributors, at 17.9%, 15.0% and 12.3%, respectively (EPA, 2021).

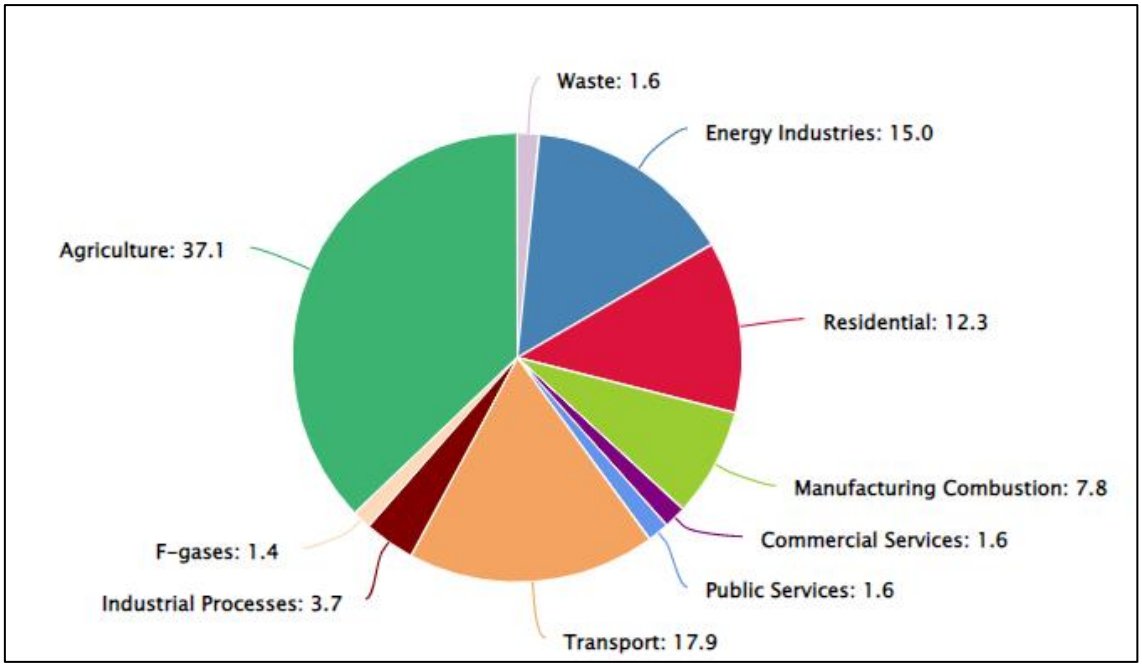


Figure 8-1: Ireland's Greenhouse Gas Emissions by Sector for 2020 (Source: EPA, 2021)

8.1.2 Study Methodology

This assessment has been carried out in accordance with the EPA Guidelines on the Information to be contained in Environmental Impact Assessment Reports (2017). Taking into account Ambient Air Quality Standards, the baseline air quality of the Site will be examined using EPA monitoring data. Air quality impacts from the Proposed Development will then be determined by a qualitative assessment of the nature and scale of dust generating activities associated with the construction phase of the Proposed Development in accordance with relevant guidance (Transport Infrastructure Ireland (TII) 2011 Appendix 8; Institute of Air Quality Management (IAQM) 2014).

Operational Phase traffic impact assessment will involve air dispersion modelling using the UK Design Manual for Roads and Bridges Screening Model (DMRB, UK Highways Agency 2007) (Version 1.03c), the NO_x to NO_2 Conversion Spreadsheet (UK Department for Environment, Food and Rural Affairs, 2017), and following all relevant guidance (TII, 2011; HA, 2007; EPA; UK DEFRA; IAQM). There is no Ireland specific tool available for the assessment of road traffic emissions, therefore, a UK resource has been utilised in the absence of an Irish equivalent.

A desktop study involving various national and international documents on climate change and analysis of synoptic meteorological data from the nearest Met Eireann station was also carried out in order to compile this chapter. Attention will be focused on Ireland's obligations under the Kyoto Protocol (including the Doha Amendment) and the Paris Agreement in the context of the overall climatic impact of the presence and absence of the Proposed Development.

8.1.3 The Existing and Receiving Environment (Baseline Situation)

The Site of the Proposed Development occupies an area of approximately 1.43 hectares (ha) within Howth Village. Howth is in the Electoral Division of Howth ED 1901, in the Civil Parish of Howth, in the Barony of Coolock, in the County of Dublin.

The Site of the Proposed Development is bounded to the east by the Balscadden Road, to the west by residential and commercial buildings fronting onto Main Street and Abbey Street, and to the north by Martello Tower and Tower Hill, and to the south by rear gardens to residential properties

8.1.3.1 Air Quality

According to the 2012 Regulations (S.I. No. 326 of 2012) the proposed Site falls into 'Zone A' of Ireland which is described by the EPA as 'Dublin Conurbation'. It is expected that existing ambient air quality in the vicinity of the Site is characteristic of a suburban location with the primary source of air emissions such as particulate matter, NO_2, and hydrocarbons likely to be of traffic and domestic fuel burning.

In conjunction with individual local authorities, the EPA undertakes ambient air quality monitoring at specific locations throughout the country in the urban and rural environment; an Air Quality Report based on data from 30 monitoring stations and a number of mobile air quality units is developed on an annual basis. The EPA's most recent publication 'Air Quality in Ireland, 2020' reports the quality of the air in Ireland based on the data from the National Ambient Air Quality Monitoring Network throughout the year 2020.

When assessing air quality, the EPA focuses on two main pollutants: particulate matter and nitrogen oxides. Measured concentrations of NO_2 for the years 2019 and 2020 are presented in Table 8-2 for Zone A monitoring stations. These results show that current levels of NO_2 are well below the annual mean and 1-hour maximum limit values. In the year 2019, annual mean concentrations of NO_2 ranged from 15 - 49 ug/m^3 across all Zone A stations, with no exceedance of the maximum hourly limit (EPA, 2020). In the year 2020, annual mean concentrations of NO_2 ranged from 11 - 30 ug/m^3 across all Zone A stations, with no exceedance of the maximum hourly limit (EPA, 2021).

The closest representative suburban background monitoring station to the Site which continuously monitors for concentrations of nitrogen oxides (NO_2) is located in Dun Laoghaire (ca. 12km to the south). Similar to Howth, Dun Laoghaire is considered a suburban coastal town and air quality monitoring carried out at this location is likely to be broadly representative of conditions that may be experienced at the Site. Concentrations of NO_2 are also well below the threshold limits contained within the regulations at Dun Laoghaire monitoring station, with an annual mean of 15 ug/m^3 and 14 ug/m^3 measured in 2019 and 2020, respectively (EPA, 2020; EPA, 2021).

During 2020, the restriction of movement in Ireland due to the COVID-19 Pandemic had an impact on air quality nationally with a large-scale reduction in vehicular traffic. It is noted that the decrease in NO_2 levels during that year is a direct result of the restrictions placed on movements and construction due to COVID-19.

Based on the EPA monitoring data and taking account of the Site's environs and surrounding land-use, along with changes in vehicular and construction activity, a conservative estimate of current background NO_2 concentrations in the vicinity of the Site is 16ug/m^3.

Table 8-2: Concentrations of NO_2 at Zone A Monitoring Stations

Station	Objective	Concentration (µg/m^3)		Limit or Threshold Value (ug/m^3)	Number of values >200µg/m^3
		2019	2020		
Winetavern St	Annual Mean NO_2	28	15	40	N/A
	Hourly Max NO_2	142	121.5	200	0
Davitt Road	Annual Mean NO_2	24	14	40	N/A
	Hourly Max NO_2	127	108.3	200	0
DAA	Annual Mean NO_2	-	23	40	N/A
	Hourly Max NO_2	-	88.8	200	0
St. Johns Road	Annual Mean NO_2	43	30	40	N/A
	Hourly Max NO_2	156	130.1	200	0
Rathmines	Annual Mean NO_2	22	13	40	N/A
	Hourly Max NO_2	183	170	200	0
Dun Laoghaire	Annual Mean NO_2	15	14	40	N/A
	Hourly Max NO_2	104	92.1	200	0
Ballyfermot	Annual Mean NO_2	20	12	40	N/A
	Hourly Max NO_2	124	107.7	200	0

Station	Objective	Concentration (µg/m³)		Limit or Threshold Value (ug/m³)	Number of values >200µg/m³
		2019	2020		
Blanchardstown	Annual Mean NO_2	31	12	40	N/A
	Hourly Max NO_2	163	164.6	200	0
Swords	Annual Mean NO_2	15	11	40	N/A
	Hourly Max NO_2	108	83.7	200	0
Dublin Port	Annual Mean NO_2	-	23	40	N/A
	Hourly Max NO_2	-	117.3	200	0
Pearse St	Annual Mean NO_2	49	27	40	N/A
	Hourly Max NO_2	151	142.3	200	0
Tallaght	Annual Mean NO_2	-	14	40	N/A
	Hourly Max NO_2	-	100.8	200	0
Ringsend	Annual Mean NO_2	24	18	40	N/A
	Hourly Max NO_2	109	123.8	200	0

Measured concentrations of PM_{10} for the years 2019 and 2020 are presented in Table 8-3 for Zone A monitoring stations. As is evident from these results, current levels of PM_{10} are well below the annual mean limit value. In the year 2019, annual mean concentrations of PM_{10} ranged from 11 – 19 ug/m^3 across all Zone A stations, with no exceedance of short-term limit values (EPA, 2020). In the year 2020, annual mean concentrations of PM_{10} ranged from 10 – 20 ug/m^3 across all Zone A stations, with no exceedance of short-term limit values (EPA, 2021).

The suburban background monitoring site of St. Anne's Park is located ca. 7.8km from the Site of the Proposed Development and therefore is broadly representative of background concentrations in the vicinity of the Proposed Development. This station continuously monitors for

concentrations of PM_{10}. Concentrations of PM_{10} at St. Annes Park monitoring station are well below their respective limit values in 2019 and 2020, with an annual mean of 12 ug/m^3 and 11 ug/m^3, respectively, and with no exceedances of the PM_{10} daily limit for the protection of human health (EPA, 2020; EPA, 2021).

Based on the EPA data measured at Zone A monitoring stations, a conservative estimate of the current background PM_{10} concentration in the region of the Proposed Development is 12 µg/m^3.

Table 8-3: Concentrations of PM_{10} at Zone A Monitoring Stations

Station	Objective	Concentration (µg/m^3)		Limit or Threshold Value
		2019	2020	
Winetavern St	Annual Mean PM_{10}	15	13	40 µg/m^3
	Days >50µg/m^3	9	0	35 days
Rathmines	Annual Mean PM_{10}	15	11	40 µg/m^3
	Days >50µg/m^3	9	2	35 days
Phoenix Park	Annual Mean PM_{10}	11	10	40 µg/m^3
	Days >50µg/m^3	2	0	35 days
Blanchardstown	Annual Mean PM_{10}	19	15	40 µg/m^3
	Days >50µg/m^3	11	2	35 days
Dun Laoghaire	Annual Mean PM_{10}	12	12	40 µg/m^3
	Days >50µg/m^3	2	0	35 days
Ballyfermot	Annual Mean PM_{10}	14	12	40 µg/m^3
	Days >50µg/m^3	7	2	35 days
Tallaght	Annual Mean PM_{10}	12	10	40 µg/m^3
	Days >50µg/m^3	3	0	35 days
Ringsend	Annual Mean PM_{10}	19	17	40 µg/m^3
	Days >50µg/m^3	12	8	35 days
St. John's Road	Annual Mean PM_{10}	14	13	40 µg/m^3
	Days >50µg/m^3	5	0	35 days
St Annes Park	Annual Mean PM_{10}	12	11	40 µg/m^3
	Days >50µg/m^3	1	0	35 days

Station	Objective	Concentration (µg/m³)		Limit or Thresh-old Value
		2019	2020	
Dublin Airport	Annual Mean PM_{10}	-	13	40 µg/m³
	Days >50µg/m³	-	0	35 days
Davitt Road	Annual Mean PM_{10}	19	15	40 µg/m³
	Days >50µg/m³	15	4	35 days
Dublin Port	Annual Mean PM_{10}	-	20	40 µg/m³
	Days >50µg/m³	-	7	35 days
Finglas	Annual Mean PM_{10}	13	12	40 µg/m³
	Days >50µg/m³	2	0	35 days
Marino	Annual Mean PM_{10}	14	13	40 µg/m³
	Days >50µg/m³	4	0	35 days

8.1.3.2 Macroclimate

Ireland has a typical maritime climate, largely due to its proximity to the Atlantic Ocean and the presence of the Gulf Stream. Due to the moderating effects of the Gulf Stream, Ireland does not suffer the temperature extremes that are experienced by many other countries at a similar latitude. Mean annual temperatures generally range between 9°C and 10°C. Winters tend to be cool and windy while summers are mostly mild and less windy. The prevailing wind direction is between the south and west with average annual wind speeds ranging between 6 knots in parts of south Leinster to over 15 knots in the extreme north. Rainfall in Ireland occurs throughout the year with reasonable frequency. The highest rainfall occurs in the western half of the country and on high ground, and generally decreases towards the northeast. As the prevailing winds are from the west-southwest, the west of Ireland experiences the largest number of wet days. The area of least precipitation is along the eastern seaboard of the country.

8.1.3.3 Microclimate

The synoptic meteorological station at Dublin Airport is located approximately 12km northwest of the Proposed Development; and for the purposes of this chapter, weather data collected here may be considered similar to that which is experienced in the area of the subject Site.

The weather in the area of the subject Site is generally dominated by cool oceanic air masses, with cool winters, mild humid summers, and a lack of temperature extremes. Based on meteorological data at Dublin Airport over the last 3 years, the mean January temperature is 5.3°C, while the mean July temperature is 15.4°C. The prevailing wind direction is from a quadrant centred on the southwest. These are moderately warm winds from the Atlantic and they habitually bring rain. The expected annual rainfall for the eastern half of the country

ranges between 750 and 1000mm. Easterly winds are less frequent, weaker, and tend to bring cooler weather from the northeast in spring and warmer weather from the southeast in summer.

8.1.3.3.1 Rainfall

Rainfall is a key indicator of changes in climate, as measurements of rainfall are fundamental to assessing the effects of climate change on the water cycle and water balance. Table 8-4 illustrates the monthly and annual rainfall data collected over a 3-year period (2018-2020) at Dublin Airport Weather Station. The annual rates of precipitation ranged from 709.4mm in 2018 to 886.1mm in 2019 with distribution of the highest monthly rainfall values falling mainly in the autumn and winter months. This is broadly within the expected range of the eastern half of the country.

Table 8-4: Monthly Rainfall Values (mm) for Dublin Airport Weather Station from January 2018 to December 2020 (Source: Met Eireann)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2020	36.0	130.4	31.8	12.8	9.3	69.6	98.9	87.3	60.9	80.6	48.1	83.1	**748.8**
2019	26.8	30.5	92.5	74.6	33.4	82.9	41.0	91.9	104.6	77.2	173.0	57.7	**886.1**
2018	93.1	36.9	100.0	68.9	19.1	4.8	40.0	48.0	43.8	42.6	131.2	81.0	**709.4**
LTA[13]	62.6	48.8	52.6	54.1	59.5	66.7	56.2	73.3	59.5	79.0	72.9	72.7	**757.9**

8.1.3.3.2 Wind

Wind at a particular location can be influenced by a number of factors, such as obstructions by trees or buildings, the nature of the terrain, and deflection by nearby mountains or hills. Wind blows most frequently from the south and west for open sites while winds from the northeast and north occur less often. The analysis of hourly weather data from Dublin Airport synoptic weather station over a period of 5 years suggests that the predominant wind direction blows from the southwest, with windspeeds of between 7 and 10 knots occurring most frequently.

Figure 8-2 provides a wind speed frequency distribution which represents wind speed classes and the frequency at which they occur (% of time) at Dublin Airport weather station over a period of 5 years. Wind speeds of 8 knots have the highest frequency, occurring approximately 8.6% of the time.

[13] The 'LTA' is average for the climatological long-term-average (LTA) reference period 1981-2010

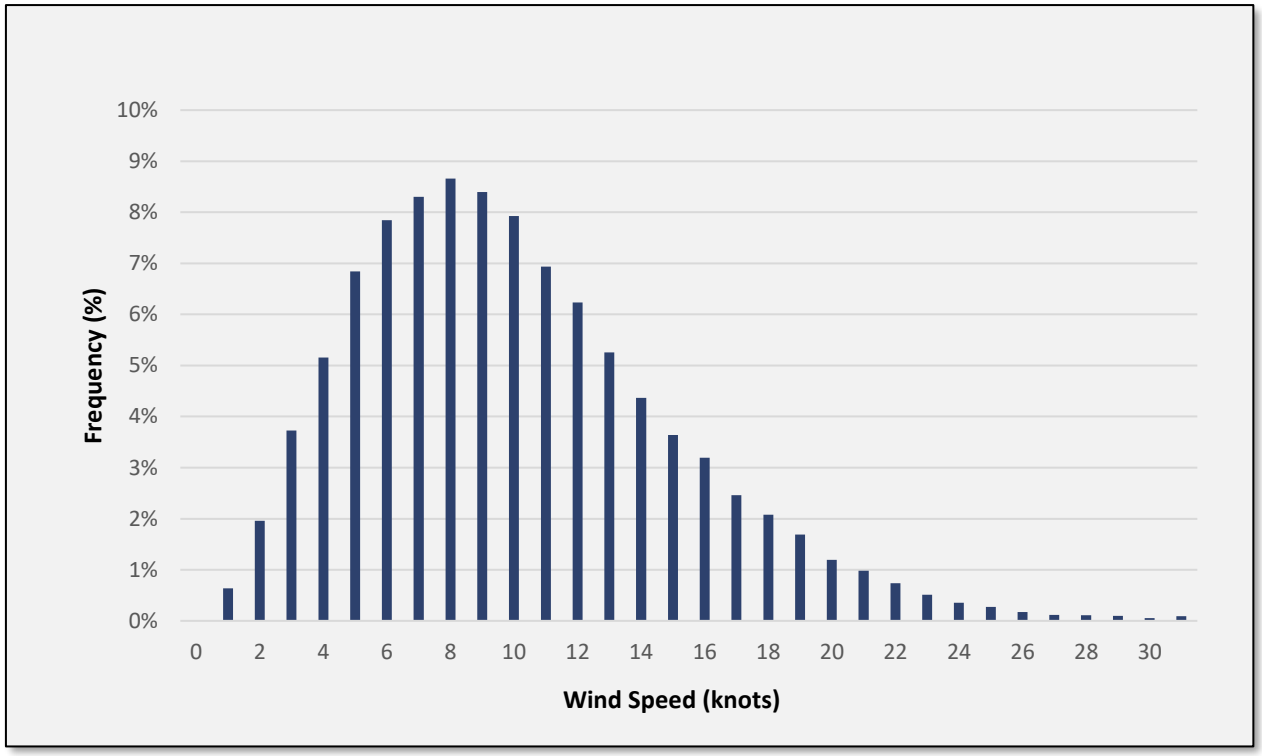


Figure 8-2: Wind Speed Frequency Distribution at Dublin Airport Synoptic Weather Station over 5 years (2016-2020)

Figure 8-3 provides a wind rose of the predominant wind directions and associated wind speeds at Dublin Airport. As is visible from Figure 8-3, the prevailing wind is from a south-westerly direction with an annual incidence of 33% for winds between 200 and 250 degrees. The most frequent wind speed associated with this wind direction is between 11 and 16 knots which is considered a 'moderate breeze' in terms of the Beaufort scale, this wind direction and wind speed occurs in combination approximately 11.39% of the time. The overall most common windspeed is between 7 and 10 knots, occurring in 33.28% of incidences, and wind speeds of between 11 and 16 knots occurring in 29.63% of incidences.

The lowest frequency is for winds blowing from the northern quadrant at approximately 2.81% of the time. The incidence of wind between 1 and 6 knots is about 26.16% of the year with wind speeds of above 17 knots (8.7 m/s) occurring in just 10.92% of incidences. The influence of topography can be seen in the low frequency of winds from a southerly direction at Dublin Airport, which occur at 4.24% of the year; this is due to the sheltering effect of the mountains to the south. This windrose is broadly representative of the prevailing conditions experienced at the subject Site.

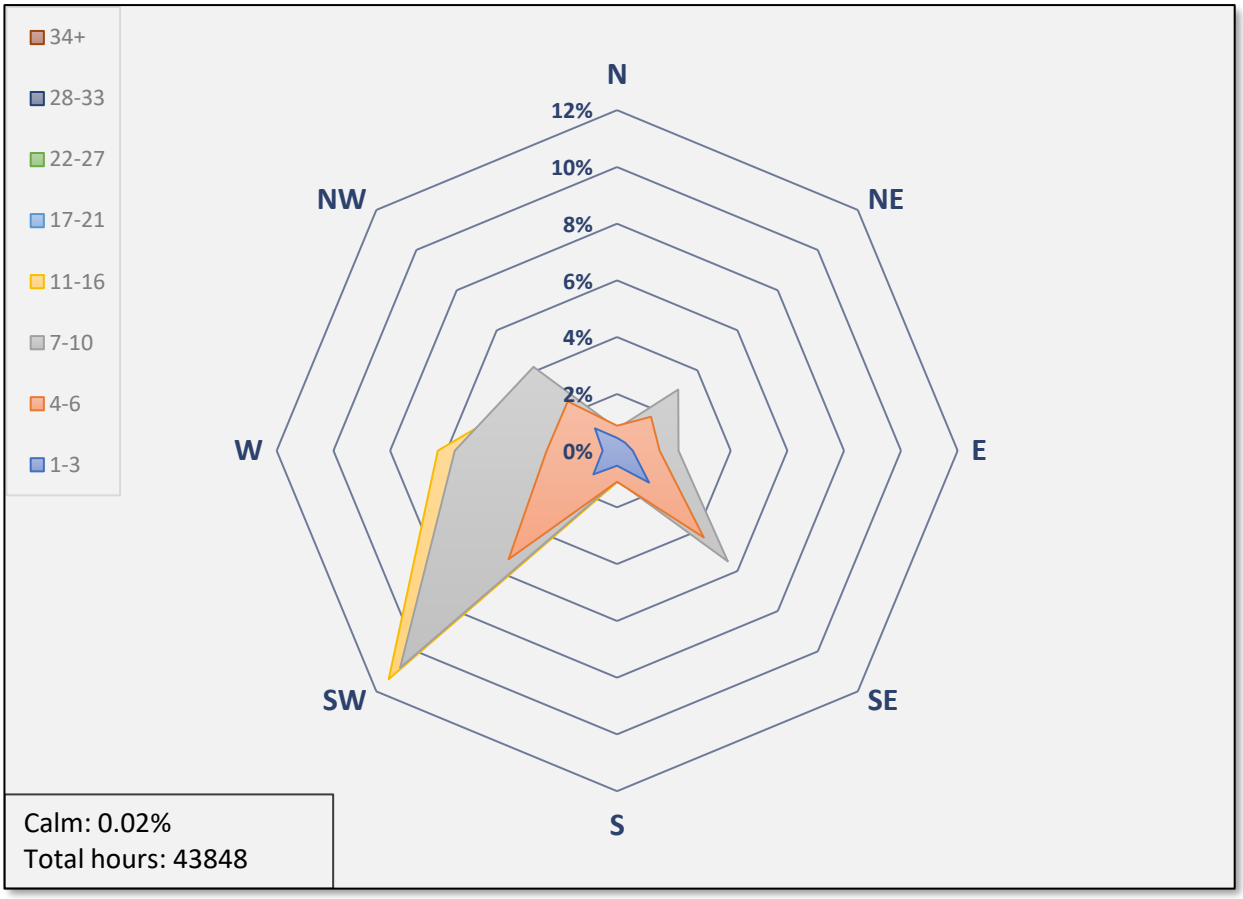


Figure 8-3: 5-year Windrose at Dublin Airport Synoptic Weather Station 2016-2020 (Developed using Met Eireann Hourly Data)

8.1.4 Characteristics of the Proposed Development

The proposed development relates to lands located to the south of the Martello Tower on Balscadden Road & the former Baily Court Hotel, Main Street, Howth, County Dublin. The development will consist of the demolition of existing structures on the proposed site including the disused sports building and the former Baily Court Hotel buildings and the construction of a residential development set out in 4 no. residential blocks, ranging in height from 2 to 5 storeys to accommodate 180 no. apartments with associated internal residential tenant amenity and external courtyards and roof terraces, 1 no. retail unit and 2 no. café/retail units. The site will accommodate car parking spaces at basement level and bicycle parking spaces at basement and surface level. Landscaping will include new linear plaza which will create a new pedestrian link between Main St and Balscadden Rd to include the creation of an additional 2 no. new public plazas and also maintains and upgrades the pedestrian link from Abbey Street to Balscadden Road below the Martello Tower.

8.1.5 Potential Impact of the Proposed Development

8.1.5.1 Potential Impacts on Air Quality

8.1.5.1.1 Construction Phase

In summary, the Proposed Development phasing consists of the following:

- Site Preparation: Site Clearance, Demolition & Enabling Works
- Construction: Piled Retaining Walls
- Construction: Bulk Excavation
- Construction: Building Foundations & Basement
- Construction: Building Superstructure Frame
- Construction: Cladding & Fit-Out Works
- Completion

The Construction Phase is intended to be a 3 year programme. The operational hours for the site will be 08:00 to 19:00 Mondays to Fridays and 08:00 to 13:00 Saturdays. No work is permitted on Sundays or public holidays.

It may be necessary to work outside these hours at times, for example for early morning concrete pours and late evening concrete finishing. The Contractor will consult Fingal County Council regarding out of hours working and local residents and businesses will be informed of any out of hours works required.

There is potential for construction related air emissions to impact on local air quality as a result of the Proposed Development. Potential impacts are expected to be short-term and of a temporary nature. The main air quality impacts that may arise during construction activities are:

- Dust deposition;
- Elevated particulate matter concentrations (PM_{10} and $PM_{2.5}$) as a result of dust generating activities on Site; and
- An increase in concentrations of airborne particles, volatile organic compounds, nitrogen oxides, and sulphur oxides due to exhaust emissions from diesel powered vehicles and equipment on Site (non-road mobile machinery) and vehicles accessing the Site.

The greatest potential impact on air quality during this phase is from construction dust emissions and the potential for nuisance dust. The dust emissions from a construction site that may result in air quality impacts generally depend on:

- Site activities and duration;
- The size of the site;
- The meteorological conditions;

- The proximity of receptors to the activities;
- The adequacy of applied mitigation measures; and
- The sensitivity of receptors to dust.

The primary sources of dust identified include soil excavation works, demolition, bulk material transportation, loading and unloading, stockpiling materials, cutting and filling, and vehicular movements (HGVs and on-site machinery).

According to Transport Infrastructure Ireland guidelines (TII, 2011), it is difficult to accurately quantify dust emissions arising from construction activities. Therefore, it is not possible to easily predict changes to dust soiling rates or PM_{10} concentrations. TII recommend a semi-quantitative approach to determine the likelihood of significant impact in this instance. This should also be combined with an assessment of the proposed mitigation measures. The following table outlines the distance criteria which is recommended for use in assisting a semi-quantitative assessment:

Table 8-5: Assessment Criteria for the Impact of Dust Emissions from Construction Activities, with Standard Mitigation in Place

Source		**Potential Distance for Significant Effects (Distance from source)**		
Scale	Description	Soiling	PM10	Vegetation effects
Major	Large construction sites, with high use of haul routes	100m	25m	25m
Moderate	Moderate sized construction sites, with moderate use of haul routes	50m	15m	15m
Minor	Minor construction sites, with limited use of haul routes	25m	10m	10m

In order to account for a worst-case scenario, the Proposed Development can be considered moderate in scale due to the size of the Site and the duration of construction activities. Therefore, it can be assumed that there is potential for significant dust soiling 50m from the Site.

There are a number of high-sensitivity receptors (residential dwellings) located within 50m of the Site boundary; these are mainly situated to the southwest and west of the Proposed Development Site. There are also a small number of residential dwellings located to the northeast and southeast of the Proposed Development Site. Therefore, in the absence of

mitigation, it is considered that there is potential for dust impacts to occur at these locations. Sensitive receptors within 100m of the Proposed Development are identified in Table 8-6:

Table 8-6: Sensitive Receptors

Name	Type	Coordinates		Orientation Relative to Site Boundary
		X	Y	
Abbey Street	Residential	53.386947	-6.065419	West
Abbey Street	Residential	53.386432	-6.065432	Southwest
Balscadden Road	Residential	53.387290	-6.063182	Northeast
Balscadden Road	Residential	53.386652	-6.063516	Southeast
Asgard Park	Residential	53.385765	-6.063541	Southeast

According to IAQM Guidance (2016), the primary factor influencing the Pathway is the distance between the sensitive receptor and the dust sources. However, other factors can cause a higher or a lower category to be assigned then would be the case based on distance alone. These factors include:

- Orientation of receptors relative to the prevailing wind direction; and
- Topography, terrain and physical features.

Meteorological conditions greatly affect the level of dust emissions and subsequent deposition downwind of the source; the most predominant being rainfall and wind speed. Adverse impacts can occur in any direction from a site; however, they are more likely to occur downwind of the prevailing wind direction and/or close to the site. Relatively high levels of moisture in the surrounding air, soils, and precipitation helps to suppress dust due to the cohesive properties of water between dust particles. The least favourable meteorological conditions for dust generation would typically be warm days with strong winds and low precipitation. Due to the variability of weather, it is impossible to predict the conditions that will occur during the Construction Phase of the development. However, wind direction is most likely to prevail from the southwest.

Table 8-7 outlines the hourly percentage distribution of wind speed and direction at Dublin Airport synoptic weather station over a 5-year period (2016-2020). This data is consistent with Figure 8-3 of this chapter and shows that the most frequent wind direction prevails from the southwest (33.89% frequency). The corresponding most frequent wind speed is between 7

and 10 knots which is considered a 'gentle breeze' in terms of the Beaufort scale; this wind direction and wind speed occurs in combination approximately 12.28% of the time.

Table 8-7: Percentage Distribution of Wind Speeds and Direction at Dublin Airport (2016-2020)

Wind speed (Knots)		<1	1 - 3	4 - 6	7 - 10	11-16	17-21	22-27	28-33	34+	% Dry Days
Wind Direction	Degrees										
North	350 - 10	0.03	0.54	0.91	0.61	0.61	0.11	0.01	0.00	0.00	40%
North-east	20 - 70		0.54	2.15	3.89	2.78	0.98	0.05	0.00	0.00	
East	80 - 100		0.94	1.92	2.22	1.2	0.23	0.00	0.00	0.00	
South-east	110 - 150		1.48	3.01	4.87	2.31	0.54	0.06	0.00	0.00	
South	170 - 190		0.64	0.98	1.35	1.33	0.36	0.07	0.00	0.00	
South-west	200 - 250		0.98	5.89	12.28	12.14	2.29	0.32	0.00	0.00	
West	260 - 280		0.59	2.69	5.57	5.73	1.79	0.3	0.00	0.00	
North-west	290 - 340		1.13	2.37	4.38	3.61	1.09	0.15	0.00	0.00	

Dry days with moderate to high windspeeds (above 5m/s (7-10 knots)) are the conditions which are most likely to result in fugitive dust emissions. Sensitive receptors within 50m of the Proposed Development have been identified a series of residential dwellings which are located to the west, northeast, and southeast of the Site.

Receptors located to the west of the Site would require prevailing winds from the east to be potentially impacted by fugitive dust emissions. At these receptors, the frequency of winds (>5m/s) occurring from the direction of the dust source on dry days is 2.6%. Receptors located to the southwest of the Site would require prevailing winds from the northeast to be potentially impacted by fugitive dust emissions. At these receptors, the frequency of winds (>5m/s) occurring from the direction of the dust source on dry days is 4.2%. Receptors located to the southeast of the Site would require prevailing winds from the northwest to be potentially impacted by fugitive dust emissions. At these receptors, the frequency of winds (>5m/s) occurring from the direction of the dust source on dry days is 3.7%. Therefore, appropriate conditions for fugitive dust emissions at these receptors are highly infrequent and it is expected that adequate mitigation measures, as outlined in Section 8.6.1, will prevent nuisance dust from resulting in any adverse impacts. Furthermore, the trees and hedgerows which are currently present on the boundary of the Proposed Development will act as a natural buffer for dust deposition in some cases.

Receptors located to the northeast of the Site would require prevailing winds from the southwest to be potentially impacted by fugitive dust emissions. At these receptors, the frequency of winds (>5m/s) occurring from the direction of the dust source on dry days is

10.8%. Therefore, in the absence of mitigation, it is considered that there is potential for dust impacts to occur at these locations.

Appropriate mitigation and monitoring measures have been recommended and will be implemented at the Site in order to minimise the risk of dust emissions arising during the Construction Phase. These mitigation measures have been outlined in the Construction Environmental Management Plan (CEMP) for the Site, and provided such measures are adhered to, it is not considered that significant air quality impacts will occur.

Construction vehicles and machinery during this phase will temporarily and intermittently generate exhaust fumes and consequently potential emissions of volatile organic compounds, nitrogen oxides, sulphur oxides, and particulate matter (dust). Dust emissions associated with vehicular movements are largely due to the resuspension of particulate materials from ground disturbance. According to the IAQM (2014), experience from the assessment of exhaust emissions from on-site machinery and Site traffic suggests that they are unlikely to make a significant impact on local air quality, and in the vast majority of cases they will not need to be quantitatively assessed. Air pollutants may increase marginally due to construction-related traffic and machinery from the Proposed Development. However, any such increase is not considered significant and will be well within relevant ambient air quality standards. According to TII (2011), the significance of impacts due to vehicle emissions during the Construction Phase will be dependent on the number of additional vehicle movements, the proportion of HGVs and the proximity of sensitive receptors to Site access routes. If construction traffic would lead to a significant change (> 10%) in Annual Average Daily Traffic (AADT) flows near to sensitive receptors, then concentrations of nitrogen dioxide, PM_{10} and $PM_{2.5}$ should be predicted in line with the methodology as outlined within TII guidance. Construction traffic is not expected to result in a significant change (> 10%) in AADT flows near to sensitive receptors. Therefore, a detailed air quality assessment is not required.

8.1.5.1.2 Operational Phase

The greatest potential effect on air quality during the Operational Phase of the Proposed Development is from traffic-related air emissions.

Operational traffic will use regional and local roads to access the facility with potential increases of traffic flow on some roads and subsequent associated emissions of VOCs, nitrogen oxides, sulphur dioxides and increased particulate matter concentrations.

In terms of associated impacts on air quality, Table 8-8 outlines the criteria that are prerequisite for an air quality assessment. According to IAQM guidance (2017), if none of the criteria are met, then there should be no requirement to carry out an air quality assessment for the impact of the development on the local area, and the impacts can be considered as having an insignificant effect.

Table 8-8: Indicative Criteria for Requiring an Air Quality Assessment (Source: IAQM, 2017)

Potential Change resulting from Proposed Development	Indicative Criteria to Proceed to an Air Quality Assessment
Cause a significant change in Light Duty Vehicle (LDV) traffic flows on local roads with relevant receptors	A change of LDV flows of more than 1000 Annual Average Daily Traffic (AADT)
Cause a significant change in Heavy Duty Vehicle (HGV) flows on local roads with relevant receptors	A change of HGV flows of more than 100 Annual Average Daily Traffic (AADT)
Realign roads, i.e., changing the proximity of receptors to traffic lanes	Where the change is 5m or more
Cause a change in Daily Average Speed (DAS)	Where the DAS will change by 10 km/h or more
Cause a change in peak hour speed	Where the peak hour speed will change by 20km/h or more.

As per the Traffic and Transport Assessment which has been detailed in Chapter 12, Section 12.1, the criteria presented in Table 8-8 have not been met by the Proposed Development; it is therefore considered unlikely for significant air quality impacts to occur as a result of increased traffic flow, and an associated air quality assessment is not required.

8.1.5.2 Potential Impacts on Climate

8.1.5.2.1 Construction Phase

There is the potential for combustion emissions from onsite machinery and traffic derived pollutants of CO_2 and N_2O to be emitted during the construction phase of the development. However, due to the size and duration of the construction phase, and the mitigation measures proposed, the effect on national GHG emissions will be insignificant in terms of Ireland's obligations under the Kyoto Protocol and therefore will have no considerable impact on climate. Overall, climatic impacts are considered to be short-term and imperceptible.

8.1.5.2.2 Operational Phase

8.1.5.2.2.1 Flood Risk

There is growing scientific consensus that the warming of the climate is expected to increase the risk of floods. Rising sea levels and more frequent and sever coastal storms will increase the risk of coastal and estuarial flooding as well as coastal erosion. According to the Planning System and Flood Risk Management (DECLG & OPW, 2009), where the floodplain or coastal plain is well defined, climate change is expected to change the probability of flooding and the depth for a particular event with little change in spatial extent. Only where extensive areas of land rise gently from the river or the sea is climate change expected to significantly increase the area affected by flooding.

There is a great deal of uncertainty in relation to the potential effects of climate change; therefore, a precautionary approach should be adopted, where necessary, to reflect uncertainties in flooding datasets and the ability to predict the future climate. Development should be designed with careful consideration to possible future changes in flood risk, including the effects of climate change so that future occupants are not subject to unacceptable risk (OPW, 2009).

A Flood Risk Assessment (FRA) was undertaken by Waterman Moylan on behalf of Balscadden GP3 Limited for the Proposed Development. This assessment identifies the risk of flooding at the Site from various sources and sets out possible mitigation measures against the potential risks of flooding. Sources of possible flooding include coastal, fluvial, pluvial (direct heavy rain), groundwater and human/mechanical errors. This report provides an assessment of the subject Site for flood risk purposes only.

The subject lands have been analysed for risks from tidal flooding from the Irish Sea at Balscadden Bay, fluvial flooding from the Bloody Stream, pluvial flooding, ground water and failures of mechanical systems. The following table presents the various residual flood risks involved:

Table 8-9: Residual Flood Risks (Source: Flood Risk Assessment)

Source	Pathway	Receptor	Likeli-hood	Conse-quence	Risk	Mitigation Measure	Residual Risk
Tidal	Irish Sea/ Balscadden Bay	Proposed Develop-ment	Ex-tremely low	None	Negligible	None	Extremely low
Fluvial	Bloody Stream	Proposed Develop-ment	Ex-tremely low	None	Negligible	None	Extremely low
Pluvial	Private & Public Drain-age Network	Proposed Develop-ment, down-stream properties and roads	Ranges from high to low	Moderate	Ranges from high to low	Appropriate drainage, SuDS and at-tenuation de-sign, setting of floor levels, overland flood routing	Low
Ground Water	Ground	Under-ground ser-vices, base-ment and ground level of buildings	High	Moderate	High	Appropriate setting of floor levels, flood routing, damp proof membranes, adequate wa-terproofing at the basement structure and sealing of all openings in the basement	Low
Human/ Mechani-cal Error	Drainage network	Proposed Develop-ment	High	Moderate	High	Setting of floor levels, overland flood routing, regu-lar inspection of SW net-work	Low

As indicated in Table 8-18, the various sources of flooding have been reviewed, and the risk of flooding from each source has been assessed. Where necessary, mitigation measures have been proposed. As a result of the proposed mitigation measures, the residual risk of flooding from any source is low. The full FRA Report can be found in Appendix G.

8.1.5.2.2.2 GHG Emissions

8.1.5.2.2.2.1 Traffic

Increased LDV and HGV traffic flow as a result of the Proposed Development is likely to contribute to increases in GHG emissions such as CO_2 and N_2O. However, these contributions are likely to be marginal in terms of overall national GHG emission estimates and Ireland's obligations under the Kyoto Protocol and the Paris Agreement, and therefore unlikely to have an adverse effect on climate.

8.1.5.2.2.2.2 Building Energy

8.1.5.2.2.2.2.1 Sustainability and Energy Report

A Sustainability and Energy Report has been prepared by JV Tierney & Co Mechanical Electrical & Sustainable Engineers on behalf of Balscadden GP3 Limited for the Proposed Development. This report outlines the current building regulations framework and the requirement to achieve Nearly Zero-Energy Buildings (NZEB) standard for all new developments. The report describes how the NZEB standard is demonstrated using SEAI approved Dwelling Energy Assessment Procedure (DEAP) software.

Building energy has been long understood as contributing a major component of GHG emissions which was acknowledged within the 2030 Communication published by the European Commission (2014) which stated that "the majority of the energy-saving potential (for the EU) is in the building sector. The EU Energy Performance of Buildings Directive set out the target that all new developments should be Nearly Zero-Energy Buildings (NZEB) by the end of 2020.

In developing the energy strategy for the Proposed Development, the incorporation of energy efficient strategies into the Proposed Development deliverables will encourage the commitment to sustainable design at a very early stage, ensuring a 'best in class' development for the site. The approach will seek to ensure that the buildings will meet the principles of the Government's 'National Climate Change Policy', Fingal County Development Plan 2017-2023 to reduce carbon emissions in line with Council objective En04 and the NZEB criteria as set out in the Part L Regulations 2021 and will maximise the reduction in Carbon Dioxide (CO2) emissions thus demonstrating the commitment to Climate Change.

8.1.5.3 Potential Cumulative Impacts

Cumulative Impacts can be defined as "*impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project*". Effects which are caused by the interaction of effects, or by associated or off-site projects, are classed as indirect effects. Cumulative effects are often indirect, arising from the accumulation of different effects that are individually minor. Such effects are not caused or controlled by the project developer.

The cumulative effects on the air quality and climate of the current Proposed Development and other planned or existing developments have been considered, in particular through the generation of air pollutants and GHG emissions. There are no planned or proposed projects located in close proximity to the Proposed Development with potential to result in cumulative impacts, therefore cumulative impacts are not predicted in this regard.

8.1.5.4 'Do Nothing" Impact

The Do-Nothing impact has been considered in terms of air quality in this chapter. If the Proposed Development did not proceed, the Proposed Development Site would remain unutilised. The existing ambient air quality would remain unchanged onsite and at nearby sensitive receptors.

Greenhouse gas emissions as a result of the Proposed Development are also likely to be marginal in terms of overall national GHG emission estimates and Ireland's obligations under the Kyoto Protocol and the Paris Agreement when compared to a Do-Nothing scenario.

8.1.6 Avoidance, Remedial & Mitigation Measures

8.1.6.1 Air Quality

8.1.6.1.1 Construction Phase

It is not expected that adverse air quality impacts are likely to occur at sensitive receptors as a result of the Proposed Development. However, appropriate mitigation measures, as outlined within the Outline Construction and Demolition Management Plan (CDMP), which has been prepared by Waterman Moylan Consulting Engineers, will be employed as necessary to further prevent such impacts occurring:

- Vehicle and wheel washing facilities will be provided at site exit where practicable. If necessary, vehicles are to be washed down before exiting the site.
- Netting is to be provided to enclose scaffolding to mitigate escape of air borne dust from the existing buildings.
- Shroud piling machinery as shown below when operating near to boundaries.
- Engines and exhaust systems should be maintained so that exhaust emissions do not breach stationary emission limits set for the vehicle / equipment type and mode of operation.
- Dust emission over the site boundary should be minimised using static sprinklers or other watering methods as necessary.
- No burning of materials to be permitted on site.
- Water sprays for dust suppression should be affixed to mechanical excavators/munchers involved in demolition works.
- Demolition waste should be removed from site as quickly as possible to minimise risk of dust generation and any fine material should be covered with a tarpaulin or similar material and tied down.
- Water sprays and cannons should be used where possible during cutting, with protective measures applied to retained finishes local to the cutting.
- Prior to commencement, the Main Contractor should identify the construction operations which are likely to generate dust and to draw up action plans to minimise emissions.
- In areas of poor natural ventilation, dust capture/extraction methods should be employed by the Main Contractor.
- The Main Contractor should allocate suitably qualified and experienced personnel to be responsible for ensuring the generation of dust is minimised and effectively controlled.
- The Main Contractor will be required to appoint a senior member of the site management team to act as the liaison with third parties in respect of complaints regarding dust and or site activities.
- Monitoring of dust deposition should be undertaken at nominated boundary locations to ensure that dust levels comply with the TA Lift limit value of 350mg/(m²/day) based on a 30-day average using Bergerhoff gauges (Limits to be agreed with local authority).

8.1.6.1.2 Operational Phase

It has been determined that the Operational Phase air quality impact is negligible and therefore no site-specific mitigation measures are proposed.

8.1.6.2 Climate

As negative climatic impacts associated with the Construction and Operational Phases of the Proposed Development are negligible, no mitigation measures are proposed. Best practice measures will be implemented to minimise exhaust emissions from construction and operational vehicles and machinery by avoidance of engines running unnecessarily, as idle engines will not be permitted for excessive periods. Furthermore, all proposals for development will seek to achieve the greatest standards of sustainable construction and design and will have regard to sustainable building design criteria.

8.1.6.3 "Worst Case" Scenario

Worst case scenario would involve failures of mitigation measures for the Proposed Development. In such events, it is not considered that dust nuisances will occur.

There is potential for significant dust soiling 50m from the Site and there are a number of high-sensitivity receptors (residential dwellings) located within 50m of the Site boundary; these are mainly situated to the southwest and west of the Proposed Development Site. There are also a small number of residential dwellings located to the northeast and southeast of the Proposed Development Site. In the absence of mitigation, it is considered that there is potential for dust impacts to occur at these locations. However, even in the absence of mitigation measures, the trees and hedgerows which are currently present on the boundary of the Site will act as a natural buffer for dust deposition in some cases.

8.1.7 Residual Impacts

Residual Impacts are defined *as 'effects that are predicted to remain after all assessments and mitigation measures'*. They are the remaining 'environmental costs' of a project and are the final or intended effects of a development after mitigation measures have been applied to avoid or reduce adverse impacts. Potential residual impacts from the Proposed Development were considered as part of this environmental assessment.

The Proposed Development is likely to result in a long-term slight increase in traffic on the roads surrounding the Proposed Development Site; however, this increase in traffic has been determined to have negligible impacts in terms of local air quality. Furthermore, the increase in traffic has been determined as marginal in respect of climatic impacts. Therefore, no adverse residual impacts are anticipated from the Proposed Development in the context of air quality and climate.

8.1.8 Monitoring

The monitoring of construction dust during the Construction Phase of the Proposed Development is recommended to ensure that impacts are not experienced beyond the Site boundary. Monitoring of dust can be carried out by using the Bergerhoff Method. This involves placing Bergerhoff Dust Deposit Gauges at a strategic locations along the Site boundaries for a period of 30 +/- 2 days. The selection of sampling point locations should be carried out in consideration of the requirements of the German Standard Method VDI 2119 (Measurement

of Dustfall, Determination of Dustfall using Bergerhoff Instrument (Standard Method German Engineering Institute) with respect to the location of the samplers relative to buildings and other obstructions, height above ground, and sample collection and analysis procedures. After the exposure period is complete, the Gauges should be removed from the Site; the dust deposits in each Gauge will then be determined gravimetrically and expressed as a dust deposition rate in mg/m^2/day in accordance with the relevant standard. Monitoring of construction dust deposition will be conducted at nearby sensitive receptors and at the Site boundary (i.e. worst-case location), including within the SAC at locations approved by the project ecologist, during the construction phase of the Proposed Development.

Due to the negligible impact on air quality and climate from the Operational Phase of the Proposed Development, no specific monitoring is recommended.

8.1.9 Interactions

Interactions between Air Quality and Climate and other aspects of this Environmental Impact Assessment Report have been considered and are detailed below.

8.1.9.1 Population and Human Health

Interactions between Air Quality and Population and Human Health have been considered as the Operational Phase has the potential to cause health issues as a result of impacts on air quality from dust nuisances and potential traffic derived pollutants. However, the mitigation measures employed at the Proposed Development will ensure that all impacts are compliant with ambient air quality standards and human health will not be affected. Furthermore, traffic-related pollutants have been assessed and determined as negligible, therefore air quality impacts from the Proposed Development are not expected to have a significant impact on population and human health.

8.1.9.2 Land and Soil

Control measures such as the dampening down measures outlined in Chapter 6 will reduce dust levels arising from the development works.

8.1.9.3 Biodiversity

Interactions between Air Quality and Biodiversity have been considered as the Proposed Development has the potential to cause short-term impacts on biodiversity as a result of impacts on air quality from dust nuisances and potential traffic derived pollutants in the absence of mitigation measures. However, the mitigation measures employed at the Proposed Development will ensure that all impacts are neutral and biodiversity will not be affected. An assessment of the potential impact of the Proposed Development on biodiversity is included in Chapter 5 of this EIAR.

8.1.9.4 Traffic

There can be a significant interaction between air quality, climate and traffic. This is due to traffic-related pollutants that may arise. In the current assessment, traffic derived pollutants which may affect Air Quality and Climate have been assessed as negligible. Therefore, the impact of the interaction between air quality and climate is insignificant.

8.1.10 Difficulties Encountered When Compiling

No difficulties have been encountered while compiling this chapter.

8.1.11 References

Air Pollution Act 2012 (S.I. No. 326 of 2012) Irish Statute Book.

Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011) Irish Statute Book.

Air Quality, Clean Air for Europe Directive (2008/50/EC) EUR-Lex.

Department of Communications, Climate Action and Environment (DCCAE) (2017) National Mitigation Plan

Department of Communications, Climate Action and Environment (DCCAE) (2018) National Adaptation Framework

Department of the Environment, Transport and the Regions, 1995. The Environmental Effects of Dust from Surface Mineral Workings- Volume 2. Technical Report.

Environmental Protection Agency (2018) Ireland's Final Greenhouse Gas Emissions 1990-2016.

Environmental Protection Agency (2019) Ireland's Final Greenhouse Gas Emissions 1990-2017.

Environmental Protection Agency (2019) Irelands National Inventory Report: Greenhouse Gas Emissions 1990-2017.

Environmental Protection Agency (2019) Irelands Provisional Greenhouse Gas Emissions 1990-2018.

Environmental Protection Agency (2020) Air Dispersion Modelling from Industrial Installations Guidance Note (AG4).

Environmental Protection Agency (2020) Air Quality in Ireland 2019 Annual Report on Air Quality in Ireland from the Environmental Protection Agency.

Environmental Protection Agency (2021) Air Quality in Ireland 2020 Annual Report on Air Quality in Ireland from the Environmental Protection Agency.

Environmental Protection Agency (2021) Latest Emissions Data.

European Commission (2007) 2020 Climate & Energy Package.

European Commission (2011) A Roadmap for Moving to a Competitive Low Carbon Economy in 2050.

European Commission (2014) 2030 Climate & Energy Framework.

German VDI (2002) Technical Guidelines on Air Quality Control – TA Luft.

Government of Ireland (2021) Climate Action and Low Carbon Development (Amendment) Act 2021.

Government of Ireland (2021) Climate Action Plan 2021.

Institute of Air Quality Management (2014) Guidance on the Assessment of Dust from Demolition and Construction.

Institute of Air Quality Management (2016) Guidance on the Assessment of Mineral Dust Impacts for Planning.

Institute of Air Quality Management (2017) Land-Use Planning & Development Control: Planning for Air Quality.

Intergovernmental Panel on Climate Change (2006) IPCC Guidelines for National Greenhouse Gas Inventories.

Intergovernmental Panel on Climate Change (2019) Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories.

Met Eireann (2021) Daily Meteorological Data for Dublin Airport Synoptic Weather Station.

Met Eireann (2021) Hourly Meteorological Data for Dublin Airport Synoptic Weather Station.

Met Eireann (2021) Monthly Meteorological Data for Dublin Airport Synoptic Weather Station.

Transport Infrastructure Ireland (2011) Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes.

UK Department for Environment, Food and Rural Affairs (2008) Analysis of the relationship between annual mean nitrogen dioxide concentration and exceedances of the 1-hour mean AQS Objective.

UK Department for Environment, Food and Rural Affairs (2020) NO_x to NO_2 Conversion Spreadsheet (Version 8.1).

UK Highways Agency (2019) UK Design Manual for Roads and Bridges (DMRB), Volume 11, Environmental Assessment, Section 3 Environmental Assessment Techniques, Part 1 LA 105 Air Quality.

United Nations Framework Convention on Climate Change (1998) Kyoto Protocol to the UNFCCC.

United Nations Framework Convention on Climate Change (2012) The Doha Amendment to the Kyoto Protocol.

United Nations Framework Convention on Climate Change (2015) The Paris Agreement.

8.2 Microclimate Wind

8.2.1 Introduction

B-Fluid Limited has carried out the Wind Microclimate Study for the Proposed Development at Balscadden Road, Howth, Co. Dublin. Figure 8-4 shows the Site of the Proposed Development within the redline.

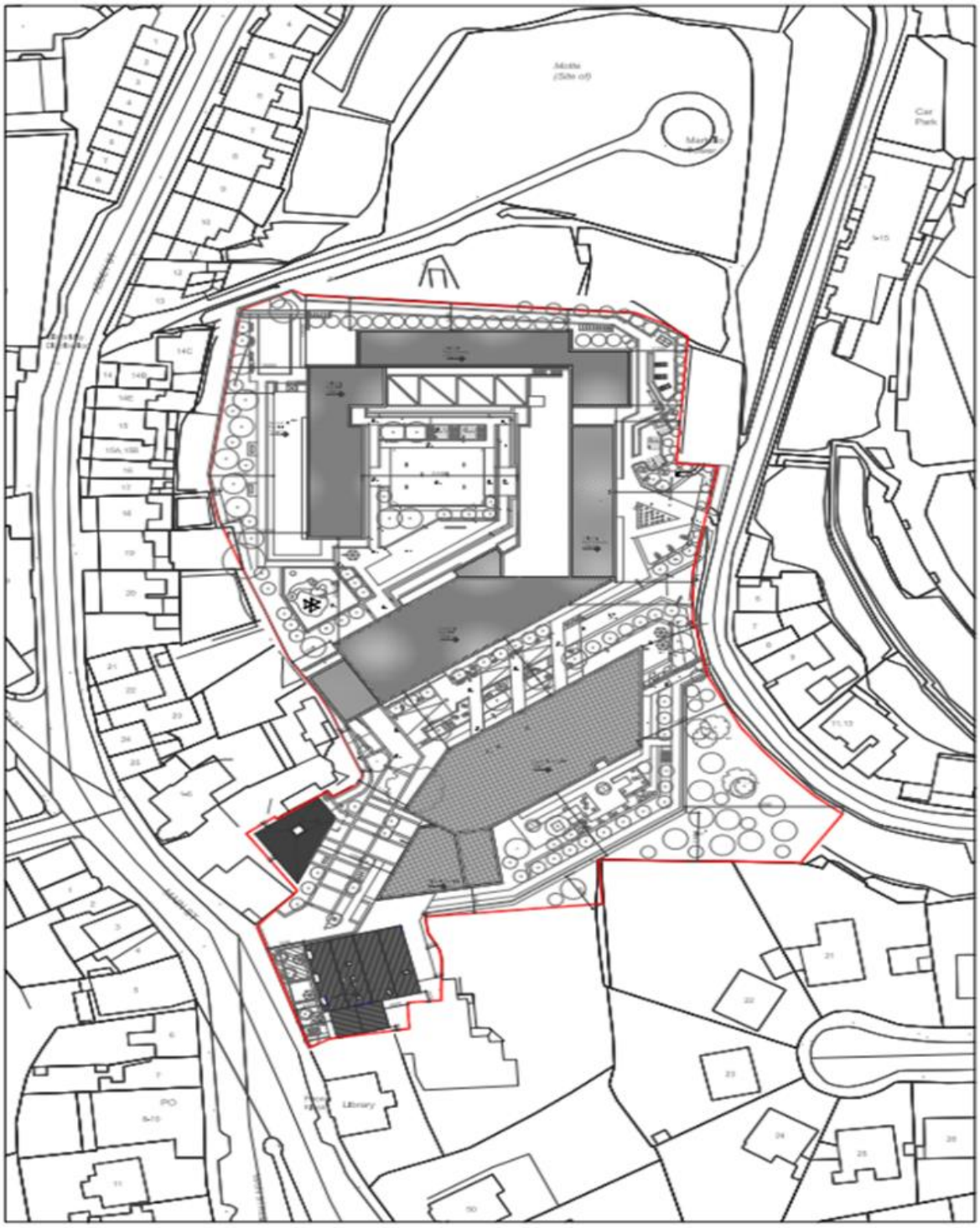


Figure 8-4: Site of the Proposed Development

This Chapter is completed by Dr. Cristina Paduano, Dr. Patrick Okolo and Dr. Arman Safdari.

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. Arman Safdari is a CFD Modelling Engineer who specialises in computational fluid dynamics applications. He is an expert in airflow modelling, heat and mass transfer and multi-phase flow simulations. He holds a PhD in Mechanical Engineering from Pusan National University, a M.Sc. and B.Sc. in Mechanical Engineering.

A Wind Microclimate Study identifies the possible wind patterns that form when wind moves through a built environment and evaluates how a new 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.

A 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 this to predicting 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.

8.2.1.1 Guidance and legislation

According to the '*Urban Development and Building Heights, Guidelines for Planning Authorities (Government of Ireland, December 2020*)' document, 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 6-8 storeys. Above this height, buildings are considered 'taller' for Dublin standards.

The recommended approach to wind microclimate studies is outlined in the "*Wind Microclimate Guidelines for Developments in the City of London* '(August 2020) 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 is used to benchmark the pedestrian wind microclimate.

The document also indicates how to use Computational fluid dynamics (CFD) to assess wind microclimate conditions and how to generate high quality outputs to provide a good understanding of the fundamental flow features around an urban context.

Building Height	Recommended Approach to Wind Microclimate Studies
Similar or lower than the average height of surrounding buildings **Up to 25m**	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 **25m to 50m**	Computational (CFD) Simulations **OR** Wind Tunnel Testing
Up to 4 times the average height of surrounding buildings **50m to 100m**	Computational (CFD) Simulations **AND** Wind Tunnel Testing
High Rise **Above 100m**	**Early Stage Massing Optimization:** 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

Figure 8-5: Recommended Approach to Wind Microclimate Studies based on Building Height, as prescribed by the Wind Microclimate Guidelines for Developments in the City of London (August 2020)

8.2.1.2 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 8-6* Figure 8-6 shows the wind velocity profile, as described above.

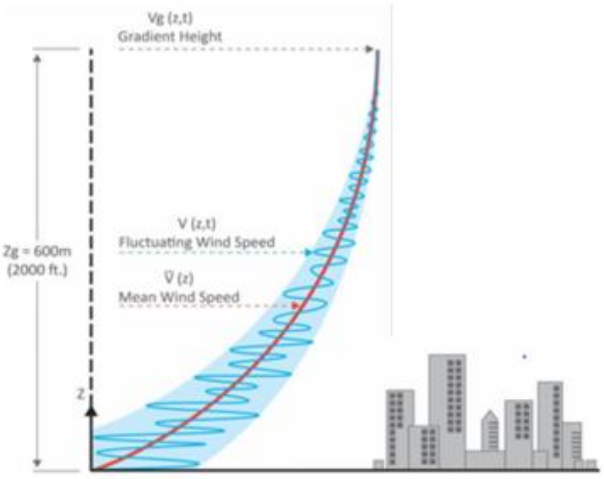


Figure 8-6: Atmospheric wind velocity profile

In an urban context, wind speeds at pedestrian level are generally low compared with upper-level wind speeds, however, the wind can create adverse patterns when flowing in between buildings which can cause local wind accelerations or re-circulations (Figure 8-7 8-7). This patterns effects pedestrian safety and comfort. In general, the wind effects to be avoided/mitigated in an urban context include the following:

- **Funnelling Effects:** The wind can accelerate significantly when flowing through a narrow passage between building structures. The highest speeds are experienced at the point where the restriction of the area is the greatest.

- **Downwash Effects:** The air stream when striking a tall building can flow around it, over it and a part can deflected towards the ground. This downward component is called downwash effect and its intensity depends on the pressure difference driving the wind. The higher the building, the higher this pressure difference can be.

- **Corner Effects:** Wind can accelerate around the corners of the buildings. Pedestrians can experience higher wind speeds as well as more sudden changes in wind speeds. The reason for this is that there are narrow transition zones between the accelerated flows and the adjacent quiescent regions. This effect is linked to the downwash effect as the downward stream component subsequently flows around the corners towards the leeward side of the building.

- **Wake Effect:** Excessive turbulence can occur in the leeward side of the building. This can cause sudden changes in wind velocity and can raise dust or lead to accumulation of debris. This effect is also dependent on the height of the building.

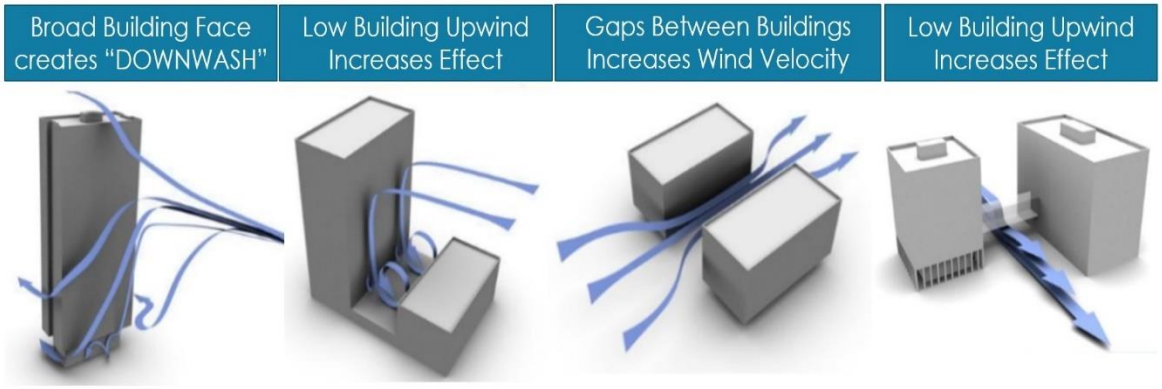


Figure 8-7: Wind patterns created around buildings showing typical wind microclimate in an urban context

The anticipation of the likely wind conditions resulting from new developments are important considerations in the context of pedestrian comfort and the safe use of the public realm. While it is not always practical to design out all the risks associated with the wind environment, it is possible to provide local mitigation to minimise risk or discomfort where required.

8.2.2 Study Methodology

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). 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 consist of the existing wind microclimate at the site.

- **Proposed Development in the Existing Scenario**: this consist 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 8.2.1.1, 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.

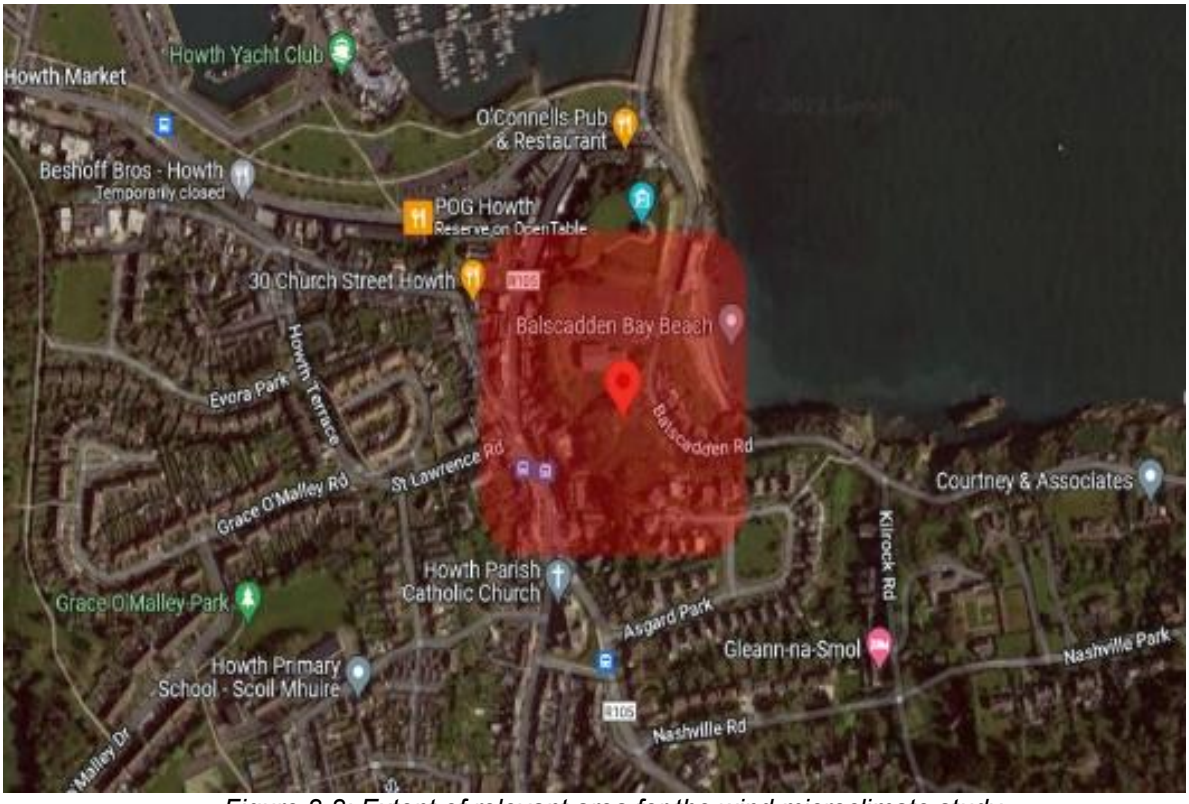


Figure 8-8: Extent of relevant area for the wind microclimate study

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*") have been modelled using CFD OpenFOAM Software (CFD model and details are in Appendix A.

- 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.

- Computational Fluid Dynamics (CFD) has been used to simulate the local wind environment for the required scenarios ('baseline, proposed, 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.

8.2.2.1 Assessment Criteria for Pedestrian Comfort and Distress

"Lawson Comfort and Distress Criteria" has 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 and these "gust *equivalent mean*" (GEM) speeds 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 following criteria are widely accepted by local authorities as well as the international building design and city planning community:

- COMFORT CRITERIA: 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 CRITERIA: Relates to the physical well-being 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 which less able individuals or cyclists may find physically difficult. Conditions in excess of this limit may be acceptable for optional routes and routes which 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.

Table 8-10 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 8-11: Lawson Pedestrian Comfort/Distress Criteria Details of Unsafe Conditions

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 1.5m above ground level as required by the guideline cited in section 8.2.1.1. 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.

8.2.2.2 Significance Criteria

The significance of on-site measurement locations is defined by comparing the wind comfort/safety levels with the intended pedestrian activity at each location, using the table provided by the Lawson Comfort and Distress Criteria.

Table 8-12: On-site Receptors Significance Criteria extracted by Wind Microclimate Guidelines for Developments in the City of London (August 2020)

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 measurement locations is defined by comparing the wind comfort/safety levels with the intended pedestrian activity at each location, prior and after the introduction of the Proposed Development.

Table 8-13: Off-site Receptors Significance Criteria extracted by Wind Microclimate Guidelines for Developments in the City of London (August 2020)

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" as a result of the Proposed Development. OR Conditions that were "unsafe" in the baseline scenario are made worse as a result of the Proposed Development.	Yes
Moderate Adverse	Conditions that were "suitable" in terms of comfort in the baseline scenario are made 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" as a result of the Proposed Development.	No
Moderate Beneficial Potential Receptors	Conditions that were "unsuitable" in terms of comfort in the baseline scenario became "suitable" as a result of the Proposed Development. OR Conditions that were "unsafe" in the baseline scenario are made better as a result of the Proposed Development (but not so as to make them "safe".	No

8.2.2.3 Local Wind Climate

A statistical analysis of 30 years historical wind data has been carried out to characterise the existing local 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 8-9 shows on the map the position of the Site of the Proposed Development and the position of Dublin Airport.

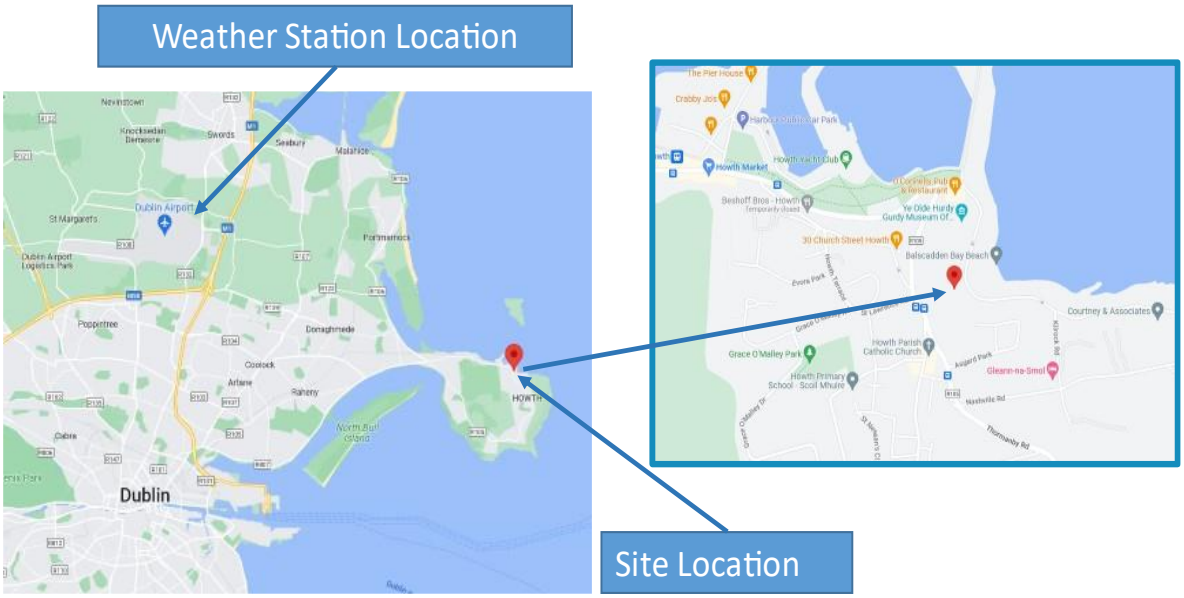


Figure 8-9: Map showing the position of Balscadden Road SHD and Dublin Airport

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 development site is located in a coastal area with small elevation and with buildings of up to 10m height in average.

- **Mean Wind Speeds**: Due to the different terrain environment, 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 a coastal terrain with some isolated elevations in the near area of the development. The sea is adjacent to the proposed site.

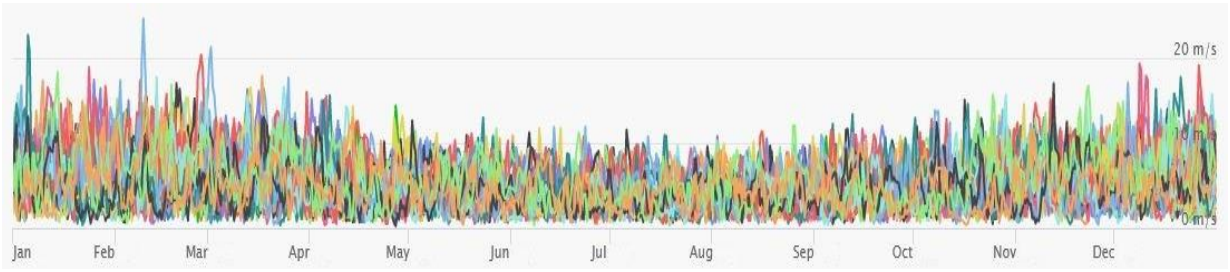


Figure 8-10: Local Wind Conditions - Wind Speed (Mean Values per Months)- historic data 1990-2020

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 is recorded at a weather station at the airport, which is located 10m above ground or 71mOD.

8.2.2.4 Local Wind for the Assessment of Pedestrian Comfort and Distress

The predominant wind directions on 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.

Figure 8-11 presents the wind speed diagram for Dublin, the diagram shows how often (how many days per month) the wind blows with a specific speed.

Figure 8-12 shows the wind rose for Dublin and details how often (how many hours per year in this case) the wind blows from a specific direction, these data highlights that the predominant wind directions for the site are West-South-West, West, and South-West.

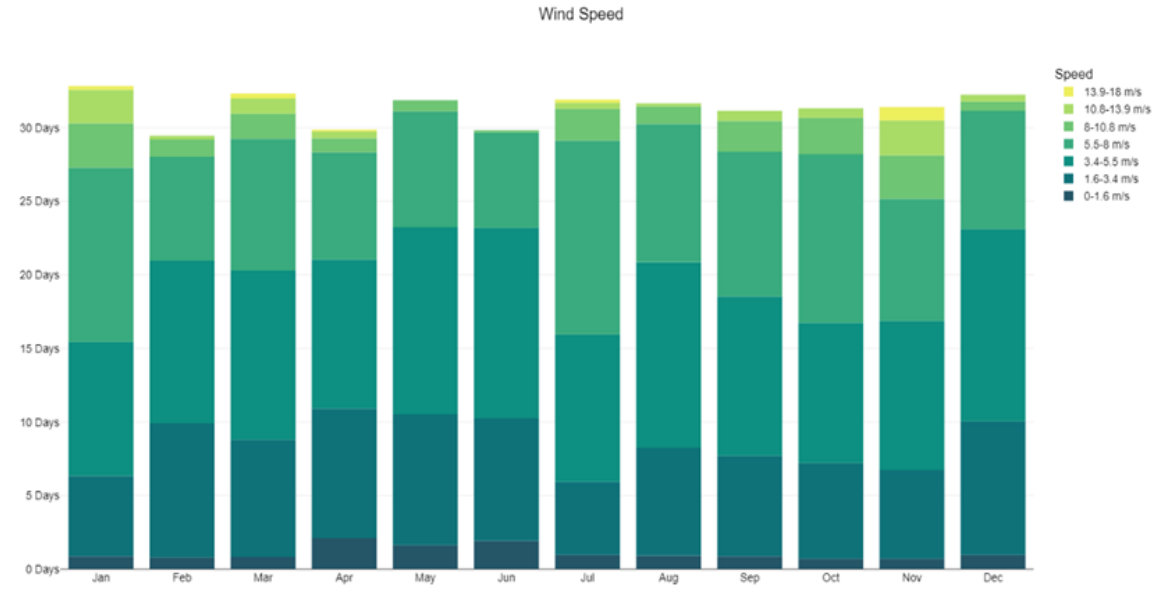


Figure 8-11: Wind Speed Monthly Historic Diagram

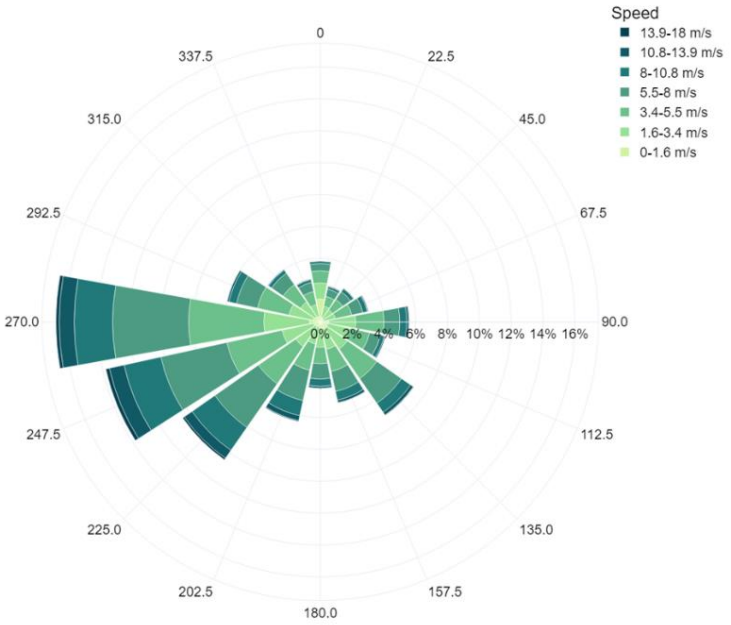


Figure 8-12: Local Wind Rose with wind frequency of occurrence details

Table 8-14 reports all the wind directions and their correspondent velocity, displayed in order of frequency of occurrence with those most frequent on the top.

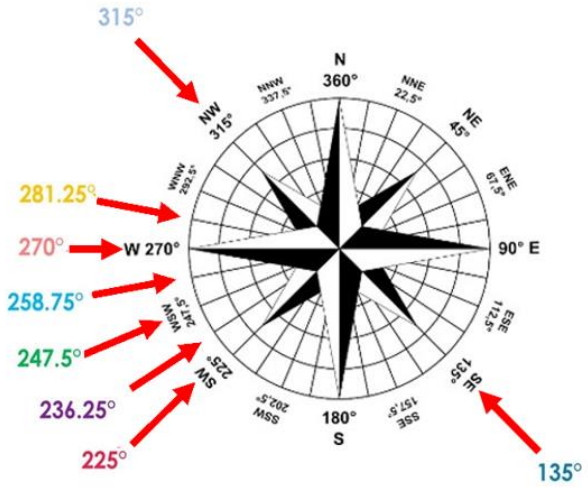
As it can be noted, the wind at the site is mostly blowing (higher frequency of occurrence) from the South-West (225deg) direction with a wind velocity of approximately 5m/s. A similar wind speed is blowing also from the South-South-West direction (213deg), however the frequency of occurrence of this wind is less than 5% (only 3.288% of the times, as indicated in Table 8-14) therefore, this wind is not relevant for the scope of performing the pedestrian comfort and distress analysis as per Lawson Criteria.

Table 8-14 Summary of the wind speeds at the site with indicated the magnitude, directions and frequency of occurrence

BASELINE WIND SPEEDS, DIRECTIONS and FREQUENCY OF OCCURENCE		
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

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. On this

basis, the wind scenarios to be considered for the wind microclimate assessment are presented in Table 8-14.



Velocity (m/s)	Direction (°)	Frequency
5.601	225	11.233
4.626	135	6.849
5.847	236.25	6.792
6.049	258.75	6.747
6.034	247.5	6.689
5.888	270	5.662
4.994	315	4.338
5.503	281.25	3.904

Figure 8-13: Baseline Wind Conditions relevant for the Lawson Criteria used for the wind microclimate study

8.2.3 The Existing and Receiving Environment (Baseline Situation)

The wind microclimate of the baseline scenario is defined by the wind patterns that develop on the site and it's the surroundings (existing buildings and topography) under the local wind conditions relevant for the assessment of the Pedestrian Comfort and Distress.

Figure 8-14: Baseline buildings and topography

For this assessment it has been considered that the existing structures are going to be demolished as part of the redevelopment of the area.

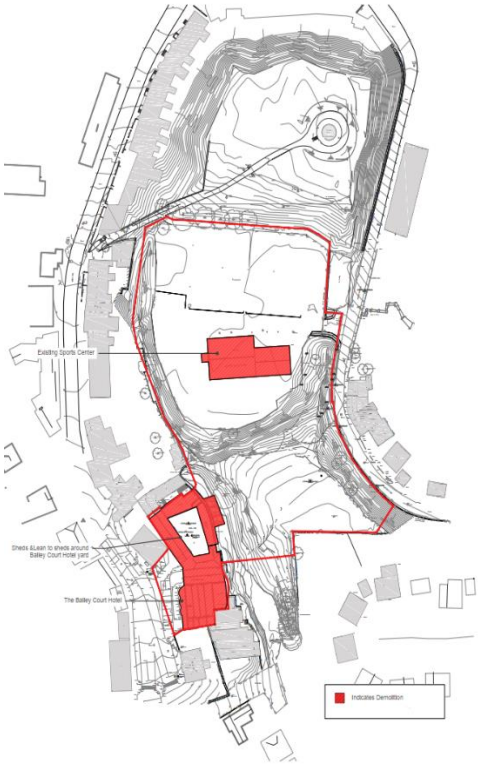


Figure 8-15: Baseline environment after demolishing of existing structures

8.2.3.1 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 (1.5m 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.

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.

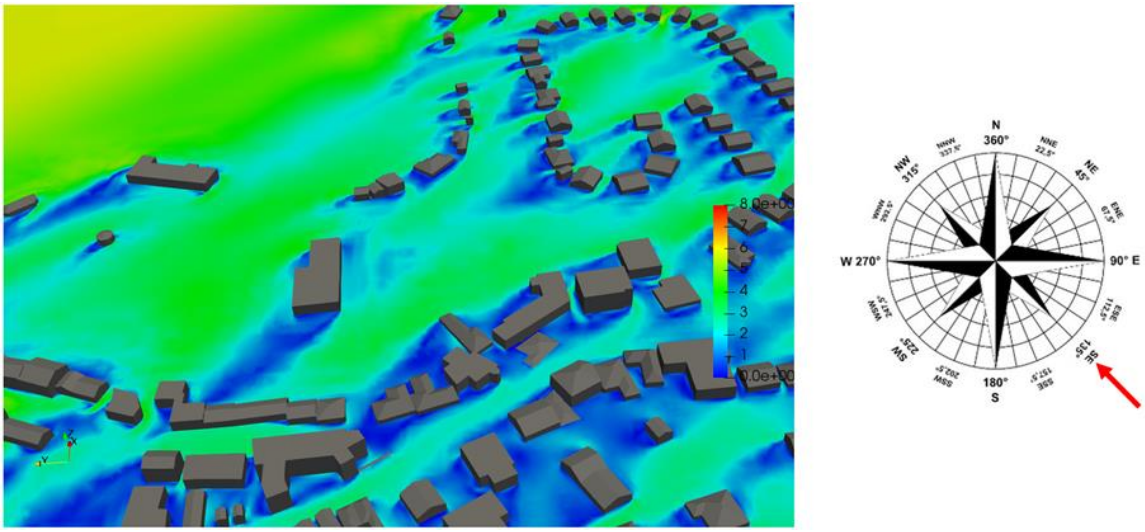


Figure 8-16: Pedestrian Level - Flow Velocity at 1.5m above the ground - Wind Direction: 135°

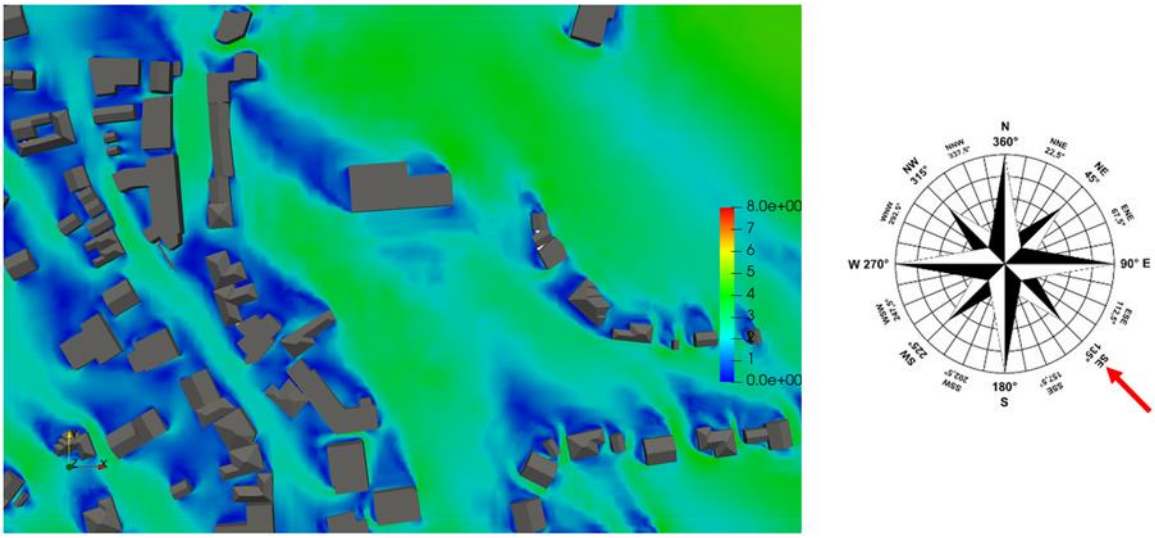


Figure 8-17: Pedestrian Level - Flow Velocity at 1.5m above the ground - Wind Direction: 135°

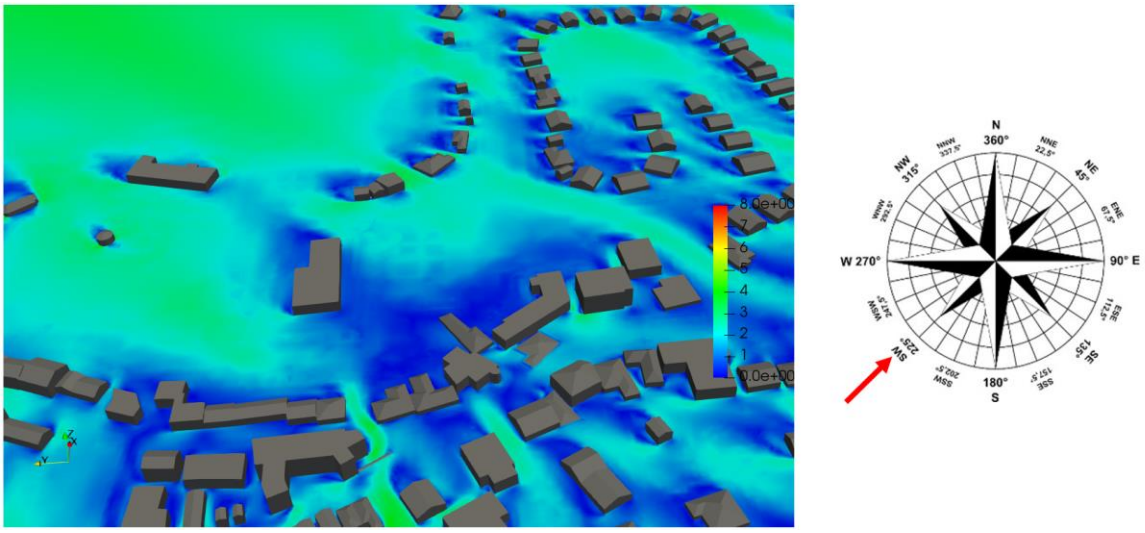


Figure 8-18: Pedestrian Level - Flow Velocity at 1.5m above the ground - Wind Direction: 225°

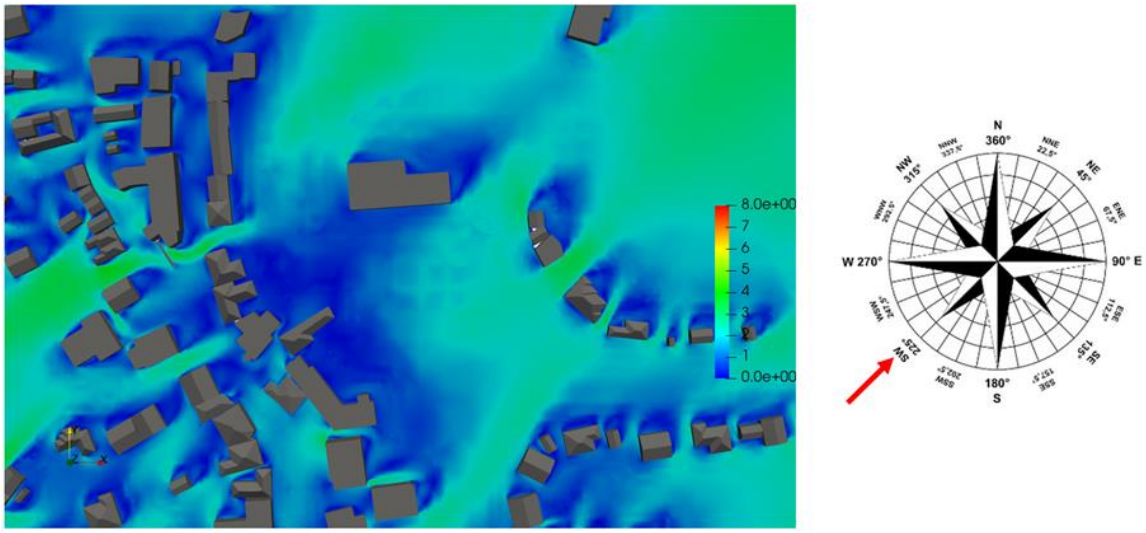


Figure 8-19: Pedestrian Level - Flow Velocity at 1.5m above the ground - Wind Direction: 225°

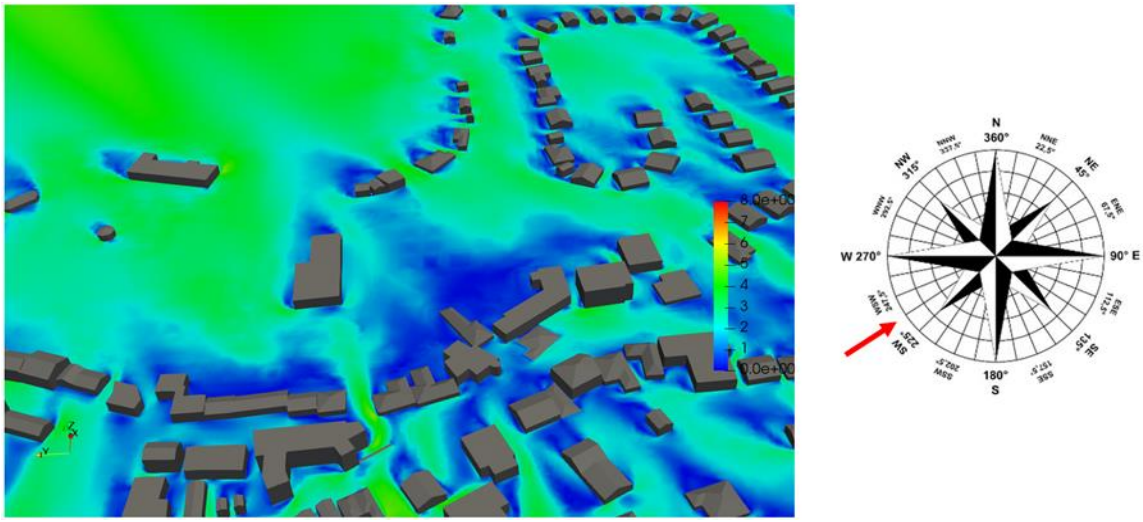


Figure 8-20: Pedestrian Level - Flow Velocity at 1.5m above the ground - Wind Direction: 236°

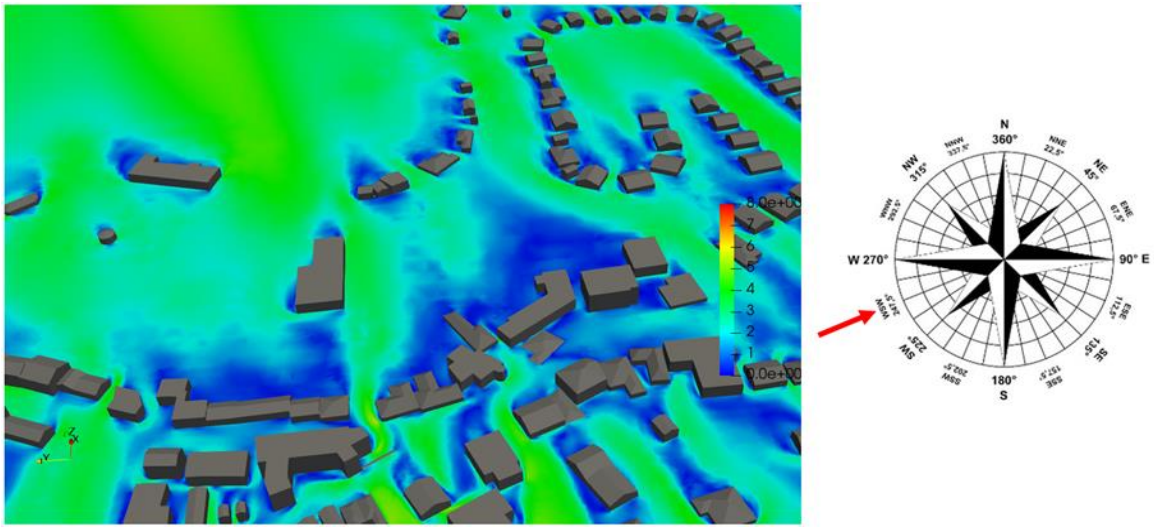


Figure 8-21: Pedestrian Level - Flow Velocity at 1.5m above the ground - Wind Direction: 247°

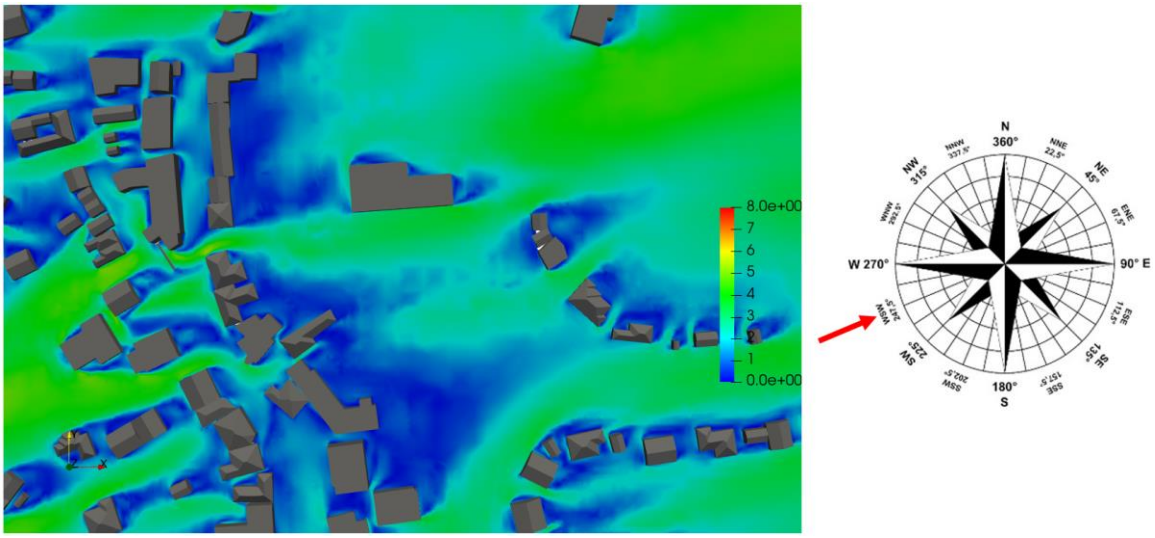


Figure 8-22: Pedestrian Level - Flow Velocity at 1.5m above the ground - Wind Direction: 247°

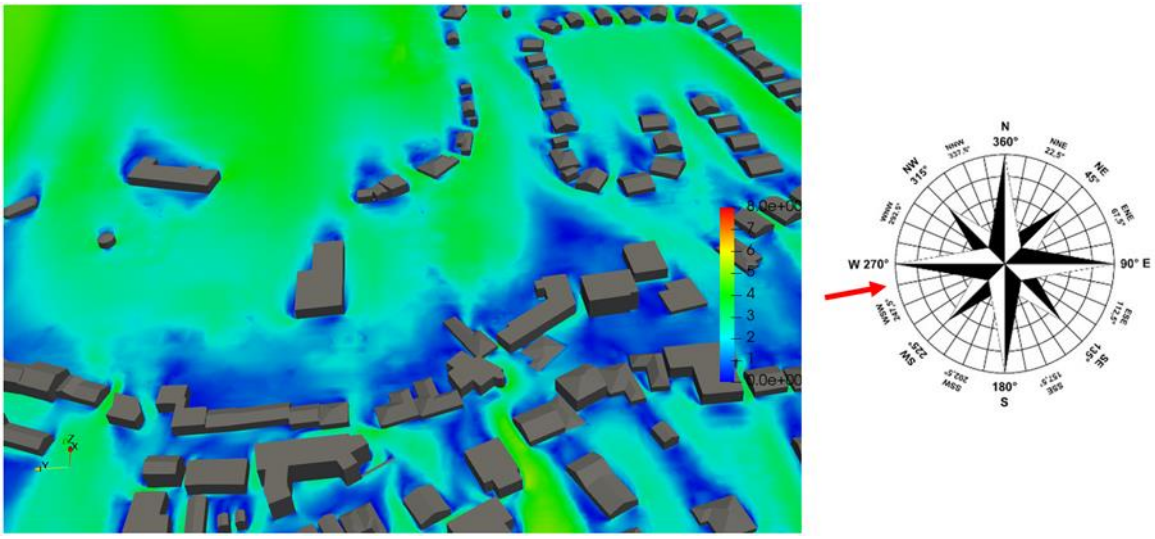


Figure 8-23: Pedestrian Level - Flow Velocity at 1.5m above the ground - Wind Direction: 258°

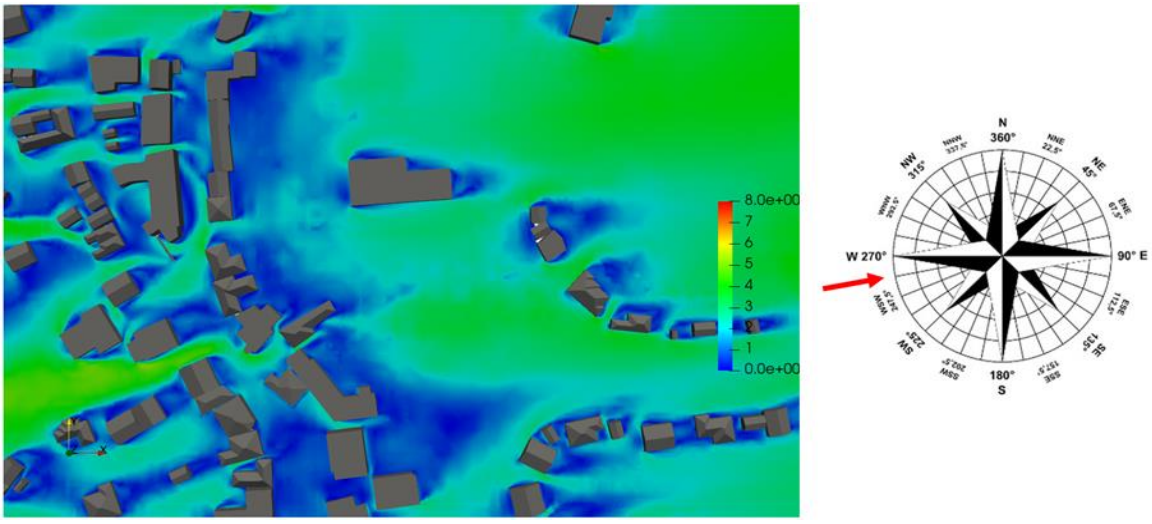


Figure 8-24: Pedestrian Level - Flow Velocity at 1.5m above the ground - Wind Direction: 258°

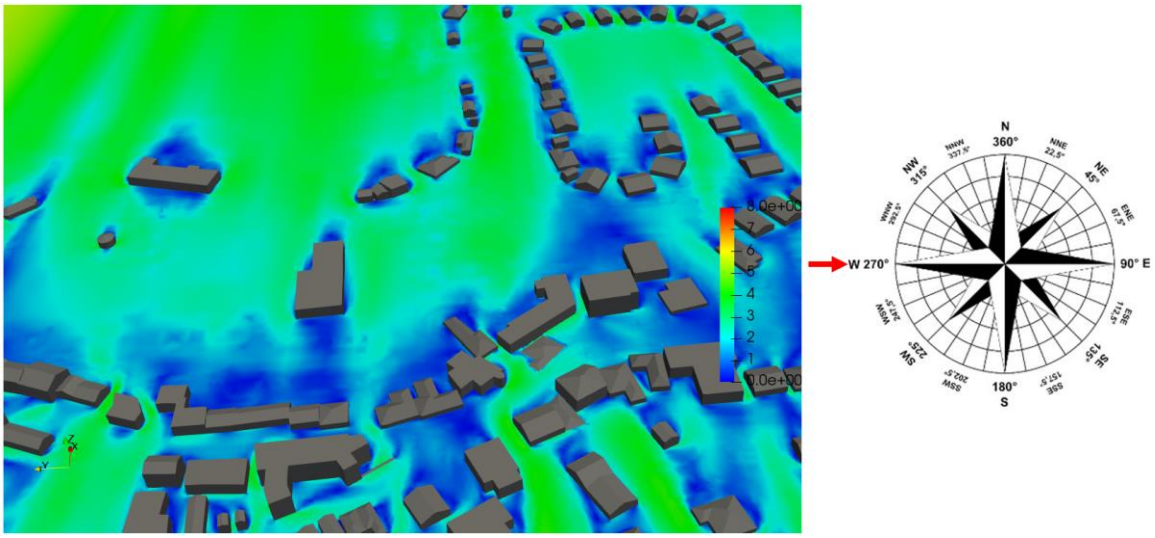


Figure 8-25: Pedestrian Level - Flow Velocity at 1.5m above the ground - Wind Direction: 270°

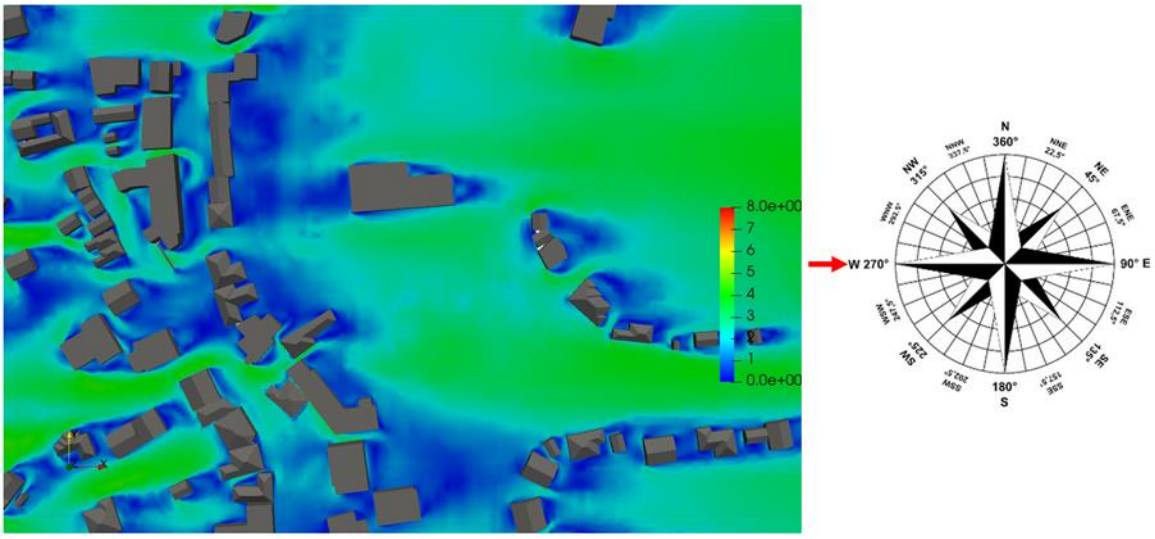


Figure 8-26: Pedestrian Level - Flow Velocity at 1.5m above the ground - Wind Direction: 270°

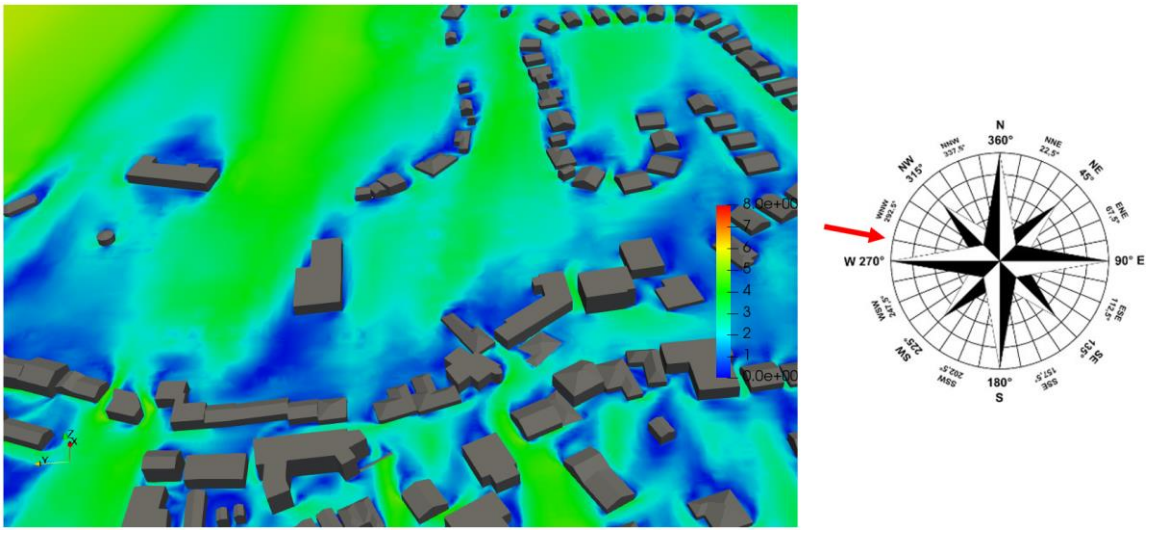


Figure 8-27: Pedestrian Level - Flow Velocity at 1.5m above the ground - Wind Direction: 281°

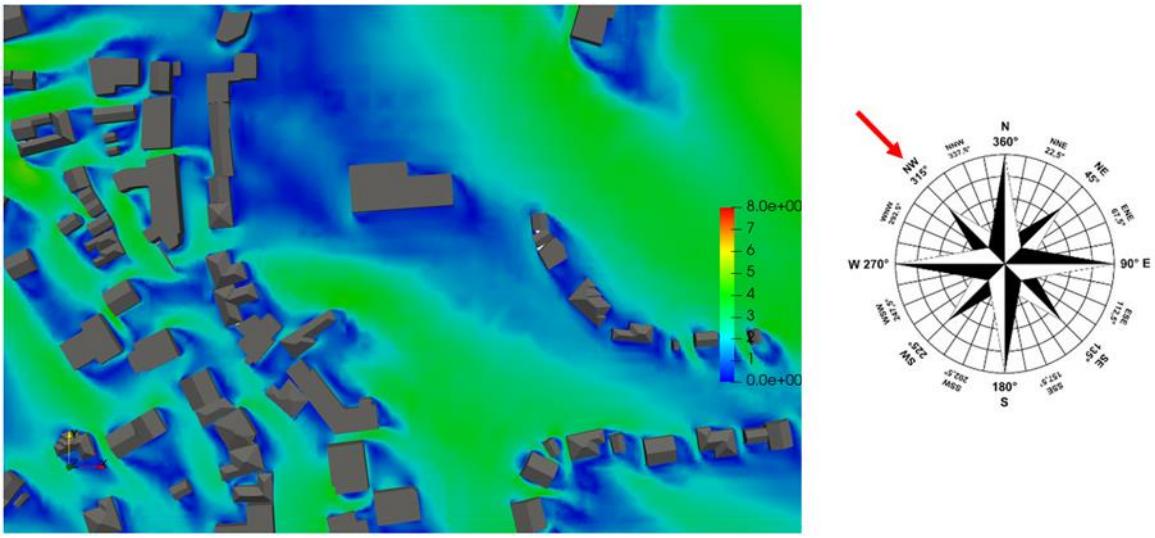


Figure 8-28: Pedestrian Level - Flow Velocity at 1.5m above the ground - Wind Direction: 315°

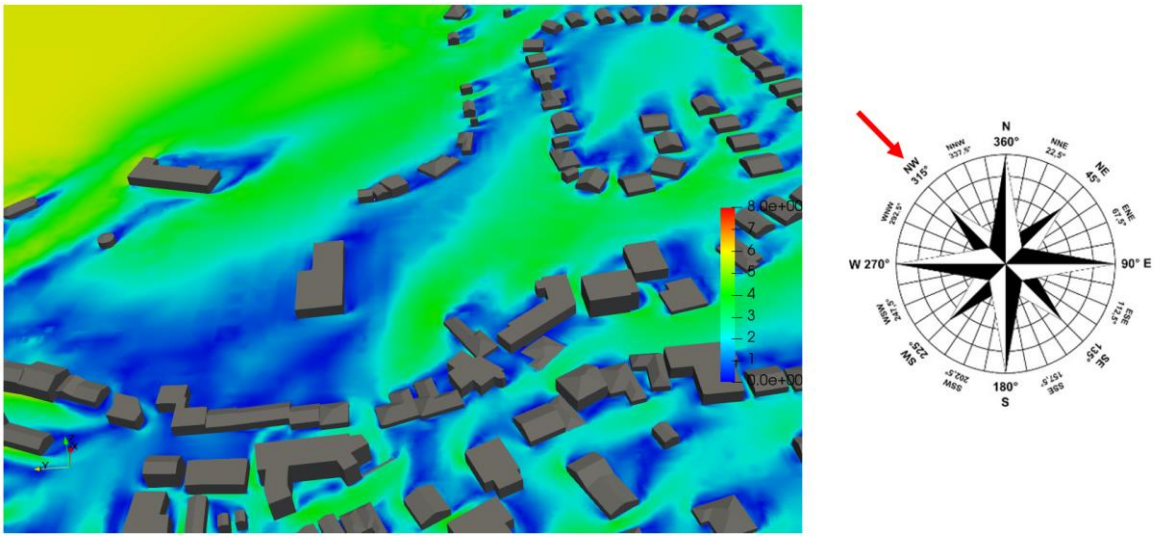


Figure 8-29: Pedestrian Level - Flow Velocity at 1.5m above the ground - Wind Direction: 315°

8.2.3.2 Impact on Pedestrian Comfort and Distress

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. The comfort/distress conditions are presented using a colour coded diagram below formulated in accordance with the Lawson Criteria.

Figure 8-30: Color coded Lawson category for plotting of the Lawson Map

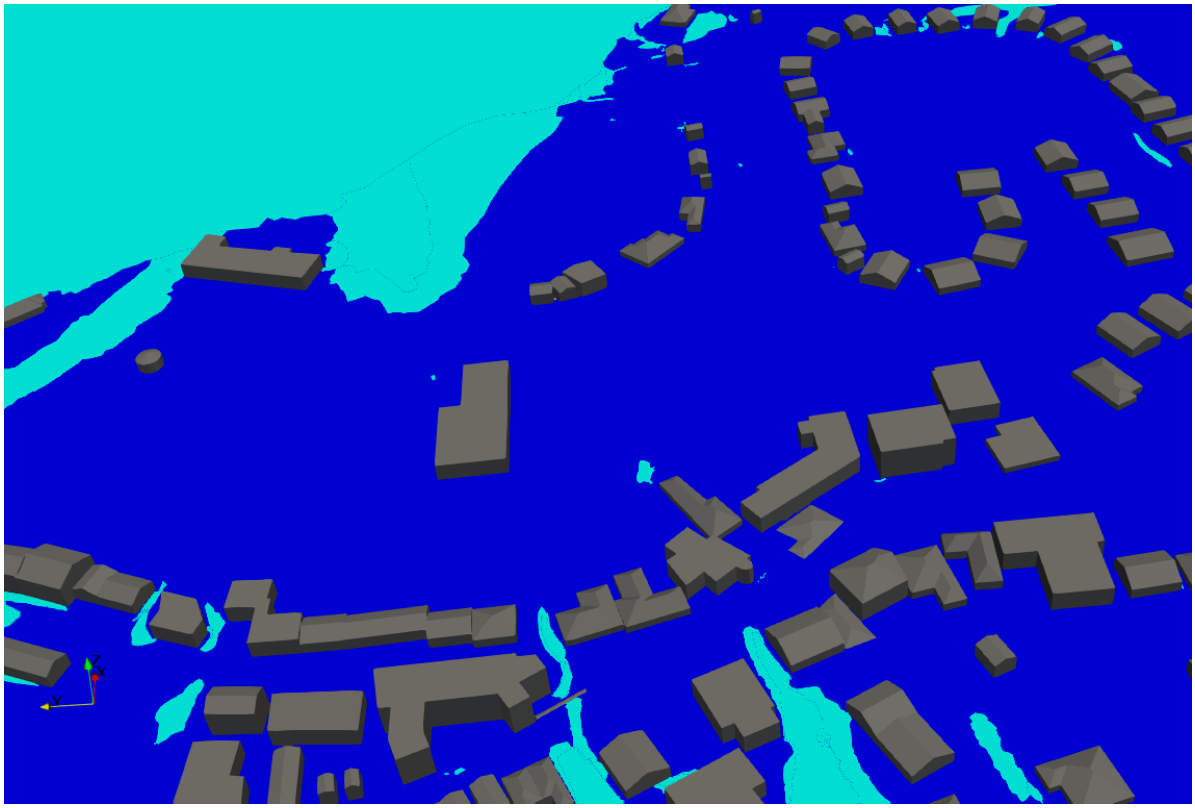


Figure 8-31: Balscadden Baseline condition - Pedestrian Level - Lawson Comfort/Distress Map - Iso View

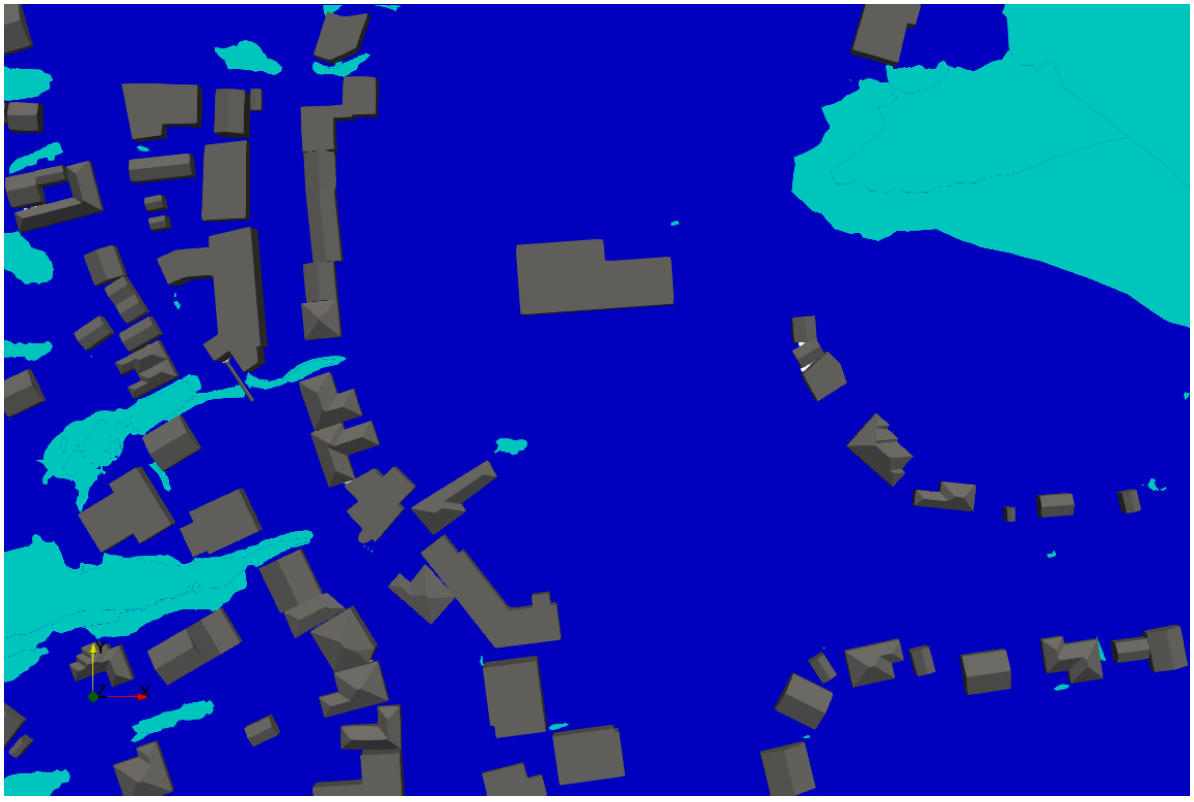


Figure 8-32: Balscadden Baseline Condition - Pedestrian Level - Lawson Comfort/Distress Map - Top View

- The assessment of the baseline scenario has shown that no area is un-safe and no conditions of distress are created in the existing environment under the local wind climate.

- The site is usable for walking and short-term sitting, the roads in the surrounding are usable for their intended scope (walking).

- At the moment, there is no designated area for public long-term sitting, however some area of the site present comfortable conditions for this activity.

8.2.4 Characteristics of the Proposed Development

The proposed development relates to lands located to the south of the Martello Tower on Balscadden Road & the former Baily Court Hotel, Main Street, Howth, County Dublin. The development will consist of the demolition of existing structures on the proposed site including the disused sports building and the former Baily Court Hotel buildings and the construction of a residential development set out in 4 no. residential blocks, ranging in height from 2 to 5 storeys to accommodate 180 no. apartments with associated internal residential tenant amenity and external courtyards and roof terraces, 1 no. retail unit and 2 no. café/retail units. The site will accommodate car parking spaces at basement level and bicycle parking spaces at basement and surface level. Landscaping will include new linear plaza which will create a new pedestrian link between Main St and Balscadden Rd to include the creation of an additional 2 no. new public plazas and also maintains and upgrades the pedestrian link from Abbey Street to Balscadden Road below the Martello Tower.

8.2.4.1 Potential 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 for this assessment are highlighted in the following image and relate to the “Public Open Space”, “Communal Open Space”, “Roof terraces at level 3 and 4 of Block B” which will be used by public for long term sittings and need to be particularly comfortable/safe.

In particular, pedestrian activities will be occurring most of times in the following areas:

- POS4 The first being the provision of a new landscaped plaza (POS4), to the east of the site overlooking Balscadden bay. This area will be complete with public seating, art sculptures and information zones for pedestrians.

- POS3 provides the public with an new external space which services the cafe, complete with natural stone paving & external seating, which is available to the public and is not commercially private.

- POS2 is the provision of a new public pedestrian zone linking Abbey St to Balscadden St. This public space will be softly landscaped and lined with water features & sculptures.

- POS1 is a new public realm which services the cafe & retail unit to the facade facing Abbey St. This area is softly landscaped and provides a covered seating area for the public to meet / sit /shop along the Main St.

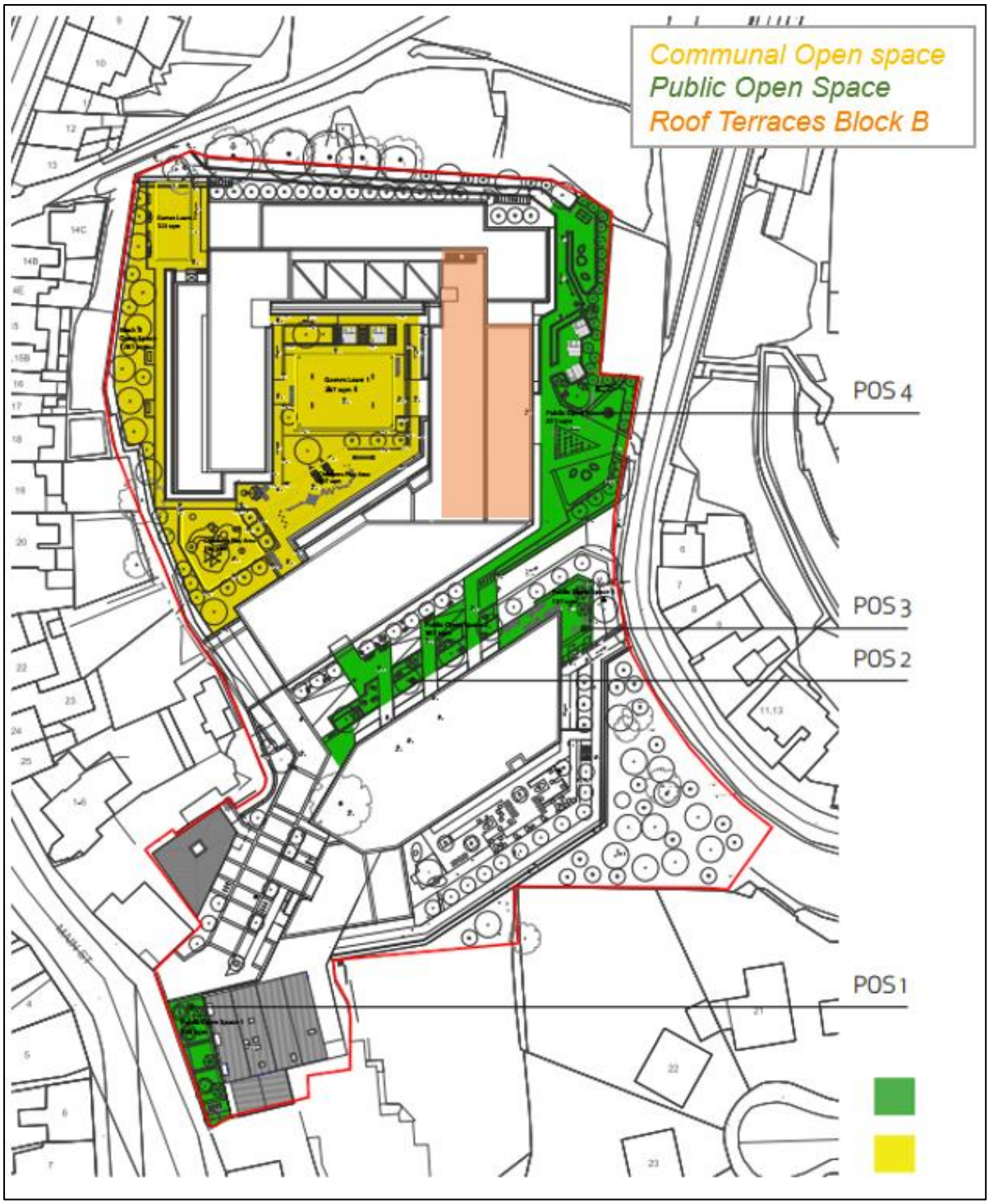


Figure 8-33: View of the Proposed Development with more sensitive receptors highlighted

8.2.5 Potential Impact of the Proposed Development

The wind microclimate of the Proposed Development is defined by the wind patterns that develop in the surroundings of the Proposed Development under the local wind conditions relevant for the Lawson Criteria and considering the existing buildings and topography. For this analysis also the proposed landscaping is included as the presence of landscaping in

corners of buildings and roads impact in a beneficial way the local microclimate, creating calmer wind conditions.

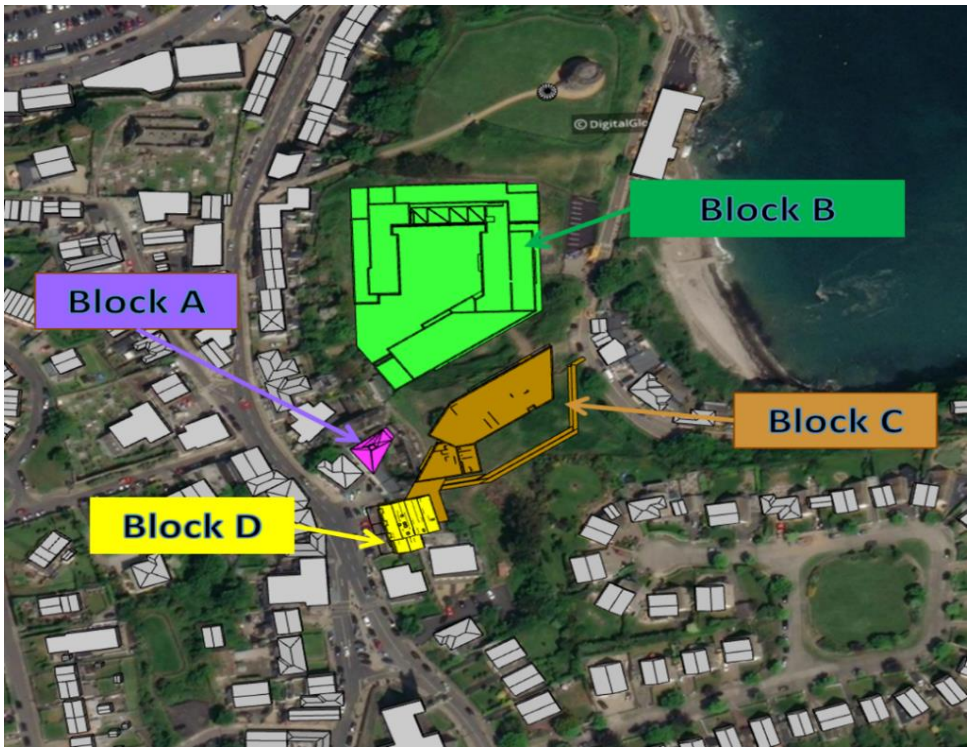


Figure 8-34: Proposed Development within the existing environment 3D model (top view)

Figure 8-35: Proposed Development within the existing environment 3D model

Results of the wind simulations carried out are detailed in the following sections. Results of wind microclimate at ground level (1.5m height - flow speeds) are collected throughout the modelled site, and the impact of these on the potential receptors is presented in the map that show the area of comfort and distress in accordance with Lawson Criteria.

8.2.5.1 Construction Phase

As construction of the Balscadden Road SHD progresses, the wind conditions at the site would gradually adjust to those of the completed development. During the construction phase, wind conditions will be in line with the baseline wind microclimate and the effect on potential receptors (pedestrians) can be considered negligible. Furthermore, the areas more sensitive for receptors are potentially not going to be used until construction will be finalised.

8.2.5.2 Operational Phase

8.2.5.2.1 Wind Microclimate at Pedestrian Level

Results of wind speeds and their circulations at pedestrian level of 1.5m above the development ground are presented in the images that follow in order of frequency of occurrence, from the most frequent wind direction to the least frequent one.

These flow velocities identify if locally, wind speeds at pedestrian-level are accelerated or decelerated in relation to the undisturbed reference wind speed (baseline wind speed) by the presence of the Proposed Development. 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.

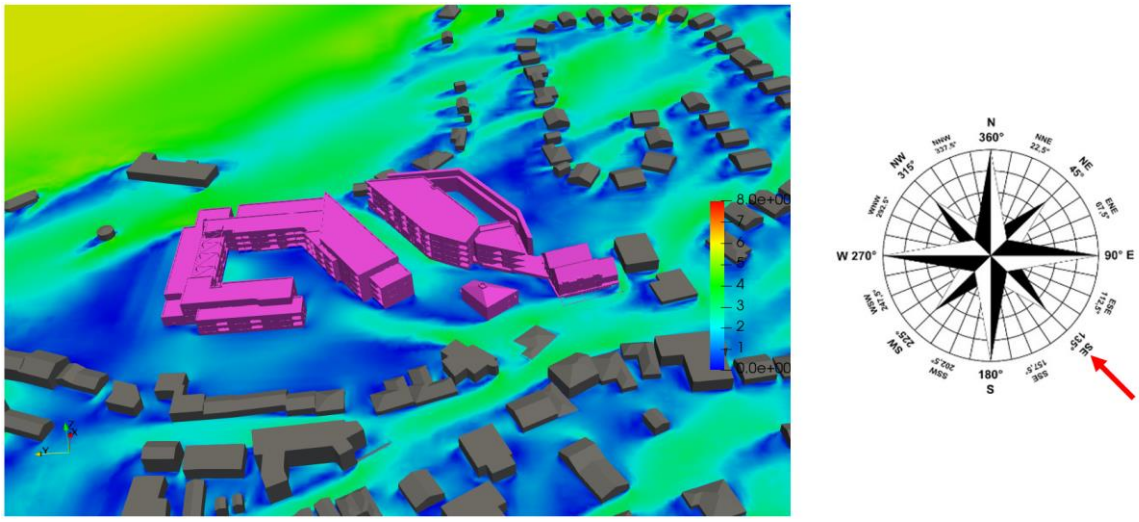


Figure 8-36: Pedestrian Level - Flow Velocity at 1.5m above the ground - Wind Direction: 135°

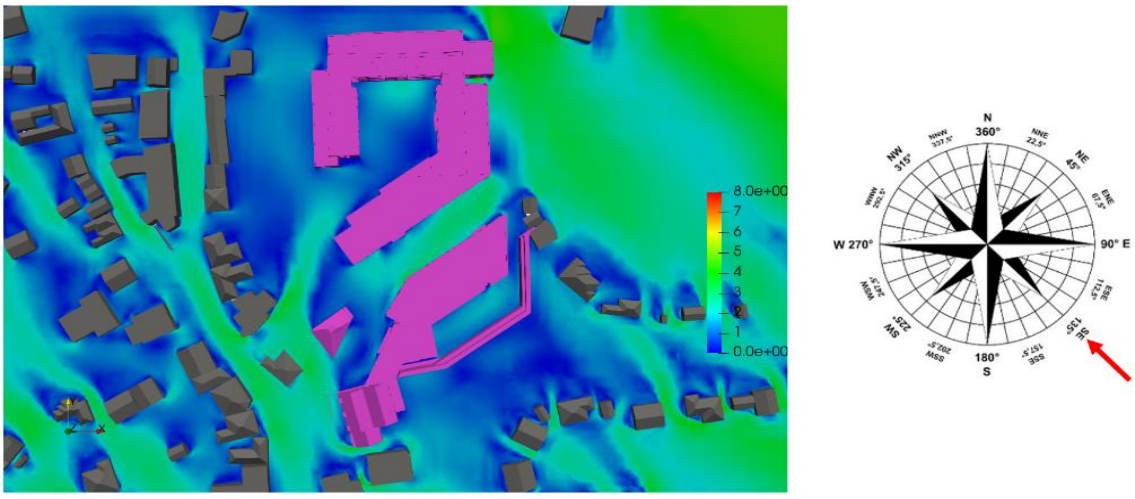


Figure 8-37: Pedestrian Level - Flow Velocity at 1.5m above the ground - Wind Direction: 135°°

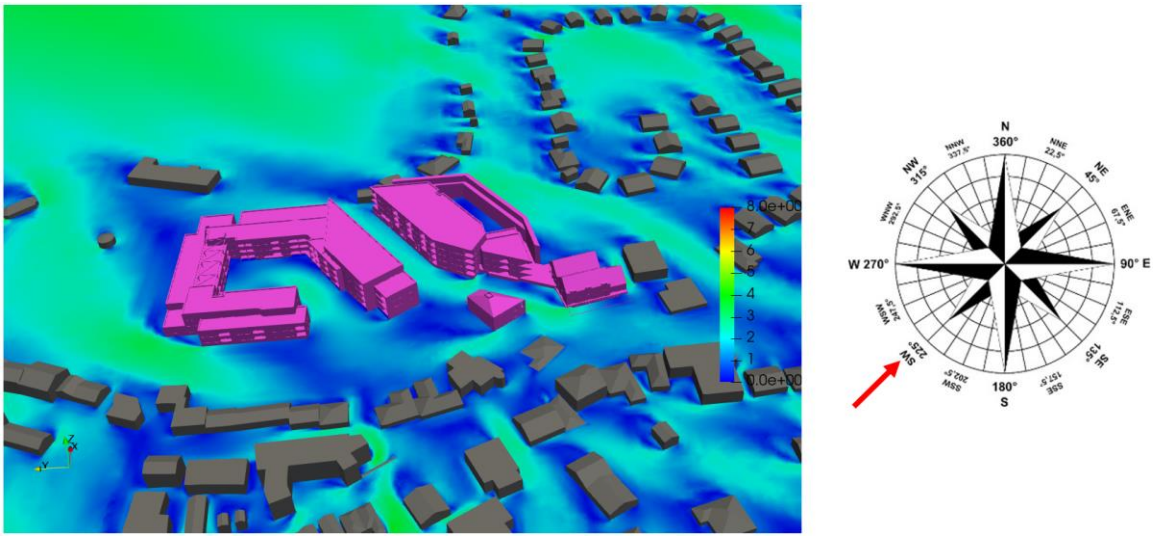


Figure 8-38: Pedestrian Level - Flow Velocity at 1.5m above the ground - Wind Direction: 225°

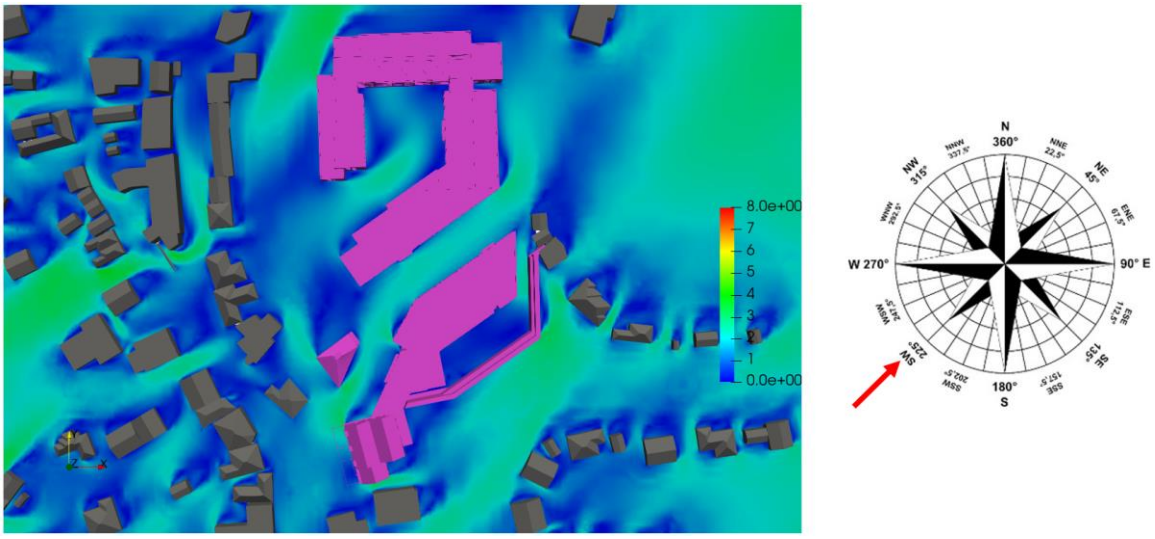


Figure 8-39: Pedestrian Level - Flow Velocity at 1.5m above the ground - Wind Direction: 225°

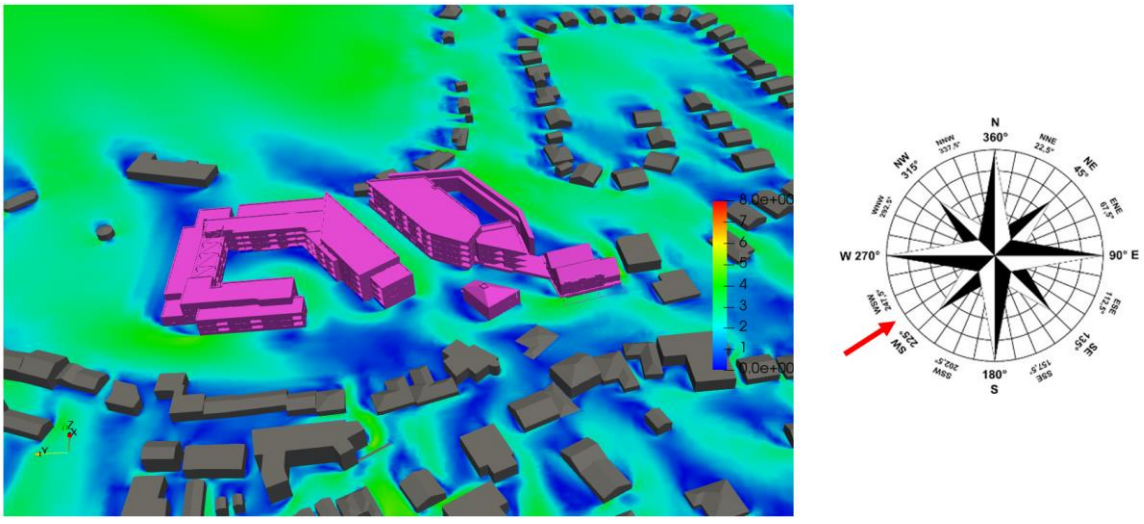


Figure 8-40 : Pedestrian Level - Flow Velocity at 1.5m above the ground - Wind Direction: 236°

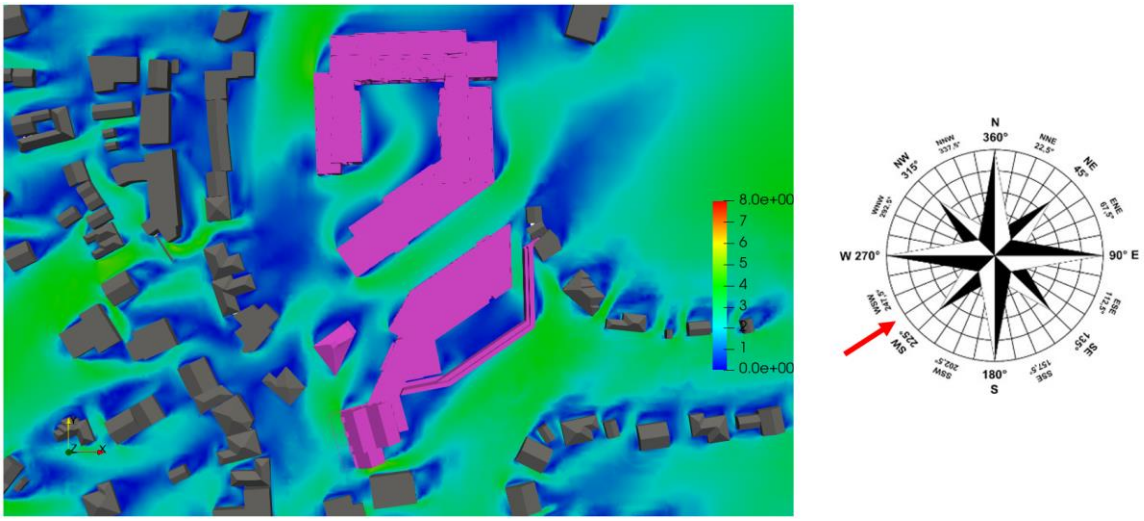


Figure 8-41: Pedestrian Level - Flow Velocity at 1.5m above the ground - Wind Direction: 236°

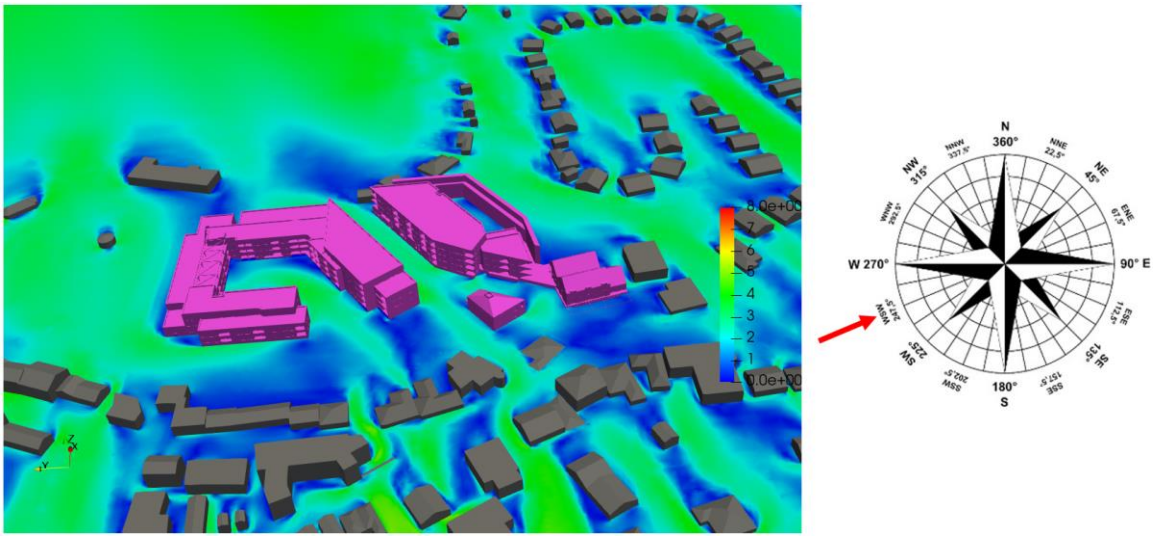


Figure 8-42: Pedestrian Level - Flow Velocity at 1.5m above the ground - Wind Direction: 247°

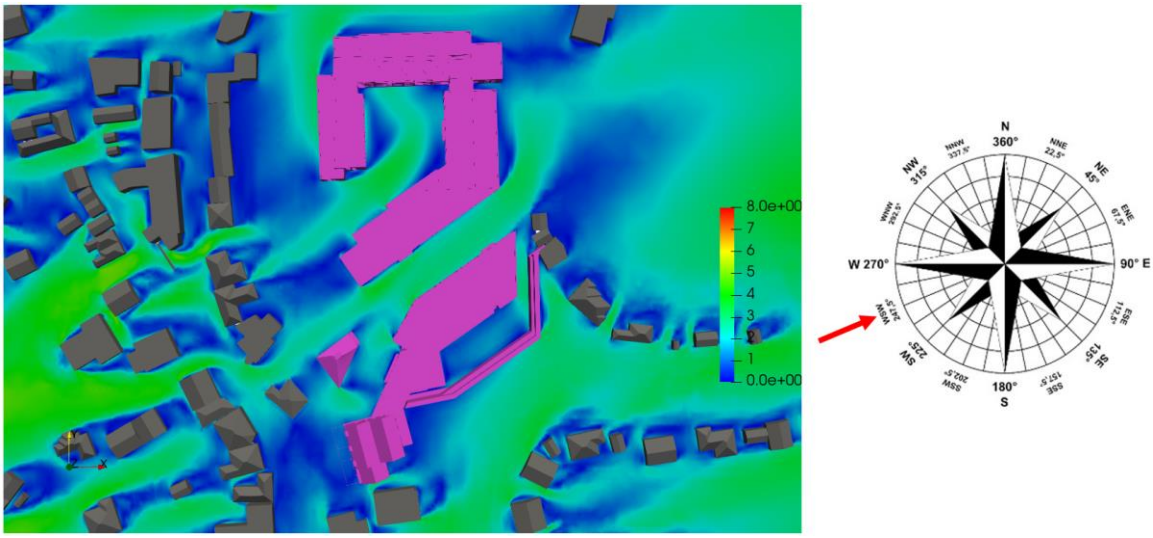


Figure 8-43: Pedestrian Level - Flow Velocity at 1.5m above the ground - Wind Direction: 247°

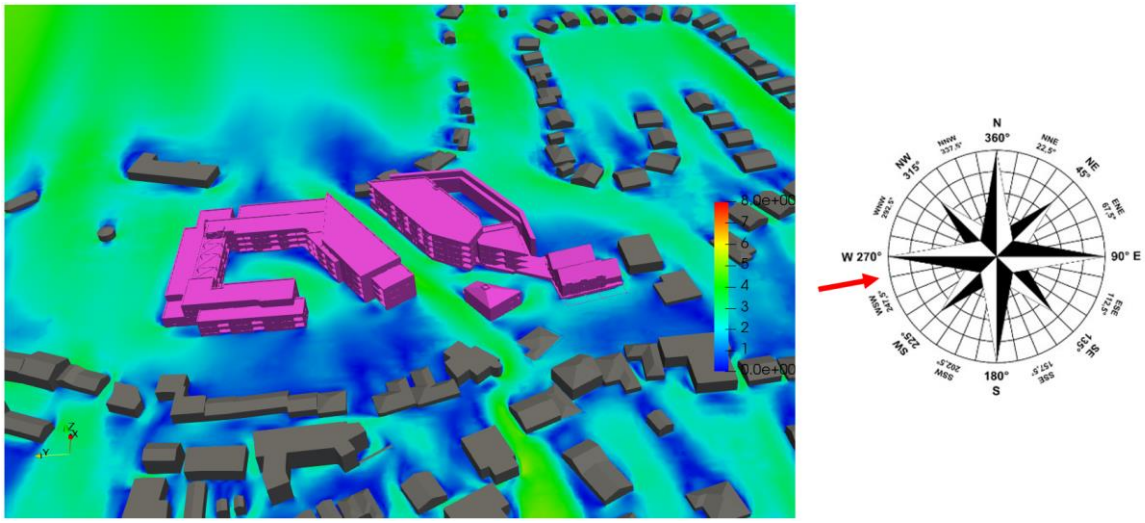


Figure 8-44: Pedestrian Level - Flow Velocity at 1.5m above the ground - Wind Direction: 258°

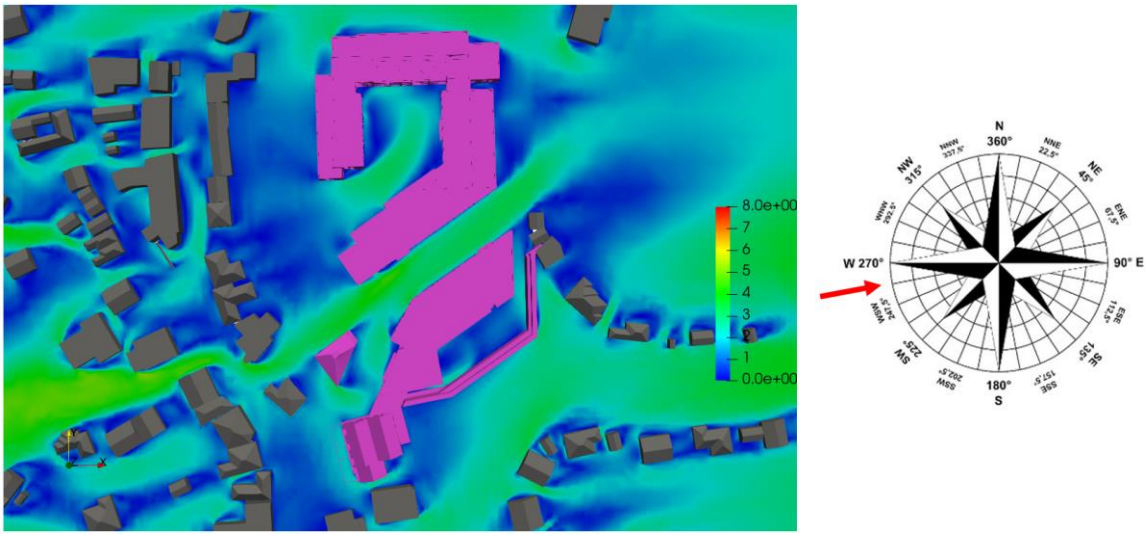


Figure 8-45: Pedestrian Level - Flow Velocity at 1.5m above the ground - Wind Direction: 258°

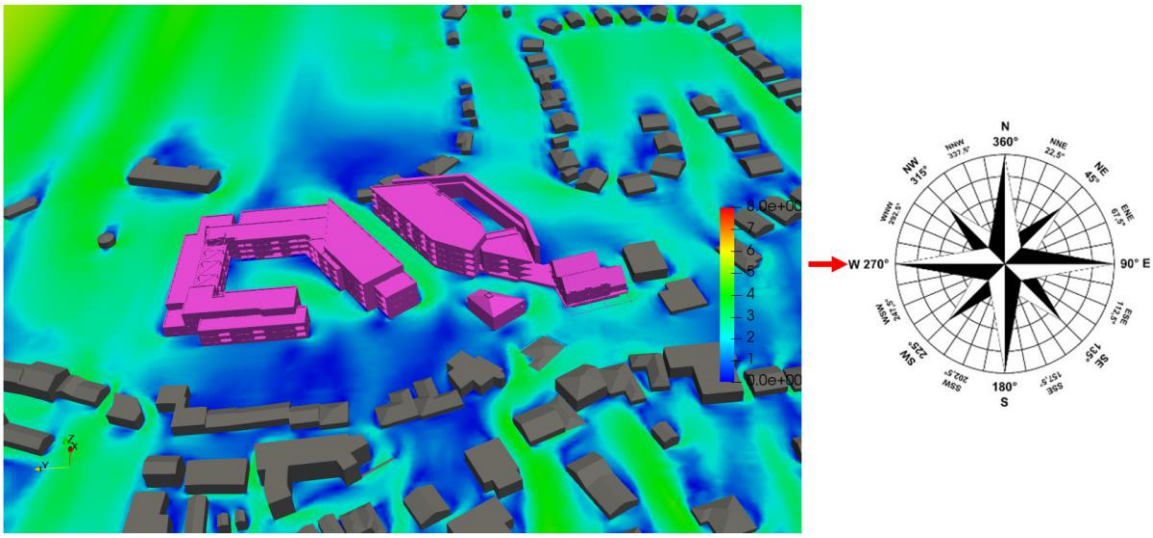


Figure 8-46: Pedestrian Level - Flow Velocity at 1.5m above the ground - Wind Direction: 270°

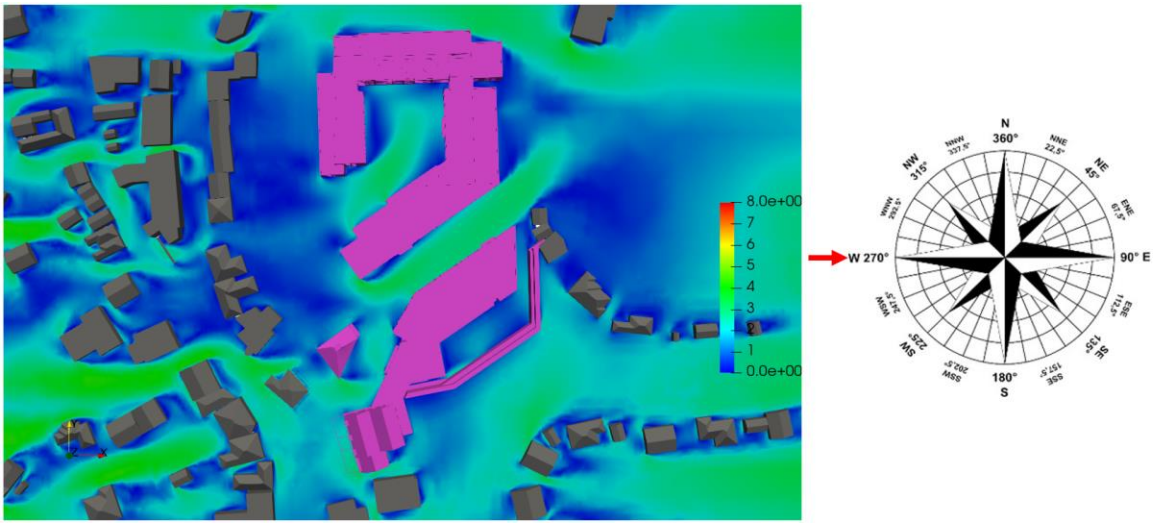


Figure 8-47: Pedestrian Level - Flow Velocity at 1.5m above the ground - Wind Direction: 270°

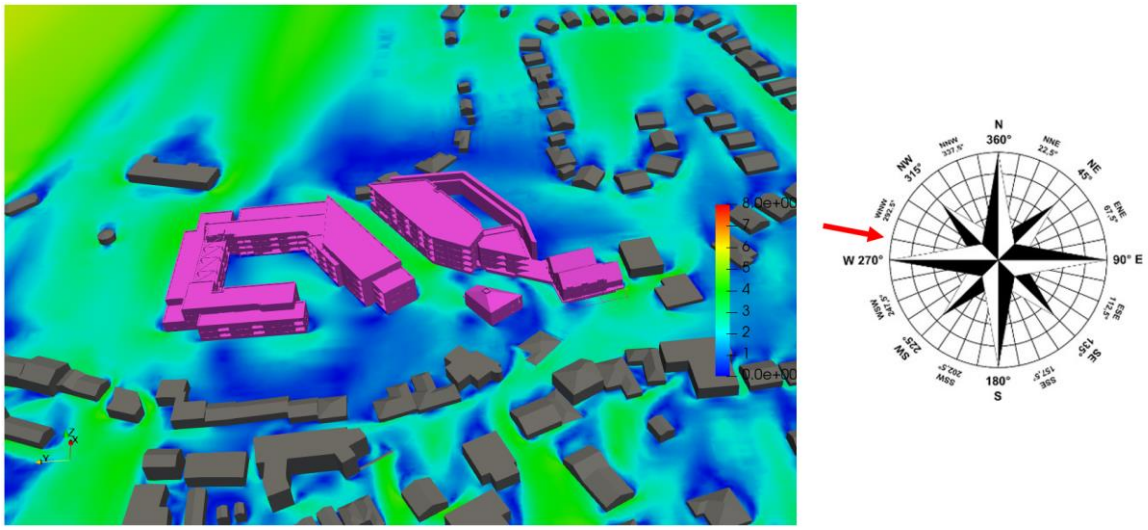


Figure 8-48: Pedestrian Level - Flow Velocity at 1.5m above the ground - Wind Direction: 281°

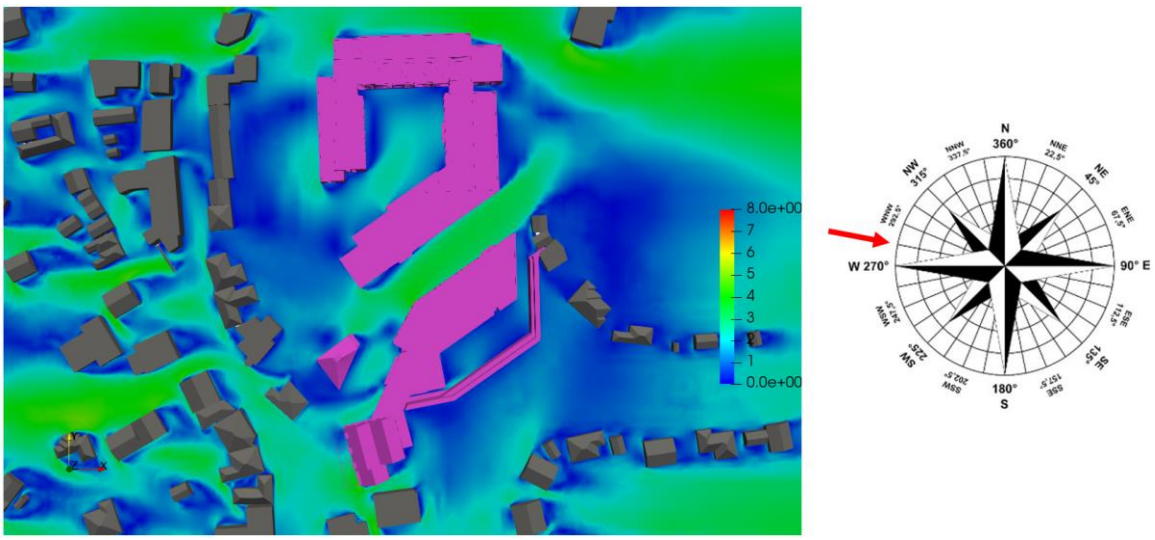


Figure 8-49: Pedestrian Level - Flow Velocity at 1.5m above the ground - Wind Direction: 281°

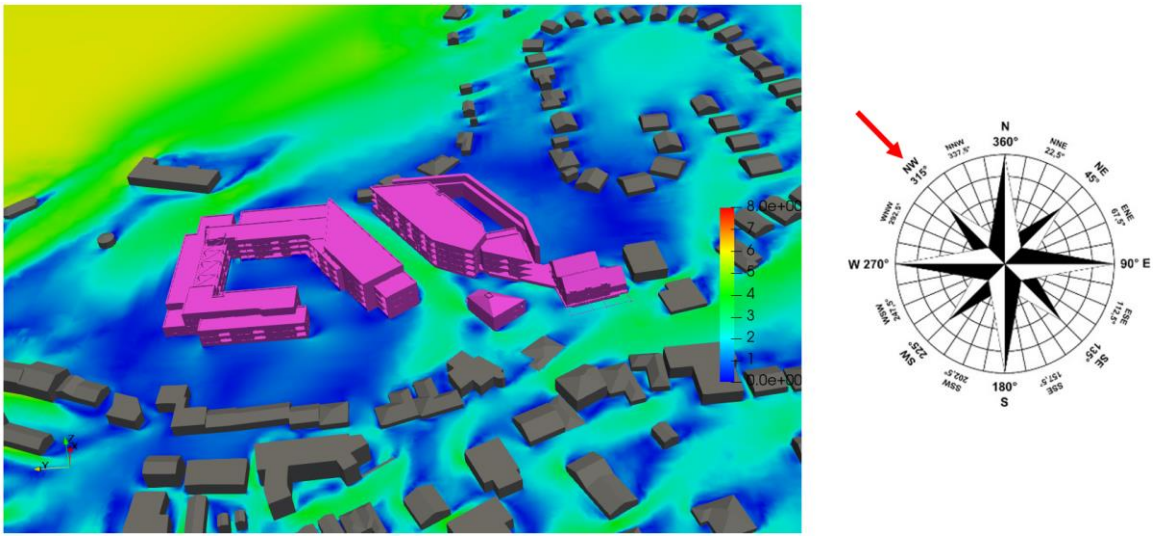


Figure 8-50: Pedestrian Level - Flow Velocity at 1.5m above the ground - Wind Direction: 315°

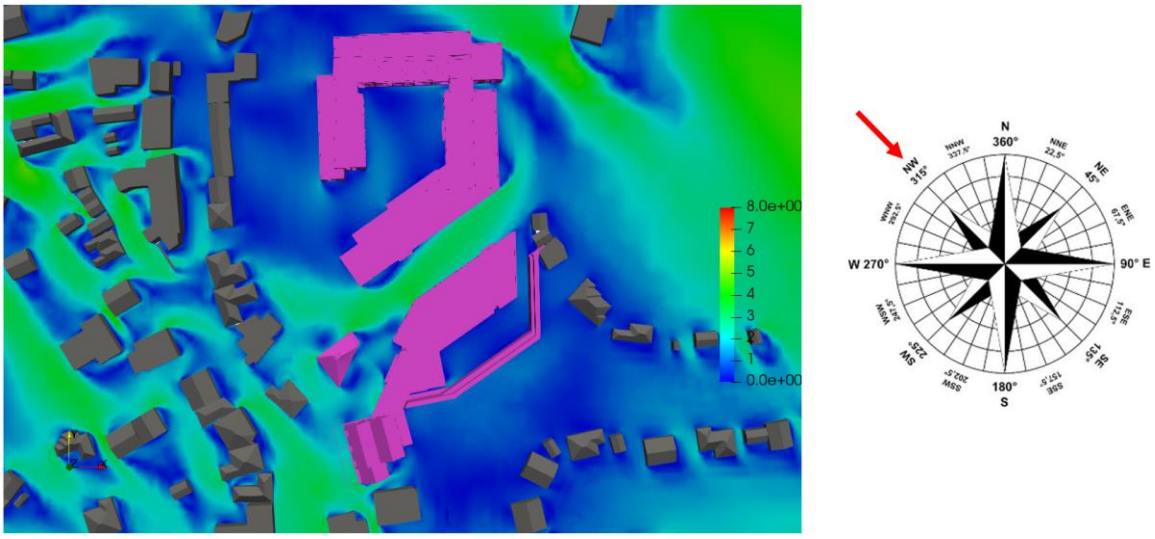


Figure 8-51: Pedestrian Level - Flow Velocity at 1.5m above the ground - Wind Direction: 315°

Some of the wind patterns in between the blocks B and C indicates minor funnelling effects. This can be noted near the South-West side of the development which receives the prevailing South-West and South-East winds at approximately 5m/s. However, considering that the baseline wind speed is ranging from 3.9ms/ to 6m/s, throughout the area the wind is not accelerating to significant values (green colour indicated velocity of max 6m/s) and wind is also decelerated respect the undisturbed wind speed in some area due to the presence of the Proposed Development (blue colour indicate speeds of max 3m/s which are less than baseline wind speed applied).

8.2.5.2.2 Impact on Pedestrian Comfort and Distress

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.

The assessment of the proposed scenario has shown that no area is unsafe, and no conditions of distress are created by the Proposed Development.

The wind microclimate of the Proposed Development is comfortable and usable for pedestrians. As the result of the Proposed Development construction, the wind on the surrounding urban context is also mitigated when compared with the baseline situation. In this sense the Proposed Development has a beneficial effect on the surrounding wind microclimate and can create comfortable pedestrian areas and public spaces.

Figure 8-52: Color coded Lawson category for plotting of the Lawson Map

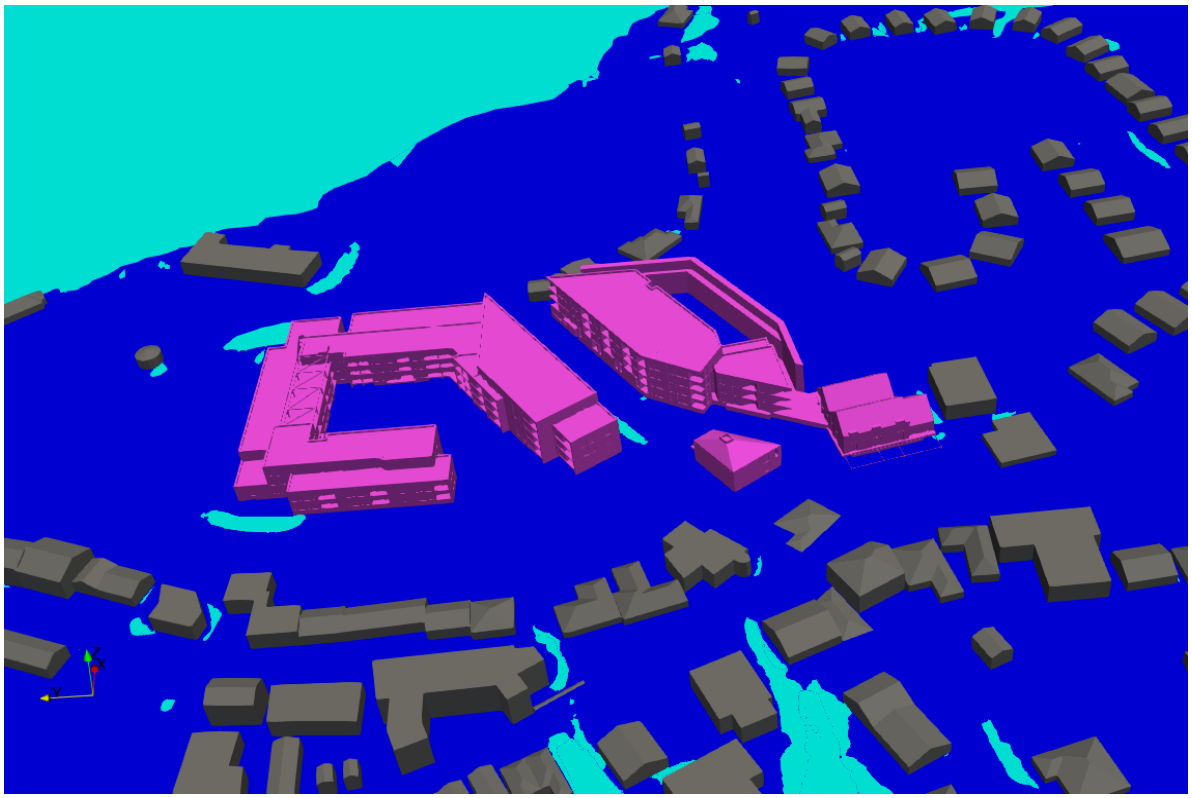


Figure 8-53: Balscadden Proposed Development - Pedestrian Level - Lawson Comfort/Distress Map

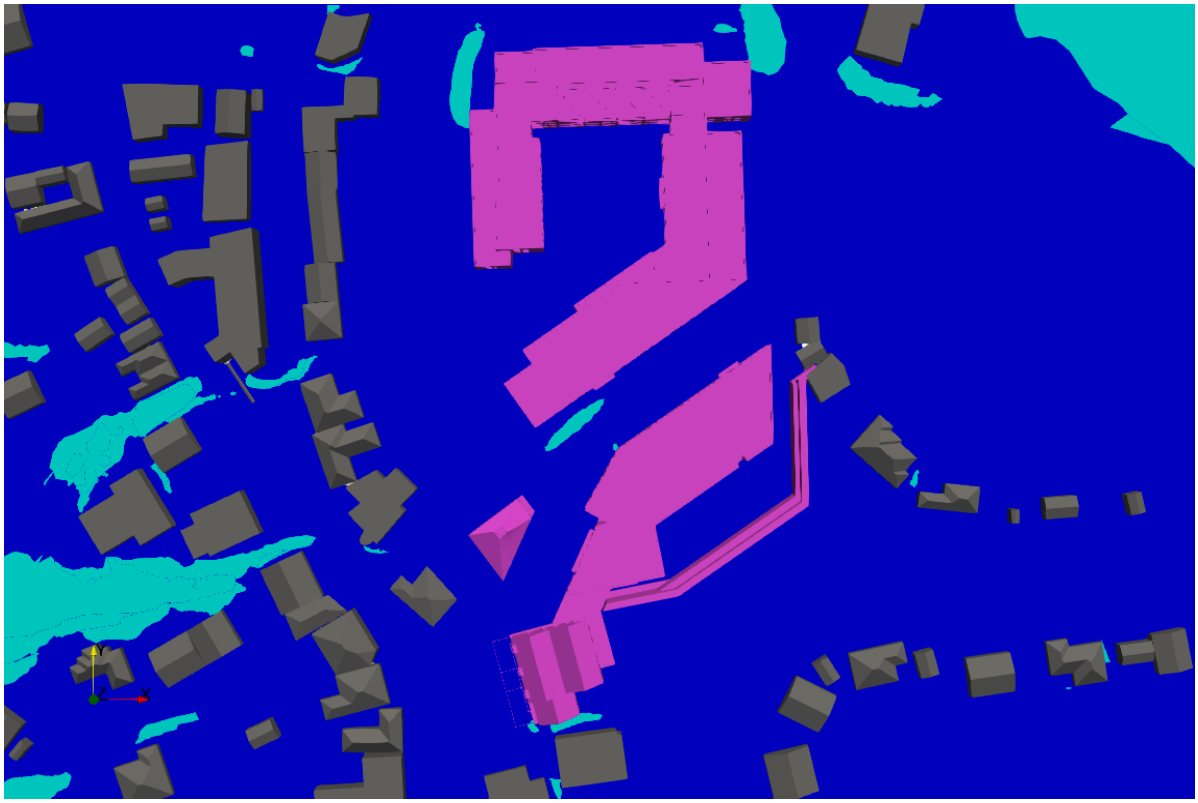


Figure 8-54 Balscadden Proposed Development- Pedestrian Level - Lawson Comfort/Distress Map

8.2.5.3 Wind Microclimate at Roof Terraces Level on Block B

The results of the wind impacts are collected at 1.5 m height above the roof terraces at level four and level three of block B. The terraces indeed will be available to residents use and they are part of the sensitive receptors for this assessment. The images that follow show the wind flow velocities at roof terrace level for the directions simulated and the speed relevant to the Lawson criteria for Comfort and Distress.

As it can be noted, the terrace on level three is more protected by the wind and its central area is well sheltered, while the terrace on level four is more exposed and impacted by a minor local wind acceleration.

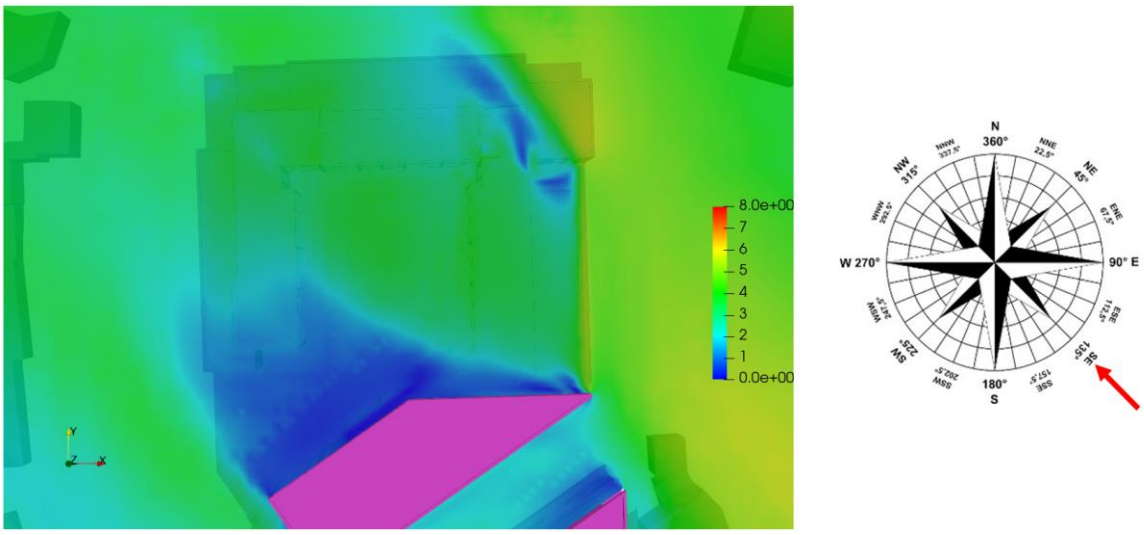


Figure 8-55: Flow Velocity at 1.5m above Fourth Level Block B Terrace- Wind Direction: 135°

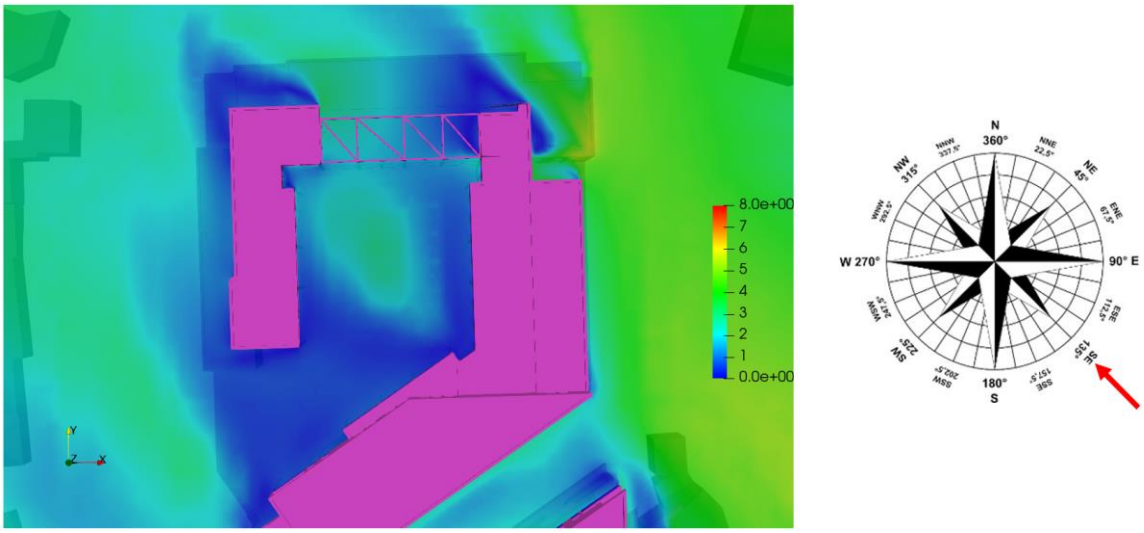


Figure 8-56: Flow Velocity at 1.5m above Third Level Block B Terrace- Wind Direction: 135°

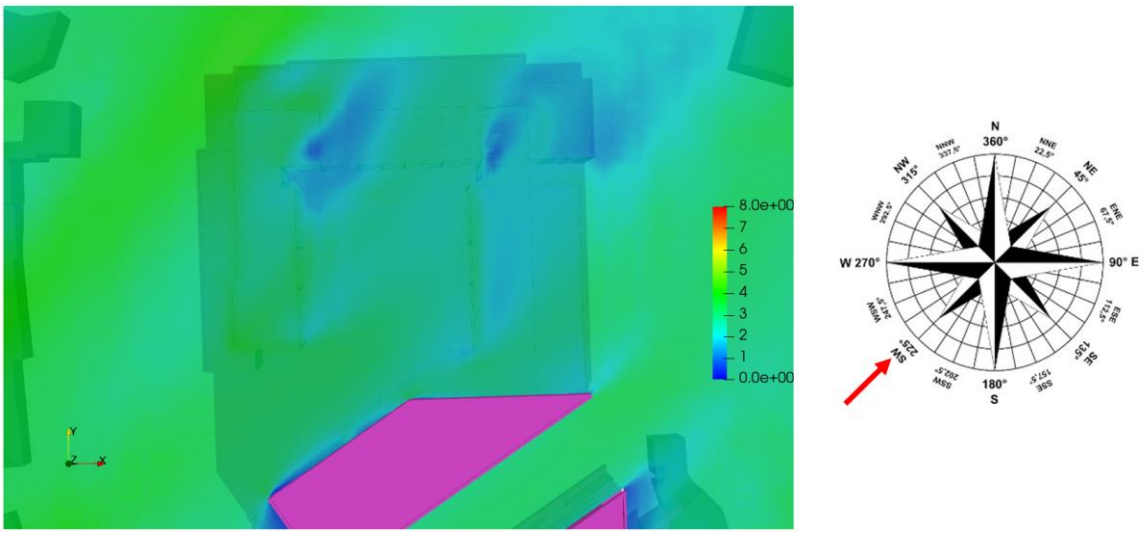


Figure 8-57: Flow Velocity at 1.5m above Fourth Level Block B Terrace- Wind Direction: 225°

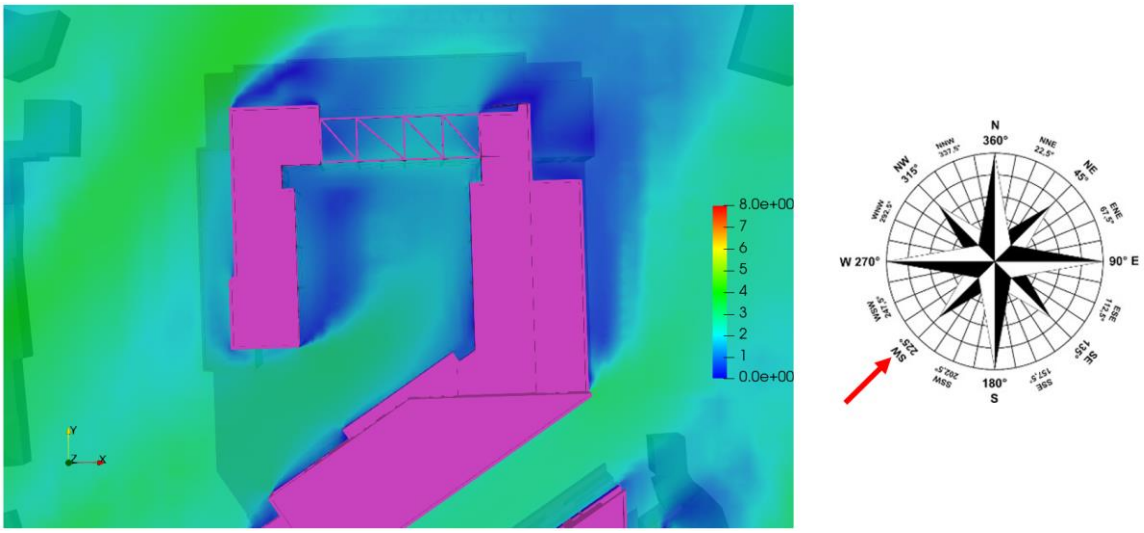


Figure 8-58: Flow Velocity at 1.5m above Third Level Block B Terrace- Wind Direction: 225°

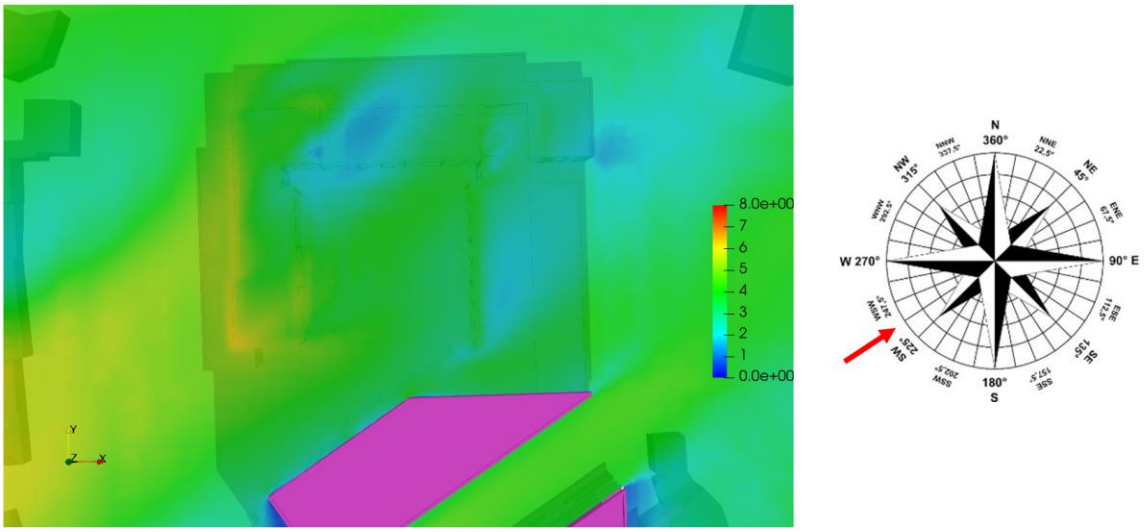


Figure 8-59: Flow Velocity at 1.5m above Fourth Level Block B Terrace- Wind Direction: 236°

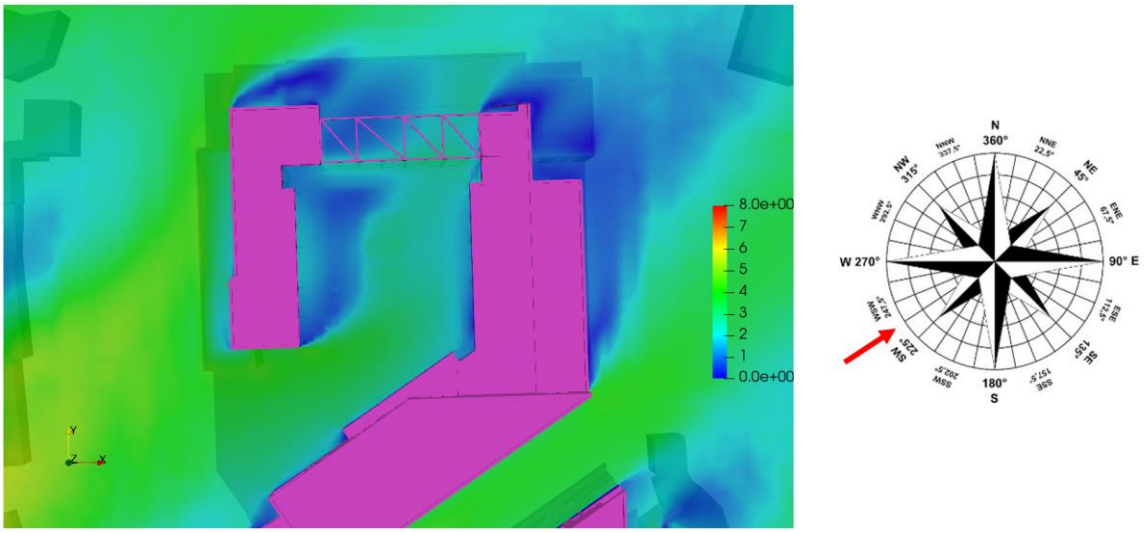


Figure 8-60: Flow Velocity at 1.5m above Third Level Block B Terrace- Wind Direction: 236°

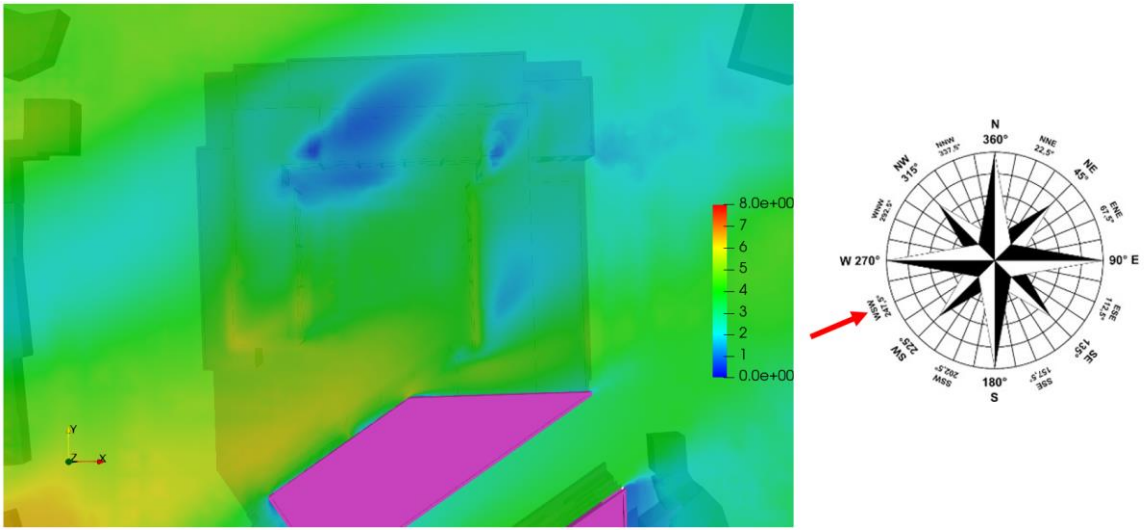


Figure 8-61: Flow Velocity at 1.5m above Fourth Level Block B Terrace- Wind Direction: 247°

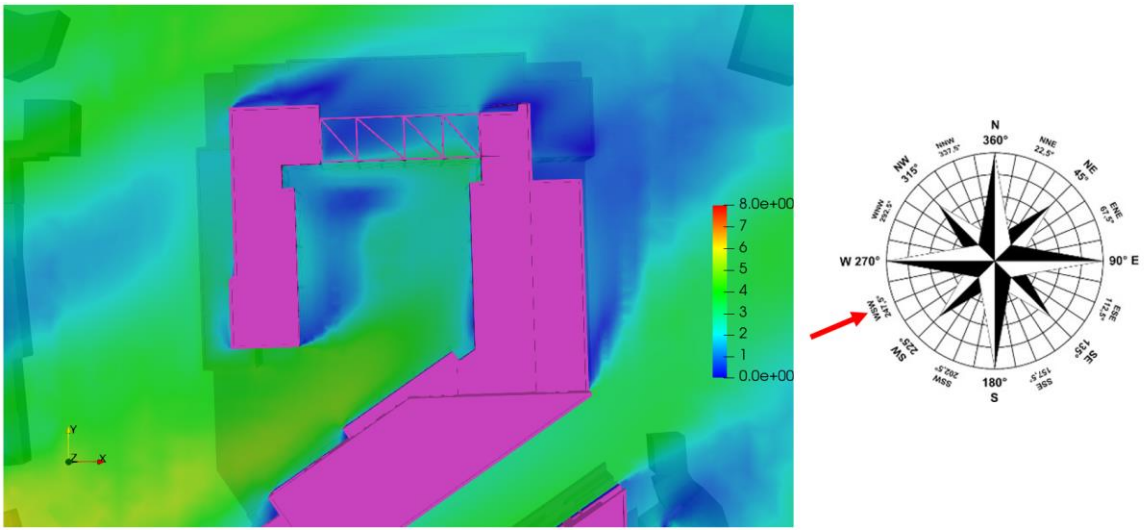


Figure 8-62: Flow Velocity at 1.5m above Third Level Block B Terrace- Wind Direction: 247°

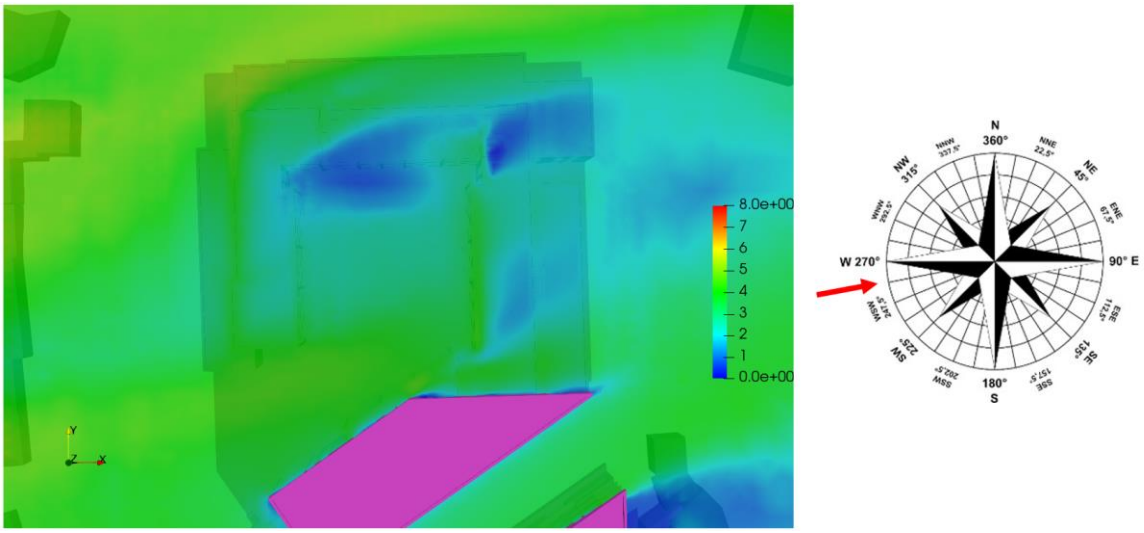


Figure 8-63: Flow Velocity at 1.5m above Fourth Level Block B Terrace- Wind Direction: 258°

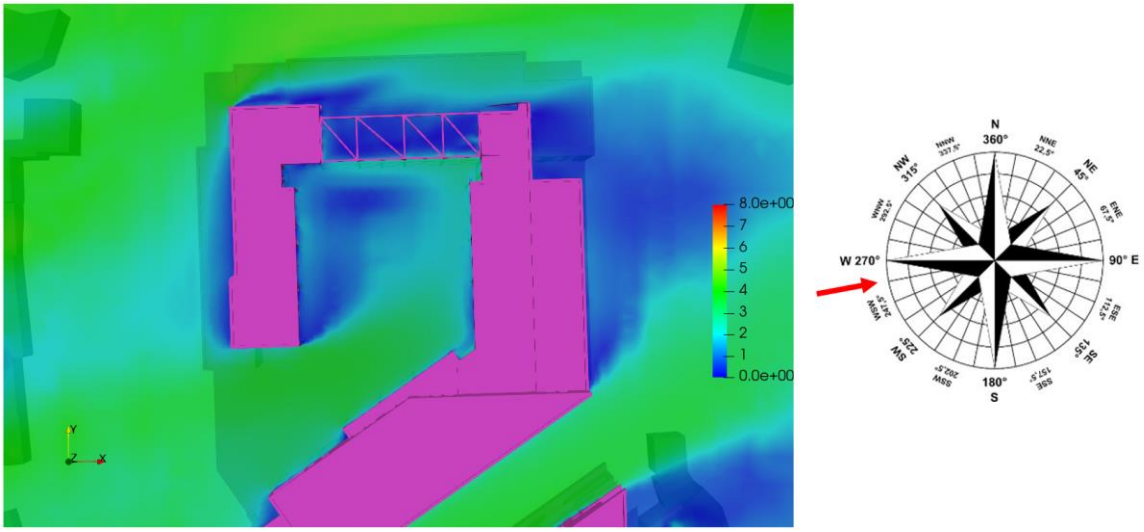


Figure 8-64: Flow Velocity at 1.5m above Third Level Block B Terrace- Wind Direction: 258°

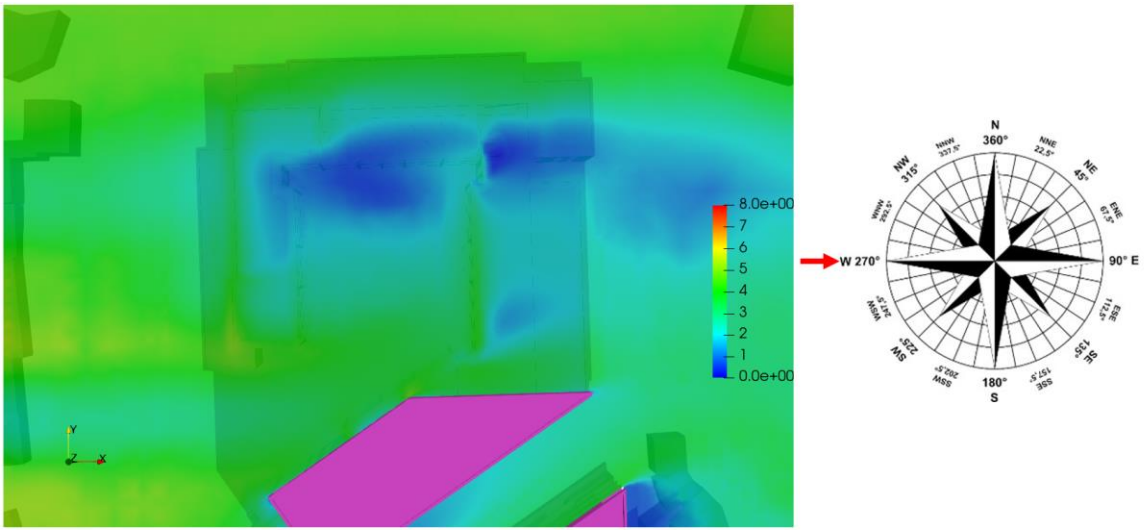


Figure 8-65: Flow Velocity at 1.5m above Fourth Level Block B Terrace- Wind Direction: 281°

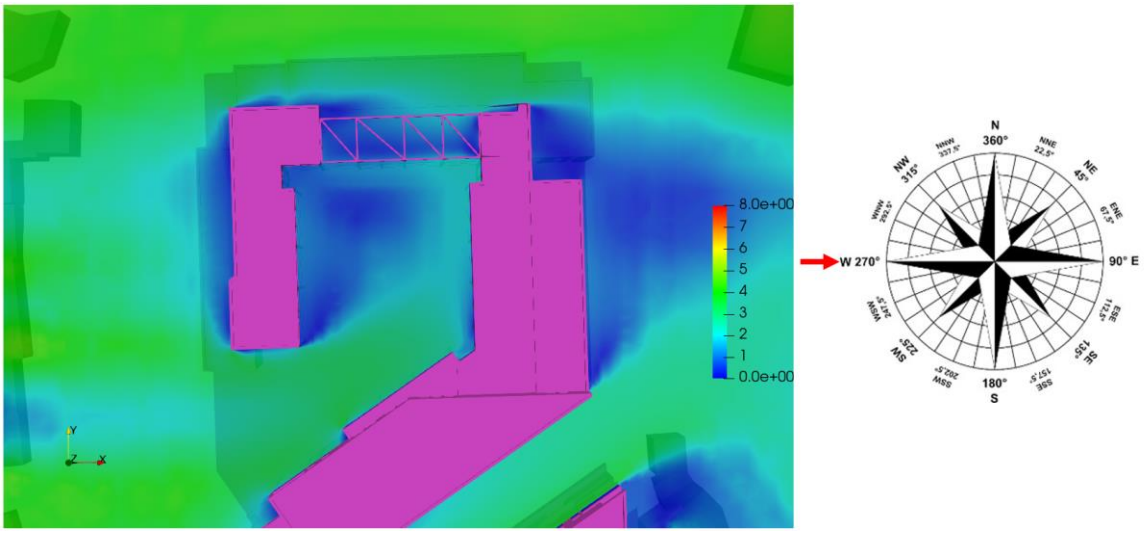


Figure 8-66: Flow Velocity at 1.5m above Third Level Block B Terrace- Wind Direction: 270°

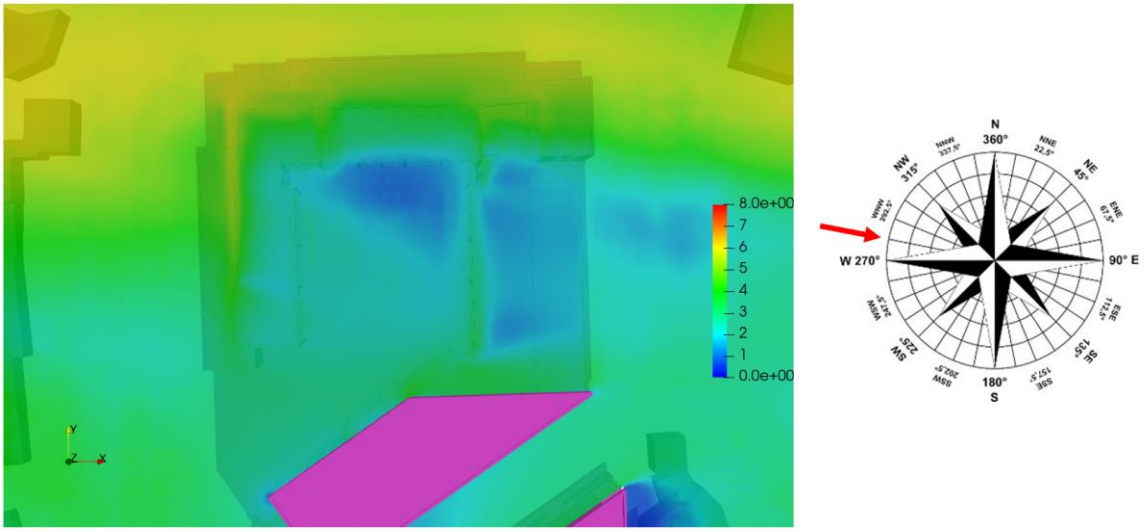


Figure 8-67: Flow Velocity at 1.5m above Fourth Level Block B Terrace- Wind Direction: 281°

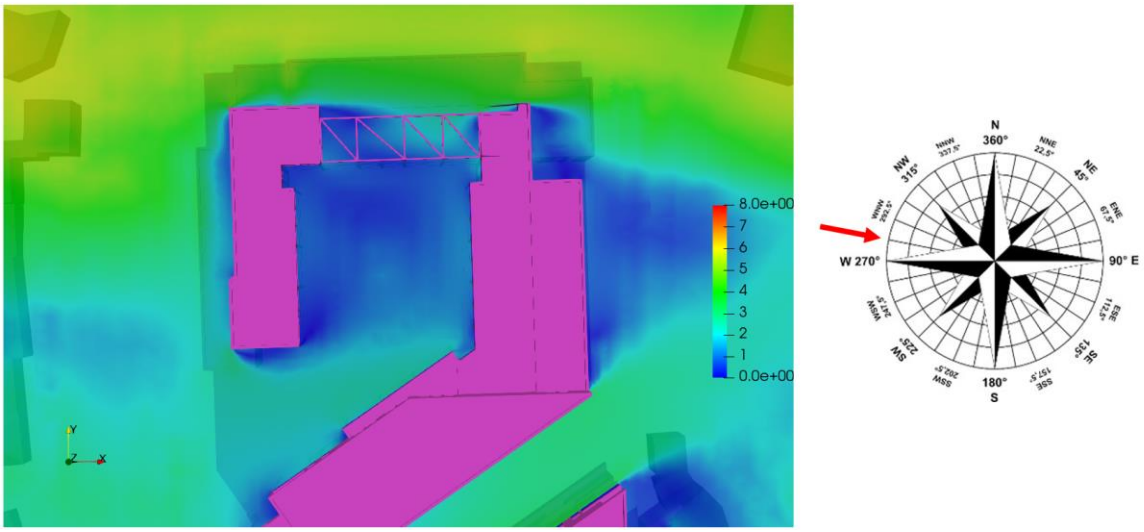


Figure 8-68: Flow Velocity at 1.5m above Third Level Block B Terrace- Wind Direction: 281°

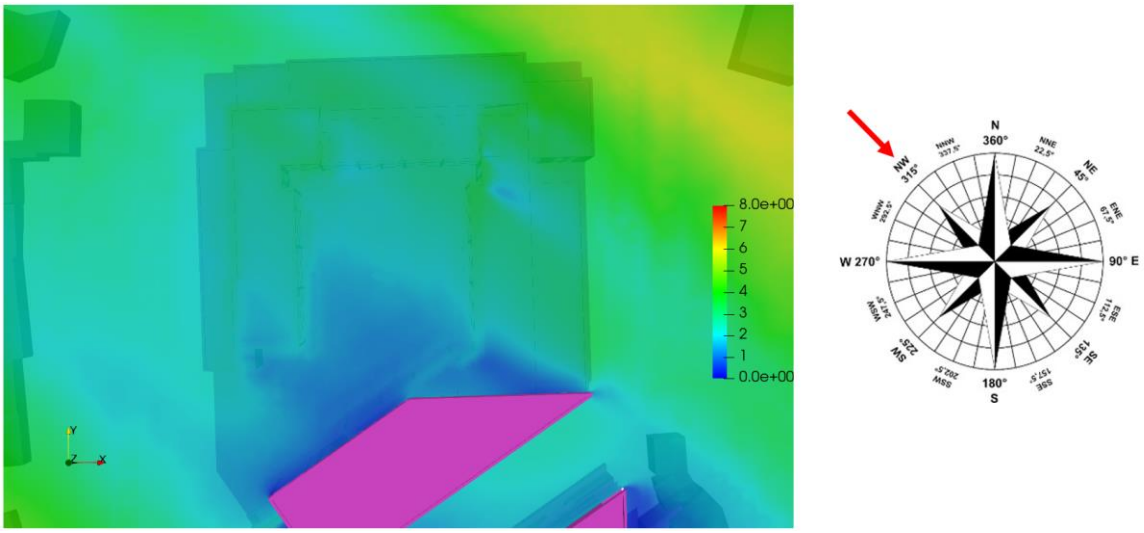


Figure 8-69: Flow Velocity at 1.5m above Fourth Level Block B Terrace- Wind Direction: 315°

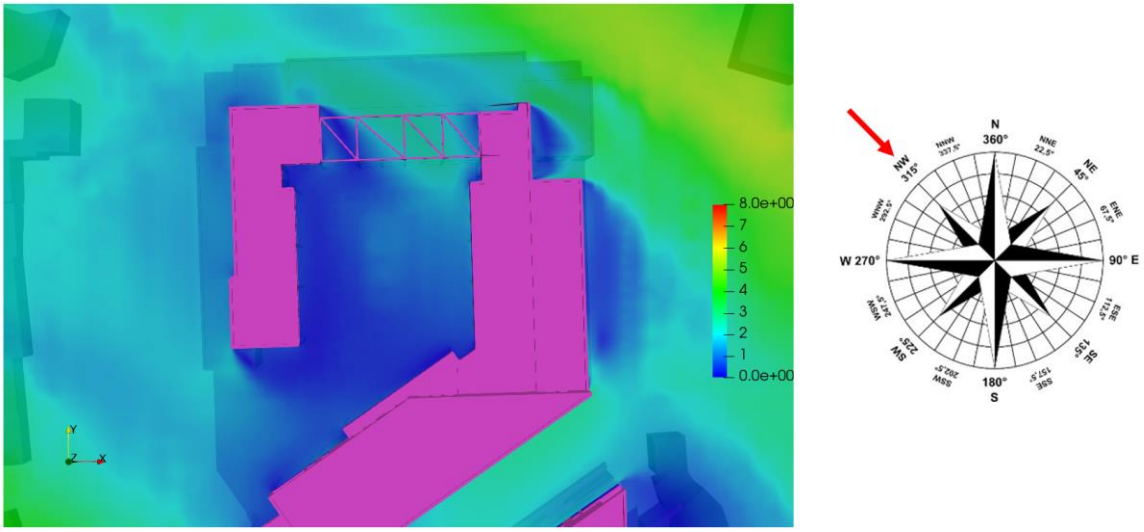


Figure 8-70: Flow Velocity at 1.5m above Third Level Block B Terrace- Wind Direction: 315°

8.2.5.4 Impact on Pedestrian Comfort and Distress - Roof Terraces Level on Block B

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.

The assessment of the proposed scenario has shown that no area is unsafe, and no conditions of distress are created by the Proposed Development.

The wind microclimate of the Proposed Development is comfortable and usable for pedestrians. As the result of the Proposed Development construction, the wind on the surrounding urban context is also mitigated when compared with the baseline situation. In this sense the Proposed Development has a beneficial effect on the surrounding wind microclimate and can create comfortable pedestrian areas and public spaces.

Figure 8-71 Lawson Map Comfort categories

Figure 8-72: Balscadden Proposed Development - Pedestrian Level - Lawson Comfort/Distress Map

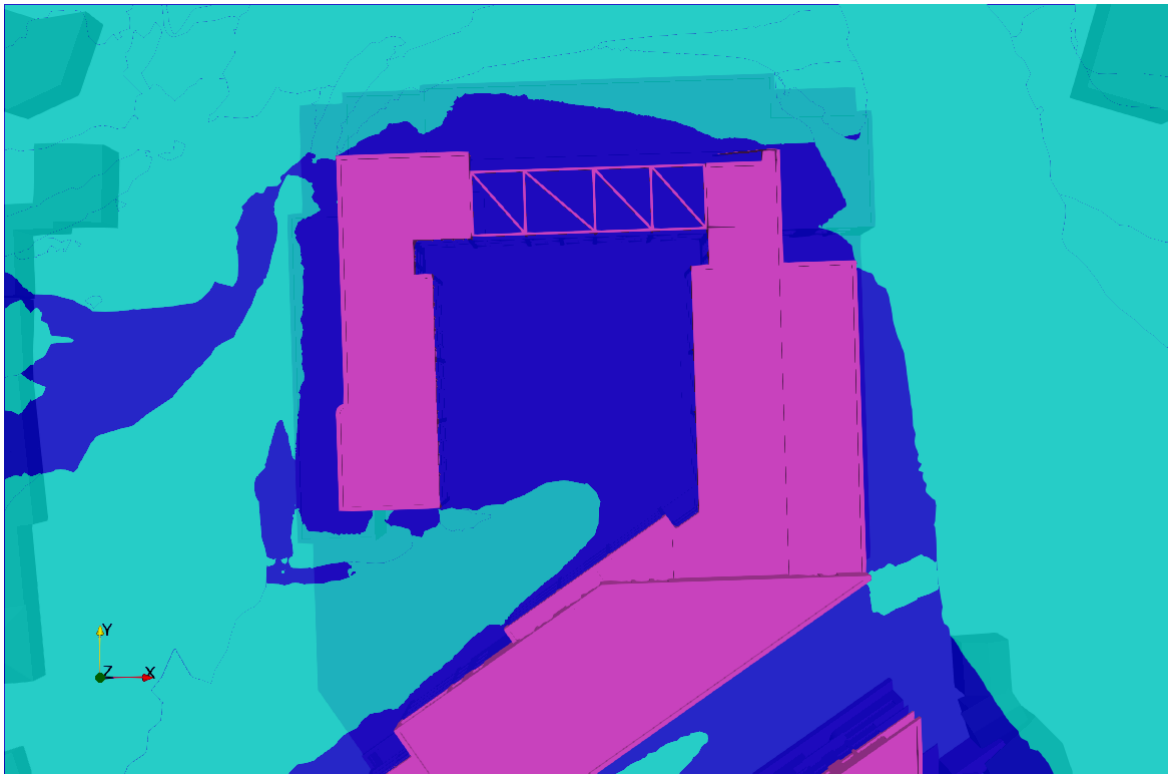


Figure 8-73: Balscadden Proposed Development - Pedestrian Level - Lawson Comfort/Distress Map

8.2.5.5 Potential Cumulative Impacts

In accordance with the guideline cited in Section 8.2.1.1, 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.

Having consider the above there are no further schemes in the area of interest of the wind microclimate assessment.

8.2.5.6 "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.

8.2.6 Avoidance, Remedial & Mitigation Measures

8.2.6.1 Construction Phase

Not applicable.

8.2.6.2 Operational Phase

Not applicable.

8.2.6.3 "Worst Case" Scenario

Not applicable.

8.2.7 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 in the previous sections, show that the wind speeds likely to occur on the site are below critical values, and that 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 development design and further increasing of the landscaping is suggested, as safety and pedestrian comfort is maintained in accordance with Lawson Comfort and Distress Criteria.

8.2.8 Monitoring

8.2.8.1 Construction Phase

There is no requirement to monitor wind impact during construction phase for pedestrian comfort and distress as the designated amenity areas will not be in use during this phase of the project and pedestrian are not accessing construction sites.

8.2.8.2 Operational Phase

The development has been designed to conform to acceptable Lawson Criteria for Comfort and Distress in accordance with the Wind Beaufort Scale and considering the historical wind conditions of the site, there is no further element to monitor for this scope as far as the landscaping is maintained in place as designed.

8.2.9 Interactions

The wind microclimate analysed in this chapter has considered the location of the proposed public and communal designed spaces and proposed terraces.

8.2.10 Difficulties Encountered When Compiling

No difficulties were encountered in compiling this chapter.

8.2.11 References

- Lawson, T.V., 2001, 'Building Aerodynamics', Imperial College Press, London.
- Simiu, E., 2011, 'Design of buildings for wind: a guide for ASCE 7-10 Standard users and designers of special structures', 2nd Edition, John Wiley and Sons, Inc., Hoboken, New Jersey, U.S.A.
- Building Aerodynamics, Tom Lawson FREng. Imperial College Press, 2001.
- Blocken, B., 2015. Computational Fluid Dynamics for Urban Physics: Importance, scales, possibilities, limitations and ten tips and tricks towards accurate and reliable simulations.Building and Environment.
- Blocken, B., Janssen, W.D. and van Hooff, T., 2012. 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.
- Franke, J., Hellsten, A., Schlunzen, H., Carissimo, B, Ed. (2007); Best Practice Guidelines for the CFD Simulation of Flows in the Urban Environment, University of Hamburg.

Appendix A

This appendix reports the numerical details of the CFD model implemented for the study of the wind microclimate conditions of this chapter.

A.1 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 8.74

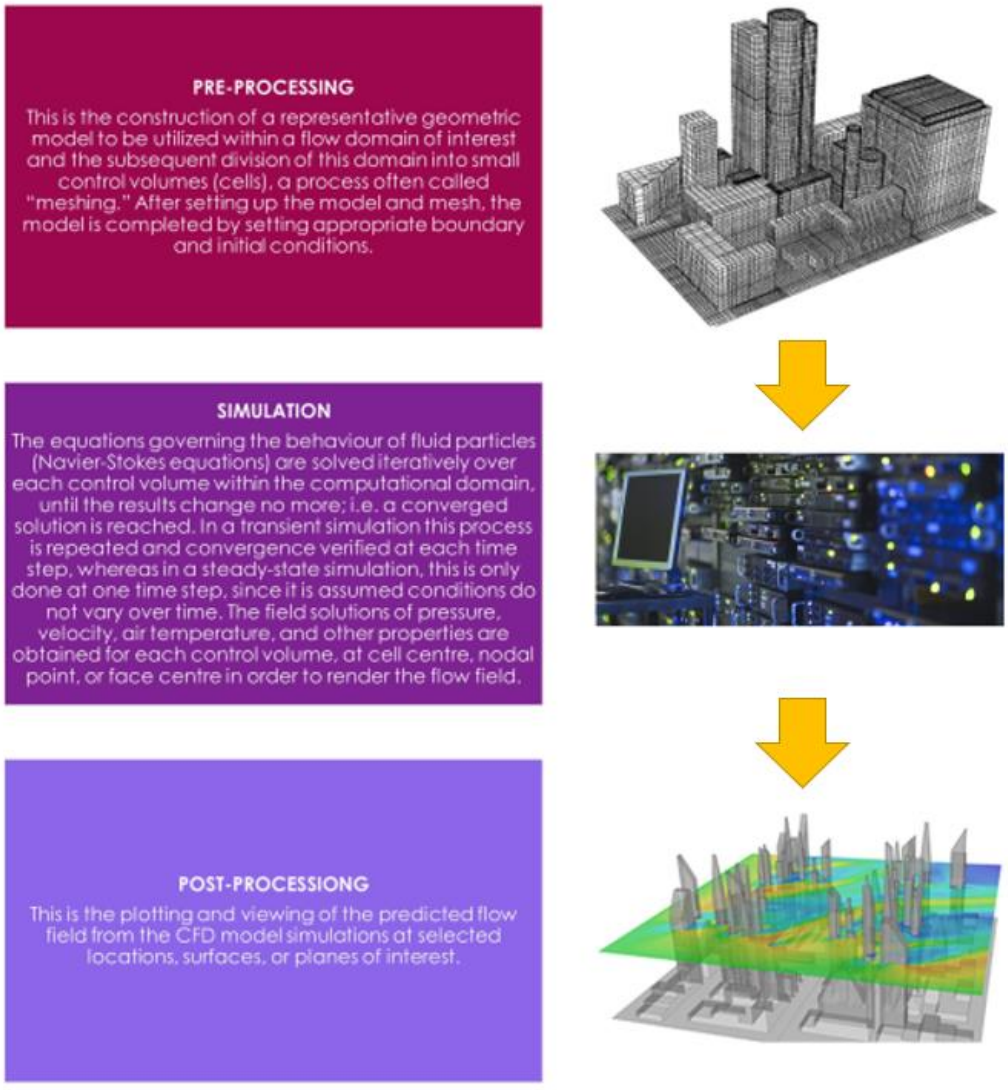


Figure 8-74: CFD method and process

A.2 OpenFOAM - CFD Software Details

The analysis of this chapter employs OpenFoam Code, which is based on a volume averaging method of discretization and uses the post-processing visualisation toolkit Paraview version 5.5. OpenFoam is a CFD software code released and developed primarily by OpenCFD Ltd., since 2004. It has a large user base across most areas of engineering and science, from both commercial and academic organisations.

OpenFOAM CFD code has capabilities of utilizing a Reynolds Averaged Navier-Stokes (RANS) approach, Unsteady Reynolds Averaged Navier-Stokes (URANS) approach, Detached Eddy Simulation (DES) approach, Large Eddy Simulation (LES) approach or the Direct Numerical Simulation (DNS) approach, which are all used to solve anything from complex fluid flows involving chemical reactions, turbulence and heat transfer, to acoustics, solid mechanics and electromagnetics.

Quality assurance is based on rigorous testing. The process of code evaluation, verification and validation includes several hundred daily unit tests, a medium-sized test battery run on a weekly basis, and large industry-based test battery run prior to new version releases. Tests are designed to assess regression behaviour, memory usage, code performance and scalability. The OpenFOAM solver algorithm directly solves the mass and momentum equations for the large eddies that comprise most of the fluid's energy. By solving the large eddies directly no error is introduced into the calculation.

To reduce computational time and associated costs the small eddies within the flow have been solved using the widely used and recognised Smagorinsky Sub-Grid Scale (SGS) model.

The small eddies only comprise a small proportion of the fluids energy therefore the errors introduced through the modelling of this component are minimal. The error introduced by modelling the small eddies can be considered of an acceptable level. Computational time will be reduced by modelling the small eddies (compared to directly solving).

A.2.1 CFD Model Details of the Wind Microclimate Study

This subsection describes all features included in the geometrical and physical representation of the Proposed Development CFD model. Any objects which may have significant impact on the wind movement and circulation are represented within the model. To be accurate, the structural layout of the building being modelled should include only the obstacles, blockages, openings and closures which can impact the wind around the building. It is important to remember that a CFD simulation approximates reality, so providing more details of the geometry within the model will not necessarily increase the understanding of the bulk flows in the real environment.

A.2.1.1 Modelled Geometry and Computational Mesh

In accordance with the guideline cited in section 8.2.1.1, 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 also be 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.

To represent reality and consider the actual wind impacting on the Site of the Proposed Development, the modelled area for the wind modelling study comprises a wider urban area of over 0.5 km of radius around the Proposed Development, this is to include the recommended dimensions (400m radius from the site centre) as outlined in Section 8.2.1.

Table 8-15 CFD Model Details

	MODELLED CFD ENVIRONMENT DIMENSIONS		
	Width	**Length**	**Height**
CFD Mesh Domain	1600m approx.	1600m approx	160m approx

Boundary Conditions for The CFD Model 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.

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, as described above is shown below.

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
- z0 = 0.4 [m] roughness length selected (see table below)

$$v_2 = v_1 \cdot \frac{ln\frac{h_2}{z_0}}{ln\frac{h_1}{z_0}}$$

A.2.2. 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 8-16.

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 8-16 Mesh and Boundary Conditions details

PARAMETERS TO CALCULATE COMPUTATIONAL MESH	
Air Density ρ	1.2kg/m3
Ambient Temperature (T)	288K (approx.15C◦) isothermal analysis
Gravity Acceleration (g)	9.8m/s2
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

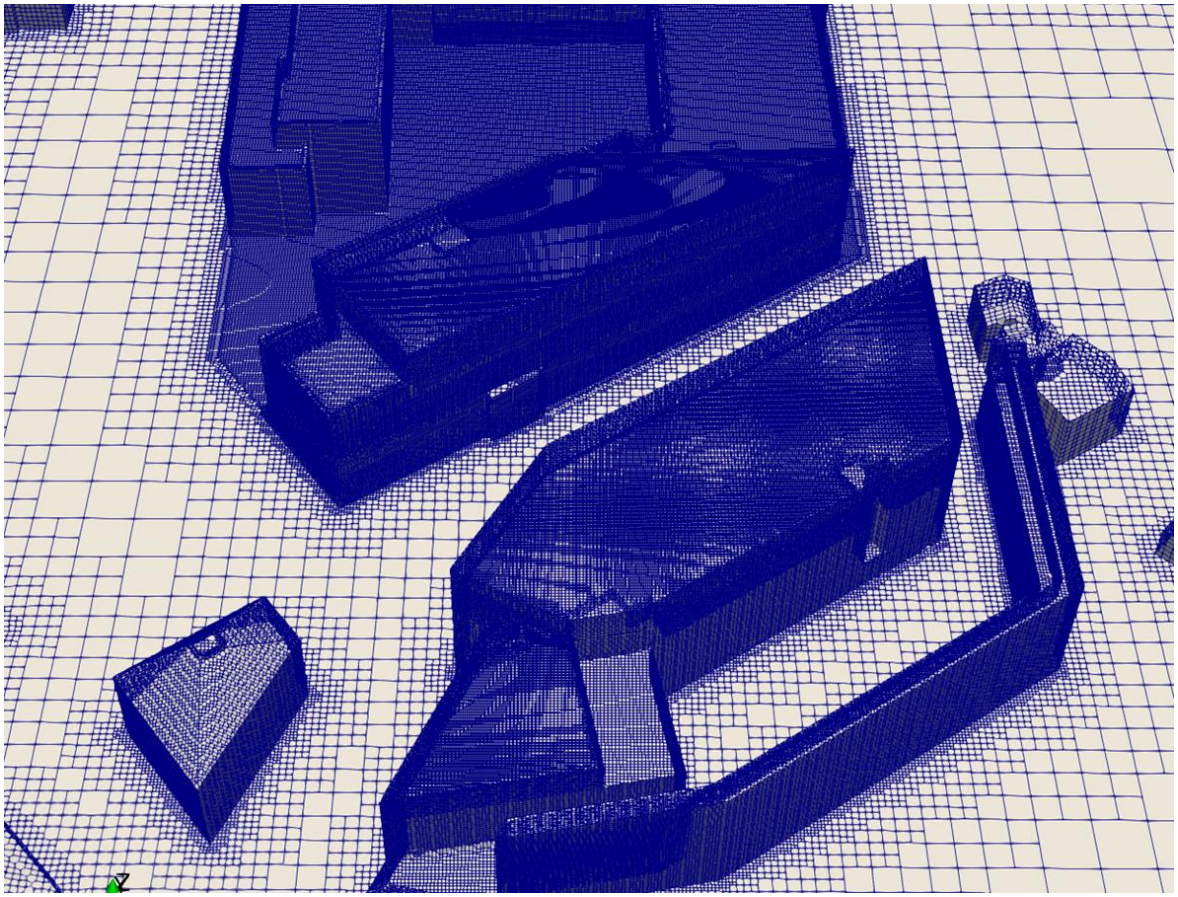


Figure 8-75 Mesh for the CFD Model

9 NOISE & VIBRATION

9.1 Introduction

This Chapter of the EIAR provides a description and assessment of the likely impact of the Proposed Development located in Howth, Dublin 13 regarding noise and vibration, both at sensitive receptors within the develop site (the Site) and at off-site sensitive recepors. The chapter was prepared by Laura Griffin (BA Hons, MSc), Environmental Consultant, Enviroguide Consulting.

This Chapter discusses the existing ambient noise levels at nearby sensitive receptors, the potential impacts of the Proposed Development on the existing ambient noise environment and the mitigation measures that may be employed to reduce or eliminate any potential impact.

9.2 Study Methodology

This assessment examined the likely impacts of sound pressure levels generated by the Proposed Development located at lands between Balscadden Road, Main Street and Abbey Street within Howth village. Noise calculations were used to predict and assess the likely impact of onsite equipment at offsite noise sensitive receptors.

For the purpose of the assessment, ‘sensitive receptors’ terminology used describes any persons, locations or otherwise that may be susceptible to changes as a consequence of the Proposed Development. The primary noise impacts associated with this Proposed Development are likely to be due to:

- Site clearance, including demolition works of the existing EDROS Building & Former Baily Court Hotel;
- Building construction works;
- Trucks entering and exiting the Site;
- Traffic along local road network;
- Operational plant noise used to serve the ancillary elements within the apartment buildings, creche and nursing home.

With respect to the listed noise impacts, the key objective of the proposed facility is to manage activities to ensure any significant increase in noise emissions are minimised.

Documents consulted during the preparation of this EIAR chapter are listed in the References section. The acoustics section has been compiled taking cognisance of:

- Design Manual for Roads and Bridges Volume 11 Section 3 Part 7 (HD 213/11 – Revision 1) (The Highways Agency et al., 2011);
- BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise;
- British Standard BS 8233:2014 – Guidance on sound insulation and noise reduction for buildings;

- ISO 1996-1:2016 Acoustics - Description, measurement and assessment of environmental noise. Part 1: Basic quantities and assessment procedures
- ISO 1996-2:2017 Acoustics - Description, measurement and assessment of environmental noise Part 2: Determination of sound pressure levels;
- ISO 9613-1:1993 Acoustics - Attenuation of sound during propagation outdoors -- Part 1: Calculation of the absorption of sound by the atmosphere;
- ISO 9613-2:1996 Acoustics - Attenuation of sound during propagation outdoors -- Part 2: General method of calculation;
- Environmental Protection Agency (2016) Guidance Note for Noise (NG4): Licence Applications, Surveys and Assessments in Relation to Scheduled Activities; and
- Guidelines for the Treatment of Noise & Vibration in National Road Schemes, National Roads Authority, Revision 1, 25th October 2004.

The following noise indices, analysis and observations were reviewed.

- LA_{eq} - The A-weighted, equivalent continuous sound level of the measurement period. Represents an 'energy average' of the sound pressure levels measured.
- LA_{90} – The A-weighted, noise level exceeded for 90% of the measurement period. Calculated by statistical analysis of the measurement data.
- LA_{10} - The A-weighted, noise level exceeded for 10% of the measurement period. Calculated by statistical analysis of the measurement data.

9.2.1 Desk Study

A desktop study was carried out to collate and review available information relating to the site and its environs for the completion of this noise assesment. The desktop study relied on the following:

- An evaluation of the Site and the surrounding area to assess certain changes to noise that are likely to impact the surrounding environs.
- Identification of sensitive receptors for assessment (see Section 9.5.1).
- BS 5228 2009 +A1 2014 Code of practice for noise and vibration control on construction and open sites with respect to the controlling noise and vibration impacts. In this instance, appropriate criteria relating to permissible construction noise levels are taken from Part one of the standard Noise.

9.3 The Existing and Receiving Environment (Baseline Situation)

The Site of the Proposed Development occupies an area of approximately 1.43 hectares (ha) within Howth Village. Howth is in the Electoral Division of Howth ED 1901, in the Civil Parish of Howth, in the Barony of Coolock, in the County of Dublin.

The Site of the Proposed Development is bounded to the east by the Balscadden Road, to the west by residential and commercial buildings fronting onto Main Street and Abbey Street, and to the north by Martello Tower and Tower Hill, and to the south by rear gardens to residential properties.

9.3.1 Quiet Area Screening

Screening was carried out to identify the potential of the Proposed Development located in or near an area that could be considered a 'Quiet Area' in open country in accordance with the Environmental Protection Agency's publication "Environmental Quality Objectives – Noise in Quiet Areas, 2003.

The criteria used to assess this determination comprised of the following

- At least 3 km from urban areas with a population >1,000 people;
- At least 10 km from any urban areas with a population >5,000 people;
- At least 15 km from any urban areas with a population >10,000 people;
- At least 3 km from any local industry;
- At least 10 km from any major industry centre;
- At least 5 km from any National Primary Route, and;
- At least 7.5 km from any Motorway or Dual Carriageway.

If the Site does not meet the above criteria, it is considered to be a non-quiet area as per the definition of the Environmental Protection Agency. 'Quiet Areas', according to NG4 (2016). Before relevant noise criterion can be applied, 'Quiet Area Screening' must be performed to identify or rule out the Site as a Quiet Area. Quiet Area screening results can be viewed in Table 9-1.

Table 9-1: Quiet Area Screening of the Development Location

Quiet Area Screening of the Development Location			
Screening Question	**Answer (Yes/No)**		**Screening Results**
Is the site >3km away from urban areas with a population >1,000 people?	Yes □	No ✓	The Proposed Development is located within Howth which is an area with a population >1,000 people.
Is the site >10km away from urban areas with a population >5,000 people?	Yes □	No ✓	The Proposed Development is located within 10km of Sutton which has a population >5,000 people.
Is the site >15km away from urban areas with a population >10,000 people?	Yes □	No ✓	The Proposed Development is located within 15km of Raheny which has a population of over 18,000 people.
Is the site >3km away from any local industry?	Yes □	No ✓	The Proposed Development is located within 3km of local industry.
Is the site >10km away from any major industry centre?	Yes □	No ✓	The Proposed Development is located within 10km of a major industry centre.
Is the site >5km away from any national primary route?	Yes ✓	No □	The N1 over 5km west of the Proposed Development.
Is the site >7.5km away from any motorway or dual carriageway?	Yes ✓	No □	The M50 is located over 7.5km west of the Proposed Development.
QUIET AREA?	**No**		**The Site does not meet these criteria it is not considered to be a quiet area.**

As the Proposed Development is located in an area which does not meet the criteria as per EPA screening guidelines, a low background noise would not be predicted, therefore baseline noise monitoring is not required as per EPA NG4 Guidance.

9.3.2 Recommended Noise Limits

There is no published statutory Irish guidance relating to the maximum permissible noise level that may be generated during the construction phase of a project.

Whilst no specific construction noise limits are set by Fingal County Council with respect to noise, the Dublin Agglomeration Noise Action Plan 2013 to 2018 refers to the use of BS 5228 2009 +A1 2014 Code of practice for noise and vibration control on construction and open sites with respect to the controlling noise and vibration impacts. In this instance, appropriate criteria relating to permissible construction noise levels are taken from BS 5228 – 1:2009+a1:2014 *Code of practice for noise and vibration control on construction and open sites – Noise.*

BS 5228 – 1:2009+a1:2014 *Code of practice for noise and vibration control on construction and open sites – Noise.* This document suggests an absolute construction noise limits depending on the receiving environment. The documents states:

"Noise from construction and demolition sites should not exceed the level at which conversations in the nearest building would be difficult with windows shut…. Noise levels between 07:00 and 19:00hrs, outside the nearest window of the occupied room closest to the site boundary should not exceed:

- 70dB in rural, suburban and urban areas away from main road traffic and industrial noise;
- 75dB in urban areas near main roads in heavy industrial areas."

The Proposed Development is located in Howth, a northern suburb of Dublin. Nearby areas include Sutton,, Kilbarrack, Baldoyle and Donaghmede. Given the suburban context, a limit value of 70dB LAeq,T for construction is considered to be reasonable.

This limit value is also in agreement with those set by Transport Infrastructure Ireland (TII) for construction projects. The 2004 TII document "*Guidelines for the Treatment of Noise and Vibration in National Road Schemes"* outlines the following construction noise limit values, as outlined in Table 9-2:

Table 9-2: Construction Noise Limits (Source: TII, 2004)

Days and Times	LAeq	LAsmax
Monday to Friday (07:00 to 19:00 hours)	70	80
Monday to Friday (07:00 to 20:00 hours)	60*	75*
Saturdays (08:00 to 16:30 hours)	65	75
Sundays & Bank Holidays (08:00 to 16:30 hours)	60*	65*

Note * Construction activity at these times, other than that required for emergency works, will normally require the explicit permission of the local authority.

9.3.3 Noise

Noise is defined as any sound that has the potential to cause disturbance, discomfort, or psychological stress to a person exposed to it, or any sound that could cause actual physiological harm to a person exposed to it, or physical damage to any structure exposed to it. In summary, noise can be defined as any unwanted sound. Sound levels are expressed in decibels (dB) on a logarithmic scale, where 0dB is nominally the "threshold of hearing" and 120dB is nominally the "threshold of pain" (refer to Figure 9-1 below).

Background noise is defined as '*the steady existing noise level present without contribution from any intermittent sources. The A-weighted sound pressure level of the residual noise at the assessment position that is exceeded for 90 per cent of a given time interval, T (LAF90,T)*'. According to the EPA Noise Guidance NG4, an area of low background noise is one where the existing background noise levels measured during an environmental noise survey are as follows:

- Average Daytime Background Noise Level ≤40dB LAF90, and;
- Average Evening Background Noise Level ≤35dB LAF90, and;
- Average Night-time Background Noise Level ≤30dB LAF90.

The Proposed Development, though situated in a suburban area, is considered to be a non-quiet area as per EPA screening guidelines.

Figure 9-1 depicts typical sounds and their noise levels on a decibel scale.

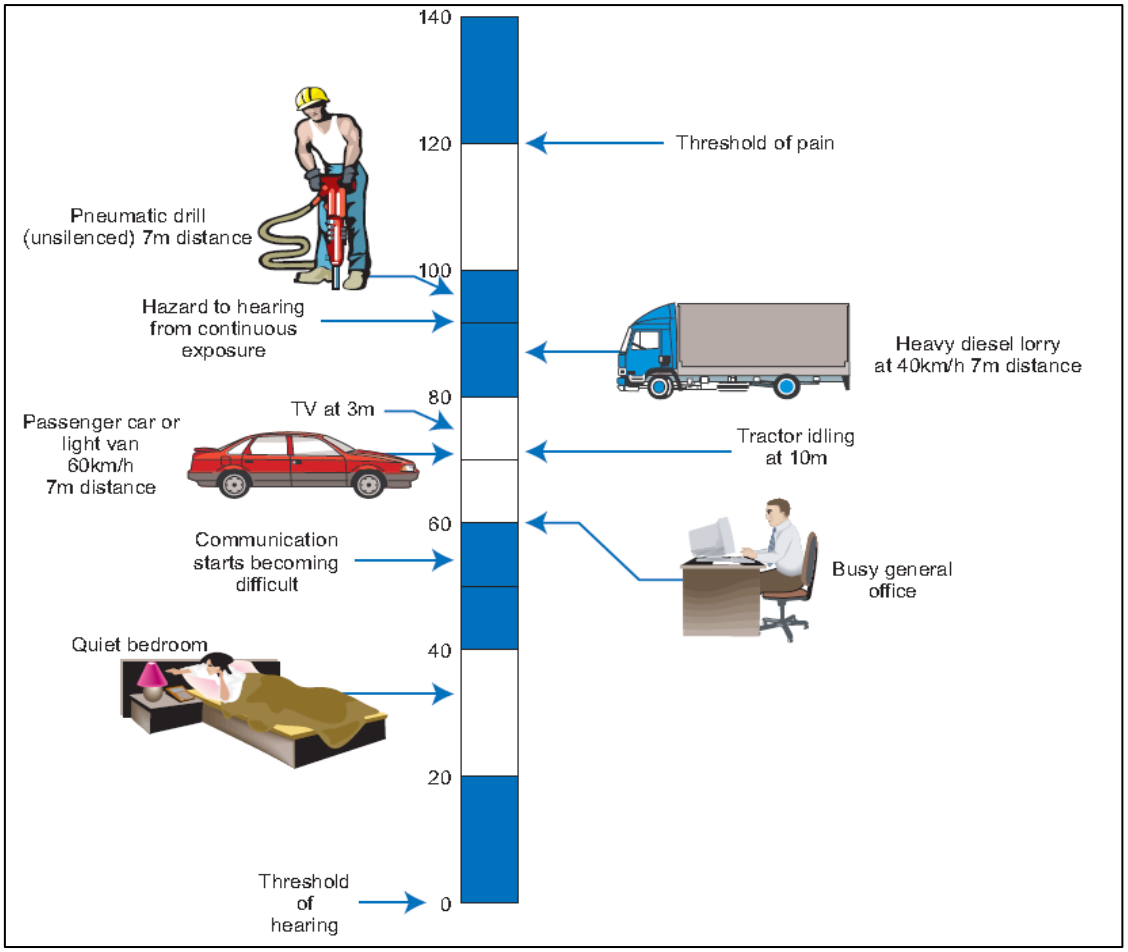


Figure 9-1: Scale and Indicative Noise Levels on the dB(A) Scale (Based on guidance taken from: Design Manual for Roads and Bridges, Volume 11 Consolidated Edition 1993)

9.4 Characteristics of the Proposed Development

9.4.1 Construction Phase

In summary, the Proposed Development phasing consists of the following:

- Site Preparation: Site Clearance, Demolition & Enabling Works
- Construction: Piled Retaining Walls
- Construction: Bulk Excavation
- Construction: Building Foundations & Basement
- Construction: Building Superstructure Frame
- Construction: Cladding & Fit-Out Works
- Completion

The Construction Phase is intended to be a 3 year programme. The operational hours for the site will be 08:00 to 19:00 Mondays to Fridays and 08:00 to 13:00 Saturdays. No work is permitted on Sundays or public holidays.

It may be necessary to work outside these hours at times, for example for early morning concrete pours and late evening concrete finishing. The Contractor will consult Fingal County

Council regarding out of hours working and local residents and businesses will be informed of any out of hours works required

9.4.2 Operational Phase

During the operational phase of the development, no significant sources of noise or vibration are expected with the development. The primary source of outward noise in the operational context relates to any changes in traffic flows along the local road network and any operational plant noise used to serve the ancillary elements within the apartment buildings, creche and nursing home.

Once the development is completed, the potential noise impacts to the surrounding environment are 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 (estate vehicle movements, children playing etc.) and hence no significant impact are expected from this area of the development site.

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 Proposed Development. Potential noise impacts also relate to operational plant serving the apartment buildings such as heat pumps.

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

9.5 Potential Impact of the Proposed Development

This section assesses the impact of the Proposed Development on the human environment. The noise and vibration generating activities associated with the Site are as follows:

- Site clearance, including demolition works of the existing EDROS Building & Former Baily Court Hotel;
- Building construction works;
- Trucks entering and exiting the Site;
- Installation of the secant pile wall.

9.5.1 Noise Sensitive Locations

The EPA define noise sensitive locations as '*any dwelling house, hotel or hostel, health building, educational establishment, place of worship or entertainment, or any other facility or other area of high amenity which for its proper enjoyment requires the absence of noise at nuisance levels*'.

In identifying sensitive receptors, consideration has been given residential properties or noise sensitive premises such as schools or hospitals, or recreational spaces within a close proximity of the Proposed Development.

The nearest noise sensitive locations are residential properties which are located approximately 20m from the Proposed Development Site Boundary.

Table 9-3: Noise Sensitive Locations

Name	Type	Coordinates		Orientation Relative to Site Boundary	Distance from the Site Boundary
Abbey Street	Residential	53.386947	-6.065419	West	20m
Abbey Street	Residential	53.386432	-6.065432	Southwest	30m
Balscadden Road	Residential	53.387290	-6.063182	Northeast	30m
Balscadden Road	Residential	53.386652	-6.063516	Southeast	20m
Asgard Park	Residential	53.385765	-6.063541	Southeast	35m

9.5.2 Noise from Operational Traffic

The traffic data used in this assessment has been provided by Waterman Moylan Engineering Consultants in Volume 2, Chapter 12 'Traffic'.

The Design Manual for Roads and Bridges (DMRB) Volume 11 Section 3 Part 7 (HD 213/11 – Revision 1) (The Highways Agency et al., 2011) states that "*changes in traffic volume on existing roads or new routes may cause either of the threshold values for noise to be exceeded. A change in noise level of 1dB LA10, 18h is equivalent to a 25% increase or a 20% decrease in traffic flow, assuming other factors remain unchanged and a change in noise level of 3dB LA10, 18h is equivalent to a 100% increase or a 50% decrease in traffic flow*".

No traffic routes are predicted to experience increases of more than 25% in total traffic flows as a result of the Proposed Development and therefore no detailed assessment is required as per the DMRB Guidelines. Refer to Chapter 12 of the EIAR for a detailed traffic assessment report.

The impact of noise from operational traffic will be negligable and will not have a negative impact.

9.5.3 Noise from Onsite Plant & Equipment

Noise and vibration can arise from the operation of fixed or mobile machinery used for the Construction Phase and from vehicular traffic during the Operational Phase. Noise prediction calculations have been completed for sound pressure levels from the use of external onsite plant and equipment up to 250m from the source. According to the inverse square law, it can be shown that for each doubling of distance from a point source, the sound pressure level decreases by approximately 6 dB. Table 9-4 and Table 9-5 detail the noise emissions from the plant or machinery items to be used in the Proposed Development and the relevant L_{Aeq} values at the reference distances. The reference levels were calculated and projected for a range of distances from the source to the appropriate receptor using the following formula:

$$L_{Source} \approx L_{Ref} - 20 \cdot \text{Log10}(R2/R1)$$

Where:

L_{Source} = Sound Pressure Level at Initial Location

L_{Ref} = Sound Pressure Level at the new Location

R1 = Distance from the noise source to initial location

R2 = Distance from noise source to the new location

The calculations make a number of assumptions such as:

1. There is a straight line between the source and observer.
2. Meteorological conditions are static.
3. There are no natural barriers that affect attenuation of noise other than distance.
4. All plant items are operating from a single source simultaneously and at full capacity.
5. All plant items are operating at the edge of the work area closest to the sensitive receptor.

The inverse square law is the logical first estimate of the sound you would get at a distant point in a reasonably open area. It is noted that the sound intensity from a point source will obey the inverse square law if there are no reflections or reverberation. If there are barriers between the source and the point of measurement, you are likely to get less than what the inverse square law predicts.

Table 9-4 and Table 9-5 set out the equipment associated with the Proposed Development and associated dB(A) levels according to BS 5228-1, and the inverse square law:

Table 9-4: Equipment associated with proposed construction activities

Plant Item	Ref	dB(A) @ 10m	dB(A) @ 20m	dB(A) @ 30m	dB(A) @ 35m	dB(A) @ 40m	dB(A) @ 100m	dB(A) @ 150m	dB(A) @ 200m	dB(A) @ 250m
Loading Shovel	BS 5228-1	76.5	70.5	67	65.6	64.5	56.5	53	50.5	48.5
Excavator	BS 5228-1	75	69	65.5	64.1	63	55	51.5	49	47
Mobile Crane	BS 5228-1	70	64	60.5	59.1	58	50	46.5	44	42
Generator	BS 5228-1	65	59	55.5	54.1	53	45	41.5	39	37
Dozer	BS 5228-1	81	75	71.5	70.1	69	61	57.5	55	53

Table 9-5: Equipment associated with proposed demolition activities

Plant Item	Ref	dB(A) @10m	dB(A) @20m	dB(A) @30m	dB(A) @35m	dB(A) @ 40m	dB(A) @ 100m	dB(A) @ 150m	dB(A) @ 200m	dB(A) @ 250m
Breaker	BS 5228-1	90	84	80.5	79.1	78	70	66.5	64	62
Crusher	BS 5228-1	86	80	76.5	75.1	74	66	62.5	60	58
Excavator	BS 5228-1	75	69	65.5	64.1	63	55	51.5	49	47

Table 9-4 and Table 9-5 outline the predicted noise levels at reference distances using *BS 5228-1* recommendations. The predicted noise levels from onsite activities up to 250m from the Site have been included. The nearest noise sensitive locations are located approximately 20m from the Proposed Development Site Boundary, however the noise generating activity will be further away than the Site boundary. There is the potential for the adopted criteria to be exceeded by some of the equipment both during construction and demolition works at the nearest sensitive receptors. However, there are hedgerows on the intervening lands between the Site Boundary and the residential dwellings. It is important to recognise that the sound intensity from a point source will obey the inverse square law if there are no reflections or reverberation. If there are barriers between the source and the point of measurement, the actual intensity is likely to be less than what the inverse square law predicts. Therefore, when taking account of local terrain, predicted noise levels at the closest residential noise sensitive locations are expected to be lower than outlined in Table 9-4 and Table 9-5. Nevertheless, mitigation measures, as outlined in Section 9.6.1, will be implemented to reduce any potential impacts.

It is not envisaged for any excessively noisy activities to be carried out over extended periods of time during the construction stage.

9.5.4 Potential Cumulative Impacts

Cumulative Impacts can be defined as "*impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project*". Effects which are caused by the interaction of effects, or by associated or off-site projects, are classed as indirect effects. Cumulative effects are often indirect, arising from the cumulation of different effects that are individually minor. Such effects are not caused or controlled by the project developer.

The cumulative effects of noise and vibrations from the Proposed Development and other existing developments have been considered, in particular through the generation of nuisance noise. There are no planned or proposed projects located in close proximity to the Proposed Development with the potential to result in cumulative impacts. Adherence and full implementation of the appropriate control and mitigation measures will ensure there is no potential for

cumulative impacts to arise. Therefore, cumulative impacts have been assessed in this regard and the impact has been determined as negligible.

9.5.5 "Do Nothing" Impact

A 'Do Nothing' scenario would result in the Site remaining undeveloped. Noise and vibration levels would remain unchanged onsite and at nearby sensitive receptors.

9.6 Avoidance, Remedial & Mitigation Measures

9.6.1 Construction Phase

In order to control likely noise impacts caused by the Proposed Development, best available technology will be employed by the appointed Main Contractor to minimise noise from the construction operations and all comply with Safety, Health and Welfare at work (construction) Regulations 2006 to 2013, Safety, Health and Welfare at Work Act 2005, BS 6187:2011 - Code of Practice for full and partial demolition, BS 5228:2009+A1:2014 Parts 1 & 2 - Code of Practice for noise and vibration control on construction and open sites – Vibration, Environmental Protection Agency Act 1992 Sections 106-108, including all Local Authority specific requirements for this specific site.

Work methods will be implemented to ensure minimal noise and vibration are created; methods will include:

- Each item of plant used on site complies with the noise limits quoted in the relevant European Commission Directive 2000/14/EC/ [S.I. No. 632 of 2001].
- All plant and equipment liable to create noise whilst in operation will, as far as reasonably practicable, be located away from sensitive receptors and neighbouring occupied buildings.
- The use of barriers and hoarding to absorb and/or deflect noise away from noise sensitive areas will be employed where required and reasonably practicable.
- All plant, equipment and noise control measures applied to plant and equipment will be maintained in good and efficient working order and operated such that noise emissions are minimised as far as reasonably practicable. Any plant, equipment or items fitted with noise control equipment found to be defective will not be operated until repaired.
- Fixed items of construction plant will be electrically powered, where possible, in preference to diesel or petrol driven. The Main Contractor will ensure that vehicles and mechanical plant employed for any activity associated with the construction works will, where reasonably practicable, be fitted with effective exhaust silencers.
- Machines in intermittent use will be shut down or throttled down to a minimum during periods between works. Static noise emitting equipment operating continuously will be housed within suitable acoustic enclosures, where appropriate.
- Tower cranes will be utilized instead of crawler cranes as these are electrically powered and quieter in operation.
- Noise suppression hammers and shields will be used on rock breaking equipment.
- Working hours will be confined to those stipulated in the grant of planning permission.

- Noise emitting processes such as rock breaking can be suspended during sensitive hours, to be agreed in consultation with FCC and neighbours.
- Alternative work practices will be investigated where the noise emitted is reduced (for example prefabricating building components off site).
- Site deliveries will be confined to working hours and allocated offloading location will be utilized for all deliveries.
- The Site Manager will also continually review and monitor the noise / dust / vibration levels / risk throughout the duration of the Proposed Development and if necessary, adjust / add to the control measures to be employed to reduce nuisance.

For controlling vibration reference should be made to BS 5228:2009+A1:2014 which offers detailed guidance on the control of vibration from demolition and construction activities. In general, BS5228:2009+A1:2014 advises the following:

- Use rubber linings in, for example, chutes and dumpers to reduce impact noise.
- Minimize drop height of materials.
- Regular and effective maintenance by trained personnel should be carried out to reduce vibration from plant and machinery.
- Hand demolition, cutting of the separation joints of the buildings in advance and small robotic breakers and 'munchers'

9.6.2 Operational Phase

During the operational phase of the development, noise mitigation measures with respect to the outward impact of the development are not deemed necessary.

9.6.3 "Worst Case" Scenario

The worst-case scenario is where mitigation measures fail for the Proposed Development. There is the potential for short-term intermittent significant impacts in the absence of mitigation measures. The worst-case predicted noise levels from the equipment at the closest off-site receptors range from 70.5-80.5. Predicted levels at the closest off-site receptors are external and actual noise levels within buildings will be lower. Assuming open-window transmission a reduction of 15 dB to construction noise levels may be assumed, or approximately 30 dB for closed window transmission. The sound intensity from a point source will obey the inverse square law if there are no reflections or reverberation. If there are barriers between the source and the point of measurement, the actual intensity is likely to be less than what the inverse square law predicts. Therefore, when taking account of local terrain, predicted noise levels at the closest residential noise sensitive locations are expected to be lower in reality than outlined in this worst case scenario.

9.7 Residual Impacts

Residual Impacts are defined *as 'effects that are predicted to remain after all assessments and mitigation measures'*. They are the remaining 'environmental costs' of a Proposed Development and are the final or intended effects of a development after mitigation measures have been applied to avoid or reduce adverse impacts. Potential residual impacts from the Proposed Development were considered as part of this environmental assessment.

No residual impacts are anticipated.

9.8 Monitoring

A noise and monitoring specialist will be appointed to carry out quarterly monitoring of noise and vibration, with the first monitoring commencing the first week of construction. The monitoring will be carried out at the nearest sensitive locations which are presented in Table 9-3.

The current proposal for the method of excavation along the eastern and southern boundary include a secant piled retaining wall. The proposed method of construction of the secant piled wall will involve the continuous flight auger (CFA) method. The CFA method offers low noise and low ground borne vibration in comparison to other forms of construction. For the avoidance of doubt, impact, driven or displacement piling will not be used.

Continuous vibration monitoring will be carried along the southern and eastern boundaries and top of the embankments.

9.9 Interactions

9.9.1 Population and Human Health

The impact assessment of noise and vibration has concluded that additional noise associated with the operation of on-site machinery will be intermittent and will not create any major negative impacts beyond the Site boundary. Mitigation and monitoring measures will be incorporated to further reduce the potential for noise generation from the Proposed Development.

It is noted that specific issues relating to Population and Human Health associated with the Proposed Development are set out in Chapter 4 of this EIAR.

9.9.2 Biodiversity

Interactions between noise and vibration and biodiversity have been considered as the Proposed Development has the potential to cause short-term impacts on biodiversity as a result of noise and vibration in the absence of mitigation measures. However, the mitigation measures employed at the Proposed Development will ensure that all impacts are neutral and biodiversity will not be affected. An assessment of the potential impact of the Proposed Development on biodiversity is included in Chapter 5 of this EIAR.

9.9.3 Traffic

The Proposed Development will have no significant impact on overall traffic volumes and therefore traffic will not result in any significant increases of noise at sensitive receptors.

9.10 Difficulties Encountered When Compiling

No difficulties were encountered.

9.11 References

BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise.

Dept. of Housing, Planning and Local Government (DHPLG), 2018. Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment August 2018.

Design Manual for Roads and Bridges Volume 11 Section 3 Part 7 (HD 213/11 – Revision 1) (The Highways Agency et al., 2011);

Environmental Protection Agency (2006) Environmental Management in the Extractive Industry (Non-Scheduled Materials).

Environmental Protection Agency (2016) Guidance Note for Noise (NG4): Licence Applications, Surveys and Assessments in Relation to Scheduled Activities.

Guidelines for the Treatment of Noise & Vibration in National Road Schemes, National Roads Authority, Revision 1, 25th October 2004.

ISO 1996-1:2016 Acoustics - Description, measurement and assessment of environmental noise. Part 1: Basic quantities and assessment procedures.

ISO 1996-2:2017 Acoustics - Description, measurement and assessment of environmental noise Part 2: Determination of sound pressure levels.

ISO 9613-1:1993 Acoustics - Attenuation of sound during propagation outdoors -- Part 1: Calculation of the absorption of sound by the atmosphere.

ISO 9613-2:1996 Acoustics - Attenuation of sound during propagation outdoors -- Part 2: General method of calculation.

10 LANDSCAPE & VISUAL IMPACT ASSESSMENT

10.1 Introduction

This Landscape and Visual impact Assessment chapter has been prepared in respect of a Strategic Housing Development at Balscadden, Howth village, Dublin 13. This chapter describes the landscape/visual context of the proposed development and assesses the likely impacts of the scheme on the receiving environment, in terms of both landscape character and visual amenity.

Landscape assessment relates to changes in the physical environment, brought about by a proposed development, which may alter its character. This requires a detailed analysis of the individual elements and characteristics of a landscape that go together to make up the overall character of that area. By understanding the aspects that contribute to this character it is possible to make judgements in relation to its quality (integrity) and to identify key sensitivities. This, in turn, provides a measure of the ability of the landscape in question to accommodate the type and scale of change associated with the proposed development, without causing unacceptable adverse changes to its character.

Visual Impact Assessment relates to changes in the composition of views as a result of changes to the landscape/landscape, how these are perceived and the effects on visual amenity. Such impacts are population-based, rather than resource-based, as in the case of landscape impacts.

10.1.1 Statement Of Authority

This Landscape and Visual Assessment chapter was prepared by Jamie Ball of Macro Works Ltd of Cherrywood Business Park, Loughlinstown, Dublin 18; a consultancy firm specialising in Landscape and Visual Assessment and associated maps and graphics. Jamie is a qualified Landscape Architect with 20 years of experience and is also a Corporate member of the Irish landscape Institute. He has prepared numerous Landscape and Visual Impact Assessments for large scale commercial and residential developments in urban and peri-urban settings.

10.2 Methodology

The likely significant effects of the proposed development on the landscape and visual environment involved:

- A desktop study to establish an appropriate study area and relevant landscape and visual designations in the Fingal County Development Plan 2017-2023;
- Fieldwork to study the receiving environment (undertaken 27th April 2021);
- Assessment of the significance of the landscape impact of the proposed development as a function of landscape sensitivity weighed against the magnitude of the landscape impact;
- Assessment of the significance of the visual impact of the proposed development as a function of visual receptor sensitivity weighed against the magnitude of the visual impact.

This assessment was undertaken in accordance with;

- Environmental Protection Agency publication ‘Guidelines on the Information to be contained in Environmental Impact Statements (Draft 2017) and the accompanying Advice

Notes on Current Practice in the Preparation of Environmental Impact Statements (Draft 2015).

- The Institute of Environmental Management and Assessment (IEMA) and Landscape Institute (UK) 'Guidelines for Landscape and Visual Impact Assessment' (GLVIA-2013).

It is important to note that the Guidelines for Landscape and Visual Impact Assessment' (GLVIA-2013) follow the European Landscape Convention (ELC) definition of landscape: *'Landscape is an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors' (Council of Europe, 2000)*. Thus, GLVIA-2013 covers all landscapes from *"high mountains and wild countryside to urban and fringe farmland (rural landscapes), marine and coastal landscapes (seascapes) and the landscapes of villages towns and cities (landscapes)"* - whether protected or degraded.

In the case of this project, owing to a combination of landscape, townscape and seascape elements within the locality of the site, this chapter could alternatively have been addressed as a Townscape/Landscape & Visual Impact Assessment or a Seascape/Landscape & Visual Impact Assessment. However, the majority of the land within the study area is that of an open or Greenfield or 'landscape' nature.

Whilst the scope of this LVIA will be comprehensive, in relation to likely effects within the study area, there will be a particular focus on effects likely to be experienced by residents in or near Howth village.

10.2.1 Landscape Impact Assessment Criteria

When assessing the potential impacts on the landscape resulting from a proposed development, the following criteria are considered:

- Landscape character, value and sensitivity;
- Magnitude of likely impacts;
- Significance of landscape effects.

The sensitivity of the landscape to change is the degree to which a particular setting can accommodate changes or new elements without unacceptable detrimental effects to its essential characteristics. Landscape Value and Sensitivity is classified using the following criteria set out in **Table 10-1**.

Table 10-1: Landscape Value and Sensitivity

Sensitivity	Description
Very High	Areas where the landscape character exhibits a very low capacity for change in the form of development. Examples of which are high value landscapes, protected at an international or national level (e.g. World Heritage Site), where the principal management objectives are likely to be protection of the existing character.
High	Areas where the landscape character exhibits a low capacity for change in the form of development. Examples of which are high value landscapes, protected at a national or regional level, where the principal management objectives are likely to be considered conservation of the existing character.
Medium	Areas where the landscape character exhibits some capacity and scope for development. Examples of which are landscapes, which have a designation of protection at a county level or at non-designated local level where there is evidence of local value and use.
Low	Areas where the landscape character exhibits a higher capacity for change from development. Typically, this would include lower value, non-designated landscapes that may also have some elements or features of recognisable quality, where management objectives include, enhancement, repair and restoration.
Negligible	Areas of landscape character that include derelict sites and degradation where there would be a reasonable capacity to embrace change or the capacity to include the development proposals. Management objectives in such areas could be focused on change, creation of landscape improvements and/or restoration.

The magnitude of a predicted landscape impact is a product of the scale, extent or degree of change that is likely to be experienced as a result of the proposed Development. The magnitude takes into account whether there is a direct physical impact resulting from the loss of landscape components and/or a change that extends beyond the immediate setting that may have an effect on the landscape character. **Table 10-2** refers.

Table 10-2: Magnitude of Landscape Impacts

Magnitude	Description
Very High	Change that would be large in extent and scale with the loss of critically important landscape elements and features, that may also involve the introduction of new uncharacteristic elements or features that contribute to an overall change of the landscape in terms of character, value and quality.
High	Change that would be more limited in extent and scale with the loss of important landscape elements and features, that may also involve the introduction of new uncharacteristic elements or features that contribute to an overall change of the landscape in terms of character, value and quality.
Medium	Changes that are modest in extent and scale involving the loss of landscape characteristics or elements that may also involve the introduction of new uncharacteristic elements or features that would lead to changes in landscape character, and quality.
Low	Changes affecting small areas of landscape character and quality, together with the loss of some less characteristic landscape elements or the addition of new features or elements.
Negligible	Changes affecting small or very restricted areas of landscape character. This may include the limited loss of some elements or the addition of some new features or elements that are characteristic of the existing landscape or are hardly perceivable.

The significance of a landscape impact is based on a balance between the sensitivity of the landscape receptor and the magnitude of the impact. The significance of landscape impacts is arrived at using the following graph set out in **Table 10-3.**

Table 10-3: Impact Significance Matrix

	Sensitivity of Receptor				
Scale/Magnitude	*Very High*	*High*	*Medium*	*Low*	*Negligible*
Very High	Profound	Profound-substantial	Substantial	Moderate	Minor
High	Profound-substantial	Substantial	Substantial-moderate	Moderate-slight	Slight-imperceptible
Medium	Substantial	Substantial-moderate	Moderate	Slight	Imperceptible
Low	Moderate	Moderate-slight	Slight	Slight-imperceptible	Imperceptible
Negligible	Slight	Slight-imperceptible	Imperceptible	Imperceptible	Imperceptible

Note: The significance matrix provides an indicative framework from which the significance of impact is derived. The significance judgement is ultimately determined by the assessor using professional judgement. Due to nuances within the constituent sensitivity and magnitude judgements, this may be up to one category higher or lower than indicated by the matrix. Judgements of Substantial (negative) and above are considered to be 'significant impacts' in EIA terms.

10.2.2 Visual Impact Assessment Criteria

As with the landscape impact, the visual impact of the proposed Development will be assessed as a function of sensitivity versus magnitude. In this instance the sensitivity of the visual receptor, weighed against the magnitude of the visual effect.

Sensitivity of Visual Receptors

Unlike landscape sensitivity, the sensitivity of visual receptors has an anthropocentric (human) basis. It considers factors such as the perceived quality and values associated with the view, the landscape context of the viewer, the likely activity they are engaged in and whether this heightens their awareness of the surrounding landscape. A list of the factors considered by the assessor in estimating the level of sensitivity for a particular visual receptor is outlined below to establish visual receptor sensitivity at each Viewshed Reference Point (VRP):

Susceptibility of Receptors

In accordance with the Institute of Environmental Management and Assessment ("IEMA") Guidelines for Landscape and Visual Assessment (3rd edition 2013) visual receptors most susceptible to changes in views and visual amenity are:

- *"Residents at home;*
- *People, whether residents or visitors, who are engaged in outdoor recreation, including use of public rights of way, whose attention or interest is likely to be focussed on the landscape and on particular views;*
- *Visitors to heritage assets, or to other attractions, where views of the surroundings are an important contributor to the experience;*

- *Communities where views contribute to the landscape setting enjoyed by residents in the area;*
- *Travellers on road rail or other transport routes where such travel involves recognised scenic routes and awareness of views is likely to be heightened".*

Visual receptors that are less susceptible to changes in views and visual amenity include;

- *"People engaged in outdoor sport or recreation, which does not involve or depend upon appreciation of views of the landscape;*
- *People at their place of work whose attention may be focussed on their work or activity, not their surroundings and where the setting is not important to the quality of working life".*

Recognised scenic value of the view (County Development Plan designations, guidebooks, touring maps, postcards etc). These represent a consensus in terms of which scenic views and routes within an area are strongly valued by the population because in the case of County Developments Plans, for example, a public consultation process is required;

Views from within highly sensitive landscape areas. These are likely to be in the form of Architectural Conservation Areas, which are incorporated within the Development Plan and therefore subject to the public consultation process. Viewers within such areas are likely to be highly attuned to the landscape around them;

Primary views from residential receptors. Even within a dynamic city context views from residential properties are an important consideration in respect of residential amenity;

Intensity of use, popularity. This relates to the number of viewers likely to experience a view on a regular basis and whether this is significant at a national or regional scale;

Viewer connection with the landscape. This considers whether or not receptors are likely to be highly attuned to views of the landscape i.e. commuters hurriedly driving on busy roads versus tourists focussed on the character and detail of the landscape;

Provision of vast, elevated panoramic views. This relates to the extent of the view on offer and the tendency for receptors to become more attuned to the surrounding landscape at locations that afford broad vistas;

Sense of remoteness and/or tranquillity. Receptors taking in a remote and tranquil scene, which is likely to be fairly static, are likely to be more receptive to changes in the view than those taking in the view of a busy street scene, for example;

Degree of perceived naturalness. Where a view is valued for the sense of naturalness of the surrounding landscape it is likely to be highly sensitive to visual intrusion by distinctly manmade features;

Presence of striking or noteworthy features. A view might be strongly valued because it contains a distinctive and memorable landscape / landscape feature such as a cathedral or castle;

Historical, cultural and / or spiritual significance. Such attributes may be evident or sensed by receptors at certain viewing locations, which may attract visitors for the purposes of contemplation or reflection heightening the sense of their surroundings;

Rarity or uniqueness of the view. This might include the noteworthy representativeness of a certain landscape type and considers whether the receptor could take in similar views anywhere in the broader region or the country;

Integrity of the landscape character. This looks at the condition and intactness of the landscape in view and whether the landscape pattern is a regular one of few strongly related components or an irregular one containing a variety of disparate components;

Sense of place. This considers whether there is special sense of wholeness and harmony at the viewing location;

Sense of awe. This considers whether the view inspires an overwhelming sense of scale or the power of nature.

Those locations which are deemed to satisfy many of the above criteria are likely to be of higher sensitivity. No relative importance is inferred by the order of listing. Overall sensitivity may be a result of a number of these factors or, alternatively, a strong association with one or two in particular.

10.2.3 Visual Impact Magnitude

The visual impact magnitude relates to the scale and nature of the visual change brought about by the proposal and this is reflected in the criteria contained in **Table 10.4** below.

Table 10-4: Magnitude of Visual Impacts

Criteria	Description
Very High	The proposal alters a large proportion or critical part of the available vista and is, without question, the most distinctive element. A high degree of visual change is generated, directly and strongly altering the visual amenity of the scene
High	The proposal alters a significant proportion or important part of the available vista and is one of the most noticeable elements. A considerable degree of visual change is generated that directly influences the visual amenity of the scene
Medium	The proposal represents a moderate alteration to the available vista, introducing a degree and quality of visual change that directly influences the visual amenity of the scene
Low	The proposal alters the available vista to a minor extent and may not be noticed by a casual observer and/or would not have a marked effect on the visual amenity of the scene
Negligible	The proposal would be barely discernible within the available vista and would have an immaterial effect on the visual amenity of the scene

10.2.4 Visual Impact Significance

As stated above, the significance of visual impacts is a function of visual receptor sensitivity and visual impact magnitude. This relationship is expressed in the same

significance matrix and applies the same EPA definitions of significance as used earlier in respect of landscape impacts (**Table 10-3** refers).

10.2.5 Quality of Effects

In addition to assessing the significance of landscape effects and visual effects, EPA Guidance for EIAs requires that the quality of the effects is also determined. This could be negative/adverse, neutral, or positive/beneficial.

Whereas, the introduction of new built elements into countryside areas more often results in negative landscape and visual effects, in urban settings, development proposals are often replacing one built feature with another or developing 'brownfield' sites. The consequence for the landscape character and visual amenity is often beneficial, or may be a combination of positive effects and negative effects for different receptors. In the context of this assessment, the judgment of the quality of the effects is made in combination with the significance judgement for both landscape impacts and visual impacts e.g., Moderate / Positive or Moderate / Negative.

10.2.6 Extent of Study Area

Due to the scale and nature of the proposed development within this receiving landscape setting, it is anticipated that the proposed development is not likely to give rise to significant landscape or visual impacts beyond approx. 1km. However, out of an abundance of caution, a 1.5km-radius study area is used in this instance (see Figure 10.1).

Figure 10-1: Study area for the proposed development

10.3 The Existing and Receiving Environment

The landscape baseline represents the existing context and is the scenario against which any changes to it, brought about by the proposed development, will be assessed. A description of the landscape context of the proposed site and wider study area is provided below. Although this description forms part of the landscape baseline, many of the elements identified also relate to visual receptors i.e., places from which viewers can potentially see the proposed development.

10.3.1 Baseline Environment

10.3.1.1 Immediate Site Context

The site of the proposed development is 1.43 hectares in size and is located between Balscadden Road, Asgard Park, Main Street and the Martello Tower, in Howth village. The site is made up of three main areas: the former Baily Court Hotel and associated buildings/yard

on Main Street, in the southwest corner of the site; a greenfield area in the south of the site that includes a glacial esker that backs on to the residences at Asgard Park residential *cul de sac*; thirdly, the derelict and dilapidated Edros sports building and tennis courts in the north of the site. Please see Figure 10.2.

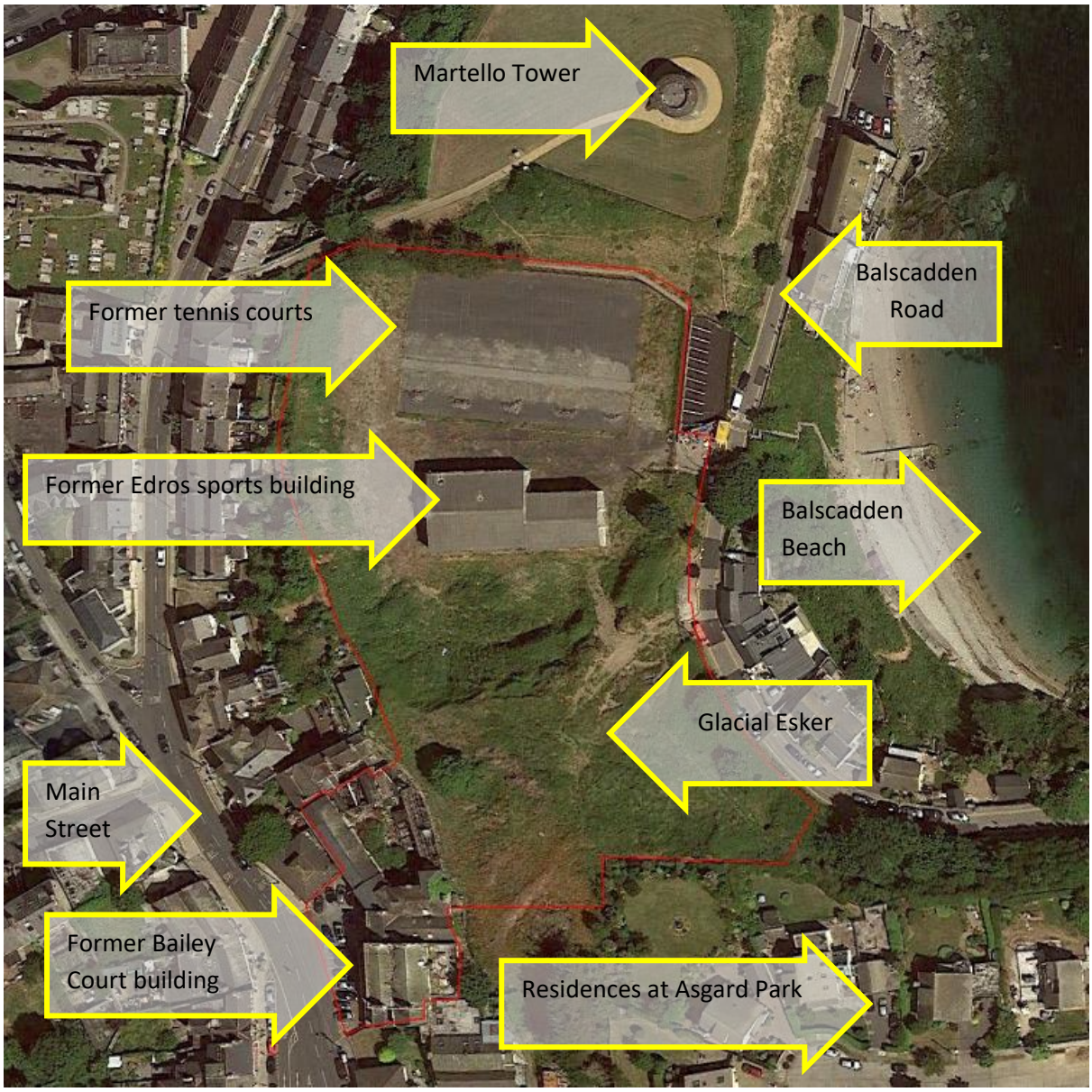


Figure 10-2: Site boundary (i.e., red line). Source: Google Earth (capture June 2018)

The northern area of the site sits at approx. 20 AOD and is mostly devoid of any notable vegetation. However, along the northern site boundary, a small stand of 5 no. mid-height Monterey Cypress is present. Outside (i.e., to the north of) a palisade fence, a pedestrian walkway/public right of way links Abbey Street (in Howth village centre) to Balscadden Road. However, the palisade fence is not the northern site boundary, as the pedestrian walkway/public right of way is inside the site boundary. This walkway aligns closely to a Fingal County Council designated 'preserved view' (i.e., scenic route) that is outside the site fence (see Figure 10.3 & 10.4).

Figure 10-3: This pedestrian walkway/public right of way links Abbey Street (in Howth village centre) to Balscadden Road. However, the palisade fence is not the northern site boundary, as the pedestrian walkway/public right of way is inside the site boundary.

Figure 10-4: elevated views of the site are experienced from immediately north of it.

The derelict Edros sports building and tennis courts occupy most of the land use in the north of the site, with the name “edros” being a reference to Howth in Ptolemy’s 2nd century map of Ireland. It is understood that mid-20th Century, this area of the site saw the construction of a

community centre with tennis, quash and badminton courts. However, it is understood these have been derelict since at least the 1990s. Self-seeding grassland and scrub covers much of the site, consistent with the lack of use and management of the site for a number of years.

The south-western area of the site aligns Howth village centre's Main Street and primarily consists of the former, now derelict, Baily Court Hotel (i.e., a disused two storey hotel building) and related extensions, outbuildings, derelict yard area (to the rear of the building) and tarmac surface car-parking (to the front of the building). The yard area hosts substantial shrubby growth, typically dominated by bramble and buddleia. Further north, the western boundary of the site borders the rear of the residential properties, where there is a substantial earth mound, lifting upwards of 5m in height, and mostly covered in a dense thicket of bramble.

Figure 10-5: The derelict Baily Court Hotel, which aligns the southwest of the site where it fronts onto Main Street in Howth village centre.

In the south of the site, an undeveloped/greenfield area includes a glacial esker that results in land lifting from approx. 20m AOD in the centre of the site, to reaching approx. 35m AOD along the southern boundary. This area includes exposed vertical and vegetated areas of gravel/sand/boulder clay, and areas of scrub are dominated by bramble with red valerian, buddleia, ivy and Sycamore saplings present. A small informal hedgerow is evident along sections of the southern boundary, with species including elder, hawthorn and sycamore. Southwest of this boundary, in a fallow/unmanaged area, numerous mature evergreen trees are present (i.e., outside the site).

The eastern boundary of the site aligns sections of Balscadden Road. Along the north-eastern boundary is a tarmacked, small public car-park area and some earth embankments. This area of the site boundary is a jumble of palisade fencing, concrete walls, hoarding and a security gate into the site, with both concrete block bollards and iron upright bollards by the roadside (see Figure 10.6). Further south and southeast along Balscadden road, the roadside glacial esker is larger and more apparent (see Figure 10.7 & 10.8), with plant species along this slope

including bramble, ground elder, nettle and cow parsley.

Figure 10-6: The northeast boundary of the site, where it aligns Balscadden Road

Figure 10-7: the centre-east boundary of the site, where it aligns Balscadden Road

Figure 10-8: Balscadden Road, near the southeast corner of the site

10.3.1.2 *Wider Site Context*

Upon an elevated knoll approx. 36m north of the northern extent of the site, and up a grassy slope from the site, is the Howth Martello Tower, built around 1804 on an Anglo-Norman motte. Both the tower and the motte are protected structures/monuments. Elevated views of the site are experienced near Tower, along with more aesthetic/compelling seaward views across Howth harbour. Further north of Martello Tower is the East Pier of Howth Harbour, which serves as a well-known destination for walkers and runners. Both East and West Piers of Howth harbour were constructed in the first quarter of the 19th Century, but the Middle Pier is less than a half-century old (see Figure 10.9).

Figure 10-9: View of Howth Harbour from the Martello Tower

Within 50m east of the site is Balscadden Bay, albeit approx. 20m lower in elevation, and down a very steep slope; a popular short, stony beach used by sea swimmers, in particular. South and southeast of the site, and on a higher elevation, is the late 20th Century residential development of Asgard Park. However, immediately south west and west of the site is the Howth village centre, where it aligns the Main street.

In terms of population and settlements, Howth Village has approx. 8000 residents. Several thousand more residents live across the peninsula, mostly between detached and semi-detached housing, with a small concentration of apartment living along the peninsula's north coast. A fishing and trading settlement since at least the 14th century, Howth village has the highest population density on the peninsula. Low-density housing estates overlooking the harbour are located within 800m south of the harbour. The spread of settlement 1.8km south from the village towards Howth Head has resulted in a number of large, detached properties showcasing views across the harbour to Ireland's Eye. There are numerous heritage sites within the village, including St Mary's Abbey (approx. 50m west of the site) and the Martello Tower (approx. 40m north of site).

Elsewhere across the peninsula, there are a small number of linear housing clusters mostly consisting of large, detached properties exhibiting views across Dublin Bay and/or the Irish Sea. However, owing to the conservation status across areas of the peninsula, settlement and development is, for the most part, constricted and localised, while one-off housing is rare. The coastal setting of Howth peninsula consists of a series of cliffs, deep inlets, stony coves and rocky caves and outcrops. The shoreline generally rises in high and steep cliffs and coastal spurs, before climbing to 171m at Black Linn, by the Ben of Howth. Approx. 1km north of Howth Harbour, Ireland's Eye is located, a 21.5 ha uninhabited island.

In terms of transport routes, the principal transport route in this area is the R105, which aligns the south-western section of the site. It originates along the north Dublin Bay coast road, before looping around the peninsula, to and from Sutton Cross. A myriad of smaller, residential roads extends from this regional road. The DART rail service terminates at Howth station, near the southern end of the West Pier, approx. 650m from the site. A ferry service operates from near the northern end of the West Pier between Dublin City, Dun Laoghaire and Howth Harbour, seven days a week between April and October.

In terms of the wider picture of public amenities and facilities, Howth village is located 15 km from Dublin city centre and is a very popular coastal destination for day-trippers, in particular; both those residents in Dublin and tourists visiting Dublin. Howth harbour is a popular visitor location owing to its scenic setting, its wildlife (including numerous harbour seals) and the range of cafes, restaurants and bars the village and West Pier offer. There is a mix of a working fishing fleet with multiple recreational or sailing craft, including Howth Yacht Club at the base of the harbour's middle pier. The village is often used by day-trippers as the start and end point for cliff-top and hillside walks across the peninsula, which provide panoramic views of Dublin Bay, the Leinster coastline and the Irish Sea. Year-round, the peninsula is a popular destination for cyclists, joggers, walkers, sailors and kayakers alike. However, in spite of its popularity as a visitor destination, it is primarily residents of the village and the wider peninsula who take up, maintain, support and participate in those amenities and facilities within the study area.

Figure 10-10: View from the Ben of Howth, north towards Howth Harbour, Ireland's Eye (to its north) and Lambay Island (in the distance, further north)

10.3.1.3 *Planning Context*

10.3.1.4 *International Policy*

A Biosphere is a special designation awarded by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) but managed in partnership by communities, NGOs and local and national governments. The UNESCO Dublin Bay Biosphere extends from Portmarnock, in north County Dublin, to south of Killiney in south County Dublin. Expanded in 2015, it reflects the environmental, economic, cultural and tourism importance of the Bay, and extends to over 300 km². Dublin Bay Biosphere contains three different zones, which are managed in different ways:

- The core zone of Dublin Bay Biosphere comprises 50km² of areas of high natural value, and includes Howth Head and Ireland's Eye;
- The buffer zone comprises 82km² of public and private green spaces such as parks, greenbelts and golf courses, which surround and adjoin the core zones;

- The transition zone comprises 173km² and forms the outer part of the Biosphere. It includes residential areas, harbours, ports and industrial and commercial areas.

It should be noted the core zone of Dublin Bay Biosphere comes within approx. 100m east of the site; the Dublin Bay Biosphere's marine transition zone comes within approx. 150m east of the site; the site, like most of the peninsula, is within the Dublin Bay Biosphere's terrestrial buffer-zone.

10.3.1.5 *EU Policy*

A Special Amenity Area Order for Howth was enacted in 1999, and sets out a framework for the conservation and protection of the area designated in accordance with the Planning Act and Planning Regulations. The Howth Special Amenity Area covers a total of 547ha. It includes Ireland's Eye (28ha) as well as heathland, woods, cliffs and wooded residential areas of the peninsula. The Fingal County Council (Howth) Special Amenity Area Order 2000 adjoins the site's eastern boundary, while the Special Amenity Area buffer zone occupies a large section of the site.

10.3.1.6 *Local Policy - Fingal County Development Plan 2017 – 2023*

Landscape Character

The Fingal CDP (County Development Plan) incorporates a Landscape Character Assessment for Fingal, which identifies a range of six landscape character types. Each landscape type is assigned a 'value' through the consideration of such elements as aesthetics, ecology, historical, cultural, religious or mythological. Value categories range from low to exceptional. Following the assessment of value, the sensitivity of each character type is defined. This is considered to be its overall ability to sustain its character in the face of change. Sensitivity is evaluated using criteria ranging from high to low. However, as the plan states:

> *"It is important to note that it does not necessarily follow that an exceptional value landscape will be highly sensitive to change or similarly a low value landscape will have a low sensitivity to change."*

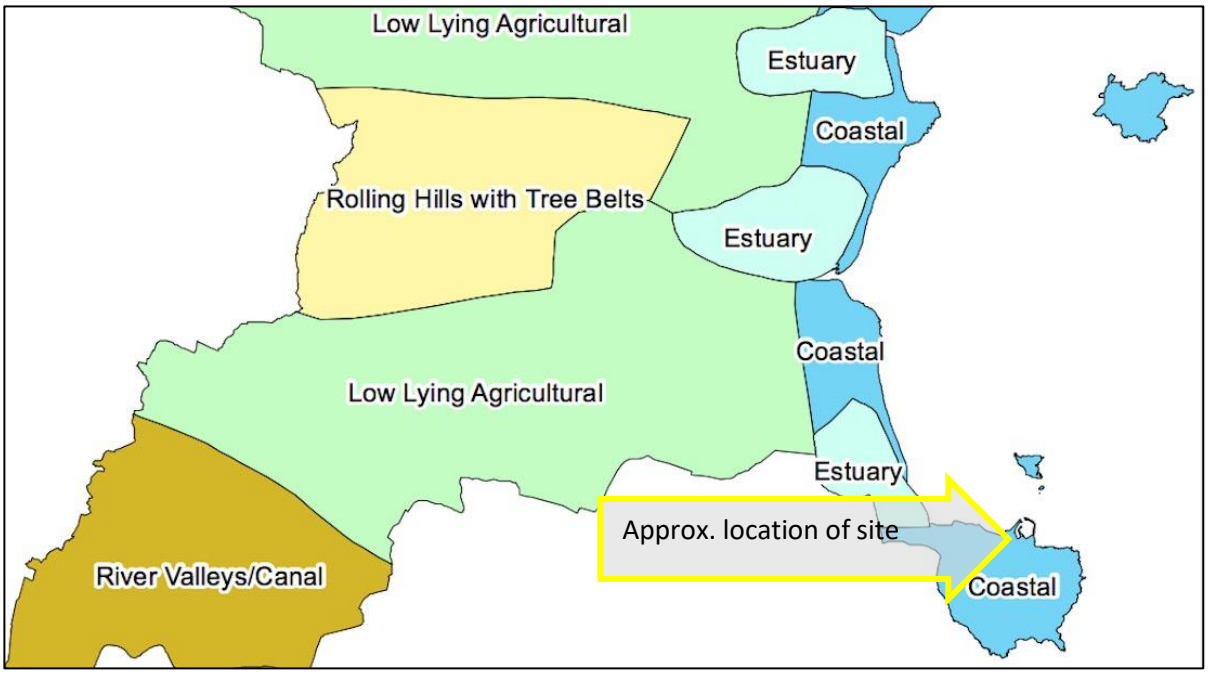


Figure 10-11: Landscape Character Types of southern Fingal (map extract from fingalcoco.ie)

According to the Fingal CDP, the Landscape Character Type for the Howth peninsula is designated 'coastal' (see Figure 10.11), which includes the following descriptions:

> *"A number of important settlements are located within this area, including Balbriggan, Skerries, Rush, Malahide, Portmarnock and Howth. The land is generally low lying, with the exception of some prominent headlands and hills in the northern part of the area, Howth and the off shore islands. Most of the Howth peninsula is covered by the 1999 Special Amenity Area Order (SAAO) … 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, architectural and natural heritage and is of high ecological value."*

Table LC01: Landscape Character Assessment Summary – Character, Value and Sensitivity

Landscape Character Types	Landscape Value	Landscape Sensitivity
Rolling Hills Type	Modest	Medium
High Lying Type	High	High
Low Lying Type	Modest	Low
Estuary Type	Exceptional	High
Coastal Type	Exceptional	High
River Valley and Canal Type	High	High

Figure 10-12: Summary of Landscape Character Assessment

As can be seen in Figure 10.12, Coastal Character Type is attributed to an "Exceptional" Landscape Value and a "High" Landscape Sensitivity. For high sensitivity landscapes, the following statement/principle for the proposed development applies:

> *"The character of the coastal visual compartments should be retained by preventing intrusive developments on headlands, promontories and coastal lands within the compartments. The coastal skyline should be protected from intrusive development*."

Natural Heritage

The following specific landscape character objectives are also included within the CDP:

Objective NH33

> *"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 NH34

> *"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 NH36

> "*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."*

Objective NH37

> "*Ensure that new development meets high standards of siting and design*."

Objective NH39

> "*Require any necessary assessments, including visual impact assessments, to be prepared prior to approving development in highly sensitive areas*."

Zoning

According to the Fingal CDP and evidenced in Figure 10.12 (below), there are two designated zonings for the site. 'TC –Town and District Centre' makes up the vast majority of the site, whose objective is to "Protect and enhance the special physical and social character of town and district centres and provide and/or improve urban facilities." The south-east corner of the site is zoned 'RS – Residential,' whose objective is to 'Provide for residential development and protect and improve residential amenity.'

According to Appendix 6 of the Fingal CDP, Local Objective Point 115 is to:

> *"Ensure the layout, scale, height and design respects the high amenity status of the surrounding area, the Martello Tower and the village character."*

As can also be discerned from Figure 10.13, the Howth village Architectural Conservation Area enters the southwest corner of the site (i.e. it entails the aforementioned derelict buildings of the site, facing onto the village's Main Street), while 'preserved views' (i.e. scenic route) align the northern boundary of the site.

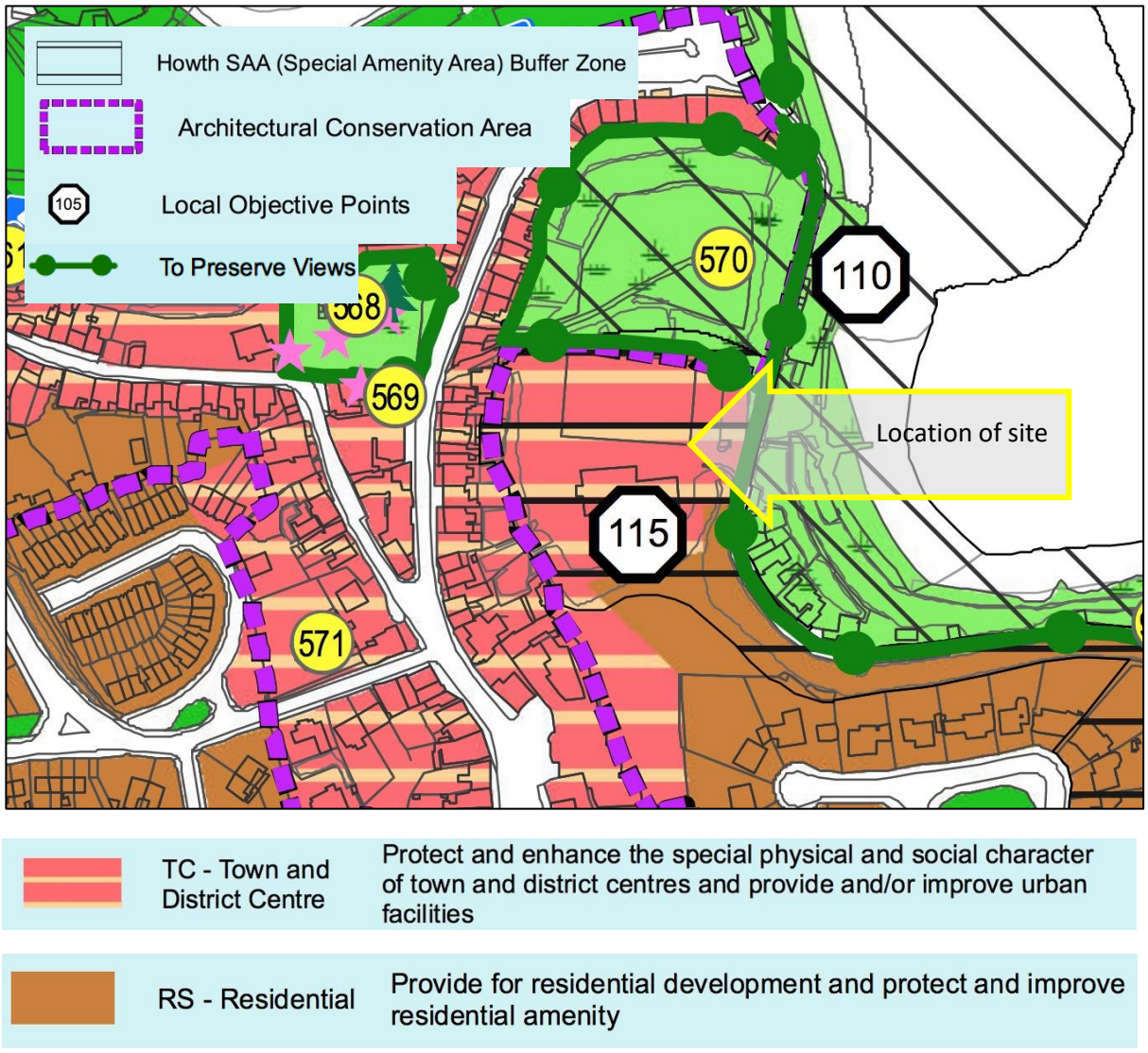


Figure 10-13: Extract of Baldoyle - Howth Sheet 10 (Zoning Objectives Map) from the Fingal CDP 2017-2023.

Green Infrastructure

Objective GI02

"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 climate change."

Objective GI03

"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 the architectural and archaeological heritage."

Objective GI04

"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 GI08

"*Integrate the provision of green infrastructure with infrastructure provision and replacement, including walking and cycling routes, as appropriate, while protecting biodiversity and other landscape resources."*

Objective GI20

"Require all new development to contribute to the protection and enhancement of existing green infrastructure and the delivery of new green infrastructure, as appropriate."

Objective GI21

"*Require all new development to address the protection and provision of green infrastructure for the five GI themes set out in the Development Plan (Biodiversity, Parks, Open Space and Recreation, Sustainable Water Management, Archaeological and Architectural Heritage, and Landscape) in a coherent and integrated manner."*

Objective GI22

"*Require all proposals for large scale development such as road or drainage schemes, wind farms, housing estates, industrial parks or shopping centres to submit a Green Infrastructure Plan as an integral part of a planning application.*

Objective GI24

"*Ensure biodiversity conservation and/or enhancement measures, as appropriate, are included in all proposals for large scale development such as road or drainage schemes, wind farms, housing estates, industrial parks or shopping centres."*

Objective GI28

"*Provide attractive and safe routes linking key green space sites, parks and open spaces and other foci such as cultural sites and heritage assets as an integral part of new green infrastructure provision, where appropriate and feasible."*

Objective GI33

"*Seek the provision of green roofs and green walls as an integrated part of Sustainable Drainage Systems (SuDS) and which provide benefits for biodiversity, wherever possible."*

Objective GI36

"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."

Views & Prospects

Specific Objectives to preserve views are noted in the Fingal Development Plan 2017-2023 on the drawing no. Sheet 10, Baldoyle/Howth. As can be seen from Figure 10.13, below, there are multiple protected views within 600-700m of the site, including those bounding the site's eastern and northern boundaries.

Figure 10-14: Extract of Fingal Development Plan 2017–2023 Drawing no. Sheet 10, Baldoyle/Howth

The protected views in proximity to the site are:

- Views to sea on Balscadden Road
- Views from Howth Piers
- The existing Martello Tower area with views towards the sea
- Views from St. Mary's Abbey
- Views from upper Main Street
- Views from Seaview Terrace

Further views are noted in the Howth Historic Core Architectural Conservation Area (ACA), including views northward from:

- Hillside Terrace
- Main Street (Upper)
- St. Mary's Abbey on Church Street
- Howth Terrace
- Martello Tower

The ACA Statement of Character states that:

> *"The key views out of the village such as those at Howth Terrace, Church Street, Main Street Upper and from the Martello Tower should be preserved and any works within the ACA should not adversely impact or block these views."*

According to 'Views and Prospects' (Page 333 of the CDP):

> "*…the County contains many vantage points from which views and prospects of great natural beauty may be obtained over both seascape and rural landscape. The scenery and landscape of the County are of enormous amenity value to residents and tourists and constitute a valuable economic asset. The protection of this asset is therefore of primary importance in developing the potential of the County. Given the high rates of economic and population growth, the challenge the County faces is to manage the landscape so that any change is positive in its effects, such that the landscapes we value are protected. There is a need, therefore, to protect and conserve views and prospects throughout the County for future generations. 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."*

Objective NH40

> *"Protect views and prospects that contribute to the character of the landscape, particularly those identified in the Development Plan, from inappropriate development."*

10.3.2 Identification of Viewshed Reference Points as a Basis for Assessment

Viewshed Reference Points (VRP's) are the locations used to study the likely visual impacts associated with the proposed development. It is not warranted to include each and every location that provides a view as this would result in an unwieldy chapter and make it extremely difficult to draw out the key impacts arising from the proposed development. Instead, the selected viewpoints are intended to reflect a range of different receptor types, distances and angles. The visual impact of a proposed development is assessed using up to 6 categories of receptor type as listed below: Key Views - from features of national or international importance; Designated Scenic Routes and Views; Local Community views; Centres of Population; Major Routes; Amenity and heritage features.

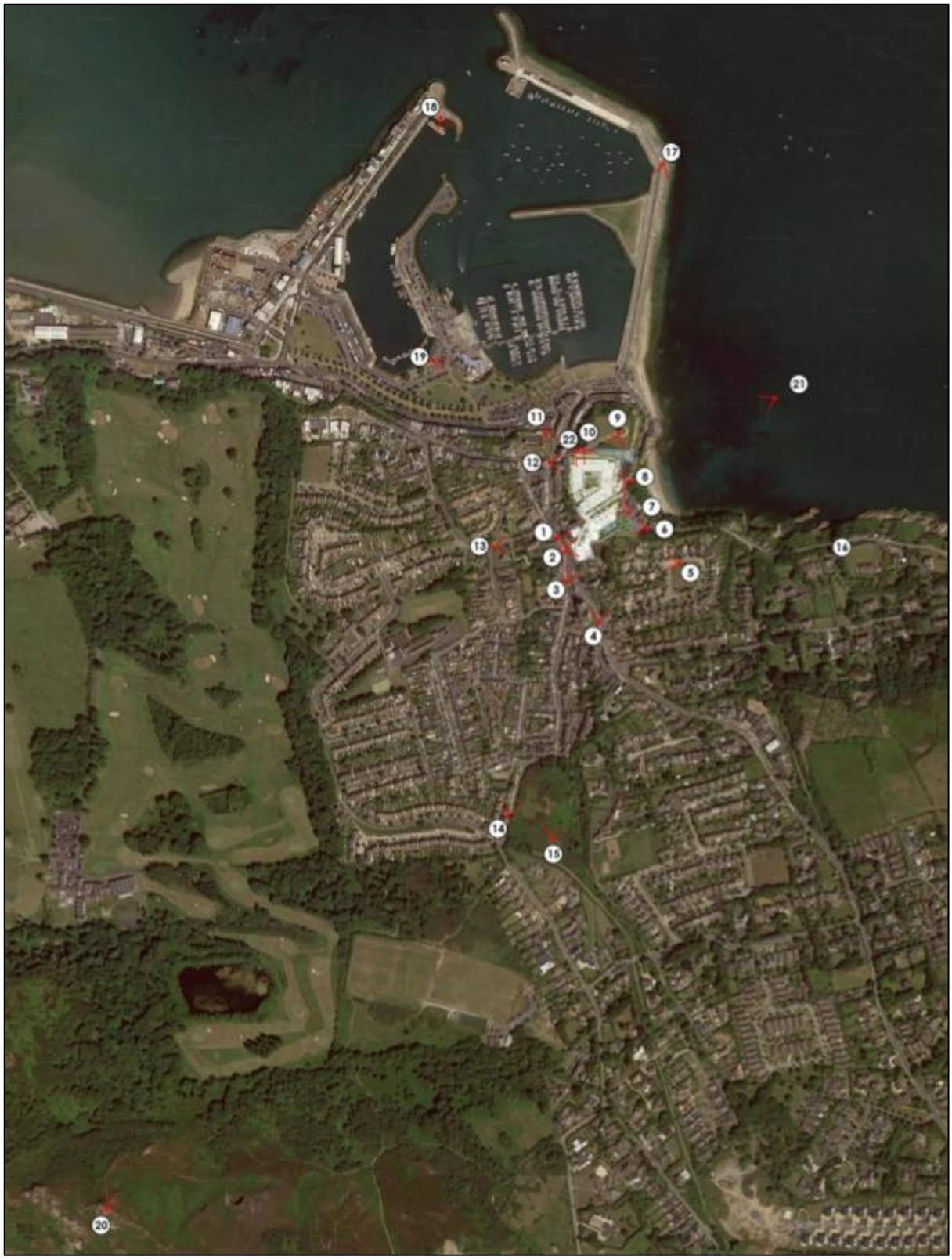


Figure 10-15: Viewpoint Selection Map (Source - Digital Dimensions)

The Viewshed Reference Points selected in this instance are set out in Table 10.5, below, and shown on Figure 10.15.

Table 10-5: Outline Description of Selected Viewshed Reference Points (VRPs)

VRP No.	***Location***	***Direction of view***
VP1	Main street Howth Village, northwest of the former Baily Court Hotel	NE/E/SE
VP2	Main street Howth Village, west of the former Baily Court Hotel	NE/E
VP3	Main street Howth Village, southwest of the former Baily Court Hotel	NE
VP4	Thormanby Road at junction with Nashville Road	N
VP5	Public green at Asgard Park	NW
VP6	Outside No 13 Balscadden Road Howth	W
VP7	Outside No 7 Balscadden Road Howth	NW
VP8	Balscadden Rd at Pedestrian access to Bay	W/SW
VP9	Martello Tower	S/SW
VP10	Footpath north of site	S/SE
VP11	St. Mary's Abbey, Howth village	SW
VP12	Abbey Street, Howth village, at base of path to Martello Tower	E/SE
VP13	St. Lawrence Road	E/NE
VP14	Balglass Road	NE
VP15	Public open space overlooking Howth village	N
VP16	Balscadden Road, overlooking Crow's Nest	NW
VP17	East Pier, Howth harbour	S
VP18	West Pier, Howth harbour	SW
VP19	Middle Pier, Howth harbour	SW
VP20	Trail & preserved view, Howth SAAO	NE
VP21	Drone View from Balscadden Bay	SW
VP22	Pedestrian path between Martello Tower and Abbey Street	SE

10.4 Characteristics of the Proposed Development

The proposed development relates to lands located to the south of the Martello Tower on Balscadden Road & the former Baily Court Hotel, Main Street, Howth, County Dublin. The development will consist of the demolition of existing structures on the proposed site including the disused sports building and the former Baily Court Hotel buildings and the construction of a

residential development set out in 4 no. residential blocks, ranging in height from 2 to 5 storeys to accommodate 180 no. apartments with associated internal residential tenant amenity and external courtyards and roof terraces, 1 no. retail unit and 2 no. café/retail units. The site will accommodate car parking spaces at basement level and bicycle parking spaces at basement and surface level. Landscaping will include new linear plaza which will create a new pedestrian link between Main St and Balscadden Rd to include the creation of an additional 2 no. new public plazas and also maintains and upgrades the pedestrian link from Abbey Street to Balscadden Road below the Martello Tower.

The key characteristics for the landscape and visual assessment relate to the height, extent and design of above ground built form and associated landscaping and how this interfaces with the surrounding urban fabric and visual amenity.

10.5 Potential Impact of the Proposed Development

10.5.1 Landscape Impacts

10.5.1.1 Landscape Value and Sensitivity

Landscape value and sensitivity ratings determined in this section may not correlate directly with those from the Fingal County Development Plan as they are derived from the universal criteria provided in Table 10.1. By contrast, individual Planning Authorities throughout the country employ different criteria and terminology for determining landscape sensitivity and generally at the broad scale of landscape units (Landscape Character Area) rather than at the site scale required here. GLVIA (2013) recommends that landscape specialists take account of pre-existing landscape character assessments, but ultimately make their own sensitivity judgements based on appropriate scale and context.

<u>The site and immediate surrounds (<200m):</u>

In terms of the site, it is a modified, anthropocentric landscape with its three main areas consisting of:

- The former Baily Court Hotel and associated buildings/yard on Main Street, in the southwest corner of the site;
- A greenfield area in the south of the site that includes a glacial esker;
- The derelict and dilapidated Edros sports building and tennis courts in the north of the site.

Thus, there are a variety of contexts and former land uses across the site: it is not uniform or cohesive in its identity or character. It should be noted that there does not appear to be no rare or notable trees or other vegetation present within the site, nor buildings of heritage and/or architectural merit, although the glacial esker in the south/southwest of the site is of noted geological merit. Overall, there is a strong air of dereliction and dilapidation associated with the site for much of the last three decades.

In terms of zoning, there are two designated zonings for the site: the southeast corner being zoned ‘RS – Residential,’ with the ‘TC – Town and District Centre’ in the rest of the site. However, the current site is marked by the absence of recreational/amenity value or residential value, while offering a negligible degree of aesthetic value, although it is in the Howth SAAO

(Special Amenity Area Order). Indeed, the site's unkempt/derelict, degraded, cordoned off and non-aesthetic values are inconsistent and incompatible with the wider setting of the village, the harbour and the peninsula and its broader landscape sensitity zoning in the Fingal County Development Plan.

On balance of these factors, the landscape sensitivity of the site is deemed to be **Medium-low**.

The Wider Study Area (>200m)

In terms of the vicinity of the site, it is currently in a transition zone between residential land use to the southeast, south and southwest of the site, and recreational/conservation land use to the east, north and northwest. Moving out further across the study area, the following apply:

Landscape / Seascape quality (condition)

The coastal landscape is relatively densely settled along the Sutton-Howth village axis. Large, detached, period houses and sizeable gardens abound much of this coastline, as well as the DART line for the last 500m before terminating at Howth station. The second coastal landscape category is that of Howth Harbour itself. In recent decades, it has achieved a sustainable identity between its environmental, recreational and commercial interests. Consequently, there is a healthy interdependence between the coastal landscape and the vibrant community it supports through the marine industry, tourism and water-based recreation.

Scenic quality

The study area and the wider Howth peninsula have a strong scenic characteristic of a hillside peninsula quality. Deeper within the peninsula, aside from limited residential development, there are several small streams, heath, scrub and woodland, golf courses and pasture, as well as a small peat bog. Close to the centre of the peninsula, several angular quartzite crags are visible for several kilometres from the north and west, in particular. The scenic quality has been reinforced and protected by limited accessibility to the peninsula, with all land traffic having to access it via the narrow Sutton tombolo, as well as limited residential development across its centre, east and southeast. The scenic quality of the harbour is a further reason why people chose to visit it or live close-by. The mix of recreational and small or moderate-sized fishing boat, moored between two 19th Century stone piers, creates an added, more localised aesthetic to the peninsula.

Rarity and Representativeness

The landscapes of low-lying north County Dublin are characterised by extensive housing developments, arterial roads, parkland and, further north, intensive fruit, vegetable and crop production. For these reasons, the landscape of Howth peninsula represents somewhat of an anomaly along Leinster's east-facing coastline. Howth's seascape of high, dramatic and dangerous cliffs and spurs is geologically and scenically less tame and consistent than Dublin's coastline to the north. Consequently, sizeable areas of the peninsula and its surrounding waters have been protected by the county, State and the EU by multiple designations and distinctions. This vivid quality is both enriched and compounded by Howth being located within 15km of Dublin City Centre. Its proximity to the nation's capital has bestowed the landscape and seascape with what is frequently perceived as being the closest raw, rugged "escape to nature" experience to Dublin city centre, and tourists visiting Dublin

often decide to visit Howth for this very reason. On a commercial level, Howth harbour remains one of the largest fishing harbours in the Republic of Ireland, and the largest on the east coast of the country.

Conservation interests

As referred to in Section 1.5.2, aside from its own Howth SAAO (Special Amenity Area Order), the peninsula and its surrounding waters contain Special Areas of Conservation (SAC), Special Protection Areas (SPA) and a proposed Natural Heritage Area (pNHA).

Recreation Value

The surrounding coastline has a high recreation value as a result of its popularity among residents, Dublin day-trippers and international tourists. The coastline of the peninsula, between its road network and cliff-top walkways, is popular with cyclists, joggers and walkers, as well as sea swimmers during the summer months. The use of the harbour is also a highly treasured amenity for fishermen, sailors and boat lovers alike, being one of very few marinas in north Dublin.

Perceptual Aspects

A strong sense of the 'wild Ireland' brand typifies Howth, for Dubliner and tourists alike. Along with the Dublin Mountains, this more exposed, rugged, tranquillity is less associated with the wider east coast. For this reason, there is a long-established perception of the peninsula - much like the mountains that dominate the southern rim of the county - as a much-cherished and picturesque antidote to the urban clutter and pace of the city's heart.

Summary of Landscape Value and Sensitivity in study area

It is considered that the landscape contained within the study area has a relatively high degree of uniqueness and sensitivity. On balance, the landscape sensitivity is judged to be **High-medium** in accordance with the criteria set out in Table 10.1 herein.

10.5.1.2 Construction Phase Landscape Impacts

There will be permanent physical effects to the land cover of the site, which are not readily reversible. During the construction stage of the proposed development, which is estimated to take 3 years, there will be intense construction-related activity within and around the site, including approach roads. This will include:

- HGVs transporting materials to and from the site;
- The demolition and clearance of existing, derelict structures on the site;
- Movement of heavy earth-moving machinery and the erection of tall tower cranes on-site;
- Temporary storage of excavated materials and construction materials on-site;
- Gradual emergence of the proposed blocks, and associated works;
- Security fencing and site lighting.

Construction stage impacts on landscape/townscape character will be 'short-term' (i.e., lasting 1-7 years), in accordance with the EPA definitions of impact duration. Furthermore, the context of this construction activity is within a village setting where the construction of multi-storey buildings has been long established.

However, excavation will range from 0 metres to up to circa 18 metres in depth, to facilitate the construction of the development and basement car park. In addition, circa 78,000 cubic metres of material to be removed from site in total, leading to a notable alteration of the existing terrain in some sections of the site. In terms of vegetation, however, no notable or rare trees or other vegetation will be lost as a result of the proposed development.

On the basis of the reasons outlined above, the magnitude of construction stage landscape/townscape impacts is deemed to be **High-medium.**

Summary:

When combined with the Medium-low sensitivity of the site and its immediate setting, the overall significance of construction stage landscape impacts is considered to be **Moderate**, in accordance with the criteria contained in Section 1.3. In addition, the quality of construction stage effects is deemed to be **Negative.**

The wider study area is more sensitive (High-medium), but will experience a much-reduced magnitude of construction stage impacts as much of the ground-based clutter and activity will be screened from view by intervening vegetation and buildings and the site is a proportionally smaller component of the broad and dynamic landscape fabric. Thus, the magnitude of construction stage impacts within the wider study area is deemed to be Medium-low and reducing further with distance. Hence, the overall significance will not exceed Moderate.

10.5.1.3 Operational Phase Landscape Impacts

Following the completion of the proposed works, landscape/townscape impacts will relate entirely to the development's impact on the character of the receiving landscape/townscape.

The most notable landscape/townscape impacts of the application site will result from the proposed 4 no. residential blocks, ranging in height from 2 to 5 storeys. While this will represent an increased vertical imprint into the site, it also represents a broader residential compatibility with the townscape fabric of Howth village; replacing a dilapidated, derelict, non-aesthetic and cordoned off site with one that is publicly accessible with high-end residential values. Along Main Street, the proposal's 1 no. retail unit and 2 no. café/retail units will be compatible with and supportive of the long-established retail sector in the village centre.

The increased accessibility and permeability of the site will also impact the character of movement in the wider village, opening up and securing stronger, safer pedestrian/cyclist access between the Main Street and Balscadden Road. In addition, the proposal will create 1,470 msq of public open space within the site, where none currently exists, as well as a further 700 msq between formal play area and lawn games area. This will all, long term, add to a healthy, contemporary and vibrant residential character of the wider village.

Overall, while the proposal will result in a distinct increase in the scale and intensity of development within the application site, and its immediate surrounds, such a development is to be expected in a residential, ever-evolving locale as this. Indeed, the proposed development will moderately extend the northern threshold of residential development in a settlement of approx. 8000 residents and in a manner consistent with the zoning of the site.

For the reasons outlined above, the magnitude of operational stage landscape impacts is considered to be **Medium-Low.**

When combined with the Medium-low sensitivity of the site and its immediate setting, the overall significance of operational stage landscape impacts is considered to be **Moderate-slight**, in accordance with the criteria contained in Section 1.3. In addition, the quality of operational stage effects is deemed to be **Positive.**

The wider study area will experience a much-reduced magnitude of operational stage impacts, in the region of **Low-negligible** and with a **Neutral-Positive** quality of effect. The highest significance of operational stage landscape impact in the wider study area is therefore deemed to be **Slight / Neutral-Positive**.

10.5.2 Visual Impacts

10.5.2.1 Visual Receptor Sensitivity

Firstly, as was established in Section 10.3.1.3, there are very many designations within the study area, between those relating to international policy (i.e., UNESCO), EU policy and local policy. Indeed, as per Section 10.3.1.3, there are multiple protected views within the study area, particularly within 600-700m of the site, including those bounding the site's eastern and northern boundaries.

Secondly, in consideration of the visual receptor criteria set out in Section 10.2, the most apparent variations in the nature of views and those availing of those views, in this instance, relates to a sense of place, in combination, where relevant, with any of the relevant scenic amenity designations associated with the study area. Accordingly, the resulting visual receptor sensitivity of all 22 viewpoints will be informed by the factors outlined in section 10.2.2. Thus, in terms of visual sensitivity, the receptors will be categorised as those being:

- Typically, non-designated viewpoints of modest visual amenity representing local residential receptors. These entail VP5, VP13 & VP19, and are deemed to be of **Medium-low** visual sensitivity.
- Typically, single designation viewpoints representing tourists / visitors or local residents involved in recreational or amenity based activity where an appreciation of the visual setting is integral to the experience and pleasant views are afforded (e.g., either a scenic designation *or* within the Howth village ACA). These entail VPs 1-4, VPs 6-8, VP10, VP12, VP14, VP17, VP18 and VP22, and are deemed to be of **Medium** visual sensitivity.
- Typically, an amenity and/or heritage feature viewpoint with aesthetic and/or extensive views, but without any scenic designation. This pertains to VP15 and VP21, and is also deemed to be of **Medium** visual sensitivity.
- Typically, a scenic designation viewpoint, in combination with a separate heritage/amenity designation (e.g., within Howth village ACA, or Howth Special Amenity Area Order). These entail VP9, VP11, VP16 & VP20, and are deemed to be of **High-Medium** visual sensitivity.

10.5.2.2 Magnitude of Visual Effect

The assessment of visual impacts at each of the selected viewpoints is aided by photomontages of the proposed development. Photomontages are a 'photo-real' depiction of the scheme within the view, utilising a rendered three-dimensional model of the development,

which has been geo-referenced to allow accurate placement and scale. For each viewpoint, the following images have been produced:

1. Existing View
2. Montage View

The baseline photography was captured in May of 2021 and thus, deciduous trees are in full leaf. In this instances seasonal factors are not considered to contribute to material differences in the visual impacts assessed below and any likely variations will be described.

Viewshed Reference Point		Viewing distance to site boundary	Direction of View
VP1	Main street Howth Village, northwest of the former Baily Court Hotel	25m	NE/E/SE

Representative of:	• Centre of population • Local Community views • Major route
Receptor Sensitivity	**Medium**
Existing View	Set within the heart of Howth village, and Howth Historic Core Architectural Conservation Area (ACA), this location aligns a bus stop and numerous commercial/retail premises along Main Street, and is close to numerous terraced residences. The R105 is a relatively busy regional road, serving not just a Dublin Bus route but also being part of the standard, popular Howth loop drive/cycle about this picturesque peninsular. In this scene, across the street, a compact, single-storey HSE community health centre is apparent. Further uphill, the former Baily Court Hotel is partially visible, behind hoarding and roadside parking, lending the appearance of it being unrepresentative and cut-off from the main street. This derelict, three-storey building appears of nondescript heritage or architectural distinction; a source of somewhat humble visual amenity fracturing the high-grade streetscape of the village centre. Lifting behind the former hotel are two mature trees, which are outside (i.e. to the south of) the site. However, the main source of visual amenity at this setting is northwards (i.e. other direction), towards Howth harbour and the sea.
Visual Impact of proposed development	Within the site, the proposed development will appear as a modest three-storey development in a busy, exposed, roadside setting, and will be evident as an appropriately scaled, tastefully finished piece of contemporary architecture that will help coalesce this streetscape. On the ground floor, commercial/retail units will be road-facing, set behind

proposed semi-mature trees and within/beneath a trellis a framework. Above the single-storey health centre, the upper floor of one proposed apartment block will be visible. While noticeable, the proposed development will not be conspicuous in this multi-faceted and ever-evolving village centre, where similar scaled buildings have been long established, and it will form a central element to the urban fabric of the village.

Aesthetically, the proposed development will appear in scale to the village centre context. Its proposed colour scheme will be broadly in-synch with that of the existing health centre, and other buildings in the village. The proposed buildings will not obscure or adversely impact any valued views from this location. In comparison to the baseline, the crisp 21st Century architecture will represent a moderate alteration to the available vista, but will most certainly not inhibit the inherent visual amenity of the scene.

As a result, the magnitude of visual impact is deemed to be **Medium-low** and of a **positive** quality.

Summary

Based on the assessment criteria and matrices outlined at **Section 10.2** the significance of residual visual impact is summarised below.

	Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**
Residual Impact Significance	Medium	Medium-low	**Moderate-slight/positive**

Viewshed Reference Point		**Viewing distance to site boundary**	**Direction of View**
VP2	Main street Howth Village, west of the former Baily Court Hotel	13m	N/NE

Representative of:

- Centre of population
- Local Community views
- Major route

Receptor Sensitivity

Medium

Existing View

Set within the heart of Howth village, and Howth Historic Core Architectural Conservation Area (ACA), this location aligns numerous commercial/retail premises along Main Street, and is close to numerous terraced residences. The R105 is a relatively busy regional road, serving not just a Dublin Bus route but also being part of the standard,

popular Howth loop drive/cycle about this picturesque peninsular. In this scene, across the street, the former Baily Court Hotel is partially visible, behind hoarding and roadside parking, lending the appearance of it being at odds with the main street. This derelict, three-storey building appears lacking in architectural or aesthetic distinction; a source of somewhat humble visual amenity fracturing the high-grade streetscape of the village centre. However, the main source of visual amenity at this setting is northwards (i.e. downhill, to the left of this vista), towards Howth harbour and the sea.

Visual Impact of proposed development

Across the street, set to either side of the main proposed vehicular entrance, four-to-five storey apartment blocks will be evident, with ground floor commercial/retail units lining the street. The proposed development will manifest as a suitably scaled, tastefully finished piece of contemporary multi-storey architecture that will help coalesce this village centre. The proposal will distinctly add to the intensity and scale of built development within the scene, while suggesting a contemporary architectural nexus along the eastern side of Main Street that was not previously as palpable. In terms of visual presence, while highly noticeable, visual change is not tantamount to visual impact.

To the northern side of the proposed vehicular entrance, the granite ground floor façade will tastefully offset the white render of higher stories. The combination of high-level fenestration and angular balconies, combined with a suitably tree-dotted hardscape, as well as ornate planting, is likely to result in a contemporary and desirable street scene fitting of this village centre. At just 13m distance to the site boundary, it will be visually dominant from this location. However, the proposal is unlikely to appear overbearing, in this multi-faceted, multi-functional urban centre, where similar (and larger) scaled buildings are regular occurrences. In addition, the proposal will not obscure or adversely impact any valued views from this location. The crisp 21st Century architecture will represent a palpable alteration to the available vista, while the main source of visual amenity at this location will remain unaffected.

As a result, the magnitude of visual impact is deemed to be **Medium** and of a **positive** quality.

Summary

Based on the assessment criteria and matrices outlined at **Section 10.2** the significance of residual visual impact is summarised below.

Residual Impact Significance

Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**
Medium	Medium	**Moderate/positive**

Viewshed Reference Point		Viewing distance to site boundary	Direction of View
VP3	Main street Howth Village, southwest of the former Baily Court Hotel	68m	NE

Representative of:	• Centre of population • Local Community views • Major route
Receptor Sensitivity	**Medium**
Existing View	Located within Howth village, and Howth Historic Core Architectural Conservation Area (ACA), this location aligns numerous commercial/retail premises along Main Street, and is close to numerous terraced residences, as well as being across a small road from the large, 19th century Howth Parish Catholic Church. In the foreground, on-street parking is dominant. Little can be determined about this side of the street, but across the street a two-storey residence is evident, downhill from which is the single-storied Howth library. Beyond the library is the former Baily Court Hotel, which is partially visible. Even at approx. 70m distance, the 'shuttered up' appearance of the building appears incongruous to this vibrant village setting. This derelict, three-storey building appears lacking in architectural or aesthetic distinction; a source of low visual amenity fracturing the high-grade streetscape of the village centre. Behind the derelict building, the steep embankment along the western side of the site is partially visible, along with the scrub vegetation cloaking it, with some mature evergreen trees south of the southern boundary of the site. It is worth noting that no seaward views are attainable from this area of the village, and the main source of visual amenity derives from the visual character of this timeworn, hillside village centre.
Visual Impact of proposed development	Behind some proposed semi-mature trees aligning the street, the proposed development will be visible, but not obvious. The proposed development will present as a suitably scaled, tastefully finished piece of contemporary multi-storey architecture that will help coalesce this village centre. The proposal will add to the intensity and scale of built development within the scene, while suggesting a contemporary architectural nexus along the eastern side of Main Street that was not previously as palpable. The proposal will marginally increase the vertical imprint to the eastern side of Main Street, but in terms of visual presence, the proposal will be noticeable, but not conspicuous. Aesthetically, the main façade will tie in visually with the façade line and scale of development further south/uphill along this street, which will

serve to integrate it within the existing street scene. The combination of high-level architecture and a tree-dotted streetscape, is likely to result in a contemporary and desirable street scene fitting of this village centre. It will not be visually dominant from this location, nor appear overbearing, in this multi-faceted, multi-functional urban centre, where similar (and larger) scaled buildings are regular occurrences. In addition, the proposal will not obscure or adversely impact any valued views from this location. The crisp 21st Century architecture will represent a moderate alteration to the available vista but it would not have a marked effect on the visual amenity of the scene.

As a result, the magnitude of visual impact is deemed to be **Medium-low** and of a **positive** quality.

Summary

Based on the assessment criteria and matrices outlined at **Section 10.2** the significance of residual visual impact is summarised below.

	Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**
Residual Impact Significance	Medium	Medium-low	**Moderate-slight/positive**

Viewshed Reference Point		**Viewing distance to site boundary**	**Direction of View**
VP4	Thormanby Road at junction with Nashville Road	195m	N

Representative of:

- Centre of population
- Local Community views
- Major route

Receptor Sensitivity

Medium

Existing View

Set approx. 100m south/uphill from Howth village centre, but still within the Howth Historic Core Architectural Conservation Area (ACA), this view along Thormanby Road/R015 allows for elevated, selective views across the village and partial views of the Irish Sea, north of the peninsula. The R105 is a relatively busy regional road, serving not just a Dublin Bus route but also being part of the standard, popular Howth loop drive/cycle about this picturesque peninsular, as well as with cyclists. The spire of the large, 19th century Howth Parish Catholic Church bookends the west (i.e. left) of the scene, while to the east (i.e. left) of the scene, is the junction with Nashville Road. The visual amenity of this scene derives partly from the picturesque, downhill village skyline

but mostly from the partial, seaward views, including snippets of the distant Ireland's Eye.

Visual Impact of proposed development

The proposal will present as pale-toned, horizontal roofline and top floor, set approx. 200m downhill from this location, as well as a double apex of a mid-rise development of indeterminable function. The proposal will gradually increase the vertical imprint to the eastern side of Main Street. However, owing to the elevation of this viewpoint, and an inability to see any streetscape (adjacent to the proposal) or lower floors, the height and overall scale of the proposed development will be not be fully revealed. The proposal will marginally add to the intensity and scale of built development within the scene, but in terms of visual presence, the proposal will be visible but not particularly noticeable.

Owing to the distance of the site in combination with the extent to which the vast majority of the development will be not visible from this location, the potential aesthetic input of this development will be vastly curtailed. Of what can be discerned, the proposal will appear as a fitting and suitably scaled, contemporary addition to this multi-faceted, multi-functional urban centre. As a result of the proposed development, seaward views will be minimally curtailed from this location. However, it is unlikely to unduly obstruct or block these valued seaward views, and would not have a marked effect on the visual amenity of the scene.

As a result, the magnitude of visual impact is deemed to be **Low** and of a **negative** quality.

Summary

Based on the assessment criteria and matrices outlined at **Section 10.2** the significance of residual visual impact is summarised below.

Residual Impact Significance

Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**
Medium	Low	**Slight/negative**

Viewshed Reference Point		**Viewing distance to site boundary**	**Direction of View**
VP5	Public green at Asgard Park	90m	NW

Representative of:

- Centre of population
- Local Community views
- Amenity & heritage feature

Receptor Sensitivity	**Medium-low**
Existing View	By way of context, Asgard Park is a residential street, which, in places, adjoins the immediate southeast of the site. However, the street is located on a distinctively higher elevation than that of the site, constructed around a small public green at its centre, which is the location of this viewpoint. In this scene, the two-storey residences of the street occupy the foreground, obstructing all further views beyond (i.e. in the direction of the site).
Visual Impact of proposed development	Owing to the numerous residences on the street, no views of the proposed development are likely to be experienced from here. Indeed, as the red extents outline of the site indicates, the peak of the development will sit at a distinctively lower elevation than that of these houses. Thus, the magnitude of visual impact is deemed to be **Negligible** and of a **neutral** quality.
Summary	Based on the assessment criteria and matrices outlined at **Section 10.2** the significance of residual visual impact is summarised below.

	Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**
Residual Impact Significance	Medium-low	Negligible	**Imperceptible/neutral**

Viewshed Reference Point		**Viewing distance to site boundary**	**Direction of View**
VP6	Outside No 13 Balscadden Road Howth	12m	W

Representative of:	• Local Community views • Amenity & heritage feature • Designated Scenic Routes and Views
Receptor Sensitivity	**Medium**
Existing View	Hosting a number of residences, Balscadden Road is a relatively short (i.e., approx. 1.2km) *cul de sac* that is very popular with walkers, in particular, as it is part of the heavily frequented Howth Cliff Path Loop (National Loop Walk) that extends from the village. Set across steeply sloping north-facing terrain, all sections of this road contain designated

'preserved views' (i.e. Fingal County Council designation). However, the orientation of those views is, at all times, seawards (i.e. mostly to the north).

In this scene, a series of single-storey, terraced cottages align the road on its seawards side, thereby blocking the source of its designated scenic amenity. A tall, roadside embankment, coated in scrub vegetation and a handful of young trees, screens most of the site. These are visible behind tall security fencing, and some parked vehicles. The boundary treatment is discordant and ill fitting, while there is little legibility or cohesion of the site's function, purpose or extent. Indeed, the scene is one of incongruously low visual amenity for its location along Balscadden Road, and the wider peninsula.

Visual Impact of proposed development

Westward along Balscadden Road, two blocks of three-to-four storey apartment blocks will be partially visible, behind the aforementioned tall, roadside embankment and intervening residences along Balscadden Road. While these two proposed blocks will be located approx. 60m from this location, they will be in the direct line of sight of walkers/pedestrians heading west/towards Howth village (please note, the one-way system along this section of the road only allows for road users to only travel eastwards). From what will be observed of the proposal, the proposed development will manifest as a suitably scaled, tastefully finished piece of contemporary multi-storey architecture that will increase the intensity and scale of built development within the scene.

Aesthetically, from what will be discerned of the partially visible two proposed blocks, the combination of clean form and high-level fenestration, combined with appropriate landscape elements, is likely to result in an up-to-date and desirable architectural development fitting of this setting. Crucially, no views of any discernible aesthetic merit will be impeded or obscured. In addition, proposed tree planting along the existing embankment will also support the aesthetics of the proposed development.

Thus, the magnitude of visual impact is deemed to be **Medium-low** and of a **positive** quality.

Summary

Based on the assessment criteria and matrices outlined at **Section 10.2** the significance of residual visual impact is summarised below.

Residual Impact Significance

Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**
Medium	Medium-low	**Moderate-slight/positive**

Viewshed Reference Point		Viewing distance to site boundary	Direction of View
VP7	Outside No 7 Balscadden Road Howth	6m	NW

Representative of:	• Local Community views • Amenity & heritage feature • Designated Scenic Routes and Views
Receptor Sensitivity	**Medium**
Existing View	Populated with a number of residences, Balscadden Road is a relatively short (i.e. approx. 1.2km) *cul de sac* that is very popular with walkers, in particular, as it is part of the heavily frequented Howth Cliff Path Loop (National Loop Walk) that extends from the village. Set across steeply sloping north-facing terrain, all sections of this road contain designated 'preserved views' (i.e. Fingal County Council designation). However, the orientation of those views is, at all times, seawards (i.e. mostly to the north). This scene is one of incongruously low visual amenity, in light of its peninsular setting. Behind security fencing and parked vehicles, across this narrow road is the site. However, a roadside embankment, coated in scrub vegetation and a handful of young trees, screen large sections of the site. The boundary treatment is discordant and ill fitting, while there is little legibility or cohesion of the site's function, purpose or extent. However, the source of visual amenity at this location is not the site, but towards the Martello Tower that is partially-visible over 100m away.
Visual Impact of proposed development	Across the street, two blocks of three-to-four storey apartment blocks will be evident, behind a low, contemporary boundary treatment and cohesive tree and shrub planting scheme. The proposed development will manifest as a suitably scaled, tastefully finished piece of contemporary multi-storey architecture that will palpably increase the intensity and scale of built development within the scene, transforming an uneven, derelict, mostly undeveloped site. While highly noticeable, the stark degree of visual change does not equate to a similar level of visual impact. Aesthetically, the combination of clean form and high-level fenestration, combined with appropriate landscape elements, is likely to result in an up-to-date and desirable architectural development fitting of this setting. At less than 7m distance to the site boundary, it will be visually dominant from this location. However, the proposal is unlikely to appear overbearing, particularly in the context of the steeply-sloping terrain of

Balscadden Road. Crucially, views of the Martello Tower will remain unimpeded from this location, while no other views of any discernible aesthetic merit will be impeded or obscured.

Thus, the magnitude of visual impact is deemed to be **Medium** and of a **positive** quality.

Summary

Based on the assessment criteria and matrices outlined at **Section 10.2** the significance of residual visual impact is summarised below.

	Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**
Residual Impact Significance	Medium	Medium	**Moderate/positive**

Viewshed Reference Point		**Viewing distance to site boundary**	**Direction of View**
VP8	Balscadden Rd at Pedestrian access to Bay	9m	W/SW

Representative of:

- Local Community views
- Amenity & heritage feature
- Designated Scenic Routes and Views

Receptor Sensitivity

Medium

Existing View

Populated with a number of residences, Balscadden Road is a relatively short (i.e., approx. 1.2km) *cul de sac* that is very popular with walkers, in particular, as it is part of the heavily frequented Howth Cliff Path Loop (National Loop Walk) that extends from the village. Set across steeply sloping north-facing terrain, all sections of this road contain designated 'preserved views' (i.e., Fingal County Council designation). However, the orientation of those views is, at all times, seawards (i.e., mostly to the north). This location is adjacent to the entrance to Balscadden beach; a small pedestrian gateway leading to numerous steps.

The site sits across Balscadden Road, behind tall security fencing, parked vehicles, hoarding and palisade fencing. Within the site, the industrial-like concrete façade of the derelict Edros sports building can be seen above a security gate and hoarding. The boundary treatment is discordant and ill fitting, while there is little legibility or cohesion of the site's function, purpose or extent. North of the site, the upper height/roof of the Martello Tower is partially visible, above intervening landform.

However, the main source of visual amenity at this location is not the site, nor the Martello Tower, but towards the north and northwest, out over Balscadden Bay and Howth Harbour; the reasons why this is designated as a preserved view.

Visual Impact of proposed development

Across the street, 2 no. four storey apartment blocks will be apparent, behind a low, contemporary boundary treatment and cohesive tree and shrub planting scheme. The proposed development will manifest as a fittingly scaled, discerningly finished piece of contemporary multi-storey architecture that will palpably increase the intensity and scale of built development within the scene, transforming an uneven, derelict, mostly undeveloped site. While very noticeable, the glaring degree of visual change is not tantamount to a similar level of visual impact.

Aesthetically, the combination of clean, linear form and high-level fenestration, combined with a tasteful landscape design, is likely to result in a contemporary architectural development fitting of this setting. At 9m distance to the site boundary, it will be visually dominant from this location. However, the proposal is unlikely to appear overbearing, particularly in the context of Balscadden Road and extensive views available from this location. Crucially, the main sources of inherent visual amenity available at this location (i.e., towards the northeast, over Balscadden Bay and Howth Harbour) will remain unimpeded and unaffected, as a result of the proposed development.

Thus, the magnitude of visual impact is deemed to be **Medium** and of a **positive** quality.

Summary

Based on the assessment criteria and matrices outlined at **Section 10.2** the significance of residual visual impact is summarised below.

Residual Impact Significance

Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**
Medium	Medium	**Moderate/positive**

Viewshed Reference Point		**Viewing distance to site boundary**	**Direction of View**
VP9	Martello Tower	36m	S/SW

Representative of:

- Local Community views
- Amenity & heritage feature

Receptor Sensitivity	**High-medium**
Existing View	Perched upon an elevated promontory overlooking Howth Harbour, the Martello Tower is a renowned landmark within the village, and also normally home to the Ye Olde Hurdy Gurdy Museum of Vintage Radio. The area surrounding the tower is a grassy amenity area that is particularly popular in the summer. The four boundaries surrounding this area of land are designated as being 'preserved views' (i.e. Fingal County Council designation), although the aforementioned Baldoyle - Howth Sheet 10 (Zoning Objectives Map), from the Fingal CDP 2017-2023, indicates these are from the base of each of the embankments surrounding this promontory, rather than from the higher elevation, with no scenic designation attributed to the tower or its immediate vicinity. However, this location is within the Howth Historic Core Architectural Conservation Area (ACA), as well as the Howth SAAO (Special Amenity Area Order). In this scene, the foreground is occupied by a low grassy knoll ending in a low railing fence (i.e., not the site's northern boundary), beyond which the site is largely visible. The former Edros building is visible, nestled within the hollow of the site. To its southeast (i.e. left) of that building is the aforementioned embankment along the site's glacial esker. The hillocky, coastal appearance of the site is manifest, as is a general unkempt, derelict appearance. Beyond the site, the uphill development from Howth village is visible, as is the verdant spread of the elevated hills in the centre of the peninsula. The distant view of the peninsula's interior, as well as those of the village and its church steeple, will provide a modest degree of visual amenity to this setting, which otherwise (i.e. in most other directions than this) provide compelling views out across the harbour and Balscadden Bay, to the Irish Sea and Ireland's Eye.
Visual Impact of proposed development	Set to the north of, and at a lower elevation from, this location, blocks of three-to-four storey apartment blocks will be noticeable. Owing to the marginal elevation of this viewpoint, and an inability to read the ground floor and broader site layout, the height and overall scale of the proposed development is not fully revealed. The strong, horizontal form of the buildings will be evident, and it will manifest as a tastefully finished piece of contemporary multi-storey architecture that will palpably increase the intensity and scale of built development within the scene, transforming the derelict site. While noticeable, the proposed development will not be conspicuous or spatially or visually dominant in this multi-faceted and ever-evolving village centre, where similar scaled buildings have been long established, and it will form a central element to the urban fabric of the village. Indeed, its visual presence is likely to be considerably diluted by the fact that most receptors at this location are here to attain the compellingly scenic harbour and sea views.

Aesthetically, the proposal will introduce a well-designed, high-end sample of modern residential architecture into a derelict site. Its landscaped roof terraces, light tone and quality fenestration, in tandem with strong landscape design, will be fitting to the quality built design and aesthetic values associated with Howth village. However, the proposed development will impede some views towards the interior of this verdant peninsula, as well as those of the village and its church steeple. Crucially, the main sources of inherent visual amenity available at this location (i.e. towards the north and northeast, over Balscadden Bay and Howth Harbour) will remain unimpeded and unaffected, as a result of the proposed development.

On balance of these factors, the magnitude of visual impact is deemed to be **Medium** and of a **neutral** quality.

Summary

Based on the assessment criteria and matrices outlined at **Section 10.2** the significance of residual visual impact is summarised below.

	Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**
Residual Impact Significance	High-medium	Medium	**Moderate/neutral**

Viewshed Reference Point		**Viewing distance to site boundary**	**Direction of View**
VP10	Footpath north of site	8m	S/SE

Representative of:

- Local Community views
- Amenity & heritage feature
- Designated Scenic Routes and Views

Receptor Sensitivity

Medium

Existing View

In terms of context, this path ascends from Abbey Street in the Howth village centre, to the Martello Tower. Overlooking Howth Harbour, the Martello Tower is a renowned landmark within the village, and also normally home to the Ye Olde Hurdy Gurdy Museum of Vintage Radio. The area surrounding the tower is a grassy amenity area that is particularly popular in the summer. The four boundaries surrounding this area of land are designated as being 'preserved views' (i.e. Fingal County Council designation), although the aforementioned Baldoyle - Howth Sheet 10 (Zoning Objectives Map), from the Fingal CDP 2017-2023, indicates these are from the base of each of the embankments

surrounding this promontory, rather than from a higher elevation. However, this location is within the Howth Historic Core Architectural Conservation Area (ACA), as well as the Howth SAAO (Special Amenity Area Order). Also, it is important to note that from this location, the grassy knoll obscures seaward views.

To the north (i.e. right) of this scene, along the northern site boundary, a small stand of 5 no. mid-height Monterey Cypress is present. Between these trees and the tower, low-mid-height vegetation is present, albeit outside the site. At the base of the trees, a palisade fence is partially visible, although this is mostly obscured by intervening vegetation. From the little than can be discerned of the site, it appears to contain an unkempt looking hardscape 'yard' area and a concrete building, but little else can be determined, such is the density of intervening tree cover.

Visual Impact of proposed development

Owing to the density of intervening tree cover, little can be discerned about the nature of the proposed development from this location. What can be determined are small segments of a contemporary, mid-rise residential block, within approx. 30m of this location. Thus, the proposal will not be visually or spatially dominant, and is deemed to have a visual presence in the lower order.

Aesthetically, as so little of the proposal can be determined from this location, its design detail (e.g. fenestration, balconies) and clean linear typology will signify a more aesthetic snippet, between branches, than the baseline provides. Be that as it, the main sources of visual amenity at and near this location are not in the direction of the site.

On balance of these factors, the magnitude of visual impact is deemed to be **Low** and of a **neutral** quality.

Summary

Based on the assessment criteria and matrices outlined at **Section 10.2** the significance of residual visual impact is summarised below.

Residual Impact Significance

Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**
Medium	Low	**Slight/neutral**

Viewshed Reference Point		**Viewing distance to site boundary**	**Direction of View**
VP11	St. Mary's Abbey, Howth village	64m	SW

- Local Community views

Representative of:	• Amenity & heritage feature • Designated Scenic Routes and Views
Receptor Sensitivity	**High-medium**
Existing View	By way of context, upon the lower slopes of Howth village, St. Mary's Abbey is a medieval church and graveyard, and is a well-visited site within the village. It is understood that King Sitric, the Viking King of Dublin, founded the earliest church here in 1042 and worshipped continued in the abbey until about 1630, when it was then abandoned by parishioners relocating to Lord Howth's private chapel (i.e. by Howth Castle). The ancient walls of the cemetery border Abbey Street, while impressive views out over Howth harbour and the Irish sea is the leading source of visual amenity from this heritage site, in tandem with the ruined Abbey. The boundaries of this graveyard are designated as being 'preserved views' (i.e. Fingal County Council designation), and it is also within the Howth Historic Core Architectural Conservation Area (ACA). In this vista, the Abbey graveyard and boundary wall occupy the foreground, beyond which 19th & 20th century, two or three storey residences along the eastern side of Abbey street can be partially seen. Behind and between these buildings, a steep, thickly vegetated embankment is partially visible, which signifies a swift lift in terrain towards the western side of the site. While the street itself cannot be seen, it is inferred, from this marginally elevated terrain. Further south/uphill in the village, the church spire is visible, but little else of the wider peninsula.
Visual Impact of proposed development	Upon the promontory behind the aforementioned residences on Abbey Street, a multi-storey apartment block will be visible but not particularly noticeable. The proposed development will present as a well-scaled, tastefully finished piece of contemporary architecture fitting to a multi-faceted village. The proposal will increase the vertical imprint of the vista, but will not govern the skyline. It will not be visually dominant, nor appear overbearing, while the foreground Abbey and the aforementioned buildings on Abbey Street will retain a more immediate, higher visual presence. Aesthetically, the proposed development will appear well positioned, in relation to the village. Its proposed colour scheme will tastefully offset the Victorian brick residence to its west, as well as the deep, verdant vegetation about its site boundary. Crucially, the proposed buildings will not obscure or adversely impact any valued views from this location, although it will - along one segment - replace a partially vegetated skyline with a partially constructed one. In comparison to the baseline, the crisp 21st Century architecture will represent a moderate alteration

to the available vista, but will not markedly detract from the inherent visual amenity of the scene.

On balance of these factors, the magnitude of visual impact is deemed to be **Low** and of a **negative** quality.

Summary

Based on the assessment criteria and matrices outlined at **Section 10.2** the significance of residual visual impact is summarised below.

Residual Impact Significance

Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**
High-medium	Low	**Moderate-slight/ Negative**

Viewshed Reference Point		**Viewing distance to site boundary**	**Direction of View**
VP12	Abbey Street, Howth village, at base of path to Martello Tower	36m	E/SE

Representative of:

- Centre of population
- Local Community views
- Major route

Receptor Sensitivity

Medium

Existing View

This location is where the pedestrian access/footpath, which leads to both the Martelllo Tower and a right of way crossing the northern end of the site, joins Abbey Street. It is also within the Howth Historic Core Architectural Conservation Area (ACA). From this location, a series of two or three storey 19th and 20th Century residences and other buildings (e.g. the Howth Music School, in the foreground) align the footpath, obstructing views in the direction of the site. As can be inferred from this scene, the site is at a notably higher elevation than that of the road. However, the main source of visual amenity at this setting is northwards (i.e. other direction), downhill towards Howth harbour and the sea, which lies less than 200m from this location.

Visual Impact of proposed development

Only a minute sliver of the proposed development will be seen from this location. This fragment of the corner of the upper storey of one of the proposed blocks will be highly unlikely to be spotted, even by the stationary observer. However, even if discerned, it will have no bearing upon the visual amenity of the scene.

As a result, the magnitude of visual impact is deemed to be **Negligible** and of a **neutral** quality.

Summary

Based on the assessment criteria and matrices outlined at **Section 10.2** the significance of residual visual impact is summarised below.

	Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**
Residual Impact Significance	Medium	Negligible	**Imperceptible/neutral**

Viewshed Reference Point		**Viewing distance to site boundary**	**Direction of View**
VP13	St. Lawrence Road	160m	E/NE

Representative of:

- Centre of population
- Local Community views

Receptor Sensitivity

Medium-low

Existing View

St Lawrence Road is a steeply sloping, narrow residential road adjoining Abbey Street in Howth village centre. Owing to sometimes-high roadside walls and buildings, this section of the road tends sharply 'channel' views in either direction of the road, rather than out laterally to either side. While this location is not within the Howth Historic Core Architectural Conservation Area (ACA), it is very close to it, as born out by the aged belfry/bell tower to the south (i.e. left) of the foreground, and heritage walls surrounding it.

In this scene, beyond numerous stonewalls in the foreground, the narrow road descends downhill, to where terraced housing along Abbey Street can be discerned. The site of the proposed development can be faintly discerned behind and above these buildings, with the only scant visible evidence being some distant, blue-coloured hoarding, and the steep glacial esker that is located in south of the site. While there are no seawards views attainable from this strongly residential location, the main source of visual amenity is the timeworn character and built heritage associated with Howth village, in the fore- to mid-ground.

Visual Impact of proposed development

Behind and above the aforementioned buildings along Abbey Street, the upper one or two floors of the two proposed multi-storey apartment blocks will be partially visible, while the lower floors mostly will not be.

The proposed development will present as a tastefully finished piece of contemporary multi-storey architecture. The proposal will add to the intensity and scale of built development within the scene, but will also noticeably heighten the built skyline of the village, thereby marginally increasing a sense of enclosure. While noticeable, the proposal will not be conspicuous.

Aesthetically, the proposed development will appear broadly in scale to its built-up, urban centre context. Its proposed light-toned scheme will help in visually integrating it along the newly forged skyline. While it will reach to four-to-five storeys in height, the proposed buildings will not obscure or adversely impact any valued views from this location. The crisp 21st Century architecture will represent a moderate alteration to the available vista, and will most certainly not inhibit the inherent visual amenity of the scene, although it will generate a stronger impression of foreshortening, regarding the risen skyline.

On balance, the magnitude of visual impact is deemed to be **Medium-low** and of a **negative** quality.

Summary

Based on the assessment criteria and matrices outlined at **Section 10.2** the significance of residual visual impact is summarised below.

	Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**
Residual Impact Significance	Medium-low	Medium-low	**Moderate-slight/negative**

Viewshed Reference Point		**Viewing distance to site boundary**	**Direction of View**
VP14	Balglass Road	452m	NE

Representative of:

- Designated scenic routes and views;
- Centre of population
- Local Community views

Receptor Sensitivity

Medium

Existing View

Set approx. 400m south of Howth village location, along a steeply sloping, elevated road, this location enjoys strong scenic views over Howth village out across the Irish Sea, including Ireland's Eye and the more distant Lambay Island. This location is not within the Howth

Historic Core Architectural Conservation Area (ACA), but is a Fingal County Council designated "preserved view." In the foreground, numerous residences are located to the east (i.e. left) of the road, while to the right/east is an unmanaged public land whose vegetation largely curtails more distant views to the northeast.

Visual Impact of proposed development

At over 400m away, the proposed development will be partially visible, but certainly not noticeable. The proposal will present as a pale-toned, roofline and upper floors, at a considerably lower elevation than this location, as well as a double apex of a mid-rise development of indeterminable function. Owing to the elevation of this viewpoint, and an inability to see any streetscape (adjacent to the proposal) or its ground floor, the height and overall scale of the proposed development will not be fully revealed, in spite of this 'bird's eye' elevation. The proposal, where visible, will fractionally add to the intensity and scale of built development within the scene.

Owing to the distance of the site in combination with the extent to which the majority of the development will be not visible from this location, the aesthetic design of this development will be vastly curtailed. Of what can be discerned, the proposal will appear as a fitting and suitably scaled, contemporary addition to this multi-faceted, multi-functional urban centre. As a result of the proposed development, seaward views will be fractionally curtailed from this location, but to such a minute extent that it will not adversely impact, obstruct or block these valued seaward views, and would not have a clear effect on the visual amenity of the scene.

Overall, the magnitude of visual impact is deemed to be **Low-negligible** and of a **neutral-negative** quality

Summary

Based on the assessment criteria and matrices outlined at **Section 10.2** the significance of residual visual impact is summarised below.

Residual Impact Significance

Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**
Medium	Low-negligible	**Slight-imperceptible/ neutral-negative**

Viewshed Reference Point		**Viewing distance to site boundary**	**Direction of View**
VP15	Public open space overlooking Howth village	486m	N

Representative of:

- Local Community views

- Heritage & Amenity feature

Receptor Sensitivity	**Medium**
Existing View	This semi-wild, unmanaged open space is within the Howth Special Amenity Area Order Buffer Zone, but is not subject to any scenic or ACA designations. Located beside a bench (i.e. out of view) positioned in order to relish such scenic amenity, the foreground is occupied with unmanaged grassland, gorse, elder and other self-seeding bushes. Beyond this is a handful of taller buildings visible from within the village, set at downhill approx. 400m away, including its church spire and Martello tower. This location enjoys strong scenic views over Howth village out across the harbour and the Irish Sea, including Ireland's Eye and the more distant Lambay Island.
Visual Impact of proposed development	At almost half a kilometre away, the proposed development will be partially visible, but certainly not noticeable. The proposal will present as a pale-toned, roofline and uppermost floor, at a considerably lower elevation than this location, in a development of indeterminable function. Owing to the elevation of this viewpoint, and an inability to see any streetscape (adjacent to the proposal) or its lower floors, the height and overall scale of the proposed development will not be fully revealed, in spite of this 'bird's eye' elevation. The proposal, where visible, will fractionally add to the intensity and scale of built development within the scene. As a result of the distance of the site in combination with the extent to which the majority of the development will be not visible from this location, the aesthetic design of this development will be vastly curtailed. Of what can be discerned, the proposal will appear as a suitably scaled, contemporary addition to this multi-faceted peninsula. As a result of the proposed development, seaward views will not be curtailed from this location. Thus, the proposal will not adversely impact these valued seaward views, and would not have any detrimental effect on the visual amenity of the scene. Overall, the magnitude of visual impact is deemed to be **Low-negligible** and of a **neutral-negative** quality.
Summary	Based on the assessment criteria and matrices outlined at **Section 10.2** the significance of residual visual impact is summarised below.

Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**
Medium	Low-negligible	**Slight-imperceptible/ neutral-negative**

Residual Impact Significance

Viewshed Reference Point		Viewing distance to site boundary	Direction of View
VP16	Balscadden Road, overlooking Crow's Nest	314m	NW

Representative of:	• Designated Scenic Routes and Views; • Amenity and heritage features. • Local Community Views
Receptor Sensitivity	**High-medium**
Existing View	Hosting a number of residences, Balscadden Road is a relatively short (i.e. approx. 1.2km) *cul de sac* that is very popular with walkers, in particular, as it is part of the heavily frequented Howth Cliff Path Loop (National Loop Walk) that extends from the village. Set across steeply-sloping north-facing terrain, all sections of this road contain designated 'preserved views' (i.e. Fingal County Council designation). However, the orientation of those views is, at all times, seawards (i.e. mostly to the north). In this scene, large, cliff-perched residences are visible between this location and Balscadden Bay, while on the upper distant height are residences on Asgard Park. Further to the northwest (i.e. right), the Martello Tower and Howth Harbour are evident.
Visual Impact of proposed development	At over 300m distance, a single, four-storey apartment block will be partially visible from this location, while intervening landform and/or residential development will obscure the remaining segments of the proposal. Partially visible, but far from prominent, the proposed development will manifest as a suitably scaled, tastefully finished piece of contemporary multi-storey architecture that will marginally increase the intensity and scale of built development within the scene. Aesthetically, the combination of 'clean' horizontal form and high-level fenestration is likely to result in a high-end and desirable architectural development fitting of this scenic setting; one that will certainly not be visually dominant from this location. Crucially, views of the Martello Tower, the harbour and the sea will remain unimpeded from this location, while no other views of any discernible aesthetic merit will be impeded or obscured. On balance, the magnitude of visual impact is deemed to be **Low** and of a **neutral** quality.
Summary	Based on the assessment criteria and matrices outlined at **Section 10.2** the significance of residual visual impact is summarised below.

	Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**
Residual Impact Significance	High-medium	Low	**Moderate-slight/neutral**

Viewshed Reference Point		**Viewing distance to site boundary**	**Direction of View**
VP17	East Pier, Howth harbour	505m	S

Representative of:

- Designated Scenic Routes and Views;
- Amenity and heritage features;
- Local Community Views

Receptor Sensitivity **Medium**

Existing View

By way of context, the East Pier is particularly popular with walkers, runners and recreational fisherfolk and enjoys stunning seawards views (i.e. the source of the designated 'preserved view' aligning the pier). However, aesthetic views can also be attained when looking back to the northern half of the peninsular, including the village, the marina and Balscadden. In this scene, above the southern end of the pier, a grassy promontory can be seen, upon which the Martello Tower can be discerned. About the promontory, the vertiginous build-up of the village is evident in this view, as building stacked above building across the village can be discerned.

Visual Impact of proposed development

Peeking out just marginally above the aforementioned promontory, a sliver of the pale-toned upper floor of one of the proposed apartments will be partially discernible to the stationary and studied observer. However, even if discerned, at over half a kilometre distance, the proposal would be barely discernible within the available vista and would have an immaterial effect on the visual amenity of the scene.

Thus, the magnitude of visual impact is deemed to be **Negligible** and of a **neutral** quality.

Summary

Based on the assessment criteria and matrices outlined at **Section 10.2** the significance of residual visual impact is summarised below.

Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**

Residual Impact Significance	Medium	Negligible	**Imperceptible/neutral**

Viewshed Reference Point		**Viewing distance to site boundary**	**Direction of View**
VP18	West Pier, Howth harbour	617m	SW

Representative of:

- Designated Scenic Routes and Views;
- Amenity and heritage features.
- Local Community Views

Receptor Sensitivity **Medium**

Existing View

The west pier in Howth Harbour is best known for it's working commercial fishing harbour but also its range of seafood restaurants and cafes. This location is near its northern end, where numerous visitors enjoy views out towards Ireland's Eye. In the foreground, a small jetty caters for small boat craft taking visitors to Ireland's Eye. The harbour waters are on show, with the marina visible beyond. The vertiginous build-up of the village is evident in this view, as building stacked above building across the village can be discerned, including the Martello Tower. However, the wider extents – both vertical and horizontal – of the northern side of the peninsula are also evident, adding a palpable degree of visual amenity to add to the scenic seaward views enjoyed from this location.

Visual Impact of proposed development

At over 600 distance, the proposed development will be challenging to discern. On a relatively low promontory above the marina, the light-toned, top floor of one of the proposed apartment blocks will be partially discernible from this location, while intervening landform and/or residential development will obscure the remaining segments of the proposed development. Partially visible, but far from distinct, the proposed development will manifest as a suitably scaled, tastefully finished piece of contemporary multi-storey architecture that will most fractionally increase the intensity and scale of built development within the scene.

Aesthetically, the 'clean' horizontal form of the proposed development is likely to result in a high-end and desirable architectural development fitting of this scenic setting. Crucially, views of the Martello Tower, the harbour and the wider peninsula will remain unimpeded from this

location, while no other views of any discernible aesthetic merit will be impeded or obscured.

On balance, the magnitude of visual impact is deemed to be **Low-negligible** and of a **neutral-negative** quality.

Summary

Based on the assessment criteria and matrices outlined at **Section 10.2** the significance of residual visual impact is summarised below.

Residual Impact Significance

Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**
Medium	Low-negligible	**Slight-imperceptible/ neutral-negative**

Viewshed Reference Point		**Viewing distance to site boundary**	**Direction of View**
VP19	Middle Pier, Howth harbour	289m	SW

Representative of:

- Amenity and heritage features.
- Local Community Views

Receptor Sensitivity

Medium-low

Existing View

By way of context, this location is from the base (i.e. southern end) of the Howth Harbour middle pier, by Howth yacht club. The Middle Pier has traditionally been a popular resource for kayakers and overnighting campervans, as well as commercial fisherfolk. However, there are no scenic or conservation designations associated with it.

In this scene, a car park and the yacht club dominate the foreground, beyond which a public linear green runs parallel to the road and terraced, multi-storey buildings. The vertiginous build-up of the village is evident in this view, as building stacked above building across the village can be discerned. To the distant southwest, the upper heights of the Martello Tower and St. Mary's Abbey can be discerned.

Visual Impact of proposed development

At almost 300m distance, the upper two floors of an apartment block will be partially visible from this location, while intervening trees and/or development will obscure the remaining segments of the proposed development. Partially visible, but far from noticeable, the proposed development will present as a suitably scaled, tastefully finished piece

of contemporary multi-storey architecture that will marginally increase the intensity and scale of built development within the scene.

Aesthetically, the combination of 'clean' horizontal form and high-level fenestration is likely to result in a high-end and desirable architectural development fitting of this scenic setting; one that will certainly not be visually dominant from this location. Crucially, views of the Martello Tower and St. Mary's Abbey will remain unimpeded from this location, while no other views of any discernible aesthetic merit will be impeded or obscured.

On balance, the magnitude of visual impact is deemed to be **Low** and of a **neutral-negative** quality.

Summary

Based on the assessment criteria and matrices outlined at **Section 10.2** the significance of residual visual impact is summarised below.

	Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**
Residual Impact Significance	Medium-low	Low	**Slight/neutral-negative**

Viewshed Reference Point		**Viewing distance to site boundary**	**Direction of View**
VP20	Trail & preserved view, Howth SAAO	1.38km	NE

Representative of:

- Designated Scenic Routes and Views;
- Amenity and heritage features.
- Local Community Views

Receptor Sensitivity

High-medium

Existing View

The hills at the centre of the peninsula allow for often stunning views out across the landscape and seascape to most sides. This location is within public land designated under the Howth Special Amenity Area Order, and is located along one of very many trails criss-crossing the picturesque interior of the peninsula, which are also designated with, in this instance, 'preserved views.'. To this distant north-east (i.e., over 1.3km) of this view, Howth Harbour can be seen, before the compelling views of Ireland's Eye, Lambay and the Irish Sea. Only a very select degree of Howth village can be discerned from this location, and this largely relates to larger or more elevated buildings within the village,

including the Martello Tower and the Parish Catholic church in the village. However, such buildings are challenging to discern at this distance and elevation.

Visual Impact of proposed development

At this distance, the proposed development will be faintly discernible to the studied and stationary observer, but most certainly not noticeable. If discerned, the proposal will present as a pale-toned roofline at a vastly lower elevation than this location, in a development of indeterminable function.

Of what can be discerned, the proposal will appear as a suitably scaled, contemporary addition to this multi-faceted peninsula. As a result of the proposed development, seaward views will not be curtailed from this location. Thus, even if discerned, the proposal would have an immaterial effect on the visual amenity of the scene.

As a result of these factors, the magnitude of visual impact is deemed to be **Negligible** and of a **neutral-negative** quality.

Summary

Based on the assessment criteria and matrices outlined at **Section 10.2** the significance of residual visual impact is summarised below.

Residual Impact Significance

Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**
High-medium	Negligible	**Imperceptible**

Viewshed Reference Point		**Direction of View**
VP21	Drone View from Balscadden Bay	SW

Representative of:

- Amenity and heritage features.

Receptor Sensitivity

Medium

Existing View

By way of context, Balscadden Bay is a popular local beach for sea swimmers, but is also frequented by fisherfolk and kayakers. In addition, within 700m north of this location, but in close proximity to the harbour, is a sea route used by sightseers on recreational ferries (i.e., between the harbour, Dun Laoire and the River Liffey) running mostly during the summer months. In this drone view, the bay and beach is evident, as is the steep embankment alongside it. The prominent, three-storey apartment complex (i.e., The Asgard) between Balscadden Road and the bay draws the eye, as it's form, scale and style are not overtly compatible or respectful of the highly designated setting, nor the

Martello Tower above it, nor the 1-2 storey residences further uphill on Balscadden Road. The clay cliffs of the Martello Tower promontory are also apparent from this location. Within the site, all that can be faintly discerned is that of a quasi-industrial setting and concrete-façade of the derelict Edros building, with palisade fencing, on the skyline within the 'hollow' of the surrounding skyline. In broad brushstrokes, this somewhat disparate seaside setting is one which marries a renowned recreational Howth amenity with different layers of residential development.

Visual Impact of proposed development

The proposed development will be an apparent feature in this scene, as a 3-4 storey residential development that will extend the residential context of the setting. Located over 200m away, in terms of visual presence, the proposal will effectively 'bridge' the 'hollow' of the surrounding skyline, allowing for a more consistent skyline, when seen from this area. The proposed development will manifest as a suitably scaled, tastefully finished piece of contemporary multi-storey architecture that will palpably increase the intensity and scale of built development within the scene. Indeed, the proposal will remain less apparent than the nearer, pre-existing apartment complex along Balscadden Road (i.e., the Asgard).

Aesthetically, the combination of clean form and high-level fenestration is likely to result in an up-to-date and desirable architectural development suitable for this setting. The proposed multi-storey development mirrors that of nearer, pre-existing apartment complex, while being a more valuable contribution to the built environment. While visible, the proposal is unlikely to draw attention in the context of highly developed, and long-settled, contemporary urban community. While the proposal does marginally increase a sense of enclosure onto the beach/bay below, owing to the rise of built skyline, it will not inhibit or block any sources of visual amenity in the scene.

As a result of these factors, the magnitude of visual impact is deemed to be **Medium-low** and of a **Positive** quality.

Summary

Based on the assessment criteria and matrices outlined at **Section 10.2** the significance of residual visual impact is summarised below.

Residual Impact Significance

Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**
Medium	Medium-low	**Moderate-slight/ negative**

Viewshed Reference Point		Viewing distance to site boundary	Direction of View
VP22	Pedestrian path between Martello Tower and Abbey Street	7m	SE

Representative of:

- Local Community views
- Amenity & heritage feature
- Designated Scenic Routes and Views

Receptor Sensitivity

Medium

Existing View

In terms of context, this path ascends from Abbey Street in the Howth village centre, to the Martello Tower, the upper level of which can be discerned at the head of the path, in this view. The area surrounding the tower is a grassy amenity area that is particularly popular in the summer. The four boundaries surrounding this area of land are designated as being 'preserved views' (i.e., Fingal County Council designation), although the aforementioned Baldoyle - Howth Sheet 10 (Zoning Objectives Map), from the Fingal CDP 2017-2023, indicates these are from the base of each of the embankments surrounding this promontory, rather than from a higher elevation. However, this location is within the Howth Historic Core Architectural Conservation Area (ACA), as well as the Howth SAAO (Special Amenity Area Order). Also, it is important to note that from this location, no seaward views are attainable. Indeed, between this point along the pathway and Abbey Street, there is a high level of trees and buildings to either side, channelling views either uphill (towards Martello Tower) or downhill (towards Abbey Street).

At this juncture of the pathway, an unpaved 'informal' desire-line pathway deviates off it to the south/right, where an often muddy pathway links to Balscadden Road, outside the palisade fencing by the northern site boundary (refer to Figure 10.2). The pathway by the northern side boundary is one which is dark, narrow and uneven, and does not entice or favour pedestrians to use it. With the palisade fencing and scrub-like vegetation along the pathway, as well as the channelled views along this pathway, it is a scene of unusually low visual amenity in light of its Howth village setting and multiple high-level designations.

Visual Impact of proposed development

Owing to the density of intervening tree cover, little can be discerned about the nature of the adjacent proposed apartment block from this location. What can be determined are small segments of a contemporary, mid-rise residential block that will not be visually or spatially dominant. However, the proposed landscape measures will have a more palpable visual presence in this scene, that manifestly lift

the visual amenity of the setting. The pre-existing pathway by the northern boundary will be replaced with a contemporary, wider, concrete pathway aligned with proposed plants and trees that will support the aesthetics of the proposed development, while providing a more safe, bright, useable and attractive pathway connecting Balscadden Road to the village centre.

As a result of these factors, the magnitude of visual impact is deemed to be **Medium-low** and of a **positive** quality.

Summary

Based on the assessment criteria and matrices outlined at **Section 10.2** the significance of residual visual impact is summarised below.

	Visual Receptor Sensitivity	Visual Impact Magnitude	**Significance / Quality of Visual Impact**
Residual Impact Significance	Medium	Medium-low	**Moderate-slight/positive**

10.5.3 Potential Cumulative Impacts

The main potential for cumulative impacts to occur in relation to the proposed development is in the localised context around the site where the proposed development may be visible in conjunction with other existing and/or permitted developments.

10.5.4 Existing Developments

As residential development is commonplace within the surrounding and local landscape context, the proposed development will have limited impact on the local character of this landscape. In fact, apartment living of three or more storeys is an established land use within the study area. Where the full vertical extent of the proposal is viewed from Howth main street, it is in a receiving environment where pre-existing three-storey buildings are also present. Critically, however, the aforementioned, veritable hollow within the localised landform of the site further aids in reducing potential cumulative impact associated with the proposal, when viewed outside the village centre.

10.5.5 Permitted Developments

A planning search revealed that the majority of developments within the vicinity of the Site of the Proposed Development are applications granted more than 5 years ago and that have since been completed. The larger, more recent applications are detailed below:

F18A/0023: (1) Demolition of existing family dwelling (7 East Pier) and its replacement with 12 guestrooms and storage areas in a 2.5 storey building (2) Reconfiguration of the roof to the existing guesthouse (3) Reconfiguration of the existing internal layout of stairs, kitchens and stores including the installation of a lift (4) Addition of storage areas at first floor behind the restaurant (5) Addition of an extra guestroom on the flat roof above the restaurant and (6) All associated site works. (Decision: Grant Permission. Decision Date: 19/06/2018).

F19A/0405: Development will consist of 1) Demolition of existing 3 storey dwelling house. 2) Construction of a new 3 storey over basement apartment development consisting

of 8 no. 2 bedroom apartments. 3) New vehicular entrance, roads, footpaths, landscaping, services consisting of storm and foul water disposal, mains water supply and all associated site works. (Decision: Grant Permission. Decision date: 04/03/2020. Appeal Decision: Grant Permission. Appeal Decision Date: 26/03/2021).

SHD/009/19: Demolition of all structures on site (c8,162sq.m. GFA) and excavation of a basement. The Proposed Development comprises of the provision of a mixed-use development of residential/retail/restaurant/cafe uses and a creche in 4 no. blocks (A to D), over part basement Blocks A, B, C and D with a height up to a maximum of seven storeys of apartments over lower ground floor and basement car parking levels (a total of eight storeys over basement level). The residential component will consist of 512 no. residential units. (Decision: Grant Permission. Decision date: 03/04/2020).

SHD/009/20: The development will consist of 162 no. residential units distributed across 3 no. blocks (A, B & C) ranging in height from 5-6 storeys, with a cumulative gross floor area (GFA) of 13,337.10 sq.m. (Decision: Grant Permission. Decision date: 21/09/2021).

The above permissions indicate that the scale and nature of the proposed development is consistent with emerging trends in this area for higher density apartment living within mid-height developments. Together with these permissions, the proposed development will contribute to a greater intensity and scale of built form within the vicinity of Howth Village, but this growth is being sustainably managed through planning process and particularly the land use policy context and protective designations contained within the Fingal County Development Plan. Consequently, high standards of design that account for sustained amenity of surrounding receptors are required.

10.5.6 Cumulative Summary

Overall, it is considered that the proposed development will contribute to an emerging trend for higher density living in this area, but one that is integrating sustainably with existing residential patterns to generate diversity of residential development rather than dominating it or replacing it. Consequently the proposed development is not considered to contribute to significant cumulative impacts in-combination with any other existing or permitted developments in the vicinity.

10.5.7 “Do Nothing” Impact

In the event of the proposed development not proceeding, the site will remain in a derelict form contributing negatively to the landscape character of the local area.

10.6 Avoidance, Remedial & Mitigation Measures

10.6.1 Construction Phase

The main construction stage mitigation measure, which has multiple benefits beyond landscape and visual effects is the early stage instalment of a tidy, solid hoarding around the site. This will screen much of the ground-based stockpiling of material and movement of people and machinery and general construction clutter. It will also screen much of the early stage excavation and lower storey construction from view.

10.6.2 Operational Phase

Operational stage mitigation relevant to landscape and visual effects is almost entirely embedded in the appropriate siting and design of the development to ensure that it is not overbearing in relation to neighbouring receptors or over-scaled in relation to the prevailing townscape fabric. The external finishes and colour palette present as a high quality of built form where undue bulk and massing is avoided and visual interest is generated.

There will also be considerable internal and external landscaping including street trees, which will aid the integration of the development with its connecting contexts as well as softening / partially screening the built form as well as aiding the transition of built-form scale down to the human scale of the street. Again, such landscaping measures are integral to the design of the development that has been assessed.

10.6.3 "Worst Case" Scenario

The worst-case-scenario in respect of the mitigation measures described above relates to the potential failure / partial failure of landscaping measures to survive or become established and this does not have material repurcussions for the impacts levels Assessed herein. In such a case, the defects and liability period of the selected landscape contractor (typically 2-3years) will cover replacement planting.

10.7 Residual Impacts

In this instance there are no specific landscape and visual related mitigation measures proposed or which relate to landscape and visual impacts and are material to the assessment already undertaken in Section 10.5 - Potential Impacts. This is because such mitigation measures are integral and embedded within the design assessed, particularly because such design measures are represented in the photomontage set used for the visual impact assessment. Consequently, Residual impacts can be considered equivalent to Potential Impacts in this instance.

10.7.1 Overall Significance of Impact

Overall, it is considered that the proposed development is an appropriate contribution to the built fabric of this locality that will not result in any significant landscape/townscape or visual impacts.

10.8 Monitoring

10.8.1 Construction Phase

No monitoring is required, in terms of landscape and/or visual mitigation measures or impacts.

10.8.2 Operational Phase

No monitoring is required, in terms of landscape and/or visual mitigation measures or impacts.

10.9 Interactions

Multiple interactions took place, during the compilation of this assessment chapter, with other subconsultants and the lead consultant associated with this project. These specifically include the following factors.

10.9.1 Architectural and Cultural Heritage

Based on the archaeological assessment carried out in chapter 11, it is not predicted that any changes in landscape or visual amenities will affect in any way the archaeology and cultural heritage of the area.

10.9.2 Population and Human Health

Photomontages were prepared by Digital Dimensions to aid the assessment of the visual effects of the Proposed Development on surrounding receptors. Based on the assessment criteria and matrices outlined in Chapter 10 the significance of residual visual impacts ranges between Moderate and Imperceptible, whilst the quality of these impacts is generally Positive or Neutral.

10.9.3 Biodiversity

An assessment of the potential impact of the Proposed Development on the surrounding landscape character is outlined in Chapter 10 - Landscape and Visual. These impacts are considered to be relevant to the ecological sensitivities associated with the Site, albeit the relevance to the landscape and visual chapter is mainly in relation to aesthetics and screening.

10.10 Difficulties Encountered When Compiling

No difficulties were encountered during the course of compiling this chapter.

10.11 References

- Environmental Protection Agency publication 'Guidelines on the Information to be contained in Environmental Impact Statements (Draft 2017) and the accompanying Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (Draft 2015).
- Fingal County Development Plan 2017-2023
- Institute of Environmental Management and Assessment (IEMA) and Landscape Institute (UK) 'Guidelines for Landscape and Visual Impact Assessment' (GLVIA-2013).

11 ARCHAEOLOGY AND CULTURAL HERITAGE

11.1 Introduction

This chapter of the EIAR describes and assesses the potential effects of the Proposed Development, located at a c. 1.43 hectare site comprising lands located south of the Martello Tower on Balscadden Road, & the former Baily Court Hotel, Main Street Howth, County Dublin. The chapter was prepared by Laura Griffin (BA Hons, MSc), Environmental Consultant with Enviroguide Consulting.

The Site of the Proposed Development was originally three separate plots which have been consolidated into a single entity under one landowner.

The Site of the Proposed Development is bounded to the east by the Balscadden Road, to the west by residential and commercial buildings fronting onto Main Street and Abbey Street, and to the north by Martello Tower and Tower Hill, and to the south by rear gardens to residential properties.

The aim of this chapter is to assess the baseline Archaeological, Architectural and Cultural Heritage conditions of the surrounding environment for the Proposed Development, in order to determine any significant impacts that may arise as a result of the Proposed Development and highlight any potential effects this may have on these resources. In addition, if deemed appropriate, mitigation measures are recommended, in accordance with the policies of Fingal County Council, the Department of Culture, Heritage and the Gaeltacht, National Monuments Acts 1930-2004 and best practice guidelines.

The assessment comprised a desktop study and cartographic research. The sources used were the Record of Monument and Places (RMP), Department of Culture, Heritage and the Gaeltacht (DoCHG), the National Museum of Ireland topographical files, the County Development plans and various literature resources.

The RMP is comprised of manuals listing all known archaeological sites and monuments in each County with accompanying maps locating these sites and additional information from archaeological excavations and assessment records in the intervening period. All sites included in the RMP are protected under the National Monuments Acts (1930-2004). The record is continually being updated with information from the results of on-going research and excavation, as new sites are discovered. The types of Recorded National Monuments, both within the study area and in the immediate vicinity, have served to inform the author in the development of a hypothesis as to the potential sub-surface archaeology within the study area. This is backed up by the results of previous archaeological excavations and investigations both within and without the study area published in excavation summary reports for each year (www.excavations.ie).

The National Museum maintains a register of finds of archaeological objects from each townland in the twenty-six counties of the Republic of Ireland. Detailed records are held for each find, many of which are regarded as ‘stray finds’ having been recovered by farmers in the course of ploughing or other such activities and received to the museum in accordance with national monuments legislation. The records contain information such as type and

location of find, correspondence between the museum and the finder, and, where applicable, results of excavations carried out by museum staff at the location of the finds.

The Fingal County Development Plan (2017-2023) has a list of protected structures which has established the preservation of these structures including their settings. The Record of Protected Structures was established under the Local Government (Planning and Development) Act 2000 and comprises a listing of structures of architectural, historical, archaeological, artistic, cultural, scientific, social, or technical interest, along with accompanying maps. It also safeguards the protected structures along with their curtilage against any development without the express permission of the Minister for the Department of Arts Heritage and the Gaeltacht.

A number of literary sources and Cartographic maps were also consulted. Literary sources are a valuable means of completing the written archaeological record of an area and gaining insight into the history of the environs of the proposed works. The principal sources consulted are listed in the bibliography at the end of this chapter. Cartographic maps consulted were the OS 6-inch first edition mapping (1837-1842), 25-inch mapping series (1889-1913) and third edition (1909) for Co. Wicklow.

11.2 Study Methodology

11.2.1 Guidance and Legislation

The following legislation and guidance documents were consulted as part of this assessment. This legislation makes up the main legal mechanisms by which Archaeological, Architectural and Cultural Heritage resources are protected in Ireland.

- National Monuments Act, 1930-2014;
- Heritage Act, 1995;
- Architectural Heritage and Historic Properties Act, 1999;
- Local Government (Planning and Development) Act, 2000
- The Planning and Development (Strategic Infrastructure) Act, 2006;
- EPA ‘Guidelines on the information to be contained in Environmental Impact Assessment Reports’ (EPA, Draft 2017);
- Frameworks and Principles for the Protection of the Archaeological Heritage, 1999, (formerly) Department of Arts, Heritage, Gaeltacht, and Islands.
- Architectural Heritage Protection: Guidelines for Planning Authorities, 2011, (formerly) Department of Arts, Heritage, and the Gaeltacht.

The assessment contained in this chapter involved a desktop study / paper survey which considered all available archaeological, architectural, historical, and cartographic sources. This information was used in order to assess any potential impact on the receiving environment and to identify measures to ensure the conservation of any monuments or features.

11.2.2 Desk Study

The following archaeological, historical and cartographic sources were examined as part of the paper study:

Records of Monuments and Places (RMP) is a list of monuments recorded under Section 12 (1) of the National Monuments (Amendment) Act 1994.

Sites and Monuments Record (SMR) is a national baseline database of known archaeological sites and monuments in Ireland.

Topographical Files of the National Museum of Ireland is an archive containing records of all finds logged by the National Museum.

Aerial Photographs provide an important archaeological resource in terms of detecting new sites and identifying the exact location and extent of known sites. These features can be identified through surface anomalies such as earthworks or distinct vegetation marks.

Excavations Bulletin is an annual publication, started in 1970, which summarises all archaeological excavations carried out in Ireland each year (www.excavations.ie).

The National Inventory of Architectural Heritage is a comprehensive database of structures relating to the architectural heritage of Ireland.

Fingal County Development Plan contains a list of Architectural Conservation Areas and recorded Protected Structures for Fingal.

Cartographic Sources are important in providing topographical information on areas of archaeological potential as well as tracing land use development within the Proposed Development area.

11.3 The Existing and Receiving Environment (Baseline Situation)

The Site of the Proposed Development occupies an area of 1.43 hectares (ha) on Main Street Howth. Howth is in the Electoral Division of Howth ED 1901, in the Civil Parish of Howth, in the Barony of Coolock, in the County of Dublin.

The Site of the Proposed Development was originally three separate plots which have been consolidated into a single entity under one landowner.

The largest plot of land, on Balscadden Road, south of the Martello tower, was formerly the EDROS centre, comprising a community hall and tennis courts. The Site is undeveloped, overgrown and fenced off. It offers no visual or physical amenity to Howth and provides a poor setting for the Martello Tower. It is a relatively flat site, surrounded on 3 sides by steep embankments. A right-of-way from Abbey Street to Balscadden Road exists along the bottom of the mound but this pathway is isolated from neighbouring properties. South of the Balscadden site is the ‘Cluxton’ lands, which are also overgrown with grass and shrubs. The site slopes steeply upwards to the Asgard Park estate on the southern boundary, c. 15m higher than the Balscadden plateau. The third plot of land is the former Baily Court Hotel, which has been closed since circa 2007. The rear of the hotel backs directly onto the Cluxton lands.

Ringforts and enclosures are undoubtedly the most common field monuments within the Irish landscape and there are no ringforts and no. 1 enclosure located within a 2km radius of the

Proposed Development. A ringfort is a space surrounded by an earthen bank formed by material thrown up from a fosse or ditch located immediately outside the earthen bank. Generally, ringforts vary in size from 25–50 metres in diameter and are usually circular in plan but can also be oval or D-shaped. A drawing which indicates the location of the Proposed Development in relation to archaeological monuments and architectural features is available within Appendix H.

11.4 Characteristics of the Proposed Development

The proposed development relates to lands located to the south of the Martello Tower on Balscadden Road & the former Baily Court Hotel, Main Street, Howth, County Dublin. The development will consist of the demolition of existing structures on the proposed site including the disused sports building and the former Baily Court Hotel buildings and the construction of a residential development set out in 4 no. residential blocks, ranging in height from 2 to 5 storeys to accommodate 180 no. apartments with associated internal residential tenant amenity and external courtyards and roof terraces, 1 no. retail unit and 2 no. café/retail units. The site will accommodate car parking spaces at basement level and bicycle parking spaces at basement and surface level. Landscaping will include new linear plaza which will create a new pedestrian link between Main St and Balscadden Rd to include the creation of an additional 2 no. new public plazas and also maintains and upgrades the pedestrian link from Abbey Street to Balscadden Road below the Martello Tower.

11.4.1 RMP files (Record of Monuments and Places) close to the study area

Within a 2km radius of the Proposed Development Site there are twenty-five recorded archaeological monuments. The monuments are listed below, and identified by townland, RMP number, site type, site status and distance of the site for the Proposed Development. The RMP reference consists of a three-letter county code, the relevant number of the Ordnance Survey six-inch sheet on which the Site is located, and the number of the individual monument. This information is gathered from the online Historic Environment Viewer provided by the Department of Culture, Heritage, and the Gaeltacht. These monuments are discussed below within the context of the historical and archaeological background of the surrounding area. No Recorded Monuments will be affected by the development plans.

RMP No. DU016-002002-

Townland Howth

Site Type Martello Tower

Description It stands on a natural spur above Balscadden Bay, east of Howth Village off Abbey Street in view of the tower on Ireland's Eye on the W side of the island. Entrance in the SW side with machicolation present above the doorway. The interior is lit by small square opes. Exterior is rendered. A chimney has been inserted on the N side (Morris 1939, 181; Kerrigan 1996, 174). The tower was armed with a 24-pounder cannon. The Preventive Water Guard was granted the right to occupy the tower in 1825 when it formed part of their anti-struggling network of towers and stations. It was also used as a signalling station and was occupied by HM Postmaster General following the nationalisation of the telegraph companies in 1870 (Bolton et al 2012,151). Now the Hurdy Gurdy Museum of vintage radio.

Distance This RMP site is located 0.045km north of the basement excavation at the Proposed Development Site, the Martello tower sits on high ground that falls away at cliffs to the west, north and east, while to the south the ground slopes steeply towards the application Site.

Impact This site will not be affected by the Proposed Development.

Arising from concerns regarding the potential impact of the earthworks associated with the Proposed Development, an assessment the ground movements on the Martello tower was completed by Byrne Looby as part of the Geotechnical Report. The building damage assessment report concluded that based on the predicted ground movements and offset to Martello tower, the tower is outside the zone of sensitivity caused by the basement excavation works.

A vibration monitoring regime will be established along this boundary to ensure the proposed works does not cause slippages. All ground works will involve low-vibration methods of construction as outlined in the Geotechnical Report, the report also provides recommendations for the remedial works in order to prevent any potential future slips occurring.

There is only one viewpoint within the grounds of the Martello tower where there is any reasonable view of both the tower and the application Site and this is from the northern perimeter of the Martello site. This is addressed in the Architectural Heritage Impact Assessment Report, this report provides a photomontage of the view southwards past the tower and towards the application Site which demonstrates that the tower dominates the view and the Proposed Development is in relatively low in this view. This report concludes that the application Site would not have a significant impact on the character or setting of the Martello tower from within its grounds. The northern section of the Site will be closest to the Martello tower, the difference in levels between Block B and the Martello tower will ensure that the building will be relatively low when seen from the tower, Views V10, V16, V18 and V20 which were submitted as part of the application show the proposed Block B in the context of the tower and demonstrate that the building will not have an adverse effect on its character or setting. The Proposed Development has been designed in order to ensure that there is minimal impact on the Martello tower (Rob Goodbody, 2022).

RMP No. DU016-002001-

Townland Howth

Site Type Castle – motte

Description In 1775 Gabriel Beranger made a sketch showing a large flat- topped mound with an outer ring and a fosse (Harbison 1992, 24-5). Thought by Westropp (1922, 63-4) to be the mote-castle of Almoric, founder of the family line of Howth. All that remains is the flat natural spur on which a martello tower stands (DU016-020002-).

Distance This RMP site is located 0.07km north of the Proposed Development Site.

Impact This RMP is also outside the zone of sensitivity caused by the basement excavation works as demonstrated in the Byrne Looby report and the recommendations for the remedial works contained in this report will prevent any potential future slips occurring and therefore the site will not be affected by the Proposed Development.

RMP No. DU015-138----

Townland Howth

Site Type House - medieval

Description The remains of this medieval house were discovered in the course of excavations undertaken in 1992 (license no. 92E0010; Hayden 1993). The building proved to be of 13th- or 14th century date and measured 8.6m east-west by 4m north-south internally and had walls up to 0.95m in thickness, standing to a maximum height of 0.60m. The building is likely to have had more than one storey judging from the stoutness of the walls and the entrance was situated at its east end. Three floor levels were uncovered in the interior and took the form of mortar or clay floors with associated occupation deposits. Initially, the ground floor may have been a single room but during a second phase, when the second-floor level was laid, it was divided into two rooms by a stone footing presumably carrying a wooden superstructure. The building was set in a trench partly cut into the rising ground below the cliff to the south and water seeping down the cliff face appears to have been a problem. This was alleviated by the construction of underfoot drains and a sump at the second level. The building appears to have gone out of use and been demolished by the 15th or 16th century possibly as a result of the area being inundated by the sea when large sand banks were laid down (Hayden 1993).

Distance This RMP site is located 0.1km northwest of the Proposed Development Site.

Impact

This RMP is also outside the zone of sensitivity caused by the basement excavation works as demonstrated in the Byrne Looby report and the recommendations for the remedial works contained in this report will prevent any potential future slips occurring and therefore the site will not be affected by the Proposed Development.

RMP No. DU015-029003-

Townland Howth

Site Type Tomb – effigial

Description A 15th century altar tomb stands at east end of southern aisle of St. Mary's church (DU0 15-029001-). Its covering slab (dims. L 2.20m, 1.05m) bears effigies of Sir Christopher St. Lawrence, Lord of Howth and Anne Plunkett, his wife. The former is dressed as a knight in plate armour and chain mail with lady on right side wearing a gown and horned headdress. There are inscriptions around the bevelled edge of the slab. The sides are sculpted with human figures and shields (Fitzgerald 1907, 355-359). The tomb is behind iron railings and under a slate-roofed, timber-posted canopy which protects it from the most direct effects of the weather.

Distance This RMP site is located 0.1km west of the Proposed Development Site.

Impact

This RMP is also outside the zone of sensitivity caused by the basement excavation works as demonstrated in the Byrne Looby report and the recommendations for the remedial works contained in this report will prevent any potential future slips occurring and therefore the site will not be affected by the Proposed Development.

RMP No. DU015-030----

Townland Howth

Site Type House – fortified house

Description Known as the College of Howth, this is a T-shaped three- storey building of probable late 15th-16th century date. It fronts onto Abbey Street and is located south of St Mary's Church (DU015-029001-). Its longer axis runs east-west (int. dims. max. L 16m, max Wth 7m) and there is a small projection in the centre of the east wall which according to Leask (1960, III, 28-30) contained the garderobes. Built of roughly coursed blocks of Howth stone, volcanic type rocks and limestone with dressed limestone used in quoins, windows, and doors.

Formerly the E end of the building was divided into two compartments each containing fireplaces in gable walls. An entrance passage divided the west end of the building into two compartments. Access was through an elliptical arched doorway with chamfered jambs that have been hammer dressed. The ground floor was lit by an elliptical arched window with plain hood moulding. The eastern projection is lit by slit opes. The first floor contains round-arched windows formed of chamfered limestone jambs.

A number of archaeological investigations were undertaken prior to its conversion to a domestic house. A survey revealed that the inside had been lowered in modern times, the original ground floor was 1.7m higher than the present floor. It also identified a mortared foundation within the footprint of the building which was suggestive of an earlier structure or a cellar (Simpson, L. 2006, 161). Hand excavation (Licence no. 03E1804) of four pits (averaging 1m sq.), at the corners of the building and the southern footing of a proposed stairwell (3m east-west by 1.1m), were excavated through archaeological deposits to determine the natural subsoil. The medieval horizon containing 13th/14th century pottery was identified 0.06-0.43m below the lowered ground level. The foundation of a rubble-built internal wall (0.5m high) was identified almost centrally to the structure (Baker 2003). The new house was 'hung' within the original and an iron roof added.

Distance This RMP site is located 0.05km west of the Proposed Development Site.

Impact

This RMP is also outside the zone of sensitivity caused by the basement excavation works as demonstrated in the Byrne Looby report and the recommendations for the remedial works contained in this report will prevent any potential future slips occurring and therefore the site will not be affected by the Proposed Development. The Landscape and Visual Assessment (LVIA) selected 22 Viewshed Reference Points and assessed the visual impacts at each. Each

of the selected viewpoints is aided by photomontages of the Proposed Development. The LVIA has concluded that overall, the Proposed Development will not result in any significant landscape/townscape or visual impacts (Macroworks, March 2022). Based on the conclusion of the LVIA, the Proposed Development will not result in any significant visual impact on this RMP.

RMP No. DU015-094----

Townland Howth

Site Type Building

Description A site assessment directly west of 'Abbey Cottage' which is the western portion of the priests' house associated with St Mary's Abbey, Howth revealed the north-west angle of an earlier stone structure. This comprised two courses of quoin stones overlying a more crudely constructed foundation layer. The dressing on the stone indicated a 16th century date. As this structure and the gable wall of Abbey Cottage observe the same line, it appears that this may have been the original gable of Abbey Cottage which was rebuilt c. 90m to the east, probably during the 19th century (Meenan 1995).

Distance This RMP site is located 0.1km west of the Proposed Development Site.

Impact

This RMP is also outside the zone of sensitivity caused by the basement excavation works as demonstrated in the Byrne Looby report and the recommendations for the remedial works contained in this report will prevent any potential future slips occurring and therefore the site will not be affected by the Proposed Development.

RMP No. DU015-029006-

Townland Howth

Site Type Graveyard

Description This graveyard is square in plan and entered from the southwest corner where it drops down significantly from street level. Externally there are houses to the south and west including Howth College (DU015-030----), Abbey Road. to the east and a sheer drop c.30ft to the north. The unusual crenelated perimeter wall was depicted by Beranger in the 18th century.

After torrential rain in October 2011, part of the northern perimeter wall collapsed causing extensive ground collapse and coffin exposure. A programme of removal and reinstatement was undertaken and the graveyard wall buttressed externally. There are engineering monitoring points along the internal wall and on the church. The collapse along the northern limit has been repaired and plots reinstated.

The graveyard contains a mixture of 18th, 19th and modern gravestones that range from simple undecorated stones to table tombs.

Distance This RMP site is located 0.1km east of the Proposed Development Site.

Impact

This RMP is also outside the zone of sensitivity caused by the basement excavation works as demonstrated in the Byrne Looby report and the recommendations for the remedial works contained in this report will prevent any potential future slips occurring and therefore the site will not be affected by the Proposed Development.

RMP No. DU015-029005-

Townland Howth

Site Type Graveslab

Description A grave- slab is re-used as a kerbstone in the south-west corner of graveyard. It contains a stepped base inscribed on the lower portion of the slab. Now lying on its side just north of the base of the graveyard entrance steps.

Distance This RMP site is located 0.1km west of the Proposed Development Site.

Impact

This RMP is also outside the zone of sensitivity caused by the basement excavation works as demonstrated in the Byrne Looby report and the recommendations for the remedial works contained in this report will prevent any potential future slips occurring and therefore the site will not be affected by the Proposed Development.

RMP No. DU015-029001-

Townland Howth

Site Type Church

Description St. Mary's Church, known as Howth Abbey is a National Monument (No. 36). It is sited on the side of north facing hill with extensive views of Howth harbour and Ireland's Eye. The original church on the site was founded by Sitric, King of Dublin c.1042. It comprises an impressive double-aisled church of largely 14th century date with later alterations. Built of coursed masonry. The aisles vary in length (N aisle L 20.7m; dims. S aisle L 23m) and are almost of equal width (Wth c. 6m). They are divided by an arcade of pointed arches. Both aisles originally gabled, were merged to form one roof in the 16th century.

The western gable was widened to carry stairs to a triple bellcote. An external recess with a high-semi-circular arched opening was also added to the W gable. A porch in the southern wall allows access to the S aisle through a pointed sandstone doorway and a round-headed doorway of dressed limestone in the interior. Both doors in N aisle have plain pointed head s and are of uncertain date. N aisle is lit by a double-light tracery W window with sandstone

jambs, and a triple light E window with semi-elliptical flattened heads of dressed limestone. S aisle is lit by double-light with flattened arches in the W and a triple light with cusped ogee and trefoil heads in the E. There is a stoup in the S wall which is contained in a trefoil-headed niche in the S wall (Cochrane 1896, 1-21; Ball 1917 29-47, 87-111; Leask 1960, 3, 34-37). The church also contains a piscina with a trefoil-head and another further west. In the southwest corner of the south aisle is the chantry chapel which contains the tomb of Christopher St Lawrence and his wife Anna Plunkett (DU015-029003-).

Distance This RMP site is located 0.1km west of the Proposed Development Site.

Impact

This RMP is also outside the zone of sensitivity caused by the basement excavation works as demonstrated in the Byrne Looby report and the recommendations for the remedial works contained in this report will prevent any potential future slips occurring and therefore the site will not be affected by the Proposed Development.

RMP No. DU015-029004-

Townland Howth

Site Type Graveslab

Description There are two medieval grave slabs attached to the E and S wall of the S aisle (DU0 15-029001-). Both grave-slabs have an incised floriated cross with arms and a stepped base.

Distance This RMP site is located 0.1km west of the Proposed Development Site.

Impact

This RMP is also outside the zone of sensitivity caused by the basement excavation works as demonstrated in the Byrne Looby report and the recommendations for the remedial works contained in this report will prevent any potential future slips occurring and therefore the site will not be affected by the Proposed Development.

RMP No. DU015-029002-

Townland Howth

Site Type Ritual site – holy well

Description Located in the retaining wall of the abbey graveyard (DU015-029006-). Traditionally described as the 'eye spout' or 'holy spout'. Now water issues from a short length of pipe said to have come from a holy well dedicated to our Lady in St. Mary's Church (Ó Danachair 1958, 1, 1, 77).

Distance This RMP site is located 0.1km west of the Proposed Development Site.

Impact

This RMP is also outside the zone of sensitivity caused by the basement excavation works as demonstrated in the Byrne Looby report and the recommendations for the remedial works contained in this report will prevent any potential future slips occurring and therefore the site will not be affected by the Proposed Development.

RMP No. DU015-028001-

Townland Howth

Site Type Cist

Description A cist (L 9m; Wth 0.7m) was exposed during house construction work in 1897 (Shearman 1866-9, 330-32). It was constructed of limestone blocks and was covered by a mound (Westropp 1922, 64). Not visible at ground level.

Distance This RMP site is located 0.5km west of the Proposed Development Site.

Impact

This RMP is also outside the zone of sensitivity caused by the basement excavation works as demonstrated in the Byrne Looby report and the recommendations for the remedial works contained in this report will prevent any potential future slips occurring and therefore the site will not be affected by the Proposed Development.

RMP No. DU015-042----

Townland Howth Demesne

Site Type Burial ground

Description According to Fr. Shearman human remains were uncovered during the construction of the modern Protestant Church. St Mary's church (1866) was built on the site of an earlier church and is located west Evora Bridge, the site of a great battle. Finds included sword fragments and a jet ring (Shearman 1922, 65). Monitoring (Licence no. 03E0935) of the insertion of a new gas supply to the north of St Mary's church was undertaken. A 55m long slot trench on the higher ground within the church grounds, revealed at least three situ human burials and evidence for disarticulated remains (D 0.50m). No excavation of the human remains took place (Scally, G. 2003).

Distance This RMP site is located 0.9km west of the Proposed Development Site.

Impact This site will not be affected by the Proposed Development due to the distance from the Proposed Development site.

RMP No. DU015-026----

Townland Howth Demesne

Site Type Chapel

Description Located on the grounds of Howth Castle north of the stable yard and west of the driveway, the church is surrounded by overgrowth and ivy covered. This large medieval chapel is rectangular in plan (int. dims. L 12.20m, Wth.4.50m) and built of randomly coursed sandstone masonry with dressed quoins. Originally entered through opposed doorways (blocked) which have almost flat segmental arches at W end of nave. The remains of a pointed arched opening in west end forms the entrance. The arch has been modified at the base, stone removed and brick inserted. Tufa has been used for one of the southern jambs. An impressive E window has a pointed arch with dressed sandstone hood and roll moulding internally. Draw bar holes are present. There are blocked up, flat, segmental arched windows at E end of N and S walls. Appears to be some dumping of material internally.

Distance This RMP site is located 1km west of the Proposed Development Site.

Impact

This site will not be affected by the Proposed Development due to the distance from the Proposed Development site.

RMP No. DU015-027003-

Townland Howth Demesne

Site Type Armorial plaque (present location)

Description An armorial plaque (DU019-001002-) was originally set into an external wall of Watermill cottage (DU019-001001-). The armorial plaque is now concreted into the northern façade of the stable block above an entranceway at Howth Castle. It shows the arms of the St. Lawrence family, Howth, 20th Baron of Howth and wife Elizabeth (Plunkett), the initials C.S. and E.P. and a date 1572 (Bowen 1963, 75-76).

Distance This RMP site is located 1km west of the Proposed Development Site.

Impact

This site will not be affected by the Proposed Development due to the distance from the Proposed Development site.

RMP No. DU015-027002-

Townland Howth Demesne

Site Type Gatehouse

Description The gate house is located on the north side of a courtyard attached to Howth Castle (DU015-027001-) by a rubble stone bawn wall, c.1525, with round headed integral carriageway, gun loops and crow stepped crenelated parapet (NIAH). It stands three storeys high with a battlemented parapet and a NE tower which projects above parapet level. Built of randomly coursed rubble with dressed quoins. A studded wooden gate is still present on the E side of the gateway below a round arch formed from sandstone and limestone which alternate to create a banding effect. The gateway has a segmental arched vault running E-W. There are buttresses to first floor level on the E and S sides. Two high vaulted chambers are entered off the N side of entrance passage through round-arched passages. Their interior is lit by single slit opes (L 6.40m, Wth 4.20m). The S side is defended by a musket hole. Entrance to upper floors is through the attached outbuildings in the W.

The NE tower contains a stone spiral staircase which is entered through a square-headed doorway of chamfered limestone. There is a fireplace with plain segmental arch on N side on the first floor. The east window is a double-light with a mullion and transom and cusped ogee-heads and a crack in the base of the window arch. A mural chamber off the first floor is lit by plain rectangular windows. Second floor is entered through a pointed arched doorway of chamfered limestone. The fireplace in the NW corner is a later insertion. There is an ogee-headed window on W side. Along the W side of the parapet there is a pointed arched window incorporated into battlements. Renovated 1738.

Distance This RMP site is located 1km west of the Proposed Development Site.

Impact

This site will not be affected by the Proposed Development due to the distance from the Proposed Development site.

RMP No. DU015-027001-

Townland Howth Demesne

Site Type Castle – tower house

Description Located in grounds on the N side of Howth Head overlooking Irelands Eye. A fine gatehouse *DU015-027002-) is attached by a battlemented wall to Howth Castle which incorporates in its southern range a massive three-storey tower house with corner towers. Attached to the E of this is a two storey hall of 17th century date. Classical style alterations to the central hall date from the early 18th century when the castle was enlarged and modernised by William St. Lawrence (Bence-Jones 1988, 155-156; Dawson 1976, 122-132; Mc Cready 1893, 447). Re-rendered c.1990.

The ground floor of the tower house (L 677m, Wth 5.60m, T 1.55m) is entered off the central hall through an opening in a later partition wall that creates a corridor within the original ground floor chamber. There is a dual vault over the ground floor with an intervening wall (Wth 0.66m) that has an opening midway along (Wth 1.02m). Partial remains of a projecting angle tower with a corbelled roof survive in the NE. A spiral stairway (diam. 1.08m) in a square projecting tower off the NW angle provides access to the upper floors. The stairs have been replaced and cut across the window opes. The first floor has been re-modelled with later window opes in the S and W. The SW angle has a tower which may have originally contained a garderobe. The second floor (L8.12m, Wth 6.40m) is entered through a pointed arch doorway (Wth 0.90m). There are window opes in the E and S walls of the main chamber which contain a corbelled recess in the SW angle tower. This is lit by a single slit loop (L 1.81, Wth 1.52m). There is a squinch in the SE corner which would have been needed to carry a corner tower at battlement level. The spiral stairs provide access to the battlement level with a wall walk connecting four projecting angle towers. A double pitched slate roof is set behind a crow-stepped crenellated parapet.

Architectural fragments have been incorporated into the surrounding buildings including a carved dragon built into the wall at the entrance to the garden and an inscribed 16th century Tablet at the entrance to stable yard N of castle (Ball 1917, 7, 8, 70, 71 Mc Cready 1893, 447).

Distance This RMP site is located 1km west of the Proposed Development Site.

Impact

This site will not be affected by the Proposed Development due to the distance from the Proposed Development site.

RMP No. DU015-032----

Townland Howth Demesne

Site Type Megalithic tomb - portal tomb

Description The tomb is situated by a pathway under tree cover at the edge of Deer Park golf course at the foot of Muck Rock on the north side of Howth Head. There is an entrance in SE to a single chamber (L 2.6m; Wth 1.1m). This is indicated by two portals (H 2.75m and 2.45m respectively). The doorstone has partially collapsed into the chamber. The large roof stone (L 5.2m; Wth 4.2m; D 1.9m) still rests on the upper edge of the portals above the collapsed chamber (Borlase 1897, 2, 376-9; Ó Nualláin 1983, 82, 96).

Distance This RMP site is located 1.4km southwest of the Proposed Development Site.

Impact

This site will not be affected by the Proposed Development due to the distance from the Proposed Development site.

RMP No. DU019-004003-

Townland Howth

Site Type Barrow – mound barrow

Description Located at the NW end of a natural knoll known as 'Dun Hill' which has been enclosed in antiquity (DU019-004002-). A later cairn was apparently built on top of a low earthen mound thought by Westropp (1922, 58-9) to be a barrow.

Distance This RMP site is located 1.4km southwest of the Proposed Development Site.

Impact

This site will not be affected by the Proposed Development due to the distance from the Proposed Development site.

RMP No. DU019-004001-

Townland Howth

Site Type Cairn – unclassified

Description Located at the NW end of a natural knoll known as 'Dun Hill' which has been enclosed in antiquity (DU019-004002-). This is a circular denuded cairn (diam 14m; H 1.5m) which incorporates a cist-like structure (L 0.8m; W 0.89m; D 0.5m). The latter is indicated as 'post office signal post' on the 1843 edition of the OS 6-inch map and may not be original (Westropp 1922, 58-9). This cairn was apparently built on top of a low earthen mound thought to be a barrow (DU019-004003-).

The headland was subject to gorse fire over the summer of 2013 revealing field walls to the southwest. The cairn itself and the summit remained unburned.

Distance This RMP site is located 1.4km southwest of the Proposed Development Site.

Impact

This site will not be affected by the Proposed Development due to the distance from the Proposed Development site.

RMP No. DU019-006----

Townland Howth

Site Type Cairn – unclassified

Description Located on elevated ground close to a trackway North of Carrickbrack. A relatively small cairn of stones of possible antiquity (Diam. 4.5m; H 1.25m). According to Westropp (1922, 59) it was known as the 'Cross Cairn' or 'St Patrick's Cross'. Difficult to locate as the area is overgrown with gorse. Extensive views of the entire coast south to Wicklow.

Distance This RMP site is located 1.9km south of the Proposed Development Site.

Impact

This site will not be affected by the Proposed Development due to the distance from the Proposed Development site.

RMP No. DU016-007----

Townland Howth

Site Type Cairn – unclassified

Description Located on the summit of Kilrock on Howth Head. This is a circular round-topped cairn (diam. 6.5m; H 2-2.5m). There is a great deal of shattered stone visible on the surface. Kerbstones are visible along E and SW. A trigonometrical station is marked at this point and there is the possibility that the cairn was constructed for this purpose. Spectacular views north to Ireland's Eye and east coast.

Distance This RMP site is located 1km east of the Proposed Development Site.

Impact

This site will not be affected by the Proposed Development due to the distance from the Proposed Development site.

RMP No. DU015-031003-

Townland Sutton South

Site Type Graveyard

Description A roughly square area enclosed by the townland boundary on all sides except the W where there is a curve in the boundary indicating the former existence of an early ecclesiastical enclosure (DU015-031001-). St Fintan's graveyard has been extended significantly to the southeast and northwest. the oldest section known as the 1189 section

adjoins St. Fintan's church. To the east is the 1907 section and to the west is the 1954 section. The newest extends downslope to the west as is known as the 'lawn' as it contains only flat grave markers (Fingal Historic Graveyards Project 2008). Still in use.

Distance This RMP site is located 2km southwest of the Proposed Development Site.

Impact

This site will not be affected by the Proposed Development due to the distance from the Proposed Development site.

RMP No. DU015-031001-

Townland Sutton South

Site Type Ecclesiastical enclosure

Description The small, oratory-like, building (DU015-031002-) is eccentrically located in a circular enclosure (diam. c. 28m) which is defined by a flat-topped bank (Wth 6m, H 0.6m) best preserved to the east of the church. The 1937 edition OS 6-inch map shows a curved boundary to the west of the church which is probably a continuation of this ecclesiastical enclosure.

Distance This RMP site is located 2km southwest of the Proposed Development Site.

Impact

This site will not be affected by the Proposed Development due to the distance from the Proposed Development site.

RMP No. DU015-031002-

Townland Sutton South

Site Type Church

Description The small, oratory-like, building is located within a circular enclosure (DU015-031001-). Known as St Fintan's the church is roughly rectangular in plan (int. dims. L 5m, Wth 2.45m). Built of large blocks of sandstone, granite and tufa with dressed quoins. The walls are battered. It appears to be an Early-Norman church with later medieval alterations. Originally entered in the west through a lintelled doorway, which was replaced by a pointed arched doorway. This has chamfered jambs. A square recess above the doorway has a circular ope. There is a single bellcote on the west gable.

In the interior there are three wall presses, that in the east end of the north wall incorporates the arch of an earlier window. The wall niche in the south is angular in plan with deeply chamfered side stones and a carved head; the third wall press is a square-headed niche in

the west end of the south wall. The east window is rounded with sept foil moulding on the arch and chamfered sandstone and limestone jambs. Now blocked up. Partial remains of a window are present at the western end of the north wall. The window in the northeast angle is semi-circular headed whilst that in the south is overgrown.

Metal railings have been added to roof and door. The Bellingham grave plot, also defined by railings is attached externally to the church on the north facade. Much of the mortar has been washed out of the exterior of the south, north and east walls.

Distance This RMP site is located 2km southwest of the Proposed Development Site.

Impact

This site will not be affected by the Proposed Development due to the distance from the Proposed Development site.

11.4.2 Topographical files, National Museum of Ireland (NMI)

There are no topographical files on the Site of the Proposed Development in the National Museum files. The closest recorded topographical files to the Proposed Development is a “Animal Bone” on Ireland’s Eye (2.1km north of the Site)- Name 2004:145.

11.4.3 Cartographic Analysis

11.4.3.1 Historic six-inch Ordinance Survey Map, 1837-1842

The first edition of the six-inch Ordnance Survey map was carried out from 1837-1842. This map shows the main Baily Court Hotel (formerly known as the Royal Hotel) in the lefthand corner of the Site with a small projection on the southern side, towards the rear of the building. Figure 11-1 shows the land to the north of the Site as open ground.

See Figure 11-1 OS mapping historic 6’’ First Edition Colour (GEOHIVE).

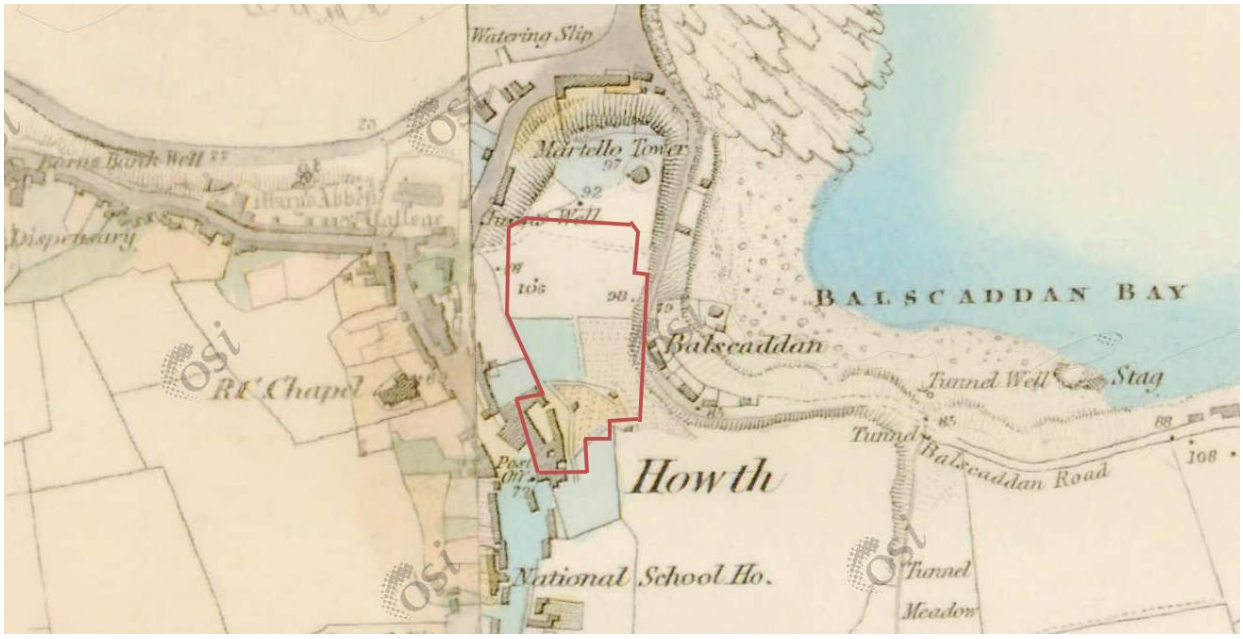


Figure 11-1: First Edition 6-inch Ordinance Survey Map, 1837-1842 with project site (Red outline)

11.4.4 Fingal County Development Plan 2017 - 2023

The Fingal County Council Development Plan addresses Architectural Conservation Areas, historic areas and Protected Structures, and recognises the statutory protection afforded to all Records of Monuments and Places (RMP) and all archaeological heritage sites under the National Monuments Legislation (1930-2004), and the development plan lists a number of aims and objectives in relation to archaeological and architectural heritage.

- Objective CH20: Ensure that any development, modification, alteration, or extension affecting a Protected Structure and/or its setting is sensitively sited and designed, is compatible with the special character, and is appropriate in terms of the proposed scale, mass, height, density, layout, materials, impact on architectural or historic features, and junction with the existing Protected Structure.
- Objective CH25: Ensure that proposals for large scale developments and infrastructure projects consider the impacts on the architectural heritage and seek to avoid them. The extent, route, services and signage for such projects should be sited at a distance from Protected Structures, outside the boundaries of historic designed landscapes, and not interrupt specifically designed vistas. Where this is not possible the visual impact must be minimised through appropriate mitigation measures such as high quality design and/or use of screen planting.
- Objective CH32: Avoid the removal of structures and distinctive elements (such as boundary treatments, street furniture, paving and landscaping) that positively contribute to the character of an architectural conservation area.

Each of these objectives has been considered and the Proposed Development has been designed in such a way as to fulfil the objectives.

11.4.4.1 Architecture

Protection is also recognised to areas of cohesive architectural value and these areas can be classified as Architectural Conservation Areas (ACA), and any works that may have a material effect on the special character of an ACA needs planning permission. An area can be designated an ACA often because it contains a group of historic buildings or has a distinctive street size/plot size that contributes to the distinct character of a town or village. In the Fingal area, there are thirty-two Architectural Conservation Area Locations, as follows:

- Abbeville Demesne
- Ardgillan Demesne
- Balbriggan – Nos. 14 to 28 Hampton Street (even numbers only)
- Balbriggan Historic Town Core
- Baldoyle
- Balrothery
- Balscadden
- Castleknock
- Donabate – Newbridge House Demesne & The Square
- Garristown
- Howth Castle Demesne
- Howth Historic Core
- Howth – Nashville Road & Park
- Howth – St. Nessan's Terrace, St. Peter's Terrace, Seaview Terrace & The Haggard
- Lusk
- Luttrellstown Demesne
- Malahide Castle Demesne
- Malahide Historic Core
- Malahide – The Bawn, Parnell Cottages & St. Sylvesters Villas
- Malahide – The Rise
- Milverton Demesne
- Naul
- Portrane – Grey Square
- Portrane – Red Square
- Portrane – St. Ita's Hospital complex
- Old Portmarnock (Drimnigh Road)
- Oldtown
- Rowlestown
- Skerries
- Sutton – Sutton Cross & Environs
- Sutton – No. 20a to 26 Strand Road
- Sutton – Martello Terrace, Strand Road

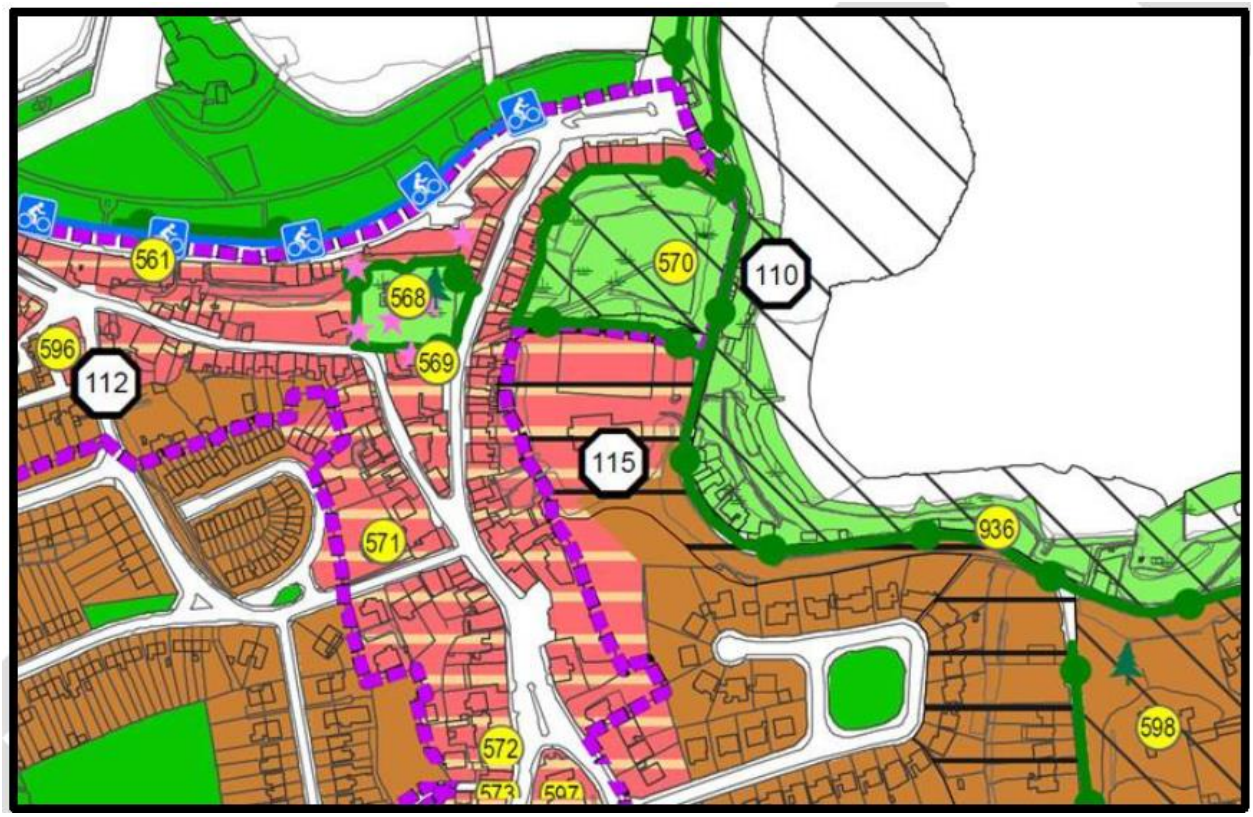


Figure 11-2 Detail of Fingal Development Plan 2017-2023 showing Howth

Figure 11-2 shoes a map extract from the Fingal Development Plan 2017-2023. The broken purple line depicts the Howth Historic Core architectural conservation area (ACA). The Baily Court Hotel is within the boundary of this ACA, while the ACA boundary runs along western and northern boundaries of the application site.

An Architectural Heritage Impact Assessment was prepared by Rob Goodbody of Historic Building Consultants on behalf of Balscadden GP3 Limited in respect of the Proposed Development. The Proposed Development seeks to remove a derelict hotel building and to provide four new buildings on a site that lies adjacent to a prominent Martello tower and to an architectural conservation area (ACA), while the front part of the application site lies within the ACA. This assessment concluded that the Proposed Development has been designed in such a way that ensures that there is minimal impact on the Martello Tower, the ACA and other elements of architectural heritage in the vicinity. The full Architectural Heritage Impact Assessment can be found in Appendix H.

11.4.4.2 Protected Structures

A protected structure is a structure or part of a structure that a planning authority considers to be a special interest from an "*architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest*".

In certain circumstances, some archaeological structures may also be considered as architectural heritage, meaning they may therefore appear on both the Record of Monuments and Places (RMP) and the Record of Protected Structures (RPS). These structures are protected by both the National Monuments Acts and the Planning and Development Acts 2000 (as amended).

According to Appendix 2 of the Fingal County Council Development Plan 2017-2023. The Baily Court Hotel is not included and hence is not a protected structure. There are no records of Protected Structures within the Site of the Proposed Development.

11.4.4.3 Inventory of Architectural Heritage

The National Inventory of Architectural Heritage (NIAH) was reviewed in order to identify any buildings/features of architectural significance within 2km of the Proposed Development Site. The NIAH Registration Number refers to the registration number on the National Inventory of Architectural Heritage building survey of Fingal. The NIAH is a section within the Department of the Arts Heritage and the Gaeltacht, and the work involves identifying and recording the architectural heritage of Ireland from 1700 to present day Ireland. It is important to note that there may be structures in the NIAH survey that are also included in the RPS, however not all of them are. There are 61 buildings of architectural significance located within 2km of the Proposed Development Site. Information from the National Inventory of Architectural Heritage on this building and its features are given below.

Reg. No. 11359019

Townland: Howth

Date: 1780 - 1820

Original Use: House

Categories of Special Interest: Architectural, Artistic

Description: Semi-detached three-bay three-storey double-pile former house, c.1800. Two-bay three-storey extension, c.1850, to south-east corner. Projecting bow to ground floor, c.1990. Two-bay two-storey extension to south-west corner, c.1995. was in use as hotel. ROOF: Double-pitched behind parapet; double-pile; replacement fibre-cement slate, c.1990; concrete ridge tiles; nap rendered chimney stacks; clay pots; concrete coping; upvc rainwater goods; flat-roof to bowed projection. WALLS: Nap rendered; painted. OPENINGS: Square-headed window openings -tripartite to upper floors; concrete sills; original 2/2 and 6/6 timber sash windows to first floor; replacement upvc casement windows, c.1990, to second floor; replacement timber casement windows, c.1990: rope moulded pillars with cast-iron dressings; tripartite door opening to right; round-headed door opening to centre; square-headed flanking door openings; glazed timber panelled doors; fanlight.

Distance: This is located on the Proposed Development Site.

Impact: To facilitate the Proposed Development reference 11359019 (the former Baily Court Hotel) will be demolished. The general lack of surviving earlier elements within the building and the very poor condition of the building would have been contributory factors in the decision by Fingal County Council to decide to grant permission for the demolition of the former hotel in 2013 and the decision of an Bord Pleanála to grant permission in the following year. The condition of the building has become considerably worse since that time.

Reg. No. 11359020

Townland: Howth

Date: 1920 - 1940

Original Use: Library/archive

Categories of Special Interest: Architectural, Social

Description: Detached three-bay single-storey library, c.1930, with gabled central projecting entrance porch. ROOF: Hipped cement tiled roof; cast iron rainwater goods. WALLS: Pebbledash with plaster quoins projecting gabled entrance. OPENINGS: Probably original timber multipaned casements with shared concrete sills. Panelled double doors with over light.

Distance: This is located 0.02km south of the Proposed Development Site.

Impact:

This RMP is also outside the zone of sensitivity caused by the basement excavation works as demonstrated in the Byrne Looby report and the recommendations for the remedial works contained in this report will prevent any potential future slips occurring and therefore the site will not be affected by the Proposed Development. The single-storied Howth library can be seen in Photomontage V3 which was submitted as part of this planning application and is available within Appendix I. The magnitude of visual impact at View V3 is deemed to be Medium-low and of a positive quality (Macroworks, March 2022).

Reg. No. 11359033

Townland: Howth

Date: 1800 - 1810

Original Use: Martello tower

Categories of Special Interest: Architectural, Social

Description: Martello tower, c.1805, on a circular plan with tapered profile, having machicolation above raised entrance. Modern metal steps to first floor. ROOF: Concealed behind parapet. WALLS: Rendered; granite string course and coping to parapet; ashlar granite projection supported by five granite console bracket above entrance. OPENINGS: Square headed; rendered hood mouldings. Metal studded door to first floor. Second door located at ground floor with gibbsian granite surround; metal studded door randomly placed; small square windows.

Distance: This is located 0.05km north of the Proposed Development Site.

Impact: Arising from concerns regarding the potential impact of the earthworks associated with the Proposed Development, an assessment the ground movements on the Martello tower

was completed by Bryne Looby as part of the Geotechnical Report, a copy of this report can be found in Appendix D. The building damage assessment report concluded that based on the predicted ground movements and offset to Martello tower, the tower is outside the zone of sensitivity caused by the basement excavation works.

A vibration monitoring regime will be established along this boundary to ensure the proposed works does not cause slippages. All ground works will involve low-vibration methods of construction as outlined in the Geotechnical Report, the report also provides recommendations for the remedial works in order to prevent any potential future slips occurring (Bryne Looby, 2022).

There is only one viewpoint within the grounds of the Martello tower where there is any reasonable view of both the tower and the application Site and this is from the northern perimeter of the Martello site. This is addressed in the Architectural Heritage Impact Assessment Report, this report provides a photo of the view southwards past the tower and towards the application Site which demonstrates that the tower dominates the view and the Proposed Development is in relatively low in this view. This report concludes that the application Site would not have a significant impact on the character or setting of the Martello tower from within its grounds. The northern section of the Site will be closest to the Martello tower, the difference in levels between Block B and the Martello tower will ensure that the building will be relatively low when seen from the tower, Views V10, V16, V18 and V20 which were submitted as part of the application show the proposed Block B in the context of the tower and demonstrate that the building will not have an adverse effect on its character or setting. The Proposed Development has been designed in order to ensure that there is minimal impact on the Martello tower.

Reg. No. 11359025

Townland: Howth

Date: 1810 – 1830

Original Use: House

Categories of Special Interest: Architectural, Artistic

Description: Semi-detached three-bay two-storey house, c.1820, with single-storey screen wall to south. Square headed timber sash tripartite windows with granite sills. Painted stone Ionic doorcase. ROOF: Double pitched slate; terracotta ridge tiles; red brick chimney stacks; terracotta pots; cast iron rain water goods. WALLS: Rough cast painted with rendered dressings; nap rendered side elevation. OPENINGS: raised and fielded panelled door, timber fanlight. Elliptical headed door opening; sill guard.

Distance: This is located 0.05km west of the Proposed Development Site.

Impact:

This RMP is also outside the zone of sensitivity caused by the basement excavation works as demonstrated in the Byrne Looby report and the recommendations for the remedial works contained in this report will prevent any potential future slips occurring and therefore the site will not be affected by the Proposed Development. The Landscape and Visual Assessment (LVIA) selected 22 Viewshed Reference Points and assessed the visual impacts at each. Each of the selected viewpoints is aided by photomontages of the Proposed Development. The LVIA has concluded that overall, the Proposed Development will not result in any significant landscape/townscape or visual impacts (Macroworks, March 2022). Based on the conclusion of the LVIA, the Proposed Development will not result in any significant visual impact on this RMP.

Reg. No. 11359013

Townland: Howth

Date: 1800 - 1840

Original Use: House

Categories of Special Interest: Architectural, Artistic

Description: Pair of terraced double-pile three-bay two-storey houses, c.1820, with returns to rear. Recessed garage extension, c.1930, to end-of-terrace house. ROOF: M profile slate roof with terracotta ridge tiles; rendered chimney stacks; cast iron hopper and downpipe. WALLS: Cement rendered. OPENINGS: Flat headed window openings with rendered reveals; granite sills and timber sashes. Original stone doorcase with depressed arch opening, engaged ionic columns original leaded fanlight and probably original timber panelled door.

Distance: This is located 0.04km west of the Proposed Development Site.

Impact:

This RMP is also outside the zone of sensitivity caused by the basement excavation works as demonstrated in the Byrne Looby report and the recommendations for the remedial works contained in this report will prevent any potential future slips occurring and therefore the site will not be affected by the Proposed Development. The Landscape and Visual Assessment (LVIA) selected 22 Viewshed Reference Points and assessed the visual impacts at each. Each of the selected viewpoints is aided by photomontages of the Proposed Development. The LVIA has concluded that overall, the Proposed Development will not result in any significant landscape/townscape or visual impacts (Macroworks, March 2022). Based on the conclusion of the LVIA, the Proposed Development will not result in any significant visual impact on this RMP.

Reg. No. 11359012

Townland: Howth

Date: 1840 - 1860

Original Use: House

Categories of Special Interest: Architectural, Artistic

Description: Terraced three-bay two-storey house, c.1850, retaining original fenestration. ROOF: M Profile; concrete asbestos tiles to front span; terracotta ridge tiles; cement rendered chimney stack; terracotta pots. WALLS: Rendered front elevation with quoin detailing to one side. OPENINGS: Square headed moulded rendered arch architraves; granite cills; timber 2/2 sash windows. Recessed timber panelled and glazed door; depressed headed opening; fluted pilasters; tiled floor within porch.

Distance: This is located 0.03km west of the Proposed Development Site.

Impact:

This RMP is also outside the zone of sensitivity caused by the basement excavation works as demonstrated in the Byrne Looby report and the recommendations for the remedial works contained in this report will prevent any potential future slips occurring and therefore the site will not be affected by the Proposed Development. The Landscape and Visual Assessment (LVIA) selected 22 Viewshed Reference Points and assessed the visual impacts at each. Each of the selected viewpoints is aided by photomontages of the Proposed Development. The LVIA has concluded that overall, the Proposed Development will not result in any significant landscape/townscape or visual impacts (Macroworks, March 2022). Based on the conclusion of the LVIA, the Proposed Development will not result in any significant visual impact on this RMP.

Reg. No. 11359014

Townland: Howth

Date: 1840 – 1860

Original Use: House

Categories of Special Interest: Artistic, Social

Description: Terraced three-bay two-storey house, c.1850, with wall-mounted cast-iron post box, c.1900 and timber shopfront, c.1910. Now also in use as post office. ROOF: Double pitched slate and asbestos tile roof with terracotta ridge tiles; cement rendered chimney stack with terracotta pots. WALLS: Cement rendered; original timber shopfront with replacement facia. OPENINGS: Timber sash and aluminium windows. Timber glazed door. INTERIOR: Modern post office to ground floor.

Distance: This is located 0.07km west of the Proposed Development Site.

Impact:

This RMP is also outside the zone of sensitivity caused by the basement excavation works as demonstrated in the Byrne Looby report and the recommendations for the remedial works contained in this report will prevent any potential future slips occurring and therefore the site will not be affected by the Proposed Development. The Landscape and Visual Assessment (LVIA) selected 22 Viewshed Reference Points and assessed the visual impacts at each. Each of the selected viewpoints is aided by photomontages of the Proposed Development. The LVIA has concluded that overall, the Proposed Development will not result in any significant landscape/townscape or visual impacts (Macroworks, March 2022). Based on the conclusion of the LVIA, the Proposed Development will not result in any significant visual impact on this RMP.

Reg. No. 11359015

Townland: Howth

Date: 1840 - 1860

Original Use: House

Categories of Special Interest: Architectural, Artistic

Description: Pair of semi-detached former houses, built c.1850, comprising three-bay two-storey house to north and two-bay two-storey house with single-storey carriageway arch to south. Now in use as public house. ROOF: M profile asbestos tiled roof hidden behind parapet with four rendered chimney stacks and cast-iron down pipe. WALLS: Rendered with quoins and string course; dentil cornice below parapet wall having projecting coping. OPENINGS: Square headed and segmental arched window openings with moulded plaster surrounds; timber sashes and casements; round headed door surround with fluted pilasters, plain fanlight and double doors.

Distance: This is located 0.1km west of the Proposed Development Site.

Impact:

This RMP is also outside the zone of sensitivity caused by the basement excavation works as demonstrated in the Byrne Looby report and the recommendations for the remedial works contained in this report will prevent any potential future slips occurring and therefore the site will not be affected by the Proposed Development. The Landscape and Visual Assessment (LVIA) selected 22 Viewshed Reference Points and assessed the visual impacts at each. Each of the selected viewpoints is aided by photomontages of the Proposed Development. The LVIA has concluded that overall, the Proposed Development will not result in any significant landscape/townscape or visual impacts (Macroworks, March 2022). Based on the conclusion of the LVIA, the Proposed Development will not result in any significant visual impact on this RMP.

Reg. No. 11359016

Townland: Howth

Date: 1780 - 1820

Original Use: House

Categories of Special Interest: Architectural, Artistic

Description: Detached four-bay two-storey over basement former house, c.1800, with flanking screen walls. Gibbsian door surround approached by steps, with single-storey bay window to left-hand side. Single-bay single-storey return to rear. Partly re-fenestrated, c.1985. Now in use as public house. ROOF: Double-pitched; fibre-cement slate; concrete ridge tiles; nap rendered chimney stack; yellow clay octagonal pots; cast-iron rainwater goods; flat-roof to canted bay window with moulded cornice. WALLS: Nap rendered; nap rendered 'timber frame' dressings. OPENINGS: Square-headed window openings; moulded architraves; concrete sills to ground floor; replacement timber casement windows, c.1985; stone sills to upper floor; original 2/2 timber sash windows; canted bay window to left ground floor; segmental-headed window openings; continuous sill course; replacement timber casement windows, c.1985; round-headed door opening; cut-stone Gibbsian door case; replacement timber panelled door and diamond leaded fanlight, c.1990.

Distance: This is located 0.1km west of the Proposed Development Site.

Impact:

This RMP is also outside the zone of sensitivity caused by the basement excavation works as demonstrated in the Byrne Looby report and the recommendations for the remedial works contained in this report will prevent any potential future slips occurring and therefore the site will not be affected by the Proposed Development. The Landscape and Visual Assessment (LVIA) selected 22 Viewshed Reference Points and assessed the visual impacts at each. Each of the selected viewpoints is aided by photomontages of the Proposed Development. The LVIA has concluded that overall, the Proposed Development will not result in any significant landscape/townscape or visual impacts (Macroworks, March 2022). Based on the conclusion of the LVIA, the Proposed Development will not result in any significant visual impact on this RMP.

Reg. No. 11359010

Townland: Howth

Date: 1000 - 1100

Original Use: Graveyard/cemetery

Categories of Special Interest: Archaeological, Architectural, Artistic, Social

Description: Graveyard, with interments from c.1050 to 1973, surrounding a rubble stone 15th century church. Bounded by castellated granite walls and overlooking harbour.

Distance: This is located 0.1km west of the Proposed Development Site.

Impact:

This RMP is also outside the zone of sensitivity caused by the basement excavation works as demonstrated in the Byrne Looby report and the recommendations for the remedial works contained in this report will prevent any potential future slips occurring and therefore the site will not be affected by the Proposed Development. The Landscape and Visual Assessment (LVIA) selected 22 Viewshed Reference Points and assessed the visual impacts at each. Each of the selected viewpoints is aided by photomontages of the Proposed Development. The LVIA has concluded that overall, the Proposed Development will not result in any significant landscape/townscape or visual impacts (Macroworks, March 2022). Based on the conclusion of the LVIA, the Proposed Development will not result in any significant visual impact on this RMP.

Reg. No. 11359011

Townland: Howth

Date: 1830 – 1850

Original Use: House

Categories of Special Interest: Architectural, Artistic

Description: Terraced three-bay two-storey, c.1840, retaining original fenestration. ROOF: Double pitched fibre cement tiled with two rendered chimneys. WALLS: Cement rendered walls with quoin detailing. OPENINGS: Moulded plaster window surrounds to original timber sash windows. Elliptical arched plaster door surround comprising fluted pilasters; timber panelled door.

Distance: This is located 0.1km north of the Proposed Development Site.

Impact:

This RMP is also outside the zone of sensitivity caused by the basement excavation works as demonstrated in the Byrne Looby report and the recommendations for the remedial works contained in this report will prevent any potential future slips occurring and therefore the site will not be affected by the Proposed Development. The Landscape and Visual Assessment (LVIA) selected 22 Viewshed Reference Points and assessed the visual impacts at each. Each of the selected viewpoints is aided by photomontages of the Proposed Development. The LVIA has concluded that overall, the Proposed Development will not result in any significant landscape/townscape or visual impacts (Macroworks, March 2022). Based on the conclusion of the LVIA, the Proposed Development will not result in any significant visual impact on this RMP.

Reg. No. 11359017

Townland: Howth

Date: 1800 - 1840

Original Use: Church/chapel

Categories of Special Interest: Architectural, Artistic, Social

Description: Detached three-bay two-storey over basement former Roman Catholic church, c.1820, with pedimented central bay having a single-storey projecting porch, and flanked by recessed lean-to bays. Single-bay lean-to extension to west gable. Now in use as offices. Graveyard to north. ROOF: Double pitched slate roof; mono-pitched slate roofs to side bays. WALLS: Rendered with granite detailing including Greek revival motifs. OPENINGS: Central projecting granite porch with replacement timber door side entrances having granite surrounds.

Distance: This is located 0.1km west of the Proposed Development Site.

Impact:

This RMP is also outside the zone of sensitivity caused by the basement excavation works as demonstrated in the Byrne Looby report and the recommendations for the remedial works contained in this report will prevent any potential future slips occurring and therefore the site will not be affected by the Proposed Development. The Landscape and Visual Assessment (LVIA) selected 22 Viewshed Reference Points and assessed the visual impacts at each. Each of the selected viewpoints is aided by photomontages of the Proposed Development. The LVIA has concluded that overall, the Proposed Development will not result in any significant landscape/townscape or visual impacts (Macroworks, March 2022). Based on the conclusion of the LVIA, the Proposed Development will not result in any significant visual impact on this RMP.

Reg. No. 11359018

Townland: Howth

Date: 1800 - 1860

Original Use: Bridge

Categories of Special Interest: Architectural, Social

Description: Limestone and yellow brick belfry, c.1830, covered with ivy, and abutting boundary wall.

Distance: This is located 0.1km west of the Proposed Development Site.

Impact:

This RMP is also outside the zone of sensitivity caused by the basement excavation works as demonstrated in the Byrne Looby report and the recommendations for the remedial works contained in this report will prevent any potential future slips occurring and therefore the site will not be affected by the Proposed Development. The Landscape and Visual Assessment (LVIA) selected 22 Viewshed Reference Points and assessed the visual impacts at each. Each of the selected viewpoints is aided by photomontages of the Proposed Development. The LVIA has concluded that overall, the Proposed Development will not result in any significant landscape/townscape or visual impacts (Macroworks, March 2022). Based on the conclusion of the LVIA, the Proposed Development will not result in any significant visual impact on this RMP.

Reg. No. 11359021

Townland: Howth

Date: 1910 - 1920

Original Use: School

Categories of Special Interest: Archaeological, Social

Description: Detached three-bay single-storey school, c.1915, with projecting gable-fronted end bays and recessed entrance bay to north gable. ROOF: Double pitched roof with terracotta ridge tiles, cement rendered chimney stacks with terracotta pots. WALLS: Smooth rendered with recessed panel above windows in end bays. OPENINGS: Timber casements and sashes, concrete sills; tongue and groove doors.

Distance: This is located 0.1km southwest of the Proposed Development Site.

Impact:

This RMP is also outside the zone of sensitivity caused by the basement excavation works as demonstrated in the Byrne Looby report and the recommendations for the remedial works contained in this report will prevent any potential future slips occurring and therefore the site

will not be affected by the Proposed Development. The Landscape and Visual Assessment (LVIA) selected 22 Viewshed Reference Points and assessed the visual impacts at each. Each of the selected viewpoints is aided by photomontages of the Proposed Development. The LVIA has concluded that overall, the Proposed Development will not result in any significant landscape/townscape or visual impacts (Macroworks, March 2022). Based on the conclusion of the LVIA, the Proposed Development will not result in any significant visual impact on this RMP.

Reg. No. 11358058

Townland: Howth

Date: 1500 - 1550

Original Use: Castle/fortified house

Categories of Special Interest: Archaeological, Architectural, Artistic, Historical

Description: Rubble stone bawn wall, c.1525, with round headed integral carriageway, gun loops and crow stepped crenellated parapet.

Distance: This is located 0.1km southwest of the Proposed Development Site.

Impact:

This RMP is also outside the zone of sensitivity caused by the basement excavation works as demonstrated in the Byrne Looby report and the recommendations for the remedial works contained in this report will prevent any potential future slips occurring and therefore the site will not be affected by the Proposed Development. The Landscape and Visual Assessment (LVIA) selected 22 Viewshed Reference Points and assessed the visual impacts at each. Each of the selected viewpoints is aided by photomontages of the Proposed Development. The LVIA has concluded that overall, the Proposed Development will not result in any significant landscape/townscape or visual impacts (Macroworks, March 2022). Based on the conclusion of the LVIA, the Proposed Development will not result in any significant visual impact on this RMP.

Reg. No. 11359023

Townland: Howth

Date: 1900 - 1910

Original Use: House

Categories of Special Interest: Architectural, Artistic

Description: Corner-sited end-of-terrace two-bay two-storey gable-fronted red brick Edwardian house, c.1905, with return to rear. Single-bay two-storey extension to return and

replacement timber shopfront inserted to ground floor, c.1990. One of a pair (11359022) ROOF: Gable-fronted; slate; red clay ridge tiles; square rooflight; profiled red brick chimney stack; yellow clay pots; Gable timber eaves; finial; cast-iron rainwater goods. WALLS: Red brick; Flemish bond; bull nosed brick corner pilasters to ground floor with granite dressings; granite quoins to first floor; nap rendered to gable with red brick consoles having 'timber frame' dressings. OPENINGS: Pair of round-headed window openings to first floor having square-headed flanking windows; granite sills; moulded red brick archivolts and cut-stone untels; square-headed to remainder of building; replacement uPVC casement windows, c.1990; timber shopfront, c.1990; square-headed door opening to left side elevation; timber panelled door.

Distance: This is located 0.1km southwest of the Proposed Development Site.

Impact:

This RMP is also outside the zone of sensitivity caused by the basement excavation works as demonstrated in the Byrne Looby report and the recommendations for the remedial works contained in this report will prevent any potential future slips occurring and therefore the site will not be affected by the Proposed Development. The Landscape and Visual Assessment (LVIA) selected 22 Viewshed Reference Points and assessed the visual impacts at each. Each of the selected viewpoints is aided by photomontages of the Proposed Development. The LVIA has concluded that overall, the Proposed Development will not result in any significant landscape/townscape or visual impacts (Macroworks, March 2022). Based on the conclusion of the LVIA, the Proposed Development will not result in any significant visual impact on this RMP.

Reg. No. 11359024

Townland: Howth

Date: 1885 - 1905

Original Use: Church/chapel

Categories of Special Interest: Architectural, Artistic, Social

Description: Detached gable-fronted stone built Roman Catholic church, built 1899. Square profile three-stage tower to north-east corner. Transepts to southern end having entrance porches attached to north elevations, and side-chapels attached to south elevations. Apse to south. Sacristy attached to west side-chapel. ROOF: Double pitched slate; decorative terracotta ridge tiles; cast iron rainwater goods. WALLS: Rockfaced granite; limestone chamfered plinth; gargoyles and early Irish stone crosses to pinnacles. OPENINGS: Round headed stained glass windows to nave and transept with decorative stone hood mouldings. Elaborate tracery rose window. Polished granite columns supporting round headed door opening to entrance. INTERIOR: Carved timber gallery. Polished granite columns. Apse is marble panelled; arched timber ceiling supported by carved stone 'angel' corbels.

Distance: This is located 0.1km south of the Proposed Development Site.

Impact:

This RMP is also outside the zone of sensitivity caused by the basement excavation works as demonstrated in the Byrne Looby report and the recommendations for the remedial works contained in this report will prevent any potential future slips occurring and therefore the site will not be affected by the Proposed Development. The Landscape and Visual Assessment (LVIA) selected 22 Viewshed Reference Points and assessed the visual impacts at each. Each of the selected viewpoints is aided by photomontages of the Proposed Development. The LVIA has concluded that overall, the Proposed Development will not result in any significant landscape/townscape or visual impacts (Macroworks, March 2022). Based on the conclusion of the LVIA, the Proposed Development will not result in any significant visual impact on this RMP.

Reg. No. 11359028

Townland: Howth

Date: 1920 - 1940

Original Use: Hall

Categories of Special Interest: Architectural, Artistic, Technical

Description: Detached three-bay single-storey corrugated-iron hall, c.1930, with projecting entrance porch to north-east gable. Now disused. Single-storey outbuilding to site. ROOF: Gable-fronted; corrugated-iron; iron ridge tiles; decorative timber barge boards; gable-fronted to porch with timber latching to gable. WALLS: Corrugated-iron; painted timber latching to gables. OPENINGS: Square-headed window openings; timber sills; replacement uPVC casement windows, c.1990; pointed-arch door opening; tongue-and-grooved timber panelled door.

Distance: This is located 0.2km south of the Proposed Development Site.

Impact:

This RMP is also outside the zone of sensitivity caused by the basement excavation works as demonstrated in the Byrne Looby report and the recommendations for the remedial works contained in this report will prevent any potential future slips occurring and therefore the site will not be affected by the Proposed Development. The Landscape and Visual Assessment (LVIA) selected 22 Viewshed Reference Points and assessed the visual impacts at each. Each of the selected viewpoints is aided by photomontages of the Proposed Development. The LVIA has concluded that overall, the Proposed Development will not result in any significant landscape/townscape or visual impacts (Macroworks, March 2022). Based on the conclusion of the LVIA, the Proposed Development will not result in any significant visual impact on this RMP.

Reg. No. 11359027

Townland: Howth

Date: 1890 – 1910

Original Use: School

Categories of Special Interest: Architectural, Social

Description: Detached eight-bay single-storey former national school, c.1900, now vacant. ROOF: Double pitched; slate; terracotta ridge tiles; red brick stacks; cast iron rainwater goods; exposed roof timbers. WALLS: Rubble stone and brick; lime render; rendered quoins; inscribed concrete wall mounted plaque. OPENINGS: Square headed concrete sills; rendered quoined reveals; original 6/9 timber casement windows. Two with nine pane fixed over light. Timber tongue and groove panelled doors.

Distance: This is located 0.4km southwest of the Proposed Development Site.

Impact:

This RMP is also outside the zone of sensitivity caused by the basement excavation works as demonstrated in the Byrne Looby report and the recommendations for the remedial works contained in this report will prevent any potential future slips occurring and therefore the site will not be affected by the Proposed Development. The Landscape and Visual Assessment (LVIA) selected 22 Viewshed Reference Points and assessed the visual impacts at each. Each of the selected viewpoints is aided by photomontages of the Proposed Development. The LVIA has concluded that overall, the Proposed Development will not result in any significant landscape/townscape or visual impacts (Macroworks, March 2022). Based on the conclusion of the LVIA, the Proposed Development will not result in any significant visual impact on this RMP.

Reg. No. 11367005

Townland: Howth

Date: 1900 – 1910

Original Use: Post box

Categories of Special Interest: Artistic, Social

Description: Wall-mounted cast-iron post box, c.1905, with raised 'ER' monogram.

Distance: This is located 1.5km south of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development.

Reg. No. 11358025

Townland: Howth Demesne

Date: 1895 – 1905

Original Use: Church/chapel

Categories of Special Interest: Architectural, Artistic, Social

Description: Detached Gothic style Presbyterian church, built 1898, with castellated three-stage tower to north. Transepts to southern end and Tudor style entrance porch to east elevation.

Distance: This is located 1.5km west of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development due to it's distance from the Site.

Reg. No. 11358024

Townland: Howth Demesne

Date: 1895 – 1925

Original Use: Manse

Categories of Special Interest: Architectural, Artistic

Description: Detached three-bay two-storey Tudor Gothic style manse, c.1910. Single-storey projecting porch, flanked by chimney breast to left-hand-side, and bay window with pair of gabled dormers above to right-hand side. Two-bay two-storey return to rear. ROOF: Double-pitched and gable-fronted; terracotta tiles; red clay ridge tiles; red brick chimney stacks; yellow clay pots; timber eaves; cast-iron rainwater goods; flat roof to porch behind battlemented parapet. WALLS: Roughcast; unpainted; limestone quoins; nap rendered courses; terracotta tiles to dormers and to first floor right side elevation. OPENINGS: Square-headed openings; timber casement windows; sandstone mullions to double-height bay window; ogee-headed fixed leaded windows; sandstone quoined architrave to door opening; tongue-and-groove timber panelled door; wrought iron hinges.

Distance: This is located 1.5km west of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development due to its distance from the Site.

Reg. No. 11358022

Townland: Howth Demesne

Date: 1850 – 1870

Original Use: House

Categories of Special Interest: Architectural, Artistic

Description: Detached three-bay single-storey house, c.1860, with bipartite window openings to right side elevation. Extended to front and rear, c.1960, comprising flat-roofed projecting porch and single-bay single-storey flat-roofed extension. Re-roofed, c.1990. Single-bay single-storey outbuilding to rear attached to rear. Possibly a former railway gate keeper's cottage that may date to 1846-1847 when line opened. ROOF: Double-pitched artificial slate c.1990; concrete ridge tiles; concrete coping; nap rendered stacks; timber eaves; upvc rainwater goods; flat-roof to porch and return; WALLS: Nap rendered; painted some areas ruled and lined. OPENINGS: Square-headed; stone sills; 3/3 timber sash window; bipartite window openings to right side elevation with 1/1 timber sash windows; timber fixed-pane and casement windows to extensions; tongue-and-groove timber panelled door.

Distance: This is located 1.5km west of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development due to its distance from the Proposed Development site.

Reg. No. 11358021

Townland: Howth Demesne

Date: 1840 – 1860

Original Use: Hotel

Categories of Special Interest: Architectural

Description: Detached multiple-bay two-storey hotel, c.1850, with three-stage tower having dormer attic. Extended several times to north.

Distance: This is located 1.5km west of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development due to its distance from the Proposed Development site.

Reg. No. 11358027

Townland: Howth Demesne

Date: 1820 – 1850

Original Use: Demesne walls/gates/railings

Categories of Special Interest: Architectural, Artistic

Description: Entrance gateway, c.1835, comprising four Hindu Gothic style limestone ashlar piers with friezes and moulded cappings, flanked by pedestrian gateways. Cast-iron gates and railings. Secondary gateway to rear with cast-iron bollards. WALLS: Limestone ashlar to pedestrian gateways; undulating profiles to piers; moulded capping (broken in parts). OPENINGS: Pointed-arch to pedestrian gateways; cast-iron gates and double gates.

Distance: This is located 1km west of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development due to its distance from the Proposed Development site.

Reg. No. 11358026

Townland: Howth Demesne

Date: 1860 – 1870

Original Use: Church/chapel

Categories of Special Interest: Architectural, Artistic, Social

Description: Detached Gothic style gable-fronted Church of Ireland church, built 1866. Five-bay side elevations to nave, with projecting side aisles. Four-stage tower with spire to north-west corner, and single-bay chancel to east. Hall attached perpendicular to south elevation, c.1990. ROOF: Double pitched with original slates and terracotta ridge tiles. Exposed cast iron gutter and downpipes. WALLS: Rock faced granite laid in random courses with quoin dressed corners and a chamfered plinth. Tower rises to 80ft and is terminated by wrought iron gilt finial. OPENINGS: Pointed circular openings with sandstone surround and stained glass. Pointed profile entrance encasing oak door with decorative iron hinges & door handle. INTERIOR: Nave separated from aisles by a series of pointed arches of red & yellow brick unplastered on polished marble columns with carved capital and moulded bases. There is a stone pulpit of plain design. Stairs leading to organ gallery via tower.

Distance: This is located 0.9km west of the Proposed Development Site.

Impact: This feature will not be affected by the Proposed Development due to its distance from the Proposed Development site .

Reg. No. 11358062

Townland: Howth Demesne

Date: 1725 - 1775

Original Use: Dovecote/pigeon house/aviary

Categories of Special Interest: Architectural, Artistic

Description: Single-bay two-storey rubble stone building, c.1750, on a circular plan, possibly originally a dovecote. Now disused and partly derelict. Attached to rubble stone wall, c.1840, on an L-shaped plan, around a kitchen garden.

Distance: This is located 1km west of the Proposed Development Site.

Impact:

This feature will not be affected by the Proposed Development due to its distance from the Proposed Development site .

Reg. No. 11358060

Townland: Howth Demesne

Date: 1735 - 1740

Original Use: Castle/fortified house

Categories of Special Interest: Archaeological, Architectural, Artistic, Historical

Description: Attached ten-bay single-storey wing with half dormer attic, built 1738, on an L-shaped plan. Three-bay single-storey return with half dormer attic to west, having domed belvedere to apex. Façade and openings remodelled c.1840. Two-bay two-storey return added to west c.1910. Conservatory added to return c.1990.

Distance: This is located 1km west of the Proposed Development Site.

Impact:

This feature will not be affected by the Proposed Development due to its distance from the Proposed Development site.

Reg. No. 11358056

Townland: Howth Demesne

Date: 1905 – 1910

Original Use: Castle/fortified house

Categories of Special Interest: Archaeological, Architectural, Artistic, Historical

Description: Attached three-bay two-storey library block, built 1910 in tower house form, with basement and dormer attic. Square plan corner turrets to south-west and north-east facades. Incorporating fabric of earlier structures, 1738 and c.1840. ROOF: Double-pitched slate set behind crow-stepped crenelated parapet, with cast-iron rainwater goods and roughcast rendered chimney. Ashlar copings and finials. WALLS: Roughcast rendered over rubble stone. OPENINGS: Openings remodelled and refenestrated 1910. Timber sash windows with ashlar lintels.

Distance: This is located 1km west of the Proposed Development Site.

Impact:

This feature will not be affected by the Proposed Development due to its distance from the Proposed Development site.

Reg. No. 11358055

Townland: Howth Demesne

Date: 1905 – 1915

Original Use: Castle/fortified house

Categories of Special Interest: Archaeological, Architectural, Artistic, Historical

Description: Attached three-bay two-storey wing, over basement and with dormer attic, built 1910. Incorporating fabric of earlier structures, 1738 and c.1840. Single-bay two-storey linking bay to south-east. ROOF: Double pitched slate set behind crenellated parapets, with cast-iron rainwater goods. WALLS: Roughcast render over rubble stone construction. OPENINGS: Openings remodelled and refenestrated, c.1910. Timber sash windows set in square headed openings with chamfered limestone reveals. Venetian style open logia to south-east with ashlar limestone columns and voussoirs.

Distance: This is located 1km west of the Proposed Development Site.

Impact:

This feature will not be affected by the Proposed Development due to its distance from the Proposed Development site.

Reg. No. 11354007

Townland: Howth Demesne

Date: 1840 – 1860

Original Use: House

Categories of Special Interest: Architectural, Artistic

Description: Detached five-bay two-storey over basement house, c.1850, with recessed bay to north and recessed central bay having single-storey projecting entrance porch. Limestone entrance gates, derelict gate lodge and farmyard complex to site. ROOF: Hipped asbestos cement roof with nap rendered chimney stacks; clay pots; cast-iron rainwater goods. WALLS: Rough-cast rendered with red brick corbel cornice. OPENINGS: Square headed with nap rendered reveals; granite cills; 1/1 timber sash windows; segmental headed porch opening with brick dressing; timber and glazed door, c.1990, granite steps. INTERIOR: Raised and fielded timber shutters, lugged architraves, raised and fielded timber doors, run moulded cornice ramped dado rail, mahogany staircase with tapered balusters.

Distance: This is located 1km west of the Proposed Development Site.

Impact:

This feature will not be affected by the Proposed Development due to its distance from the Proposed Development site.

Reg. No. 11358054

Townland: Howth Demesne

Date: 1600 – 1700

Original Use: Castle/fortified house

Categories of Special Interest: Archaeological, Architectural, Artistic, Historic

Description: Attached six-bay two-storey over basement late-medieval house, c.1650. Comprising four-bay two-storey central block flanked by single-bay five-storey square plan crenelated turrets. Renovated 1738, with openings remodelled and terrace added. Renovated, 1910, with interior remodelled. ROOF: Double pitched slate set behind crow stepped parapets. WALLS: Roughcast render with moulded string course to top floors of turrets. OPENINGS: Timber sash windows and remodelled window openings, 1738. Timber panelled door set in rusticated cut stone Doric doorcase, 1738. Several window openings remodelled, 1910.

Distance: This is located 1km west of the Proposed Development Site.

Impact:

This feature will not be affected by the Proposed Development due to its distance from the Proposed Development site.

Reg. No. 11358053

Townland: Howth Demesne

Date: 1350 – 1450

Original Use: Castle/fortified house

Categories of Special Interest: Archaeological, Architectural, Artistic, Historical

Description: Attached three-bay four-storey medieval tower house, c.1400, with base batter and crow stepped crenellated parapet. Single-bay five-storey crenelated corner turret on a square plan to southwest. Renovated and openings remodelled, 1738. Re-rendered c.1990. ROOF: Double pitched slate set behind crow-stepped crenellated parapet. WALLS: Roughcast rendered over rubble stone construction. Moulded string course to top floors. OPENINGS: Timber sash windows set in openings remodelled, 1738. Nap rendered surrounds.

Distance: This is located 1km west of the Proposed Development Site.

Impact:

This feature will not be affected by the Proposed Development due to its distance from the Proposed Development site.

Reg. No. 11358057

Townland: Howth Demesne

Date: 1500 – 1550

Original Use: Castle/fortified house

Categories of Special Interest: Archaeological, Architectural, Artistic, Historical

Description: Attached four-bay three-storey medieval tower house with dormer attic, c.1525, with turret attached to north-east. Renovated c.1650. Renovated and openings remodelled, 1738. Renovated with dormer attic added, 1910.

Distance: This is located 1km west of the Proposed Development Site.

Impact:

This feature will not be affected by the Proposed Development due to its distance from the Proposed Development site.

Reg. No. 11358061

Townland: Howth Demesne

Date: 1835 – 1845

Original Use: Stables

Categories of Special Interest: Archaeological, Architectural, Artistic, Historical

Description: Attached eighteen-bay single-storey rubble stone stable range on an L-shaped plan, c.1840, with half dormer attic and integral carriageway arches. Comprising eight-bay range to east with crenelated corner turret, ten-bay range to range with bell tower and crenelated turret.

Distance: This is located 1km west of the Proposed Development Site.

Impact

This feature will not be affected by the Proposed Development due to its distance from the Proposed Development site.

Reg. No. 11358059

Townland: Howth Demesne

Date: 1400 – 1500

Original Use: Castle/fortified house

Categories of Special Interest: Archaeological, Architectural, Artistic, Historical

Description: Attached single-bay three-storey rubble stone gate tower, c.1450, with round-headed integral carriageway to ground floor. Renovated 1738. Now partly derelict.

Distance: This is located 0.9km west of the Proposed Development Site.

Impact:

This feature will not be affected by the Proposed Development due to its distance from the Proposed Development site.

Reg. No. 11358052

Townland: Howth Demesne

Date: 1800 – 1850

Original Use: Castle

Categories of Special Interest: Architectural, Artistic

Description: Attached six-bay two-storey wing, c.1825, with decorative stepped battlemented parapet having corner machicolation to north-east. Renovated 1910 with some openings remodelled to first floor to accommodate use as private chapel. ROOF: Double pitched slate set behind decorative stepped and crenelated parapet. Nap rendered chimneys with red clay pots. Cast-iron rainwater goods. WALLS: Roughcast rendered. OPENINGS: Timber sash windows with stone sills. Three window openings remodelled, 1910, to first floor. Timber panelled doors. INTERIOR: Private chapel inserted to first floor, 1910, to design by Edwin Lutyens.

Distance: This is located 0.9km west of the Proposed Development Site.

Impact:

This feature will not be affected by the Proposed Development due to its distance from the Proposed Development site.

Reg. No. 11358050

Townland: Howth Demesne

Date: 1350 – 1450

Original Use: Castle/fortified house

Categories of Special Interest: Archaeological, Architectural, Artistic, Historical

Description: Attached three-bay three-storey rubble stone medieval tower house, c.1400, with base batter and crenelated parapet. Single-bay five-storey crenelated entrance turret on a square plan to centre. Renovated c.1825. Renovated and refenestrated c.1910. ROOF: Crow-stepped crenelated parapet and chimney. WALLS: Random rubble stone, with some render c.1825. OPENINGS: Square headed window openings with limestone chamfered architraves and replacement fixed timber windows c.1910. Mullioned window, c.1825, to south elevation. Lancet openings to top floor of entrance turret, with replacement diamond leaded windows, c.1910, to lower floors. Limestone doorcase with replacement timber panelled door, c.1910, to entrance turret.

Distance: This is located 0.9km west of the Proposed Development Site.

Impact:

This feature will not be affected by the Proposed Development due to its distance from the Proposed Development site.

Reg. No. 11359009

Townland: Howth

Date: 1890 - 1910

Original Use: House

Categories of Special Interest: Architectural

Description: Detached three-bay three-storey over basement former house, c.1900, with gable-fronted projecting porch and gable-fronted advanced end bay to north. Return to rear. Now in use as Garda station. ROOF: Double pitched slate roof; hipped to one side; pebble dash, and red brick chimney stacks; cast-iron rainwater goods. WALLS: Pebble dash walls with rendered quoins and detailing. OPENINGS: Square and pointed door openings; rendered reveals; limestone sills; segmental headed 6/6 timber sash windows to front, 3/3 and 6/6 to rear.

Distance: This is located 0.3km west of the Proposed Development Site.

Impact:

This feature is also outside the zone of sensitivity caused by the basement excavation works as demonstrated in the Byrne Looby report and the recommendations for the remedial works contained in this report will prevent any potential future slips occurring and therefore the site will not be affected by the Proposed Development. The Landscape and Visual Assessment (LVIA) selected 22 Viewshed Reference Points and assessed the visual impacts at each. Each of the selected viewpoints is aided by photomontages of the Proposed Development. The LVIA has concluded that overall, the Proposed Development will not result in any significant landscape/townscape or visual impacts (Macroworks, March 2022). Based on the conclusion of the LVIA, the Proposed Development will not result in any significant visual impact on this RMP.

Reg. No. 11359008

Townland: Howth

Date: 1850 - 1870

Original Use: Store/warehouse

Categories of Special Interest: Architectural

Description: Terraced three-bay three-storey roughly dressed stone built former warehouse, c.1860. Now in use as restaurant. ROOF: Double pitched slate roof with terracotta ridge tiles and two skylights to front pitch. WALLS: Coursed granite rubble wall with quoins. OPENINGS: Segmental yellow brick arched openings with stone and brick dressings. Timber casement .

Tongue and grove double doors to former carriage arch; entrance to restaurant via modern door.

Distance: This is located 0.3km west of the Proposed Development Site.

Impact:

This feature is also outside the zone of sensitivity caused by the basement excavation works as demonstrated in the Byrne Looby report and the recommendations for the remedial works contained in this report will prevent any potential future slips occurring and therefore the site will not be affected by the Proposed Development. The Landscape and Visual Assessment (LVIA) selected 22 Viewshed Reference Points and assessed the visual impacts at each. Each of the selected viewpoints is aided by photomontages of the Proposed Development. The LVIA has concluded that overall, the Proposed Development will not result in any significant landscape/townscape or visual impacts (Macroworks, March 2022). Based on the conclusion of the LVIA, the Proposed Development will not result in any significant visual impact on this RMP.

Reg. No. 11359006

Townland: Howth

Date: 1840 - 1850

Original Use: Church/chapel

Categories of Special Interest: Architectural

Description: Detached four-bay single-storey former place of worship, c.1845, with projecting entrance porch to west gable. In use as courthouse to 1970, now in use as offices. Notice inside states that the building was originally a place of worship for fishermen. Later used as rent collection office by Lord Howth's agents. By 1870 served as local courthouse. ROOF: Pitched double slate roof; terracotta roof ridge tiles; rendered chimney stack with two terracotta pots. WALLS: Nap rendered; five pilasters containing cross shaped recessed in capitals. OPENINGS: Round headed moulded windows with keystone rendered reveals; round headed 6/6 timber sash windows; INTERIOR: Main Hall with plain plaster walls and ceiling; concrete floor; original timber skirting; balcony at east end with railing donated from church of Assumption, Howth.

Distance: This is located 0.4km west of the Proposed Development Site.

Impact:

This feature is also outside the zone of sensitivity caused by the basement excavation works as demonstrated in the Byrne Looby report and the recommendations for the remedial works contained in this report will prevent any potential future slips occurring and therefore the site will not be affected by the Proposed Development. The Landscape and Visual Assessment (LVIA) selected 22 Viewshed Reference Points and assessed the visual impacts at each. Each

of the selected viewpoints is aided by photomontages of the Proposed Development. The LVIA has concluded that overall, the Proposed Development will not result in any significant landscape/townscape or visual impacts (Macroworks, March 2022). Based on the conclusion of the LVIA, the Proposed Development will not result in any significant visual impact on this RMP.

Reg. No. 11359007

Townland: Howth

Date: 1820 - 1860

Original Use: Hotel

Categories of Special Interest: Architectural

Description: Detached seven-bay two-storey hotel, c.1840, with projecting entrance porch and flanking wings. Conservatory, c.1975, to east wing. Several extensions to rear. ROOF: Hipped in profile slate with rendered chimney stack. WALLS: Rendered and painted with quoins and string course. OPENINGS: Segmental arched openings with upvc windows and two timber sash windows to ground floor.

Distance: This is located 0.5km west of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development. This RMP is also outside the zone of sensitivity caused by the basement excavation works as demonstrated in the Byrne Looby report and the recommendations for the remedial works contained in this report will prevent any potential future slips occurring and therefore the site will not be affected by the Proposed Development. The Landscape and Visual Assessment (LVIA) selected 22 Viewshed Reference Points and assessed the visual impacts at each. Each of the selected viewpoints is aided by photomontages of the Proposed Development. The LVIA has concluded that overall, the Proposed Development will not result in any significant landscape/townscape or visual impacts (Macroworks, March 2022). Based on the conclusion of the LVIA, the Proposed Development will not result in any significant visual impact on this RMP.

Reg. No. 11359005

Townland: Howth

Date: 1820 - 1870

Original Use: Hotel

Categories of Special Interest: Architectural, Artistic

Description: Semi-detached five-bay three-storey hotel, c.1860, with three gabled bays. Four-bay two-storey earlier block, c.1840, to east, with return linking to recessed hotel block. Several extensions to rear. ROOF: Hipped slate roof, pitched double to gable front. WALLS:

Painted brick with plaster and brick detailing. OPENINGS: Segmental arched with timber sash windows.

Distance: This is located 0.5km west of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development due to its distance from the Proposed Development site.

Reg. No. 11359004

Townland: Howth

Date: 1845 - 1865

Original Use: Railway Station

Categories of Special Interest: Architectural, Artistic, Social

Description: Detached eleven-bay two-storey railway station, c.1855, with projecting central entrance bay. Ground floor now in use as public house. Cast iron decorated canopy to platform. ROOF: Hipped slate roof with terracotta ridge tiles; four yellow brick chimneys. WALLS: Rendered and painted with plaster quoins. OPENINGS: Plastered window surrounds with granite sills. Timber casements with lead diamond detailing; replacement timber doors.

Distance: This is located 0.6km west of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development due to its distance from the Proposed Development site.

Reg. No. 11359001

Townland: Howth

Date: 1860 - 1880

Original Use: Station Master’s house

Categories of Special Interest: Architectural, Artistic, Social

Description: Detached three-bay two-storey red brick former station master's house, c.1870, with gablet over central bay. Single-storey return to rear. ROOF: Double pitched roof; corniced red brick chimneys; cast-iron gutters and downpipes; decorative timber barge boards and gable detail to façade. WALLS: Red brick Flemish bond; yellow brick string course and quoins; chamfered yellow brick plinth. OPENINGS: Single round headed; chamfered granite cills, brick reveals, uPVC sash window to first floor, two segmental headed uPVC sashes to ground floor, timber panelled door with brick surround and plain fanlight.

Distance: This is located 0.6km west of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development due to its distance from the Proposed Development site.

Reg. No. 11359002

Townland: Howth

Date: 1850 - 1890

Original Use: Bridge

Categories of Special Interest: Architectural, Technical

Description: Single-arch bridge, c.1870, built of snecked limestone with red brick arch and yellow brick string course.

Distance: This is located 0.6km west of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development due to its distance from the Proposed Development site.

Reg. No. 11359040

Townland: Howth

Date: 1880 - 1930

Original Use: Boat turning station

Categories of Special Interest: Technical

Description: Boat turning station, c.1910, with cast-iron tracks.

Distance: This is located 0.6km northwest of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development due to its distance from the Proposed Development site.

Reg. No. 11359039

Townland: Howth

Date: 1860 - 1880

Original Use: House

Categories of Special Interest: Architectural

Description: Detached gable-fronted three-bay two-storey house, c.1870. ROOF: Double pitched corrugated ion; rendered chimney stack with yellow clay pot. WALLS: Nap rendered plinth and façade with rendered quoins; rough cast rendered and timber latticed gable end; nap rendered side elevations. OPENINGS: Segmental headed openings; decorative plastered surrounds with keystone; aluminium casement windows; tongue and grooved timber panelled door to ground floor with over light above.

Distance: This is located 0.6km northwest of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development due to its distance from the Proposed Development site.

Reg. No. 11359038

Townland: Howth

Date: 1840 - 1860

Original Use: Church/chapel

Categories of Special Interest: Architectural, Historical, Social

Description: Detached five-bay roughly dressed stone built former church, c.1850, with polychromatic brick dressings. Now in use as offices. Two-bay two-storey gable-fronted warehouse attached to north-east gable. ROOF: T-plan double pitched concrete tiled roof with granite coping to gables. WALLS: Coursed granite; single red brick string course; polychrome brick detailing; granite quoining. OPENINGS: Four pointed arched windows with polychrome attic; brick openings; granite sills with uPVC casements windows; southern gable contains trefoil granite window; door has pointed arch with polychrome brick detailing; original timber tongue and groove two leaf door.

Distance: This is located 0.6km northwest of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development due to its distance from the Proposed Development site.

Reg. No. 11359037

Townland: Howth

Date: 1860 - 1880

Original Use: Boathouse

Categories of Special Interest: Architectural, Historical, Social

Description: Detached five-bay roughly dressed stone built former church, c.1850, with polychromatic brick dressings. Now in use as offices. Two-bay two-storey gable-fronted warehouse attached to north-east gable. ROOF: T-plan double pitched concrete tiled roof with granite coping to gables. WALLS: Coursed granite; single red brick string course; polychrome brick detailing; granite quoining. OPENINGS: Four pointed arched windows with polychrome attic; brick openings; granite sills with uPVC casements windows; southern gable contains trefoil granite window; door has pointed arch with polychrome brick detailing; original timber tongue and groove two leaf door.

Distance: This is located 0.6km northwest of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development due to its distance from the Proposed Development site.

Reg. No. 11359044

Townland: Howth

Date: 1860 - 1880

Original Use: Boathouse

Categories of Special Interest: Architectural

Description: Single-bay double-height ashlar granite boathouse c.1870. Ashlar granite steps to platform over entrance door.

Distance: This is located 0.6km northwest of the Proposed Development Site.

Impact:

This site will not be affected by the Proposed Development due to its distance from the Proposed Development site.

Reg. No. 11359036

Townland: Howth

Date: 1860 - 1880

Original Use: Building misc

Categories of Special Interest: Architectural

Description: Two-bay two-storey granite and rendered harbour building, c.1870, with canted bay window to first floor. ROOF: Double slate roof with two red brick chimneys; cast iron downpipe. WALLS: Granite ashlar to ground floor, rough cast rendered above. OPENINGS: Square and depressed headed openings; granite reveals to ground floor; rendered to first, 2/2 timber sash window and bay window to first floor, partially boarded up. Two doors to ground floor with granite keystones to openings having timber panelled doors within.

Distance: This is located 0.6km northwest of the Proposed Development Site.

Impact:

This site will not be affected by the Proposed Development due to its distance from the Proposed Development site.

Reg. No. 11359035

Townland: Howth

Date: 1870 - 1890

Original Use: Building misc

Categories of Special Interest: Architectural, Artistic

Description: Detached five-bay two-storey former Harbour Masters house, c.1880, with breakfront end bays and pediment over central breakfront entrance bay. Single-bay two-storey extension, c.1970, to north-east. Now in use as clubhouse. ROOF: Roof hidden behind granite parapet wall; two tall, rendered chimney stacks with cornices; retaining terracotta pots. WALLS: Granite ground floor with vermiculated granite pilasters; nap rendered first floor with plain rendered pediment; rendered side elevation. OPENINGS: Square headed; granite reveals to ground floors; rendered to first floor; granite sills; 6/6 and 1/1 timber sashes; three doors; central door with granite surround; timber panelled doors; side doors with over lights.

Distance: This is located 0.7km northwest of the Proposed Development Site.

Impact:

This site will not be affected by the Proposed Development due to its distance from the Proposed Development site.

Reg. No. 11359034

Townland: Howth

Date: 1815 - 1820

Original Use: Lighthouse

Categories of Special Interest: Architectural, Artistic, Social, Technical

Description: Three-stage ashlar granite lighthouse, built 1817, with cast-iron railings surrounding glass lantern. Two-bay two-storey ashlar granite lighthouse keeper's house attached to south-east, converted to two-storeys in 1856. Converted to unattended electric lighting in 1955. ROOF: Glass & steel lantern, steel railings to observation deck. WALLS: Granite ashlar; granite corbels supporting projecting observation deck. Wall plaque with date inscribed. OPENINGS: Square headed sash windows to lighthouse uPVC sashes to lighthouse keeper's house. Square headed; tongue and grooved timber panelled door; plain over light; Semi-circular granite doorstep.

Distance: This is located 0.7km north of the Proposed Development Site.

Impact:

This site will not be affected by the Proposed Development due to its distance from the Proposed Development site.

Reg. No. 11359041

Townland: Howth

Date: 1800 - 1830

Original Use: Harbour/dock/port

Categories of Special Interest: Architectural, Artistic, Social, Technical

Description: Harbour, 1807 - 1813, comprising East and West piers. Constructed of ashlar granite and rubble stone, having ashlar granite walls and sea walls. Granite mainly from Dalkey Quarry. Lighthouse to East pier. Former Lifeboat station, boathouse, boat turning station and warehouse buildings to West pier. East Pier started 1807 under Captain George Taylor. In 1809 he was succeeded by John Rennie. In 1810 West Pier started under John Rennie and substantially completed by 1813.

Distance: This is located 0.5km north of the Proposed Development Site.

Impact:

This site will not be affected by the Proposed Development due to its distance from the Proposed Development site.

Reg. No. 11359029

Townland: Howth

Date: 1860 - 1880

Original Use: Gate lodge

Categories of Special Interest: Architectural, Artistic

Description: Detached two-bay single-storey red brick gate lodge, c.1870, with bay-window and recessed entrance bay. Set adjacent to pair of red brick and limestone gate piers with cast-iron gate. ROOF: Hipped; slate; terracotta ridge tiles; ornate brick chimney with clay pots. WALLS: Hard red brick; limestone plinth course; moulded brick. Decorative polychrome tile to side wall. OPENINGS: Segmental headed; moulded brick reveals; stone sills; timber sash windows; timber panelled door.

Distance: This is located 0.3km southeast of the Proposed Development Site.

Impact:

This feature is also outside the zone of sensitivity caused by the basement excavation works as demonstrated in the Byrne Looby report and the recommendations for the remedial works contained in this report will prevent any potential future slips occurring and therefore the site will not be affected by the Proposed Development. The Landscape and Visual Assessment (LVIA) selected 22 Viewshed Reference Points and assessed the visual impacts at each. Each of the selected viewpoints is aided by photomontages of the Proposed Development. The LVIA has concluded that overall, the Proposed Development will not result in any significant landscape/townscape or visual impacts (Macroworks, March 2022). Based on the conclusion of the LVIA, the Proposed Development will not result in any significant visual impact on this RMP.

Reg. No. 11359030

Townland: Howth

Date: 1860 - 1880

Original Use: House

Categories of Special Interest: Architectural, Artistic

Description: Detached three-bay two-storey red brick house, c.1870, on an irregular plan with a central canted bay. Retaining original fenestration. Single-storey brick outbuildings to east. ROOF: Complex roof plan with natural slate; wrought iron weathervane; cast-iron rainwater goods. WALLS: Red brick Flemish bond with moulded brick and carved limestone detail polychrome attic; tiled detail; modern conservatory to south face. OPENINGS: Canted bay windows; original timber sashes; retained single, di-partite, tri-partite round segmental, square

headed openings with stopped chamfered or bullnosed brick reveals; stone sills, 1/1 timber sash windows, timber panelled entrance door.

Distance: This is located 0.3km southeast of the Proposed Development Site.

Impact:

This feature is also outside the zone of sensitivity caused by the basement excavation works as demonstrated in the Byrne Looby report and the recommendations for the remedial works contained in this report will prevent any potential future slips occurring and therefore the site will not be affected by the Proposed Development. The Landscape and Visual Assessment (LVIA) selected 22 Viewshed Reference Points and assessed the visual impacts at each. Each of the selected viewpoints is aided by photomontages of the Proposed Development. The LVIA has concluded that overall, the Proposed Development will not result in any significant landscape/townscape or visual impacts (Macroworks, March 2022). Based on the conclusion of the LVIA, the Proposed Development will not result in any significant visual impact on this RMP.

Reg. No. 11359022

Townland: Howth

Date: 1890 - 1910

Original Use: House

Categories of Special Interest: Architectural, Artistic

Description: Terraced two-bay two-storey gable-fronted red brick Edwardian house, c.1905, with return to rear. Now also in use as retail outlet, with replacement timber shopfront inserted to ground floor. One of a pair (11359023) ROOF: Double pitched gable fronted roof; slate; clay ridge tiles; cast-iron water goods; timber finnial at apex; tall red brick chimney stacks. WALLS: Red brick, Flemish bond, shop flanked by pilasters with rock-faced granite bases and carved capitals. Granite coping, cill course and lintels; nap rendered to gable with red brick consoles having 'timber frame' dressings. OPENINGS: First floor contains two semi-circular headed windows with moulded brick surrounds flanked by two small square headed window, all four windows share common rock-faced granite cill course and broken granite lintels; uPVC windows.

Distance: This is located 0.3km southeast of the Proposed Development Site.

Impact:

This feature is also outside the zone of sensitivity caused by the basement excavation works as demonstrated in the Byrne Looby report and the recommendations for the remedial works contained in this report will prevent any potential future slips occurring and therefore the site will not be affected by the Proposed Development. The Landscape and Visual Assessment (LVIA) selected 22 Viewshed Reference Points and assessed the visual impacts at each. Each

of the selected viewpoints is aided by photomontages of the Proposed Development. The LVIA has concluded that overall, the Proposed Development will not result in any significant landscape/townscape or visual impacts (Macroworks, March 2022). Based on the conclusion of the LVIA, the Proposed Development will not result in any significant visual impact on this RMP.

Reg. No. 11359031

Townland: Howth

Date: 1880 - 1900

Original Use: House

Categories of Special Interest: Architectural, Artistic

Description: Pair of semi-detached four-bay two-storey houses, c.1890, with gabled central bays and gabled advanced end bays. Single-bay single-storey flat-roofed recessed entrance bays to sides. Single-bay two-storey returns to rear. ROOF: Hipped and gable-fronted natural slate; decorative iron ridge tiles; nap rendered chimney stacks; octagonal yellow clay pots; square rooflights; timber eaves; cast-iron rainwater goods; flat-roofs to recessed entrance bays. WALLS: Nap rendered; unpainted; raised nap rendered quoins to corners; decorative timber frames to gable fronts. OPENINGS: Square-headed window openings; concrete sills; 1/1 timber sash windows; round-headed door openings; timber panelled doors; over lights.

Distance: This is located 0.4km southeast of the Proposed Development Site.

Impact:

This feature is also outside the zone of sensitivity caused by the basement excavation works as demonstrated in the Byrne Looby report and the recommendations for the remedial works contained in this report will prevent any potential future slips occurring and therefore the site will not be affected by the Proposed Development. The Landscape and Visual Assessment (LVIA) selected 22 Viewshed Reference Points and assessed the visual impacts at each. Each of the selected viewpoints is aided by photomontages of the Proposed Development. The LVIA has concluded that overall, the Proposed Development will not result in any significant landscape/townscape or visual impacts (Macroworks, March 2022). Based on the conclusion of the LVIA, the Proposed Development will not result in any significant visual impact on this RMP.

Reg. No. 11359032

Townland: Howth

Date: 1870 - 1890

Original Use: House

Categories of Special Interest: Architectural, Artistic

Description: Terrace of six three-bay two-storey houses, c.1880, with gabled projecting end bays, having recessed central entrance porches, flanked by bay windows. ROOF: Double pitched slate roofs with terracotta ridge tiles; red brick chimneys; retaining terracotta chimney pots; exposed gutters; decorative timber barge boards with finials to end bays. WALLS: Cement rendered with render quoins to party walls; small single storey rendered scullery returns. OPENINGS: Round and square headed windows - most rendered reveals, stone sills; some original 1/1 timber sashes; others with casement uPVC; coloured glass to stair hall; door surrounds having fluted pilasters and moulded key stone; timber panelled, and glazed doors flanked by sidelights and over lights above; recessed porches to mid terrace houses with timber panelled and glazed doors flanked by sidelights and over lights above.

Distance: This is located 0.3km southeast of the Proposed Development Site.

Impact:

This feature is also outside the zone of sensitivity caused by the basement excavation works as demonstrated in the Byrne Looby report and the recommendations for the remedial works contained in this report will prevent any potential future slips occurring and therefore the site will not be affected by the Proposed Development. The Landscape and Visual Assessment (LVIA) selected 22 Viewshed Reference Points and assessed the visual impacts at each. Each of the selected viewpoints is aided by photomontages of the Proposed Development. The LVIA has concluded that overall, the Proposed Development will not result in any significant landscape/townscape or visual impacts (Macroworks, March 2022). Based on the conclusion of the LVIA, the Proposed Development will not result in any significant visual impact on this RMP.

Reg. No. 11358033

Townland: Sutton South

Date: 1880 - 1900

Original Use: Graveyard/cemetery

Categories of Special Interest: Archaeological, Architectural, Artistic, Social

Description: Private graveyard of Bellingham family, c.1890, with pair of cut stone grave markers set behind cast-iron railings. Set adjacent to rubble granite single-cell medieval church, with bellcote over gable, now in ruins.

Distance: This is located 2km southwest of the Proposed Development Site.

Impact: This site will not be affected by the Proposed Development due to the distance from the Proposed Development site.

11.5 Potential Impacts of the Proposed Development

11.5.1 Construction Phase

This section assesses the impact of the Proposed Development on the Archaeology and Cultural Heritage of the area during the Construction Phase.

The greatest impact to buried archaeological deposits occurs during large-scale removal of topsoil during the initial construction phase groundworks. However, as the closest recorded RMP site is located 0.05km from the Site, it is predicted that the Construction Phase of the development will not cause any significant impact on the Archaeology and Cultural Heritage of the area as a result of construction and excavation works.

11.5.2 Operational Phase

The Operational Phase of the Proposed Development will not result in any impact on the Archaeology and Cultural Heritage of the area.

11.5.3 Potential Cumulative Impacts

In the context of archaeology and cultural heritage impact, no cumulative effects are anticipated from the Proposed Development.

11.5.4 "Do Nothing" Impact

If the Proposed Development were not to proceed, the existing Site will remain as greenfield / brown field site. Archaeological or cultural remains will not be impacted upon, the same as the scenario for the Proposed Operational Phase of the Development.

11.6 Avoidance, Remedial & Mitigation Measures

11.6.1 Construction Phase

It is possible that excavation works associated with the Proposed Development may have an adverse impact on small or isolated previously unrecorded archaeological features or deposits that have the potential to survive beneath the current ground level. If any archaeological remains are discovered during this project, all works will cease and an expert archaeologist will be brought to Site and all future works will be carried out under the supervision of the archaeologist.

11.6.2 Operational Phase

Since no known archaeological, architectural or cultural heritage remains were found during the desk top survey, it is likely that there are no further mitigation measures required for this development.

11.6.3 "Worst Case" Scenario

In the worst-case scenario where mitigation measures fail for the Proposed Development, it is considered that there is potential that a monument of cultural heritage or importance could be damaged. This is considered highly unlikely and indeterminable.

11.7 Residual Impacts

Residual Impacts are defined *as 'effects that are predicted to remain after all assessments and mitigation measures'*. They are the remaining 'environmental costs' of a project and are the final or intended effects of a development after mitigation measures have been applied to avoid or reduce adverse impacts. Potential residual impacts from the Proposed Development were considered as part of this environmental assessment.

No negative residual impacts in the context of archaeology and cultural heritage are anticipated regarding this Proposed Development.

11.8 Monitoring

No specific monitoring measures are required in relation to archaeology and cultural heritage given the fact that it is not predicted that the Proposed Development will have any adverse impacts on any archaeological features or deposits.

11.9 Interactions

Interactions between Archaeology and Cultural Heritage and other aspects of this Environmental Impact Assessment Report have been considered and are detailed below.

11.9.1 Landscape and Visual:

It is not predicted that any changes in landscape or visual amenities will affect in any way the archaeology and cultural heritage of the area.

11.10 Difficulties Encountered When Compiling

There were no difficulties in compiling the specified information with regard to archaeological, architectural and cultural heritage.

11.11 References

Archaeological Survey Database, available at: http://webgis.archaeology.ie/historicenvironment/

Department of Arts, Heritage, Gaeltacht and the Islands (1999b). Policy and Guidelines on Archaeological Excavation. Dublin. Government Publications Office.

National Monuments of Ireland database available at: http://webgis.archaeology.ie/historicenvironment/

National Inventory of Archaeological Heritage, available at: http://www.buildingsofireland.ie/Surveys/Buildings/

OSI mapping (www.osi.ie)

https://heritagemaps.ie/WebApps/HeritageMaps/index.html

Fingal County Development Plan 2017 - 2023

www.excavations.ie

12 MATERIAL ASSETS

12.1 Waste and Utilities

12.1.1 Introduction

Material assets have been defined as 'Resources that are valued and that are intrinsic to specific places, they may be either human or natural origin and the value may arise for either economic or cultural reasons' (EPA 2002).

This definition was further expanded by the EPA in 2017 in *'Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports'* which states;

'The meaning of this factor is less clear than others. In Directive 2011/92/EU it included architectural and archaeological heritage. Directive 2014/52/EU includes those heritage aspects as components of cultural heritage. Material assets can now be taken to mean built services and infrastructure. Traffic is included because in effect traffic consumes roads infrastructure. Sealing of agricultural land and effects on mining or quarrying potential come under the factors of land and soils.'

The scope and definition of Material Assets within the context of the EIA process has been defined by the EIA Directive as including Architectural and Archaeological Heritage or Cultural Heritage. These elements are assessed separately in Chapter 11 under Archaeology & Cultural Heritage.

This Chapter of the Environmental Impact Assessment Report (EIAR) provides an assessment of the potential impacts of the Proposed Development on Material Assets or physical resources in the environment of human origin including built services and infrastructure comprising:

- Electricity,
- Telecommunications,
- Gas,
- Water Supply Infrastructure,
- Sewerage, and
- Waste Management

Natural resources (water, land, biodiversity, air etc) are addressed in their respective chapters. The Building Life Cycle Report produced by Aramark (2022), and included in this EIAR as Appendix J, provides an assessment of the raw materials to be used as building materials for the Proposed Development. The Sustainability and Energy Report produced by JV Tierney and Co (2022), and included in this EIAR as Appendix B, provides an assessment of the energy strategy and the integrated Water Management and Conservation approach to be adopted by the Proposed Development.

This Chapter was prepared by Enviroguide Senior Environmental Consultant Nikita Coulter. Nikita Coulter has a B.Sc. in Zoology (Hons) from University College Dublin, an M.Sc in Biodiversity and Conservation and a Postgraduate Diploma in Environmental Engineering from Trinity College Dublin, and a NEBOSH accredited International Diploma in Environmental

Risk Management. Nikita has 8 years professional experience as an Environmental Compliance Specialist.

12.1.2 Study Methodology

The methodology adopted for the assessment takes cognisance of the relevant guidelines the following:

- Environmental Protection Agency (EPA) (2017) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EIAR) - DRAFT
- EPA (2003) Advice Notes on Current Practice in the preparation of Environmental Impact Statements.
- EPA (2002) Guidelines on the information to be contained in Environmental Impact Statements.

The scope of work undertaken for the assessment included a desk-based study of material assets, namely built services, utilities and infrastructure associated with the existing Site and the Proposed Development. All phases of the Proposed Development were considered in the assessment of potential impacts on material assets.

Information on built assets in the vicinity of the Site of the Proposed Development was assembled by the following means:

- A desktop review of ESB Networks Utility Maps, Irish Water Utility Plans, Gas Networks Ireland Service plans, EIR E-Maps, Building Life Cycle Report, Sustainability and Energy Report, Engineering Assessment Report, Outline Constructionan Demolition Management Plan.

Assessment of the likely impact of features of the Proposed Development, including surface water runoff, foul water discharge and water usage was carried out in accordance with the following guidelines:

- IS EN752, “Drain and Sewer Systems Outside Buildings”

12.1.2.1 Prediction and Assessment of Impacts

Impacts were predicted and assessed based on the Impact Assessment guidance detailed in the EPA’s 2017 draft document, *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* and by using the definitions detailed in Tables 12-1 to 12-5. Impacts will vary from negative to neutral or positive, and also will vary in significance on the receiving environment. The terminology and methodology used for assessing the impact significance and corresponding effects throughout this chapter are described in Table 12-1 to 12-5. Where significant potential impacts were identified, mitigation measures are proposed to minimise impacts.

Table 12-1: Terminology used to assess the quality potential impacts & effects

Quality of Effects / Impacts	Definition
Negative	A change which reduces the quality of the environment.
Neutral	No effects or effects that are imperceptible, within the normal bounds of variation or within the margin of forecasting error.
Positive	A change that improves the quality of the environment.

Source: EPA, 2017

Table 12-2: Terminology used to assess the significance of potential impacts & effects

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

Source: EPA, 2017

Table 12-3: Terminology used to assess the duration of potential impacts/effects

Duration of Effects / Impacts	Definition
Momentary	Effects lasting from seconds to minutes
Brief	Effects lasting less than a day
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
Reversible	Effects that can be undone, for example through remediation or restoration

Source: EPA, 2017

In line with the EPA Guidelines (EPA, 2017), the terms in table 12-4 are defined when quantifying the extent and context of effects, and the terms in table 12-5 are defined when quantifying the probability of effects.

Table 12-4: Definition of the Extent and Context of Effects

Quality	Definition
Extent	Describe the size of the area, the number of sites, and the proportion of a population affected by an effect.
Context	Describe whether the extent, duration, or frequency will conform or contrast with established (baseline) conditions (is it the biggest, longest effect ever?)

Source: EPA, 2017

Table 12-5: Definition of the Probability of Effects

Quality	Definition
Likely Effects	The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.
Unlikely Effects	The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.

Source: EPA, 2017

Figure 12-1 (extracted from the EPA Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, 2017) shows how the character of the predicted impact in relation to the sensitivity of the receiving environment can determine the significance of the impact.

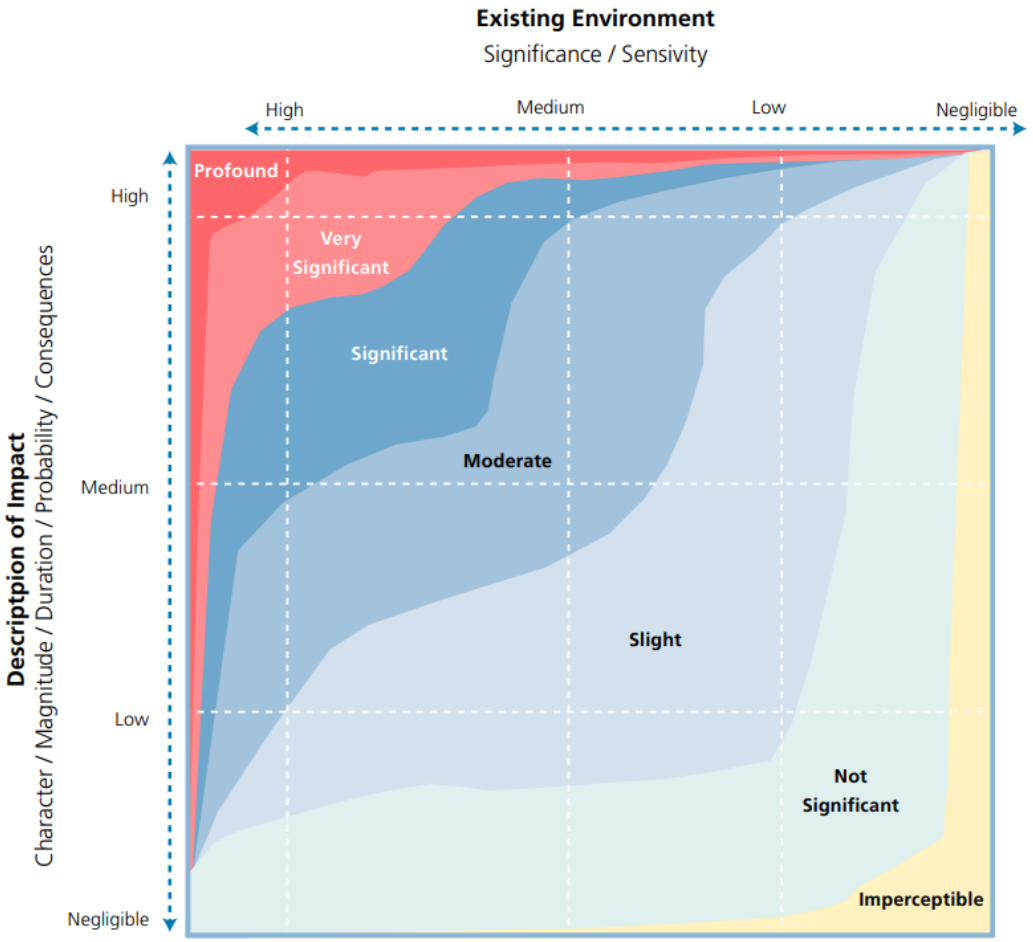


Figure 12-1 Chart showing typical classifications of the significance of impacts (EPA, 2017, Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports)

12.1.3 The Existing and Receiving Environment (Baseline Situation)

12.1.3.1 Site Location

The Site of the Proposed Development occupies an area of 1.43 hectares (ha) and is located within Howth Village. The Site of the Proposed Development is bounded to the east by the Balscadden Road, to the west by residential and commercial buildings fronting onto Main Street and Abbey Street, and to the north by Martello Tower and Tower Hill, and to the south by rear gardens of residential properties.

The Site of the Proposed Development was originally three separate plots which have been consolidated into a single entity under one landowner and are currently comprised of a mosaic of scrub, hardstanding and a derelict hotel and leisure centre

The largest plot of land, on Balscadden Road, south of the Martello tower, was formerly the EDROS centre, comprising a community hall and tennis courts. The Site is undeveloped, overgrown and fenced off. It offers no visual or physical amenity to Howth and provides a poor setting for the Martello Tower. It is a relatively flat site, surrounded on 3 sides by steep embankments. A right-of-way from Abbey Street to Balscadden Road exists along the bottom of the mound but this pathway is isolated from neighbouring properties. South of the

Balscadden site are the 'Cluxton' lands, which are also overgrown with grass and shrubs. The site slopes steeply upwards to the Asgard Park estate on the southern boundary, c. 15m higher than the Balscadden plateau. The third plot of land is the former Baily Court Hotel, which has been closed since circa 2007. The rear of the hotel backs directly onto the Cluxton lands.

Figure 12-2 and Figure 12-3 detail the Site Location and the Site Layout respectively.

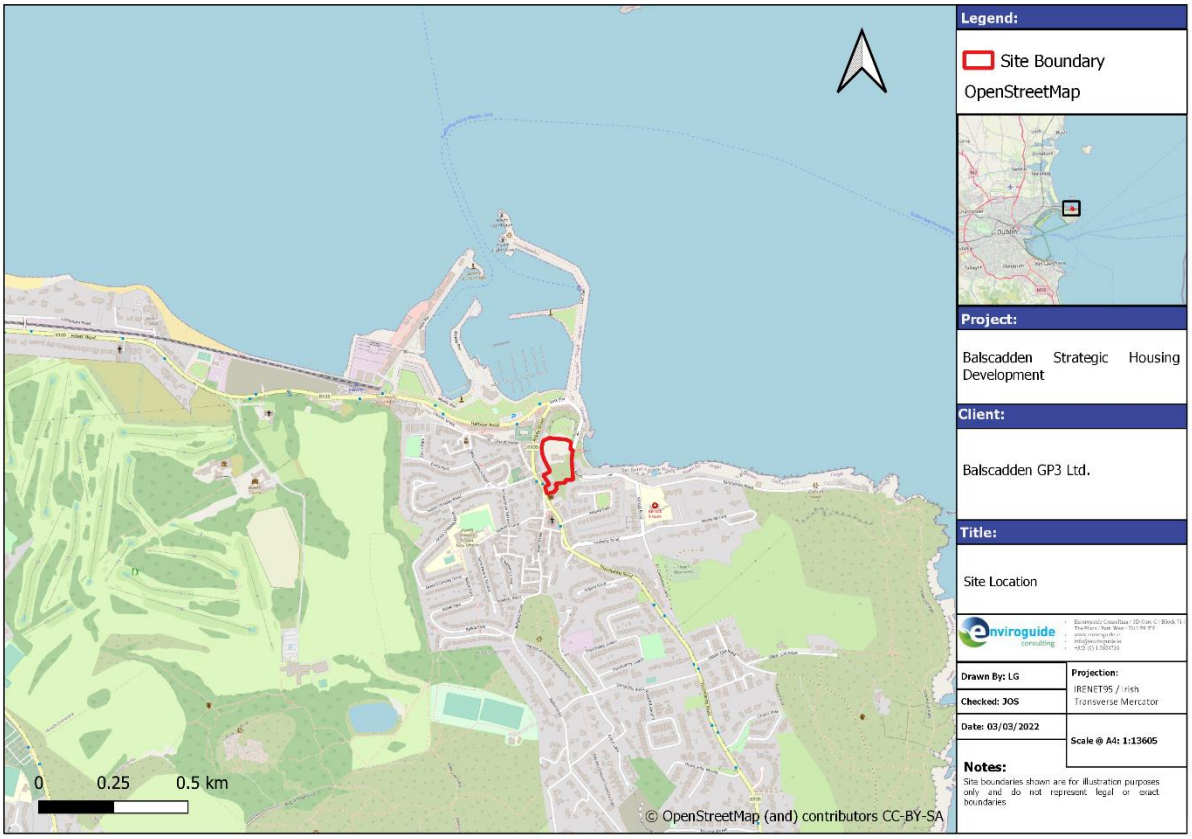


Figure 12-2: Site Location Map

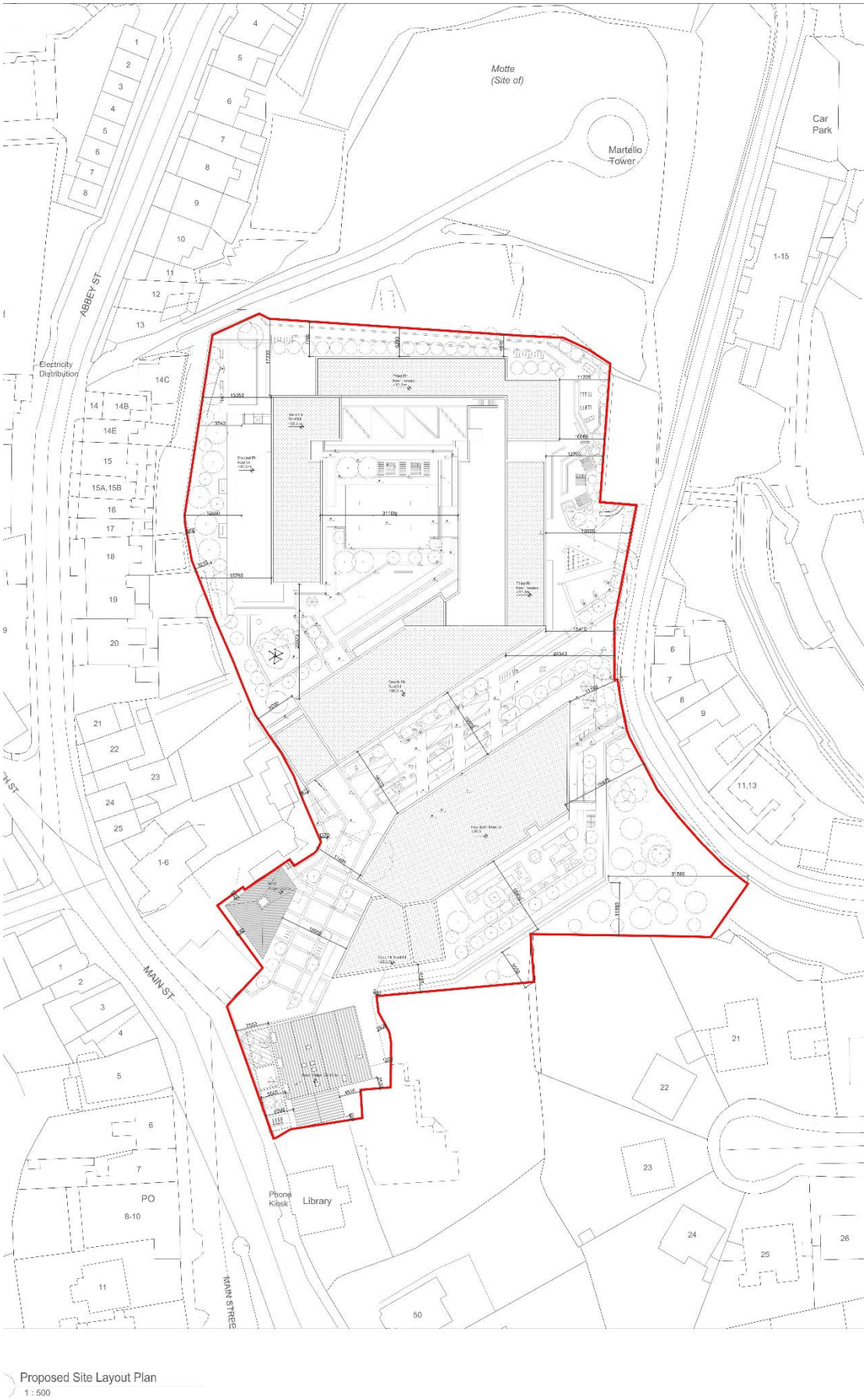


Figure 12-3: Site Layout Plan (Drawing available in Appendix A)

12.1.3.2 Land Use History

Historical mapping and aerial photography available from the Ordnance Survey of Ireland website (OSI, 2021) were reviewed and key observations on-site and off-site are summarised in Table 12-6.

Table 12-6: Historical Land Use

Date	Information Source	Site Description
1837-1842	**OSI map 6inch**	**On-site:** Most of the Site is open land, with buildings noted as Post Office located in the southeastern portion of the Site. **Off-site:** The Martello Tower and Howth Harbour lie to the north of the Site. Abbey Street, to the west of the Site, is lined with terraced houses, and St. Mary's Abbey and a College are located on the opposite side of Abbey Street. Approx. 1km west of the Site lies Howth Castle and estate. Balscadden Bay lies to the east of the Site and to the southeast is open land.
1888-1913	**OSI map 25inch**	**On-site:** The Royal Hotel is now noted at the location of the Post Office on the 1837-1842 map. **Off-site:** Howth Village has become more built up, with many more residential dwellings visible to the south and southeast. The Sutton and Howth Electric Tramway has been built in a loop around Howth and Sutton.
1830-1930	**OSI Cassini map 6inch**	**On-site:** No significant changes **Off-site:** Furth development has taken place around the Site, with "Howth (Urban District)" recorded to the west of the Site, and more residential development to the south and southeast of the Site. Amenities are visible, including schools, libraries. Recreational amenities are noted in the area also, such as Tennis Grounds and bathing areas.
1995	**OSI Aerial photography**	**On-site:** The Edros Leisure Centre is visible on the Site of the Proposed Development. **Off-site:** Howth Harbour and Marina have been further developed and Deer Park Golf Course now covers most of the Howth Castle Estate. Most of the open land between Deer Park and Abbey Street and extending to the southeast has been developed.
2000	**OSI Aerial photography**	**On-site:** No significant changes **Off-site:** No significant changes
2005	**OSI Aerial photography**	**On-site:** No significant changes **Off-site:** No significant changes
2005-2013	**OSI Aerial Photography**	**On-site:** No significant changes **Off-site:** No significant changes
2021	**Google Maps Photography**	**On-site:** No significant changes **Off-site**: No significant changes

12.1.3.3 Immediate Surroundings

The Site occupies an area of approximately 1.43 hectares (ha) and is located within Howth Village. The Martello Tower and Howth Harbour lie to the north of the Site. Abbey Street, to the west of the Site, is lined with terraced houses and St. Mary's Church and its graveyard, overlook the harbour on the opposite side of Abbey Street. Balscadden Bay lies 60m to the

east of the Site. Howth Parish Catholic Church sits on an isolated triangle of land to the south of the Site, bounded by Main Street, Thormanby Road and St. Mary's Road. The majority of the surrounding area to the west, south and southeast of the Site has been developed with residential developments and amenities. Howth Castle, and its estate are key features of the area. Howth Castle is situated approximately 1km to the west of the Site, and the estate hosts Deer Park Golf Club.

In addition to its fishery harbour, Howth also hosts a substantial marina. One branch of the DART suburban rail system has its physical terminus by the harbour. Howth is at the end of a regional road (R105) from Dublin.

12.1.3.4 Local Settlement and Land Use

The settlement of Howth Village spans much of the northern part of Howth Head, which was once an island but now is connected to the rest of Dublin via a narrow strip of land (a tombolo) at Sutton. Howth is in the administrative county of Fingal, within the traditional County Dublin. Howth Village is bounded by the sea and undeveloped land except along two roads, one rising towards the Summit, one running at sea level near the coast, towards Sutton Cross.

More than half of Howth Head, totalling around 545 hectares, is subject to a Special Amenity Area Order, a provision of Irish law designed to protect areas of natural beauty or biodiversity. It covers Ireland's Eye and the heathland, woods, cliffs, shingle beaches and wooded residential areas of the south-eastern half of the Howth peninsula. These areas have a rich diversity of flora and fauna and include protected species such as the green-winged orchid, the red squirrel and seabirds such as kittiwakes, guillemots and gannets.

12.1.3.5 Electricity Supply

12.1.3.5.1 Local Supply & Grid Connection

The electricity supply grid infrastructure on the island of Ireland is owned and maintained by ESB Networks and operated on a day-to-day basis by EirGrid. The grid today comprises of two types of networks, transmission lines which carry very large amounts of electricity long distances connecting power stations to local transformer stations and local distribution grids which carry electricity from the transformer stations into individual consumers' premises.

The closest local transformer 110 kV substation is situated 6km west of the Site of the Proposed Development in Grange, Dublin 13. Figure 12-4 indicates the approximate location of existing ESB distribution underground cables (red - 10KV/20KV/400V/230V) and overhead lines (blue - 400V/230V) in the general area of the Proposed Development.

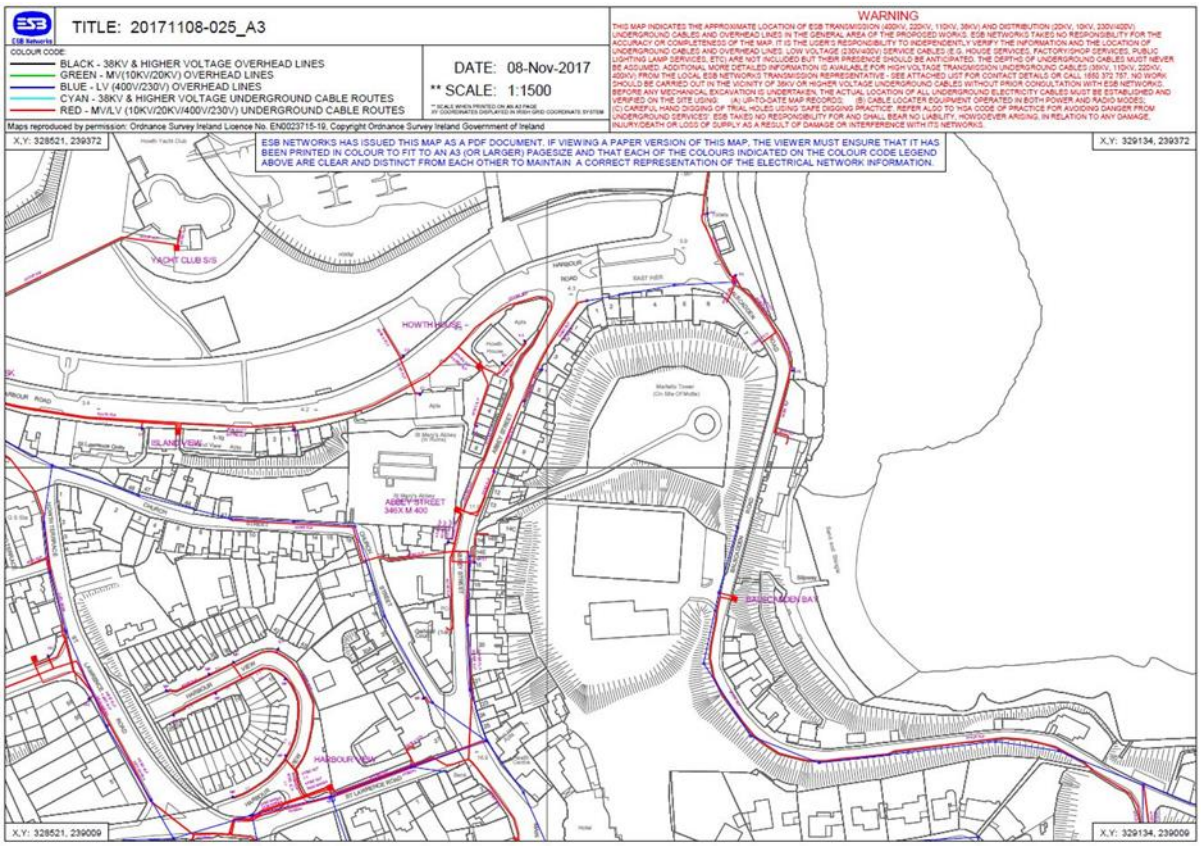


Figure 12-4 ESB distribution underground cables (red - 10KV/20KV/400V/230V) and overhead lines (blue - 400V/230V) in the general area of the Proposed Development

12.1.3.5.2 Onsite Supply and Consumption

The Site is currently brownfield with derelict buildings, and there is currently no onsite consumption or use of electricity.

12.1.3.6 Gas Supply

12.1.3.6.1 Local Supply & Grid Connection

Gas Networks Ireland builds, develops and operates Ireland's gas infrastructure, maintaining over 14,521 km of gas pipelines and two sub-sea interconnectors. Gas Networks Ireland is responsible for connecting all new gas customers to the network, and for work on service pipes and meters at customers' premises, on behalf of all gas suppliers in Ireland. Connections to the natural gas network are available in Howth Village. Figure 12-5 indicates the approximate location of existing gas Network Ireland underground distribution (blue) and inserted (green) pipelines in the general area of the Proposed Development.

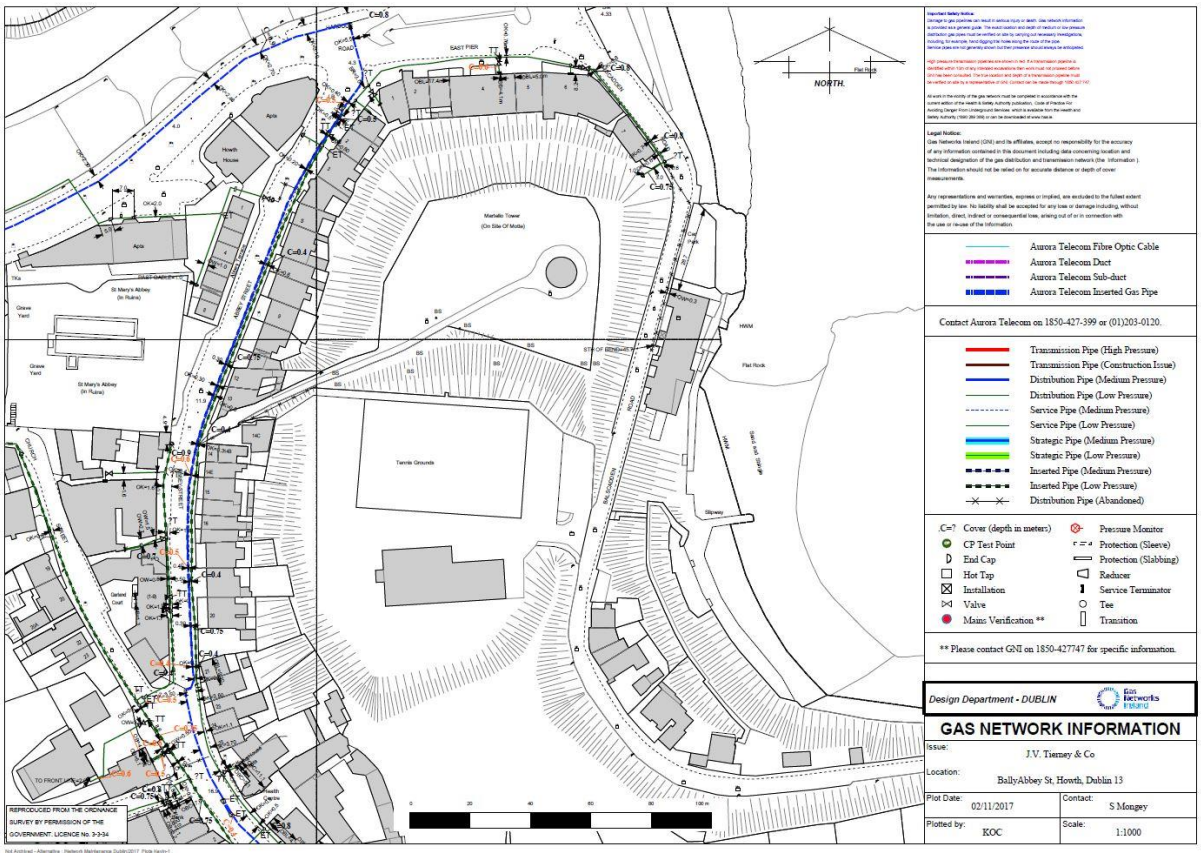


Figure 12-5 Gas Network Ireland underground distribution (blue) and inserted (green) pipelines in the general area of the Proposed Development.

12.1.3.6.2 Onsite Supply and Consumption

The Site is currently brownfield with derelict buildings, and there is currently no onsite consumption or use of natural gas

12.1.3.7 Information and Communications Technology (ICT)

12.1.3.7.1 Local Supply & Connection

Eircom uses underground ducts and overhead poles for its services. Other operators in the market can have their fibre cable carried in Eircom's existing infrastructure to provide broadband for their customers. Figure 12-6 indicates the approximate location of existing overhead poles in the general area of the Proposed Development.

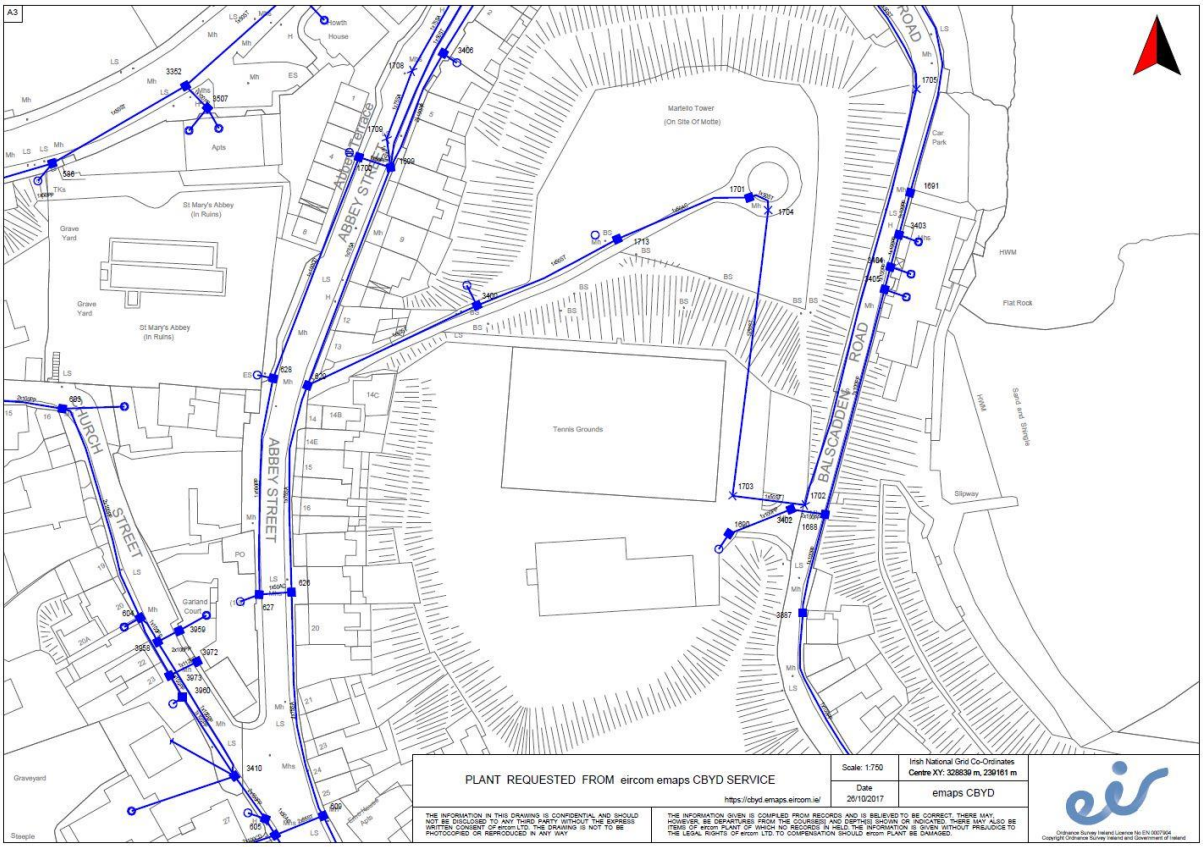


Figure 12-6 Eircom overhead poles and telecommunications lines (blue) in the general area of the Proposed Development.

National Broadband Ireland was set up by the Irish Government to facilitate the roll out of fibre broadband across Ireland. The Department of the Environment, Climate and Communications have developed an interactive map which details the progress of the rollout of the National Broadband Plan. The High-Speed Broadband map identifies locations and premises as amber or blue and the map is updated on a quarterly basis. Amber areas depict target areas for the State intervention of the National Broadband Plan. Blue areas indicated that commercial operators have instated or are in the process of delivering high speed broadband services. The Site of the Proposed Development is located within a blue area and high speed broadband is available.

In terms of mobile telecommunication for transmission and reception, the closest mobile/ICT communications mast (Eir Mobile, Vodafone and Three) is located at the Howth Garda Station on Howth Terrace approximately 240m west of the Site of the Proposed Development.

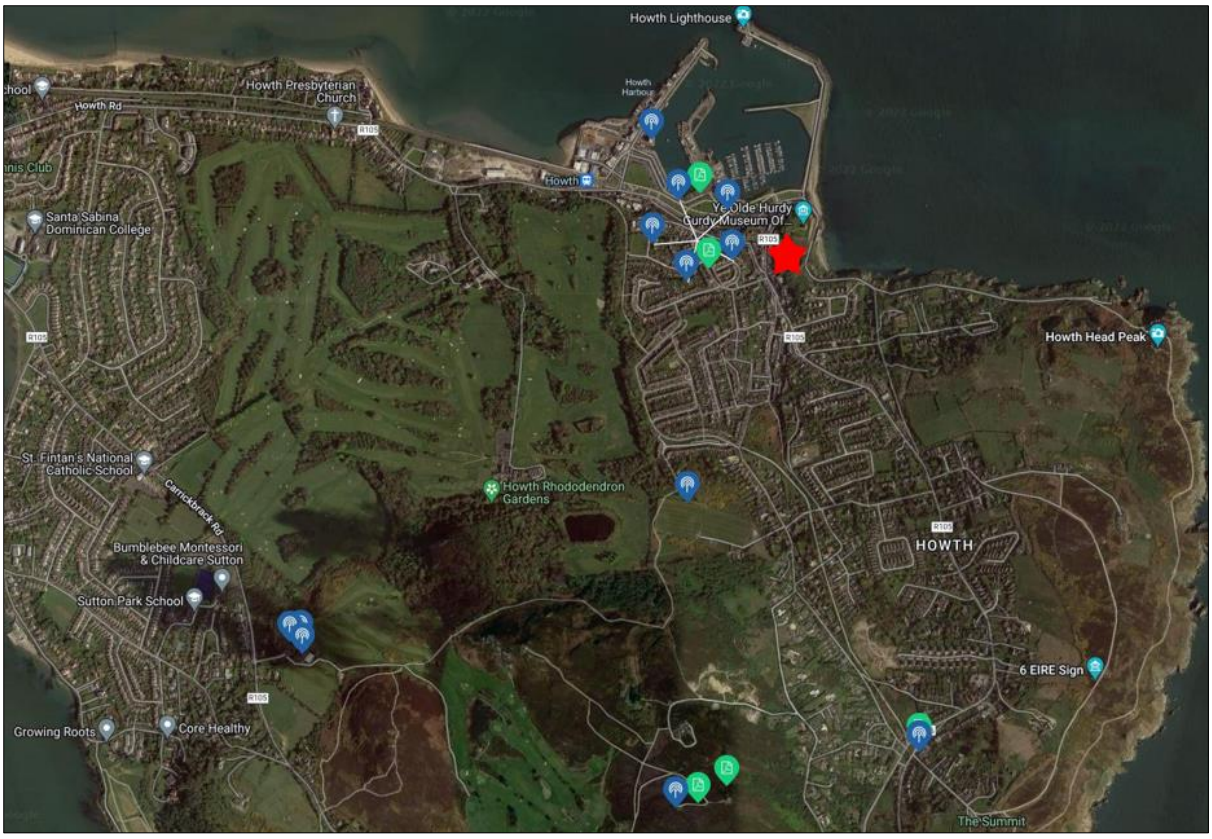


Figure 12-7 Location of mobile communications masts (dark blue tags) relevant to the Proposed Development (indicated with a red star). Taken from https://siteviewer.comreg.ie/

12.1.3.7.2 Onsite Supply and Consumption

The Site is currently brownfield with derelict buildings. An overhead line enters into the Site of the Proposed Development from the Balscadden Road on the east. IT infrastructure is not in place at the Site.

12.1.3.8 Water Supply and Demand

The Site of the Proposed Development is brownfield and there is no water supply or demand at present. The Site is currently not connected to a municipal water supply, but it is located in a well-serviced urban area. There is an existing 6" diameter (approximately 150mm) watermain adjacent to the subject site in Main Street / Abbey Street. There is an existing 125mm diameter watermain on Balscadden Road, terminating near the mid-point of the Site.

12.1.3.9 Local Hydrology and Hydrogeology

The Proposed Development Site is mapped by the EPA (EPA, 2021) as within Liffey and Dublin Bay Catchment, the Mayne Sub-catchment (SC_09_17) and the Howth WFD River Sub Basin (IE_EA_09H230880). There are no significant above-ground surface water features in the vicinity of the Site. A small unnamed stream is located approx. 30m to the west of the Site. This stream rises on Thornamby Hill and flows in a northerly direction towards Howth Harbour. The stream appears to enter a culvert at Balglass Road, and flow through this culvert along Main Street and Abbey Street before discharging into Howth Harbour. A second, very short coastal stream is located approx. 180m to the east of the Site. No EPA water quality assessments have been carried out on either of these streams.

The Site of the Proposed Development is situated on the Dublin (IE_EA_G_008) groundwater body. Two bedrock aquifer types and a fault line are in the Site area. The bedrock aquifer at the north of the Site is a Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones. The bedrock aquifer to the south of the Site is a Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones (GSI, 2021). The groundwater rock units underlying the aquifer are classified as Dinantian Lower Impure Limestones and Cambrian Metasediments.

The subsoil is predominately man made, with a small area of Bedrock at Surface to the east of the Site (EPA, 2021). The soil is predominantly urban (GSI, 2021).

12.1.3.10 On-site Surface Water Drainage

The Site is currently brownfield with derelict buildings and no natural watercourses running through the Site. Surface water currently infiltrates the ground, and any excess surface water discharges to the adjacent roads and ultimately to the existing public drainage network. The public drainage network comprises of an existing 600mm diameter sewer in Main Street, continuing north along Abbey Street (Waterman Moylan, 2022).

12.1.3.11 Wastewater Management

The Site of the Proposed Development is currently brownfield with derelict buildings and there are no wastewater management requirements at present. There is an existing 225mm diameter foul water sewer in Main Street, continuing north along Abbey Street, to the west of the site, where it increases to 300mm. There is an existing 225mm diameter foul water sewer in Balscadden Road to the east of the site, also discharging in a northerly direction. Both sewers combine to discharge west along Harbour Road. There is also a large 1,500mm diameter concrete wastewater sewer traversing the site (Waterman Moylan, 2022).

12.1.3.12 Waste Management

Fingal County Council (FCC) is the local authority responsible for setting and administering waste management activities in the area of the Proposed Development. Fingal County Council's waste management activities are governed by the requirements set out in the Eastern-Midlands Region (EMR) Waste Management Plan 2015-2021. The subject site is currently a brownfield, derelict site and has no waste management requirements.

12.1.4 Characteristics of the Proposed Development

12.1.4.1 Description of Development

The proposed development relates to lands located to the south of the Martello Tower on Balscadden Road & the former Baily Court Hotel, Main Street, Howth, County Dublin. The development will consist of the demolition of existing structures on the proposed site including the disused sports building and the former Baily Court Hotel buildings and the construction of a residential development set out in 4 no. residential blocks, ranging in height from 2 to 5 storeys to accommodate 180 no. apartments with associated internal residential tenant amenity and external courtyards and roof terraces, 1 no. retail unit and 2 no. café/retail units. The site will accommodate car parking spaces at basement level and bicycle parking spaces at basement and surface level. Landscaping will include new linear plaza which will create a new pedestrian link between Main St and Balscadden Rd to include the creation of an additional 2 no. new public plazas and also maintains and upgrades the pedestrian link from Abbey Street to Balscadden Road below the Martello Tower. This is set out as follows:

1. The 4 no. residential buildings range in height from 2 storeys to 5 storeys, accommodating 180 no. apartments comprising 4 no. studios, 62 no. 1 bed units, 89 no. 2 bed units and 25 no. 3 bed units. The breakdown of residential accommodation is as follows:

- Block A is a 3 storey building, including balconies, accommodating 2 no. units;
- Block B is a 2 to 5 storey building, including setbacks, balconies, and external roof terraces at 3rd and 4th floors accommodating 126 no. units;
- Block C is a 3 to 5 storey building, including setbacks and balconies, accommodating 43 no. units;
- Block D is a 3 storey building, including balconies, accommodating 9 no. units;
- Residential Tenant Amenity Space is provided in Blocks B and C, totalling c.427.1 sq.m and Communal External Amenity Space is provided at throughout the scheme including at roof level on Block B, totalling c.4,108 sq.m.

2. Non-residential uses retail unit of c. 106.4 sq.m in Block A at ground level, café/retail unit of c.142.7 sq.m in Block C at ground and first floor, café/retail unit of c. 187.7 sq.m in Block D resulting in a total of c. 436.8 sq.m of non-residential other uses.

3. The development will include a single level basement under Block B, accessed from Main St only, containing 139 car spaces including 7 accessible spaces, plant, storage areas, waste storage areas and other associated facilities. A total of 410 cycle parking spaces are provided for at both basement and ground level, comprising 319 resident spaces and 91 visitor spaces.

4. The scheme provides for a new linear plaza which will create a new pedestrian and cycle link between Main St and Balscadden Rd to include the creation of an additional 2 no. new public plazas and also maintains and upgrades the existing pedestrian link from Abbey Street to Balscadden Road below the Martello Tower.

5. All other ancillary site development works to facilitate construction and the provision of the basement car park, site services, piped infrastructure, a sub-station, public lighting, plant, signage, bin stores, bike stores, boundary treatments and hard and soft landscaping.

6. It is proposed to reduce the ground levels on the site from c. 34.5m OD to c. 19.975m OD locally under Block C. A single storey basement is proposed under Block B with the existing ground level reduced from c.20m OD to c.17.1m OD. occurring at formation level.

12.1.4.2 Construction Phase

The Construction Management Plan (Waterman Moylan, 2021) details the following construction phase.

Extensive geotechnical, hydrological and environmental site investigation have been undertaken for the site. The results from the site investigations will be used to inform the design of the foundations and retaining walls, a hydrological ground water study, a ground movement analysis and waste management strategy.

The following outlines the construction phase sequence of works:

- Demolition of the existing EDROS Building & former Baily Court Hotel.
- Removal of site vegetation and installation of site set-up.
- Installation of temporary silt trench to eastern boundary to protect SAC/pNHA.
- Provision of a temporary piling mat and berms between levels.
- Secant piled walls installed to allow for the bulk excavation and reduced level dig.
- Temporary works installed to temporarily restrain the secant piled walls during excavation.
- Basement battered open-cut excavation to the North and East boundaries with a safe angle of repose.
- Installation of the building raft foundation and basement retaining walls.
- Tower crane installation for the construction of the building frame.
- Bottom-up construction sequence of the floor slabs and vertical elements.
- Elements of the building frame may be premanufactured off site in precast construction for speed of construction, less formworks and on-site waste.
- Temporary scaffolding may be required around each building during the construction of the building envelope.
- Elements of the building facade may be premanufactured off site using modular construction for speed of construction and less on-site waste.

12.1.4.3 Operational Phase

The Operational Phase of the Proposed Development will consist of the normal day-to-day operations necessary for the management of a residential development and a café/retail space, and the ongoing maintenance of the dwellings and units.

12.1.5 Potential Impact of the Proposed Development

This section assesses the impact of the Proposed Development on the Material Assets of the area.

12.1.5.1 Electricity Supply

12.1.5.1.1 Construction Phase

Construction related activities will require temporary connection to the local electrical supply network. The Main Contractor will apply for a power supply from ESB Networks to power both the compound and the construction site. The size of supply will be calculated to ensure it is sufficient to power both the site compounds and construction site activities. A dedicated power supply will be provided for the tower cranes, task lighting, power tools and charging stations for plant such as electric hoists.

Connecting a new multi-unit housing development to the electricity distribution system must be carried out in accordance with ESB Networks' specifications, and in particular with the guidance provided in the documents ESB Networks National Code of Practice for the Customer Interface Version 5 (2021) and ESB Networks Construction Standards for MV Substation Buildings (2019). The developer must undertake the preparatory work such as installation of ducting and provision of substation plinth or building. Once the preparation work has been completed to a satisfactory standard, ESB Networks will commence installation of the electricity cabling/lines and any other necessary equipment. A temporary suspension of

the network locally to facilitate the connection works may be required during the construction Phase, and an additional temporary suspension will also occur when power is provided to the Site of the Proposed Development. These temporary suspensions will be controlled by ESB Networks as the statutory undertaker and in accordance with standard protocols.

The potential impact from the Construction Phase of the Proposed Development on the local electrical supply network is likely to be negative, slight, and short-term.

12.1.5.1.2 Operational Phase

Electricity will be required to provide public lighting, domestic lighting, power supply and heating for each individual unit for the Proposed Development. A Sustainability & Energy Report (JV Tierney & Co, 2022) has been prepared for the Proposed Development which sets out a sustainability and energy strategy for the operational phase of the apartments. The strategy approach will be to firstly maximise the passive benefits of the building's fabric, orientation, etc. followed by the inclusion of highly efficient M&E systems to achieve a design that will meet the Renewable Energy Ratio (RER) target of 20% outlined in the NZEB criteria as set out in the Building Regulations Technical Guidance Document, Part L 2021, Conservation of Fuel and Energy – Dwellings.

The Dwelling Energy Assessment Procedure (DEAP) is the methodology for demonstrating compliance with specific aspects of Part L of the Building Regulations. DEAP is also used to generate the Building Energy Rating (BER) and advisory report for new and existing domestic buildings. The DEAP assessment for the Proposed Development was carried out on a theoretical middle floor, 2 no. bed apartment using architect's drawings, façade details and M&E outline specifications using an electric Exhaust Air Heat Pump approach to heat radiators and domestic hot water. The preliminary DEAP assessment shows an indicative Energy Performance Coefficient (EPC) and Carbon Performance Coefficient (CPC) compliant Apartment building in accordance with the Part L of the Building Regulations 2021 with an indicative Building Energy Rating (BER) of A2 (Sustainability & Energy Report, JV Tierney & Co, 2022).

The ESB Substations will be housed in the southwest corner of the plinth of Block C and can be accessed from the street easily. Electric car charging facilities will also be provided in line with Government and Fingal County Council policy. All public and amenity lighting will use low energy LED light fittings and be installed in line with Fingal County Council specifications.

The impact of the Operational Phase of the Proposed Development on the electricity supply network is likely to be to increase demand to the existing supply. The energy usage for the Proposed Development is detailed in the Sustainability & Energy Report (JV Tierney & Co, 2022), included as Appendix B. The potential impact from the Operational Phase on the electricity supply network is likely to be neutral, long term and moderate.

12.1.5.2 Information and Communications Technology (ICT)

12.1.5.2.1 Construction Phase

Connections may be required to the existing ICT network during the Construction Phase of the Proposed Development. New connections will be controlled by the network provider in accordance with standard protocols. Due to the temporary nature of the Construction Phase, the likely effect of the Construction Phase on the local telecoms network will be neutral, imperceptible, and temporary.

12.1.5.2.2 Operational Phase

Microwave transmission links for wireless communications can be obstructed by tall buildings. Cellular towers are typically between 20m-40m tall. As the height of the tallest building in the Proposed Development is approximately 16m, the likely effect of the height of the buildings on surrounding microwave links is neutral and imperceptible in the long term. The likely effect of the Operational Phase of the Proposed Development on the local telecommunications network is to be a marginal increase in demand. The Site of the Proposed Development is located within an area where high speed broadband is available and a mobile communications mast supporting Eir Mobile, Vodafone and Three antennae is located at the Howth Garda Station on Howth Terrace approximately 240m west of the Site of the Proposed Development. The likely effect of the Operational Phase on the local telecoms network will be neutral, and imperceptible in the long term.

12.1.5.3 Gas Supply

12.1.5.3.1 Construction Phase

The Construction Phase of the Proposed Development will have a neutral, imperceptible effect on the local and national gas supply in the long term as no gas supply is required for the Construction Phase and there will be no connections made to the natural gas network as part of the Proposed Development.

12.1.5.3.2 Operational Phase

The Operational Phase of the Proposed Development will have a neutral, imperceptible effect on the local and national gas supply in the long term as the Proposed Development will not be connected to the natural gas network. Electric Exhaust Air Heat Pumps will be used for space heating and domestic hot water.

12.1.5.4 Water Supply and Demand

12.1.5.4.1 Construction Phase

The Site of the Proposed Development is brownfield, with a derelict hotel and leisure centre both of which are without an active water supply. Site offices and construction activities will create a demand for water supply to the site. A temporary connection is required to facilitate on-site works for all housing developments. Commencement of construction will therefore result in a net increase in the water demand for the Site of the Proposed Development. New connection works may cause water supply disruptions during the Construction Phase. These disruptions will be controlled by Irish Water and Fingal County Council in accordance with standard protocols. Due to the nature of the works during the Construction Phase, the likely effect will be negative, non-significant and temporary.

12.1.5.4.2 Operational Phase

The Proposed Development will be connected to the existing mains water supply subject to agreement from Irish Water who issued a Confirmation of Feasibility for the connection on the 3rd of August 2021, reference number CDS21002487 (Refer to Appendix A of the Engineering Assessment Report; Waterman Moylan,2022). Irish Water have confirmed that connection to the existing mains water supply network is feasible without any upgrades to the existing infrastructure. (Refer to Appendix B of the Engineering Assessment Report; Waterman

Moylan,2022). The mains water supply is operated in accordance with relevant existing statutory consents. During the Operational Phase of the Proposed Development there will be a demand for water from the public water supply. An integrated Water Management and Conservation approach that incorporates the use of low water consumption equipment and efficient sanitary appliances will ensure the minimal use of potable water (Sustainability & Energy Report, JV Tierney & CO, 2022).

Water demand calculations carried out by Waterman Moylan as per Section 3.7.2 of the Irish Water Code of Practice for Water Infrastructure estimate that the Proposed Development will have a water usage demand of approximately 29,000m^3 per year during the Operational Phase. Irish Water have confirmed that, based on a desk top analysis of the capacity currently available in the Irish Water network(s) as assessed by Irish Water, the proposed demand can be facilitated. Excess usage is the consumption of water services above the threshold amount stipulated in the Water Services Act (2017). Water use above the annual household allowance (213m^3) is considered to be excessive use and Irish Water customers may be liable for charges on the amount above this level. Based on the calculation performed by Waterman Moylan (2022), individual households within the Proposed Development will use approximately 161m^3 of water per year.

The likely effect of the increase in mains water demand will be neutral, non-significant, and long-term on mains water supply.

12.1.5.5 Water Environment – Hydrology and Surface Water Drainage

12.1.5.5.1 Construction Phase

Surface water currently infiltrates the ground, and any excess surface water discharges to the adjacent roads and ultimately to the existing public drainage network. It is noted that specific issues relating to surface water associated with the Proposed Development are set out in Chapter 7 (Water - Hydrology and Hydrogeology) of this EIAR.

12.1.5.5.2 Operational Phase

It is considered that the design of the Proposed Development including the implementation of the surface water management and SuDS strategy, along with the foul water management strategy are in line with the objectives of the Water Framework Directive (2000/60/EC). The proposed flow control device is to be limited to the greenfield equivalent runoff rate, and SuDS measures are proposed to maximise the infiltration as set out above. The net runoff volume from the site will therefore remain unchanged. Overall, the likely effect of the surface water drainage strategy incorporating the SuDS proposals for the Proposed Development will result in a neutral, imperceptible, long-term impact on receiving surface water quality.

12.1.5.6 Wastewater Management

12.1.5.6.1 Construction Phase

A temporary connection is required to facilitate on-site works for all housing developments. Commencement of construction will therefore result in a net increase in the foul water produced at the Site of the Proposed Development. The Main Contractor will carry out a site survey to identify the locations of the water and foul drainage connections to the Site. It will be the Main Contractor's responsibility to apply to Irish Water for connections to the water main

and foul drain, ideally utilising existing connections to service the site toilets and canteen facilities during the Construction Phase.

Irish Water issued a Confirmation of Feasibility letter for the proposal on 3 August 2021 (reference number CDS21002487)(Refer to Appendix A of the Engineering Assessment Report; Waterman Moylan,2022). The letter notes that connection to the existing wastewater network is feasible subject to upgrade works. The required upgrades comprise approximately 100m of network extension, from the site to the existing 300mm sewer in Abbey Street. The letter also notes this upgrade is not currently on Irish Water's investment plan, and the applicant will therefore be required to fund the upgrade works (Engineering Assessment Report, 2022). The network upgrades and the new connection works may cause disruptions to the foul water netowrk during the Construction Phase. These disruptions will be controlled by Irish Water and Fingal County Council in accordance with standard protocols. Due to the nature of the works during the Construction Phase, the likely effect will be negative, non-significant and temporary.

A Statement of Design Acceptance has also been received from Irish Water for the proposed development (Refer to Appendix B of the Engineering Assessment Report; Waterman Moylan,2022). A Build-Over Agreement will be required for the 1,500mm diameter concrete wastewater sewer. Early engagement to proceed with such an agreement is recommended. Foul water sewers will be constructed strictly in accordance with Irish Water requirements. No private drainage will be located within public areas. Drains will be laid to comply with the requirements of the latest Building Regulations, and in accordance with the recommendations contained in the Technical Guidance Document H.

12.1.5.6.2 Operational Phase

It is proposed to discharge wastewater from the site by gravity to the existing foul water sewer in Main Street. The calculations for foul water flows at the Proposed Development are set out in the Engineering Assessment Report (Waterman Moylan, 2022) in line with the Irish Water Code of Practice for Wastewater Infrastructure (2020). Domestic wastewater loads have been calculated based on 2.7 persons per unit with a per capita wastewater flow of 150 litres per head per day along with a 10%-unit consumption allowance. A peak flow multiplier of 6 was used in the calculations (as per Section 2.2.5 of Appendix B of the Code of Practice). The resulting total dry weather foul water flow from the Proposed Development is 0.928 l/s, with a peak flow of 5.569 l/s.

Capacity within the existing foul sewer network has been confirmed by Irish Water (Waterman Moylan, 2022). The foul water from the Proposed Development will ultimately be treated at Ringsend WwTP that operates under existing statutory consents. Furthermore, Irish Water have completed the first phase of upgrade works to Ringsend WwTP in December 2021, which increased the capacity of the facility by 400,000 P.E. These works, together with the further works will ultimately increase the capacity of the facility from 1.6 million PE to 2.4 million PE. This plant upgrade will result in an overall reduction in the final effluent discharge loading to the receiving waters. This increase in wastewater being discharged to the public sewer will have a neutral, non-significant, and long-term impact on the capacity of the sewer.

12.1.5.7 Waste Management

12.1.5.7.1 Construction Phase

An Outline Construction & Demolition Management Plan (OCDMP) (Waterman Moylan, 2022) has been prepared for the Proposed Development to provide guidance to the Main Contractor on waste management during the Construction Phase.

The management of Construction & Demolition (C&D) waste at the site will be undertaken in accordance with the current legal and industry standards including:

- The Waste Management Acts 1996 - 2011 and associated Regulations.
- Protection of the Environment Act 2003 as amended.
- Litter Pollution Act 1997 as amended.
- Eastern-Midlands Region Waste Management Plan 2015 – 2021.

It will be the responsibility of the Main Contractor appoint a C&D Waste Manager. The C&D Waste Manager will have overall responsibility for the implementation of the project C&D Waste Management Plan (WMP) during the Construction Phase. The C&D Waste Management Plan will aim to ensure maximum recycling, reuse and recovery of waste with diversion from landfill wherever possible, and it will provide guidance on the appropriate collection and transport of waste from the site to prevent issues associated with litter, or more serious environmental pollution such as contamination of soil and/or water.

Anticipated non-hazardous and hazardous waste streams that could be generated by the demolition and construction activities at a typical site are summarised in Table 12-7. The List of Waste (LoW) code / European Waste Code (EWC) for each waste stream is also shown.

Table 12-7: Typical Waste Types Generated in the Construction Phase and LoW/EWC Codes

Waste Material	LoW / EWC Code
Concrete, bricks, tiles, ceramics	17 01 01-03 & 07
Wood, glass and plastic	17 02 01-03
Treated wood, glass, plastic, containing hazardous substances	17-02-04*
Bituminous mixtures, coal tar and tarred products	17 03 01*, 02 & 03*
Metals (including their alloys) and cable	17 04 01-11
Soil and stones	17 05 03* & 04
Gypsum-based construction material	17 08 01* & 02
Paper and cardboard	20 01 01
Mixed C&D waste	17 09 04
Green waste	20 02 01
Electrical and electronic components	20 01 35 & 36
Batteries and accumulators	20 01 33 & 34
Liquid fuels	13 07 01-10
Chemicals (solvents, pesticides, paints, adhesives, detergents etc.)	20 01 13, 19, 27-30
Insulation materials	17 06 04
Organic (food) waste	20 01 08
Mixed Municipal Waste	20 03 01

** individual waste type may contain hazardous substances*

There will be waste materials generated from the demolition of the existing buildings on site comprising the disused sports building and the former Baily Court Hotel. Asbestos Containing Material (ACM) cement roof tiles are visible on the disused sports building. The waste generated from demolition will be more difficult to segregate than waste generated from construction, as many of the materials from the old buildings will be bonded together or integrated, for example, plasterboard on timber ceiling joists, steel embedded in concrete, etc. The anticipated demolition waste and rates of reuse, recycling/recovery and disposal is shown in Table 12-8.

Table 12-8: Estimated off-site reuse, recycle and disposal rates for demolition waste from the Site

Waste Type	Tonnes	Reuse		Recycle/Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Glass	67	0	0	85	57	15	10
Concrete, Bricks, Tiles, Ceramics	488	30	147	65	317	5	24
Plasterboard	0	30	0	60	0	10	0
Asphalts	108	30	32	65	70	5	5
Metals	59	5	3	80	47	15	9
Slate	8	80	6	10	1	10	1
Timber	96	10	10	60	57	30	29
Asbestos	6	0	0	0	0	100	6
Total	832		195		549		84

Excavations works will be required at the Site of the Proposed Development to facilitate the construction of new foundations and site formation levels. It has been estimated that approximately 67,000m^3 of material comprising gravel, sand, stones, clay and made ground will need to be excavated. There are limited opportunities for the reuse of the excavated material onsite and it is envisaged that all material will need to be removed offsite. This will be taken for appropriate offsite reuse, recovery, recycling and/or disposal as appropriate.

During the Construction Phase there may be a surplus of building materials, such as timber off-cuts, broken concrete blocks, cladding, plastics, metals and tiles generated. There may also be excess concrete during construction which will need to be disposed of. Plastic and cardboard waste from packaging and supply of materials will also be generated. The anticipated construction waste and rates of reuse, recycling/recovery and disposal is shown in Table 12-9, and a list of facilities licenced to accept C&D waste and soil and stone, along with their capacities is presented in Table 12-10.

Table 12-9: Estimated off-site reuse, recycle and disposal rates for construction waste from the Site

Waste Type	Tonnes	Reuse		Recycle/Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Mixed C&D	63,619	0	0	0	0	100	63,619
Timber	100	10	10	55	55	5	5
Plasterboard	3	30	1	70	2	0	0
Metals	10	10	1	90	9	0	0
Concrete	280	30	84	65	182	5	14
Asphalt	50	0	0	0	0	100	50
Other	250	20	50	60	150	20	50
Total	64,312		146		398		63,738

Table 12-10 Licenced Facilities Authorised to Accept Construction and Demolition Wastes in the Dublin Region

EPA Licence Register No.	Facility Name	Location	Waste Type	Capacity Per Annum (Tonnes)
P1014-01	Padraig Thornton Waste Disposal Limited	Stephenstown Business Park, Balbriggan, Dublin.	Non hazardous C&D	22,800
W0039-02	Starrus Eco Holdings Limited	Ballymount Cross, Tallaght, Dublin 24, Dublin.	Total	150,000
W0044-02	Padraig Thornton Waste Disposal Limited	Killeen Road, Ballyfermot, Dublin 10, Dublin.	Non hazardous C&D	30,000
W0165-02	Greenstar Holdings Limited	Ballynagran Residual Landfill, Ballynagran, Coolbeg and Kilcandra, County Wicklow.	Non hazardous C&D	28,000
W0183-01	Starrus Eco Holdings Limited	Millennium Business Park, Grange, Ballycoolin, Dublin 11, Dublin.	Non hazardous C&D	30,000
W0188-01	Starrus Eco Holdings Limited	14B Phase 3, Road 3A, Greenogue Industrial Estate, Rathcoole, Dublin.	Non hazardous C&D	5,000
W0205-01	Green Circular Economy Unlimited Company	Crag Avenue, Clondalkin Industrial Estate, Clondalkin, Dublin 22, Dublin.	Non hazardous C&D	3,000
W0227-01	Padraig Thornton Waste Disposal Limited	Unit 28, John F Kennedy Road, JFK Industrial Estate, Naas Road, Dublin 12, Dublin.	Non hazardous C&D	20,000
W0261-02	Starrus Eco Holdings Limited	Cappagh Road, Finglas, Dublin 11, Dublin.	Non hazardous Soil & Stone Non hazardous C&D	10,000 35,000

The contractor will be required to ensure that oversupply of materials is kept to a minimum and opportunities for reuse of suitable materials is maximised. Waste will also be generated from construction workers e.g., organic/food waste, dry mixed recyclables (wastepaper, 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 infrequently from site offices. All wastes generated will be stored in appropriate receptacles pending collection by a suitably permitted waste collector. Waste will be transported to an appropriate, authorised waste treatment facility.

If the correct classification and segregation of the C&D waste, in particular ACM, and excavated material is not carried out to ensure that any hazardous and potentially contaminated materials are identified and handled in a way that this could impact negatively on human health, water and soil, both on and off-site, and on the final treatment of the excavated material. The likely effect of the impact, in the absence of mitigation, is significant and negative in the short term.

The Construction Phase of the Proposed Development will result in an increase in demand for waste collections and waste treatment in the area, the likely effect of which will be significant and negative in the short term.

12.1.5.7.2 Operational Phase

The Operational Waste Management Plan (OWMP) (AWN Consulting Ltd, 2022) which has been prepared for the Proposed Development contains detailed and specific information regarding resource and waste management during the Operational Phase of the Proposed Development.

Communal bin stores will be provided for each apartment building. Bin stores will be located conveniently for access for residents, internally with the exception of Block A. Block B bin store will be located at basement level, adjacent to the bike parking facilities and will be accessed by either of the five cores. Block A, C and D bin store will be located at ground level & at a maximum of 50 metres from the front door. Bins will be collected on Balscadden Road by the management company to keep bin trucks away from the public and communal areas.

Municipal waste is made up of household waste and commercial waste that is compositionally comparable to household waste. It includes residual, recyclables, organic, bulky and waste electrical and electronic equipment. Anticipated wastes arising from the day-to-day operations at the site are detailed in the OWMP and are summarised in Table 12-11:

Table 12-11: Typical Waste Types Generated in the Operational Phase and LoW/EWC Codes

Waste Material	List of Waste (LoW) / EWC Code
Paper and Cardboard	20 01 01
Plastics	20 01 39
Metals	20 01 40
Mixed Non-Recyclable Waste	20 03 01
Glass	20 01 02
Biodegradable Kitchen Waste	20 01 08
Oils and Fats	20 01 25
Textiles	20 01 11
Batteries and Accumulators*	20 01 33* - 34
Printer Toner/Cartridges*	20 01 27* - 28
Green Waste	20 02 01
WEEE*	20 01 35*-36
Chemicals (solvents, pesticides, paints & adhesives, detergents, etc.) *	20 01 13*/19*/27*/28/29*30
Fluorescent tubes and other mercury containing waste*	20 01 21*
Bulky Wastes	20 03 07

The OWMP has estimated the volume of waste that will be generated from the residential units based on the predicted occupancy of the units, while the floor area usage (m^2) has been used to estimate the waste arising from the retail units. The estimated weekly volumes are presented in Table 12-12.

Table 12-12: Estimated Waste Generation for Residential & Commercial Units

Waste Type	Waste Volume (m3 / week)	
	Residential (Combined)	Commercial (Combined)
Organic Waste	2.84	0.24
Dry Mixed Recyclables	20.8	2.3
Glass	0.55	0.06
Mixed Non-Recyclables	11.53	1.25
Total	**35.71**	**3.85**

A weekly collection system will operate for the Proposed Development, and to accommodate this it has been calculated within the OWMP that the apartments will require storage for:

- 1 no. 240 Litre bin and 12 no. 1,100 Litre bins for mixed municipal (non-recyclable) waste
- 2 no. 240 Litre bins and 18 no. 1,100 Litre bins for dry mixed recyclables
- 1 no. 120 Litre bin and 12 no. 240 Litre bin for organic/food waste and

- 2 no. 120 Litre bin and 3 no. 240 bins for glass.

The retail/cafe units will require storage for:

- 3 no. 240 Litre bins and 1 no. 1,100 Litre bin for mixed municipal (non-recyclable) waste,
- 6 no. 240 Litre bins and 1 no. 1,100 Litre bin for dry mixed recyclables,
- 2 no. 120 Litre bins and 1 no. 240 Litre bin for organic/food waste and
- 3 no. 120 Litre bins for glass.

Any additional household wastes from the apartments such as glass, bulky waste, WEEE, batteries, textiles etc. must be brought to a local recycling facility. The nearest Bring Bank for glass and aluminium recycling is at Howth Marina Car Park, approx. 200m north of the Site. The closest Bring Centre is on Oscar Traynor Road, Dublin 5, approximately 9km west of the Site, while the Ringsend Recycling Centre, which accepts larger waste items than the Bring Centre, is located approximately 11 km southwest of the Site of the Proposed Development. The commercial tenants cannot use the civic amenity centre. They must segregate their additional waste streams and either avail of the take-back service provided by retailers or arrange for recycling / recovery of their waste by a suitably permitted / licenced contractor. The facilities management may arrange collection, depending on the agreement.

During the Operational Phase of the Proposed Development the main impact is the increased demand for waste collection services in the area as a result of increased residents, retail and non-retail uses. The likely effect of the impact, in the absence of mitigation, is significant and negative in the long term. Additionally, improper collection, transport or disposal of waste could lead to the improper management of waste at end destinations, the likely effect of which is significant and negative in the short-term.

12.1.5.8 Potential Cumulative Impacts

The cumulative effects of Proposed Development on Material Assets have been assessed taking other planned, existing, and permitted developments in the surrounding area into account. All planning permission applications that have been granted and developed have been incorporated into the baseline assessment of this application. A planning search revealed that there have been two recent (within the last five years) applications for Strategic Housing Developments in the vicinity of the Site of the Proposed Development, both of which have been granted permission as detailed below:

Planning Reference SHD/009/19 - Strategic Housing Development, "Claremont", Former Techrete Site, Beshoff Motors and Garden Centre, Howth Road, Howth, Co. Dublin: Demolition of all structures on site (c8,162sq.m. GFA) and excavation of a basement. The Proposed Development comprises of the provision of a mixed-use development of residential/retail/restaurant/cafe uses and a creche in 4 no. blocks (A to D), over part basement Blocks A, B, C and D with a height up to a maximum of seven storeys of apartments over lower ground floor and basement car parking levels (a total of eight storeys over basement level). The residential component will consist of 512 no. residential units. (Decision: Grant Permission. Decision date: 03/04/2020).

Planning Reference SHD/009/20 - Strategic Housing Development "Kenelm", Deer Park, Howth, Co. Dublin: The development will consist of 162 no. residential units distributed

across 3 no. blocks (A, B & C) ranging in height from 5-6 storeys, with a cumulative gross floor area (GFA) of 13,337.10 sq.m. (Decision: Grant Permission. Decision date: 21/09/2021).

Both applications were subject to a full Environmental Impact Assessment of its own accord. The EIAR for both developments have been assessed as part of this EIAR, and were found to conclude that there will be no significant residual effects on built services or waste as a result of the either of the permitted developments, alone or in combination with other projects.

12.1.5.8.1 Construction Phase

New connections for the permitted developments and the Proposed Development to electricity, telecommunications, mains water, surface water drainage and foul water systems, will be coordinated with the relevant utility provider and Fingal County Council (ESB Networks, Eir, and Irish Water respectively) at the appropriate point in the development processes. If the permitted developments and the Proposed Development are under construction concurrently, this may result in additional loads of construction and demolition waste being moved offsite and may increase pressure on waste facilities in the area to accept construction waste. Operational Phase

Irish Water have confirmed that there is capacity within the mains water supply network and in the foul network to accept foul water from the Proposed Development, and there are no anticipated cumulative impacts on the receiving water environment associated with the Proposed Development due to discharges from Ringsend WwTP (Irish Water, 2022, Conformation of Feasibility). The capacity of waste collection companies and waste management facilities in the Eastern Midlands Region have been designed with forward planning and expansion in mind to cater for a growing population. Existing waste collections currently take place in the local area and the Proposed Development will likely be added to an existing collection route.

When considered in conjunction with other permitted, planned and existing developments in the vicinity of the Site, it is predicted that the likely cumulative impact of the Proposed Development with other developments in the area on built services and waste management during both the Construction and Operational Phases will be neutral and imperceptible in the long term.

12.1.5.9 "Do Nothing" Impact

A "Do-Nothing" scenario would result the lands remaining undeveloped, overgrown and fenced off. The former Baily Court Hotel and EDROS Centre would remain boarded up and would continue to deteriorate. The likely effect of a Do-Nothing scenario on Material Assets would be neutral and imperceptible in the long term.

12.1.6 Avoidance, Remedial & Mitigation Measures

Specific avoidance, remedial and mitigation measures to be taken during the Construction and Operational Phase with respect to water supply, surface water drainage and foul water are detailed within Chapter 7, Water (Hydrology and Hydrogeology), of this EIAR. All works will be carried out in accordance with Irish Water Code of Practice for Water and Wastewater Infrastructure. Laying of watermains/wastewater sewers and testing of pipelines and infrastructure will be in accordance with Irish Water standard details. All surface water works will be carried out in accordance with The Greater Dublin Area Regional Code of Practice for Drainage Works.

New connections for electricity and telecommunications will be coordinated with the relevant utility provider and Fingal County Council and carried out and tested by approved contractors, as per standard protocols.

The Outline Construction & Demolition Management Plan (Waterman Moylan, 2022) provides guidance to the Main Contractor on waste management during the Construction Phase. In the event that hazardous soil, or historically deposited waste is encountered during the site bulk excavation phase, the contractor will notify FCC and provide a Hazardous/Contaminated Soil Management Plan, to include estimated tonnages, description of location, any relevant mitigation, destination for disposal/treatment, in addition to information on the authorised waste collector(s). Removal of asbestos or ACMs will be carried out by a suitably qualified contractor and ACM's will only be removed from site by a suitably permitted/licenced waste contractor. in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010. All material will be taken to a suitably licensed or permitted facility. Based on a review of facilities in Dublin (refer to Table 12-10) and surrounding counties permitted/licenced to accept construction and demolition waste, and the permitted/licenced capacity of each, there is sufficient capacity to accept the construction and demolition from the permitted developments and Proposed Development, subject to acceptance agreements.

An OWMP (AWN Consulting Ltd, 2022) has been produced for the Proposed Development which outlines measures to be taken to achieve waste prevention, maximum recycling and recovery of waste with a focus on diversion of waste from landfill wherever possible. Waste segregation will be implemented onsite to minimise potential cross contamination of waste streams and facilitate subsequent re-use, recycling and recovery. It is recommended within the OWMP that bin collection times are staggered to reduce the number of bins required to be emptied at once and the time the waste collector is onsite. The OWMP also states that the facilities management company must employ suitably permitted or licenced contractors to undertake off-site management of their waste in accordance with all legal requirements. This includes the requirement that a waste contactor handle, transport and reuse / recover / recycle / dispose of waste in a manner that ensures that no adverse environmental impacts occur as a result of any of these activities.

12.1.6.1 'Worst-Case' Scenario

In the event that the Proposed Development was to proceed, a worst-case scenario in relation to built services & infrastructure (electricity, telecommunications, gas, water supply infrastructure, and sewerage), would be where the works involved during construction resulted in an extended power or telecommunications outage, or disruption to water supply or sewerage systems for existing properties in the area due to unforeseen delays on site.

A worst-case scenario in relation to waste would be where a previously unclassified hazardous waste stream arose on the site during excavations, which was not identified and segregated appropriately and resulted in the contamination of a non-hazardous waste stream, such as soil and stones, resulting in a large volume of hazardous waste that would require specialist removal and treatment.

However, taking account of the avoidance and mitigation measures the worst-case scenarios are deemed to be an unlikely scenario

12.1.7 Residual Impacts

Residual Impacts are defined as "*effects that are predicted to remain after all assessments and mitigation measures*". They are the remaining 'environmental costs' of a project and are the final or intended effects of a development after mitigation measures have been applied to avoid or reduce adverse impacts. Potential residual impacts from the Proposed Development were considered as part of this environmental assessment.

Provided the mitigation measures outlined in Section 12.1.9 and detailed in the Outline Construction & Demolition Management Plan (Waterman Moylan, 2022) and the Operational Waste Management Plan (AWN Consulting Ltd, 2022) are implemented and a high rate of reuse, recycling and recovery is achieved, the likely effect of the Construction and Operational Phases on the environment will be neutral and imperceptible in the long term.

Having regard to the mitigation measures proposed within this and other chapters of the EIAR, no significant residual impacts are anticipated.

12.1.8 Monitoring

12.1.8.1 Construction Phase

The monitoring of construction and demolition waste during the Construction Phase of the Proposed Development is recommended to ensure that impacts are not experienced beyond the Site boundary. The Main Contractor will be responsible for monitoring and record keeping in respect of waste leaving the facility and that these records will be maintained on site.

12.1.8.2 Operational Phase

The building management company, tenants and residents will be required to maintain the resident bins and storage areas in good condition as required by the FCC Waste Bye-Laws. The waste strategy presented in the OWMP will provide sufficient storage capacity for the estimated quantity of segregated waste. The designated areas for waste storage will provide sufficient room for the required receptacles in accordance with the details of this strategy. The areas will be fitted with CCTV for monitoring.

12.1.9 Interactions

Material assets, utilities and waste interact with other environmental receptors as follows:

- Population and Human Health: The improper removal, handling and storage of ACM could negatively impact on the health of construction workers. Extended power or telecommunications outages, or disruption to water supply or sewerage systems for existing properties in the area could negatively impact on the surrounding human population and their overall health. Potential impacts on population and human health are addressed in Chapter 4.
- Biodiversity: The improper handling and storage of waste during the Construction and Operational Phases could negatively impact on biodiversity. Potential impacts on biodiversity are addressed in Chapter 5 (Biodiversity).
- Land and Soil: Improper handling and segregation of hazardous or contaminated wastes could lead to the contamination of soil and stones excavated from the site. Potential impacts on land and soils are addressed in Chapter 6.

- Water (Hydrology & Hydrogeology: Any connections to the public water network (water supply or foul sewer) during the Construction and Operational Phases will be under consent from Irish Water. Potential impacts on water are addressed in Chapter 7.
- Traffic: Waste collection activities at the Proposed Development have the potential to impact upon traffic movements in the Howth area. Potential impacts on traffic are addressed in Chapter 12.2.

12.1.10 Difficulties Encountered When Compiling

No difficulties were encountered in the preparation of this Chapter.

12.1.11 References

- Environmental Protection Agency (EPA) (2017) Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR) – *DRAFT*
- EPA (2003) Advice Notes on Current Practice in the preparation of Environmental Impact Statements.
- EPA (2002) Guidelines on the information to be contained in Environmental Impact Statements.
- ESB Networks (2021) National Code of Practice for the Customer Interface, Version 5
- Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions (European Communities 1999)
- https://myplan.ie/ (DHLGH, 2021) Zoning and National Planning Applications Map Viewer. Consulted on 21.02.2022
- https://siteviewer.comreg.ie/#explore (ComReg, 2021). Commission for Communications Regulation Mast Viewer. Consulted on 21.02.2022.
- https://www.gasnetworks.ie/corporate/company/our-network/pipeline-map/ (Gas Networks Ireland, 2021). Gas Networks Ireland Pipeline Viewer. Consulted on 21.02.2022.
- https://www.gov.ie/en/publication/5634d-national-broadband-plan-map/ Consulted on 09.02.2022.
- National Standards Authority of Ireland (NSAI), 2017. IS EN752, “Drain and Sewer Systems Outside Buildings – Sewer system Management. NSAI, 1 Swift Square, Northwood, Santry, Dublin 9
- Ordnance Survey Ireland, 2020 (OSI, 2021). Ordnance Survey Ireland webmapping https://geohive.maps.arcgis.com/apps/webappviewer/index.html Consulted on 21.02.2022.

12.2 Transport

12.2.1 Introduction

This chapter of the EIAR assesses the likely traffic and transportation impacts on the receiving environment during the construction and operational phases of the Proposed Development. The existing and proposed transport infrastructure in the area is described, and an assessment of the current and the future traffic environment is made. The impact of the development in terms of public transportation, pedestrian and cycle is also assessed.

The chapter describes: the methodology; the receiving environment at the application site and surroundings; the characteristics of the proposal in terms of physical infrastructure; the potential impacts that proposals of this kind are likely to produce; the predicted impact of the proposal examining the effects of the Proposed Development on the local road network; the remedial or reductive measures required to prevent, reduce, or offset any significant adverse effects; and the monitoring.

This Chapter was completed by Fernando Silva, B Eng, MIEI, Senior Traffic Engineer, Waterman Moylan Consulting Engineers together with Luke Byrne, BEng, MEng, Traffic Engineer, Waterman Moylan Consulting Engineers and reviewed by Joe Gibbons, Chartered Engineer, Director, Waterman Moylan.

12.2.2 Study Methodology

The following methodology has been adopted for this assessment:

- Review of relevant available information including, current Fingal County Development Plan 2017-2023, existing traffic information and other relevant studies;
- Site visit to gain an understanding of the site access and observe the existing traffic situation.
- Consultations with Fingal County Council Roads Department to agree the site access arrangements and determine the scope of the traffic analysis required to accompany a planning application.
- Detailed estimation of the transport demand that will be generated by the Proposed Development. The morning and evening peak times will be addressed as well as an estimation of under-construction and potential future developments in the surrounding area.
- Assessment of the impact of traffic on local junctions, car parking requirements and accessibility of the site by sustainable modes including walking, cycling and public transport.

12.2.3 The Existing and Receiving Environment (Baseline Situation)

12.2.3.1 Site Location

The subject Site is located in Howth, bounded to the east by the Balscadden Road and by residential properties, to the west by residential and commercial buildings fronting onto Main Street and Abbey Street, to the north by greenfield lands, and to south by residential properties. The overall site is.1.43 Hectares, with a former leisure centre building at the northern portion of the lands. The site location is shown on the Figure 12-8.

Figure 12-8: Site Location (Source : Google Maps).

12.2.3.2 Local Road Network

The site is bounded to the east by the Balscadden Road, to the west by residential and commercial buildings fronting onto Main Street and Abbey Street. The subject site is currently accessed from east via Balscadden Road, as shown in Figure 12-9. A new site access is proposed at the west of the Site via Main Street (R105).

Balscadden Road is a one-way south-east bound road, continuing east towards the Howth cliffs. It connects with the southbound Kilrock Road, which continues to the Nashville Road to connect back with the R105.

To the west of the site, Harbour Road, Abbey Street and Main Street are all sections of the R105 – a regional road which travels from Dublin City Centre and forms a loop through Howth. Figure 12-10 illustrates the R105 loop of Howth; to the southeast direction, R105 continues uphill as Thormanby Road, then becomes Carrickbrack Road from the section between Balkhill Road and Strand Road, which from that point, becomes Greenfield Road (R105) and finally connects back to itself at the signalised junction with R106.

Figure 12-9: Site Location and Existing Access Point (Source: Google Maps).

Figure 12-10: Large Scale Map of Existing Road Network (Source: Google Maps).

12.2.3.3 Baseline Traffic Data

Weekday Traffic

In order to quantify the volumes of traffic movements at key junctions on the road network surrounding the subject site, traffic count data has been assessed for the following junctions. The location of these junctions in relation to the Proposed Development site is shown in Figure 12-11.

- Junction 1: R105(W) / R105(S) / East Pier;
- Junction 2: R105 (N) / Church Street / St. Lawrence Road / R105 (S);
- Junction 3: R105 (N) / Main Street / R105 (S);
- Junction 4: Main Street (N) / Main Street (S) / R105 (S) / R105 (N);
- Junction 5: Balscadden Road (W) / Kilrock Road / Balscadden Road (E);
- Junction 6: Howth Road / Greenfield Road / Dublin Road / Station Road.

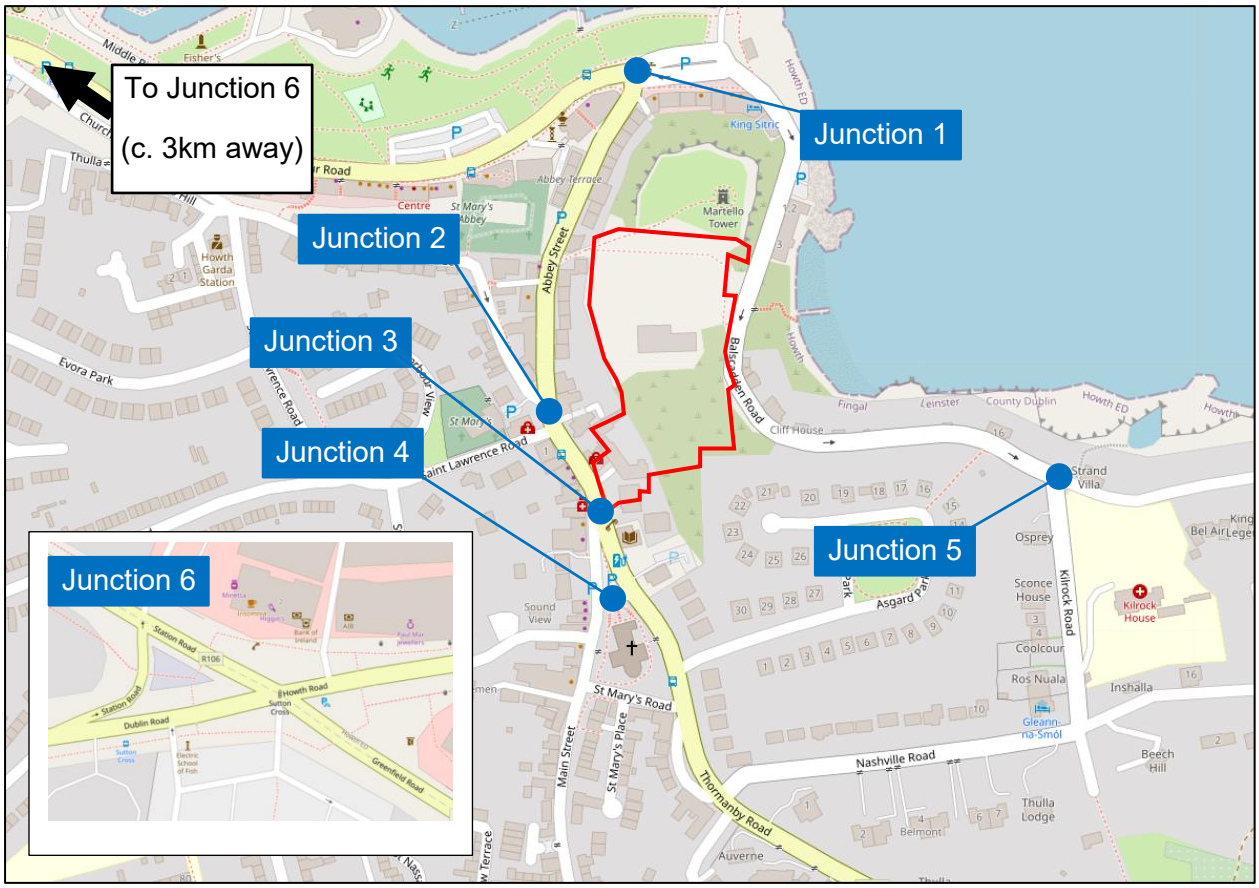


Figure 12-11: Location of Surveyed Junctions.

The baseline traffic data was obtain by a traffic survey undertaken by 'Tracsis' on Thursday 07/10/21. The average AM and PM peak hours identified were 08:00 – 09:00 and 15:00 – 16:00, respectively. The AM peak hour was consistent for most junctions surveyed while the PM peak hour varied from 14:00 – 15:00 to 17:00 – 18:00. Between the 6 junctions surveyed the average PM peak hour was 15:00 – 16:00.

A summary of the baseline two-way flows and the two-way flow expected to be generated by the proposed plus committed and potential future developments in the local area are presented in Table 12-13 for Junction 1, Table 12-14 for Junction 2, Table 12-15 for Junction 3, Table 12-16 for Junction 4.1, Table 12-17 for Junction 4.2, Table 12-18 for Junction 5 and Table 12-19 for Junction 6.

Table 12-13: Summary Results for Junction 1

Description	Total Junction Two Way Flow (Veh)	Proposed + Committed + Future Developments Two Way Flow (Veh)	% Traffic increase
AM Peak Hour (08:00 - 09:00)	440	112	25%
PM Peak Hour (18:00 - 19:00)	496	117	24%

Table.12-14: Summary Results for Junction 2

Description	Total Junction Two Way Flow (Veh)	Proposed + Committed + Future Developments Two Way Flow (Veh)	% Traffic increase
AM Peak Hour (08:00 - 09:00)	472	111	24%
PM Peak Hour (18:00 - 19:00)	495	96	19%

Table.12-15: Summary Results for Junction 3

Description	Total Junction Two Way Flow (Veh)	Proposed + Committed + Future Developments Two Way Flow (Veh)	% Traffic increase
AM Peak Hour (08:00 - 09:00)	453	73	16%
PM Peak Hour (18:00 - 19:00)	461	96	21%

Table.12-16: Summary Results for Junction 4.1

Description	Total Junction Two Way Flow (Veh)	Proposed + Committed + Future Developments Two Way Flow (Veh)	% Traffic increase
AM Peak Hour (08:00 - 09:00)	193	39	20%
PM Peak Hour (18:00 - 19:00)	141	49	35%

Table 12-17: Summary Results for Junction 4.2

Description	Total Junction Two Way Flow (Veh)	Proposed + Committed + Future Developments Two Way Flow (Veh)	% Traffic increase
AM Peak Hour (08:00 - 09:00)	358	42	12%
PM Peak Hour (18:00 - 19:00)	379	52	14%

Table 12-18: Summary Results for Junction 5

Description	Total Junction Two Way Flow (Veh)	Proposed + Committed + Future Developments Two Way Flow (Veh)	% Traffic increase
AM Peak Hour (08:00 - 09:00)	15	6	40%
PM Peak Hour (18:00 - 19:00)	45	2	4%

Table 12-19: Summary Results for Junction 6

Description	Total Junction Two Way Flow (Veh)	Proposed + Committed + Future Developments Two Way Flow (Veh)	% Traffic increase
AM Peak Hour (08:00 - 09:00)	2,004	188	9%
PM Peak Hour (18:00 - 19:00)	1,842	213	12%

Trip generation calculations for the proposed, committed, and potential future developments are presented later in this Chapter.

As recommended in the TII Publication, 'Project Appraisal Guidelines Unit 16.1: Expansion Factors for Short Period Traffic Counts (October 2016)', the traffic count data has been converted to Annual Average Daily Traffic (AADT) data in order to provide a dataset representative of the annual traffic flow profile for the road network surrounding the Proposed Development.

The General Expansion Factor Method, as outlined in the TII Publication, was used to convert the surveyed flows for the Annual Average Daily Traffic (ADDT). The corresponding Factors for the Greater Dublin Region were used.

The traffic growth rate of 1.016 used to factor up the 2020 surveyed flows into 2021 is in accordance with the *'Table 6.1: Link-Based Growth Rates: Metropolitan Area Annual Growth Rates'* within the TII Publications – Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections (May 2019). The ADDT flows are shown below in Tables 12-20, 12-21, 12-22, 12-23, 12-24, 12-25, 12-26 and 12-27.

Table 12-20: AADT Calculations – Junction 1

Hour Ending	Proportion of Daily Traffic	Existing Two-way Flows through Junction 1 (Vehicles)
07:00	0.037	80
08:00	0.077	299
09:00	0.081	442
16:00	0.069	499
17:00	0.083	527
18:00	0.088	515
Total	0.435	2,362

24 Hour Estimate = 2,362/0.435 = 5,430 vehicles

Weekly Average Daily Traffic (WADT) = 5,430 x 0.99 = 5376 vehicles

Annual Average Daily Traffic (AADT) = 5376 x 0.97 = **5215 vehicles**

Table 12-21: AADT Calculations – Junction 2

Hour Ending	Proportion of Daily Traffic	Existing Two-way Flows through Junction 2 (Vehicles)
07:00	0.037	76
08:00	0.077	306
09:00	0.081	475
16:00	0.069	498
17:00	0.083	545
18:00	0.088	546
Total	0.435	2,446

24 Hour Estimate = 2,446/0.435 = 5623 vehicles

Weekly Average Daily Traffic (WADT) = 5623 x 0.99 = 5567 vehicles

Annual Average Daily Traffic (AADT) = 5567 x 0.97 = **5340 vehicles**

Table 12-22: AADT Calculations – Junction 3

Hour Ending	Proportion of Daily Traffic	Existing Two-way Flows through Junction 3 (Vehicles)
07:00	0.037	71
08:00	0.077	299
09:00	0.081	458
16:00	0.069	474
17:00	0.083	509
18:00	0.088	518
Total	0.435	2,329

24 Hour Estimate = 2,329/0.435 = 5,354 vehicles

Weekly Average Daily Traffic (WADT) = 5,354 x 0.99 = 5,300 vehicles

Annual Average Daily Traffic (AADT) = 5,300 x 0.97 = **5,141 vehicles**

Table 12-23: AADT Calculations – Junction 4.1

Hour Ending	Proportion of Daily Traffic	Existing Two-way Flows through Junction 4.1 (Vehicles)
07:00	0.037	16
08:00	0.077	76
09:00	0.081	193
16:00	0.069	141
17:00	0.083	135
18:00	0.088	150
Total	0.435	711

24 Hour Estimate = 711/0.435 = 1,634 vehicles

Weekly Average Daily Traffic (WADT) = 1,634 x 0.99 = 1,618 vehicles

Annual Average Daily Traffic (AADT) = 1,618 x 0.97 = **1,570 vehicles**

Table 12-24: AADT Calculations – Junction 4.2

Hour Ending	Proportion of Daily Traffic	Existing Two-way Flows through Junction 4.2 (Vehicles)
07:00	0.037	58
08:00	0.077	241
09:00	0.081	359
16:00	0.069	369
17:00	0.083	407
18:00	0.088	412
Total	0.435	1846

24 Hour Estimate = 1,846/0.435 = 4,244 vehicles

Weekly Average Daily Traffic (WADT) = 4,244 x 0.99 = 4,201 vehicles

Annual Average Daily Traffic (AADT) = 4,201 x 0.97 = **4,075 vehicles**

Table 12-25: AADT Calculations – Junction 5

Hour Ending	Proportion of Daily Traffic	Existing Two-way Flows through Junction 5 (Vehicles)
07:00	0.037	4
08:00	0.077	14
09:00	0.081	15
16:00	0.069	45
17:00	0.083	38
18:00	0.088	42
Total	0.435	158

24 Hour Estimate = 158/0.435 = 363 vehicles

Weekly Average Daily Traffic (WADT) = 363 x 0.99 = 340 vehicles

Annual Average Daily Traffic (AADT) = 340 x 0.97 = **349 vehicles**

Table 12-26: AADT Calculations – Junction 6

Hour Ending	Proportion of Daily Traffic	Existing Two-way Flows through Junction 6 (Vehicles)
07:00	0.037	309
08:00	0.077	1,100
09:00	0.081	2,040
16:00	0.069	1,881
17:00	0.083	1,739
18:00	0.088	1,608
Total	0.435	8677

24 Hour Estimate = 8,677/0.435 = 19,947 vehicles

Weekly Average Daily Traffic (WADT) = 19,947 x 0.99 = 19,748 vehicles

Annual Average Daily Traffic (AADT) = 19,748 x 0.97 = **19,156 vehicles**

12.2.3.4 Pedestrian and Cycling Facilities

GDA Existing Cycle Network

Currently, there are no cycle lanes in the immediate area surrounding the site. Cyclists can benefit from the provision of dedicated cycle lanes (even within Bus Lane) from Howth Railway Station heading west, which links up into an off-road cycle trail along Howth Road and Clontarf Road leading to Fairview.

Figure 12-12 shows the existing GDA Existing Cycle Network as extracted from Sheet 2.

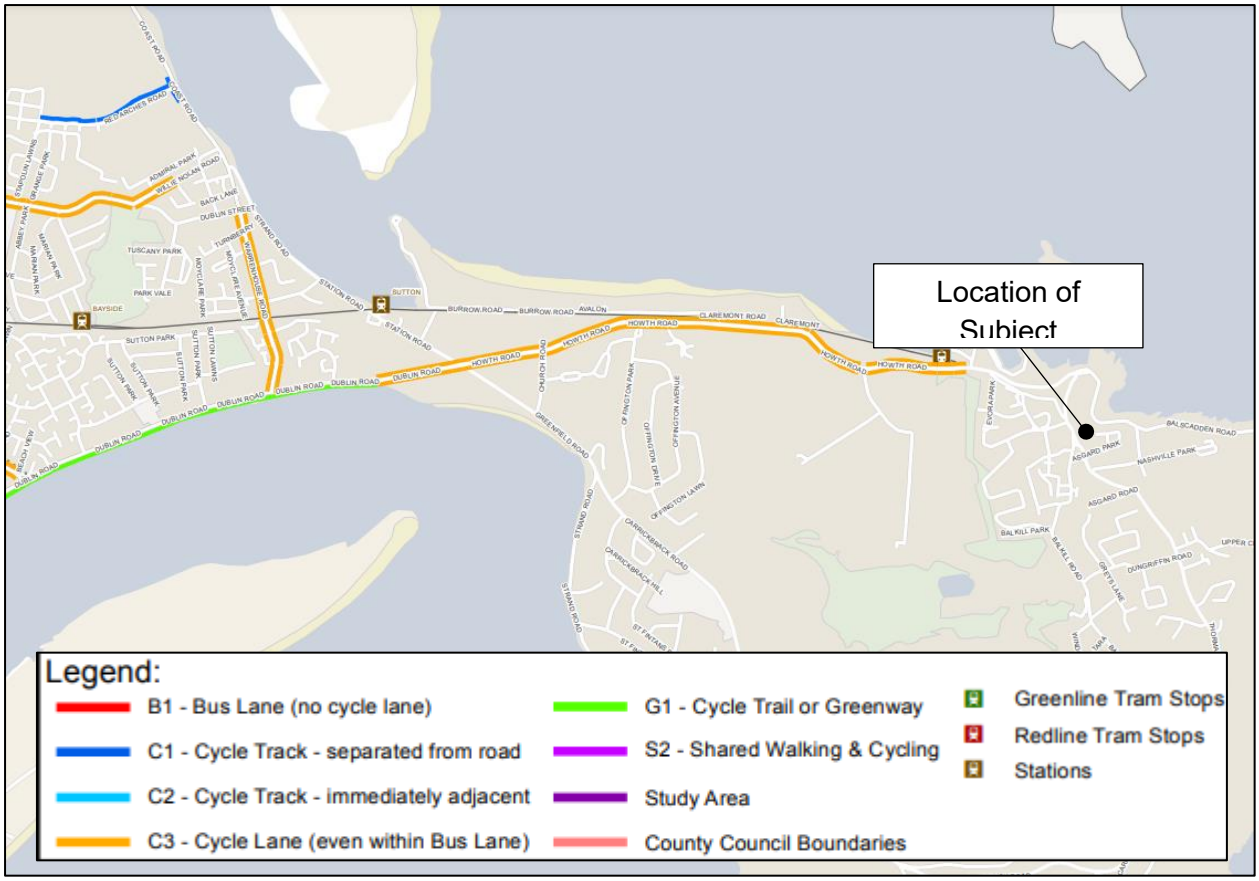


Figure 12-12: The Existing GDA Cycle Network.

Bike Parking

Two public bike parking are available at Howth Railway Station with a total provision of 11 no. stands.

In addition to the above, Bleeper Bike provides two further racks in Howth, one at East Pier, approximately 400m (c. 5-minute walk) from the proposed site entrance on Main Street (R105), and the other at Howth Railway Station, approximately 750m (c. 9-minute walk) from the same site access point.

Local Pedestrian Facilities

In the vicinity of the Proposed Development, Main Street (R105) incorporates good quality pedestrian facilities with street lighting and footpaths along both sides of the carriageway. To the south of the proposed site entrance on Main Street (R105), approximately 50m, there is a signal-controlled pedestrian crossing available with dropped kerbs and tactile paving which currently provides easy crossing for all users. To the north, the nearest pedestrian crossing (zebra type) is provided at the junction between R105 Harbour Road and R105 Abbey Street.

12.2.3.5 Public Transport Facilities

Dublin Bus

The subject site is directly served by public bus service. The closest bus stops – southbound (Stop ID: 560) and northbound (Stop ID: 575), are located on Main Street (R105) southwest of the site, just outside the proposed site access – See Figure 12-13. The southbound bus

route is travelling towards Dublin City Centre to Abbey Street Lower and the northbound bus route is travelling towards Howth Summit.

Figure.12-13: Site Location and Existing Access Point (Source: Google Maps).

All bus stops illustrated in Figure 12-13 are served by Dublin Bus Routes 6 and H3. Both routes operate from Howth to Abbey Street Lower in Dublin City Centre. Route 6 is routed via Howth Station, Howth Summit, Sutton Cross, Killester and Fairview whilst Route H3 travels via Howth Summit, Raheny, Killester and Fairview. A summary of the frequency of which Routes 6 and H3 operate is summarised in Table 12-27. The bus frequency data presented refers to the time that buses leave the first bus stops and was obtained by consulting Dublin Bus website.

Table 12-27: Summary Frequency of Dublin Bus Routes.

Weekday Frequency						
Route No.	Direction	00:00 to 07:00	07:00 to 09:00	09:00 to 17:00	17:00 to 19:00	19:00 to 00:00
6	From Howth	1 service	4 services	8 services	2 services	5 services
	To Howth	2 services	1 service	8 services	2 services	6 services
H3	From Howth	4 services	4 services	16 services	4 services	8 services
	To Howth	3 services	4 services	16 services	4 services	9 services
Saturday Frequency						
Route No.	Direction	00:00 to 07:00	07:00 to 09:00	09:00 to 17:00	17:00 to 19:00	19:00 to 00:00
6	From Howth	1 service	2 services	8 services	2 services	5 services
	To Howth	1 service	2 services	8 services	2 services	6 services
H3	From Howth	2 services	4 services	19 services	5 services	8 services
	To Howth	2 services	3 services	20 services	6 services	7 services
Sunday and Bank Holiday Frequency						
Route No.	Direction	00:00 to 07:00	07:00 to 09:00	09:00 to 17:00	17:00 to 19:00	19:00 to 00:00
6	From Howth	-	2 services	8 services	2 services	5 services
	To Howth	-	2 services	8 services	2 services	6 services
H3	From Howth	-	3 services	19 services	6 services	5 services
	To Howth	-	2 services	20 services	6 services	5 services

Rail

Howth Railway Station is located on Howth Road (R105) approximately 750m west of the proposed access to the subject development site. Journey times from the proposed site entrance to Howth Station is around 10 minutes for walking and 4 minutes for cycling from the east site access point and 11 minutes for walking from the north-west site access point – See Figures 12-14 and 12-15. Cycling from the north-west entrance is not viable due to one-way road along Balscadden Road. The entire site is situated within 1km of the station.

Access from the subject site (proposed access) to Howth Station is currently provided via Main Street (R105), Church Street and Harbour Road/Howth Road (R105). A network of footpaths is provided along the entire route towards the station. No cycle lane is provided along the route; however, two public bike parking are available at Howth Station with a total provision of 11 no. stands. Note that, from the site to Howth station, cyclists are not allowed to travel along Church Street, as this road operates at a one-way system (south-east bound only).

The Howth Railway Station is served by DART and Dublin Commuter routes, and operates from 5:45 AM to 00:30 AM Monday to Sunday, and from 08:30 AM to 00:30 AM on Sundays. Service is provided from Howth to Greystones via Dublin City Centre.

Figure.12-14: Walking Routes from Site to Howth Station (Source: Google Maps).

Figure 12-15 Cycling Routes from Site to Howth Station (Source: Google Maps).

12.2.4 Characteristics of the Proposed Development

12.2.4.1 General

The proposed development relates to lands located to the south of the Martello Tower on Balscadden Road & the former Baily Court Hotel, Main Street, Howth, County Dublin. The development will consist of the demolition of existing structures on the proposed site

including the disused sports building and the former Baily Court Hotel buildings and the construction of a residential development set out in 4 no. residential blocks, ranging in height from 2 to 5 storeys to accommodate 180 no. apartments and duplexes with associated internal residential tenant amenity and external courtyards and roof terraces, 1 no. retail unit and 2 no. café/retail units. The site will accommodate car parking spaces at basement level and bicycle parking spaces at basement and surface level. Landscaping will include new linear plaza which will create a new pedestrian link between Main St and Balscadden Rd to include the creation of an additional 2 no. new public plazas and also maintains and upgrades the pedestrian link from Abbey Street to Balscadden Road below the Martello Tower.

The schedule of accommodation is set out in the Table 12-28.

Table 12-28: Schedule of Accommodation

Description	Studio	1-Bed	2-Bed	3-Bed	Total
Block A	-	-	2	-	2
Block B	-	51	57	18	126
Block C	-	8	28	7	43
Block D	4	3	2	-	9
Total	**4**	**62**	**89**	**25**	**180**

The Proposed Development will include a single level basement under Block B, accessed from Main St only, containing 139 car spaces including 7 accessible spaces, plant, storage areas, waste storage areas and other associated facilities. A total of 410 cycle parking spaces are provided for at both basement and ground level, comprising 319 resident spaces and 91 visitor spaces.

The scheme provides for a new linear plaza which will create a new pedestrian and cycle link between Main St and Balscadden Rd to include the creation of an additional 2 no. new public plazas and also maintains and upgrades the existing pedestrian link from Abbey Street to Balscadden Road below the Martello Tower.

The Proposed Development includes all other ancillary site development works to facilitate construction and the provision of the basement car park, site services, piped infrastructure, a sub-station, public lighting, plant, signage, bin stores, bike stores, boundary treatments and hard and soft landscaping.

The subject site currently benefits from an existing vehicular access point to the east off Balscadden Road. As part of the subject proposed scheme, the existing access junction is proposed to be upgraded and a new vehicular access to the site is proposed from west via Main Street (R105), which, via an internal road, will connect to the existing site entrance on Bals-cadden Road and will provide access to the apartment blocks. The location of each site access point (*green circles*) and the proposed internal road (*yellow marking*) are illustrated in Figure 12-16.

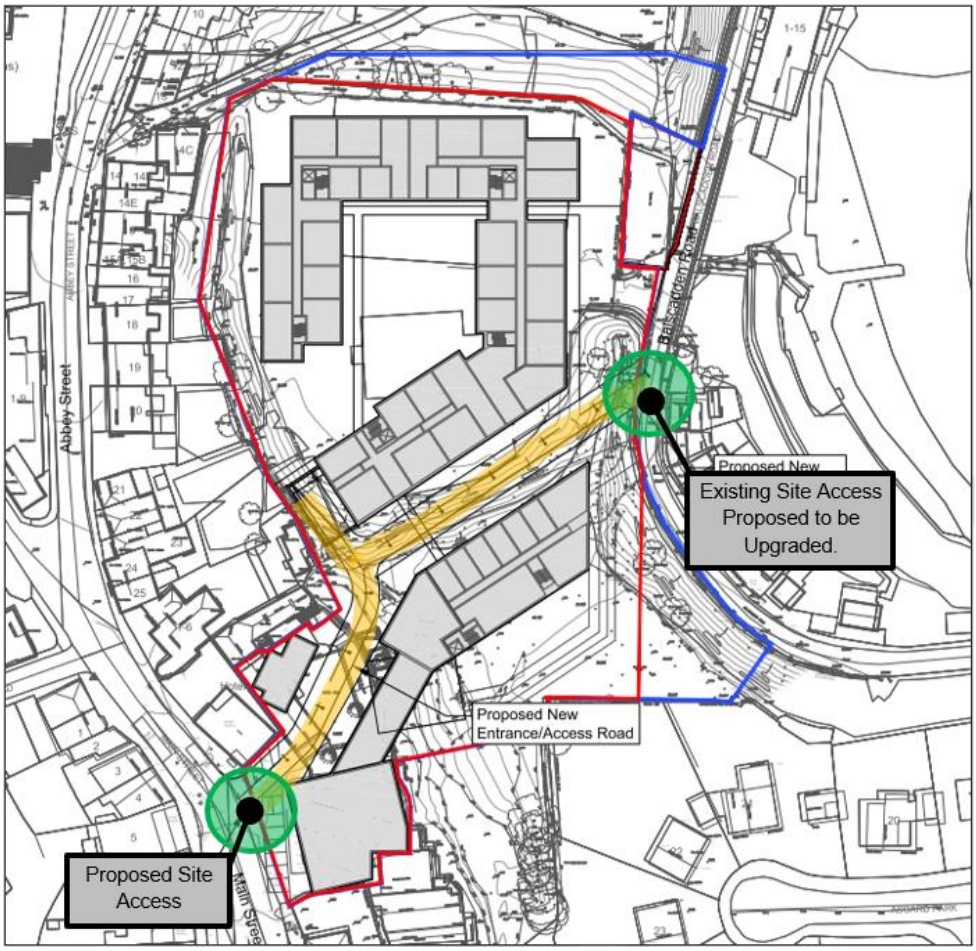


Figure 12-16: Site Access Points and Internal Road Layout

12.2.4.2 Committed Developments

In order to undertake a robust and complete assessment of the analysed junctions, the under-construction mixed-use development at the former Techrete site has also been assessed with regards to trip generation and distribution (Ref. ABP-306102-19).

The permission provided for the construction of 512 no. apartments and a total of 2,873 sqm of area of retail, commercial and creche space.

This site is located west of the Proposed Development, approximately 1.2km away from the Proposed Development along R105. Figure 12-17 shows the location in relation to the Proposed Development site.

Figure 12-17: Location of Under-construction Development (ABP-306102-19)

12.2.5 Potential Impact of the Proposed Development

12.2.5.1 Introduction

The potential impacts of the Proposed Development from a traffic and transport perspective at both construction and operational stage are outlined in the following sections.

12.2.5.2 Traffic Impact

Construction Traffic

There is potential for construction traffic to impact from a noise and dust perspective in relation to the surrounding road network. Deliveries to and from the site by heavy good vehicles will impact on noise levels, whilst dust may result from vehicles travelling along gravel roads and from general earthwork activities. There is also potential for traffic congestion, due to increased heavy good vehicles on the road network which may also perform turning movements, unloading, etc., in areas that impact on traffic. The potential for inappropriate parking whilst waiting for access to the site, may also impact local road users. However, the duration of this impact will be short-term (i.e., one to three years).

The worst-case scenario in terms of construction traffic will be during the excavation stage. The proposed development requires significant excavation works due to the sloping topography of the site. In this regard, it is currently estimated that there will be approximately 67,000m^3 of excavation required on the site. It is noted that this represents a reduction from the previous planning application, which required some 80,000m^3 of excavation. This optimisation was achieved through design amendments that sought to reduce the volume of excavation.

By reducing the quantity of excavated material to be removed from the site, there is a reduction in construction-related trips: the carrying capacity of the trucks is 15m^3, so a reduction from 80,000m^3 of excavation to 67,000m^3 of excavation will result in approximately 867 fewer trips

in and out over a 60-day (3-month) period, from 5,334 trips in and out down to 4,467 trips in and out.

Assuming a 10-hour working day between 08h00 and 18h00, and conservatively assuming that removal trucks will only operate Monday to Friday, there will be a daily average of approximately 75 HGV arrivals and 75 HGV departures per working day during the busiest 3-month period. Overall, the expected HGV movements during this stage of construction are predicted to vary from 65 to 95 arrivals per day and 65 to 95 departures per day. These movements represent some 2% of the existing traffic flow of 300 to 450 vehicles per hour each way on Main Street during the same period.

The nature of Howth is such that access via public roads requires all vehicles to pass through Sutton Cross. There are two route options to access the subject site from Sutton Cross. Route 1 is via Howth Road and Route 2 is via Greenfield Road/Howth Head. See Figure 12-18 illustrating both Routes.

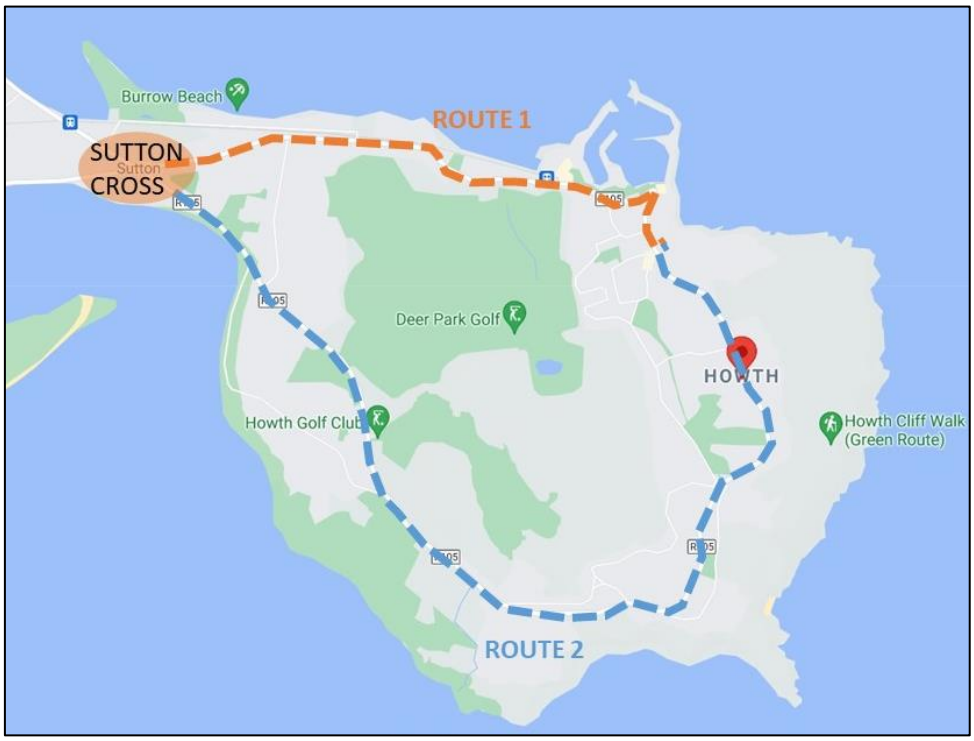


Figure 12-18: Vehicular routes from Sutton Cross

Route 1 is the shortest route measuring approximately 3.5km from Sutton Cross to the proposed site. Route 2 is approximately 7.5km.

It has been agreed with the local Balscadden residents that Balscadden Road will not be used for Construction Traffic due to the restrictive nature of the road, so in this regard a route option using Balscadden Road is not considered in this assessment.

Following our review and consultation with Fingal Council, the emerging preferred route is Route 2

Although this route is longer it is considered that this route would have the least impact on the existing road network. The route is generally of consistent carriageway width (7.0m to 7.5m) suitable for construction vehicles. There will be less potential for conflicts with pedestrian and other vehicles which should reduce the risk of an accident. It is also considered

that the travel time is likely to be similar or even quicker due to the congestion in Howth Harbour during the busy summer months.

It is recognised that the emerging preferred route passes 2 no. schools. In this regard, depending upon the time of year measures will be put into place to avoid construction traffic on this route during the ½ hr before schools start and similarly the ½ hr when schools close, these being the busiest times for peak traffic at the schools.

Operational Traffic

The Proposed Development will generate a number of trips by vehicles. These trips may have an impact on the surrounding road network and could contribute to increased congestion.

Traffic count data was obtained for the purposes of the planning application. The data surveyed is expected to reflect the peak traffic conditions on the local road network. An estimation of the traffic generation and distribution of the Proposed Development has been set out below. This will be compared to the background traffic counts in order to ascertain the impact the Proposed Development will have on the local road network.

12.2.5.3 Trip Generation

In order to assess the likely impact of the traffic generation arising from the subject Proposed Development, TRICS software has been consulted. TRIS is the national standard of trip generation and analysis in Ireland. It is a database system which allows users to identify representative trip rates and establish potential levels of trip generation for a wide variety of developments.

Full trip rates, which were sourced from TRICS version 7.8.2, have been provided in Appendix B and are summarised in Table 12-29.

The AM and PM peak hours of the surrounding road network (surveyed junctions) were recorded at 08:00 to 09:00 and 15:00 to 16:00, respectively. The associated trip rates are shown below.

Table 12-29: TRICS Car Trip Rates

Land Use	Calculation Factor	AM Peak Hour		PM Peak Hour	
		Arrival	Departure	Arrival	Departure
Apartments	Per Unit	0.053	0.236	0.091	0.062

The potential peak hour traffic generation for the Proposed Development is presented in Table 12-30. It has been calculated based on the proposed 180 no. apartment units and the TRICS trip rates set out above.

Table 12-30: Trip Rates: Proposed Development

Land Use	No. Units	AM Peak Hour		PM Peak Hour	
		Arrival	Departure	Arrival	Departure
Apartments	180	11	43	Apartments	180

As can be seen from the calculations above, it is estimated that the Proposed Development will generate a total of 54 car trips in the AM peak hour (11 arrivals and 43 departures) and 27 in the PM peak hour (16 arrivals and 11 departures).

12.2.5.4 Trip Distribution

The estimated traffic to/from the Proposed Development site has been divided between the following two access points:

- **Access Point 1**: Proposed Western Access on Main Street (R105).
- **Access Point 2**: Existing/Proposed New Eastern Access on Balscadden Road.

Based on the location of each access point and the fact that Balscadden Road operates on a one-way southbound basis along the eastern boundary of the site, it was assumed that Access Point 1 will serve the majority of the trips (85%) whilst Access Point 2 is assumed to serve 15%. Of the 85% of trips using Access Point 1, 70% is assumed to travel north towards Harbour Road and 15% southwards along R105.

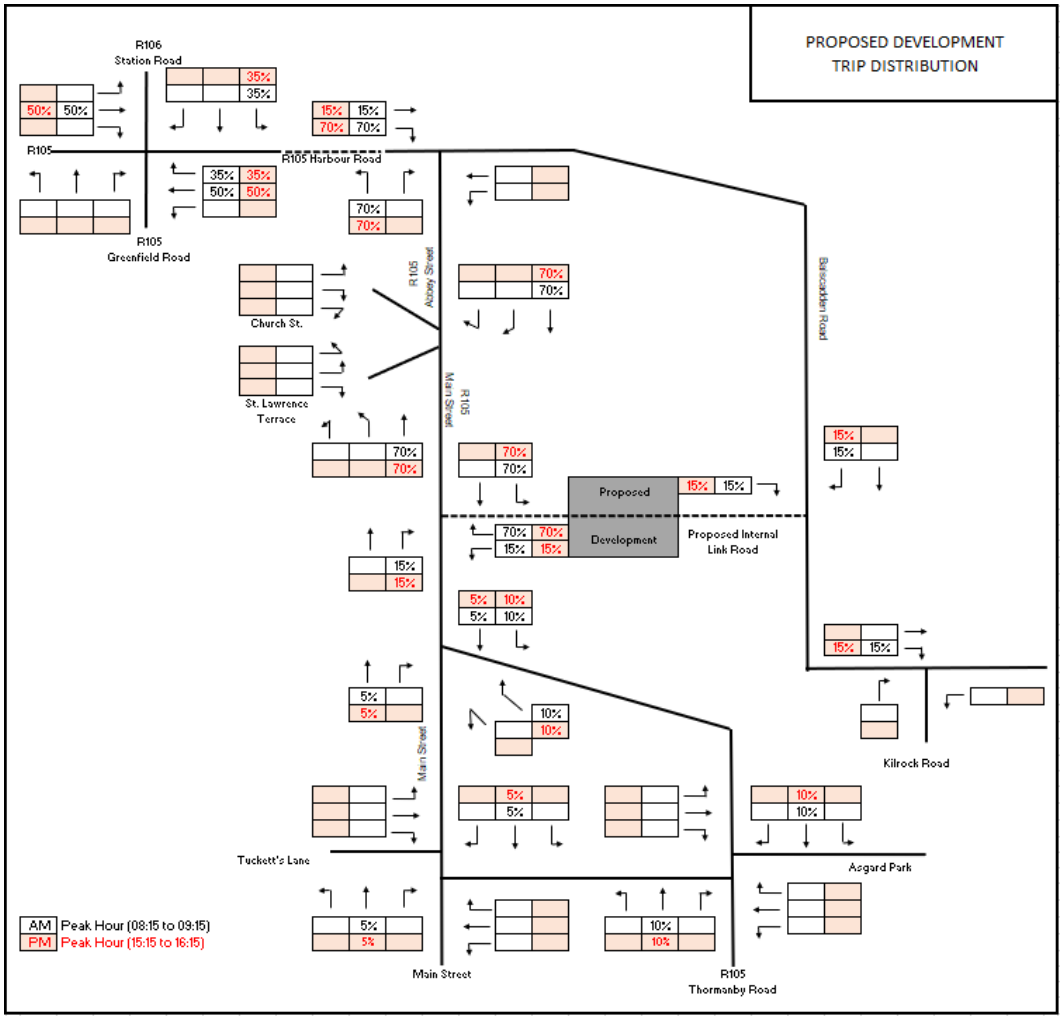


Figure 12-19: Trip Distribution - Proposed Development.

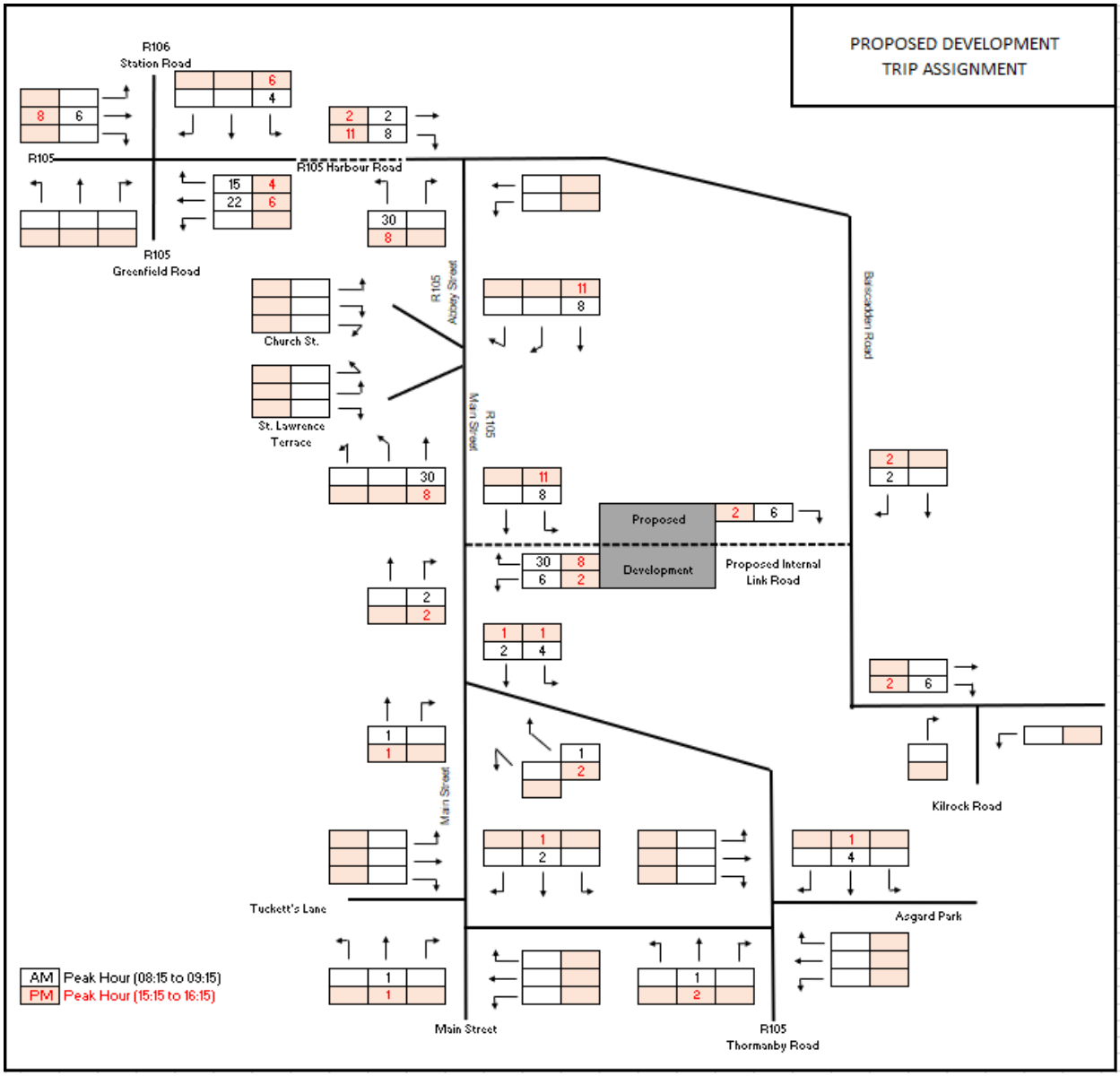


Figure 12-20: Trip Assignment - Proposed Development.

12.2.5.5 Do-Nothing Scenario

Should the Proposed Development not take place, the access roads and infrastructure will remain in their current state and there will be no change. Background traffic would be expected to grow over time. Given the location and zoning of the subject site, it is reasonable to assume that a similar development, with a potentially more intensive requirement for vehicular trips would be established on this site at some stage in the future

12.2.6 Avoidance, Remedial & Mitigation Measures

12.2.6.1 Introduction

This section of the report discusses mitigation measures to reduce the impact the Proposed Development on the surrounding area during the construction and operational phases.

12.2.6.2 Construction Phase

It is proposed that a Construction Environmental Management Plan (CEMP) will be prepared by the appointed contractor in order to minimise the potential impact of the construction phase of the Proposed Development on the safety and amenity of other users of the public road. A Preliminary CEMP has been prepared as a guide to the appointed contractor and this is included as pert of this application. The CEMP will consider the following aspects:

- Dust and dirt control measures.
- Noise assessment and control measures
- Routes to be used by vehicles
- Working hours of the site
- Details of construction traffic forecasts
- Time when vehicle movements and deliveries will be made to the site
- Facilities for loading and unloading
- Facilities for parking cars and other vehicles

In addition to the above, a detailed Construction Traffic Management Plan (CTMP) will be prepared by the main contractor. A Preliminary CTMP has been prepared which will guide the Contractor and this is included as part of this application. This document will outline proposals in relation to construction traffic and associated construction activities that impact the surrounding roads network. The document will be prepared in coordination and agreed with the local authority.

Care will be taken to ensure existing pedestrian and cycling routes are suitably maintained or appropriately diverted as necessary during the construction period, and temporary car parking is provided within the site for contractor's vehicles. It is likely that construction will have an imperceptible impact on pedestrian and cycle infrastructure.

Through the implementation of the CEMP and CTMP, it is anticipated that the effect of traffic during the construction phase will have a slight effect on the surrounding road network for short-term period.

12.2.6.3 Operational Phase

The Proposed Development is situated adjacent to suitable infrastructure and transport services for travel by sustainable modes. A key barrier to modal shift towards sustainable modes of travel is often a lack of information about potential alternatives to the car. As such, it is proposed that residents will be made aware of potential alternatives including information on walking, cycle routes and public transport.

Residents will be encouraged to avail of these facilities for travel to and from work. Provision of this information will be made during the sales process and will be included in the new homeowner's pack upon the sale of each unit, as this represents the best opportunity to make residents aware and to secure travel behaviour change. It is anticipated that this measure will help to reduce the level of traffic at the Proposed Development, thus providing mitigation against any traffic and transport effects of the development.

A Travel Plan has been included in this application under separate cover. This Plan sets out method to reduce the dependence on private car journeys and encourage residents within

the development to avail of sustainable forms of transport such as walking, cycling and public transport.

12.2.7 Residual Impacts

12.2.7.1 Traffic

The predicted impacts of the Proposed Development from a traffic and transport perspective at both construction and operational phases are outlined in the following sections.

12.2.7.2 Construction Phase

Provided the above mitigation measures and management procedures outlined in the Construction Management Plan are incorporated during the Construction Phase, the residual impact upon the local receiving environment is predicted to be short-term in the nature and slight in terms of effect.

12.2.7.3 Operational Phase

In order to assess the potential impact arising from the Proposed Development during the operational phase, a Traffic and Transport Assessment has been prepared and is included in the planning application under a separate cover. The traffic modelling carried out as part of the Traffic and Transport Assessment includes the analysis of 6 no. Junctions of the surrounding network as set out below.

- Junction 1: R105(W) / R105(S) / East Pier;
- Junction 2: R105 (N) / Church Street / St. Lawrence Road / R105 (S);
- Junction 3: R105 (N) / Main Street / R105 (S);
- Junction 4: Main Street (N) / Main Street (S) / R105 (S) / R105 (N);
- Junction 5: Balscadden Road (W) / Kilrock Road / Balscadden Road (E);
- Junction 6: Howth Road / Greenfield Road / Dublin Road / Station Road.

Traffic Growth Factors

It has been assumed within this Traffic and Transport Assessment for the subject site that construction of the Proposed Development will commence in 2022 for completion in 2025. Therefore, the Opening Year is assumed as 2025. In line with the 'Traffic and Transport Assessment Guidelines (May 2014)' which this TTA is based on, the junctions were also assessed for the future design years of 2030 (Opening Year +5 Years) and 2040 (Opening Year +15 Years). The background traffic growth rates used to factor up the 2021 baseline flows are in accordance with the '*Table 6.2: Link-Based Growth Rates: County Annual Growth Rates (excluding Metropolitan Area)*' within the TII Publications – Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections (May 2019). These are:

- 1.074 (Central Growth) growth factor from 2021 to 2025
- 1.174 (Central Growth) growth factor from 2021 to 2030
- 1.241 (Central Growth) growth factor from 2021 to 2040

Committed Future Developments

The under-construction mixed-use development at the former Techrete site has also been assessed with regards to trip generation and distribution (Ref. ABP-306102-19). The permission provided for the construction of 512 no. apartments and a total of 2,873 sqm of area of retail, commercial and creche space. This site is located west of the Proposed Development, approximately 1.2km away from the Proposed Development along R105.

Trip generation calculation for the approved (under-construction) development at the former Techrete site is shown in Table 12-31. It was extracted from the Traffic & Transport Assessment Report prepared by Barret Mahony Consulting Engineers in 2019 for the site (Ref. ABP-306102-19).

Table 12-31: Trip Generation – Approved (Under-construction) Development (ABP-306102-19).

Land Use	AM Peak Hour		PM Peak Hour	
	Arrival	Departure	Arrival	Departure
Apartments	22	82	77	41
Non-residential	44	39	54	61
Total	**66**	**121**	**131**	**102**

As can be seen from Table 12-31 as part of the TIA prepared by Barret Mahony Consulting Engineers, it was estimated that the under-construction mixed-use development at the former Techrete site will generate a total of 187 car trips in the AM peak hour (66 inbound and 121 outbound) and a total of 233 car trips in the PM peak hour (131 inbound and 102 outbound).

As this development is already at the construction stage, for modelling purposes, the above trips have been included in all DO NOTHING scenarios.

The assignment of the AM & PM car trips for the under-construction mixed-use development at the former Techrete site is detailed in Figure 12-21. The trip distribution has been extracted from the Traffic & Transport Assessment Report prepared by Barret Mahony Consulting Engineers in 2019 for the site (Ref. ABP-306102-19) and used in Figure 12-21.

In summary, it was assumed that two thirds of the generated traffic will make their way to/from west along R105 towards Sutton Cross and one third will travel to/from east towards Howth Village. Of the one third traveling to Howth Village, 50% of the trips were assumed to terminate in the local area, with the remaining 50% accessing Sutton Cross via Greenfield Road.

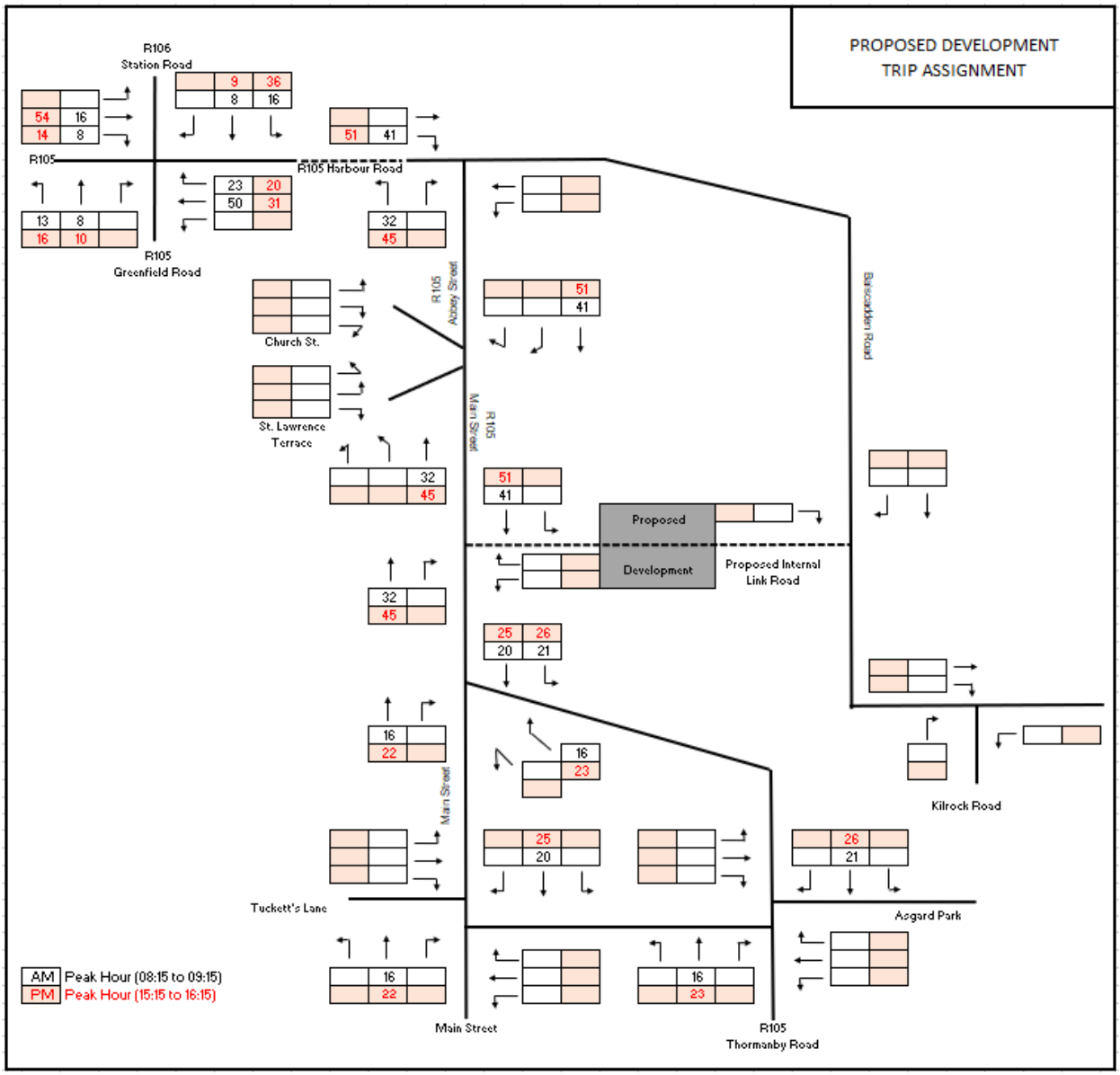


Figure.12-21: Trip Assignment – Approved (Under-construction) Development (ABP-306102-19).

Assessment Scenarios

The performance of the assessed junction has been analysed for the critical AM Peak Hour and PM Peak Hour (08:00 – 09:00 and 15:00 – 16:00) for the Weekday Analysis and Peak Hour (16:00 – 17:00) for the following scenarios:

- **2021 Baseline:** Existing Road network.
- **2025 DO NOTHING:** Existing Road network with baseline traffic flows factored up + traffic to/from the under-construction development at the former Techrete site (Ref. ABP-306102-19).
- **2030 DO NOTHING**: Existing Road network with baseline traffic flows factored up + traffic to/from the under-construction development at the former Techrete site (Ref. ABP-306102-19).

- **2040 DO NOTHING:** Existing Road network with baseline traffic flows factored up + traffic to/from the under-construction development at the former Techrete site (Ref. ABP-306102-19).
- **2025 DO SOMETHING:** 2025 DO NOTHING + traffic to/from the Proposed Development.
- **2030 DO SOMETHING:** 2030 DO NOTHING + traffic to/from the Proposed Development.
- **2040 DO SOMETHING:** 2040 DO NOTHING + traffic to/from the Proposed Development.

Modelling Results

There are various modelling software packages available to assess every type of junction. Waterman Moylan uses TRANSYT and PICADY to analyse signalised and priority junctions, respectively.

TRANSYT (Traffic Network Study Tool) software is a widely accepted software for modelling signalled controlled junctions. This programme utilises the phases and traffic flows input by the user and optimises phase timings over a cycle time. The outputs of a TRANSYT assessment include a Degree of Saturation percentage (DOS%) figure and queue length for each link on the road network.

PICADY is software for modelling priority-controlled junctions. This programme utilises junction's geometry and traffic flows input by the user to determine Ratio of Flow to Capacity (RFC) and queue length for each link on the junction.

Typically, a junction is said to be working satisfactory when the DOS/RFC of each link does not exceed 85%/0.85. Acceptable DOS/RFC values are considered to be in the range of 85%/0.85 to 100%/1.0 with higher values indicating restrained movements.

Modelling Results

A summary of the results of the modelling carried out as part of the Traffic and Transport Assessment is provided in Table 12-32. Junction 1 – Summary of PICADY Analysis Results.

Junction 1: R105 (W) / R105 (S) / East Pier

Junction 1 is an existing priority-controlled T-junction to the north of the subject development site. It has been modelled based on its current configuration and the Priority Intersection Capacity and Delay (PICADY) analysis results are summarised below. The arms of the junction were labelled as follows within PICADY model:

- Arm A: R105 (W).
- Arm B: East Pier (E).
- Arm C: R105 (S).

Table 12-32: Junction 1 – Summary of PICADY Analysis Results.

Stream	AM Peak Hour			PM Peak Hour		
	Queue (PCU)	Delays (sec.)	RFC	Queue (PCU)	Delays (sec.)	RFC
2021 Baseline						
Stream B-C	0.0	6.43	0.02	0.0	6.66	0.04
Stream B-A	0.0	7.87	0.03	0.1	8.29	0.06
Stream C-B	0.0	6.25	0.02	0.0	6.50	0.03
2025 DO NOTHING						
Stream B-C	0.0	5.79	0.03	0.0	6.85	0.04
Stream B-A	0.0	9.35	0.03	0.1	8.89	0.07
Stream C-B	0.0	6.40	0.02	0.0	6.70	0.03
2025 DO SOMETHING						
Stream B-C	0.0	5.81	0.03	0.0	6.89	0.04
Stream B-A	0.0	9.50	0.03	0.1	8.99	0.07
Stream C-B	0.0	6.42	0.02	0.0	6.75	0.03
2030 DO NOTHING						
Stream B-C	0.0	5.82	0.03	0.0	6.96	0.04
Stream B-A	0.0	9.58	0.03	0.1	9.13	0.08
Stream C-B	0.0	6.45	0.02	0.0	6.80	0.04
2030 DO SOMETHING						
Stream B-C	0.0	5.85	0.03	0.0	6.99	0.04
Stream B-A	0.0	9.73	0.03	0.1	9.23	0.08
Stream C-B	0.0	6.48	0.02	0.0	6.84	0.04
2040 DO NOTHING						
Stream B-C	0.0	5.88	0.03	0.1	7.03	0.05
Stream B-A	0.0	9.68	0.03	0.1	9.28	0.09
Stream C-B	0.0	6.50	0.02	0.0	6.85	0.04
2040 DO SOMETHING						
Stream B-C	0.0	5.91	0.03	0.1	7.08	0.05

Stream B-A	0.0	9.84	0.04	0.1	9.39	0.09
Stream C-B	0.0	6.52	0.02	0.0	6.90	0.04

The PICADY analysis results as summarised in Table 12-32 indicate that Junction 1 is currently operating well within capacity during both peak hours and would continue to do so for the future assessment year of 2040 DO SOMETHING with the highest RFC at 0.04 and a corresponding queue of 0.0 vehicle in the AM and with the highest RFC at 0.09 and a corresponding queue of 0.1 vehicle recorded in the PM.

Junction 2: R105 (N) / Church Street / St. Lawrence Road / R105 (S)

Junction 2 is an aggregation of two existing priority-controlled T-junction (R105 with Church Street and R105 with St. Lawrence Road) located to the west of the subject development site. Junction 2 has been modelled based on its current configuration and the PICADY analysis results are summarised in Table 12-33. The arms of the junction were labelled as follows within PICADY model:

- Arm A: R105 (S).
- Arm B: St. Lawrence Road.
- Arm C: R105 (N).
- Arm D: Church Street.

Table 12-33: Junction 2 – Summary of PICADY Analysis Results.

Stream	AM Peak Hour			PM Peak Hour		
	Queue (PCU)	Delays (sec.)	RFC	Queue (PCU)	Delays (sec.)	RFC
2021 Baseline						
Stream B-ACD	0.0	8.77	0.05	0.1	8.83	0.05
Stream A-BCD	0.0	4.75	0.00	0.0	0.00	0.00
Stream D-ABC	0.0	7.58	0.04	0.1	7.20	0.08
Stream C-ABD	0.0	5.71	0.00	0.0	5.50	0.02
2025 DO NOTHING						
Stream B-ACD	0.1	9.31	0.05	0.1	9.36	0.06
Stream A-BCD	0.0	4.61	0.00	0.0	0.00	0.00
Stream D-ABC	0.1	7.92	0.05	0.1	7.57	0.09
Stream C-ABD	0.0	5.52	0.00	0.0	5.30	0.02
2025 DO SOMETHING						
Stream B-ACD	0.1	9.51	0.05	0.1	9.44	0.06

Stream A-BCD	0.0	4.51	0.00	0.0	0.00	0.00
Stream D-ABC	0.1	8.01	0.05	0.1	7.62	0.09
Stream C-ABD	0.0	5.54	0.00	0.0	5.26	0.02
2030 DO NOTHING						
Stream B-ACD	0.1	9.57	0.06	0.1	9.64	0.06
Stream A-BCD	0.0	4.51	0.00	0.0	0.00	0.00
Stream D-ABC	0.1	8.07	0.05	0.1	7.67	0.10
Stream C-ABD	0.0	5.50	0.00	0.0	5.26	0.02
2030 DO SOMETHING						
Stream B-ACD	0.1	9.78	0.06	0.1	9.72	0.06
Stream A-BCD	0.0	4.41	0.00	0.0	0.00	0.00
Stream D-ABC	0.1	8.16	0.05	0.1	7.72	0.10
Stream C-ABD	0.0	5.52	0.00	0.0	5.22	0.02
2040 DO NOTHING						
Stream B-ACD	0.1	9.77	0.07	0.1	9.79	0.07
Stream A-BCD	0.0	4.45	0.00	0.0	0.00	0.00
Stream D-ABC	0.1	8.10	0.06	0.1	7.82	0.11
Stream C-ABD	0.0	5.49	0.00	0.0	5.25	0.02
2040 DO SOMETHING						
Stream B-ACD	0.1	9.98	0.07	0.1	9.87	0.07
Stream A-BCD	0.0	4.36	0.00	0.0	0.00	0.00
Stream D-ABC	0.1	8.19	0.06	0.1	7.87	0.11
Stream C-ABD	0.0	5.50	0.00	0.0	5.21	0.02

The PICADY analysis results as summarised in Table 12-33 indicate that Junction 2 is currently operating well within capacity during both peak hours and would continue to do so for the future assessment year of 2040 DO SOMETHING with the highest RFC at 0.07 and a corresponding queue of 0.1 vehicle in the AM and with the highest RFC at 0.11 and a corresponding queue of 0.1 vehicle recorded in the PM.

Junction 3: R105 (N) / Main Street / R105 (S)

Junction 3 is an existing priority-controlled T-junction located just southwest of the subject development site. It has been modelled based on its current configuration and the PICADY

analysis results are summarised in Table 12-34. The arms of the junction were labelled as follows within PICADY model:

- Arm A: R105 (S).
- Arm B: Main Street.
- Arm C: R105 (N).

Table 12-34: Junction 3 – Summary of PICADY Analysis Results.

Stream	AM Peak Hour			PM Peak Hour		
	Queue (PCU)	Delays (sec.)	RFC	Queue (PCU)	Delays (sec.)	RFC
2021 Baseline						
Stream B-C	0.2	6.97	0.16	0.1	6.44	0.10
Stream B-A	0.0	6.62	0.01	0.0	6.76	0.01
Stream C-AB	0.1	5.88	0.06	0.2	5.92	0.10
2025 DO NOTHING						
Stream B-C	0.3	7.39	0.20	0.2	6.86	0.14
Stream B-A	0.0	6.91	0.01	0.0	7.13	0.02
Stream C-AB	0.2	6.06	0.11	0.3	6.19	0.16
2025 DO SOMETHING						
Stream B-C	0.3	7.41	0.20	0.2	6.88	0.14
Stream B-A	0.0	6.93	0.01	0.0	7.15	0.02
Stream C-AB	0.2	6.06	0.11	0.3	6.20	0.17
2030 DO NOTHING						
Stream B-C	0.3	7.62	0.22	0.2	7.00	0.15
Stream B-A	0.0	7.04	0.01	0.0	7.27	0.02
Stream C-AB	0.2	6.07	0.12	0.3	6.23	0.18
2030 DO SOMETHING						
Stream B-C	0.3	7.64	0.22	0.2	7.02	0.15
Stream B-A	0.0	7.07	0.01	0.0	7.28	0.02
Stream C-AB	0.2	6.08	0.12	0.3	6.24	0.18
2040 DO NOTHING						
Stream B-C	0.3	7.78	0.23	0.2	7.10	0.16
Stream B-A	0.0	7.13	0.01	0.0	7.38	0.02

Stream C-AB	0.2	6.08	0.12	0.3	6.26	0.19
2040 DO SOMETHING						
Stream B-C	0.3	7.80	0.23	0.2	7.11	0.16
Stream B-A	0.0	7.15	0.01	0.0	7.39	0.02
Stream C-AB	0.2	6.08	0.13	0.3	6.28	0.19

The PICADY analysis results as summarised in Table 12-34 indicate that Junction 3 is currently operating well within capacity during both peak hours and would continue to do so for the future assessment year of 2040 DO SOMETHING with the highest RFC at 0.23 and a corresponding queue of 0.3 vehicle in the AM and with the highest RFC at 0.19 and a corresponding queue of 0.3 vehicle recorded in the PM.

Junction 4.1: Main Street (N) / Main Street (S) / Tuckett's Lane (W)

Junction 4.1 is an existing priority-controlled staggered junction located to the south of the subject development site. It has been modelled based on its current configuration and the PICADY analysis results are summarised in Table 12-35. The arms of the junction were labelled as follows within PICADY model:

- Arm A: Main Street (N).
- Arm B: Eastern Approach (E).
- Arm C: Main Street (S)
- Arm D: Tuckett's Lane (W).

Table 12-35: Junction 4.1 – Summary of PICADY Analysis Results.

Stream	AM Peak Hour			PM Peak Hour		
	Queue (PCU)	Delays (sec.)	RFC	Queue (PCU)	Delays (sec.)	RFC
2021 Baseline						
Stream B-ACD	0.1	8.85	0.08	0.0	8.39	0.04
Stream A-BCD	0.0	6.03	0.02	0.0	5.59	0.01
Stream D-ABC	0.0	7.14	0.01	0.0	6.73	0.01
Stream C-ABD	0.0	5.29	0.02	0.0	5.59	0.01
2025 DO NOTHING						
Stream B-ACD	0.1	9.10	0.09	0.1	8.61	0.05
Stream A-BCD	0.0	5.98	0.02	0.0	5.50	0.01
Stream D-ABC	0.0	7.24	0.01	0.0	6.82	0.01
Stream C-ABD	0.0	5.23	0.02	0.0	5.51	0.01
2025 DO SOMETHING						

Stream B-ACD	0.1	9.12	0.09	0.1	8.61	0.05
Stream A-BCD	0.0	5.96	0.02	0.0	5.49	0.01
Stream D-ABC	0.0	7.24	0.01	0.0	6.82	0.01
Stream C-ABD	0.0	5.24	0.02	0.0	5.52	0.01
2030 DO NOTHING						
Stream B-ACD	0.1	9.26	0.10	0.1	8.70	0.05
Stream A-BCD	0.0	6.01	0.03	0.0	5.49	0.01
Stream D-ABC	0.0	7.22	0.02	0.0	6.80	0.01
Stream C-ABD	0.0	5.20	0.02	0.0	5.51	0.01
2030 DO SOMETHING						
Stream B-ACD	0.1	9.27	0.10	0.1	8.71	0.05
Stream A-BCD	0.0	6.00	0.03	0.0	5.48	0.01
Stream D-ABC	0.0	7.22	0.02	0.0	6.80	0.01
Stream C-ABD	0.0	5.20	0.02	0.0	5.51	0.01
2040 DO NOTHING						
Stream B-ACD	0.1	9.31	0.10	0.1	8.75	0.06
Stream A-BCD	0.0	6.03	0.03	0.0	5.48	0.01
Stream D-ABC	0.0	7.24	0.02	0.0	6.81	0.01
Stream C-ABD	0.0	5.17	0.02	0.0	5.50	0.01
2040 DO SOMETHING						
Stream B-ACD	0.1	9.33	0.10	0.1	8.75	0.06
Stream A-BCD	0.0	6.02	0.03	0.0	5.48	0.01
Stream D-ABC	0.0	7.25	0.02	0.0	6.82	0.01
Stream C-ABD	0.0	5.17	0.02	0.0	5.50	0.01

The PICADY analysis results as summarised in Table 12-35 indicate that Junction 4.1 is currently operating well within capacity during both peak hours and would continue to do so for the future assessment year of 2040 DO SOMETHING with the highest RFC at 0.10 and a corresponding queue of 0.1 vehicle in the AM and with the highest RFC at 0.06 and a corresponding queue of 0.1 vehicle recorded in the PM.

Junction 4.2: R105 (N) / R105 (S) / Asgard Park (E)

Junction 4.2 is an existing priority-controlled staggered junction located to the south of the subject development site. It has been modelled based on its current configuration and the PICADY analysis results are summarised in Table 12-36. The arms of the junction were labelled as follows within PICADY model:

- Arm A: R105 (S).
- Arm B: Western Approach (W).
- Arm C: R105 (N)
- Arm D: Asgard Park (E).

Table 12-36: Junction 4.2 – Summary of PICADY Analysis Results.

Stream	AM Peak Hour			PM Peak Hour		
	Queue (PCU)	Delays (sec.)	RFC	Queue (PCU)	Delays (sec.)	RFC
2021 Baseline						
Stream B-ACD	0.0	7.49	0.03	0.0	7.17	0.03
Stream AB-CD	0.0	5.10	0.00	0.0	5.24	0.00
Stream D-ABC	0.0	7.21	0.02	0.0	7.69	0.03
Stream CD-AB	0.0	5.60	0.01	0.0	5.22	0.01
2025 DO NOTHING						
Stream B-ACD	0.0	7.74	0.03	0.0	7.39	0.04
Stream AB-CD	0.0	5.01	0.00	0.0	5.12	0.00
Stream D-ABC	0.0	7.41	0.02	0.0	7.95	0.03
Stream CD-AB	0.0	5.50	0.01	0.0	5.10	0.01
2025 DO SOMETHING						
Stream B-ACD	0.0	7.75	0.03	0.0	7.40	0.04
Stream AB-CD	0.0	5.02	0.00	0.0	5.12	0.00
Stream D-ABC	0.0	7.43	0.02	0.0	7.96	0.03
Stream CD-AB	0.0	5.48	0.01	0.0	5.09	0.01
2030 DO NOTHING						
Stream B-ACD	0.0	7.76	0.03	0.0	7.44	0.04
Stream AB-CD	0.0	4.95	0.00	0.0	5.07	0.00
Stream D-ABC	0.0	7.49	0.02	0.0	8.10	0.03

Stream CD-AB	0.0	5.50	0.01	0.0	5.06	0.01
2030 DO SOMETHING						
Stream B-ACD	0.0	7.77	0.03	0.0	7.44	0.04
Stream AB-CD	0.0	4.95	0.00	0.0	5.07	0.00
Stream D-ABC	0.0	7.51	0.02	0.0	8.10	0.03
Stream CD-AB	0.0	5.47	0.01	0.0	5.06	0.01
2040 DO NOTHING						
Stream B-ACD	0.0	7.90	0.03	0.0	7.58	0.04
Stream AB-CD	0.0	4.91	0.00	0.0	5.04	0.00
Stream D-ABC	0.0	7.60	0.02	0.0	8.20	0.04
Stream CD-AB	0.0	5.48	0.01	0.0	5.03	0.01
2040 DO SOMETHING						
Stream B-ACD	0.0	7.91	0.03	0.0	7.70	0.04
Stream AB-CD	0.0	4.91	0.00	0.0	4.97	0.00
Stream D-ABC	0.0	7.61	0.02	0.0	7.91	0.03
Stream CD-AB	0.0	5.43	0.01	0.0	5.09	0.01

The PICADY analysis results as summarised in Table 12-36 indicate that Junction 4.2 is currently operating well within capacity during both peak hours and would continue to do so for the future assessment year of 2040 DO SOMETHING with the highest RFC at 0.03 and a corresponding queue of 0.0 vehicle in the AM and with the highest RFC at 0.04 and a corresponding queue of 0.0 vehicle recorded in the PM.

Junction 5: Balscadden Road (W) / Kilrock Road / Balscadden Road (E)

Junction 5 is an existing priority-controlled T-junction located to the east of the subject development site. It has been modelled based on its current configuration and the PICADY analysis results are summarised in Table 12-37. The arms of the junction were labelled as follows within PICADY model:

- Arm A: Balscadden Road (E).
- Arm B: Kilrock Road (S).
- Arm C: Balscadden Road (W).

Table 12-37: Junction 5 – Summary of PICADY Analysis Results.

Stream	AM Peak Hour			PM Peak Hour		
	Queue (PCU)	Delays (sec.)	RFC	Queue (PCU)	Delays (sec.)	RFC
2021 Baseline						
Stream B-AC	0.0	0.00	0.00	0.0	8.00	0.00
Stream C-AB	0.0	6.34	0.01	0.0	6.44	0.03
2025 DO NOTHING						
Stream B-AC	0.0	0.00	0.00	0.0	8.01	0.00
Stream C-AB	0.0	6.34	0.01	0.0	6.44	0.04
2025 DO SOMETHING						
Stream B-AC	0.0	0.00	0.00	0.0	8.03	0.00
Stream C-AB	0.0	6.41	0.02	0.0	6.47	0.04
2030 DO NOTHING						
Stream B-AC	0.0	0.00	0.00	0.0	8.03	0.00
Stream C-AB	0.0	6.35	0.01	0.0	6.46	0.04
2030 DO SOMETHING						
Stream B-AC	0.0	0.00	0.00	0.0	8.04	0.00
Stream C-AB	0.0	6.41	0.02	0.0	6.48	0.04
2040 DO NOTHING						
Stream B-AC	0.0	0.00	0.00	0.0	8.05	0.00
Stream C-AB	0.0	6.35	0.01	0.0	6.48	0.04
2040 DO SOMETHING						
Stream B-AC	0.0	7.99	0.01	0.0	8.05	0.00
Stream C-AB	0.0	6.31	0.02	0.0	6.49	0.04

The PICADY analysis results as summarised in Table 12-37 indicate that Junction 5 is currently operating well within capacity during both peak hours and would continue to do so for the future assessment year of 2040 DO SOMETHING with the highest RFC at 0.02 and no queue recorded in the AM and with the highest RFC at 0.04 and also no queue recorded in the PM.

Junction 6: Howth Road / Greenfield Road / Dublin Road / Station Road

Junction 6 is an existing signalised crossroads located approximately 3.0km west of the subject development site. It has been modelled based on its current configuration and the TRANSYT analysis results are summarised in Table 12-38 The arms of the junction were labelled as follows within TRANSYT model:

- Arm A: Howth Road (E).
- Arm B: Greenfield Road (S).
- Arm C: Dublin Road (W).
- Arm D: Station Road (N).

Table 12-38: Junction 6 – Summary of TRANSYT Analysis Results.

Arm	Movement	AM Peak Hour		PM Peak Hour	
		Queue (PCU)	DOS (%)	Queue (PCU)	DOS (%)
2021 Baseline					
A	S / L	13.50	71	11.74	62
	R	6.46	59	9.30	74
B	S / L / R	15.17	86	14.20	85
C	S	8.99	56	8.89	82
	L	0.72	6	0.41	4
	R	13.52	86	11.78	71
D	S / R	8.02	56	3.72	33
	L	5.34	29	3.96	22
2025 DO NOTHING					
A	S / L	15.85	79	13.80	67
	R	10.65	60	11.04	79
B	S / L / R	16.82	86	16.77	88
C	S	10.36	62	9.66	80
	L	0.87	7	0.49	5
	R	13.91	87	15.08	79
D	S / R	8.60	55	4.18	31
	L	5.59	29	4.86	26
2025 DO SOMETHING					
A	S / L	16.91	81	14.02	68
	R	8.10	62	11.28	80
B	S / L / R	16.82	86	16.77	88
C	S	10.63	63	9.66	80
	L	0.88	7	0.49	5
	R	13.91	87	15.62	80
D	S / R	8.60	55	4.18	27
	L	5.60	29	4.99	31
2040 DO NOTHING					
A	S / L	31.40	84	16.94	6
	R	13.69	69	14.63	90
B	S / L / R	34.68	89	20.69	93
C	S	14.39	73	13.36	92
	L	0.95	9	0.63	6
	R	20.69	118	19.45	89
D	S / R	11.95	57	4.68	32
	L	6.34	31	5.36	28
2040 DO SOMETHING					
A	S / L	19.24+	84	16.65	74
	R	9.09	63	13.41	85
B	S / L / R	17.72+	83	18.62	88
C	S	13.12+	74	13.07	88
	L	1.19	11	0.65	6
	R	31.20+	108	19.36	89
D	S / R	5.46	53	4.58	31
	L	9.40+	29	5.18	27

The TRANSYT analysis results as summarised in Table 12-38 indicate that Junction 6 is currently operating within capacity during both peak hours with the highest DOS at 86% and a corresponding queue of 15.17 vehicles in the AM and with the highest DOS at 85% and a corresponding queue of 14.20 vehicles recorded in the PM.

For the assessment year of 2025, the results indicate that the junction would continue to operate within capacity for both DO NOTHING (without development) and DO SOMETHING (with development) scenarios during both AM and PM peak hours.

In the 2040 DO NOTHING scenario, as per the TRANSYT results above, even without the inclusion of the trips generated by the Proposed Development, Junction 6 would operate above capacity in the AM peak hour with two approaches at 118% of Degree of Saturation, and within capacity for in the PM peak hour with the highest DOS at 93% and a corresponding queue of 20.69 vehicles recorded.

With the inclusion of the trips generated by the Proposed Development, the phase timings were optimised by the software. This optimisation reduced the number of approaches operating above capacity in the AM peak hour to only one approach, however, the recorded DOS for this over saturated approach is 108% with a corresponding queue of 31.20 vehicles. In the PM peak hour, the results indicate that the junction would continue to operate below capacity with the highest DOS at 89% and a corresponding queue of 19.36 vehicles recorded.

It is worth mentioning however, that the impact of the Proposed Development in the operation of Junction 6 is minimal.

12.2.8 Monitoring

12.2.8.1 Construction Phase

During the Construction Phase the following monitoring is advised. The specific compliance exercises to be undertaken in relation to the range of measures detailed in the final construction management plan will be agreed with the planning authority.

- Construction vehicles routes and parking
- Internal and external road conditions
- Construction activities hours of work

12.2.8.2 Operational Phase

The Travel Plan for the Proposed Development will be monitored and updated at regular intervals. This will enable tracking in terms of a reduction in the dependence on private car journeys and a shift towards sustainable transport options such as walking, cycling and the use of public transport such as buses and trains.

12.2.9 Interactions

Material assets, utilities and waste interact with other environmental receptors as follows:

Population and Human Health: There may be temporary negative impacts to human health during the Construction Phase caused by noise, dust, air quality and visual impacts which are covered in other chapters of this EIAR.

There may be short term traffic delays during road works on public roads when tying into existing roads or when connecting to existing services. These will be managed by implementation of a construction traffic management plan.

Water (Hydrology and Hydrogeology): There may be interaction with the surrounding water bodies through surface water runoff during topsoil stripping and earthworks which will be required to construct the roads.

Land and Soil: Excess soil excavated during construction works for the development will be transported by road for disposal in approved locations as provided for in this EIAR. Movements of construction traffic will be managed in accordance with the Construction Traffic Management Plan.

Noise: The Proposed Development will have no significant impact on overall traffic volumes and therefore traffic will not result in any significant increases of noise at sensitive receptors.

Air Quality and Climate: There can be a significant interaction between air quality, climate and traffic due to traffic-related pollutants that may arise. In the current assessment, traffic derived pollutants which may affect Air Quality and Climate have been deemed to be negligible. Therefore, the impact of the interaction between air quality and climate is insignificant.

12.2.10 Difficulties Encountered When Compiling

There were no difficulties encountered when undertaking this assessment.

12.2.11 References

Dublin BusConnects Website: New Dublin Area Bus Network - BusConnects

Design Manual for Urban Roads and Streets (DMURS), Department of Transport, Tourism and Sport

Irish Rail Website: www.irishrail.ie

Fingal County Council Development Plan 2017 – 2023

NRA Guidelines, Traffic and Transportation Assessment Guidelines (2014), National Roads Authority

Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections, (May 2019), Transport Infrastructure Ireland Publications

Project Appraisal Guidelines for National Roads Unit 16.1 – Expansion Factors for Short Period Traffic Counts, (2016), Transport Infrastructure Ireland Publications

Sustainable Urban Housing: Design Standards for New Apartments, (2020), Department of Housing, Planning and Local Government

Transport for Ireland (TFI): www.transportforireland.ie

13 RISK MANAGEMENT

13.1 Study Methodology

13.1.1 Scope and Context

The relevant legislation that applies to this chapter is the Schedule 6 of the Planning and Development Regulations 2001, as amended, in particular by Statutory Instrument (SI) No. 296/2018 - European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018. The following paragraphs of Schedule 6, Paragraph 2(e)(i)(IV), specifically refers "*a description of the likely significant effects on the environment of the proposed development resulting from … the risks to human health, cultural heritage or the environment (for example due to accidents or disasters),*"

Paragraph 2(h) further expands with "*a description of the expected significant adverse effects on the environment of the proposed development deriving from its vulnerability to risks of major accidents and/or disasters which are relevant to it. Relevant information available and obtained through risk assessments pursuant to European Union legislation such as the Seveso III Directive or the Nuclear Safety Directive or relevant assessments carried out pursuant to national legislation may be used for this purpose, provided that the requirements of the Environmental Impact Assessment 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, emergencies arising from such events*."

This Chapter was prepared by Enviroguide Senior Environmental Consultant Nikita Coulter. Nikita Coulter has a B.Sc. in Zoology (Hons) from University College Dublin, an M.Sc in Biodiversity and Conservation and a Postgraduate Diploma in Environmental Engineering from Trinity College Dublin, and a NEBOSH accredited International Diploma in Environmental Risk Management. Nikita has 8 years professional experience as an Environmental Compliance Specialist.

13.1.2 Guidelines and Reference Material

This assessment, of major accidents and disasters is a relevantly new requirement in legislation and, as a result, national guidelines are not yet available. Cognisance has been taken of the Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA Draft, August 2017). Although this document predates the 2018 legislation it follows the requirements laid out in the Directive 2014/52/EU.

Specifically, the EPA Guidelines state that the EIAR must take account of "*the vulnerability of the project to risk of major accidents and /or disasters relevant to the project concerned and that the EIAR therefore explicitly addresses this issue. The extent to which the effects of major accidents and / or disasters are examined in the EIAR should be guided by an assessment of the likelihood of their occurrence (risk)… The potential for a project to cause risks to human health, cultural heritage or the environment due to its vulnerability to external accidents or disasters is considered where such risks are significant, e.g. the potential effects of floods on sites with sensitive plants. Where such risks are significant then the specific assessment of those risks in the form of a Seveso Assessment (where relevant) or Flood Risk Assessment*

may be required. The EIAR should refer to those separate assessments while avoiding duplication of their contents."

Reference has also been made to the Office of Emergency Planning, Department of Defence (DOD) Publication *'A National Risk Assessment for Ireland 2020'*. A consolidated list of national hazards for Ireland identified in the DOD document are identified in Table 13-1.

Table 13-1: Consolidated List of National Hazards (Source: A National Risk Assessment for Ireland (2020) Department of Defence)

Hazard: Civil • Large Crowd Event • Pandemic • Water Supply Distribution and Contamination • Food Chain Contamination • Animal Disease • Terrorist Incident	**Hazard: Natural** • Storm • Snow and Ice (Including prolonged low temperature) • Flooding (Including pluvial, fluvial and coastal)
Hazard: Transportation • Maritime Incident • Air Incident • Transport Hub (Includes Airports, Ports and Rail Stations)	**Hazard: Technological** • Structural Collapse (Including Dam, Tunnel, Bridge and Building) • Nuclear Incident (Abroad) • Cyber Incident • Disruption of Energy Supply (Including oil, gas, electricity and communications)

13.1.3 Risk Assessment Methodology

The risk assessment methodology has been supported by general risk assessment methods. Hazard analysis and risk assessment are accepted internationally as essential steps in the process of identifying the challenges that may have to be addressed by society, particularly in the context of emergency management. Mitigation as a risk treatment process involves reducing or eliminating the likelihood and/or the impact of an identified hazard.

Table 13-2 Classification of National Likelihood Criteria (Source: A National Risk Assessment for Ireland (2020) Department of Defence)

National Likelihood Criteria		
Rating	**Classification**	**Average Recurrence Interval**
1	Extremely Unlikely	100 or more years between occurrences
2	Very Unlikely	51-100 year between occurrences
3	Unlikely	11-50 years between occurrences
4	Likely	1-10 years between occurrences
5	Very Likely	Ongoing/Less than 1 year between occurrences

13.2 Predicted Impacts

The EIAR chapters within this report identify that the Proposed Development has been designed in accordance with best practice and that the Proposed Development can be safely undertaken without risk to health.

In order to understand the potential consequences and predicted impacts of any major accident or disaster due to the Proposed Development and the vulnerability of the project a desk study was undertaken. The assessment reviewed:

- The vulnerability of the project to major accidents or disasters.
- The potential for the project to cause risks to human health, cultural heritage and the environment, as a result of that identified vulnerability.

A methodology has been used including the following phases:

Phase 1 Assessment:

The DOD Consolidated List of National Hazards was used to identify a preliminary list of potential major accident and disasters. Receptors covered by legislation were not included within the assessment e.g. construction workers.

Phase 2 Screening:

The list was screened and major events such as volcanoes were not included given the unlikely event of one occurring. Elements already addressed as a key part of the design e.g. risks of building collapse, are not repeated.

Phase 3: Mitigation and Evaluation

In the event that mitigation measures included did not mitigate against the risk, then, the potential impacts on receptors are identified in the relevant chapter. Table 13-3 lists the major accidents and/or disasters reviewed.

Table 13-3: Major Accidents and/or Disasters Reviewed

Major Accident or Disaster	Relevant for this Proposed Development? (Y/N)	Why relevant?	Potential Receptor	Covered within EIAR?
Civil				
Large Crowd Event (An event with over 5,000 people)	N	Not considered vulnerable due to the nature of the Proposed Development, i.e., predominantly residential development with retail and café units.	N/A	N/A
Pandemic	Y	COVID-19 is an illness that can affect your lungs and airways. It is caused by a virus called Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). SARS-CoV-2 is spread in sneeze or cough droplets. The Proposed Development poses no additional COVID-19 risk. It is anticipated that there will be approximately 300 workers directly employed during the construction phase of the project. During the Construction Phase of this Proposed Development HSE guidelines will be adhered to as relevant. All workers directly and indirectly employed during the Operational Phase of the Proposed Development will comply with the relevant Government protocols that will be in place at that point in time in relation to COVID-19.	Local businesses, construction workers	Chapter 4 (Population and Human Health) of this report addresses COVID-19.

Water Supply Contamination	Y	Waterborne diseases can be caused by consuming contaminated drinking water. No public health issues have been identified for the Construction Phase or Operational Phase of the Proposed Development. Appropriate industry standard and health and safety legislative requirements will be implemented during the Construction Phase that will be protective of site workers associated with the dewatering works. The existing water supply for the Proposed Development will be via connection to the public supply.	Local water users	Chapter 7 (Water (Hydrology and Hydrogeology)) of this report identifies the control measure required to avoid contamination of water supplies during construction works.
Food Chain Contamination	Y	Potentially relevant to the Proposed Development in the Operational Phase. Food premises in the commercial units will be required to register the premises as a food business with the HSE and would need to adhere to food safety legislation and traceability requirements.	Consumers/Producers	N/A
Animal Disease	N	Not relevant to the Proposed Development	N/A	N/A
Terrorist Incident	N	Not considered vulnerable due to the nature of the Proposed Development, i.e., residential/commercial development.	N/A	N/A
Transportation				
Maritime Incident	N	Not considered vulnerable. Despite the proximity of the Site to the coast, the Site is 18m above sea level at the lowest point. The National Risk Assessment for Ireland 2020 lists the 'worst-case' Maritime Incident scenario as a collision between a cargo vessel and a passenger ferry resulting in a blockage along the 10km channel at Dublin Port, which could also result in a spill of heavy fuel oil into the port and bay. A collision or a fuel spill in Howth Harbour or Balscadden Bay will not affect the Proposed Development, due to the nature of the development and the vertical distance separating the Site from the coastline.	N/A	N/A

Air Incident	N	Not considered vulnerable. The closest commercial airport is Dublin Airport, which is approximately 12km northwest of the Site of the Proposed Development. The closest Public Safety Zone (PSZ) associated with the runaways at Dublin Airport is located approximately 2.3km north of the Site of the Proposed Development. The closest domestic airport is Ballybougal Airfield, which is located approximately 17km northwest of the Site of the Proposed Development. Casement Aerodrome, Baldonell is a military airbase located approximately 27km southwest of the Site of the Proposed Development.	N/A	Section 13.3.2 of this Chapter (Risk Management) assess the vulnerability of the Proposed Development to air incidents.
Transport Hub (Includes Airports, Ports and Rail Stations)	N	Not considered vulnerable as the Site of the Proposed Development is not defined as a Transport Hub. The closest rail station is Howth Train Station, which is approximately 680m east of the Site of the Proposed Development. The closest maritime port is Howth Harbour and Marina, which is approx. 170m north of the Site of the Proposed Development. *For airports see above*.	N/A	N/A
Natural				
Cultural, Archaeological and Architectural Heritage	N	Not considered vulnerable. As the closest Record of Monuments and Places (RMP) site is located 0.05km from the Site of the Proposed Development, it is predicted that the Construction Phase will not cause any significant impact on the Archaeology and Cultural Heritage of the area as a result of construction and excavation works.	N/A	Chapter 10 (Archaeology and Cultural Heritage) of this EIAR assessed the impact of the Proposed Development on the Archaeological and Cultural Heritage.
Landslides / Sinkholes	N	Not considered vulnerable. A soil retention system comprising a secant piled retaining wall has been	N/A	Chapter 6 (Land and Soils) of this EIAR assessed the vulnerability of

		designed to the site-specific ground investigations and groundwater monitoring to prevent the risk of unstable soil conditions occurring during construction or ground movement causing damage to the surrounding environment. The predicted ground movements during the ground works and construction phase have been established in the Byrne Looby report.		the Proposed Development to ground movements.
Earthquakes	N	Not considered vulnerable due to the location of the site.	N/A	N/A
Floods/Storm surge/tidal flooding	Y	Vulnerable to flooding from surcharging the on-site drainage system. A Flood Risk Assessment (Waterman Moylan, 2022) has been conducted for the Site of the Proposed Development. The Site has been analysed for risks from tidal flooding from the Irish Sea at Balscadden Bay, fluvial flooding from the Bloody Stream, pluvial flooding, ground water and failures of mechanical systems. Appropriate setting of floor levels, flood routing, damp proof membranes, adequate waterproofing at the basement structure and sealing of all openings in the basement are required to be strictly adhered to during the Construction Phase. During the Operational Phase the surface water network needs to be regularly maintained and where required cleaned out to mitigate the risk of flooding from the drainage system.	Development	Chapter 8 (Air Quality, Climate and Microclimate) of this EIAR identifies the vulnerability of the project to flooding.
Severe weather such as Tornados, Heatwaves, Blizzards and Droughts	N	Not considered vulnerable. In the event of severe weather events, the national meteorological service, Met Éireann, provides advance notice of severe weather, usually several days in advance. When appropriate, colour-coded weather warnings are issued. The Office of Emergency Planning works with the government departments and other key public authorities in order to ensure the best possible use of resources and compatibility across different emergency planning	N/A	N/A

		requirements.		
Air Quality events	Y	Vehicular emissions Dust emissions	Residents/ workers	Chapter 8 (Air Quality, Climate and Microclimate) of this EIAR identifies the impact of the construction and operation of the development on ambient air quality.
Wildfires	N	Not considered vulnerable due to the location of the Site of the Proposed Development.	N/A	N/A
Dam, Bridge or Tunnel Failure	N	Not considered vulnerable as no dams, bridges or tunnels are proposed as part of the development.	N/A	N/A
Flood defence failure	Y	There is a risk of flooding of the basement levels. The risk will be mitigated by regular inspection and cleaning out of the Surface Water drainage network.	Residents / workers / developers	Chapter 8 (Air Quality, Climate and Microclimate) of this EIAR identifies the vulnerability of the project to flooding.
Fire	Y	There is a risk of fire which might lead to loss of life and environmental pollution. The buildings have been designed in accordance with all relevant building and fire safety standards. Fire safety infrastructure will be installed at the Site. A fire evacuation strategy will be put in place in advance of dwelling occupancy.	Construction workers / Residents / Employees	Section 13.3.1 of this Chapter deals with Fire Safety and Emergency Response. A Preliminary Fire Safety and Access & Use Strategy (Maurice Johnson & Partners, 2022) has been prepared for the Proposed Development.
Invasive species	Y	There is a risk that invasive alien plant species (IAPS) within the Site (Sycamore *Acer pseudoplatanus*, Butterfly Bush *Buddleia davidii* and Three-Cornered Leek *Allium triquetrum*) could spread to the Howth Head SAC as a result of soil disturbance and clearance activities at the Site. As a precautionary measure, the Site will be re-surveyed for IAPS prior to construction and IAPS will be removed via chemical and/or mechanical means. There is also a risk of introducing invasive species to the Proposed Development. Any material required on the Site will be sourced from a stock that has been screened	Native species / local biodiversity	Chapter 5 (Biodiversity) of this EIAR details the preventative measures to be taken with regards to invasive species.

		for the presence of any invasive species by a suitably qualified ecologist and where it is confirmed that none are present. All machinery will be thoroughly cleaned and disinfected prior to arrival on site to prevent the spread of invasive species.		
Technological				
Structural Collapse (Building)	N	This has been taken into consideration in the building design. All buildings have been designed to modern standards. No further assessment is required.	N/A	N/A
Nuclear incident	N	Not considered vulnerable. There are no nuclear power stations near the Proposed Development. The closest is Trawsfynydd Nuclear Power Station, which is located approximately 150km east of the Site of the Proposed Development in Wales.	N/A	N/A
Cyber incident	N	Not considered vulnerable. This is a predominantly residential development; however, the retail/commercial units may opt to have cyber protection in place when operational. This will be at the discretion of the unit operators.	N/A	N/A
Disruption to energy supply (oil, gas, electricity)	N	Not considered vulnerable. ESB Networks maintain the electricity network in Ireland. Gas Networks Ireland maintain the natural gas network in Ireland.	N/A	Chapter 12 (Material Assets) of this EIAR contains information on the energy systems to be utilised during the Construction and Operational Phases of the Proposed Development
Utilities failure (communications)	N	Not considered vulnerable. In Ireland, the fixed-line communications market is dominated by Eir; while Eir, Three, and Vodafone own Ireland's mobile telecommunications infrastructure.	N/A	Chapter 12 (Material Assets) of this EIAR contains information on communications systems.
Utilities failure (water supply)	N	Not considered vulnerable.	N/A	Chapter 7 (Water) and Chapter 12 (Material Assets) of this EIAR contain information on water supply

		A pre-connection enquiry was submitted to Irish Water in relation to a Water & Wastewater connection for the Proposed development and Irish Water have advised the proposed connection to the Irish Water networks can be facilitated at this moment in time.		
Utilities failure (wastewater, sewage)	N	Not considered vulnerable. A pre-connection enquiry was submitted to Irish Water in relation to a Water & Wastewater connection for the Proposed development and Irish Water have advised the proposed connection to the Irish Water networks can be facilitated at this moment in time.	N/A	Chapter 7 (Water) and Chapter 12 (Material Assets) of this EIAR contain information on wastewater and sewage removal and treatment
Utilities failure (solid waste)	N	Not considered vulnerable. A Construction, Demolition and Waste Management Plan has been prepared for the Construction Phase of the Proposed Development and an Operational Waste Management Plan has been prepared for the Operational Phase of the Proposed Development. The implementation of the waste management plans will mitigate risks from solid waste.	N/A	Chapter 12 (Material Assets) of this EIAR contains information on solid waste removal and treatment
Industrial accidents (defence, energy, oil and gas refinery, food industry, chemical industry, manufacturing, quarrying, mining)	N	Not considered vulnerable. There are no Upper Tier Seveso sites adjacent to the Site of the Proposed Development. There are 16 Upper Tier Seveso Sites located approximately 10km from the Proposed Development at Dublin Port.	N/A	N/A

13.3 Management Plans

13.3.1 Fire Safety and Emergency Response

The design criteria of the buildings are in accordance with all relevant building and fire safety standards. A Preliminary Fire Safety and Access & Use Strategy (Maurice Johnson & Partners, 2022) has been prepared for the Proposed Development. Appropriate means of escape in case of fire involving multiple escape stairs, ventilated corridors and sprinkler systems have been designed into each of the apartment blocks and the retail units. Additionally, the Proposed Development structure will be designed to achieve minimum 60 minutes fire resistance (stability, integrity and insulation) and the topmost floor height will not be greater than 20m. The individual residential units will each be designed as standalone compartments fire separated from all adjoining accommodation. Access routes serving the Proposed Development have been designed to provide adequate space for the Fire Brigade. A fire evacuation strategy will be put in place in advance of dwelling occupancy.

A Building Lifecycle Report (Aramark Property, 2022) reviews the outline specification of materials and infrastructure to be utilised for the Proposed Development. Protective Services that will be included in the Proposed Development are listed within report and include:

- Fire alarms
- Fire extinguishers
- Apartment sprinkler system (where applicable by fire cert)
- Dry risers (a system of empty pipes and valves that can be connected externally to a pressured water source by emergency services and firefighters in the event of a fire)
- Firefighting lobby ventilation (to fire consultants design and specification)
- Common area lobbies smoke extract / exhaust systems

13.3.2 Public Safety Zones

Public Safety Zones (PSZs) are mapped out around airport runways to protect the public on the ground from possible aircraft crashes in populated area. PSZs are used to prevent inappropriate use of land where the risk to the public is greatest, e.g., by limiting the type and allowable height of buildings and structures within the zones.

Two individual risk factors relating to chance of death by aircraft crash have been assessed in determining appropriate Public Safety Zones (PSZs) at Dublin Airport. The inner PSZ risk value is 1 in 100,000 per year and the outer PSZ risk value is 1 in 1,000,000 per year, for each runway.

The Site of the Proposed Development is located approximately 12km to the southeast of Dublin Airport. There are no PSZs directly over the Site of the Proposed Development at Balscadden Road, Howth. The nearest PSZ is an outer PSZ which is located approximately 2.3 kilometres to the north of the Site of the Proposed Development. The PSZs at Dublin Airport and the location of the Site of the Proposed Development are shown in Figures 13-1 and Figures 13-2 below.

Based on the PSZs, an aircraft strike disaster is not considered relevant to this Proposed Development.

Figure 13-1: Dublin Airport Public Safety Zones Existing Runways (the Site of the Proposed Development is represented by a red star)

Figure 13-2: Dublin Airport Public Safety Zones Existing Runway 10L/28R (the Site of the Proposed Development is represented by a red star)

13.4 Residual Impacts

Control measures will put in place for health and safety and environmental management as per conditions of the planning permission, relevant code of practices (Code of Practice for Inspecting and Certifying Buildings and Works) and relevant legislation including Building Control Act 1990 (No. 3 of 1990), as amended and Building Control Regulations 1997, as amended.

The residual impacts will be negligible once all control, mitigation and monitoring measures have been implemented.

13.5 Monitoring

All monitoring proposals for the risks identified in Table 13-3 have been detailed in the relevant technical chapters as listed in Table 13-3 and are included in Chapter 15 Mitigation Measures and Monitoring.

13.6 Difficulties Encountered When Compiling

No difficulties were encountered in completing this Risk Chapter.

13.7 References

- Chapter 4-12 of Volume 2 of this EIAR
- Environmental Resources Management Ireland Ltd (2005) Public Safety Zones Report
- EPA (2017) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (Draft).
- Garda Mapping Section – Seveso Sites Ireland WebMap [Viewed Online 17.02.2022] https://www.arcgis.com/home/item.html?id=a01b5a0a6ff24f10adff30beaa3b6fd0
- Office of Emergency Planning (2020) 'A National Risk Assessment for Ireland 2020' Department of Defence Publication
- Statutory Instrument (SI). No. 296/2018 - European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018

14 INTERACTIONS

14.1 Introduction

As a requirement of Planning Regulations and the Environmental Protection Agency's '*Guidelines on information to be contained in Environmental Impact Assessment Reports*' (2017), interrelationships between various environmental aspects must be considered when assessing the impact of the Proposed Development, as well as individual significant impacts. The significant impacts of the Proposed Development and the proposed mitigation measures have been detailed in the relevant chapters of this report. However, as with all developments that pose potential environmental impacts, there also exists potential for interactions/interrelationships between the impacts of different environmental aspects. The results may exacerbate or ameliorate the magnitude of impacts. This chapter of the EIAR addresses the interactions between the various environmental factors of the Proposed Development.

The following Section is directed by Article 3 section 1(e) of the EIA Directive. The EPA Guidelines on the information to be contained in Environmental Impact Assessment Reports (Draft, 2017) and Advice Notes for Preparing Environmental Impact Statements (Draft, September 2015) were also considered.

Article 3 of the Directive states:

1. *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)*

14.2 Study Methodology

The interactions between impacts on different environmental factors have been addressed throughout this EIAR. Close co-ordination and management with the EIAR team was carried out to ensure that all likely relevant interactions were addressed at the scoping stage of the EIAR and interactions have been adequately assessed.

Following an assessment of the EIAR, a matrix was produced to display where interactions between impacts on different factors have been addressed. This has been carried out by use of chapter headings included in the EIAR and details of any interaction during all phases of the Proposed Development.

14.3 Interactions

A matrix has been produced to show where potential significant interactions between effects on different factors have been addressed, see Table 14-1.

As this EIAR has been prepared by a number of specialist consultants, an important aspect of the EIA process was to ensure that interactions between the various disciplines have been

taken into consideration. The principal interactions requiring information exchange between the environmental specialists and the design team are summarised below.

Table 14-1: Interactions between Factors

Interaction	4. Population and Human Health	5. Biodiver-sity	6. Land and Soils	7. Water (Hydrology and Hydro-geology)	8. Air Quality & Climate	9. Noise & Vibration	10. Landscape & Visual Amen-ity	11. Archaeology, Architecture & Cultural Heritage	12. Material Assets (Waste & Utilities)	12. Material Assets (Traffic)	13. Risk Manage-ment
Population and Human Health											
Biodiversity											
Land and Soils											
Water (Hydrol-ogy and Hydro-geology)											
Air Quality and Climate											
Noise & Vibra-tion											
Landscape & Visual Amenity											
Archaeology, Architectural and Cultural Heritage											
Material Assets (Waste & Utili-ties)											
Material Assets (Traffic)											
Risk Manage-ment											

	No Interaction
	Interaction
	N/A

Table 14-2: Population and Human Health

Population and Human Health	
Summary	
Chapter 4 of this EIAR, *Population and Human Health,* details the direct and indirect effects of the Proposed Development on Population and Human Health; and sets out any required mitigation measures where appropriate. The population in the vicinity of the Site of the Proposed Development has been assessed in terms of demography, economic activity and employment, tourism and amenity, landscape and visual, human health and social health. Construction Phase • The Proposed Development has the potential to cause additional traffic, air emissions from increased traffic, noise, or visual impact. Each of these impacts has been assessed in full in the respective chapters of this EIAR - Chapter 8 (Air Quality) Chapter 9 (Noise and Vibration) and Chapter 10 (Landscape and Visual Amenity). Operational Phase • The Proposed Development has the potential to cause additional traffic, air emissions from increased traffic, noise, or visual impact.	
Interactions	
Air Quality	Interactions between Air Quality and Population and Human Health have been considered as the Operational Phase has the potential to cause health issues as a result of impacts on air quality from dust nuisances and potential traffic derived pollutants. However, the mitigation measures employed at the Proposed Development will ensure that all impacts are compliant with ambient air quality standards and human health will not be affected. The Air Quality and Climate Chapter notes that the impact of the Proposed Development on air quality and climate is predicted to be negligible with respect to the Operational Phase in the long term. Furthermore, traffic-related pollutants which may affect Population & Human Health have been deemed as slight to moderate, therefore are not expected to have a significant impact on population and human health.
Water (Hydrology and Hydrogeology)	Water (Hydrology and Hydrogeology) has been fully assessed in Volume 2, Chapter 7 of this EIAR. No public health issues associated with the water (hydrology and hydrogeology) conditions at the Site have been identified for the Construction Phase or Operational Phase of the Proposed Development.

	Appropriate industry standards and health and safety legislative requirements will be implemented during the Construction Phase that will be protective of site workers.
Noise and Vibration	Noise is fully assessed in Volume 2, chapter 9. The nearest noise sensitive locations are residential properties which are located approximately 20m from the Proposed Development Site Boundary. Once the development is completed, the potential noise impacts to the surrounding environment are 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 (estate vehicle movements, children playing etc.) and hence no significant impact are expected from this area of the development site. 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 Proposed Development. Potential noise impacts also relate to operational plant serving the apartment buildings such as heat pumps. The impact assessment of noise and vibration has concluded that additional noise associated with the operation of the facility will not create any noise nuisance beyond the Site boundary. No human health impacts are anticipated as a result of noise during the Operational Phase of the Proposed Development.
Landscape and Visual	There are no protected views, rights of way or planned pieces of strategic infrastructure or any important tourist sites effected in any way by the Proposed Development. A photomontages were prepared by Macroworks to access the visual effect of the Proposed Development on surrounding receptors. Based on the assessment criteria and matrices outlined in Chapter 10 the significance of residual visual impact are summarised as High-medium, medium to medium-low. The visual impacts are considered neutral, moderate, and long term for the Operational Phase.
Material Assets: Traffic	There can be a significant interaction between population and human health and traffic. This is due to traffic-related pollutants that may arise. The Proposed Development will have moderate impact on traffic volumes in the local network. A Travel Plan has been prepared by Waterman Moylan Consulting Engineers Limited (February 2022), in support of a planning application for the Proposed Development. This document summarised the accessibility of the site by active and public transport modes of transport and focused on how residents could be encouraged to use sustainable means of transport to and from the site and to minimise the number of residents who will drive to work. Therefore, impact on Population and Human Health is deemed to be neutral, moderate and long-term.

Land and Soil	The Construction Phase of the Proposed Development could give rise to short-lived dust from the site and from soil spillages on the existing road network around the site which may impact population and human health, especially during dry conditions. Dust suppression will be carried out to ensure that dust nuisance affecting population and human health and neighbouring properties is minimised. Good construction management practices, as detailed in the CEMP will minimise the risk of pollution from construction activities at the Site. During the Operational Phase, due to best management practices, good housekeeping, and adherence to all health and safety procedures, it is not foreseen that there will be any negative impacts to population and human health.
Material Assets (Waste and Utilities)	The Construction Phase of the Proposed Development will result in an increase in demand for waste collections and waste treatment in the area, however, due to the nature of this phase, the impact will be temporary, negative and moderate. There will be an increase in waste generation and in the amount of water used and wastewater produced during the Operational Phase of the Proposed Development. The building management company, tenants and residents will be required to maintain the resident bins and storage areas in good condition as required by the FCC Waste Bye-Laws. The waste strategy presented in the OWMP will provide sufficient storage capacity for the estimated quantity of segregated waste. Communal bin stores will be provided for each apartment building. Bin stores will be located conveniently for access for residents. In terms of water supply, Irish Water have confirmed that connection to the existing water supply network is feasible without any upgrades to the existing infrastructure. The proposed surface water flow control device is to be limited to the greenfield equivalent runoff rate, and SuDS measures are proposed to maximise the infiltration. The net runoff volume from the site will therefore remain unchanged. Therefore, impact on Population and Human Health is deemed to be neutral, moderate and long-term.
Conclusions	
The development is considered to have a slight positive impact in terms of sustainable employment generation at the Proposed Development. The Proposed Development has the potential to increase the level of direct and indirect employment associated with the on-site activities which would have a significant positive socio-economic effect. Adverse impacts on Population and Human Health are not expected to occur and any potential inter-actions with impacts of other environmental aspects, as outlined in this EIAR, are insignificant.	

Table 14-3: Biodiversity

Biodiversity	
Summary	
Chapter 5 of this EIAR, *Biodiversity,* details the direct and indirect effects of the Proposed Development on the local flora and fauna; and sets out any required mitigation measures where appropriate. Construction Phase • The Proposed Development will result in the loss of semi-natural habitat from the terrestrial buffer zone of Dublin Bay Biosphere, the impact of which is deemed to be impact is deemed to be ***negative, permanent, imperceptible***. However, there is potential for surface water run-off containing silt and/or pollutants generated during the construction phase to negatively affect the terrestrial core zone to the east of the Site and the surrounding marine zones. • Construction traffic has the potential to impact the air quality at the Howth Head pNHA through construction dust emissions and the potential for nuisance dust. Operational Phase • Operational phase traffic emissions on Howth Head pNHA are deemed to be ***neutral*** and the overall impact of the Proposed Development is negligible in terms of ambient air quality standards.	
Interactions	
Water (Hydrology and Hydrogeology)	The key environmental interaction with biodiversity is water. A series of mitigation measures are proposed in Chapter 7 – Water (Hydrology and Hydrogeology) of this EIAR document, as well as in Chapter 5, to ensure the quality (i.e. no pollution or sedimentation) and quantity (surface run-off and flooding) of water is of an appropriate standard. Interactions between hydrology and biodiversity can occur through impacts to water quality, arising, for example, from an accidental pollution event during the construction or operational phase. This interaction has the potential to result in impacts on habitats and fauna that are hydrologically linked to the site.
Land and Soils	An assessment of the potential impact of the Proposed Development on land and soils is outlined in Chapter 6 – Land and Soils. These impacts are considered to be relevant to the ecological sensitivities associated with the Site of the Proposed Development discussed in Chapter 5; and mitigation measures addressing these potential impacts are described in full in Chapter 6. The bulk removal of soils at the site can have implications for biodiversity. Natural regeneration of native and local seeds is the preferred option for re-vegetating the area to be retained for biodiversity.
Air Quality and Climate	An assessment of the potential impact of the Proposed Development on air quality and climate is included in Chapter 8 of this EIAR. Dust emissions arising from construction works at the site were identified as having

	potentially significant effects on local biodiversity, in particular the adjacent Howth Head pNHA/SAC. However, once the dust minimisation measures are implemented, impacts to biodiversity and designated sites are not predicted to be significant.
Noise and Vibration	An assessment of the potential impact of the Proposed Development in the form of excess noise and vibrations associated with the proposed works are laid out in Chapter 9 - Noise and Vibration. There is potential for interactions between noise and sensitive fauna, e.g., birds, that occur in adjacent habitats from increased noise levels during the construction phase. However, as described, noise related impacts are not deemed to be significant, even in the absence of mitigation. Nevertheless, the noise chapter and biodiversity chapter provides a range of mitigation measures to reduce noise emissions from the site.
Landscape and Visual Amenity	An assessment of the potential impact of the Proposed Development on the surrounding landscape character is outlined in Chapter 10 - Landscape and Visual. Landscaping at a development site can have significant implications for biodiversity. The landscape plan includes an area to be retained for biodiversity which will help to off-set habitat loss associated with the proposed development. The lighting plan has been sensitively designed to protect bats from light pollution. No significant negative effects are predicted.
Material Assets (Waste and Utilities)	Construction waste arising from site operations could negatively affect local fauna through entrapment, for example. However, appropriate was management practices on a site as described in section 5.6.2.4 will ensure no significant effects occur on local biodiversity.
Conclusions	
A suite of mitigation measures have been outlined and once all these mitigation measures are implemented in full, and remain effective throughout the lifetime of the Development, no significant negative impacts on the local ecology or on any designated nature conservation sites are expected from the Proposed Development.	

Table 14-4: Land and Soil

Land and Soil	
Summary	
Chapter 6 of this EIAR, *Land and Soil*, details the direct and indirect effects of the Proposed Development on the local land, soils, and geology; and sets out any required mitigation measures where appropriate. There are a number of potential pollutants associated with the Construction and Operational Phase of the Proposed Development which have the potential to impact on the environment with respect to land, soils and geology such as: • Discovery of potentially contaminated materials during excavation activities during the Construction Phase; • Potential release of cementitious material during construction works for foundations, pavements and infrastructure; • Accidental release of deleterious materials including fuels and other materials being used on-site during the Construction Phase; • During excavation surface water runoff from the surface of the excavated areas may result in silt discharges to the public network. • Potential for uncontrolled release of (i.e., fuels from vehicles on-site), through failure or rupture of the drainage system during the Operational Phase	
Interactions	
Population & Human Health	Dust from the site and from soil spillages on the existing road network around the site could impact human health, especially during dry conditions. Dampening down measures with water sprays will be implemented during periods of dry weather to reduce dust levels arising from the development works.
Water (Water (Hydrology and Hydrogeology))	Accidental oil or diesel spillages from construction plant and equipment, in particular at refuelling areas, could result in oil contamination of the soils and underlying geological structures, including surface water and groundwater. Measures will be implemented throughout the construction stage to prevent contamination of the soil and adjacent watercourses from oil and petrol leakages.
Air Quality & Climate Change	Dust from the site and from soil spillages on the existing road network around the site could impact air quality, especially during dry conditions. Dampening down measures with water sprays will be implemented during periods of dry weather to reduce dust levels arising from the development works.

	Air Quality will be controlled and monitored as set out in Chapter 8 of this EIAR.
Noise & Vibration	Heavy machinery used for excavations could impact on noise and vibration. Both will be controlled and monitored as set out in Chapter 11 of this EIAR.
Material Assets (Waste Management)	Excess soil excavated during construction works, including any potential contaminated soils, will be managed and disposed of in approved locations as provided for in this EIAR and in compliance with Waste Management Regulations.
Biodiversity	Accidental oil or diesel spillages from construction plant and equipment could impact local flora and fauna. Such spills will be mitigated in accordance with Chapter 6 of this EIAR.
Material Assets (Traffic)	Excess soil excavated during construction works for the development will be transported by road for disposal in approved locations as provided for in this EIAR. Movements of construction traffic will be managed in accordance with the Construction Traffic Management Plan.
Conclusions	
The facility design has incorporated many features which will limit the exposure of soil and groundwater to contamination. The mitigation measures outlined in the CDWMP and the respective Chapters outlined above, will ensure that there will be no significant adverse impacts on the receiving land, soil and geology associated with the Construction Phase and the Operational Phase of the Proposed Development.	

Table 14-5: Water (Hydrology and Hydrogeology)

Water (Hydrology and Hydrogeology)	
Summary	
Chapter 7 of this EIAR, *Water (Hydrology and Hydrogeology)*, provides an assessment of the potential impacts of the Proposed Development on hydrology, water and hydrogeology and sets out any required mitigation measures where appropriate. There is a risk of pollution of groundwater and water courses by accidental spillage of foul effluent during connection being made to live sewers. • There is a risk of pollution of groundwater and water courses by accidental spillage of foul effluent during connection being made to live sewers. • There is a possibility of leakage from sewers and drains within the site and along the route to the outfall sewer which could result in local contamination of soil and ground waters in the area. • Sedimentation and silt arising from construction activities and fuel spillage could contaminate the surface water network. • Runoff from the roads and hardstanding areas could discharge contaminants, including oils and silts, to the surface water system which might result in pollution to the surface water network.	
Interactions	
Population & Human Health	No public health issues associated with the water (hydrology and hydrogeology) conditions at the Proposed Development Site have been identified for the Construction Phase or Operational Phase of the Proposed Development. Appropriate industry standard and health and safety legislative requirements will be implemented during the construction phase that will be protective of site workers. It is noted that specific issues relating to Public Heath associated with the Proposed Development are set out in Chapter 4 of this EIAR.
Land, Soils and Geology	An assessment of the potential impact of the Proposed Development on the existing land, soils and geological environment during the Operational Phase of the Proposed Development is set out in Chapter 6 Land, Soil and Geology.
Material Assets (Water)	An assessment of the potential impact of the Proposed Development on the Material Assets including built services, infrastructure, traffic, and waste management has been set out in Chapter 12 of this EIAR. Any discharges to the public foul sewer and water supply to the Proposed Development will be under consent from Irish Water.

Biodiversity	An assessment of the potential impacts of the Proposed Development on the Biodiversity of the Proposed Development Site, with emphasis on habitats, flora and fauna which may be impacted a result of the Proposed Development are included in Chapter 5 of this EIAR. It also provides an assessment of the impacts of the Proposed Development on habitats and species, particularly those protected by national and international legislation or considered to be of particular conservation importance and proposes measures for the mitigation of these impacts.
Material Assets (Traffic)	There is a potential of impact on water courses at offsite locations in the vicinity of the Proposed development Site, due to sediment that may be entrained in road runoff due to traffic activities and resulting tracked sediment and debris being tracked offsite during the Construction Phase of the Proposed Development which are addressed in Section 7.5.3.2 of this Chapter. The Proposed Development will have no significant impact on overall traffic volumes at the Proposed Development Site during the Operational Phase and therefore traffic will not result in any significant impacts on water quality or quantity at sensitive water body receptors. Any specific issues relating to Traffic impacts associated with the Proposed Development are set out in Chapter 12 of this EIAR.
Conclusions	
The protective/avoidance/mitigation measurements that will be applied as per the CDWMP, will ensure that the Proposed Development will not give rise to any likely significant impacts.	

Table 14-6: Air Quality and Climate

Air Quality and Climate	
Summary	
Chapter 8 of this EIAR, *Air Quality and Climate*, provides an assessment of the potential impacts of the Proposed Development on ambient air quality and climate, and sets out appropriate mitigation measures where necessary. The greatest potential effect on air quality associated with the Proposed Development is from dust and traffic-related air emissions. The primary sources of dust identified include soil excavation works, demolition, bulk material transportation, loading and unloading, stockpiling materials, cutting and filling, and vehicular movements (HGVs and on-site machinery). Operational traffic will use regional and local roads to access the facility with potential increases of traffic flow on some roads and subsequent associated emissions of VOCs, nitrogen oxides, sulphur dioxides and increased particulate matter concentrations.	
Interactions	
Population and Human Health	Interactions between Air Quality and Population and Human Health have been considered as the Operational Phase has the potential to cause health issues as a result of impacts on air quality from dust nuisances and potential traffic derived pollutants. However, the mitigation measures employed at the Proposed Development will ensure that all impacts are compliant with ambient air quality standards and human health will not be affected. Furthermore, traffic-related pollutants have been assessed and determined as negligible, therefore air quality impacts from the Proposed Development are not expected to have a significant impact on population and human health.
Land and Soil	Control measures such as the dampening down measures outlined in Chapter 6 will reduce dust levels arising from the development works.
Material Assets: Traffic	There can be a significant interaction between air quality, climate and traffic due to traffic-related pollutants that may arise. In the current assessment, traffic derived pollutants which may affect Air Quality and Climate have been deemed to be negligible. Therefore, the impact of the interaction between air quality and climate is insignificant.
Biodiversity	Interactions between Air Quality and Biodiversity have been considered as the Proposed Development has the potential to cause short-term impacts on biodiversity as a result of impacts on air quality from dust nuisances and potential traffic derived pollutants in the absence of mitigation measures. However, the mitigation measures employed at the Proposed Development

	will ensure that all impacts are neutral and biodiversity will not be affected. An assessment of the potential impact of the Proposed Development on biodiversity is included in Chapter 5 of this EIAR.

Conclusions

The greatest potential effect on air quality associated with the proposed Development is from traffic-related air emissions and dust. However, these contributions are likely to be marginal in terms of overall national GHG emission estimates and Ireland's obligations under the Kyoto Protocol, and therefore unlikely to have an adverse effect on climate.

Table 14-7: Noise and Vibration

Noise and Vibration	
Summary	
Chapter 9 of this EIAR, *Noise and Vibration*, provides a description and assessment of the likely impact of the proposed activities from noise, and sets out appropriate mitigation measures where necessary. The noise-generating activities associated with the Site are as follows: • Site clearance, including demolition works of the existing EDROS Building & Former Baily Court Hotel; • Building construction works; • Trucks entering and exiting the Site.	
Interactions	
Population and Human Health	The impact assessment of noise and vibration has concluded that additional noise associated with the operation of on-site machinery will be intermittent and will not create any major negative impacts beyond the Site boundary. Mitigation and monitoring measures will be incorporated to further reduce the potential for noise generation from the Proposed Development. It is noted that specific issues relating to Population and Human Health associated with the Proposed Development are set out in Chapter 4 of this EIAR.
Material Assets (Traffic)	The Proposed Development will have no significant impact on overall traffic volumes and therefore traffic will not result in any significant increases of noise at sensitive receptors.
Biodiversity	Interactions between noise and vibration and biodiversity have been considered as the Proposed Development has the potential to cause short-term impacts on biodiversity as a result of noise and vibration in the absence of mitigation measures. However, the mitigation measures employed at the Proposed Development will ensure that all impacts are neutral and biodiversity will not be affected. An assessment of the potential impact of the Proposed Development on biodiversity is included in Chapter 5 of this EIAR.
Conclusions	
No traffic routes are predicted to experience increases of more than 25% in total traffic flows as a result of the Proposed Development and therefore no detailed assessment is required as per the DMRB Guidelines. Refer to Chapter 12 of the EIAR for a detailed traffic assessment report. The impact of noise from operational traffic will be imperceptible and will not have a negative impact.	

Table 14-8: Landscape and Visual

Landscape and Visual	
Summary	
Chapter 10 of the EIAR, *Landscape and Visual*, provides a description and assessment of the likely impact of the Proposed Development on the landscape and visual amenities of the area.	
Interactions	
Population and Human Health	Photomontages were prepared by Digital Dimensions to aid the assessment of the visual effects of the Proposed Development on surrounding receptors. Based on the assessment criteria and matrices outlined in Chapter 10 the significance of residual visual impacts ranges between Moderate and Imperceptible, whilst the quality of these impacts is generally Positive or Neutral.
Biodiversity	An assessment of the potential impact of the Proposed Development on the surrounding landscape character is outlined in Chapter 10 - Landscape and Visual. These impacts are considered to be relevant to the ecological sensitivities associated with the Site, albeit the relevance to the landscape and visual chapter is mainly in relation to aesthetics and screening.
Archaeology and Cultural Heritage	Based on the archaeological assessment carried out in chapter 11, it is not predicted that any changes in landscape or visual amenities will affect in any way the archaeology and cultural heritage of the area.
Conclusions	
Specific landscape and visual mitigation measures are not proposed as these embedded in the design of the built form and associated landscaping measures. No significant negative impacts on the Landscape and Visual aspects of the surrounding environment are expected from the Proposed Development.	

Table 14-9: Archaeology and Cultural Heritage

Archaeology and Cultural Heritage	
Summary	
Chapter 11 of the EIAR, *Archaeology and Cultural Heritage,* provides information on the known architectural, archaeological and cultural heritage sites in the study area.	
Interactions	
Landscape and Visual	It is not predicted that any changes in landscape or visual amenities will affect the archaeology and cultural heritage of the area.
Conclusions	
With the implementation of all mitigation measures detailed in Chapter 11, there will be no negative residual impacts upon the archaeological or cultural heritage resource.	

Table 14-10: Material Assets, Traffic, Waste and Utilities

Material Assets, Traffic, Waste and Utilities	
Summary	
Chapter 12 of the EIAR, *Material Assets*, provides an assessment of the potential impacts of the Proposed Development on Material Assets including traffic, built services and infrastructure.	
Interactions – Traffic	
Population and Human Health	There may be temporary negative impacts to human health during the Construction Phase caused by noise, dust, air quality and visual impacts which are covered in other chapters of this EIAR. There may be short term traffic delays during road works on public roads when tying into existing roads or when connecting to existing services. These will be managed by implementation of a construction traffic management plan.
Water (Hydrology and Hydrogeology)	There may be interaction with the surrounding water bodies through surface water runoff during topsoil stripping and earthworks which will be required to construct the roads.
Land and Soil	Excess soil excavated during construction works for the development will be transported by road for disposal in approved locations as provided for in this EIAR. Movements of construction traffic will be managed in accordance with the Construction Traffic Management Plan.
Noise	The Proposed Development will have no significant impact on overall traffic volumes and therefore traffic will not result in any significant increases of noise at sensitive receptors.
Air Quality and Climate	There can be a significant interaction between air quality, climate and traffic due to traffic-related pollutants that may arise. In the current assessment, traffic derived pollutants which may affect Air Quality and Climate have been deemed to be negligible. Therefore, the impact of the interaction between air quality and climate is insignificant.
Interactions - Waste and Utilities	
Population and Human Health	The improper removal, handling and storage of ACM could negatively impact on the health of construction workers. Extended power or telecommunications outages, or disruption to water supply or sewerage systems for existing properties in the area could negatively impact on the surrounding human population and their overall health. Potential impacts on population and human health are addressed in Chapter 4.

Biodiversity	The improper handling and storage of waste during the Construction and Operational Phases could negatively impact on biodiversity. Potential impacts on biodiversity are addressed in Chapter 5 (Biodiversity).
Land and Soil	Improper handling and segregation of hazardous or contaminated wastes could lead to the contamination of soil and stones excavated from the site. Potential impacts on land and soils are addressed in Chapter 6.
Water (Hydrology and Hydrogeology)	Uncontrolled releases from the foul water network during the Construction or Operational Phase could negatively impact on the Howth Head pNHA in Balscadden Bay. Potential impacts on the biodiversity of the area are addressed in Chapter 5 and the potential impacts on the water environment are addressed in Chapter 7.
Archaeology and Cultural Heritage	It is possible that excavation works for the new foundations and site formation levels may have an adverse impact previously unrecorded archaeological features or deposits that have the potential to survive beneath the current ground level. If any archaeological remains are discovered during this project, all works will cease and an expert archaeologist will be brought to Site and all future works will be carried out under the supervision of the archaeologist.
Traffic	Waste collection activities at the Proposed Development have the potential to impact upon traffic movements in the Howth area. Potential impacts on traffic are addressed in Chapter 12.2.
Conclusions	
With the implementation of all mitigation measures detailed above, there will be no negative residual impacts upon the Material Assets, Traffic, Waste and Utilities.	

14.4 References

EIAR Chapters 4 to 12 inclusive.

15 MITIGATION AND MONITORING MEASURES

15.1 Introduction

This EIAR has assessed the impacts and resulting effects likely to occur as a result of the Proposed Development on the various aspects of the receiving environment.

The Proposed Development will be operated in a manner that will ensure that the potential impacts on the receiving environment are avoided where possible. In cases where impacts or potential impacts have been identified, mitigation measures have been proposed to reduce the significance of particular impacts. These mitigation recommendations are contained within each chapter exploring specific environmental aspects.

This chapter of the EIAR collates and summarises the mitigation commitments made in Chapter 4 to Chapter 13.

15.2 Summary of Mitigation Measures

15.2.1 Population and Human Health

15.2.1.1 Construction Phase

15.2.1.1.1 Mitigation

During the Construction Phase of this Proposed Development HSE guidelines will be adhered to in relation to social distancing, cough and sneeze etiquette, face masks and hand washing. Appropriate welfare facilities will be provided at the facility. Frequently touched objects and surfaces such as door handles, machine steering wheels and gear levers will be cleaned and disinfected frequently.

The Governments 'Work Safely Protocol' and the Construction Industry Federation 'Back to Work Resource Pack ' will be adhered to.

No specific mitigation measures are required during the Construction Phase of the Proposed Development in relation to population and settlements, given the lack of direct effects resulting from the Proposed Development. However, where required, mitigation measures in relation to air emissions (dust), noise, traffic, waste etc. are identified in their respective chapters in this EIA Report.

15.2.1.1.2 Monitoring

No specific monitoring measures are proposed or required in relation to Population and Human Health for the Construction Phase of the Proposed Development.

Monitoring activities proposed for the Construction Phase in accordance with the CEMP that will be prepared by contractor once appointed.

A full traffic assessment has been completed as part of Chapter 12 (Material Assets) and a Noise Impact Assessment as part of Chapter 9 (Noise and Vibration). Please refer to these specific Chapters for any proposed monitoring.

15.2.1.2 Operational Phase

15.2.1.2.1 Mitigation

All HSE guidelines published to protect against the spread of COVID-19 will be adhered to during the Operational Phase of the Proposed Development, if relevant. These HSE guidelines may relate to social distancing, cough and sneeze etiquette, face masks and hand washing.

All workers employed during the Operational Phase of the Proposed Development will comply with the relevant HSE guidelines and any Government protocols that will be in place at that point in time in relation to Covid-19.

No specific mitigation measures are required in relation to population and settlements, given the lack of direct effects resulting from the Proposed Development. However, where required, mitigation measures in relation to air emissions, noise, traffic etc. are identified in their respective chapters in this EIA Report.

15.2.1.2.2 Monitoring

No specific monitoring measures are required in relation to Population and Human Health, given the lack of direct effects resulting from the Proposed Development. However, where required, monitoring in relation to air emissions, water, noise, and traffic are identified in their respective chapters in this EIAR.

15.2.2 Biodiversity

15.2.2.1 Mitigation By Design

Landscape plan

According to the Landscape Design Statement, the proposed planting mix is to adhere to the design principles of Special Amenity Area Order for Howth (SAAO). The planting schedule is provided following a pre-planning consultation with the relevant Local Authority Parks Department personnel for consideration on planting mixes and in accordance with principles of SAAO Howth Guidelines, and relevant aspects of current Landscape and Green infrastructure sections of the Fingal County Council Development Plan.

A native, coastal tolerant tree lined boundary condition is proposed to the western boundary along the proposed retaining wall. A mixed understory native hedge is proposed along all of the boundary wall.

To the north, dwarf Scots pine are proposed such that the setting and view of the Martello Tower is not interrupted. To the south the steep embankment of upper strata glacial till on sand and limestone gravel is proposed to be consolidated with mainly native coastal tolerant species.

A sedum capping is proposed upon the top of the retaining walls. The concept proposed is to provide a naturalised tree embankment rather than plantation which would be out of character with the horizon line when viewed elsewhere along the peninsula.

179 trees are proposed to be planted within the Site, of which 79 are native (Table 15-1). It is acknowledged that the coastal setting and urban context of the Site, coupled with the loss of ability to plant ash (due to ash dieback) has limited the use of some native trees in the landscape plan, even in the most sheltered points of the Proposed Development.

Table 15-1: Native species within the proposed landscape plan. Extracted from the Landscape Design Statement (Plus Architecture, 2022)

Species	Comment	Location	Number
Native tree planting			
***Arbutus unedo* (Strawberry Tree)**	Native coastal tolerant	Northern boundary and south-eastern corner	34
***Corylus avellana* (Hazel)**	Native moderate coastal tolerance. Located primarily in sheltered boundary locations	Located primarily in sheltered boundary locations	2
***Crataegus monogyna* (Hawthorn)**	Native, hardy, Coastal tolerant	South-eastern corner	7
***Juniperus communis* (Common Juniper)**	Native Coastal tolerant	Located to seaward embankment	4

Malus sylvestris **'Evereste' (Crab apple 'Evereste')**	Native moderate coastal tolerance.	Located in sheltered boundary locations	11
Populus tremula **(aspen)**	Native coastal tolerant	Western boundary	3
Prunus avium **(Wild cherry)**	Native moderate coastal tolerant.	Located in sheltered areas.	2
Quercus petraea **(sessile oak)**	Native oak, must be Irish grown on phytosanitary grounds, moderately coastal tolerant	1 no tree placed in sheltered location to the west of the Site	1
Quercus robur **(English oak)**	Native oak, must be Irish grown on phytosanitary grounds, moderately coastal tolerant	1 no tree placed in sheltered location to the west of the Site.	3
Sorbus aria **'Majestica' (Whitebeam Majestica)**	Coastal, Tolerant Native tree	Set back from front coastal line	9
Sorbus aucuparia **(Rowen)**	Native hardy tree, modestly coastal tolerant species	Sheltered area of proposed development.	3
Native Hedge Planting			
Corylus avellana **(hazel)**	Hardy dense habit, native and source of food for wildlife.	Western and southern site boundaries	
Crataegus monogyna **(hawthorn)**	Hardy, dense habit, thorny, native and source of food for wildlife		
Hedra helix **(Ivy)**	Hardy native climbing evergreen, self clinging plant, source of food for wildlife.		
Ilex aquifolium **(holly)**	Hardy, dense evergreen habit, spikey, native and source of food for wildlife		
Lonicera periclymenum **(honey suckle)**	Hardy scrambling native hedgrow plant , attractive scented		

	twining shrub and source of food for wildlife		
***Rosa canina* 'alba' (dog rose 'alba')**	Hardy native hedgerow shrub, attractive flowers and thorny and source of food for wildlife		
***Sambucus nigra* (elder)**	Hardy native hedgerow plant , native and source of food for wildlife		
***Viburnum opulus* (guelder rose)**	Hardy native hedgerow plant, attractive flowers and source of food for wildlife		
Grass area to front of embankment			
Grass flower meadow mixture to wide margins: **'Biodiverse wildflower meadow mixture Ref WF02 @ 1.5g/m2or as otherwise directed by supplier with integrated grass mix 50% 1.5g/m2 as pre mixed by 'Design by Nature' . Required min seed mixture 1.1KG of** **Native Sourced Irish Wildflower Seed Mixture, without added 'Grass** **Seeds'. Plus 1.1kg of grass seed mixed into mixture (rate of sowing** **for grass is also 1.5 grams per square metre). Special mixture of bents and fescues by Design by Nature.**	Front of margin wildflower grass mix. Low maintenance where grass margin pertains.	Front of embankment	

As part of the landscape plan, it is proposed to manage the area on top of the proposed embankment at the south-eastern corner of the Site for biodiversity (Figure 5-13). Trees to be planted in this area include Strawberry Tree, Common Juniper, Hawthorn, Austrian Pine and Aspen.

Natural regeneration of native and local seeds is the preferred option for re-vegetating the area to be retained for biodiversity. To this end, the following is proposed:

- Topsoil will be carefully stripped and stockpiled in reasonably dry conditions where possible, to avoid unnecessary compaction and damage to the soil structure. The two soil types should be stacked and stored separately.
- Topsoil containing Invasive Alien Species (i.e., Three-cornered Leek, Buddleia, Sycamore) will not be stored. Waste materials containing Three cornered leek must be removed to an approved waste facility (see section 5.6.2.10 below for further details).
- Topsoil heaps should not exceed 3m in height and 6m in width and used within 12 months. If greater time is needed ten precautions and remedial procedures will have to be carried out as per BS 3882:2015.
- No seeding or herbicide application is to be carried out on stored topsoil to be used in the area designated for biodiversity.
- The recycled topsoil for the biodiversity area will be applied as a topsoil layer in the formation of the regraded embankment over the imported soil. Maximum depth to 300mm.
- A method statement will be provided by the main contractor to the local authority and ecologist for the stripping storage and redistribution of soil within this area.
- Soil analysis test results will be submitted in advance of stripping and storage of topsoil for review by the local authority and ecologist. In the event that the topsoil is deemed unsuitable for recycling due to contamination, poor soil structure, texture and composition of soil, the embankment will be grass seeded following embankment works using Seaside Wild flora (Mix) EC06, Native Origin Irish Wildflower Seed Mixtures: Ecotype Range by Design by Nature or E/A by ecologist.

No public lighting will be installed within the area retained for biodiversity. Dead wood will be placed on a pile within this area. As recommended by Browne[14] (n.d.), a 50cm x 150cm hole will be excavated for the log pile and filled with woody vegetation arising from the felling of trees within the Site. To form the log pile, firstly upright logs will be buried under the soil in the excavated hole. Secondly, larger logs will be stacked towards the centre of the pile, with smaller ones on top and around sides. Leaf litter will be added to the pile in autumn.

As recommended by the RSPB[15], the log pile will be placed in dappled shade to maintain humidity. The log pile will not be located too close to healthy trees and shrubs to avoid the potential spread of fungi.

Management within the area retained for biodiversity will be limited to the following:

[14] Browne, J. (n.d.) Gardening for Biodiversity. Laois County Council. (https://laois.ie/wp-content/uploads/Garden-Wildlife-Booklet-WEB-17MB.pdf)

[15] https://www.rspb.org.uk/birds-and-wildlife/advice/gardening-for-wildlife/dead-wood-for-wildlife/

- Add leaf litter to decaying wood pile
- No management (e.g. weeding, tidying) to be carried out apart from around newly planted trees/shrubs
- No herbicides or pesticides to be used
- Mowing (if required) to be carried out as per the all-Ireland pollinator plan as follows (five cut and lifts per year, mowing height set to 3 inches, no herbicide or fertiliser application):
    - First cut after the 15th April (Dandelions are a vital food source for pollinators in spring)
    - Second cut at end of May
    - Third cut in mid-late July (maximises growth of Clovers and other wildflowers)
    - Fourth cut at the end August
    - Fifth cut after mid-October

Figure 15-2: Proposed landscape plan (Plus Architecture, 2022). Area retained for biodiversity indicated in red

Sustainable Urban Drainage Systems

The following is extracted from the Engineering Services Report prepared by Waterman Moylan (2021):

It is proposed to discharge surface water from the site by gravity to the existing surface water sewer on Main Street.

The Proposed Development will be designed to incorporate best drainage practice. Surface water discharging to the public network will be restricted to the greenfield equivalent runoff rate via a Hydrobrake or similar approved flow control device. The surface water network will

be designed to accommodate the 1-in-5-year storm, with attenuation storage provided for the 1-in-100-year storm.

It is proposed to incorporate a Storm Water Management Plan through the use of various SuDS techniques to treat and minimise surface water runoff from the site. The methodology involved in developing a Storm Water Management Plan for the subject site is based on recommendations set out in the Greater Dublin Strategic Drainage Study (GDSDS) and in the SuDS Manual (Ciria C753). Based on three key elements – Water Quantity, Water Quality and Amenity – the targets of the SuDS train concept have been implemented in the design, providing SuDS devices for each of the following:

- Source Control
- Site Control
- Regional Control

It is proposed to introduce several source control measures, including the following:

Green Roof: Green roofing is proposed at portions of each block's roof area. The substrate and the plant layers in a sedum roof absorb large amounts of rainwater and release it back into the atmosphere by transpiration and evaporation. They also filter water as it passes through the layers, so the run-off, when it is produced, has fewer pollutants. Rainfall not retained by green roofs is detained, effectively increasing the time to peak and slowing peak flows.

Permeable Paving: It is proposed to introduce permeable paving in courtyards and along pedestrian circulation paths to facilitate infiltration of surface water from paved areas. The goal of permeable paving is to control stormwater at the source to reduce runoff. In addition to reducing surface runoff, permeable paving has the dual benefit of improving water quality by trapping suspended solids and filtering pollutants in the substrata layers.

Filter Drains: Filter drains are proposed around the perimeter of buildings, consisting of perforated pipes surrounded in filter stone. The filter drains will provide infiltration, optimise the retention time and provide quality improvement to the storm water runoff, in particular the first flush from hardstanding areas.

Bioretention Gardens and Planters: Intensive bioretention gardens and planters are proposed at some public open spaces. These planted areas can absorb large amounts of rainwater and release it back into the atmosphere by transpiration and evaporation. They can also filter water as it passes through the layers, helping to treat pollutants.

Tree Pits: At the subject site, it is proposed to introduce roadside tree pits. Trees can help control storm water runoff because their leaves, stems, and roots slow rain from reaching the ground and capture and store rainfall to be released later. Trees help to attenuate flows, trap silts and pollutants, promote infiltration and prevent erosion. Incorporating tree planting offers multiple benefits, including attractive planting features, improved air quality and increased biodiversity whilst helping to ensure adaptation to climate change.

Attenuation Storage and Flow Control: Attenuation storage for up to the 1-in-100 year storm will be provided in a privately managed and maintained underground attenuation tank. A

Hydrobrake or similar approved flow control device will be used to limit the discharge to the greenfield equivalent runoff rate.

Lighting Plan

In order to preserve the commuting potential of the treelines/hedgerows remaining and to minimise disturbance to bats utilising the Site in general, the lighting and layout of the Proposed Development is designed to minimise light-spill onto habitats used by the local bat population foraging or commuting.

No lighting is proposed within the area designated for biodiversity at the south eastern corner.

According to JV Tierney and Co, the preliminary lighting design for the Proposed Development is based upon the following European/British Standards and best practice guidelines:

- Luminaires should be selected to ensure that when installed, there will be zero direct upward light emitted to the sky (all output will be at or below 90°to the horizontal) to help prevent sky glow from light pollution in the night sky.
- The light emitted from these fittings will have no photo biological risk and will be categorised as 'Exempt Group' in relation to emissions of Blue Light, Infrared and Ultra Violet Radiation in accordance with EN 62741:2008.
- All luminaires will have a Luminous Intensity Classification of between G4 and G6 to IS EN 13201-2:2003/BS 5489-1:2013 and recommendations of Institution of Lighting Professionals and Bat Conservation Trust 'Bats and Lighting in the UK' documentation and Bat Conservation Ireland Guidance Notes for Planners, Engineers, Architects and Developers December 2010.
- Guidance note for the Reduction of Obtrusive Light GN01:2011, produced by the Institute of Lighting Professionals (ILP).
- LED technology will be utilised to ensure no UV component as recommended by Bat Conservation Ireland.
- Lighting Standards as issued by Fingal County Council.

The proposed external lighting scheme will be designed using LED fittings with high performance optics to provide visual comfort. The external lighting scheme will specifically respond to the landscape treatment and be sensitively designed to ensure minimum light pollution. Luminaires will be selected to ensure that when installed there will be zero direct upward light emitted to the sky (all output will be at or below 90° to the horizontal) to help prevent sky glow from light pollution in the night sky. The light emitted from these fittings will have no photo biological risk and will be categorised as 'Exempt Group' in relation to emissions of Blue light, Infrared and Ultra Violet Radiation in accordance with EN 62741:2008.

All luminaires will have a Luminous Intensity Classification of between G4 and G6 to IS EN 13201- 2:2003(E)/BS 5489-1:2013 and recommendations of Institution of Lighting Professionals and Bat Conservation Trust 'Bats and Lighting in the UK' documentation and Bat Conservation Ireland Guidance Notes for Planners, Engineers, Architects and Developers December 2010. As also recommended in the above guides and standards, Variable Lighting and Part-Night Lighting will be utilised.

15.2.2.2 Construction Phase

15.2.2.2.1 Mitigation

15.2.2.2.1.1 Protection of Designated Sites

15.2.2.2.1.1.1 Surface water mitigation

Surface water discharges from the Site will not be permitted onto Balscadden road nor into the Howth Head SAC/pNHA during the works. As such, there will be no surface water discharges to the east of the Site.

Trenched double silt fencing will be installed along the eastern boundary of the Proposed Development Site (along the existing contours of Balscadden Road but outside the boundary of the SAC/pNHA area) on the inside of the hoarding. The silt fencing will act as a temporary sediment control device to protect the SAC/pNHA from sediment and potential surface water run-off from the Site. The fencing will be inspected twice daily based on Site and weather conditions for any signs of contamination or excessive silt deposits and records of these checks will be maintained. Ponded water will be pumped from the trench into a sediment tank and discharged based on site authorisations or disposed of via a permitted wastewater contractor. Under no circumstances will any wastewater generated onsite be released into nearby drains or Balscadden Road.

In addition, the following general measures will be undertaken:

- Designated impermeable cement washout areas will be provided.
- Run-off from the working site or any areas of exposed soil will be channelled and intercepted at regular intervals for discharge to silt-traps or lagoons with over-flows directed to land rather than to a drain.
- Silty water generated on site will be treated using silt traps/settlement ponds and temporary interceptors and traps will be installed until such time as permanent facilities are constructed.
- Storm drain inlets which could receive stormwater from the project will be protected throughout the Construction Phase. Inlet protection will be installed before soil disturbing activities begin.
- A regular review of weather forecasts of heavy rainfall will be conducted and a contingency plan will be prepared for before and after such events to minimise any potential nuisances. As the risk of the break-out of silt laden run-off is higher during these weather conditions, no work will be carried out during such periods where possible.
- Any imported materials will, as much as possible, be placed on Site in their proposed location and double handling will be avoided. Where this is not possible designated temporary material storage areas will be used.
- These temporary storage areas will be surrounded with silt fencing to filter out any suspended solids from surface water arising from these materials.
- Temporary hydrocarbon interceptor facilities will be installed and maintained where Site Works involve the discharge of drainage waters to nearby drains.
- All containment and treatment facilities will be regularly inspected and maintained.

- Refuelling of plant during the Construction Phase will only be carried out at designated refuelling station locations on site. Each station will be fully equipped for spill response and a specially trained and dedicated Environmental and Emergency Spill Response team will be appointed before the commencement of works on site.
- Only emergency breakdown maintenance will be carried out on site. Drip trays and spill kits will be available on site to ensure that any spills from vehicles are contained and removed off site.
- All personnel working on site will be trained in pollution incident control response.
- Any other diesel, fuel or hydraulic oils stored on site will be stored in bunded storage tanks- the bunded area will have a volume of at least 110% of the volume of the stored materials as per best practice guidelines (Enterprise Ireland, BPGCS005).
- If portaloos and/or containerised toilets and welfare units will be used to provide facilities for site personnel, all associated waste will be removed from site by a licenced waste disposal contractor.
- Under no circumstances will any untreated wastewater generated onsite (from equipment washing, road sweeping etc.) be released into nearby drains.

15.2.2.2.1.1.2 Dust Minimisation Plan

The objective of dust control at the site is to ensure that no significant nuisance occurs at nearby sensitive receptors, including Howth Head pNHA. In order to develop a workable and transparent dust control strategy, the following management plan has been formulated by drawing on best practice guidance from Ireland, the UK (BRE 2003), (The Scottish Office 1996) (UK Office of Deputy Prime Minister 2002) and the USA (USEPA 1997), (USEPA 1986).

Monitoring of Dust Emissions within Howth Head SAC and pNHA

- Monitoring of dust within the SAC/pNHA one month prior to commencement of any construction works to collate baseline data at a location approved by the project ecologist will be carried out. Monitoring of dust can be carried out by using the Bergerhoff Method. This involves placing Bergerhoff Dust Deposit Gauges at strategic locations along the Site boundaries for a period of 30 +/- 2 days. The selection of sampling point locations should be carried out in consideration of the requirements of the German Standard Method VDI 2119 (Measurement of Dustfall, Determination of Dustfall using Bergerhoff Instrument (Standard Method German Engineering Institute) with respect to the location of the samplers relative to buildings and other obstructions, height above ground, and sample collection and analysis procedures. After the exposure period is complete, the Gauges will be removed from the Site; the dust deposits in each Gauge will then be determined gravimetrically and expressed as a dust deposition rate in mg/m2/day in accordance with the relevant standard. Monitoring of construction dust deposition will be conducted at nearby sensitive receptors and at the Site boundary (i.e., worst-case location), including within the SAC at locations approved by the project ecologist, during the Construction phase of the Proposed Development.
- Regular inspections of the SAC/pNHA adjacent to the Site will be carried out to monitor dust, records and notes on these inspections will be logged.

- The individual(s) responsible for monitoring of dust within the SAC/pNHA will receive work specific induction in relation to dust minimisation measures, visual dust assessment and dust monitoring in the direct area.
- Should dust deposition be deemed to be at a rate which has the potential to cause an impact on the SAC/pNHA/Dublin Bay Biosphere, additional mitigation will be put in place immediately.

General Monitoring

- Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This will 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 DMP, 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, dust flux, or real-time PM_{10} continuous monitoring locations with the Local Authority. Baseline monitoring will commence at least three months before work commences on site or before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.

15.2.2.2.1.1.2.1 Communications

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
- Display the name and contact details of person accountable for air quality and dust issues on the site boundary.
- Display the head or regional office contact information.
- Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the site. The DMP may include monitoring of dust deposition, dust flux, real-time PM_{10} continuous monitoring and/or visual inspections.

15.2.2.2.1.1.2.2 Site Management

- Regular inspections of the Site and boundary will be carried out to monitor dust, records and notes on these inspections should be logged.
- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
- 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

offsite, and the action taken to resolve the situation in the log book.

15.2.2.2.1.1.2.3 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.
- Fully enclose specific operations where there is a high potential for dust production and the Site is active for an extensive period.
- 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 stockpiles to prevent wind whipping.

15.2.2.2.1.1.2.4 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 20 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)

15.2.2.2.1.1.2.5 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.

15.2.2.2.1.1.2.6 Measures Specific to Demolition

- Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust)

- Ensure effective water suppression is used during demolition operations. Handheld sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.

- Avoid explosive blasting, using appropriate manual or mechanical alternatives.

- Bag and remove any biological debris or damp down such material before demolition.

15.2.2.2.1.1.2.7 Measures Specific to Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.

- Use Hessian or mulches 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.

15.2.2.2.1.1.2.8 Measures Specific to Construction

- Avoid scabbling (roughening of concrete surfaces) if possible.

- 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.

15.2.2.2.1.1.2.9 Measures Specific to Trackout

Site roads (particularly unpaved) can be a significant source of fugitive dust from construction sites if control measures are not in place. The most effective means of suppressing dust emissions from unpaved roads is to apply speed restrictions. Studies show that these measures can have a control efficiency ranging from 25 to 80%.

- A speed restriction of 15 km/hr will be applied as an effective control measure for dust for on-site vehicles.
- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.
- 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.

15.2.2.2.1.1.2.10 Dust Control – Public Roads

Spillage and blow-off of debris, aggregates and fine material onto public roads should be reduced to a minimum by employing the following measures.

- Vehicles delivering material with potential for dust emissions to an off-site location will be enclosed or covered with tarpaulin always to restrict the escape of dust;
- Public roads outside the Site will be regularly inspected for cleanliness, as a minimum daily, and cleaned as necessary. A road sweeper will be made available to ensure that public roads are kept free of debris.
- If practicable, a wheel wash facility will be employed at the exit of the Site so that traffic

leaving the Site compound will not generate dust or cause the build-up of aggregates and fine material in the public domain.

15.2.2.2.1.2 Reduction of Noise Impacts

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

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

- Selection of plant with low inherent potential for generating noise.
- Siting of plant as far away from sensitive receptors as permitted by site constraints.
- Avoidance of unnecessary revving of engines and switch off plant items when not required.
- Keep plant machinery and vehicles adequately maintained and serviced.
- Proper balancing of plant items with rotating parts.
- Keep internal routes well maintained and avoid steep gradients.
- Minimise drop heights for materials or ensure a resilient material underlies.
- Use of alternative reversing alarm systems on plant machinery.
- Where noise originates from resonating body panels and cover plates, additional stiffening ribs or materials should be safely applied where appropriate.
- Limiting the hours during which site activities likely to create high levels of noise are permitted.
- Appointing a site representative responsible for matters relating to noise.
- Monitoring typical levels of noise during critical periods and at sensitive locations.

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

15.2.2.2.1.3 Protection of Fox

Although Foxes are not afforded legal protection in Ireland, care should be taken when disturbing the den and the area around it. Fox are protected from a variety of hunting/extermination techniques as per the **Wildlife Acts 1976 to 2012**; and from acts of cruelty as per the **Animal Health and Welfare Act 2013**.

The dens should not be disturbed during the breeding/rearing season, which typically lasts from **March to June.** If destroying the den at other times, care should be taken to allow the occupant to escape.

15.2.2.2.1.4 Protection of Hedgehog and Pygmy Shrew

As noted in the British Hedgehog Preservation Society's publication *Hedgehogs and development*, during the Construction Phase of the Proposed Development Hedgehogs have the potential to be impacted through the loss of suitable hibernation and nest sites in the form

of piles of dead wood, vegetation and leaves. This can be mitigated through the careful removal of dead wood/leaves to another part of the Site where they will not be affected. Woody debris from the proposed clearance of vegetative areas on site can also be left in this out-of-the way location as compensatory Hedgehog habitat during the Construction Phase (refer to section 5.6.1.1 above).

Vegetation will be removed in sections working in a consistent direction to prevent entrapment of protected fauna potentially present (e.g. Hedgehog).

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

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

Work likely to cause disturbance during hibernation – for example removal of hibernation habitats such as log piles and dense scrub –**should not take place during November to March**.

15.2.2.2.1.5 Protection of Bats

To protect bats from lighting associated with the **Construction Phase** of the Proposed Development, the following have been considered when choosing luminaires and are incorporated into the lighting design where appropriate. This is taken from the most recent BCT Lighting Guidelines (BCT, 2018):

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

Any Construction Phase external lighting should strictly follow the above guidelines.

15.2.2.2.1.6 Protection of Birds

Any clearance of vegetation or demolition of buildings should be carried out outside the main breeding season, i.e. 1st March to 31st August, in compliance with the Wildlife Act 2000. Should any vegetation removal or demolition be required during this period, this vegetation should be checked for birds, and if any are noted during this evaluation prior to removal, a derogation licence is required from the NPWS. This would note the section of habitat that is a nest site, the precise location within the hedgerow/trees/buildings, the species of bird present; and also elaborate the means by which the birds would be protected prior to nest removal. If eggs have been laid, the nest should be protected until the young have fledged after which time the nest could be destroyed (under licence from the NPWS only). This would also require further compensatory measures including nesting sites for birds if practicable.

15.2.2.2.1.7 Protection of Common Lizard

In order to minimise the risk of site clearance and construction works disturbing, or causing the mortality of Common lizard, the following mitigation will be undertaken at the Site:

- A site-specific survey for common lizard will be undertaken prior to the construction phase commencing. Appropriate mitigation measures will be recommended by the surveyor, and are likely to include the following, extracted from NRA (n.d.):
    - Any habitats identified as potentially suitable for lizard (e.g., meadow or scrub habitat) will be removed during the winter period, where possible, avoiding potential Common lizard hibernacula sites (dry sites which provide frost-free conditions e.g. underground small mammal burrows, piles of dead wood or rubble)
    - where this is not possible and clearance must be undertaken during the active season (March through to September, inclusive), vegetation will be cut first to approximately 15cm, and then to the ground, under supervision of an ecologist. This will allow the opportunity for lizards to be displaced by the disturbance and leave the affected area
    - potential hibernacula sites identified by the surveyor will be removed during the active season (March through to September, inclusive) under the supervision of an ecologist, when they are less likely to be in use by torpid lizards

15.2.2.2.1.8 Protection of Fish and Marine Mammals

The mitigation measures outlined in section 5.5.1.1 will serve to protect fish and marine mammals.

15.2.2.2.2 Protection of Retained Trees

An Arboricultural Method Statement and Tree Protection Plan has been prepared by The Tree File (2022) which provides guidance in respect of tree protection on a development site. This Method Statement and Tree Protection Plan will serve to protect any retained trees and trees adjacent to the Site. Refer to the Arboricultural Report accompanying this application for full details.

15.2.2.2.2.1 Timing of vegetation clearance

The following table provides guidance for when vegetation clearance and instream works are permissible. Information sources include The Bat Survey Report, the British Hedgehog Preservation Society's *Hedgehogs and Development* and *The Wildlife (Amendment) Act, 2000*.

Table 15-2: Seasonal restrictions on vegetation removal. Red boxes indicate periods when clearance/works are not permissible

<table>
<tr><th>Ecological Feature</th><th>January</th><th>February</th><th>March</th><th>April</th><th>May</th><th>June</th><th>July</th><th>August</th><th>Septem-ber</th><th>October</th><th>November</th><th>December</th></tr>
<tr><td>Breeding Birds</td><td colspan="2">Vegetation clearance permissi-ble</td><td colspan="5"><u>Nesting bird season</u>
No clearance of vegetation or works to relevant structures permitted unless confirmed to be devoid of nesting birds by an ecologist.</td><td colspan="4">Vegetation clearance permissible</td></tr>
<tr><td>Hibernating mammals (namely Hedgehog, excluding bats)</td><td colspan="2"><u>Mammal hibernation season</u>
No clearance of vegetation or works to relevant structures permitted unless confirmed to be devoid of hibernating mammals by an ecologist.</td><td colspan="7">Vegetation clearance permissible</td><td colspan="3"><u>Mammal hibernation season</u>
No clearance of vegetation or works to relevant structures permitted unless confirmed to be devoid of hibernating mammals by an ecologist.</td></tr>
<tr><td>Bats</td><td colspan="8">Tree felling to be avoided</td><td colspan="2">Preferred period for tree-felling</td><td colspan="2">Tree felling to be avoided</td></tr>
<tr><td>Common Lizard</td><td colspan="2">Vegetation clearance permissi-ble, avoiding potential Common Lizard hibernacula sites (dry sites which provide frost-free conditions e.g. underground small mammal burrows, piles of dead wood or rubble)</td><td colspan="6">Removal of potential hibernacula sites identified by the surveyor under the supervision of an ecologist.

Ideally no vegetation clearance to take place. Where this is not possible, vegetation will be cut first to approximately 15cm, and then to the ground, under supervision of an ecologist. This will allow the opportunity for lizards to be displaced by the disturbance and leave the affected area.</td><td colspan="4">Vegetation clearance permissible, avoiding potential Common Lizard hibernacula sites (dry sites which provide frost-free conditions e.g. underground small mammal burrows, piles of dead wood or rubble)</td></tr>
</table>

The preferred period for vegetation clearance is within the month of October (Table 2). Vegetation should be removed in sections working in a consistent direction to prevent entrapment of protected fauna potentially present (e.g. Hedgehog). Vegetation clearance

should take place under the supervision of an ecologist to avoid any potential impact on bats, breeding birds, common lizards or mammals.

15.2.2.2.2.2 Biosecurity

Altemar (2019a) detected Three Cornered Leek *Allium triquetrum* at the Site on the slopes facing the Baily Court Hotel during their Site surveys. This species is listed in Part 1 of the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011, as amended). No other invasive species listed on Schedule III of the above-mentioned regulations were found at the Site by Altemar (2019a). No invasive alien species (IAS) listed on Schedule III of the above-mentioned regulations were detected during Site surveys undertaken on the 16th August 2021. It is likely that Three Cornered Leek was not re-found as this species flowers early in the year with plants dying back completely by June and July.[16]. It should be noted however that access to the grounds of the Baily Court Hotel was not possible during the field survey carried out. As such, as a precautionary measure, the Site will be re-surveyed for IAS prior to construction, ensuring access to the grounds of the Baily Court Hotel is possible. If any IAS are present, a suitably qualified ecologist will be consulted regarding their treatment and an IAS Management Plan prepared.

Assuming Three Cornered Leek is still at the Site in the location specified above by Altemar (2019a) the following management will be undertaken:

> This species will be removed via chemical and/or mechanical means. Careful mechanical removal of bulbs followed by appropriate off-site disposal will reduce the infestation but is unlikely to destroy the seed bank. Mechanical removal may need to be repeated over a number of years to exhaust the seed bank. Herbicide application may be successful at reducing the spread of the plant. Applications of herbicide should be made in spring before flowering. However, similar to mechanical removal, multiple applications may be required due to the persistence of bulbs and of the soil seed bank. Disposal of material will be undertaken with due caution to prevent accidental spread of the plant. Waste materials containing Three cornered leek must be removed to an approved waste facility. In many cases, it is not possible to control an established stand of IAS with a single herbicide treatment. Therefore, repeated treatments over successive years is typically necessary. Where physical methods are used to control IAS, the treated area will also need to be monitored over a number of years for regrowth.
>
> Monitoring of all IAS stands treated at the Site will be carried out for 2 years following treatment by a suitably qualified ecologist. Further monitoring may be required if treatment has not been successful. A site may be considered remediated after two consecutive growing seasons with no sign of regrowth from all of the previously identified stands (TII, 2020a).

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

[16] https://species.biodiversityireland.ie/profile.php?taxonId=28150&taxonDesignationGroupId=26#Species_Biology

- Any material required on the site will be sourced from a stock that has been screened for the presence of any invasive species by a suitably qualified ecologist and where it is confirmed that none are present.

- All machinery will be thoroughly cleaned and disinfected prior to arrival on site to prevent the spread of invasive species.

15.2.2.2.3 Monitoring

Trenched double silt fencing will be installed along the eastern boundary of the Proposed Development Site (along the existing contours or Balscadden Road but outside the boundary of the SAC/pNHA area) on the inside of the hoarding. The fencing will be inspected twice daily based on Site and weather conditions for any signs of contamination or excessive silt deposits and records of these checks will be maintained.

Daily on-site and off-site inspections will be undertaken where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. 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 Dust Management Plan, 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, dust flux, or real-time PM_{10} continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.

15.2.2.3 Operational Phase

15.2.2.3.1 Mitigation

Provision of nesting and roosting opportunities for bats and birds

Two bat boxes are required to mitigate for the general conservation of local bat populations.

Two no. rocket bat boxes will be erected along the native hedgerow / area maintained for biodiversity at the south-eastern Site boundary. These are to be located on 5m steel poles in $1m^3$ of 40 newtons cement. An Irish supplier of this type of bat box is: Eire Ecology (Please note that these are made to order). There should not be any lighting along the southern boundary and within the semi-mature planting area and particularly within the area of the proposed locations of the rocket bat boxes.

To enhance the value of the Site for birds, 5 no. artificial nest boxes (for passerine species) will be placed within the area maintained for biodiversity at the south-eastern Site boundary. Nest box placement should be informed by a suitably qualified ecologist.

Signage

Notwithstanding Operational Phase impacts on Howth Head pNHA as a result of the Proposed Development are deemed to be neutral, signage will be erected towards the east of the Proposed Development Site overlooking Balscadden Bay, to educate visitors to Howth Head SAAO/pHNA/SAC of the valued flora, habitats and fauna within the area and their sensitivities. This signage will encourage the public to keep their dogs on leads and avoid trampling sensitive flora and habitats.

15.2.2.3.2 Monitoring

The following bat monitoring is recommended post-construction works. This monitoring should involve the following aspects:

- Inspection of rocket bat boxes within one year of erection of bat box scheme/rocket box. Register bat box scheme with Bat Conservation Ireland. This should be undertaken for a minimum of 2 years.
- Monitoring of any other bat mitigation measures. All mitigation measures should be checked to determine that they were successful. A full summer bat survey is recommended post-works.

15.2.3 Land and Soils

15.2.3.1 Construction Phase

15.2.3.1.1 Mitigation

A soil retention system comprising a secant piled retaining wall has been designed to the site specific ground investigations and groundwater monitoring to prevent the risk of unstable soil conditions occurring during construction or ground movement causing damage to the surrounding environment.

The predicted ground movements during the ground works and construction phase have been established in the Byrne Looby report. The impact of these movement on adjacent structures/infrastructure have been assessed. Based on the predicted ground movements, the Northern boundary adjacent to the Martello Tower found that the works are outside the zone of sensitivity for the site. A Category 0 (Negligible) and a Category 2 (Slight) has been determined for the Southern and Western boundaries respectively. To further mitigate the risk of ground movement during the works a movement monitoring regime will be established to all boundaries. Details of the movement monitoring regime and trigger limits are outlined in the Byrne Looby report and Outline Construction Management Plan.

Byrne Looby have carried out an assessment on the impact of the development to the underlying Sewer which shows there will only be a minor increase in stress at the location of the development that is considered appropriate with the existing form of construction.

A hydrological assessment of the proposed development has been undertaken by Minerex Environmental Limited. The hydrological assessment finds that the likelihood of the proposed embedded retaining walls and proposed foundations to disrupt the existing groundwater flow is low. This is further mitigated by the raised female pile toe level within the secant piled walls that terminates at formation level, thereby allowing gaps between the male and female pile to facilitate the passage of ground water.

To minimise ground borne vibrations occurring during the works, low vibration methods have been specified. A vibration monitoring regime is to be established around the site ahead of the works commencing with trigger limits outlined in the Byrne Looby report.

To reduce the quantity of soil to be removed from or imported into the site, the floor levels of the proposed buildings and roads are designed to match existing levels as closely as is feasible, to minimise the cut and fill balance. The number of vehicle movements offsite will be minimised by this optimisation. However, given the prominent location of the site on a hill, given the steep slopes on the site, and given that there is a large basement proposed, it is anticipated that there will be a surplus of soil to be removed from the site. It is currently estimated that there will be approximately 67,000m3 of excess soil to be excavated and removed from the site.

Any surplus subsoil and rock required to be removed from site will be deposited in approved fill areas or to an approved waste disposal facility. Surplus subsoil will be stockpiled on site, in such a manner as to avoid contamination with builders' waste materials, etc., and so as to preserve the materials for future use as clean fill. The Construction Environmental Management Plan will include protocols for soil removal and will be implemented by the development's main contractor during the construction stage.

Soil samples taken from the site during the site investigations showed no evidence of contamination. However, any contaminated soils that are encountered during the works will be excavated and disposed of off-site in accordance with the Waste Management Acts, 1996-2021, and associated regulations and guidance provided in Guidelines for the Management of Waste from National Road Construction Projects published by the National Roads Authority in 2008.

In the case of topsoil, careful planning and on-site storage can ensure that this resource is reused on-site as much as possible. Any surplus of soil not reused on site can be sold. However, topsoil is quite sensitive and can be rendered useless if not stored and cared for properly. It is therefore important that topsoil is kept completely separate from all other construction waste, as any cross-contamination of the topsoil can render it useless for reuse.

It is important to ensure that topsoil is protected from all kinds of vehicle damage and kept away from site-track, delivery vehicle turning areas and site plant and vehicle storage areas.

If topsoil is stored in piles of greater than two metres in height, the soil matrix (internal structure) can be damaged beyond repair. It should also be kept as dry as possible and used as soon as possible to reduce any deterioration through lengthy storage and excess moving around the site.

Records of topsoil storage, movements and transfer from site will be kept by the C&D Waste Manager.

The provision of wheel wash facilities at the construction entrance to the development will minimise the amount of soils deposited on the surrounding road network. The adjoining road network will be cleaned on a regular basis, as required, to prevent the build-up of soils from the development site on the existing public roads. Dampening down measures with water sprays will be implemented during periods of dry weather to reduce dust levels arising from the development works.

Measures will be implemented throughout the construction stage to prevent contamination of the soil and adjacent watercourses from oil and petrol leakages. Suitable bunded areas will be installed for oil and petrol storage tanks. Designated fuel filling points will be put in place with appropriate oil and petrol interceptors to provide protection from accidental spills. Refuelling will be restricted to these allocated re-fuelling areas. This area is to be an impermeable bunded area designed to contain 110% of the volume of fuel stored.

During excavation works, temporary sumps will be used to collect any surface water run-off thereby avoiding standing water within the excavations. If groundwater is encountered during excavations, mechanical pumps will be required to remove the groundwater from sumps. Sumps should be carefully located and constructed to ensure that groundwater is efficiently removed from excavations and trenches.

Silt traps, silt fences and tailing ponds will need to be provided by the contractor where necessary to prevent silts and soils being washed away by heavy rains during the course of the construction stage. Surface water runoff and water pumped from the excavation works will be discharged via a silt trap / settlement pond to the existing foul drainage network. Straw bales will be used at the outfall to filter surface water to remove contaminants.

After implementation of the above measures, the proposed development will not give rise to any significant long term adverse impact. Moderate negative impacts during the construction stage will be short term only in duration.

A Construction Management Plan, Traffic Management Plan and Waste Management Plan will be implemented by the contractor during the construction stage to control the above remedial measures.

15.2.3.1.2 Monitoring

Monitoring during the construction phase will be carried out, in particular in relation to the following:

- Adequate protection of topsoil stockpiled for reuse.
- Adequate protection from contamination of soils for removal.
- Monitoring of surface water discharging to any existing watercourses, ditches and the public network.
- Monitoring cleanliness of the adjoining road network.
- Monitoring measures for prevention of oil and petrol spillages.
- Dust control by dampening down measures close to the boundaries of the site, when required due to unusually dry weather conditions.

15.2.3.2 Operational Phase

15.2.3.2.1 Mitigation

On completion of the construction phase and following replacement of topsoil, a planting programme will commence to prevent soil erosion. SuDS and filtration devices are proposed to be provided as part of the development. These will help to remove pollutants from rainwater runoff. The SuDS proposals will also encourage infiltration of surface water to the ground.

15.2.3.2.2 Monitoring

During the operational phase, the surface water network (drains, gullies, manholes, AJs, SuDS devices, attenuation system) will be regularly maintained and where required cleaned out. A suitable maintenance regime of inspecting and cleaning will be incorporated into the safety file/maintenance manual for the development.

15.2.4 Water (Hydrology and Hydrogeology)

15.2.4.1 Construction Phase

15.2.4.1.1 Mitigation

A Construction Management Plan, Traffic Management Plan and Waste Management Plan will be implemented by the contractor to ensure, site-specific procedures and mitigation measures to monitor and control environmental impacts throughout the Construction Phase of the project and ensure that construction activities do not adversely impact the environment. An Outline Construction Environmental Management Plan has been prepared for the Proposed Development (Enviroguide Consulting, 2022).

The construction works will be managed with consideration of applicable regulations and standard 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;
- EPA (2004) IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities;
- CIRIA 697, The SUDS Manual, 2007;
- UK Pollution Prevention Guidelines (PPG) UK Environment Agency, 2004;
- Construction Industry Research and Information Association CIRIA C648: Control of water pollution from linear construction projects: Technical guidance (Murnane et al. 2006);
- CIRIA C648: Control of water pollution from linear construction projects: Site guide (Murnane et al. 2006); and
- Inland Fisheries Ireland (2016). Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters

Monitoring of Groundwater

As outlined in the MEL report, additional groundwater level monitoring is required to identify temporal variability in groundwater levels. This will carried out as part of the detailed geotechnical design prior to construction.

Control and Management of Water

There will be no discharges to groundwater or surface water during the Construction Phase. Water runoff to adjoining roads will not be permitted.

There will be no requirement for groundwater dewatering during construction of the basement and management of water will include control of surface water runoff and pumping of water from excavations.

Where necessary the water will be treated onsite to remove sediment or other potentially contaminating compounds. The treated water will be tankered offsite or discharged to sewer only under licence from Irish Water or Fingal Co. Co. as appropriate.

During earthworks there is the potential for suspended solids entrained in runoff to enter the gullies on the adjoining roads. Straw bales or silt fences will be appropriately located around earthworks areas as appropriate to manage runoff in particular these measures will be incorporated along the site boundary with Balscadden Road. A buffer zone of 10m will be maintained round the Site boundary in particular adjoining Balscadden Road. The Contractor is to ensure that no contaminated water/liquids leave the Proposed Development Site (as surface water and surface water run-off or otherwise), enter the local drainage system or direct discharge drainage ditches or water courses or springs

A regular review of weather forecasts of heavy rainfall will be conducted, and a contingency plan will be prepared for before and after such events to minimise any potential nuisances. As the risk of the break-out of silt laden run-off is higher during these weather conditions, no work will be carried out during such periods where possible.

Any erosion control measures (i.e. silt-traps, silt-fencing and swales) will be regularly maintained during the Construction Phase.

Where water must be pumped from the excavations, water will be managed through robust methodologies in accordance with best practice standards (CIRIA – C750) and regulatory consents.

Temporary hydrocarbon interceptor facilities will be installed and maintained where Site Works involve the discharge of drainage waters to nearby drains.

A monitoring programme will be implemented to ensure that water quality criteria set out in the discharge licence are achieved prior to discharging to the sewer. The monitoring programme will be designed by an appropriately qualified Environmental Consultant.

Groundwater level monitoring prior to construction as part of the detailed design stage is recommended.

Howth Sewer Tunnel

A Build-Over Agreement will be required for the Howth Sewer Tunnel diameter concrete wastewater sewer. Early engagement to proceed with such an agreement is recommended to ensure that any requirements of the agreement are incorporated in the CEMP to be prepared by the contractor.

Control and Management of Soil and Bedrock

Prior to excavation, a detailed review of the final cut and fill model will be carried out to confirm cut and fill volumes. As outlined in Chapter 6 of this EIAR, soil samples taken from the site during the site investigations showed no evidence of contamination. In the event that contaminated soils are encountered during the works will be managed in accordance with relevant guidelines including EPA ‘Guidance on the Management of Contaminated Land and Groundwater at EPA Licensed Sites’ (EPA, 2013). Potentially contaminated soil to be excavated and removed and disposed of off-site in accordance with the Waste Management Acts, 1996-2021, and associated regulations and guidance.

Any surplus soil not suitable for re-use as a by-product and other waste materials arising from the Construction Phase will be removed offsite by an authorised contractor and sent to the appropriately authorised (licensed/permitted) receiving waste facilities.

Management of Stockpiles

Stockpiled soil and stone materials pending removal offsite or reuse onsite will be located in in designated areas only and there will be no storage of materials within 10m of any boundary and drains. Where necessary, stockpiles will be surrounded with silt fencing to filter out any suspended solids from surface water arising from these materials (refer to Control and Management of Water above).

Segregation and storage of wastes generated during works will be segregated and temporarily stored on-site in accordance with the OCEMP (Enviroguide, 2022).

While waste classification and acceptance at a waste facility is pending, excavated soil for recovery/disposal will be stockpiled as follows:

- A suitable temporary storage area will be identified and designated;
- All stockpiles will be assigned a stockpile number;
- Soil waste categories will be individually segregated; and all segregation, storage & stockpiling locations will be clearly delineated on the Site drawings;
- Erroneous pieces of concrete will be screened from the stockpiled soils and segregated separately;
- Non-hazardous and hazardous soil (if required to be stockpiled) will be stockpiled only on hard-standing or high-grade polythene sheeting to prevent cross-contamination of the soil below; and
- Soil stockpiles will be sealed to prevent run-off of rainwater and leaching of potential contaminants from the stockpiled material generation and/or the generation of dust.

Waste will be stored on-site, including concrete, asphalt and soil stockpiles, in such a manner as to:

- Prevent environmental pollution (bunded and/or covered storage, minimise noise generation and implement dust/odour control measures, as may be required);
- Maximise waste segregation to minimise potential cross contamination of waste streams and facilitate subsequent re-use, recycling and recovery; and
- Prevent hazards to site workers and the general public during construction phase (largely noise, vibration and dust).

Concrete Works

The use of cementitious grout used during the construction of the basement and other infrastructure will avoid any contamination of ground through the use of appropriate design and methods implemented by the Contractor and in accordance with industry standards.

All ready-mixed concrete will be delivered to the Proposed Development Site by truck. Concrete mixer trucks will not be permitted to wash out onsite with the exception of cleaning the chute into a container which will then be emptied into a skip for appropriate compliant removal offsite.

There is no requirement for wet concrete works.

Piling Methodology

The proposed piling methodology will minimise the potential for introduction of any temporary conduit between surface and potential sources of contamination at the ground surface and underlying groundwater. Details of the construction sequence and specification for the pile walls and basements are provided in the Geotechnical Report (Byrne Looby, 2022) however, construction method will be determined by the appointed specialist piling contractor. The piling method will include procedures to ensure any potential impact to water quality is prevented including preventing surface runoff or other piling/drilling fluids from entering the pile bores. Where there is a requirement to use lubricants, drilling fluids or additives the contractor will be required to use water-based, biodegradable and non-hazardous compounds.

Boreholes

Existing monitoring boreholes that are no longer required at the Site will be decommissioned in accordance with the specifications outlined in EPA Advice Noted 14 (EPA, 2013). This will remove any potential direct conduit for contaminants to enter the groundwater directly.

Importation of Soil and Aggregates

Contract and procurement procedures will ensure that all aggregates and fill material required are sourced from reputable suppliers operating in a sustainable manner and in accordance with industry conformity and compliance standards and statutory obligations.

The importation of aggregates will be subject to management and control procedures which will include testing and assessment of the suitability for use in accordance with engineering and environmental specifications for the Proposed Development including the suitability of material that may be imported in accordance with an Article 27 By-Product Notification. Therefore, any unsuitable material will be identified and avoided prior to importation to the Site.

Handling of Fuels and Hazardous Materials:

Fuel, oils and chemicals used during construction are classified as hazardous.

Storage of fuel hazardous will be undertaken with a view to protecting any essential services (electricity, water etc.) and the receiving land, soil and geology environment.

Bulk quantities of fuel will not be stored at the Site.

Storage areas for any fuel, oils and chemicals will be bunded and clearly marked. Fuel will only be stored in the quantities required for emergency use and re-fuelling. 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 moved on spill pallets. Drums will be loaded and unloaded by competent and trained personnel using appropriate equipment.

Oils and chemicals used and stored on-site will be sealed, secured and stored in a dedicated internally bunded chemical storage cabinet unit or inside concrete bunded areas to prevent any seepage to ground. There will be clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage.

- Bunds will have regard to Environmental Protection Agency guidelines ‘Storage and Transfer of Materials for Scheduled Activities’ (EPA, 2004) and Enterprise Ireland. Best Practice Guide BPGCS005. Oil Storage Guidelines. All tank and drum storage

areas will, as a minimum, be bunded to a volume not less than the greater of the following:

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

- Vehicle or equipment maintenance work will take place in a designated impermeable area within the Site;
- Emergency response procedures will be put in place, in the unlikely event of spillages of fuels or lubricants;
- Spill kits including oil absorbent material will be provided so that any spillage of fuels, lubricants or hydraulic oils will be immediately contained;
- In the event of a leak or spill from equipment in the instance of a mechanical breakdown during operation, any contaminated soil will be removed from the Site and compliantly disposed off-site. Residual soil will be tested to validate that all potentially contaminated material has been removed. This procedure will be undertaken in accordance with industry best practice procedures and EPA guidelines;
- Site staff will be familiar with emergency procedures for in the event of accidental fuel spillages; and
- All staff on-site will be fully trained on the use of equipment to be used on-site.
- Portable generators or similar fuel containing equipment will also be placed on suitable drip trays or bunds.

Refuelling of plant and vehicles during the Construction Phase will only be permitted at designated refuelling station locations onsite and will be from a road tanker brought to site as required. Each station will be fully contained and equipped for spill response and a specially trained and dedicated Environmental and Emergency Spill Response team will be appointed by the Contractor before the commencement of works onsite.

A procedure will be drawn up by the contractor which will be adhered to during refuelling of on-site vehicles. This will include the following:

- Fuel will be delivered to plant on-site by dedicated tanker;
- All deliveries to on-site vehicles will be supervised and records will be kept of delivery dates and volumes;
- The driver will be issued with, and will carry at all times, absorbent sheets and granules to collect any spillages that may accidentally occur;
- Where the nozzle of a fuel pump cannot be placed into the tank of a machine then a funnel will be used; and
- All re-fuelling will take place in a designated impermeable area. In addition, oil absorbent materials will be kept on-site in close proximity to the re-fuelling area.

Welfare Facilities

Welfare facilities have the potential, if not managed appropriately, to release organic and other contaminants to ground or surface water courses. All waste from welfare facilities will be

managed in accordance with the relevant statutory obligations through either a temporary connection to mains foul sewer (subject to receipt of the relevant consent from Irish Water) which will be constructed in accordance with Irish Water and Fingal Co. Co. guidelines or by tankering of waste offsite by an appropriately authorised contractor in compliance with all legislative requirements.

Wheel-Wash and Water Treatment Facilities

The use of wheel-wash and water treatment facilities will be used as required on site. The correct use and management of these will be undertaken by the appointed contractor to ensure that there is no harm to the receiving water environment.

To prevent tracking of dust and debris offsite the following will be undertaken:

- 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).
- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.

To prevent fugitive runoff from the Site the following will be implemented:

- Silt traps, silt fences and tailing ponds will need to be provided by the contractor where necessary to prevent silts and soils being washed away by heavy rains during the course of the construction stage.
- Surface water runoff and water pumped from the excavation works will be discharged via a silt trap / settlement pond to the existing foul drainage network.
- Straw bales will be used at the outfall to filter surface water to remove contaminants.
- Onsite water treatment system will be used if required to remove suspended solids and hydrocarbons.

All sludges, used straw bales, and other waste from wheel-wash and water treatment infrastructure will be removed from the Site by the contractor in accordance with all legislative requirements.

15.2.4.1.2 Monitoring

During construction phase the following monitoring measures will be considered:

- Inspections and monitoring will be undertaken during excavations, piling and other groundworks to ensure that measures protective of water quality are fully implemented and effective.
- Discharges to sewers will be monitoring where required in accordance with statutory consents (discharge licence).
- Monitoring and inspection of Balscadden Road will be undertaken routinely to ensure there is no fugitive runoff from the Site entering the road gullies or other drains in particular during earthworks.

- Routine monitoring and inspections during refuelling, concrete works to ensure no impacts and compliance with ameliorative, remedial and reductive measures.
- Materials management and waste audits will be carried out at regular intervals

15.2.4.2 Operational Phase

15.2.4.2.1 Mitigation

Ongoing regular operational monitoring and maintenance of drainage and the SuDS measures in accordance with CIRIA SuDS Manual C753 will be incorporated into the overall management strategy for the Proposed Development.

There is no other requirement for mitigation measures for the Operational Phase of the Proposed Development.

15.2.4.2.2 Monitoring

Ongoing regular operational monitoring and maintenance of drainage and the SuDS will be carried out. No other monitoring is required during the Operational Phase.

15.2.5 Air Quality

15.2.5.1 Construction Phase

15.2.5.1.1 Mitigation

15.2.5.1.1.1 Air Quality

It is not expected that adverse air quality impacts are likely to occur at sensitive receptors as a result of the Proposed Development. However, appropriate mitigation measures, as outlined within the Outline Construction and Demolition Management Plan (CDMP), which has been prepared by Waterman Moylan Consulting Engineers, will be employed as necessary to further prevent such impacts occurring:

- Vehicle and wheel washing facilities will be provided at site exit where practicable. If necessary, vehicles are to be washed down before exiting the site.
- Netting is to be provided to enclose scaffolding to mitigate escape of air borne dust from the existing buildings.
- Shroud piling machinery as shown below when operating near to boundaries.
- Engines and exhaust systems will be maintained so that exhaust emissions do not breach stationary emission limits set for the vehicle / equipment type and mode of operation.
- Dust emission over the site boundary will be minimised using static sprinklers or other watering methods as necessary.
- No burning of materials will be permitted on site.
- Water sprays for dust suppression will be affixed to mechanical excavators/munchers involved in demolition works.
- Demolition waste should be removed from site as quickly as possible to minimise risk of dust generation and any fine material should be covered with a tarpaulin or similar material and tied down.
- Water sprays and cannons will be used where possible during cutting, with protective measures applied to retained finishes local to the cutting.
- Prior to commencement, the Main Contractor will identify the construction operations which are likely to generate dust and to draw up action plans to minimise emissions.
- In areas of poor natural ventilation, dust capture/extraction methods will be employed by the Main Contractor.
- The Main Contractor will allocate suitably qualified and experienced personnel to be responsible for ensuring the generation of dust is minimised and effectively controlled.
- The Main Contractor will appoint a senior member of the site management team to act as the liaison with third parties in respect of complaints regarding dust and or site activities.
- Monitoring of dust deposition should be undertaken at nominated boundary locations to ensure that dust levels comply with the TA Lift limit value of 350mg/(m²/day) based on a 30-day average using Bergerhoff gauges (Limits to be agreed with local authority).

15.2.5.1.1.2 Climate

As negative climatic impacts associated with the Construction and Operational Phases of the Proposed Development are negligible, no mitigation measures are proposed. Best practice measures will be implemented to minimise exhaust emissions from construction and operational vehicles and machinery by avoidance of engines running unnecessarily, as idle engines will not be permitted for excessive periods. Furthermore, all proposals for development will seek to achieve the greatest standards of sustainable construction and design and will have regard to sustainable building design criteria.

15.2.5.1.2 Monitoring

The monitoring of construction dust during the Construction Phase of the Proposed Development is recommended to ensure that impacts are not experienced beyond the Site boundary. Monitoring of dust can be carried out by using the Bergerhoff Method. This involves placing Bergerhoff Dust Deposit Gauges at a strategic locations along the Site boundaries for a period of 30 +/- 2 days. The selection of sampling point locations should be carried out in consideration of the requirements of the German Standard Method VDI 2119 (Measurement of Dustfall, Determination of Dustfall using Bergerhoff Instrument (Standard Method German Engineering Institute) with respect to the location of the samplers relative to buildings and other obstructions, height above ground, and sample collection and analysis procedures. After the exposure period is complete, the Gauges should be removed from the Site; the dust deposits in each Gauge will then be determined gravimetrically and expressed as a dust deposition rate in mg/m^2/day in accordance with the relevant standard. Monitoring of construction dust deposition will be conducted at nearby sensitive receptors and at the Site boundary (i.e. worst-case location), including within the SAC at locations approved by the project ecologist, during the construction phase of the Proposed Development.

15.2.5.2 Operational Phase

15.2.5.2.1 Mitigation

15.2.5.2.1.1 Air Quality

It has been determined that the Operational Phase air quality impact is negligible and therefore no site-specific mitigation measures are proposed.

15.2.5.2.1.2 Climate

Same as Construction Phase.

As negative climatic impacts associated with the Construction and Operational Phases of the Proposed Development are negligible, no mitigation measures are proposed. Best practice measures will be implemented to minimise exhaust emissions from construction and operational vehicles and machinery by avoidance of engines running unnecessarily, as idle engines will not be permitted for excessive periods. Furthermore, all proposals for development will seek to achieve the greatest standards of sustainable construction and design and will have regard to sustainable building design criteria.

15.2.5.2.2 Monitoring

Due to the negligible impact on air quality and climate from the Operational Phase of the Proposed Development, no specific monitoring is recommended.

15.2.6 Microclimate

15.2.6.1 Construction Phase

15.2.6.1.1 Mitigation

Not applicable.

15.2.6.1.2 Monitoring

There is no requirement to monitor wind impact during construction phase for pedestrian comfort and distress as the designated amenity areas will not be in use during this phase of the project and pedestrian are not accessing construction sites.

15.2.6.2 Operational Phase

15.2.6.2.1 Mitigation

Not applicable.

15.2.6.2.2 Monitoring

The Proposed Development has been designed to conform to acceptable Lawson Criteria for Comfort and Distress in accordance with the Wind Beaufort Scale and considering the historical wind conditions of the site, there is no further element to monitor for this scope as far as the landscaping is maintained in place as designed.

15.2.7 Noise & Vibrations

15.2.7.1 Construction Phase

15.2.7.1.1 Mitigation

In order to control likely noise impacts caused by the Proposed Development, best available technology will be employed by the appointed Main Contractor to minimise noise from the construction operations and all comply with Safety, Health and Welfare at work (construction) Regulations 2006 to 2013, Safety, Health and Welfare at Work Act 2005, BS 6187:2011 - Code of Practice for full and partial demolition, BS 5228:2009+A1:2014 Parts 1 & 2 - Code of Practice for noise and vibration control on construction and open sites – Vibration, Environmental Protection Agency Act 1992 Sections 106-108, including all Local Authority specific requirements for this specific site.

Work methods will be implemented to ensure minimal noise and vibration are created; methods will include:

- Each item of plant used on site complies with the noise limits quoted in the relevant European Commission Directive 2000/14/EC/ [S.I. No. 632 of 2001].
- All plant and equipment liable to create noise whilst in operation will, as far as reasonably practicable, be located away from sensitive receptors and neighbouring occupied buildings.
- The use of barriers and hoarding to absorb and/or deflect noise away from noise sensitive areas will be employed where required and reasonably practicable.
- All plant, equipment and noise control measures applied to plant and equipment will be maintained in good and efficient working order and operated such that noise emissions are minimised as far as reasonably practicable. Any plant, equipment or items fitted with noise control equipment found to be defective will not be operated until repaired.
- Fixed items of construction plant will be electrically powered, where possible, in preference to diesel or petrol driven. The Main Contractor will ensure that vehicles and mechanical plant employed for any activity associated with the construction works will, where reasonably practicable, be fitted with effective exhaust silencers.
- Machines in intermittent use will be shut down or throttled down to a minimum during periods between works. Static noise emitting equipment operating continuously will be housed within suitable acoustic enclosures, where appropriate.
- Tower cranes will be utilized instead of crawler cranes as these are electrically powered and quieter in operation.
- Noise suppression hammers and shields will be used on rock breaking equipment.
- Working hours will be confined to those stipulated in the grant of planning permission.
- Noise emitting processes such as rock breaking can be suspended during sensitive hours, to be agreed in consultation with FCC and neighbours.
- Alternative work practices will be investigated where the noise emitted is reduced (for example prefabricating building components off site).
- Site deliveries will be confined to working hours and allocated offloading location will be utilized for all deliveries.

- The Site Manager will also continually review and monitor the noise / dust / vibration levels / risk throughout the duration of the project and if necessary, adjust / add to the control measures to be employed to reduce nuisance.

For controlling vibration reference should be made to BS 5228:2009+A1:2014 which offers detailed guidance on the control of vibration from demolition and construction activities. In general, BS5228:2009+A1:2014 advises the following:

- Use of rubber linings in, for example, chutes and dumpers to reduce impact noise.
- Minimize drop height of materials.
- Regular and effective maintenance by trained personnel should be carried out to reduce vibration from plant and machinery.
- Hand demolition, cutting of the separation joints of the buildings in advance and small robotic breakers and 'munchers'

Toolbox talks will also be carried out with personnel with regards to managing vibration on site. Exposure limits as set out in Regulation 4 of BS 5228:2009+A1:2014 will be reviewed, risk assessments carried out, detecting signs of injury, safe working practices and suppression techniques will all be incorporated. Methods of construction will be adopted to omit and or control vibration at the source, utilize lower levels of vibration, use vibration pads and gloves where possible. Any activity which will generate vibration will as far as practicable be isolated from sensitive receptors. Level of protection and procedure put in place will be dictated by potential risk resulting from work to be carried out.

All works within the sensitivity zones of the site will be carried out using piling and excavation and assembly techniques to ensure vibration levels are kept below the threshold level. The proposed construction methodology for the structures directly adjacent to sensitive boundaries will be designed by the contractor to ensure that all protection measures are adhered to and that all new works are undertaken in such a way as to limit vibration.

15.2.7.1.2 Monitoring

A noise and monitoring specialist will be appointed to carry out quarterly monitoring of noise and vibration, with the first monitoring commencing the first week of construction. The monitoring will be carried out at the nearest sensitive locations which are presented in Table 16-3.

Table 15-3: Noise Sensitive Locations

Name	Type	Coordinates		Orientation Relative to Site Boundary	Distance from the Site Boundary
Abbey Street	Residential	53.386947	-6.065419	West	20m
Abbey Street	Residential	53.386432	-6.065432	Southwest	30m
Balscadden Road	Residential	53.387290	-6.063182	Northeast	30m
Balscadden Road	Residential	53.386652	-6.063516	Southeast	20m
Asgard Park	Residential	53.385765	-6.063541	Southeast	35m

The current proposal for the method of excavation along the eastern and southern boundary include a secant piled retaining wall. The proposed method of construction of the secant piled wall will involve the continuous flight auger (CFA) method. The CFA method offers low noise and low ground borne vibration in comparison to other forms of construction. For the avoidance of doubt, impact, driven or displacement piling will not be used.

Continuous vibration monitoring will be carried along the southern and eastern boundaries and top of the embankments.

15.2.7.2 Operational Phase

15.2.7.2.1 Mitigation

During the operational phase of the development, noise mitigation measures with respect to the outward impact of the development are not deemed necessary.

15.2.7.2.2 Monitoring

During the operational phase of the development, noise monitoring measures are not deemed necessary.

15.2.8 Landscape & Visual

15.2.8.1 Construction Phase

15.2.8.1.1 Mitigation

Other than those multiple, embedded elements of the design that respond to its immediate site setting, there are no specific landscape and visual avoidance/remedial/mitigation measures considered necessary in this instance.

15.2.8.1.2 Monitoring

No monitoring is required, in terms of landscape and/or visual impacts.

15.2.8.2 Operational Phase

15.2.8.2.1 Mitigation

Refer to section 15.2.6.1.1.

15.2.8.2.2 Monitoring

No monitoring is required, in terms of landscape and/or visual impacts.

15.2.9 Archaeology and Cultural Heritage

15.2.9.1 Construction Phase

15.2.9.1.1 Mitigation

It is possible that excavation works associated with the Proposed Development may have an adverse impact on small or isolated previously unrecorded archaeological features or deposits that have the potential to survive beneath the current ground level. If any archaeological remains are discovered during this project, all works will cease and an expert archaeologist will be brought to Site and all future works will be carried out under the supervision of the archaeologist.

15.2.9.1.2 Monitoring

No specific monitoring measures are required in relation to archaeology and cultural heritage given the fact that it is not predicted that the Proposed Development will have any adverse impacts on any archaeological features or deposits.

15.2.9.2 Operational Phase

15.2.9.2.1 Mitigation

Since no known archaeological, architectural or cultural heritage remains were found during the desk top survey, it is likely that there are no further mitigation measures required for this development.

15.2.9.2.2 Monitoring

No specific monitoring measures are required in relation to archaeology and cultural heritage given the fact that it is not predicted that the Proposed Development will have any adverse impacts on any archaeological features or deposits.

15.2.10 Materials Assets

15.2.10.1 Construction Phase

15.2.10.1.1 Mitigation

Specific avoidance, remedial and mitigation measures to be taken during the Construction Phase with respect to water supply, surface water drainage and foul water are detailed within Chapter 7, Water (Hydrology and Hydrogeology), of this EIAR. All works will be carried out in accordance with Irish Water Code of Practice for Water and Wastewater Infrastructure. Laying of watermains/wastewater sewers and testing of pipelines and infrastructure will be in accordance with Irish Water standard details. All surface water works will be carried out in accordance with The Greater Dublin Area Regional Code of Practice for Drainage Works.

New connections for electricity and telecommunications will be coordinated with the relevant utility provider and Fingal County Council and carried out and tested by approved contractors, as per standard protocols.

The Outline Construction & Demolition Management Plan (Waterman Moylan, 2022) provides guidance to the Main Contractor on waste management during the Construction Phase. In the event that hazardous soil, or historically deposited waste is encountered during the site bulk excavation phase, the contractor will notify FCC and provide a Hazardous/Contaminated Soil Management Plan, to include estimated tonnages, description of location, any relevant mitigation, destination for disposal/treatment, in addition to information on the authorised waste collector(s). Removal of asbestos or ACMs will be carried out by a suitably qualified contractor and ACM's will only be removed from site by a suitably permitted/licenced waste contractor. in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010. All material will be taken to a suitably licensed or permitted facility. Based on a review of facilities in Dublin (refer to Figure 12-10) and surrounding counties permitted/licenced to accept construction and demolition waste, and the permitted/licenced capacity of each, there is sufficient capacity to accept the construction and demolition from the permitted developments and Proposed Development, subject to acceptance agreements.

15.2.10.1.2 Monitoring

The monitoring of construction and demolition waste during the Construction Phase of the Proposed Development is recommended to ensure that impacts are not experienced beyond the Site boundary. The Main Contractor will be responsible for monitoring and record keeping in respect of waste leaving the facility and that these records will be maintained on site.

15.2.10.2 Operational Phase

15.2.10.2.1 Mitigation

Specific avoidance, remedial and mitigation measures to be taken during the Operational Phase with respect to water supply, surface water drainage and foul water are detailed within Chapter 7, Water (Hydrology and Hydrogeology), of this EIAR. All works will be carried out in accordance with Irish Water Code of Practice for Water and Wastewater Infrastructure. Laying of watermains/wastewater sewers and testing of pipelines and infrastructure will be in accordance with Irish Water standard details. All surface water works will be carried out in accordance with The Greater Dublin Area Regional Code of Practice for Drainage Works.

An OWMP (AWN Consulting Ltd, 2022) has been produced for the Proposed Development which outlines measures to be taken to achieve waste prevention, maximum recycling and recovery of waste with a focus on diversion of waste from landfill wherever possible. Waste segregation will be implemented onsite to minimise potential cross contamination of waste streams and facilitate subsequent re-use, recycling and recovery. It is recommended within the OWMP that bin collection times are staggered to reduce the number of bins required to be emptied at once and the time the waste collector is onsite. The OWMP also states that the facilities management company must employ suitably permitted or licenced contractors to undertake off-site management of their waste in accordance with all legal requirements. This includes the requirement that a waste contactor handle, transport and reuse / recover / recycle / dispose of waste in a manner that ensures that no adverse environmental impacts occur as a result of any of these activities.

15.2.10.2.2 Monitoring

The building management company, tenants and residents will be required to maintain the resident bins and storage areas in good condition as required by the FCC Waste Bye-Laws. The waste strategy presented in the OWMP will provide sufficient storage capacity for the estimated quantity of segregated waste. The designated areas for waste storage will provide sufficient room for the required receptacles in accordance with the details of this strategy. The areas will be fitted with CCTV for monitoring.

15.2.11 Traffic

15.2.11.1 Construction Phase

15.2.11.1.1 Mitigation

It is proposed that a Construction Environmental Management Plan (CEMP) will be prepared by the appointed contractor in order to minimise the potential impact of the construction phase of the Proposed Development on the safety and amenity of other users of the public road. A Preliminary CEMP has been prepared as a guide to the appointed contractor and this is included as part of this application. The CEMP will consider the following aspects:

- Dust and dirt control measures.
- Noise assessment and control measures
- Routes to be used by vehicles
- Working hours of the site
- Details of construction traffic forecasts
- Time when vehicle movements and deliveries will be made to the site
- Facilities for loading and unloading
- Facilities for parking cars and other vehicles

In addition to the above, a detailed Construction Traffic Management Plan (CTMP) will be prepared by the main contractor. A Preliminary CTMP has been prepared which will guide the Contractor and this is included as part of this application. This document will outline proposals in relation to construction traffic and associated construction activities that impact the surrounding roads network. The document will be prepared in coordination and agreed with the local authority.

Care will be taken to ensure existing pedestrian and cycling routes are suitably maintained or appropriately diverted as necessary during the construction period, and temporary car parking is provided within the site for contractor's vehicles. It is likely that construction will have an imperceptible impact on pedestrian and cycle infrastructure.

Through the implementation of the CEMP and CTMP, it is anticipated that the effect of traffic during the construction phase will have a slight effect on the surrounding road network for short-term period.

15.2.11.1.2 Monitoring

During the Construction Phase the following monitoring is advised. The specific compliance exercises to be undertaken in relation to the range of measures detailed in the final construction management plan will be agreed with the planning authority.

- Construction vehicles routes and parking
- Internal and external road conditions
- Construction activities hours of work

15.2.11.2 Operational Phase

15.2.11.2.1 Mitigation

The Proposed Development is situated adjacent to suitable infrastructure and transport services for travel by sustainable modes. A key barrier to modal shift towards sustainable modes of travel is often a lack of information about potential alternatives to the car. As such, it is proposed that residents will be made aware of potential alternatives including information on walking, cycle routes and public transport.

Residents will be encouraged to avail of these facilities for travel to and from work. Provision of this information will be made during the sales process and will be included in the new homeowner's pack upon the sale of each unit, as this represents the best opportunity to make residents aware and to secure travel behaviour change. It is anticipated that this measure will help to reduce the level of traffic at the Proposed Development, thus providing mitigation against any traffic and transport effects of the development.

A Travel Plan has been included in this application under separate cover. This Plan sets out method to reduce the dependence on private car journeys and encourage residents within the development to avail of sustainable forms of transport such as walking, cycling and public transport.

15.2.11.2.2 Monitoring

The Travel Plan for the Proposed Development will be monitored and updated at regular intervals. This will enable tracking in terms of a reduction in the dependence on private car journeys and a shift towards sustainable transport options such as walking, cycling and the use of public transport such as buses and trains.