

HOLLYSTOWN-KILMARTIN SITE 4

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

BSM

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Environmental Assessment **Built Environment**

Client:

Marina Quarter Limited

Date:

30 August 2023

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1 Introduction

1.1 Overview

This Environmental Impact Assessment Report (EIAR) provides a statement of the effects that the proposed Large-scale Residential Development (LRD) at Hollystown-Kilmartin Site 4 in Hollystown-Kilmartin, Dublin 15 ('the proposed development'), if carried out, would have on the environment. It has been prepared in accordance with the provisions of the Planning and Development Act 2000 – 2023 ('PDA 2000'), the Planning and Development Regulations 2001 – 2023 ('PDR 2001') and the relevant guidance documents, as detailed herein.

1.2 The Applicant

The Applicant is Marina Quarter Limited.

1.3 The Proposed Development

1.3.1 Site of the Proposed Development

The proposed development site is located in a peri-urban area of Dublin 15, c. 13km to the north-west of Dublin city centre and c. 3.5km north of Blanchardstown town centre. The site is situated in the administrative area of Fingal County Council, in the townlands of Kilmartin and Hollystown, local electoral area of 'Blanchardstown Mulhuddart' and electoral division of 'The Ward'.

The proposed development site is predominantly comprised of disused agricultural land, bordered by treelines, hedgerows and drainage ditches. The surrounding area is a relatively new suburban area comprising a mix of uses from residential, to educational and agricultural. Lands to the north of the site include part of the former golf course of the Hollystown Golf Club, and the residential area of Hollystown Park, and the east of the site includes the emerging residential area of Bellingsmore and Hollywoodrath. The site is also bound immediately to the east by lands that form part of a Strategic Housing Development (SHD) comprising 548 no. residential units along with 3 no. childcare facilities (ABP Reg. Ref. 312271, permitted in March 2023). To the west, the site is bound by greenfield lands and is zoned rural. An overhead 110kV ESB powerline runs across the northern portion of the site.

The lands to the south of the site are in community use (Tyrrelstown Park, GAA Pitches, Tyrrelstown Cricket Club Grounds), with Tyrrelstown Community Centre to the south-east alongside education uses (St. Luke's National School, Tyrrelstown Educate Together National School and Le Chéile Secondary School). The south-western part of the proposed development site includes an area of disused lands dominated by willow and bramble scrub. Further to the south-east is the Blanchardstown Corporate Park, Northwest, Ballycoolin and Rosemount Business Parks, and to the south-west is the Damastown Industrial Park, comprising light industrial and pharmaceutical activities. The site is accessed via the R121 road which connects Tyrrelstown with the N3, Blanchardstown, and the wider national road network.

Figure 1.1 and **Figure 1.2**, below, illustrate the location of the proposed development site.

1.3.2 Overview of the Proposed Development

The proposed development relates to a site of c.20.6ha referred to as Hollystown-Kilmartin 4 located in the townland of Hollystown and Kilmartin, Dublin 15. The site is bound by lands which previously

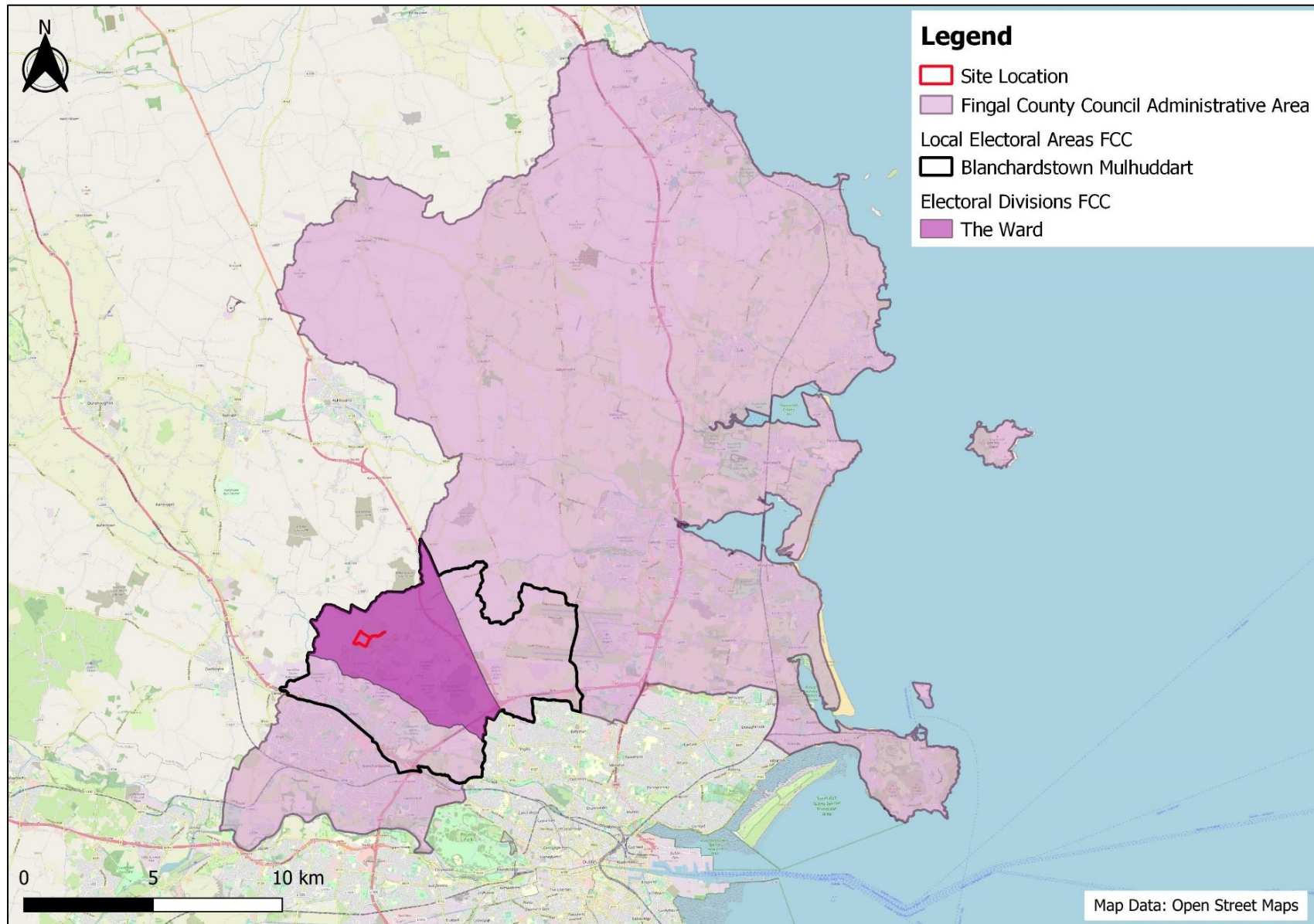
formed part of the former Hollystown Golf Club and the residential area of Hollystown Park to the north, lands forming part of a permitted Strategic Housing Development (SHD) to the east (ABP Reg. Ref. 312271), Tyrrelstown Park to the south, and rural zoned lands to the west.

The proposed development will include for the development of 580 no. residential units, consisting of 112 no. apartments/duplexes and 468 no. houses ranging from 1 – 3 storeys and will also include for car parking, cycle parking, new pedestrian/ cycle links, storage, services and plant areas. Landscaping will include for high quality private open space, communal amenity areas and public open space provision.

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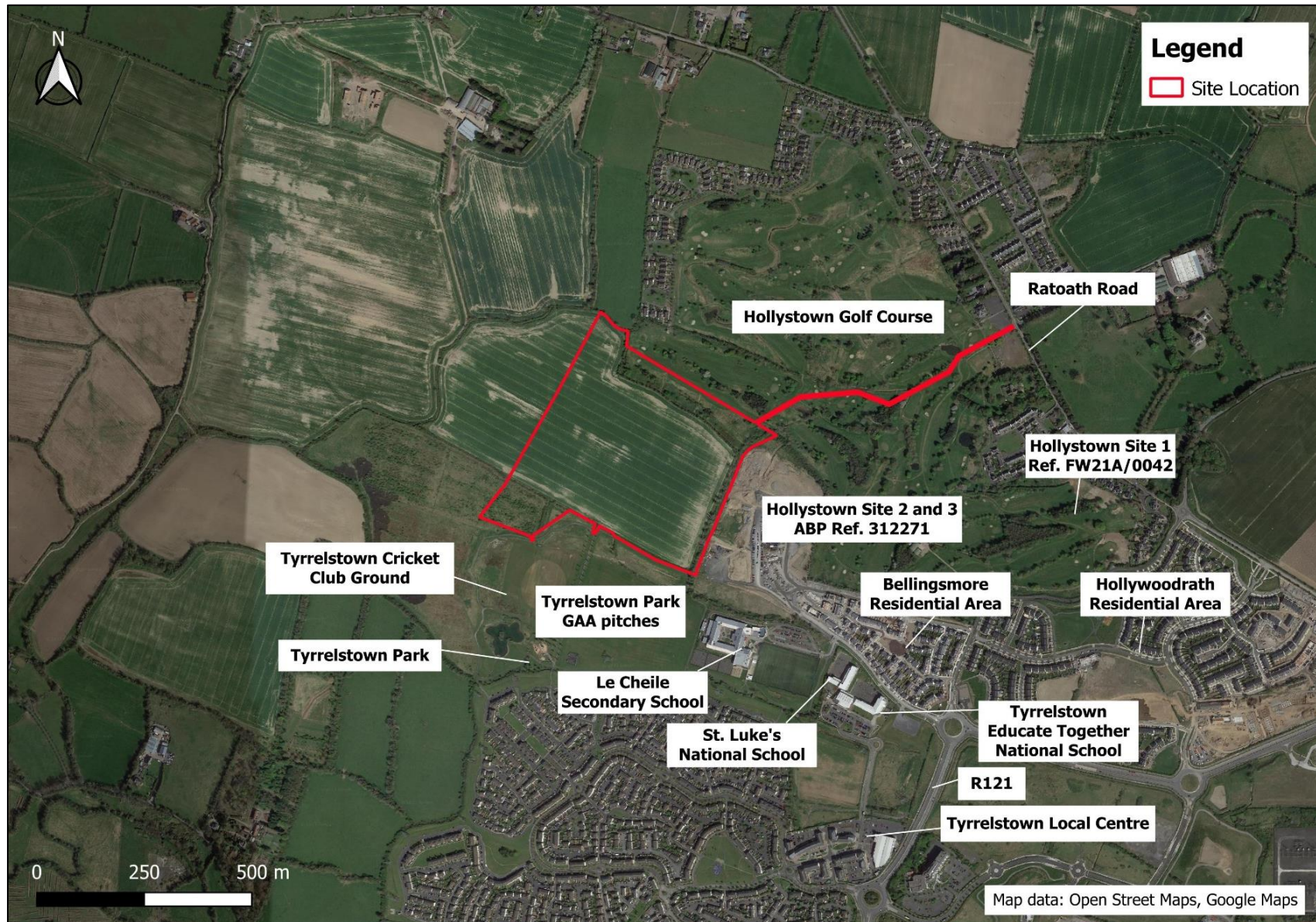
Figure 1.1 Location of the proposed development



Hollystown-Kilmartin Site 4

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Figure 1.2 Site of the proposed development



1.4 Environmental Impact Assessment

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

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

Table 1.1 Overview of the EIA process

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

1.5 Format & Structure of the Environmental Impact Assessment Report

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

Table 1.2 Structure of the EIAR

Section	Description
Volume 1:	Non-technical Summary (NTS)
	A summary of the EIAR in non-technical language
Volume 2:	Main Report
Chapter 1	Introduction
Chapter 2	The EIA Process
Chapter 3	Planning & Development Context

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

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

Table 1.3 Information required under EIA Directive Annex IV

Information Referred to in EIA Directive Article 5(1)	EIAR Section
1. Description of the project, including in particular:	
(a) a description of the location of the project;	Volume 2, Chapter 1
(b) a description of the physical characteristics of the whole project, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases;	Volume 2, Chapter 5
(c) a description of the main characteristics of the operational phase of the project (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used;	Volume 2, Chapter 5
(d) an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation) and quantities and types of waste produced during the construction and operation phases.	Volume 2, Chapter 5 Volume 2, Chapter 7 to 18
2. A description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.	Volume 2, Chapter 4
3. A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the project as far as natural changes from the baseline scenario can be assessed with reasonable effort on the	Volume 2, Chapter 1, Chapter 4, Chapter 7 to 18

Information Referred to in EIA Directive Article 5(1)	EIAR Section
basis of the availability of environmental information and scientific knowledge.	
4. A description of the factors specified in Article 3(1) likely to be significantly affected by the project: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape.	Volume 2, Chapter 7 to 21
5. A description of the likely significant effects of the project on the environment resulting from, inter alia:	
(a) the construction and existence of the project, including, where relevant, demolition works;	Volume 2, Chapter 7 to 21
(b) the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources;	Volume 2, Chapter 7 to 21
(c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste;	Volume 2, Chapter 7 to 21
(d) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters)	Volume 2, Chapter 7, Chapter 14, Chapter 2 (Section 2.5.1)
(e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;	Volume 2, Chapter 20
(f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change;	Volume 2, Chapter 7 to 21
(g) the technologies and the substances used.	Volume 2, Chapter 5
The description of the likely significant effects on the factors specified in Article 3(1) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the project. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the project.	Volume 2, Chapter 7 to 21
6. A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.	Volume 2, Chapter 7 to 21
7. A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases.	Volume 2, Chapter 7 to 21
8. A description of the expected significant adverse effects of the project on the environment deriving from the vulnerability of the project to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to Union legislation such as Directive 2012/18/EU of the European Parliament and of the Council (*) or Council Directive	Volume 2, Chapter 2 (Section 2.5.1), Chapter 7 to 21

Information Referred to in EIA Directive Article 5(1)	EIAR Section
2009/71/Euratom (**) or relevant assessments carried out pursuant to national legislation may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.	
9. A non-technical summary of the information provided under points 1 to 8.	Volume 1
10. A reference list detailing the sources used for the descriptions and assessments included in the report.	Volume 2, Chapter 7 to 21

1.5.1 EIAR Chapters Structure

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

Introduction

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

Method

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

Baseline Environment

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

Predicted Impacts

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

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

Mitigation Measures

Each chapter provides a description of any specific mitigation measures envisaged to avoid, prevent, reduce or, if possible, offset any significant adverse effects on the environment identified under the assessment of potential impacts described above. Furthermore, Chapter 21 of the EIAR collates and summarises the mitigation measures that have been identified in the individual chapters.

Residual Impacts

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

Monitoring

Each chapter includes a description (if any) of the proposed monitoring of effects on the environment which might be necessary, covering the monitoring methods and the agencies responsible for their implementation. Furthermore, Chapter 21 of the EIAR collates and summarises the monitoring measures that have been identified in the individual chapters.

Interactions

Each chapter of the EIAR provides a description of the key interactions and inter-relationships identified between the topics addressed within this EIAR. Chapter 19 of the EIAR provides an overview of the key interactions identified and addressed in the foregoing chapters of the EIAR.

Cumulative Impacts

Chapter 20 of the EIAR discusses the potential for cumulative impacts to arise as a result of the proposed development in combination with other projects. Each of the specialist contributors to this EIAR have considered the potential for cumulative impacts to arise, with particular reference to the projects listed in Chapter 20.

Difficulties Encountered

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

References

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

1.5.2 The Environmental Impact Assessment Team

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

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

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

Table 1.4 EIAR contributors

Name	Company	Role / input	Qualifications
Pauline Byrne	BSM	Project Manager	BSc Mgmt., Adv. Dip. Marketing, MA Regional & Urban Planning - Head of Planning - Member of Royal Town Planning Institute (MRTPI) - Member of Irish Planning Institute (MIPI) - Over 20 years of experience
Thomas Burns	BSM	EIAR technical review	B.Agr.Sc. (Land.) Dip. EIA Mgmt., Adv. Dip. Plan. & Env. Law - Environmental Planner and Landscape Architect - Member of Irish Landscape Institute & Irish Environmental Law Association - Over 30 years of experience in EIA and LVIA
Namrata Kaile	BSM	EIAR Co-ordinator; Background chapters; Population & Human Health; Material Assets – Services	BSc Life Sciences, MSc Env. Sciences - Environmental Consultant & Ecologist - Associate Member CIEEM - Over 4 years of experience
Matthew Hague	BSM	Biodiversity; Appropriate Assessment Screening; EIAR technical review	BSc, MSc, Adv. Dip. Plan. & Env. Law - Associate & Senior Ecologist - Chartered Environmentalist – CEnv - MCIEEM - Member of Irish Environmental Law Association - Over 20 years of experience
Marcelo Allende	AWN Consulting	Land, Soils, Geology & Hydrogeology; Hydrology	BSc, BEng Water Resources Civil Engineering - Environmental (Water Resources) Consultant - Member of IAH (Irish Group) - Member of Engineers Ireland - Over 15 years of experience
Luke Maguire	AWN Consulting	Land, Soils, Geology & Hydrogeology; Hydrology	BSc Geoscience - Environmental (Water Resources) Consultant 2.5 years of experience

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Name	Company	Role / input	Qualifications
Dr. Avril Challoner	AWN Consulting	Air Quality & Climate	BEng (Env), PhD, CSci, CEnv - Air Quality and Climate Consultant - Member Institute of Environmental Management and Assessment, Member Institute of Air Quality Management 10 Year of Experience in Consultancy
Ian Byrne	Byrne Environmental Consulting Ltd.	Material Assets- Waste	MSc Environmental Protection, Dip. Environmental & Planning Law - Principal Consultant - Member of the Institute of Acoustics (MIOA) - Over 26 years of experience
Dr. Aoife Kelly	AWN Consulting	Noise and Vibration	BSc (Hons), PgDip, PhD. - Senior Acoustic Consultant - Member of Institute of Acoustics (MIOA) 10 years of experience
Alex Craven	BSM	Landscape & Visual	BSc, MLA - Landscape Architect - LVIA specialist - Member of Irish Landscape Institute (MILI) - Over 10 years of experience
Faith Bailey	IAC Archaeology	Cultural Heritage, Archaeology & Architectural Heritage	BA (Hons) Archaeology, MA Cultural Landscape Management - Associate Director, Senior Archaeologist and Cultural Heritage Consultant - Member Chartered Institute of Archaeologists (MCIFA) - Member Institute of Archaeologists of Ireland (MIAI) - License eligible archaeologist - Over 19 years of experience
David Walshe	IN2 Engineering	Microclimate – Daylight & Sunlight	BSc (Eng.) (Hons) C.Eng. MIEI - Director, Environmental and Sustainability Engineering - Specialist in building simulation, and daylight and sunlight analysis with over 28 years' experience.

Name	Company	Role / input	Qualifications
			- Chartered Engineer - Member of Engineers Ireland (IEI)
William O'Donnell	IN2 Engineering	Microclimate – Daylight & Sunlight	BSc (Eng.) (Hons) C.Eng. MIEI, MCIBSE - Associate Director, Environmental and Sustainability Engineering - Specialist in building simulation, and daylight and sunlight analysis with over 17 years' experience. - Chartered Engineer - Member of Engineers Ireland (IEI) - Member of Chartered Institute of Building Services Engineers (CIBSE) - Director, Board of Irish Green Building Council (IGBC)
Seulgi Lee	IN2 Engineering	Microclimate – Daylight & Sunlight	BSc (Arch/ Int. Des) PG MA (Arch/ Int. Des.) - Environmental Engineer, with over 7 years' experience, now specialising in daylight and sunlight analysis. - Member of Engineers Ireland (IEI)
Aimee Dunne	DBFL Consulting Engineers	Traffic & Transportation	BEngTech, MEng - Chartered Engineer – CEng - Member of Engineers Ireland (MIEI) - Member of the Institute of Highway Engineers (MIHE) - Specialist in transport planning and design, and highway engineering - Over 11 years of experience
Daniel Gill	DBFL Consulting Engineers	Traffic & Transportation	BEng Tech, BEng (Hons) - Transportation Engineer - Member of Engineers Ireland (MIEI) - Specialises in proposed residential/commercial developments, active travel schemes and junction assessments - Over 4 years of experience

1.6 Impact Assessment Methodology

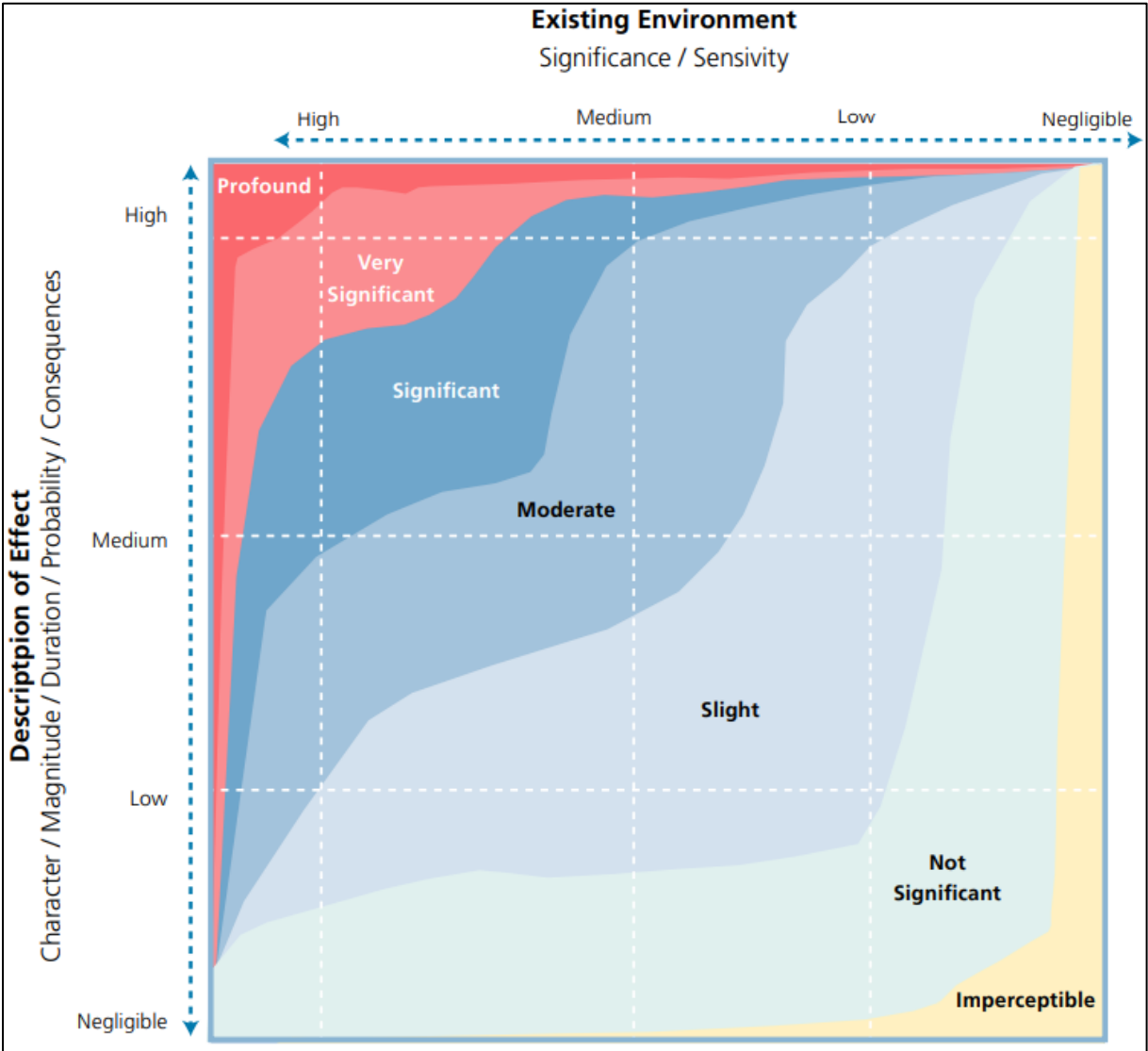
The impact assessment methodology is detailed in the respect of the various environmental topics in the respective chapters herein. The assessment of impacts is based on the source-pathway-receptor model, which dictates that, for an environmental impact to occur, there must be a source, a receptor which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

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

Criteria	Definition
Quality of Effects	
Positive	A change that improves the quality of the environment (for example, by increasing species diversity, improving reproductive capacity of an ecosystem, removing nuisances or improving amenities).
Neutral	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
Negative / adverse	A change that reduces the quality of the environment (for example, lessening species diversity, diminishing the reproductive capacity of an ecosystem, damaging health / property or causing nuisance).
Significance of Effects	
Imperceptible	An effect capable of measurement but without significant consequences.
Not significant	An effect that causes noticeable changes in the character of the environment but without significant consequences.
Slight	An effect that causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant	An effect that, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
Very significant	An effect that, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
Profound	An effect that obliterates sensitive characteristics.
Extent and Context of Effects	
Extent	The size of the area, number of sites, or proportion of a population affected by an effect.
Context	Describes whether the extent, duration, or frequency will conform or contrast with established (baseline) conditions (i.e. <i>is it the biggest, longest effect ever?</i>)
Probability of Effects	
Likely	The effects that can reasonably be expected to occur because of a proposed development if all mitigation measures are properly implemented.
Unlikely	The effects that can reasonably be expected not to occur because of a proposed development if all mitigation measures are properly implemented.
Duration, Reversibility & Frequency	
Momentary	Effects lasting from seconds to minutes.
Brief	Effects lasting less than a day.
Temporary	Effects lasting less than a year.

Criteria	Definition
Short-term	Effects lasting one to seven years.
Medium-term	Effects lasting seven to fifteen years.
Long-term	Effects lasting fifteen to sixty years.
Permanent	Effects lasting over sixty years.
Reversible	Effects that can be undone (for example, through remediation or restoration).
Frequency	How often the effect will occur (e.g. once, rarely, occasionally, frequently, constantly, hourly, daily, weekly, monthly, annually, etc.).
Type of Effects	
Indirect / secondary	Impacts that are not a direct result of a proposed development, often produced away from the site or because of a complex pathway.
Cumulative	The addition of many minor or significant effects, including effects of other plans and / or projects, to create larger, more significant effects.
Do-nothing	The environment as it would be in the future should the proposed development not be carried out.
Worst-case	The effects arising from a proposed development in the case where mitigation measures substantially fail.
Indeterminable	When the full consequences of a change in the environment cannot be described.
Irreversible	When the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost.
Residual	The effect that will occur after the proposed mitigation measures have been implemented.
Synergistic	Where the resultant effect is of greater significance than the sum of its constituents (e.g. combination of SO _x and NO _x to produce smog).

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



2 The Environmental Impact Assessment (EIA) Process

2.1 Legislation

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

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

2.2 Guidelines

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

- EPA (2022). *Guidelines on the information to be contained in Environmental Impact Assessment Reports*;
- EPA (2003). *Advice Notes on Current Practice in the preparation of Environmental Impact Statement*;
- EC (2017). *Environmental Impact Assessment of Projects. Guidance on the preparation of Environmental Impact Assessment Report*;
- EC (2017). *Environmental Impact Assessment of Projects. Guidance on Scoping*;
- EC (2017). *Environmental Impact Assessment of Projects. Guidance on Screening*;
- Department of Housing, Planning and Local Government (DHPLG) (2018). *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment*;
- DHPLG (2017). Circular letter PL 1/2017 – Advice on Administrative Provisions in Advance of Transposition;
- European Commission (EC) (1999). *Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions*;
- EC (2013). *Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment*.

2.3 The EIA Process

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

“Environmental impact assessment means a process consisting of:

- (i) the preparation of an environmental impact assessment report by the developer, as referred to in Article 5(1) and (2);*
- (ii) the carrying out of consultations as referred to in Article 6 and, where relevant, Article 7;*

- (iii) the examination by the competent authority of the information presented in the environmental impact assessment report and any supplementary information provided, where necessary, by the developer in accordance with Article 5(3), and any relevant information received through the consultations under Articles 6 and 7;*
- (iv) the reasoned conclusion by the competent authority on the significant effects of the project on the environment, taking into account the results of the examination referred to in point (iii) and, where appropriate, its own supplementary examination; and*
- (v) the integration of the competent authority's reasoned conclusion into any of the decisions referred to in Article 8a."*

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

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

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

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

- (a) population and human health;*
- (b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC¹ and Directive 2009/147/EC²;*
- (c) land, soil, water, air and climate;*
- (d) material assets, cultural heritage and the landscape;*
- (e) the interaction between the factors referred to in points (a) to (d)³."*

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

"... the developer shall include at least:

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

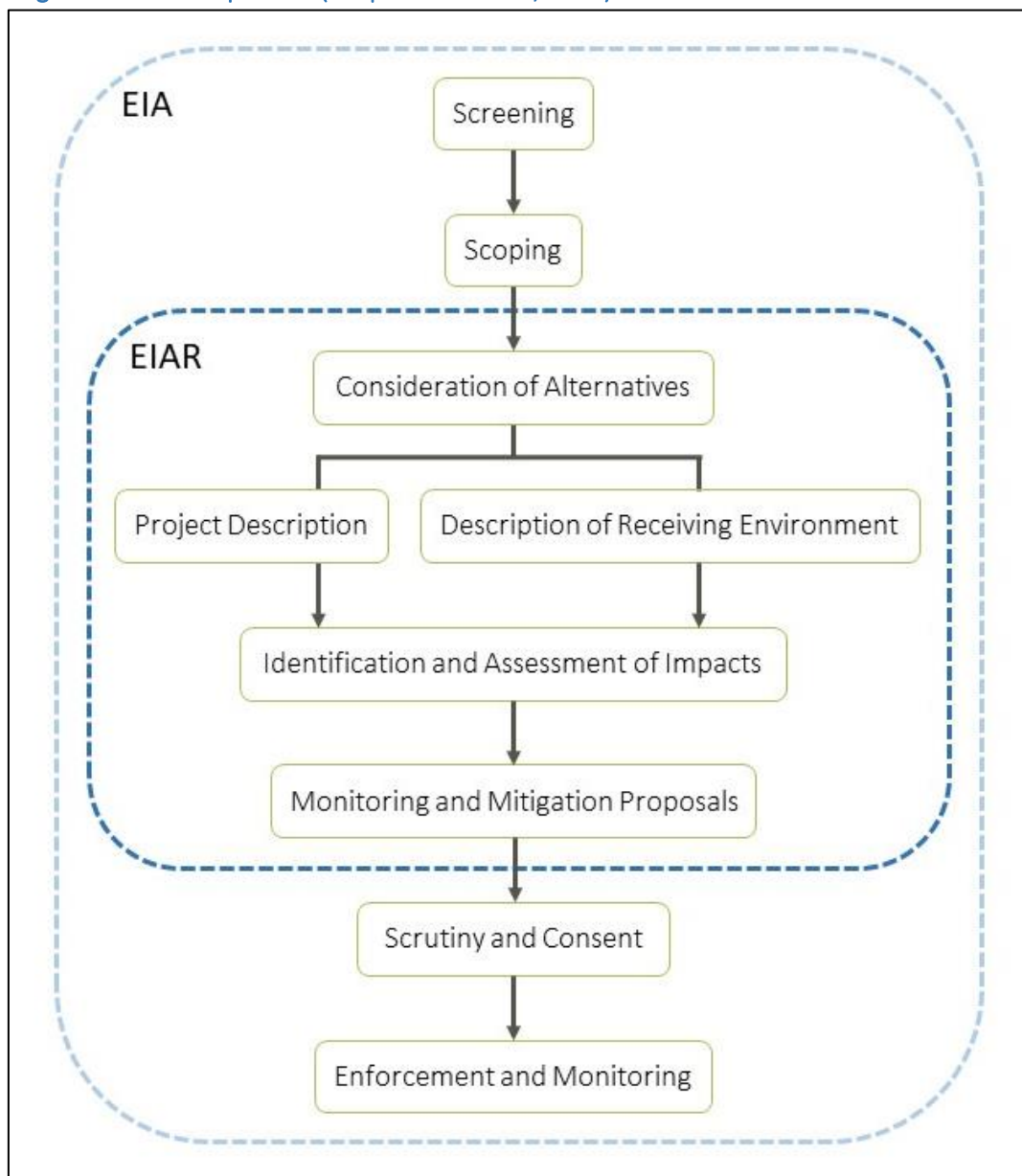
¹ Directive 92/43/EEC on the conservation of natural habitats and wild fauna and flora ('the Habitats Directive')

² Directive 2009/147/EC on the conservation of wild birds ('the Birds Directive')

³ Refer to Chapter 19 (Interactions)

- (b) a description of the likely significant effects of the project on the environment;
- (c) a description of the features of the project and/or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment;
- (d) a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment;
- (e) a non-technical summary of the information referred to in points (a) to (d); and
- (f) any additional information specified in Annex IV relevant to the specific characteristics of a particular project or type of project and to the environmental features likely to be affected.”

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



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

The EIA process may be summarised as follows:

- **Screening:** The process of determining whether a proposed development should be subject to EIA;
- **Scoping:** The process of identifying the topics that should be addressed in the EIAR as well as the methods to do so;
- **Description of the receiving environment:** This stage aims to establish a robust baseline (a description of the environmental characteristics of the receiving environment plus any relevant trends in status), utilising a review of existing available information and undertaking surveys and analyses, where appropriate;
- **Impact assessment:** The primary purpose of the EIAR is to identify, describe⁴ and present an assessment of the likely significant impacts of a proposed development on the environment;
- **Mitigation:** Where appropriate, mitigation measures are identified to avoid, prevent, reduce or offset any likely significant negative effects identified; as well as any proposed monitoring arrangements;
- **Consultation:** With statutory bodies, the public and other stakeholders, as appropriate;
- **Decision:** The competent authority (Fingal County Council, in this case) decides, in the context of other considerations (including the outcomes of the consultation process), whether development consent should be granted;
- **Implementation / enforcement of conditions of development consent:** Assuming the development is permitted, the schedule of environmental commitments (including the mitigation and monitoring measures set out in the EIAR and any additional environmental conditions of the development consent) needs to be implemented.

2.4 EIA Screening

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

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

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

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

The proposed development is not of a class of development listed in Part 1 of Schedule 5 of the PDR 2001 and, therefore, EIA is not a statutory requirement under this provision. However, the proposed development does correspond with the classes of development listed in paragraphs 10(b)(i) and 10(b)(iv) of Part 2 of Schedule 5 of the PDR 2001 and exceeds the thresholds specified in relation to these classes of development, as detailed in **Table 2.1**, below.

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

Provision (Part 2 of Schedule 5 of PDR 2001)	Proposed Development
Paragraph 10(b)(i): <i>“Construction of more than 500 dwelling units.”</i>	c. 580 units
Paragraph 10(b)(iv): <i>“Urban development which would involve an area greater than 2 hectares in the case of a business district, 10 hectares in the case of other parts of a built-up area and 20 hectares elsewhere.”⁵</i>	Total site area c. 20.6 Ha

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

2.5 EIA Scoping

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

- Population and Human Health;
- Biodiversity;
- Land, Soils, Geology and Hydrogeology;
- Hydrology;
- Air Quality and Climate;
- Noise and Vibration;
- Landscape and Visual;
- Cultural Heritage, Archaeology and Architectural Heritage;
- Microclimate- Daylight and Sunlight;
- Traffic and Transportation;
- Waste;
- Services; and
- Interactions between the above-listed topics.

2.5.1 Major Accidents & Disasters

Article 3 of the amended Directive requires that the EIAR *“shall include the expected effects deriving from the vulnerability of the project to risks of major accidents and/or disasters that are relevant to the*

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

project concerned". The objective of this requirement is to ensure appropriate risk management in this case of proposals which "...because of their vulnerability to major accidents and/or natural disasters (such as flooding, sea level rise, or earthquakes), are likely to have significant adverse effects on the environment".

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

1. There is no source-pathway-receptor linkage of a hazard that could trigger a major accident⁶ and / or disaster⁷, or potential for the proposed development to lead to a significant environmental effect; or
2. All possible MADs are adequately considered elsewhere in the assessment or covered by existing design measures or compliance with legislation and best practice.

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

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

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

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

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

Table 2.2 Seveso sites in the Fingal County Council administrative area

Tier	Establishment	Consultation distance ⁸	Distance from proposed development
Upper	Barclay Chemicals Manufacturing Ltd (t/a Barclay Crop Protection) Damastown Way, Damastown Industrial Park, Mulhuddart, Dublin 15	1,000 m	2.1km
	Chemco (Ireland) Limited (t/a Chemsources Logistics) Macetown North, Damastown Industrial Estate, Dublin 15	700 m	1.4km
	Contract & General Warehousing Ltd Westpoint Business Park, Navan Rd. Mulhuddart, Dublin 15	700 m	2.5km
	Guerbet Ireland ULC Damastown, Mulhuddart, Dublin 15	1,000 m	2.5km
Lower	Astellas Ireland Co., Ltd Damastown Road, Damastown Industrial Park, Mulhuddart, Dublin 15	1,000 m	2.4km
	Clarochem Ireland Limited Damastown, Mulhuddart, Dublin 15	1,000 m	2.8km
	Exolum Aviation Ireland Ltd (formerly CLH) Corballis Road, Dublin Airport, Co. Dublin	500 m	10.1km
	Gensys Power Ltd. Huntstown Power Station, Huntstown Quarry, Dublin 11	300 m	4.2km
	SK Biotek Watery Lane, Swords, Co. Dublin	1,000 m	11.4km

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

2.6 Other Assessments

2.6.1 Appropriate Assessment

European Sites, also known as ‘Natura 2000’ sites, include Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). These are a network of sites designated for nature conservation under Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (the ‘Habitats Directive’) and Directive 2009/147/EC on the conservation of wild birds (the ‘Birds Directive’). The requirements for Appropriate Assessment (AA) are set out under Article 6 of the Habitats Directive, transposed into Irish law by the European Union (Birds and Natural Habitats) Regulations 2011 (as amended) (the ‘Birds and Natural Habitats Regulations’) and the PDA 2000.

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

“Any plan or project not directly connected with or necessary to the management of the site but likely to have significant effect thereon, either individually or in combination with other plans or projects, shall be subject to Appropriate Assessment of its implications for the site in view of the site’s conservation objectives. In the light of the conclusions of the assessment of the

⁸ From site perimeter

implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.”

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

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

An Appropriate Assessment Screening Report has been prepared by BSM in respect of the proposed development, in accordance with the requirements of the Habitats Directive and the Birds Directive, and the PDA 2000. It has concluded:

“In view of best scientific knowledge, this report concludes that the proposed development at Hollystown - Kilmartin Site 4, Dublin 15; individually or in combination with another plan or project, will not have a significant effect on any European sites. This conclusion was reached without considering or taking into account mitigation measures or measures intended to avoid or reduce any impact on European sites.

It is considered that this report provides sufficient relevant information to allow Fingal County Council to carry out an AA Screening, and reach a determination that the proposed development will not have any likely significant effects on European sites under Article 6 of the Habitats Directive in light of their conservation objectives.”

Please refer to Appropriate Assessment Screening Report, submitted under separate cover as part of the planning application.

2.6.2 Site Specific Flood Risk Assessment

A Site Specific Risk Assessment (SSFRA) has been prepared in respect of the proposed development by DBFL Consulting Engineers (refer to report submitted under separate cover), in accordance with the OPW guidelines *The Planning System and Flood Risk Management – Guidelines for Planning Authorities* (2009). The key findings and conclusions of the SSFRA are summarised in Chapter 3 (Planning & Development Context) - **Section 3.4.8**. Refer also to Chapter 10 (Hydrology).

3 Planning and Development Context

3.1 Introduction

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

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

International

- United Nations Sustainable Development Goals (2015).

European

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

National

- Project Ireland 2040 – National Planning Framework and National Development Plan (2018);
- Sustainable Urban Housing: Design Standards for New Apartments (2022);
- Urban Development and Building Heights – Guidelines for Planning Authorities (2018);
- Design Manual for Urban Roads and Streets (2019);
- Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities (2010);
- Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas (2009);
- Urban Design Manual – A Best Practice Guide (2009);
- The Planning System and Flood Risk Management – Guidelines for Planning Authorities (2009);
- Childcare Facilities – Guidelines for Planning Authorities (2001);
- Housing for All – A New Housing Plan for Ireland (2021);
- Rebuilding Ireland – Action Plan for Housing and Homelessness (2016);
- National Cycle Manual (2011);
- National Sustainable Mobility Policy (2022).

Regional

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

Local

- Kilmartin Local Area Plan 2013– 2019 as extended (expired on 11th May 2023).

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

3.2 International Policy Context

3.2.1 United Nations Sustainable Development Goals (2015)

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

Figure 3.1 United Nations sustainable development goals (SDGs)



3.3 European Policy Context

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

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

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

As detailed in Section 2 of this EIAR, the proposed development is not of a class of development listed in Part 1 of Schedule 5 of the PDR 2001 and, therefore, EIA is not a statutory requirement under this provision. However, the proposed development does correspond with the classes of development listed in paragraphs 10(b)(i) and 10(b)(iv) of Part 2 of Schedule 5 of the PDR 2001 and exceeds the thresholds specified in relation to these classes of development. Therefore, under the provisions of the Part 2 of Schedule 5 of the PDR 2001, EIA is a statutory requirement for the proposed development.

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

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

Please refer to Section 2.6.1 and the Appropriate Assessment Screening Report, submitted under separate cover as part of the planning application, for full details.

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

The Water Framework Directive (WFD) established a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater with the objective to protect and improve water quality in all waters to achieve good ecological status by 2015 or, at the latest, by December 2027.

Specifically, the WFD aims to:

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

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

EU member states are required to implement the WFD through River Basin Management Plans (RBMPs). Ireland's approach to water quality management has developed over the first and second RBMPs and will continue to evolve into the third cycle RBMP 2022 – 2027 to protect and improve water quality nationally and locally.

The proposed development has considered the current water status of all relevant water bodies, and potential impacts have been considered in Chapter 9 Land, Soils, Geology and Hydrogeology and Chapter 10 Hydrology of this EIAR. With mitigation measures in place, it is concluded there will be no degradation of the current water body or any impact on its potential to meet the requirements and / or objectives of the RBMPs.

3.4 National Policy Context

3.4.1 Project Ireland 2040

Project Ireland 2040 is the Government's overarching planning and development policy for the country to 2040. It constitutes a *"strategy to make Ireland a better country for all of its people"* by setting public investment policy at a high level. It comprises two documents: the *National Planning Framework* (NPF), which details the strategy for development to 2040; and the *National Development Plan* (NDP), which outlines the Government's investment strategy and budget for the period 2021-2030 and identifies priority future projects.

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

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

The objectives of the NPF seek to address ongoing negative development trends, including sprawling peri-urban growth, stagnation of inner-city and old suburban areas, and loss of farmland and habitats to greenfield development.

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

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

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

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

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

The proposed development is broadly consistent with the objectives of the NPF in that it will deliver a high-quality residential development within the Dublin Metropolitan area, in a residential area. While the proposed development will be delivered on a greenfield site at the margin of an existing settlement, it is situated on lands that have been earmarked by the Local Authority (Fingal County Council) for residential development of this nature. As mentioned in previous sections, the surrounding area is a relatively new suburban area comprising a mix of uses from residential, to education and commercial and is accessed via the R121 road which connects Tyrrelstown with the N3, Blanchardstown, and the wider national road network.

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

3.4.2 Sustainable Urban Housing: Design Standards for New Apartments (2022)

The *Design Standards for New Apartments* were published by the Minister for Housing, Planning & Local Government in March 2018. They were subsequently updated in December 2020 and in December 2022.

The Guidelines note that the NPF projects a need for a minimum of 550,000 new homes, at least half of which are targeted for provision in Ireland's five cities and of particular relevance to this site it notes

a shift in Government policy towards securing more compact and sustainable urban development, to enable people to live nearer to where jobs and services are located, which requires at least half of new homes within Ireland's cities to be provided within the current built-up area of each, i.e. on sites within the existing urban 'envelope'.

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

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

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

1. Sites within or close to, i.e. within reasonable walking distance (i.e. up to 10 minutes or 800 – 1,000 m), of principal town or suburban centres or employment locations, that may include hospitals and third level institutions;
2. Sites within walking distance (i.e. between 10 – 15 minutes or 1,000 – 1,500 m) of high capacity urban public transport stops (such as DART, commuter rail or Luas) or within reasonable walking distance (i.e. between 5 – 10 minutes or up to 1,000 m) of high frequency (i.e. min. 10 minute peak hour frequency) urban bus services or where such services can be provided;
3. Sites within easy walking distance (i.e. up to 5 minutes or 400 – 500 m) of reasonably frequent (min. 15 minute peak hour frequency) urban bus services.

It is noted that *"The range of locations is not exhaustive and will require local assessment that further considers these and other relevant planning factors"*. The site of the proposed development corresponds with the third location above, being situated c. 800 m from the Hollywoodrath Avenue/Bellingsmore bus stop (Stop 7678/7866) and would be accessible via 'The Green' in Bellingsmore and via 'The Avenue'.

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

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

The Urban Development and Building Heights Guidelines for Planning Authorities (UD&BHGs) were published in December 2018 by the Minister for Housing, Planning & Local Government. They have been published to support the strategic policy framework set out in Project Ireland 2040 and objectives of the NPF, by securing a more compact and sustainable manner of development in urban areas. They set out SPPRs to which planning authorities must have regard.

The guidelines set out the Government's policy in relation to the spatial distribution of housing in Ireland. They state that Ireland's traditional settlement pattern of sprawling low-rise suburban development is *"completely unsustainable"*, creating demand for new infrastructure, resulting in the loss of greenfield land, and locking in travel patterns that are environmentally and socially unsustainable. The guidelines instead promote the building up and consolidation of existing urban areas, through a combination of brownfield and infill development and increased building heights.

The guidelines state that:

"While achieving higher density does not automatically and constantly imply taller buildings alone, increased building height is a significant component in making optimal use of the capacity of sites in urban locations where transport, employment, services or retail development can achieve a requisite level of intensity for sustainability."

Under the scope of the 'development management principles', it is further stated that:

"In relation to the assessment of individual planning applications and appeals, it is Government policy that building heights must be generally increased in appropriate urban locations. There is therefore a presumption in favour of buildings of increased height in our town/city cores and in other urban locations with good public transport accessibility."

In relation to building heights in suburban and edge locations in cities and towns, the guidelines note that new residential developments in these area typically now include townhouses (of two to three storeys), duplexes (of three to four storeys) and apartments (of four storeys and upwards), delivering medium densities of 35 – 50 dwellings per hectare.

The guidelines state that:

"Such development patterns are generally appropriate outside city centres and inner suburbs, i.e. the suburban edges of towns and cities, for both infill and greenfield development and should not be subject to specific height restrictions. Linked to the connective street pattern required under the Design Manual for Urban Roads and Streets (DMURS), planning policies and consideration of development proposals must move away from a 2-storey, cul-de-sac dominated approach, returning to traditional compact urban forms which created our finest town and city environments."

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

3.4.4 Design Manual for Urban Roads and Streets

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

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

3.4.5 Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities (2010)

The Natura 2000 network is a pan-European Union network which provides for the protection of sites that are of particular importance for rare, endangered or vulnerable habitats and species. The Natura 2000 network in Ireland is comprised of Special Areas of Conservation (SAC) and Special Protection Areas (SPA). SAC are selected for the conservation and protection of habitats listed on Annex I and species (other than birds) listed on Annex II of Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora ('the Habitats Directive'), and their habitats. SPA are sites that have been selected and notified for the conservation and protection of bird species listed on Annex I of Directive 2009/147/EC on the conservation of wild birds ('the Birds Directive') and regularly occurring migratory species, and their habitats, particularly wetlands.

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

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

An AA Screening Report has been prepared by BSM in respect of the proposed development, in accordance with the requirements of the Habitats Directive and the Birds Directive, the European Union (Birds and Natural Habitats) Regulations 2011 (as amended) and the PDA 2000.

Please refer to Section 2.6.1 and the Appropriate Assessment Screening Report, submitted under separate cover as part of the planning application, for full details.

3.4.6 Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas (2009)

The aim of these guidelines is to set out the key planning principles guiding the delivery of residential development in urban areas in Ireland. They establish core principles of urban design, with a view to creating urban places of high quality and distinct identity. They recommend that planning authorities should promote high quality design in their policy documents and in their development management processes. The Guidelines are accompanied by a non-statutory *Urban Design Manual*, which is discussed in the following section. Their objective is to produce high-quality, sustainable residential developments “where people actually want to live, to work and to raise families”.

The guidelines set out a series of high-level aims for successful and sustainable residential development in urban areas, as follows:

- Prioritise walking, cycling and public transport, and minimise the needs to use cars;
- Deliver a quality of life which residents and visitors are entitled to expect, in terms of amenity, safety and convenience;
- Provide a good range of community and support facilities, where and then they are needed and that are easily accessible;
- Present an attractive, well maintained appearance, with a distinct sense of place and a quality public realm that is easily maintained;
- Are easy to access for all and to find one’s way around;
- Promote the efficient use of land and of energy, and minimise greenhouse gas emissions;
- Provide a mix of land uses to minimise transport demand;
- Promote social integration and provide accommodation for a diverse range of household types and age groups;
- Enhance and protect the green infrastructure and biodiversity; and
- Enhance and protect the built and natural heritage.

The guidelines also state that sustainable neighbourhoods should be guided by the principle of universal design. The guidelines emphasise the importance of sustainable settlement patterns through the provision of higher densities of residential development on lands within existing or planned transport corridors i.e., within 500m of a bus stop, or within 1km of a light rail stop or rail station.

Section 5.11 of the Guidelines promotes a net residential density range in the order of 35-50 dwellings per hectare for ‘Outer Suburban/Greenfield sites’. Section 5.8 refers to sites proximate to public transport corridors and states “*It is recommended that increased densities should be promoted within 500 metres walking distance of a bus stop, or within 1km of a light rail stop or a rail station. The capacity of public transport (e.g. the number of train services during peak hours) should also be taken into consideration in considering appropriate densities.*”

The proposed development is c. 800m walking distance from the Hollywoodrath Avenue bus stop via the nearest site entrance at the Green Bellingsmore.

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

3.4.7 Urban Design Manual – A Best Practice Guide (2009)

The *Urban Design Manual* accompanies the Department's 2009 Guidelines on '*Sustainable Residential Development in Urban Areas*', as described above. It provides best practice guidance on the practical implementation of the policies contained in those guidelines. The core aim of the Manual is to provide developers, designers and planners with the information and support they need to improve the design quality and sustainability of the development schemes with which they are involved. It focuses primarily on the issues presented in housing schemes in the 30 – 50 units per hectare range but also addresses some of the specific issues generated by higher and lower density developments.

The Manual is based around 12 criteria for sustainable residential development, under the headings of 'neighbourhood', 'site', and 'home', as follows:

Neighbourhood

- Context – How does the development respond to its surroundings?
- Connections – How well connected is the new neighbourhood?
- Inclusivity – How easily can people use and access the development?
- Variety – How does the development promote a good mix of activities?

Site

- Efficiency – How does the development make appropriate use of resources, including land?
- Distinctiveness – How do the proposals create a sense of place?
- Layout – How does the proposal create people friendly streets and spaces?
- Public Realm – How safe, secure and enjoyable are the public areas?

Home

- Adaptability – How will the buildings cope with change?
- Privacy & Amenity – How does the scheme provide a decent standard of amenity?
- Parking – How will the parking be secure and attractive?
- Detailed Design – How well thought through is the building and landscape design?

The Manual recommends that these criteria be used in the assessment of residential planning applications. It identifies areas where conflicts may arise between particular criteria, stating that "*Certain issues have been identified where it may be necessary to find a balance between potentially conflicting design objectives*" (p. 9).

These criteria have been given due consideration in the design of the proposed development. Please refer to the Planning Report and Statement of Consistency, prepared by BSM and submitted as part of the planning application under separate cover, for a more detailed discussion of the how the proposed development aligns with the above-listed criteria.

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

The *Planning System and Flood Risk Management – Guidelines for Planning Authorities* was published by the Office of Public Works (OPW) and Department of Environment, Heritage and Local Government in 2009. The guidelines introduce comprehensive mechanisms for the incorporation of flood risk identification, assessment and management into the planning process. They aim to, among other things; avoid inappropriate development in areas at risk of flooding, and avoid new developments

increasing flood risk elsewhere. They mandate the preparation of Site Specific Flood Risk Assessments (SSFRA) for development applications which relate to areas at risk of flooding, and stipulate the content and level of detail to be presented therein.

It is noted that, in accordance with the findings of the Strategic Flood Risk Assessment carried out in respect of the *Fingal Development Plan 2023 – 2029*, it is an objective of the Development Plan (Objective IU017- Strategic Flood Risk Assessment, p. 417) to:

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

A SSFRA was undertaken in respect of the proposed development by DBFL Consulting Engineers (2023), in accordance with the OPW guidelines. An SSFRA report has been produced, the objective of which is to inform the planning authority in relation to flood risk associated with the proposed development. This section presents a summary of the key findings of that report.

The site has a high point running through the subject site from east to west. The site generally falls to the north-west and south-west to the existing drainage ditches/streams. The proposed residential development will significantly increase the impermeable area (of hardstanding) at the proposed development site, which is currently predominantly greenfield in nature.

Under the OPW guidelines, residential development is classed as ‘highly vulnerable’ in terms of flood risk, and should be located in Flood Zone C, where the probability of fluvial flooding is low. Where it is proposed to locate a highly vulnerable development in Flood Zones A or B, a justification test is required.

A desk study of available information found no evidence of flood risk at the proposed development site. There are no recorded historic flood events at the site, although a previous flood events have been recorded within 2.5 km of the site. The Strategic Flood Risk Assessment (SFRA) completed in respect of the Fingal Development Plan 2023-2029 identified the site of the proposed development as being in Flood Zone C, where there is a low probability of flooding.

The Stage 2 Initial Flood Risk Assessment Stage assessed the risk of fluvial flood risk from the Mooretown and Hollywood streams as well as pluvial flood risk following development. As the proposed development is situated entirely in Flood Zone C, it may be regarded as ‘appropriate’ in the context of fluvial flood risk, as per the OPW guidelines. Therefore, a justification test is not required in respect of the proposed development; and only pluvial flood risk was brought forward for detailed flood risk assessment (Stage 3).

The source-pathway-receptor model identified that there could be potential for pluvial flood risk within the LAP lands related to future drainage networks to serve the proposed development. These have potential to cause local flooding unless they are designed in accordance with the regulations e.g. GDSDS and to take account of flood exceedance e.g. for storms return periods over 1%AEP. The Source-Pathway-Receptor model also identified that the proper operation and maintenance of the drainage system is necessary to reduce the risk of human or mechanical error causing pluvial flood risk from blockages etc.

The proposed surface water drainage system has been designed in accordance with the GDSDS, with attenuation storage provided, and discharged flows reduced to equivalent greenfield run-off rates. Sustainable drainage system (SuDS) measures are proposed, including 2no. infiltration blankets, 1no.

stormtech attenuation facility and 3 no. infiltration basins to provide storage and promote infiltration, shallow swales and tree pits. The total surface water storage volume available is in the region of ~4573m³ provided within the attenuation facilities. The total storage volume is based on the site's available outflow of 45.1 l/sec.

The SSFRA has predicted that, during storms greater than the 1% AEP pluvial event, the proposed development's drainage network will be exceeded and areas with low ground levels will begin to flood. Proposed road levels to the north and south fall towards the existing drainage ditches, and lowest building floor levels are set a minimum of 0.5 m above the top water level in the corresponding attenuation facility (in accordance with recommended minimum freeboard), ensuring that proposed residential units will be protected from pluvial flooding if the drainage network is exceeded. It is not predicted that adjacent areas will be affected up to the 1% AEP event. However, if larger storms (>1% AEP) exceed the capacity of the proposed development's drainage system, overland flood routes may be directed towards the existing drainage ditches in the northern and southern areas of the site. It is anticipated that, for a 0.1% AEP flood event, the proposed development may be safely accessed / exited via the proposed vehicular entrances.

Proposed mitigation measures to address residual pluvial flood risk are as follows:

- **M1:** Proposed drainage system to be maintained on a regular basis to reduce the risk of blockage;
- **M2:** In the event of storms exceeding the 100-year design capacity of the drainage system, then possible flood routing for overland flows towards the drainage outfalls to the north should not be blocked;
- **M3:** Floor levels are set a minimum of 500mm above predicted 100 year flood levels.

The SSFRA has concluded that the proposed flood risk mitigation measures, if implemented, are sufficient to provide a suitable level of protection to the proposed development. For further information, refer to standalone SSFRA report, submitted under separate cover. Refer also to Chapter 10 (Hydrology).

3.4.9 Childcare Facilities – Guidelines for Planning Authorities (2001)

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

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

However the *Sustainable Urban Housing: Design Standards for New Apartments* (Department of Housing, Local Government and Heritage, 2022) state that:

“Notwithstanding the Planning Guidelines for Childcare Facilities (2001), in respect of which a review is to be progressed, and which recommend the provision of one child-care facility (equivalent to a minimum of 20 child places) for every 75 dwelling units, the threshold for provision of any such facilities in apartment schemes should be established having regard to the

scale and unit mix of the proposed development and the existing geographical distribution of childcare facilities and the emerging demographic profile of the area. One-bedroom or studio type units should not generally be considered to contribute to a requirement for any childcare provision and subject to location, this may also apply in part or whole, to units with two or more bedrooms.” (p.33)

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

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

Housing for All, published in September 2021, published by Department of Housing, Local Government and Heritage is the Government’s new housing plan to 2030. It provides an overview of the existing housing scenario as follows:

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

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

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

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

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

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

The estimates of housing demand which form the basis of the *Housing for All* plan’s targets have been developed by the Department of Housing, Local Government and Heritage (DHLGH)’s Housing Need

and Demand Assessment (HNDA) model, which has been adapted from the Scottish HNDA. The HNDA tool has been used to project the future need for housing in Ireland by tenure type (**Table 3.1**).

Table 3.1 DHLGH HNDA annual housing demand projections to 2030

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

The plan seeks to ensure that new housing is delivered in an environmentally sustainable manner, with a greater proportion of residential development in the existing built-up footprint of towns and cities, and all new homes being built to Nearly Zero Energy Building (NZEB) standards, as well as a policy of retrofitting existing housing stock.

The proposed development is consistent with the Government's New Housing for All plan, in that it will provide approx. 580 no. new, high-quality homes on appropriately zoned lands, including social housing (Part V) distributed throughout the proposed development.

3.4.11 Rebuilding Ireland – Action Plan for Housing and Homelessness (2016)

Rebuilding Ireland is the Government's Action Plan for Housing and Homelessness, launched in 2016. The Plan's aim is to accelerate housing supply by addressing the needs of homeless people and families in emergency accommodation, accelerate the provision of social housing, deliver more housing, utilise vacant homes and improve the rental sector.

The Plan contains five key pillars as follows:

- 1. Address Homelessness:** Provide early solutions to address the unacceptable level of families in emergency accommodation; deliver inter-agency supports for people who are currently homeless, with a particular emphasis on minimising the incidence of rough sleeping, and enhance State supports to keep people in their own homes;
- 2. Accelerate Social Housing:** Increase the level and speed of delivery of social housing and other State-supported housing;
- 3. Build More Homes:** Increase the output of private housing to meet demand at affordable prices;
- 4. Improve the Rental Sector:** Address the obstacles to greater private rented sector delivery, to improve the supply of units at affordable rents;
- 5. Utilise Existing Housing:** Ensure that existing housing stock is used to the maximum degree possible – focusing on measures to use vacant stock to renew urban and rural areas.

The proposed development is consistent with the Government's *Rebuilding Ireland- Action Plan for Housing and Homelessness*, in that it will provide 580 no. new, high-quality homes on appropriately zoned lands, including 10% for Part V allocation.

3.4.12 National Cycle Manual (2011)

The National Cycle Manual was published by the National Transport Authority (NTA) in 2011 with a view to improving the cycling infrastructure in urban environments, and encouraging more people to cycle. It provides guidance on the integration of the bicycle into the design of urban areas.

The proposed development will feature the provision of a connected network of pedestrian and cyclist facilities will provide connectivity to key destinations including Tyrrelstown Local Centre, future Tyrrelstown GAA pitches and local primary / secondary schools, designed in accordance with the DMURS (2013) and the National Cycle Manual.

The NTA published a draft of the revised National Cycle Manual in February 2023. The Authority undertook stakeholder consultation on the draft manual with groups such as cycling campaigners, disability campaigners and organisations, and public transport users. The updated National Cycle Manual has been distributed to the Councils in August 2023, however, the final version has not yet been published.

For further information in this regard, refer to the DMURS Design Statement and Traffic and Transport Assessment prepared by DBFL Consulting Engineers and submitted under separate cover as part of the planning application.

3.4.13 National Sustainable Mobility Policy (2022)

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

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

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

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

Principle 1 : Safe and Green Mobility

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

Principle 2 : People Focused Mobility

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

Principle 3 : Better Integrated Mobility

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

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

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

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

The proposed development is situated in a peri-urban area in a town in Co. Dublin. Relative to more centrally located urban residential development (e.g. in Dublin City centre), the proposed development may be expected to rely on a higher proportion of private car use, particularly for commutes to-and-from workplaces. However, the location of the proposed development is served by accessible, high-capacity public transport infrastructure, in the form of the Dublin bus service serving the town, c. 800 m from the proposed development site.

For further information, refer to Chapter 16 (Traffic & Transportation). Also, refer to the Planning Report and Statement of Consistency, prepared by BSM and submitted as part of the planning application under separate cover.

3.5 Regional Policy Context

3.5.1 Eastern & Midland Regional Assembly Regional Spatial & Economic Strategy 2019 – 2031

There are three administrative Regions in Ireland: the Northern and Western Region, the Southern Region, and the Eastern and Midland Region and under national policy, Regional Assemblies are tasked with drafting Regional Spatial and Economic Strategies (RSEs). The primary statutory objective of the Strategy is to support implementation of Project Ireland 2040 and its accompanying documents- National Planning Framework and National Development Plan to provide a long-term strategic planning and economic framework for the Region to 2031. The proposed development is situated in the Eastern and Midland Region, which takes in Counties Longford, Westmeath, Offaly, Laois, Louth, Meath, Kildare,

Wicklow and Dublin. The Region is the smallest in terms of land area but the largest in population size and is identified as the “*economic engine of the state*” because it contains the capital city (p. 14).

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

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

The RSES is based on three key principles:

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

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

Healthy Placemaking

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

Climate Action

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

Economic Opportunity

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

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

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

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

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

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

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

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

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

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

The RSES, in respect of Housing and Regeneration, states:

RPO 5.4- *Future development of strategic residential development areas within the Dublin Metropolitan area shall provide for higher densities and qualitative standards as set out in the ‘Sustainable Residential Development in Urban Areas’, ‘Sustainable Urban Housing: Design Standards for New Apartments’ Guidelines and ‘Urban Development and Building Heights Guidelines for Planning Authorities’.*

3.5.1.1 Dublin Metropolitan Area Strategic Plan

The Metropolitan Area Strategic Plan (MASP) provides a 12 to 20-year strategic planning and investment framework for the Dublin Metropolitan Area (DMA) that is aligned with the RSOs of the RSES. The site of the proposed development at Hollystown-Kilmartin is situated on the Dublin-15 lands which forms the north-west section of the DMA. The vision for the DMA set out in the MASP is as follows:

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

In order to achieve the compact development targets of the RSES (i.e. at least 50% of all new homes within or contiguous to the existing built up area in Dublin and 30% in other settlements), the MASP identifies strategic residential and employment development corridors, as follows:

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

The location of the proposed development does not appear to fall within any of the above-listed strategic development corridors, falling somewhere between the North-West Corridor and the Metrolink-LUAS Corridor. There is no explicit reference to the development lands in the RSES. However, the proposed development will contribute to the achievement of the population growth targets in the RSES, by providing a high-quality new residential development on lands zoned for this purposes by the Local Authority (Fingal County Council).

In built up areas, a general intention to minimise private car use in favour of public transport and walking or cycling, is expressed. It is stated that new developments should *“give competitive advantage”* to these modes, for example by providing for filtered permeability and appropriately designed bicycle parking (p. 187). For urban-generated development; developments within or contiguous to existing urban areas (including on infill and brownfield sites), and developments which are well-served by walking, cycling and public transport, will be prioritised over those which does not meet these criteria.

Owing to its location in a peri-urban area, the proposed development may be expected to entail a high proportion of private car use relative to more central urban residential developments, particularly for the purpose of commutes to-and-from workplaces. However, as discussed above the provision of pedestrian, EV charging and cycling infrastructure; proximity to local community amenities; and availability of public bus services in the area; will promote more sustainable mobility choices, particularly for local journeys. The design of the internal street layout is consistent with the DMURS and *National Cycle Manual*.

It is further stated that:

“The design, construction and operation of new buildings has a significant role to play in reducing energy demand and increasing energy efficiency into the future. Careful consideration

should also be given to the adaptability of buildings over time, to enable the building stock to be retrofitted or refurbished to meet higher energy efficiency standards into the future.” (p. 180)

It is stated that Sustainable Drainage Systems (SuDS) should be incorporated into public and private developments to minimise the extent of impermeable hard surfacing and reduce the associated potential for flood risk impacts. As detailed in the Infrastructure Design Report prepared by DBFL Consulting Engineers and submitted under separate cover, the proposed development will feature a variety of SuDS measures, with the objective of controlling the quality and quantity of surface water run-off. For further information, please also refer to Chapter 10 (Hydrology) of this EIAR.

The proposed development is broadly consistent with the *RSES* and the *Dublin MASP*. For further information, please also refer to the Planning Report and Statement of Consistency, prepared by BSM and submitted as part of the planning application under separate cover.

3.5.2 Fingal Development Plan 2023 – 2029

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

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

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

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

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

Chapter 2 sets out the Core Strategy for the Plan and the key objective of the Core Strategy is to ensure that the quantum and location of development is consistent with National and Regional policy. The Plan states- *'It is Fingal's priority, and has been for a significant period of time and over successive Development Plans, to form effective and innovative approaches to mobilise development to create housing and quality urban neighbourhoods.'* (p.50). This is further reflected by Policy CSP1- Core Strategy- *'Promote and facilitate housing and population growth in accordance with the overarching Core Strategy to meet the needs of current and future citizens of Fingal.'* The Core Strategy sets out a spatial settlement strategy for the County which is consistent with the Housing Strategy, the National Planning Framework (NPF), the Regional Spatial and Economic Strategy (RSES), Specific Planning Policy Requirements (SPPRs) and Transport Strategy for Greater Dublin Area.

Fingal is divided into a Metropolitan Area and a Core Area. Blanchardstown and Swords are the largest urban centres in Fingal. Blanchardstown is part of the Dublin City and suburbs as described in the RSES and functions as part of the Dublin Metropolitan Area. Strategically located at the intersection of the N3 and M50 national roads, is the largest settlement centre in Fingal. Designated as a Level 2 'Major Town Centre' in the Retail Strategy for the Greater Dublin Area and the Fingal Retail Hierarchy, it is also one of the largest and most important retail centres in the State and a designated location for housing. It will continue to perform the role of the County's primary development centre during the Plan period.

The subject lands are located within the Blanchardstown area of Dublin City and Suburbs, adjacent to Tyrrelstown Village. The policy approach in these areas will be to gain maximum benefit from existing transport, social, and community infrastructure through the continued consolidation of the city and its suburbs.

Areas of Fingal categorised as Dublin City and Suburbs with respect to the RSES comprise the majority of Fingal's urban footprint. The policies and objectives for the Dublin City and Suburbs highlights the compact, sequential, sustainable growth of the area at appropriately identified locations. In this regard, Policy CSP19- Compact, Sequential and Sustainable Urban Growth states- *'Promote compact, sequential and sustainable urban growth to realise targets of at least 50% of all new homes to be built, within or contiguous to the existing built-up area of Dublin city and suburbs and a target of at least 30% for other metropolitan settlements, with a focus on healthy placemaking and improved quality of life.'*

While Tyrrelstown and Hollystown are not specifically identified within the Core Strategy, they are located in the *Dublin City and Suburbs Consolidation Area* associated with Blanchardstown.

The proposed development site is primarily zoned (i) RA 'Residential Area', for which the corresponding objective is to *"Provide for new residential communities subject to the provision of the necessary social and physical infrastructure"*. Further a strip of land to the north zoned (ii) OS – 'Open Space', for which the corresponding objective is to *"Preserve and provide for open space and recreational amenities"*. The Plan map also includes indicative LAP cycle routes on the proposed development site. The GDA cycle network plan also runs in the southern section of the site. For the proposed development the residential units are located within the lands zoned for residential use whilst open space with shared pedestrian and cycle links, a linear park and drainage infrastructure is provided on lands zoned Open Space to the north. The Open Space zoned lands align with the overhead powerlines and corresponding buffer zone. The surrounding land to the west is zoned as RU 'Rural', to the east as RA 'Residential Area' and to the north and south as OS 'Open Space'. Refer to **Figure 3.2**.

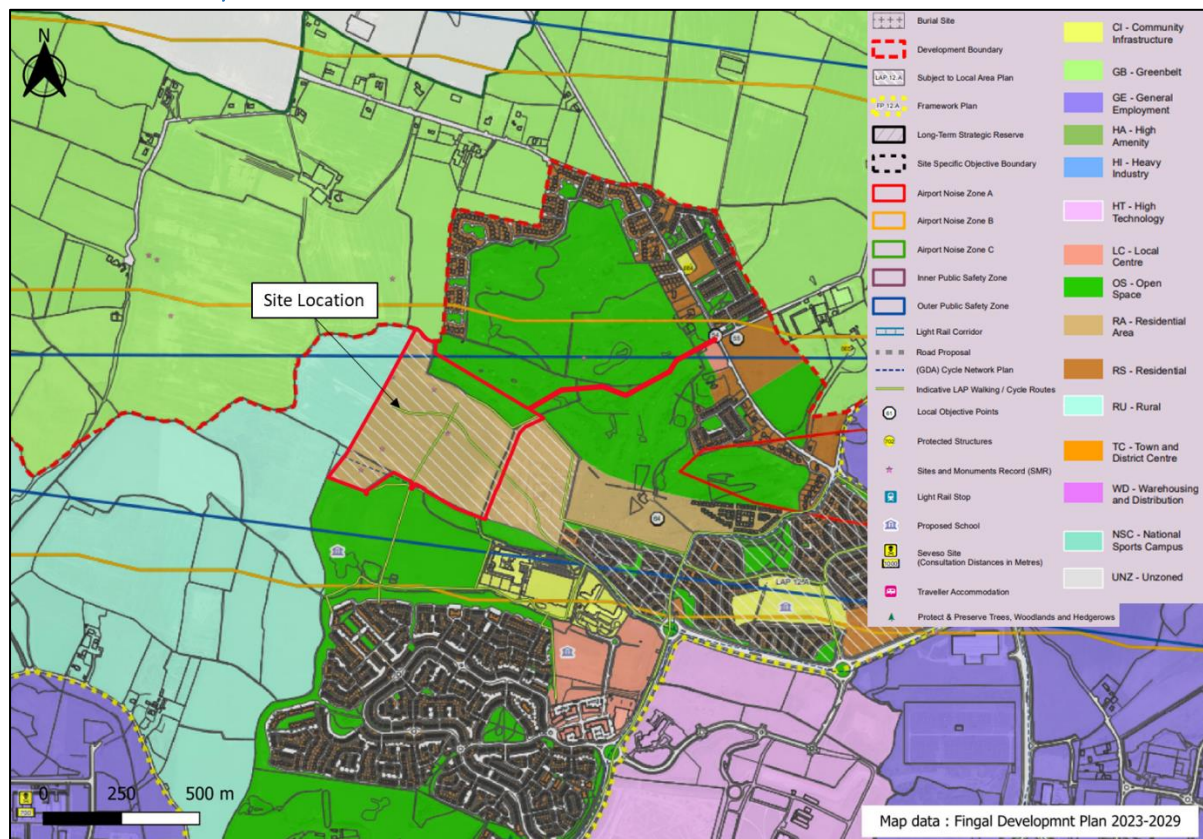
Further, as indicated on Sheet 12 of the Fingal Development Plan 2023-2029, the site is located within the Outer Public Safety Zone (Outer PSZ) associated with Dublin Airport. In the Outer Public Safety Zone

(PSZ) there is an upper limit to the population or employment density allowable, as set out by the ERM Public Safety Zones Report, 2005, and reflected in the Fingal Development Plan. Development in these zones face certain restrictions such as high density housing, schools or facilities which attract large numbers of people.

With respect to the Outer PSZ, the Report states that the future development of Category 1, Houses, within this zone should ensure a density of less than or equal to 60 persons per any single half hectare. The Report also states that no further development of Category 5, Institutional Accommodation uses, which include hospitals, schools, nurseries, care homes and prisons should take place within the Outer PSZ. Childcare facilities for this proposed development and adjacent residential development is proposed outside of the PSZ in the Local Centre lands to the south permitted under ABP Reg. Ref. 312271.

The proposed density of the lands subject of this application at c. 38.8 dwellings per hectare is set within this context.

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



The zoning map identifies LAP 12.A which under Section 2.4.1 Fingal Development Plan 2023-2029 is identified as Kilmartin LAP 2013, as extended (expired May 2023). This specific objective in relation to LAP 12.A is met by the provisions set out in the Kilmartin Local Area Plan 2013 prepared by Fingal County Council. The Kilmartin Local Area Plan (LAP) is discussed in relation to the proposed development in **Section 3.6.1**, below.

Dublin Airport is situated within the administrative area of Fingal County Council, and an approx. 6.2 km linear distance from the site of the proposed development. Fingal County Council has set out Noise

Zones in relation to aircraft noise associated with Dublin Airport. The subject site is within *Dublin Airport Noise Zone B: To manage noise sensitive development in areas where aircraft noise may give rise to annoyance and sleep disturbance, and to ensure noise insulation is incorporated within the development.* The layout of the proposed development has therefore been informed by the provisions of the Development Plan. **Table 12.8** in Chapter 12 of this EIAR (Noise & Vibration) sets out the objectives to be adhered to by applicants for developments in each zone.

There are five recorded archaeological sites located within the proposed development area as per **Table 3.3** below.

Table 3.2 Recorded monuments on proposed development site and surrounding area (Source IAC Archaeology)

RMP Number	Recorded Monument	Distance from the site
DU013-032	Enclosure	0m
DU013-037	Enclosure	0m
DU013-038	Ring-ditch	0m
DU013-039	Enclosure	0m
DU013-036	Enclosure	0m
DU013-003	Earthwork	c. 169m north-west
DU013-004	Earthwork	c. 84m north

Refer to the Chapter 14 Cultural Heritage, Archaeology and Architectural Heritage (prepared by IAC Archaeology 2023) of the EIAR.

3.5.3 Greater Dublin Area Transport Strategy 2022-2042

The Greater Dublin Area Transport Strategy 2022-2028 prepared by the National Transport Authority (NTA) sets out the framework for investment in transport infrastructure and services over next two decades to 2042.

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

The strategy also provides the following strategy objectives:

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

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

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

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

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

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

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

The proposed development is broadly consistent with the principles of the Transport Strategy, in that it will deliver residential development at a location proximate to the Dublin Bus Service (40D, 40E, 236, 236/a and 238). The proposed development is fully permeable for pedestrians and cyclists, and contains cycle infrastructure that will promote and facilitate cycling as an alternative to private car use.

Further, the proposed development will benefit from the BusConnects Dublin, which will deliver high levels of bus priority on all the main corridors and a significantly improved service network. The proposed development is proposed to be serviced by ‘B Spine- B3’ and ‘L62 Local Route’ as follow:

- **B3:** This route, as part of the B-Spine, provides a connection from Tyrrelstown Town Centre to Dún Laoghaire via Dublin City Centre. This service will travel along Church Road (R121) and have a frequency of 15 minutes on weekdays and 15-20 minutes on weekends;
- **L62:** This route will operate from Blanchardstown to Broombridge via Tyrrelstown. The all-day service has a frequency of 30 minutes (every 15 minutes during peak times) and largely replicates Dublin Bus’s existing route 40e.

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

3.6 Local Policy Context

3.6.1 Kilmartin Local Area Plan (2013) as extended (expired May 2023)

As outlined previously in this report the site is within the Kilmartin Local Area Plan 2013-2019 boundary. The LAP was adopted by FCC on May 13th 2013 and was further extended at a Council meeting (Ref. F/119/18) until 11th May 2023. The LAP has since lapsed but remains referenced as the proposed development completes the last phase of the Plan.

The stated vision for the Kilmartin development lands is as follows (p. 1):

- *To create a sustainable place to live, work and play encompassing a cohesive and diverse community with a strong identity;*
- *To contribute to the economic growth of the County through the development of a vibrant economic community centred on the local centre.*

The overall purpose of the LAP is as follows:

- *Creation of a single community in the northern part of Blanchardstown, integrating with the existing community at Tyrrelstown;*
- *Provision of residential development in a phased and integrated manner, with a supporting level of mixed uses to serve the needs of the community in an extended local centre;*
- *Creation of a permeable and legible movement network for all modes of transport linking the lands internally and externally with the Greater Blanchardstown Area;*
- *Provision of high quality recreational open space and amenity facilities to meet active and passive recreational needs of the expanding population;*
- *Provision of community and health care facilities, in particular, schools;*
- *Protection, integration and enhancement of existing environmental features within the lands and in the park located directly south;*
- *Delivery of a high-quality urban design to ensure that the area has its own unique character and identity and is a desirable place to live, work and recreate.*

The development lands are described as follows (p. 5):

“The lands are located in a transitional zonal area, situated between the existing built up area of Tyrrelstown and the rural hinterland. The lands consist of two land parcels situated on either side of the R121 which runs from Hollystown via Tyrrelstown to Mulhuddart. The lands are predominantly grassland/ tillage.

Agricultural land bounds the LAP to the west. Hollystown Golf Club and Hollystown village are immediately to the north. Tyrrelstown Local Centre, designated open space (currently being developed as a park by Fingal County Council) and the existing residential area of Tyrrelstown lie to the south. Two national schools, Tyrrelstown Educate Together and Saint Luke’s National School, exist to the south also. Employment generating lands exist to the east/south east.”

Figure 3.3 illustrates the LAP boundary, showing that the proposed development at Hollystown-Kilmartin Site 4 falls within the LAP lands. **Figure 3.4** illustrates the Urban Structure Plan proposed for the LAP lands.

Section 4 of the LAP sets out the key elements and objectives that are required to deliver the coordinated development of the lands and also assist in the urban extension to the existing residential community of Tyrrelstown. These include:

- *Green Infrastructure (Landscape, Archaeological and Architectural Heritage, Biodiversity, Parks, Open Space and Recreation and Sustainable Water Management);*
- *Movement Strategy and Transportation Infrastructure (Street Hierarchy, Access, Cycle / Pedestrian Access, Bus Service);*

Hollystown-Kilmartin Site 4

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- Land Use Mix (Density and Housing Mix, Building Heights, Waste, Social and Affordable Housing, education and Community Infrastructure, Childcare Facilities, Health Care Needs, Local Centre Facilities, Local Shop Provisions);
- Urban Design (Character Areas);
- Water and Infrastructure Services (Water Supply & Water Conservation, Foul Water Drainage, Surface Water Management, Flood Risk Management, Water Quality, Groundwater Vulnerability and Protection, Climate Change, Public Utilities).

Figure 3.3 Kilmartin LAP lands in relation to the wider area (Kilmartin Local Area Plan (2013))

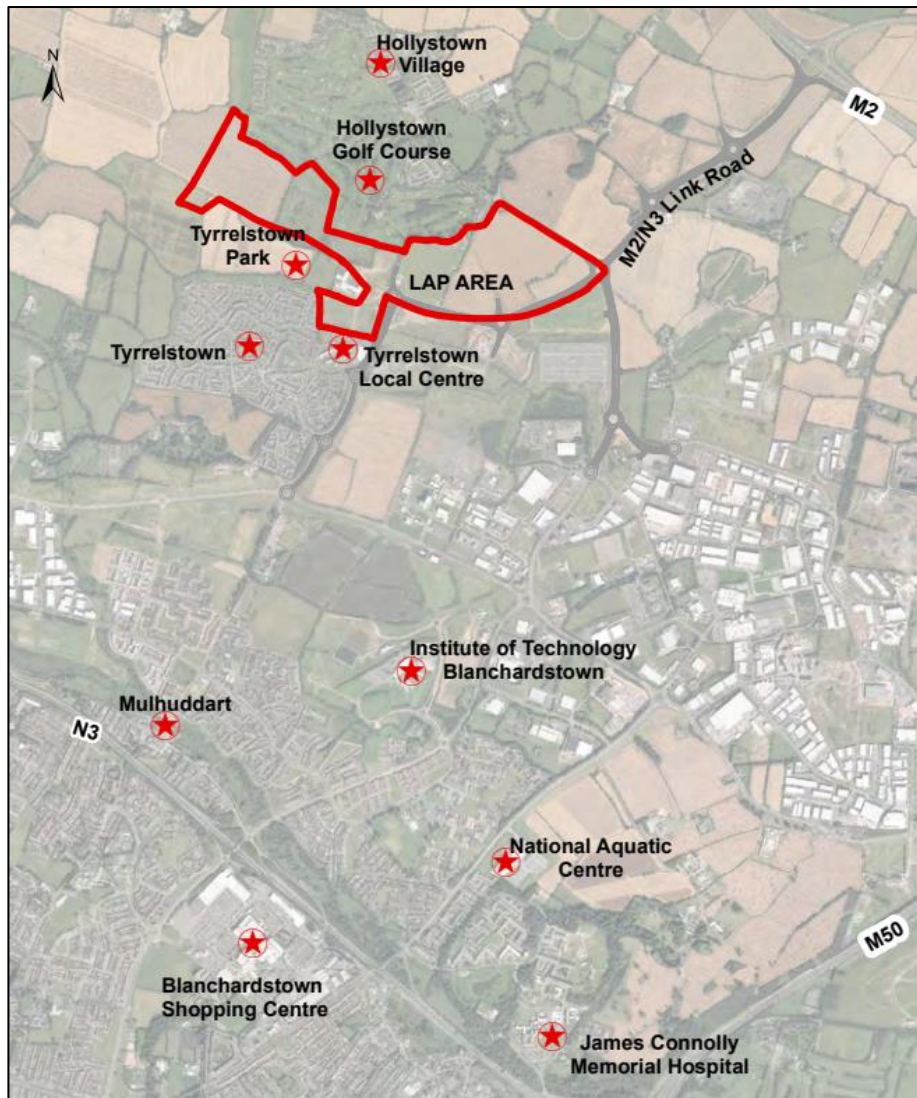
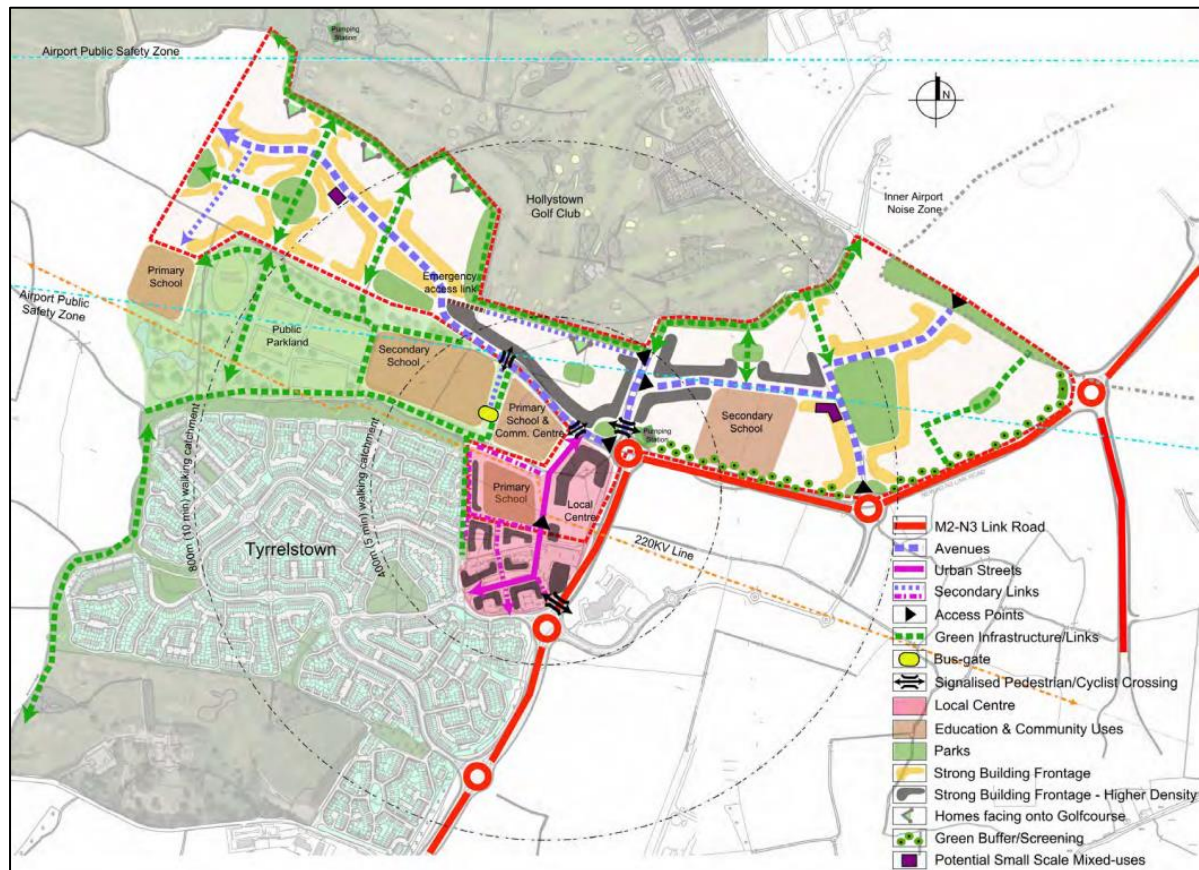


Figure 3.4 Kilmartin LAP urban structure plan (Kilmartin Local Area Plan (2013))



The LAP states that the estimated number of residential units to be delivered on the Kilmartin development lands is c. 1,400, over a period longer than the statutory 6-year time period of the LAP and Development Plan at the time of publication (2011 – 2017). The envisaged total future population of the LAP lands is c. 4,000.

The LAP supports a mix of residential units, tenure mix, unit size and design, to promote the development of a balanced community. Predominantly single house units are encouraged, comprising a mix of semi-detached, detached and terraced units. Social and / or affordable housing is to be integrated into private housing across the development lands, although specific targets are not included.

In terms of building heights, it is envisaged that dwellings will predominantly be in the 2 – 3 storey range, and at the southern boundary with Tyrrelstown Park, 3/3.5 storey residential units will be encouraged fronting onto the park, with appropriate level of landscaping to soften this urban edge.

In terms of landscape and open space, the LAP seeks the delivery of a high quality public realm, with public open space provision of at least 2.5 hectares per 1,000 population. It states that private open space for the residential sector to be provided in accordance with current Fingal Development Plan standards. The LAP advocates the development of an internal road and street network that prioritises sustainable transport modes, i.e. walking, cycling and public transport, and reduces reliance on private car use within the Kilmartin area.

In terms of Biodiversity, the LAP states that important hedgerows and treelines should be maintained to protect the remaining wildlife features. Verges of five metres or more should be left on either side

of hedgerows and tree-lines as buffers, to promote their use as wildlife corridors and to facilitate the development of grassland communities.

In terms of education and childcare, the LAP states that an additional primary and post-primary school, plus additional childcare facilities, are to be delivered under the scope of the development of the subject lands. The envisaged locations of the schools fall outside of the site of the proposed development. In relation to childcare facilities, it is stated that (p. 14):

“Childcare facilities are to be provided in accordance with relevant guidelines. The location of childcare facilities will take account of existing geographical distribution of facilities. All premises must be capable of providing outdoor play space or have safe [and] easy access to a safe outdoor play area.”

In order to promote variety and interest across the development lands, the LAP urban design concept is structured around 18 character areas, A – R (**Figure 3.5**), each of which should read as an individual entity, as reflected in the palette of construction materials, massing, density, parking, and the hierarchy of street design.

The character areas that apply to the site of the proposed development are described as follows (pp. 16 – 17):

C. Courtyard Housing / Homezones

“Suitable for medium density housing with various orientations for dwellings. Parking to be provided in the vicinity / curtilage of dwellings. Homezones will be designed to provide playspaces. A north-south connection will be maintained.”

D. Hollystown Golf Club Boundary

“A significant landscape buffer is to be provided which will include provision of a trimtrack/parcourse. Access to the LAP lands west of the R121 is gained to the south of this buffer area. Dwellings will be north facing with south facing rear gardens. This character area will support a medium density and a north-south connection will be facilitated.”

E. Kilmartin Avenue West Character 2

“Similar in character with Area E. Houses fronting a wide tree lined avenue with a strong street edge with provision for private parking/public parking, and with space to accommodate buses. The design of the Avenue should have regard to the future accessibility of lands located further west. Trees and building lines will provide consistency over the entire length of the avenue. Additional car parking will be carefully incorporated into the design of houses. The area will accommodate medium density with dwellings north/south facing. (See section 4.3 for more detail on avenue design).”

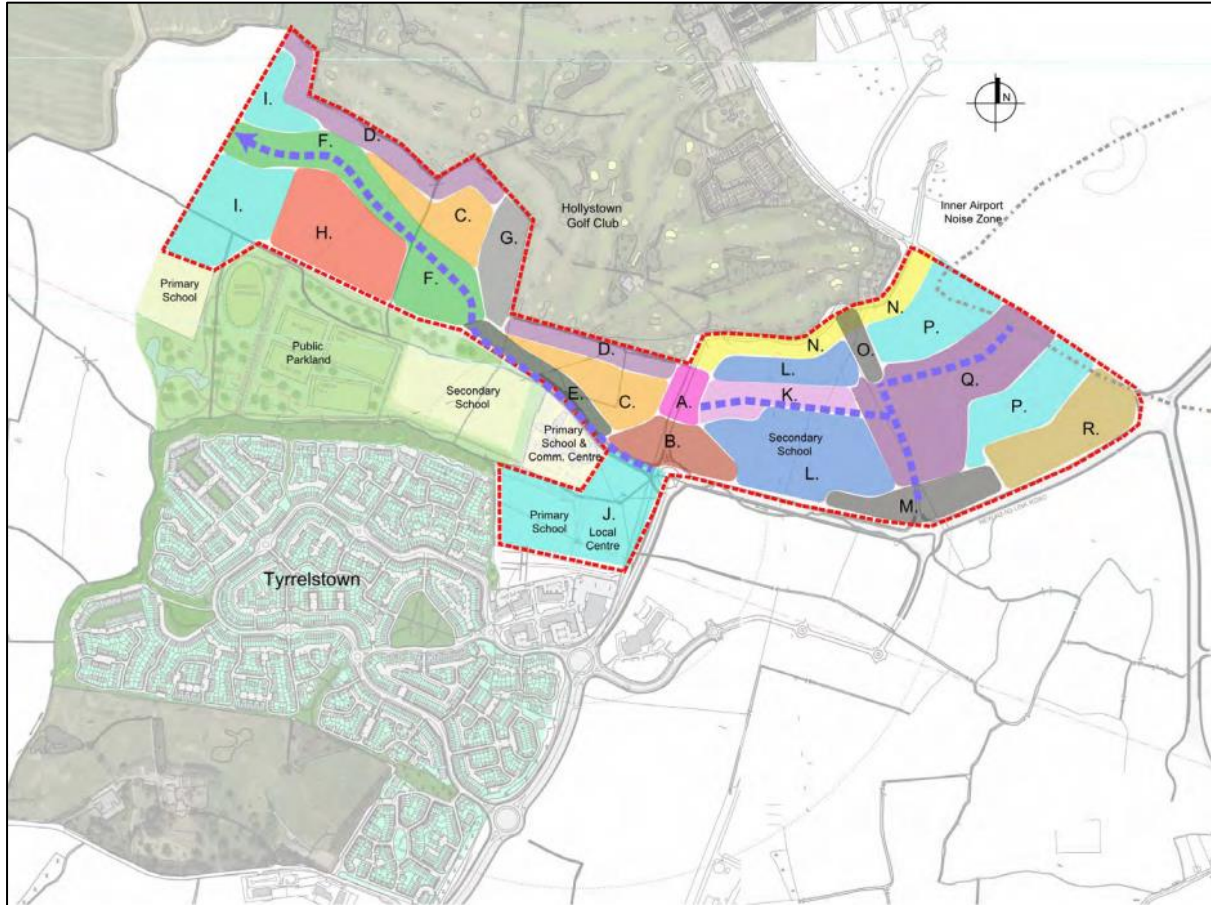
H. Formal Open Space Area and Green Connection

“Defined by its relationship to the public open space to the east, the public parkland to the south and the avenue and small mixed use development to the north. A strong north-south green connection is to be provided which will link to the existing line of poplar trees in the public parkland. Strong frontages are to be provided onto open space, the formal character of which will be defined by landscaping and the character of the surrounding dwellings. A medium density will prevail with various orientations for dwellings.”

I. Kilmartin East- Courtyard Housing / Homezones

“Characterised by medium density housing with various orientations for dwellings. Parking to be provided in the vicinity/curtilage of dwellings. Homezones will be designed to provide playspaces. A north-south connection will be maintained. In any design cognisance will be taken of the proposed post-primary school site.”

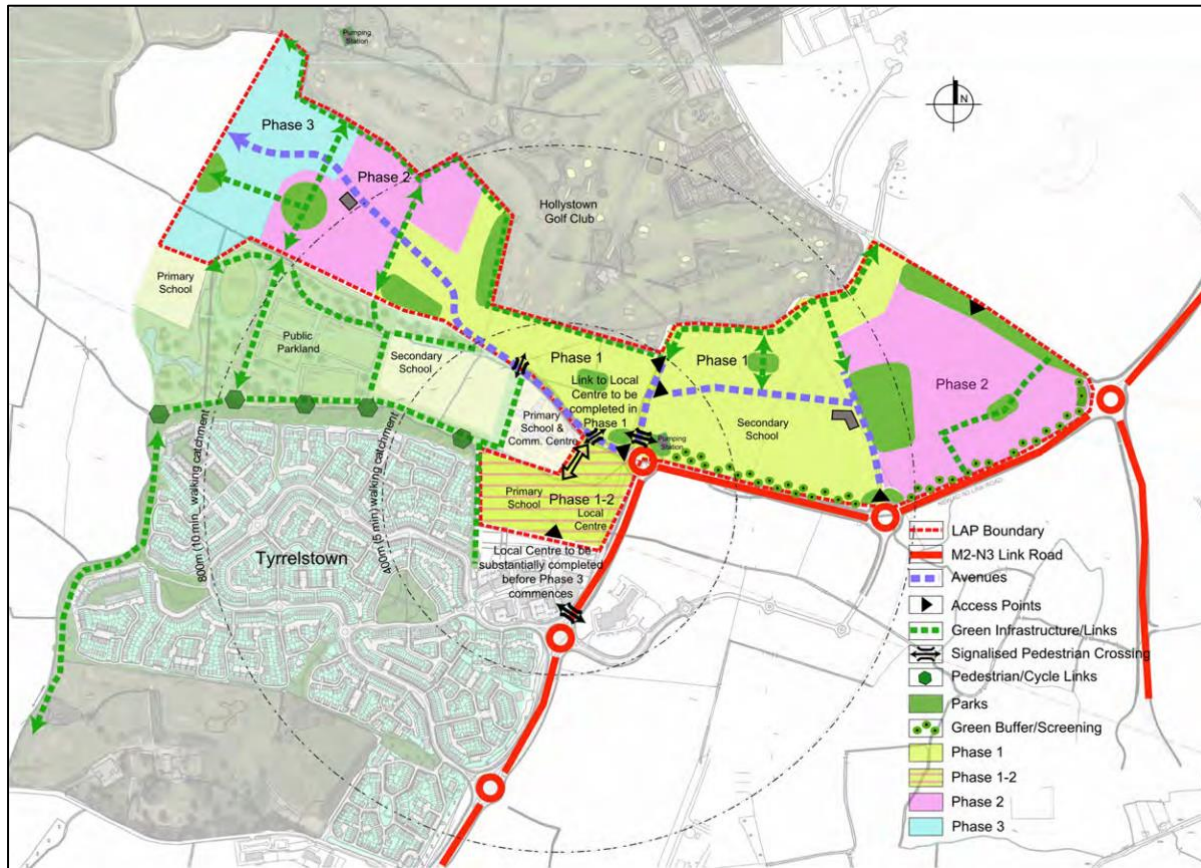
Figure 3.5 Character areas for Kilmartin LAP lands (Kilmartin Local Area Plan (2013))



In order to promote sustainable water management (SWM), and the incorporation of sustainable drainage systems (SuDS) measures, into the development of the LAP lands, a *SUDS Strategy* accompanies the LAP, to which proposed development in the subject lands must adhere.

The LAP seeks to ensure that the development of the lands is energy efficient and low-carbon, through a variety of potential measures; including design for passive solar gain, wind and solar energy, rainwater harvesting and recycling systems, green roofs, and smart technology and materials.

The LAP also sets out a phasing plan for the development of the lands, as illustrated in **Figure 3.6**.

Figure 3.6 Envisaged phasing of Kilmartin LAP lands (*Kilmartin Local Area Plan (2013)*)


The proposed development is consistent with the objectives of the LAP in that:

- It will create a high-quality, permeable residential development, integrated into neighbouring developments;
- It will contribute to the consolidation of an existing residential community at Tyrrelstown / Kilmartin / Hollystown;
- It will provide new community amenity and recreational open space facilities to meet the needs of existing and proposed residential development;
- It will deliver 580 no. of the 1,400 residential units targeted in the LAP;
- It will provide Part V social housing at the required rate of 10%;
- It will feature building heights of predominantly two to three storeys;
- Its internal road network will incorporate high-quality pedestrian and cyclist infrastructure;
- It will feature SuDS measures, as detailed in the Infrastructure Design Report, submitted under separate cover as part of the planning application;
- In terms of Biodiversity, the LAP states that *important hedgerows and treelines should be maintained to protect the remaining wildlife features. Verges of five metres or more should be left on either side of hedgerows and tree-lines as buffers, to promote their use as wildlife corridors and to facilitate the development of grassland communities.* The proposed development complies with the LAP requirements regarding biodiversity by maintaining corridors on the north, south and east of the proposed development site;
- The proposed buildings include a range of energy efficiency / decarbonisation features, including targeting of high BER ratings, lower U-values, improved air tightness and efficient white goods (where relevant). All curtilage car parking spaces will be equipped with necessary infrastructure to

facilitate use as EV charging points. A range of additional clean technology / efficient measures are under consideration at this stage, including use of solar photovoltaic panels, air to water heat pumps, passive ventilation and mechanical heat recovery ventilation.

Whilst the LAP has expired, the design of the proposed development responds to the character areas as set out above in order to provide consistency between the proposed development and previous phases whilst encouraging individual character areas. Please see the accompanying Architectural Design Statement and Landscape Design Statement prepared by Deady Gahan Architects and BSLA for further details.

3.7 Planning History of the Site

This section provides an overview of planning applications at the site of the proposed development and in the immediate vicinity. For further details, and for a comprehensive list of relevant permitted and proposed developments in the wider area, refer to Chapter 20 (Cumulative Impacts).

There are a few applications in the area, in particular 5 no. planning applications within the Applicant's landholding in recent years. The emerging wider area has had a significant amount of planning activity as an emerging residential area, in particular at Hollywoodrath and Bellingsmore to the east of the site. The site itself has no previous planning history. Recent planning activity within the Applicants landholding are set out below.

3.7.1 FCC Reg. Ref FW13A/0088 (/E1) (ABP Reg. Ref 243395)

Twinkl Services Ltd applied for planning permission for 177 No. dwellings in August 2013. The application was subsequently granted by An Bord Pleanála on the 20th October 2014. 19 No. conditions were attached to ABP's Order. The application was revised resulting in 172 no. units.

The Applicant was granted an extension of duration of permission 13th August 2019 under FCC Reg. Ref. FW13A/0088/E1.

This site, now known as Bellingsmore, is located within the Applicant's landholding, to the south of Hollystown Sites 2 & 3 and to the north of the Kilmartin Local Centre Lands. This development has been completed.

3.7.2 ABP Reg. Ref. 303956-19 (SHD)

Glenveagh Homes applied for planning permission for 253 no. dwellings in March 2019, on the lands to the east of the proposed development site. The application was refused by An Bord Pleanála (ABP) citing 2 no. reasons for refusal, on the 25th June 2019.

3.7.3 FCC Reg. Ref. FW21A/0042 (Hollystown Site 1)

Glenveagh Homes applied for planning permission to Fingal County Council for 69 no. dwellings comprising 52 no. 2-storey houses and 17 no. 3-storey houses, road upgrade works to Hollywood Road including a new vehicular exit, new foul outfall sewer, development of c.3.5ha of Class 1 Open Space and ancillary landscaping and site development works. Fingal County Council granted planning permission on 24th August 2021 subject to 34 no. conditions. This site is now under construction.

3.7.4 ABP Reg. Ref. 312271 (Hollystown Site 2&3 and Local Centre)

Glenveagh Homes Limited applied for permission for a Strategic Housing Development on lands at Hollystown Sites 2&3 and Local Centre. The SHD consists of 548 no. residential units (401 no. houses

and 147 no. apartments), 3 no. childcare facilities and all associated site works. An Bord Pleanála granted planning permission on 23rd March 2023 subject to 31 no. conditions.

3.7.5 FCC Reg. Ref. F22A/0169 (Local Centre Development)

Glenveagh Homes Limited applied for planning permission for development on Local Centre lands located adjacent to the existing Tyrrelstown Local Centre, in the townland of Hollywoodrath, Dublin 15. The proposed development consists of a main retail unit (supermarket), 3 no. retail/ retail service units, a café and a medical centre. Fingal County Council granted planning permission on 9th June 2023 subject to 30 no. conditions and the application is currently subject to a Third-party appeal.

4 Consideration of Alternatives

4.1 Introduction

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

4.2 Legislation

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

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

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

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

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

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

4.3 Method

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

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

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

1. ‘Do-Nothing’ Alternative;
2. Alternative Locations;

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

4.4 Do-Nothing Alternative

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

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

- (a) A continuation of the existing status and use of the lands (predominantly disused agricultural land);
or
- (b) Development (likely residential) under the scope of a separate proposal and application at some point in the future.

The latter scenario (b) is considered somewhat more likely, taking into consideration the policy context (including the zoning and development objectives for the lands under the Development Plan) and significant demand for housing in the area. In the context of the ongoing housing crisis in the Dublin Metropolitan Area, the former scenario (a) is considered to represent an inefficient, uneconomical and socially suboptimal use of the Hollystown / Kilmartin development lands. The opportunity cost, in this scenario, would include the 580no. residential units proposed and the accommodation that these would otherwise provide.

The proposed development site is zoned as 'RA- Residential Area' under the Fingal Development Plan 2023-2029. A 'do-nothing' alternative for these zoned lands would mean that these residential zoned lands would not be developed in accordance with the objectives of the County Council Development Plan and would be contrary to the Councils objective to promote residential land use at this site.

4.5 Alternative Locations

The proposed development site is zoned as 'RA- Residential Area' under the Fingal Development Plan 2023-2029 and the proposed development is consistent with the core strategy of the Development Plan. Taking into account the Local Authority zoning and development objectives, it is concluded that the site is suitable for the proposed development, which has been tailored to deliver site-specific development objectives.

As stated in the EPA guidelines that:

"Some locations have more inherent environmental sensitivities than others. Depending on the type of project and the range of alternatives which the developer can realistically consider, it may be possible to avoid such sites in favour of sites which have fewer constraints and more capacity to sustainably assimilate the project. It can be useful to ensure that a range of options, that may reasonably be available, are included in the evaluation."

[...]

“Clearly in some instances some of the alternatives described below will not be applicable – e.g. there may be no relevant ‘alternative location’...”

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

4.6 Alternative Layouts & Design

The evolution of the design and layout for the proposed development has been an iterative process which involved the entire design team. The design has undergone rigorous appraisal, which has led to a final layout that responds appropriately to the site characteristics, opportunities and constraints. The final layout, presented in the Architectural Drawings and the Architectural Design Statement (which have been submitted under separate cover and should be read in conjunction with this chapter), has evolved since the initial design stage, subsequent to a number of design team meetings, and in response to pre-planning meetings with Fingal County Council.

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

4.6.1 Design Alternative 1

The early stage site strategy was based on the Kilmartin Local Area Plan 2013-2019 as extended (expired on 11th May 2023), in which the subject land is included. This layout was a first attempt to address the main items outlined in the Kilmartin Local Area Plan and was informed by the topography and the natural features present on site. Refer to **Figure 4.1**.

4.6.1.1 Positive Characteristics

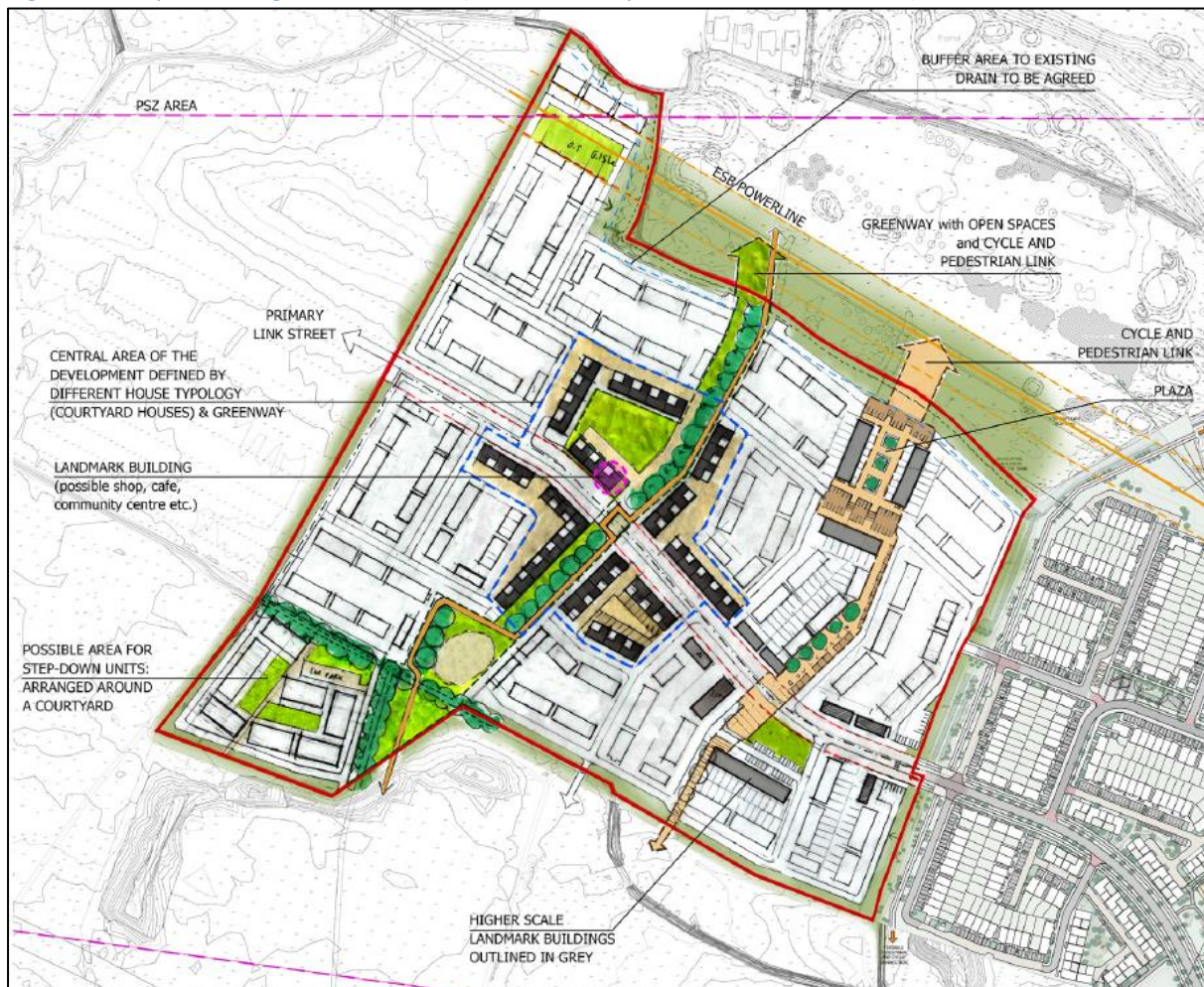
- Preservation of the existing drains and hedgerows along the northern, eastern and southern boundaries and in the south-western corner;
- Primary Link Street that runs from east to west as set out in the Kilmartin LAP (“avenue”);
- North-south green infrastructure link at the centre of the site (“greenway”) as set out in the Kilmartin LAP and is integrated in the wider green network proposed for this area;
- The main open spaces are placed on the greenway at the centre of the site;
- Creation of a core village at the centre of the site which is defined by different house typologies;
- Strong building frontages onto the Primary Link Street, along the greenway, facing Tyrrelstown Park to the south and the green area under the ESB powerlines to the north (as set out in the Kilmartin LAP);
- Possible addition of step-down units (Later living Units – LLU) to enhance the housing mix and to attract different end-users.

4.6.1.2 Negative Characteristics

The following required further analysis and appropriate solutions in the subsequent design iteration and development process:

- The setbacks from the existing drains and hedgerows should be increased and should be better integrated in the overall green infrastructure;
- The larger open spaces have all been placed along the greenway, the units to the west and to the east of the site do not have good quality usable open spaces and the design of these areas does not establish a sense of place;
- The secondary pedestrian and cycle link to the east has not developed sufficiently well and does not connect enough open spaces along its path;
- The core village at the centre of the site has been split into two distinct areas by the Primary Link Street, this makes this space less usable and recognisable;
- The layout has been dominated by roads and car parking surface, the layout proposes very long and straight roads with standard parking arrangements;
- The layout proposes long and straight roads along all the edges of the site and fails in the creation of strong frontages and different thresholds between the residential areas and the parks;
- There are no roads hierarchy, and the shared surfaces have not yet been developed;
- The Later Living Units have been located too far away from the main vehicular and pedestrian links.

Figure 4.1 Layout- design alternative 1 (Source: Deady Gahan Architects 2023)



4.6.2 Design Alternative 2

The scheme evolved from the initial conceptual design, following reviews and consultations with the applicant and the design team. The inputs from DBFL Consulting Engineers and Bernard Seymour

Landscape Architects were very important to progress developing the vehicular, cycle / pedestrian and green infrastructure.

All the positive characteristics of the initial concept have been maintained and progressed and some of the negative characteristics have been improved. Refer to **Figure 4.2**.

4.6.2.1 Positive Characteristics

Key elements that have been implemented and improved include:

- Preservation of the existing drains and hedgerows along the northern, eastern and southern boundaries and in the south-western corner. A setback of 10m from the top of the existing drains have been introduced to preserve these natural areas;
- The Primary Link Street that runs from east to west as set out in the Kilmartin LAP has been improved and is now addressed by strong building frontages 3-storeys duplex-apartments to the south and 2 / 3-storeys courtyard houses to the north;
- The greenway that runs from north to south at the centre of the site connects to the wider green network and is connected by a segregated pedestrian and cycle path. This connection intersects 4no. open spaces along its path;
- Several smaller open spaces have been placed in the eastern and in the western area of the site so that all the units have a usable open space nearby;
- The central area of the site has been developed in a more distinctive and considered Village Core, is defined by a large shared surface area and is placed to the north of the Primary Link Street;
- Strong building frontages along the Primary Link Street, along the greenways, facing Tyrrelstown Park to the south and the green area under the powerlines to the north. Creation of different thresholds between residential areas and parks included long and straight roads being removed;
- The Later Living Units (LLU) have been moved to the north-west of the Primary Link Street at a more accessible location. They have also been placed in a courtyard arrangement around a central communal amenity space to develop a stronger sense of community;
- First definition of a hierarchy of roads and introduction of some shared surfaces.

4.6.2.2 Negative Characteristics

- The greenway to the north has been connected to a natural area that have not been developed yet; the layout can benefit from the integration of this area under the powerlines in the overall layout and green infrastructure;
- The road layout can be further improved in order to minimize the long and straight roads;
- The location of the Later Living Units has been improved, but they can be moved in a more central location to be more accessible by public transport;
- The secondary north-south connection to the east is still not strong enough, it only crosses 2no. middle-size open spaces. These open spaces are too linear, car dominated and segmented by parking areas;
- The size and shape of all the open spaces can be improved and made more usable;
- The central village has improved but it is not dense enough and the landscaped areas need to be developed further. Also the shared surface area needs to be further developed.

Figure 4.2 Layout- design alternative 2 (Source: Deady Gahan Architects 2023)



4.6.3 Design Alternative 3

The previous layout has been further developed in order to improve its weak points and further detail the positive characteristics. Refer to **Figure 4.3**.

4.6.3.1 Positive characteristics

Resolution of remaining site considerations included:

- Preservation of the existing drains and hedgerows along the northern, eastern and southern boundaries and in the south-western corner, these have been integrated into the open spaces framework and in the wider green infrastructure;
- The Primary Link Street that runs from east to west is defined by much stronger building frontages, 3-storeys duplex-apartments to the south and 2 / 3-storeys courtyard houses to the north;
- The concept of the central village and green fingers has been further developed, a village core, with higher density, scale and distinctive character sits central to the site, with lower density clusters towards its edges. 'Landscape fingers' are interspersed, defining clusters and leading into and through the central village, connecting the site as a whole;
- The north-south Greenway has been placed at the centre of the site and connects Tyrrelstown Park to the south with the large parklands under the ESB powerlines to the north. These open spaces

are much larger in the final proposed layout and are connected by a segregated pedestrian and cycle link;

- A secondary north-south pedestrian and cycle link has been placed in the eastern area of the site: it connects several open spaces along its path. This has been improved following comments received from Fingal County Council: the open spaces are wider and are not dominated by the parking areas;
- The Central Village has been further developed: it now extends further west and it is characterised by a stronger urban character and a more defined shared space. Three open spaces have been added in this area;
- The Later living Units (LLU) have been moved to the north-east of the Primary Link Street, in the middle of the residential developments and are much more accessible. They have also been placed in a courtyard arrangement around a central communal amenity space to develop a stronger sense of community;
- The hierarchy of streets and paths has been further developed. Several shared surfaces blends into the landscape;
- The area to the north under the ESB powerlines has been included as parklands and creates a usable linear park that connects to that proposed in sites 2 and 3 and to the 2 no. proposed north-south green links. This area provides integration of the proposed layout into the wider framework proposed in the Kilmartin Local Area Plan.

4.6.3.2 Negative characteristics

The following key items raised by Fingal County Council have been further addressed in the final layout:

- The open spaces are still quite small and linear and wider open spaces can be more usable and can help in strengthening the north-south green links;
- The greenway does not have a straight connection to Tyrrelstown Park, it should be placed more central into the site;
- The central village is crossed by long shared streets: all these shared spaces impact the efficiency of the layout;
- Location of future Tyrrelstown GAA to the north-east to be revised and secondary link street that connects to them should be removed;
- Connection to possible future school to the south-west of the site to be further considered: the road is running at the centre of a residential area;
- More details required for open spaces, shared areas, road crossings, parking etc.

Figure 4.3 Layout- design alternative 3 (Source: Deady Gahan Architects 2023)



4.6.4 Design Alternative 4- Final Layout

The final scheme is informed by the examination of the various alternatives as outlined previously and has evolved since the initial design stage through several redesigns. This has been developed through various iterations, and implementing changes during the Pre-Application process and through comments received from Fingal County Council.

At the start of this year, the applicant implemented new housing typologies to adapt their houses to changing 21st century lifestyles, providing flexibility and adaptability and dedicated spaces for home working. At the start of this year Fingal County Council also adopted the new *Fingal County Development Plan 2023-2029* and in May the “Kilmartin Local Area Plan” expired (however, principles are considered to be still valid). All these changes have informed the final scheme that has been submitted.

The positive elements of the previous layouts were maintained and some further amendments were included to improve the proposed development to provide for a new high quality residential

development that responds appropriately to the site characteristics, opportunities and constraints. Refer to **Figure 4.4**.

4.6.4.1 Positive characteristics

- The final scheme that has been submitted is based on the strong design concept of the “Neighbourhood Core and Landscape Fingers”. This concept of the landscape fingers, that divide, define and connect the residential neighbourhoods, is a constant in the developments proposed in this area. The two main ones are: the one that divides sites 2 and 3 and the greenway at centre of site 4. We have also two smaller additional fingers: the greenway at the centre of site 2 that connects to Bellingsmore and the buffer area for the existing drains that divides sites 3 and 4. The green network has been analysed and described in the accompanied Design Statement;
- The newly developed houses typologies are more efficient and allow for a higher density and larger open spaces, to achieve the 15% of the developable area as prescribed in the newly adopted development plan. These new house typologies creates a distinctive neighbourhood with a new identity but also blend it well with the granted development in sites 2 & 3 and the other existing estates;
- The north-south Greenway has been moved at the centre of the site and connects Tyrrelstown Park to the south with the large park under the ESB powerlines to the north. These open spaces are much larger and usable in the final proposed layout and are connected by a segregated pedestrian and cycle link. This link has been now aligned with the existing pedestrian and cycle link in Tyrrelstown. Two pedestrian and cycle connections have been identified through the existing hedgerows and drains between the proposed development and Tyrrelstown Park: these locations have been chosen in order to minimize the impact on these existing natural features and in order to provide a good pedestrian and cycle connectivity. Several additional open spaces have been located around the site: all the units have an open spaces or a parks within walking distance;
- The layout proposes a strong hierarchy of streets: the Primary Link Street runs from east to west at the centre of the site, a Secondary Link Street creates a loop around the central village and a Primary Local Street allows for a possible access to the potential future school to the south (as suggested by Fingal County Council). This street has been moved along the western edge of the site in order to keep it on the edge of the residential area. The suggested Tyrrelstown GAA location has been moved from the north-east of the site and consequently the road connection has been removed, this allows to have a large linear park and green corridor under the ESB powerlines without breaks. A network of local streets branches of these link streets and connects all the residential neighbourhoods. Several shared surface have been located around the site and have been blended into the landscape;
- The Central Neighbourhood has been further developed: the long shared street has been removed and it has been replaced with shorter shared spaces and larger open spaces. The Neighbourhood Core is now more compact, efficient and creates a stronger and more interactive edge on the Primary Link Street;
- The scheme has been divided into no. 4 character areas: each character area will form a different neighbourhood characterised by specific architectural and landscaped treatments and complement each other.

Figure 4.4 Layout- design alternative 4- final layout (Source: Deady Gahan Architects 2023)



4.7 Alternative Processes

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

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

4.8 Alternative Mitigation Measures

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

5 Description of the Proposed Development

5.1 Introduction

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

5.2 Site of the Proposed Development

The proposed development site is located in a peri-urban area of Dublin 15, c. 13km to the north-west of Dublin city centre and c. 3.5km north of Blanchardstown town centre. The site is situated in the administrative area of Fingal County Council, in the townlands of Kilmartin and Hollystown, local electoral area of ‘Blanchardstown Mulhuddart’ and electoral division of ‘The Ward’.

The proposed development site is predominantly comprised of disused agricultural land, bordered by treelines, hedgerows and drainage ditches. The surrounding area is a relatively new suburban area comprising a mix of uses from residential, to educational and agricultural. Lands to the north of the site include part of the former golf course of the Hollystown Golf Club, and the residential area of Hollystown Park, and the east of the site includes the emerging residential area of Bellingsmore and Hollywoodrath. The site is also bound immediately to the east by lands that form part of a Strategic Housing Development (SHD) comprising 548 no. residential units along with 3 no. childcare facilities (ABP Reg. Ref. 312271, permitted in March 2023). To the west, the site is bound by greenfield lands and is zoned rural. An overhead 110kV ESB powerline runs across the northern portion of the site.

The lands to the south of the site are in community use (Tyrrelstown Park, GAA Pitches, Tyrrelstown Cricket Club Grounds), with Tyrrelstown Community Centre to the south-east alongside education uses (St. Luke’s National School, Tyrrelstown Educate Together National School and Le Chéile Secondary School). The south-western part of the proposed development site includes an area of disused lands dominated by willow and bramble scrub. Further to the south-east is the Blanchardstown Corporate Park, Northwest, Ballycoolin and Rosemount Business Parks, and to the south-west is the Damastown Industrial Park, comprising light industrial and pharmaceutical activities. The site is accessed via the R121 road which connects Tyrrelstown with the N3, Blanchardstown, and the wider national road network.

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

5.3 Need for the Proposed Development

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

- The Government’s *National Planning Framework* (NPF) (2018) predicts that there will be a need for at least half a million additional homes in Ireland by 2040, in order to meet the needs of our growing population. In order to promote sustainable development, the NPF sets out a policy of compact

growth, targeting 40% of new housing development within and close to the existing footprint of built-up areas;

- More recently (2021), the Government's housing plan, *Housing for All*, targets increased supply of new housing (an average of at least 33,000 per year to 2030) coupled with greater provision of affordable and social housing;
- The *Eastern & Midland Regional Assembly Regional Spatial & Economic Strategy 2019 – 2031* (RSES) targets the delivery of at least 50% of all new homes within or contiguous to the built up area of Dublin City and suburbs, with at least an additional 30% being delivered in other urban areas in the Region – which takes in Counties Longford, Westmeath, Offaly, Laois, Louth, Meath, Kildare, Wicklow and Dublin. The proposed development will contribute to the achievement of the population growth targets in the RSES, by providing a high-quality new residential development on lands zoned for this purposes by the Local Authority (Fingal County Council);
- Under the *Fingal Development Plan 2023 – 2029* Fingal County Council identifies Blanchardstown as a 'Dublin City and Suburbs Consolidation Area'. While Tyrrelstown and Hollystown are not specifically identified within the Core Strategy, they are located in the Dublin City and Suburbs Consolidation Area associated with Blanchardstown. These villages are considered distinctive areas that contribute to Blanchardstown's diversity and vitality;
- The policies and objectives as stated in the *Fingal Development Plan 2023 – 2029* for the Dublin City and Suburbs highlights the compact, sequential, sustainable growth of the area at appropriately identified locations. The Plan ensures the future development of Hollystown in a sustainable manner to provide a high quality living environment for the existing and future population;
- Under the Development Plan, the site of the proposed development is predominantly zoned as 'RA – Residential Area' with the corresponding zoning objective to "Provide for new residential communities subject to the provision of the necessary social and physical infrastructure";
- Under the *Kilmartin Local Area Plan (LAP) 2013* as extended (expired May 2023), the site of the proposed development falls under the LAP lands. The LAP states that the estimated number of residential units to be delivered on the Kilmartin development lands is c. 1,400, over a period longer than the statutory 6-year time period of the LAP and Development Plan at the time of publication (2011 – 2017). The envisaged total future population of the LAP lands is c. 4,000. The LAP supports a mix of residential units, tenure mix, unit size and design, to promote the development of a balanced community. Whilst the LAP has expired, the design of the proposed development responds to the character areas as set in the LAP in order to provide consistency between the proposed development and previous phases whilst encouraging individual character areas.

5.4 Characteristics of the Proposed Development

5.4.1 Overview

The proposed development relates to a site of c.20.6ha referred to as Hollystown-Kilmartin 4 located in the townland of Hollystown and Kilmartin, Dublin 15. The site is bound by lands which previously formed part of the former Hollystown Golf Club and the residential area of Hollystown Park to the north, lands forming part of a permitted Strategic Housing Development (SHD) to the east (ABP Reg. Ref. 312271), Tyrrelstown Park to the south, and rural zoned lands to the west.

The proposed development will include for the development of 580 no. residential units, consisting of 112 no. apartments/duplexes and 468 no. houses ranging from 1 – 3 storeys and will also include for car parking, cycle parking, new pedestrian/ cycle links, storage, services and plant areas. Landscaping will include for high quality private open space, communal amenity areas and public open space provision.

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

Figure 5.1 Proposed development- site layout (Source: Deady Gahan Architects 2023)



5.4.2 Detailed Development Description

The proposed development comprises the following elements, as detailed in the statutory notices:

The proposed development will consist of the development of 580 no. residential units, consisting of 468 no. houses and 112 no. apartments & duplex units, ranging from 1 to 3 no. storeys, as follows:

- 468 no. houses comprising 232 no. 2-beds, 186 no. 3-beds and 50 no. 4-beds; and 112 no. apartment & duplex units comprising 104 no. 1-beds and 8 no. 3-beds, with balconies on all elevations, and external amenity areas;

- A total of 892 no. car parking spaces will be provided for this scheme comprising 824 no. resident parking spaces and 68 no. visitor parking spaces. A total of 2,234 no. cycle parking spaces will be provided for this scheme comprising 2,174 no. resident cycle parking spaces and 60 no. visitor cycle parking spaces. The scheme will also include for new pedestrian and cycle links and connections.
- Principal vehicular access to the application site provided by the new road extension to 'The Avenue' and internal road network of Sites 2&3 to the east (permitted under ABP Reg. Ref. 312271). The application also includes for vehicular access to the future potential school site to the south as indicated in Fingal Development Plan 2023-2029.
- The application site includes for c.2.25ha Class 2 Open Space comprising c. 15% of the total developable area including pocket parks (including both formal and informal play areas), seating areas, open space areas, fitness and kick-about areas. In addition, c. 1.86ha of linear park to the north located under existing ESB powerlines provides a linear open space connection to Sites 2&3 (permitted under ABP Reg. Ref. 312271), Site 1 (as permitted under FCC Reg. Ref. FW21A/0042 and under construction) and to permitted Dublin GAA facility (FCC Reg. Ref. Reg. Ref. FW22A/0098). The open space network includes for green corridors, pedestrian and cycle connections (including 2 no. pedestrian and cycle connections to Tyrrelstown Park to the south), landscaping, and drainage infrastructure;
- A temporary construction access and haul road to the site from Ratoath Road (L3080);
- The development will also provide for all associated ancillary site development infrastructure including landscape areas, boundary treatments, sustainable urban drainage systems (SuDs) and features, ESB sub-stations, PV panels, public lighting, servicing, signage, foul and surface water drainage, bin stores, plant, storage, internal roads & footpaths, landscaping, and all associated engineering and site enabling and development works above and below ground.

5.4.3 Water Infrastructure

For a detailed description of the proposed water infrastructure, refer to Infrastructure Design Report prepared by DBFL Consulting Engineers (2023) and submitted under separate cover as part of the planning application.

5.4.3.1 Water Supply

The proposed water supply network has been designed in accordance with *Irish Water's Code of Practice for Water Infrastructure* and *Water Infrastructure Standard Details*. It is proposed to connect to the 225mm diameter watermain to the east of the subject site which will be constructed as part of the Hollystown – Kilmartin Sites 2&3 SHD under An Bord Pleanála Reference 312271. This watermain connects to the existing 300mm diameter water main on Hollywoodrath Road (R121). The connection to the public water main will include a bulk meter, sluice valves, water meter, scour valve etc. in accordance with the Uisce Éireann's requirements. A pre-connection enquiry was made to Uisce Éireann and a Confirmation of Feasibility letter was received by the project engineers on 08 June 2023.

5.4.3.2 Surface Water Drainage

The site of the proposed development is predominantly greenfield in nature. There are two existing drainage ditches / streams located along the northern and southern boundaries of the proposed development site. These are known as the Hollywood Stream and the Mooretown Stream, respectively. It is proposed to discharge attenuated surface water to these ditches in the north-west corner and south-west corners of the subject site. The streams enter the Pinkeen River west of the site. The

Pinkeen River ultimately discharges to the Tolka River to the south of the proposed development site (c. 3.4km downstream).

Surface water run-off from the site will be attenuated to greenfield run-off rates in accordance with the Greater Dublin Strategic Drainage Study (GDSDS). Surface water storage; sustainable drainage systems (SuDS) features, including swales, permeable paving, bioretention areas, rain gardens, tree pits, detention basins, infiltration blanket, stormtech attenuation facility, hydrobrakes and petrol interceptors are proposed.

It is proposed to store runoff for a 1% AEP (Annual Exceedance Probability) storm event plus 20% allowance for climate. Runoff from roads and other hard surfaces such as paths and cycle paths will be directed to swales, tree pits and rain gardens / bio retention areas where possible. All runoff will enter unlined detention basins with hydrobrakes in which attenuated storm volumes are temporarily stored. Restricted baseflow from detention basins through the hydrobrakes will enter petrol interceptors and grease traps before finally discharging into natural drainage lines.

Surface water management for the proposed development is designed to comply with the Greater Dublin Strategic Drainage Study (GDSDS) policies and guidelines and the requirements of Fingal County Council.

5.4.3.3 Foul Water Drainage

The site of the proposed development is predominantly greenfield in nature, with no existing buildings. Therefore, there is currently no foul water loading from the site. The proposed foul water drainage network has been designed in accordance with the Building Regulations and specifically in accordance with the principles and methods set out in the DOE 'Recommendations for Site Development Works for Housing Areas', IS EN752 (2008), BS8301: 1985, IS EN12056: Part 2 (2000) and the recommendations of the 'Greater Dublin Strategic Drainage Study', (GDSDS) and the Irish Water Connection and Developer Services, 'Code of Practice for Wastewater Connections'.

It is proposed to connect the foul drainage network for the proposed development to the 450mm diameter trunk foul sewer that is currently under construction under Fingal County Council reference FW21A/0042. This trunk sewer traverses through the central primary link street of the subject site from east to west and ultimately discharges to the existing 750mm diameter foul sewer approx. 3km to the south adjacent to Powerstown Road. The foul trunk main has been designed to accommodate foul flows from the proposed development and also from the proposed Hollystown Sites 2 & 3 SHD which has been granted planning permission under ABP Reference 312271. The trunk main also accommodates foul flows from Bellingsmore Residential Development to the east and from Hollystown Site 1 to the north-east of the subject site (permitted under FCC reference FW21A/0042). It is also designed to facilitate a future connection from Hollystown Park Foul Pumping Station which has itself been permitted under FCC Reference FW21A/0042.

A pre-connection enquiry was made to Uisce Éireann and a Confirmation of Feasibility letter (June 2023) has been received. This letter is included as an appendix to the Infrastructure Design Report, prepared by DBFL Consulting Engineers and submitted separately. A statement of design acceptance was received from Uisce Éireann in August 2023, stating that Uisce Éireann has no objection to the proposed connections.

5.5 Construction Phase

5.5.1 Construction Sequence

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

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

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

5.5.1.1 Site Enabling Works

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

- Securing of site boundary and erecting of fencing or hoarding as required;
- Service terminations and positive identification of any services on the site by the utility providers;
- Provision of temporary power, lighting and water services;
- Set up of site accommodation and welfare facilities;
- Archaeological monitoring in accordance with the recommendations of the Archaeological Assessment;
- Identification of the trees that are required to be removed and the removal of these along with scrub and vegetation, in consultation with the appointed Arborist and the recommendations of the tree survey report;
- Identification of the trees that are required to be protected and the protection of these in consultation with the appointed Arborist and the recommendations of the tree survey report;
- Identification of any hazardous materials on site or in the structures that are required to be removed from the site during the course of the construction;
- Identification of watercourses in the vicinity of the site and measures to be put in place to minimise contamination of same;
- Measures for working in close proximity to existing overhead powerlines in the northern portion of the subject site. All works in close proximity and under existing overhead powerlines will be undertaken in accordance with *ESB Networks Code of Practice for Avoiding Danger from Overhead Electricity Line (2019)*;
- Excavation and reuse of soil / subsoil on site;
- Construction of a temporary haul road with a stone buildup and geotextile terram to provide for construction traffic access to the site from Ratoath Road (L3080); and
- Temporary power and water services will be arranged for the site accommodation and welfare facilities along with the provision of temporary surface water and foul water management measures for the construction phase.

5.5.1.2 Sub-structure and Superstructure Works

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

- Excavation of foundations;

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

5.5.1.3 Infrastructure Works

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

All works are to be carried out in accordance with Irish Water's Code of Practice for Water and Wastewater and the contractor is to liaise with Uisce Éireann for the duration of the construction phase which is anticipated to last approximately 42 months.

Engagement with the service and utility providers will be entered into early in the design stage to allow for adequate planning of utility infrastructure. Provision of the permanent infrastructure to the site will be carried out as early as possible in the programmed works to incorporate the temporary site requirements with the permanent requirements.

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

5.5.1.4 Reinstatement

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

5.5.2 Construction Phasing & Duration

The envisaged duration of the construction phase is 3.5 years (42 months). A detailed phasing plan for the entire Hollystown-Kilmartin land bank has been included within the Planning Report and Statement of Consistency (BSM, 2023) submitted as part of the planning application.

5.5.3 Construction Materials

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

5.5.4 Earthworks

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

In order to minimise the volume of material being exported off-site, excavated material will be reused on-site (e.g. as fill material) where feasible. All topsoil is planned to be reused on-site. However, it is

envisaged that a certain volume of excavated subsoil will be unsuitable for on-site re-use and will need to be disposed of at an appropriately licenced landfill facility. Indicative earthworks figures are as follows:

- Volume of earthworks – excavated soil / subsoil: 55,000m³;
- Volume of earthworks – infill, reuse: 45,000m³;
- Maximum depth of excavation: 6m.

5.5.5 Hazardous Substances

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

5.5.6 Construction Traffic

All construction HGV traffic for the required works will enter the site via a haul route accessed from Ratoath Road (L3080) and the former Hollystown Golf Club entrance. Ancillary access for non-HGV construction traffic will also be possible via The Avenue (south of the existing Bellingsmore development and through Sites 2&3). Ratoath Road will be the primary haul route, while The Avenue will be a secondary access route to the construction site. Warning signage will be provided at both haul route locations for pedestrians and other road users on all approaches in accordance with Chapter 8 of the Traffic Signs Manual and the Contractor's Traffic Management Plan.

All construction activities on-site will be governed by the traffic management measures outlined in the Construction & Environmental Management Plan (CEMP) prepared by DBFL Consulting Engineers (2023), and submitted under a separate cover as part of the planning application. The mitigation measures detailed in the CEMP, submitted as part of the planning application, will be implemented through a Construction Traffic Management Plan (CTMP), the details of which will include haul routes, working times and off-site disposal sites. This plan will be prepared in consultation with Fingal County Council and agreed in full with the Council prior to commencement of construction activities on site, in order to reach full agreement upon the traffic management mitigation measures and monitoring measures to be adopted during the entire programme of construction activities on-site.

5.5.7 Site Compound and Haul Route

It is envisaged that one construction site compound will be required for the purposes of the proposed development. The precise location of this will be agreed with Fingal County Council prior to the commencement of works, however it will be within the application site. An indicative location to the site compound, proposed haul route and associated surface water management features are illustrated in **Figure 5.2**, below. The construction compound will contain facilities for construction personnel (including parking, welfare facilities and canteen) and waste segregation area.

A temporary positive drainage system shall be installed prior to the commencement of the construction works to collect and store surface water runoff by the site during construction. A series of geotextile lined cascading, high level outfall, settling basins will be installed upstream of the agreed discharge point. These settlement basins will also provide storage for the groundwater. This temporary surface

Hollystown-Kilmartin Site 4

Environmental Impact Assessment Report (EIAR) Volume 2: Main Text

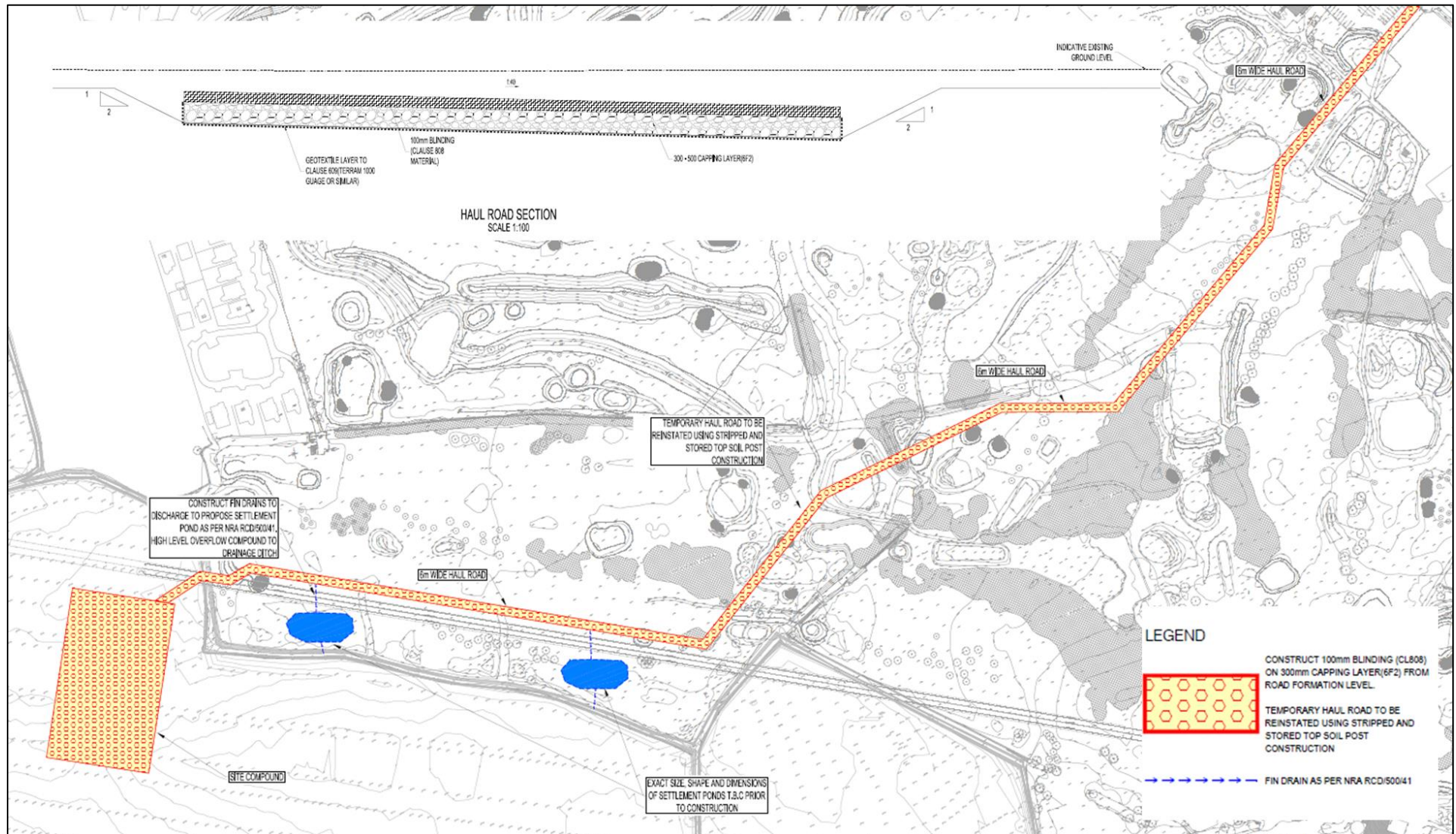
water management facility will throttle runoff, provide storage for run-off and allow suspended solids to be settled out and removed before being discharged in a controlled manner to the agreed outfall via high level overflows. All inlets to the cascading settling basins will be riprapped to prevent scour and erosion near the inlet. Surface water discharge from site will be managed and controlled for the duration of the construction works until the permanent surface water drainage system is complete.

Please refer to the accompanying Construction Environmental Management Plan prepared by DBFL Consulting Engineers (2023) for further detail.

Hollystown-Kilmartin Site 4

Environmental Impact Assessment Report (EIAR) Volume 2: Main Text

Figure 5.2 Indicative construction site compound and primary haul route (Source: DBFL, 2023)



5.5.8 Working Hours

Envisaged working hours are as follows:

- Monday – Friday: 08:00 – 19:00;
- Saturday: 08:00 – 14:00;
- Weekends / Bank Holidays: No works.

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

5.5.9 Construction Phase Plans

5.5.9.1 Construction and Environmental Management Plan

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

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

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

5.5.9.2 Dust Management Plan

A Dust Management Plan (see Chapter 11 – **Appendix 11.1**) has been prepared by AWN Consulting Ltd. for the construction phase of the proposed development, the implementation of which will provide for the proactive control of fugitive dust. The main contractor will be responsible for the coordination, implementation and ongoing monitoring of the Dust Management Plan.

5.5.9.3 Arboricultural Method Statement

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

5.5.9.4 Construction Traffic Management Plan

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

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

5.5.9.5 Resource and Waste Management Plan

A Resource & Construction Waste Management Plan (prepared by Byrne Environmental Consulting Ltd., 2023) will be implemented during the construction phase, and is submitted as part of the planning application. This document shall be finalised by the appointed contractor, in agreement with Fingal County Council, prior to the commencement of the proposed works. For further information, refer to Chapter 17 (Material Assets – Waste).

5.6 Operational Phase

5.6.1 Operational Phase Plans

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

5.6.1.1 Mobility Management Plan

A Mobility Management Plan (MMP) has been prepared by DBFL Consulting Engineers (2023) for the operational phase of the proposed development (refer to standalone document submitted under separate cover), to promote sustainable mobility among the residents of the proposed development through a range of measures. The appointed Mobility Manager of the site during the operational phase will be responsible for ensuring – allocating personnel and resources, as needed – the ongoing implementation of the MMP. This is intended to be a live document, to be updated by the Applicant / Operator, where appropriate, e.g. to ensure the Plan remains fit for purpose and up-to-date with relevant policy.

5.6.1.2 Operational Waste Management Plan

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

6 Consultation

6.1 Introduction

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

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

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

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

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

6.2 The LRD Process

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

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

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

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

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

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

Figure 6.1 Overview of LRD application process



6.3 Stage 1: Section 247 Pre-application Consultation

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

The Stage 1 Section 247 pre-application consultation meeting for the proposed development was held on 19 April 2023 via Microsoft Teams between the Applicant, design team representatives and Fingal County Council (**Table 6.1**). Matters raised by Fingal County Council during the meeting have been taken into consideration in the development of the design for the proposed development.

Table 6.1 Stage 1 Section 247 pre-application consultation meeting (19 April 2023) – attendees

	Attendees
Fingal County Council	- Deirdre Fallon – Planning - Kathy Tuck – Planning - Andrew Corcoran – Planning - Niamh O'Connor – Traffic and Transport - AnneMarie Meagher – Parks Department - Gemma Carr – Parks Department - Philip Grobler – Water and Drainage Services - Cormac McGee – Staff Officer LRD - Aoife Dunne – Housing Department
Applicant (Marina Quarter Limited)	Justin Farrelly
Design Team	- Pauline Byrne – Brady Shipman Martin - Hannah Millar – Brady Shipman Martin - Eamon Gahan – Deady Gahan Architects - Arianna Visconti – Deady Gahan Architects - Aimee Dunne – DBFL Consulting Engineers - Brendan Manning – DBFL Consulting Engineers - Melanie Sharkley – Bernard Seymour Landscape Architects (BSLA) - Periklis Tsouklas – Bernard Seymour Landscape Architects (BSLA)

6.4 Stage 2: LRD Meeting

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

The Stage 2 LRD Meeting for the proposed development was held on 20 June 2023 between the Applicant, design team representatives and Fingal County Council (**Table 6.2**).

Table 6.2 Stage 2 LRD Meeting (20 June 2023) – attendees

	Attendees
Fingal County Council	■ Deirdre Fallon – Planning ■ Kathy Tuck – Planning ■ Andrew Corcoran – Planning ■ Niamh O’Connor – Traffic and Transport ■ AnneMarie Meagher – Parks Department ■ Aoife Dunne – Housing Department ■ Rian Glynn – Housing Department ■ Philip Grobler – Water and Drainage Services ■ Cormac McGee – Staff Officer LRD
The Applicant (Marina Quarter Limited)	■ Justin Farrelly ■ Annie Mitchell ■ Colm McEldowney
Design team	■ Pauline Byrne – Brady Shipman Martin ■ Hannah Millar – Brady Shipman Martin ■ Eamon Gahan – Deady Gahan Architects ■ Arianna Visconti – Deady Gahan Architects ■ Aimee Dunne – DBFL Consulting Engineers ■ Brendan Manning – DBFL Consulting Engineers ■ Jack Butker – DBFL Consulting Engineers ■ Melanie Sharkley – Bernard Seymour Landscape Architects (BSLA) ■ Selugi Lee – IN2 Engineering

6.5 Stage 3: LRD Opinion

Following the LRD Meeting, an LRD Opinion was issued by Fingal County Council in July 2023, stating that -

“In accordance with Section 32D(2) of the Planning and Development Act 2000, as amended, the issues, in respect of which the documents submitted do not constitute a reasonable basis on which to make the application, are as follows:

1. *The proposed development relies on infrastructure which is to be developed as part of other applications. Insufficient information has been submitted in respect of the phasing of the proposed development in the context of the wider landholding of which it is part to demonstrate that all necessary infrastructure will be in place to serve the proposed*

development. Proposals are required for the phasing of the development and wider landholding belonging to the applicant, including associated map(s) which address the delivery of physical and social infrastructure and open space to serve the proposed development. This requires a detailed phasing plan, composite social and physical infrastructure and open space layout plan and accompanying detailed phasing proposals to demonstrate that all necessary infrastructure will be in place to serve the proposed development.

- 2. Sufficient information has not been provided to demonstrate that open space in accordance with the Fingal County Development Plan 2023-2029 will be provided to serve the development. Details are required where the class 1 public open space to serve the development is located in the form of a masterplan showing all class 1 open space land within the ownership of the applicant and the areas (in hectare) allocated to each planning application."*

A response to the Opinion has been submitted as part of the planning documentation that accompany the application. Please refer to the accompanying planning documents.

Pursuant to Article 16A(7) of the PDR 2001, the Opinion set out a list of specific information that should be submitted with the planning application. Reference was made to construction and environmental management plan that includes all relevant mitigation measures in the EIAR. Other items of relevance to the Environmental Impact Assessment Report, include the requirement for project specific social infrastructure audit, housing quality assessment, sunlight and daylight analysis for final design layout, revisions to Traffic and Transport Assessment, parking, road links and connectivity, construction phasing plan, engagement with Uisce Éireann to secure an updated confirmation of feasibility and a Statement of Design Acceptance, revisions to the Landscape Plan, revised proposals for open spaces, boundary treatment details, green infrastructure plan, details for hedgerow retention etc. Regard has been had in the preparation of this Environmental Impact Assessment Report to the matters raised in the LRD Opinion.

6.6 Stage 4: Submission of LRD Application

The Stage 4 of the LRD application process, the submission of the planning application to the Planning Authority (Fingal County Council), will allow for public consultation. The Applicant will make copies of the application documents (including this Environmental Impact Assessment Report) available for public viewing on a dedicated website, www.kilmartin4lrđ.ie. Members of the public, Prescribed Bodies and elected Council members may submit observations on the proposed development within five weeks of the lodgement date.

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

7 Population & Human Health

7.1 Introduction

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

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

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

7.2 Method

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

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

The EPA guidelines state that:

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

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

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

The EPA guidelines also state that:

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

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

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

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

- Central Statistics Office (CSO) census data from 2011, 2016 and 2022;
- Fingal County Council (2022). *Fingal Development Plan 2023 – 2029*;
- Fingal County Council (2013). *Kilmartin Local Area Plan 2013-2019* as extended (expired on 11th May 2023);
- Department of Housing, Planning & Local Government (DHPLG) (2023). *My Plan Map Viewer*;
- Government of Ireland (2022). *Health in Ireland – Key Trends 2022*;
- AIRO Census Mapping;
- Eastern and Midlands Regional Assembly (2019). *Regional Spatial and Economic Strategy 2019-2031*.

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

7.3 Baseline Environment

The site of the proposed development is situated in a peri-urban area, c. 13km to the north-west of Dublin city centre. The site is situated in the townlands of Kilmartin and Hollystown, local electoral area (LEA) of ‘Blanchardstown Mulhuddart’, electoral division (ED) of ‘The Ward’, and in the administrative area of Fingal County Council.

The surrounding area is a relatively new suburban area comprising a mix of uses from residential, to educational and agricultural. The nearest major commercial centres are at Mulhuddart and Blanchardstown, c. 2 km and 3.5 km to the south, respectively. The site is bound by lands which previously formed part of the former Hollystown Golf Club and the residential area of Hollystown Park to the north, lands forming part of a permitted Strategic Housing Development (SHD) application to the east (ABP Reg. Ref. 312271), Tyrrelstown Park to the south, and rural zoned lands to the west. **Figures 1.1 and 1.2** in Chapter 1 (Introduction) illustrate the location of the proposed development site.

The lands to the south of the site are in community use (Tyrrelstown Park, GAA Pitches, Tyrrelstown Cricket Club Grounds), with Tyrrelstown Community Centre to the south-east alongside education uses (St. Luke’s National School, Tyrrelstown Educate Together National School and Le Chéile Secondary

School). Further to the south-east is the Blanchardstown Corporate Park, Northwest, Ballycoolin and Rosemount Business Parks, and to the south-west is the Damastown Industrial Park, comprising light industrial and pharmaceutical activities. The site is accessed via the R121 road which connects Tyrrelstown with the N3, Blanchardstown, and the wider national road network.

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

7.3.1 Population

The CSO provides data on population and socio-economic aspects of the population at different levels from the State, county level, Local Electoral Area (LEA), individual Electoral Districts (ED) to Small Areas (SA) within each County. The 2016 Census undertaken by CSO provides detailed results and reports. Most recent census was undertaken in April 2022. CSO published preliminary results for 'Census of Population 2022' on 23 June 2022 (updated September 2022) which have been superseded by the summary results published on 30 May 2023. A series of themed reports, Small Area Population Statistics (SAPS) and Place of Work, School, College - Census of Anonymised Records (POWSCAR) and their detailed statistical tables will be provided as per the schedule set by CSO for May 2023 to December 2023. This chapter uses the most up to date and detailed statistical data that is available at the time of writing this chapter.

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

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

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

Area	Number of Persons			
	2011	2016	2022	Change
Ireland – State	4,588,252	4,761,865	5,149,139	+3.8% (2011-2016) +8.1% (2016-2022)
Fingal County Council Administrative Area	273,991	296,020	330,506	+8.0% (2011-2016) +11.6% (2016-2022)
Blanchardstown- Mulhuddart LEA	55,422	59,747	40,022	+7.8% (2011-2016) -33% (2016-2022)
The Ward ED	8,241	9,602	13,289	+16.5% (2011-2016) +38.4% (2016-2022)

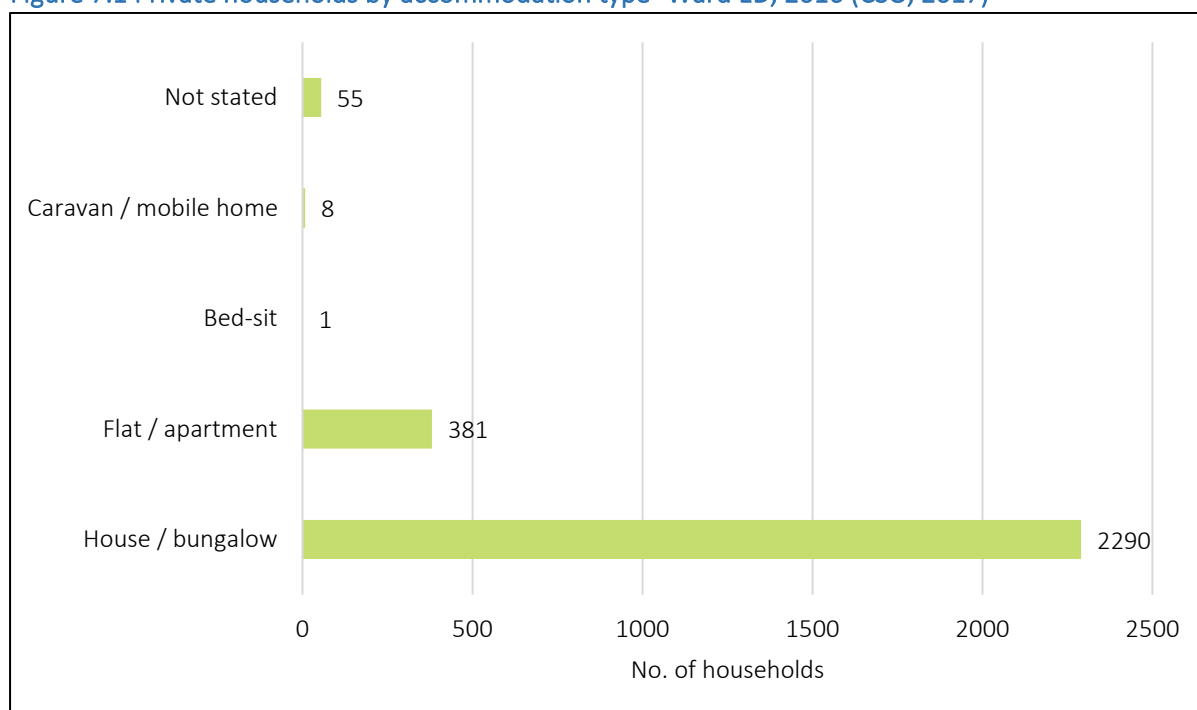
In the period between 2016 and 2022, the population in the administrative area of Fingal County Council (FCC) increased by 11.6% as compared to the previous increase of 8% between 2011 and 2016. The site of the proposed development is located in the LEA of Blanchardstown-Mulhuddart and the ED

of 'The Ward'. The population statistics indicate that growth at the level of the ED between 2016 and 2022 has been significantly more than at the level of the LEA and Local Authority administrative area, and over four times the rate of growth that occurred at the national level. The growth at the level of the LEA has shown a decrease in the period between 2016 and 2022.

7.3.2 Land Use and Settlement Patterns

The proposed development is situated in a peri-urban residential and industrial area of Hollystown, Tyrrelstown and Mulhuddart. The area is at the interface of the suburbs of Dublin City and the rural hinterland to the north / north-west. Residential development in this area is typical of suburban areas, being dominated by medium to large-scale housing estates, predominantly comprised of modern, semi-detached and detached two-storey houses, with relatively few apartments / other accommodation types (**Figure 7.1**). Development in this area is surrounded by pre-existing arable and pastoral agricultural land.

Figure 7.1 Private households by accommodation type- Ward ED, 2016 (CSO, 2017)

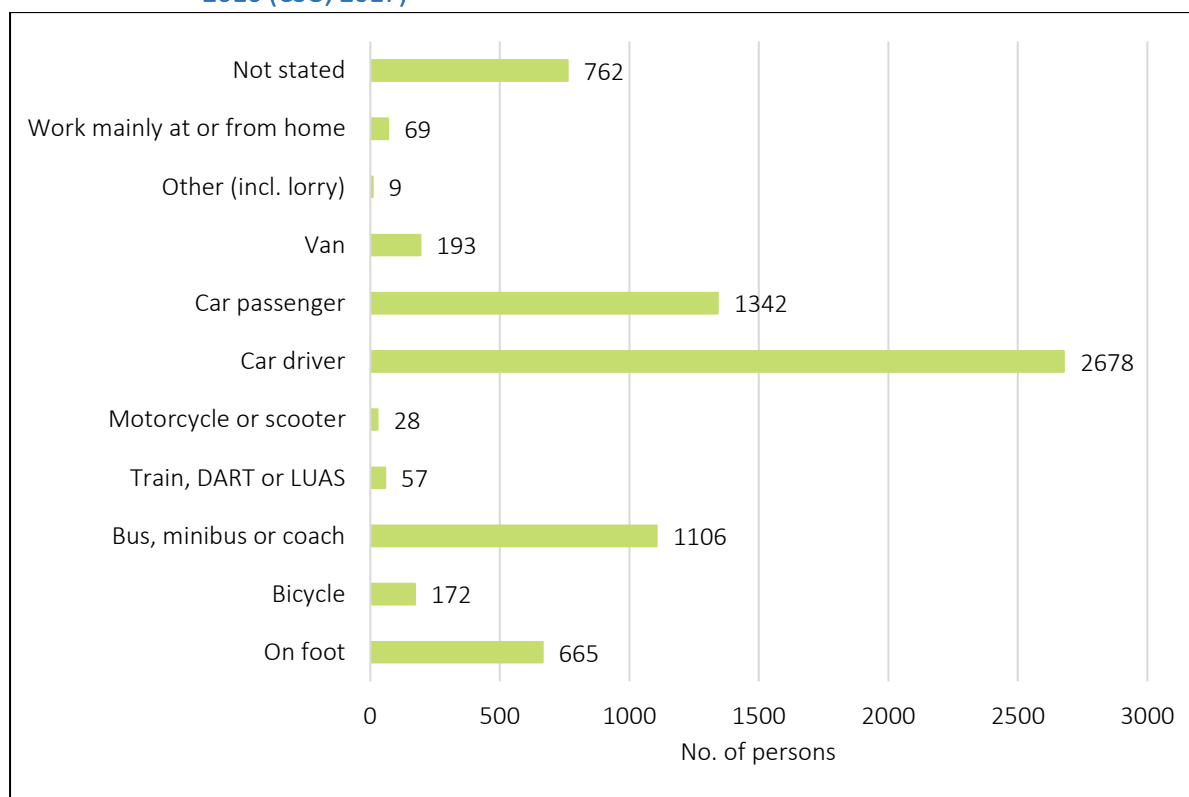


Hollystown-Kilmartin Site 4 is in the administrative area of Fingal County Council and is subject to the Fingal Development Plan 2023 - 2029 ('the Development Plan') and the Kilmartin Local Area Plan 2013 - 2019 as extended (expired on 11th May 2023). Under the Development Plan, the proposed development site is primarily zoned (i) RA 'Residential Area', for which the corresponding objective is to "Provide for new residential communities subject to the provision of the necessary social and physical infrastructure". Further a strip of land to the north is zoned (ii) OS - 'Open Space', for which the corresponding objective is to "Preserve and provide for open space and recreational amenities". For the proposed development the residential units are located within the lands zoned for residential use whilst open space with shared pedestrian and cycle links, a linear park and drainage infrastructure is provided on lands zoned Open Space to the north. The Open Space zoned lands align with the overhead powerlines and corresponding buffer zone. The surrounding land to the west is zoned as RU 'Rural', to the east as RA 'Residential Area' and to the north and south as OS 'Open Space'. Refer to **Figure 3.2**, Section 3.5.2, Chapter 3.

There is a concentration of industrial activity in this area, with industrial estates in neighbouring areas at Damastown and Tyrrelstown, including a number of SEVESO III sites, as detailed in **Section 2.5.1** (Major Accidents and Disasters). There is a hub of commercial and community amenities (including large grocery stores, medical clinic, pharmacy, restaurants, church, bank and crèche) immediately south-east of the proposed development at Tyrrelstown Local Centre, situated immediately south of the location of the proposed Kilmartin Local Centre (the application was granted permission on 9 June 2023 by Fingal County Council and subject to 30 no. conditions and the application is currently under appeal).

Chapter 16 (Traffic & Transportation) details the existing transport infrastructure at the location of the proposed development. To summarise, the location is well served by the existing road network, which features pedestrian and cycle infrastructure of the R121 and 'The Avenue'. The latter is constructed for an approximate length of 380m and currently serves as the access route to Le Chéile Secondary School and access into the Bellingsmore residential development. In terms of public transportation, there are existing public bus services in the vicinity which currently service Tyrrelstown Local Centre south of the proposed development site, providing access to-and-from Blanchardstown, Dublin City Centre and Broombridge (Dublin Bus routes 40d and 40e; Go-Ahead routes 236, 236/a and 238). A search on Google Maps (© 2023) indicates that it would take approximately one hour to get from the location of the proposed development into the city centre and that this might entail changing public transport services / routes along the way. CSO 2016 Census data indicate a high modal share of private car use in the area, with relatively low rates of walking, cycling and public transport use (**Figure 7.2**).

Figure 7.2 Population aged 5 years and over by means of travel to work, school or college- Ward ED, 2016 (CSO, 2017)



7.3.3 Economic Activity and Employment

As stated above, the nearest major commercial centres are at Mulhuddart and Blanchardstown, c. 2 km and 3.5 km to the south, respectively. These are centres of employment, as is Dublin City, c. 13 km south-east – a c. 30 minute drive (traffic depending) or approximately one hour by bike or public transport.

As stated previously, there is a concentration of industry in the local area, with a number of industrial estates / business parks; including Ballycoolin, Millennium, Rosemount, Northwest, Premier, Plato, ADSIL, Huntstown and Damastown Technology / Business Parks, and Damastown and Blanchardstown Industrial Parks. As stated in the Fingal Development Plan 2023 – 2029:

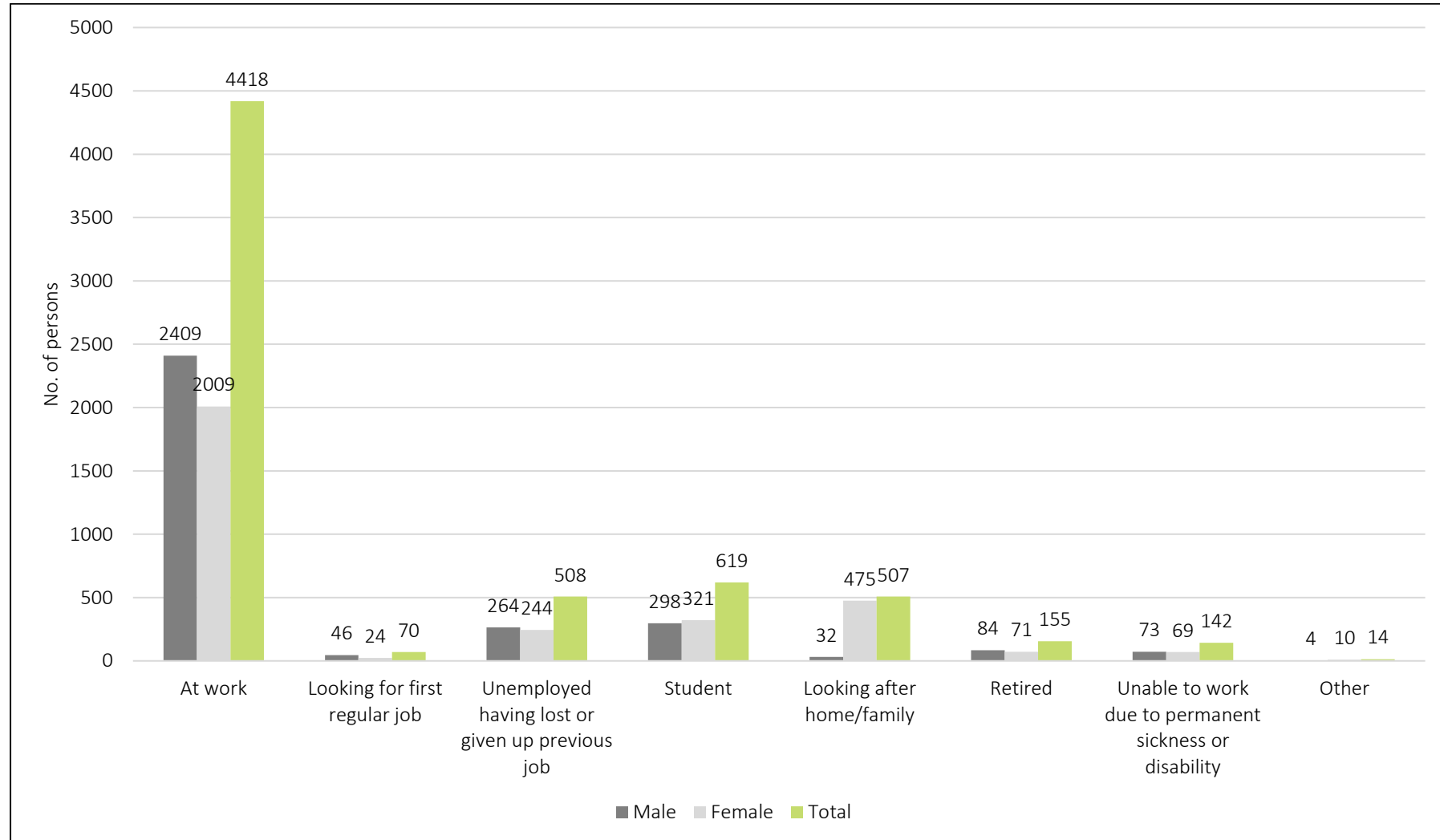
“The Dublin Enterprise Zone or DEZ is an area of around 1571 hectares, located in Blanchardstown, Dublin 15 and is home to a variety of industries from R&D, High-Tech Manufacturing, Industrial, General Enterprise and Employment. While half of the Dublin Enterprise Zone has been developed, there is the potential to create an additional 20,000 jobs on the 716 hectares of undeveloped, zoned and serviced land available in the Zone.” (p. 263).

It is noted in the Development Plan that-

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

The CSO census data for 2016 indicates a rate of employment in the ED that is within a normal range (Figure 7.3).

Figure 7.3 Principal economic status- Ward ED, 2016 (CSO, 2017)



7.3.4 Tourism and Amenity

There is a hotel in the vicinity, the Carlton Hotel Blanchardstown, which is c. 900 m south-east of the site of the proposed development in close vicinity of the Tyrrelstown Local Centre. But, generally speaking, the location of the proposed development is not an important area in terms of tourism, with no major attractions in the locality.

7.3.5 Community Infrastructure

For the purposes of the proposed development, BSM has prepared a Social Infrastructure and Childcare Demand Analysis Report. These have been submitted under separate cover as part of the planning application. The Social Infrastructure and Childcare Demand Analysis Report has determined that within the 2km catchment area there are 12no. childcare facilities. Furthermore, there are 4no. primary schools (St. Luke's National School, Tyrrelstown Educate Together National School, Gaelscoil an Chuilinn, Powerstown Educate Together National School) within the 2km catchment area and 5 no. secondary schools (Le Chéile Secondary School, Rath Dara Community College, Blakestown Community School, Hartstown Community School, Coláiste Pobail Setanta) within the 5km catchment area.

The Tyrrelstown Park and GAA pitches and Tyrrelstown Cricket Club Ground are c. 100m to the south of the proposed development and Tyrrelstown Community Centre is c. 650m to south-east. The **Table 7.2** below provides an overview of the community infrastructure in the area. Healthcare facilities are addressed in the following section.

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

Type	Name	Distance
Community Centre	Tyrrelstown Community Centre	c. 0.65km
	Mulhuddart Community Centre	c. 2.53km
	Corduff Community Resource Centre	c. 3.22km
	Huntstown Community Centre	c. 3.12km
	Castaheany Community Centre	c. 3.55km
Post office	An Post Mulhuddart	c. 2.83km
Bank	Allied Irish Bank Blanchardstown	c. 4.0km
	Bank of Ireland Blanchardstown	c. 5km
ATM	Allied Irish Bank ATM Tyrrelstown	c. 800m
Local Centre	Tyrrelstown Local Centre	c. 650m
Retail Centre	Blanchardstown Retail Centre	c. 3.5km
Library	TU Dublin Blanchardstown	c. 2.64km
Credit Union	Community Credit Union	c. 3.5km

7.3.6 Human Health

The Department of Health's 2022 report, *Health in Ireland – Key Trends 2022*, provides summary statistics on health and health care in Ireland over the past ten years. The report highlights the following key trends:

- Ireland has the highest self-perceived health status in the EU, with 82.1% of people rating their health as good or very good;
- The population in Ireland has grown by 10.5% since 2013 and the largest change was seen in the over 65 age group which increased by 35% between 2013 and 2022;
- The mortality rates have declined 16% since 2012. The mortality rates due to cancer, circulatory system diseases, ischaemic heart diseases and respiratory diseases have declined by 15%, 34%, 38% and 32%, respectively;
- Life expectancy has improved in Ireland since the past decade and has increased by almost two years since 2010. The female life expectancy in Ireland has matched the EU average and male life expectancy in Ireland has been above the EU average over the past decade;
- Over the past decade, both cigarette and alcohol consumption has declined. The alcohol consumption has declined at a slower rate than cigarette consumption.

At the national level, population health presents a picture of decreasing mortality rates and high self-perceived health over the past ten years. Ireland has the highest self-perceived health status in the EU, with 82.1% of people rating their health as good or very good. In 2021, 81.7% of males and 81.3% females rated their health as being good or very good. However, health status reflects income inequality, people in higher income brackets tend to report better health than those in lower income brackets.

Ireland has a lower infant mortality rate than the EU average over the last decade. Infant mortality, measured as deaths per 1,000 live births, has also decreased by 14.3% since 2011 and remains below the EU average. In 2021, the number of live births have increased by 4.4% since the previous year. Overall, the number of live births has fallen each year between 2012 and 2020 and increased from 2020 to 2021. The 'Total Fertility Rate' for Ireland is at 1.7 and has decreased in the recent years.

Provisional data for 2021 shows a slight decrease of 2.5% in the overall mortality rate over the previous year. The increase in life expectancy is due to significant reductions in major causes of death such as circulatory system diseases and cancer. In Ireland, the suicide rates have decreased by 32.6% since 2012 and has been down by 15.1% between 2020 and 2021. Both in Ireland and EU, males have a higher suicide rate than females. However, the latest figures show that Ireland's three-year moving average for male suicide deaths have fallen below the EU average. However, it should be noted that improvements in mortality rates and high levels of self-rated health can mask variations between regions, age groups and other population subgroups. Rates of cigarette smoking have decreased since 2001, and alcohol consumption has also decreased over the same period, although not as dramatically.

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

of economic hardship. Occupational health and safety risks to construction site personnel are also inherent where demolition and construction works are proposed.

The baseline environments in terms of air, surface water and groundwater / soil are detailed in Chapter 11 (Air Quality & Climate), Chapter 10 (Hydrology), Chapter 9 (Land, Soils, Geology & Hydrogeology), and Chapter 15 (Microclimate: Daylight and Sunlight) respectively. The risks of accidents and disasters are addressed, where relevant, in the various specialist chapters herein. Flood risk, for instance, is addressed in Chapter 10 (Hydrology); while geohazards are addressed in Chapter 9 (Land, Soils, Geology & Hydrogeology). Potential health risks associated with industrial hazards are addressed below.

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

There are a range of healthcare facilities in the vicinity of the proposed development, including Hickey's Pharmacy Tyrrelstown, Oakland Clinic and Tyrrelstown Medical Centre Centric GP (Primacare), all at the Tyrrelstown Local Centre, c. 650m to the south-east. The nearest public hospital is Connolly Hospital, Blanchardstown, a major teaching hospital, whose services include a 24-hour Emergency Department, acute medical and surgical services, acute psychiatric services, day care, out-patient care; and diagnostic, therapeutic and support services. **Table 7.3** lists healthcare facilities in the vicinity of the proposed development site.

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

Type	Name	Distance
Pharmacy	Hickey's Pharmacy Tyrrelstown	c. 650m south-east
	Allcare Pharmacy Mulhuddart	c. 2.3km south
	Touchstone Pharmacy Mulhuddart	c. 2.7km south
	Complete Care Pharmacy Mulhuddart	c. 2.8km south
Physiotherapy	Physio Rooms	c. 2.7km south-west
	DM Physio	c. 4km south-west
	Dublin Physiotherapy Clinic	c. 4.3km south-east
Dental Clinic	Oakland Dental Clinic	C. 650m south-east
Medical Centre	Tyrrelstown Medical Centre Centric GP (Primacare)	c. 650m south-east
	Oakland Clinic	c. 650m south-east
	Riverside Medical Centre	c. 2.5km south
	Alfa Medics Mulhuddart	c. 2.7km south
	Corduff Health Centre	c. 3.3km south-east
Hospital	Connolly Hospital, Blanchardstown	c. 4.3km south-east

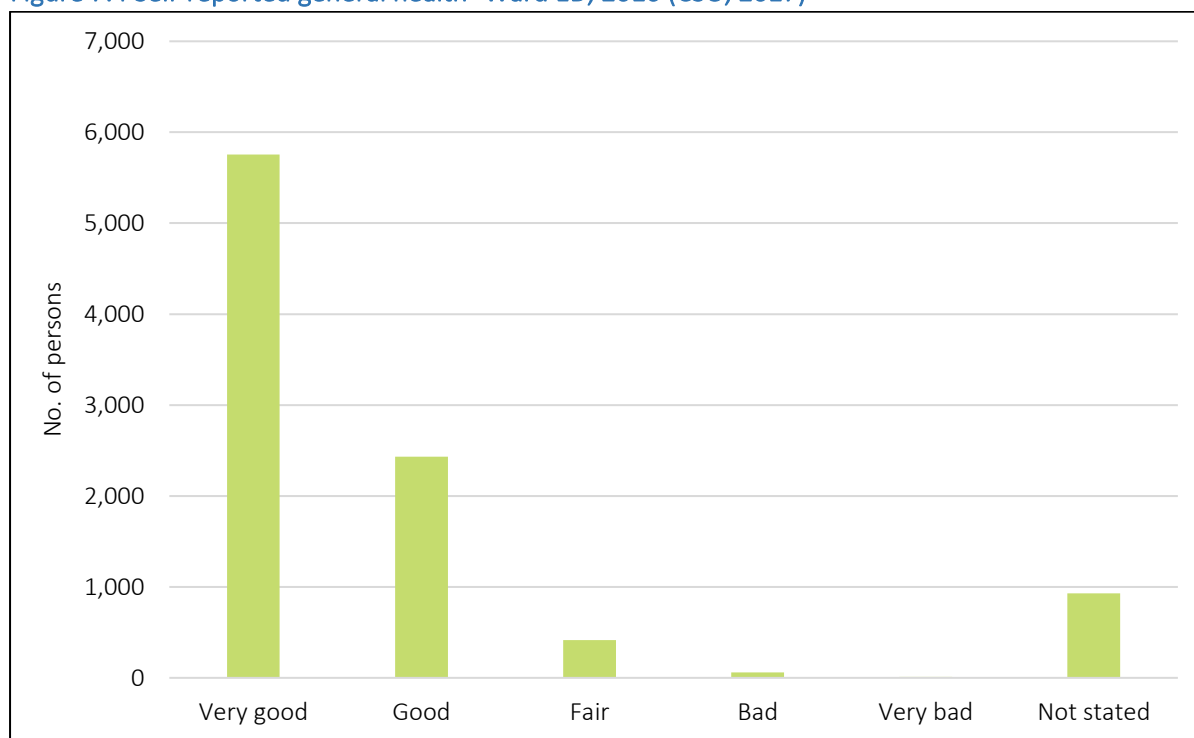
Type	Name	Distance
Optician	Specsaver Opticians and Audiologists	c. 3.5km south
	Mairead O’Leary Opticians	c. 3.5km south
	Vision Express Opticians	c. 3.5km south

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

Dublin Airport is a c. 6.5 km linear distance from the site of the proposed development, and the location of the proposed development is situated underneath a departure flight path (Dublin Airport Authority (DAA), 2016). The Fingal Development Plan 2023 – 2029 sets out the noise zones and policy objectives in relation to aircraft noise from Dublin Airport. Four noise zones are indicated (A – D), representing increasing site exposure to aircraft noise. It is the policy of the Council to actively resist residential development within Zone A, and resist in Zones B and C pending independent acoustic advice and mitigation measures. Certain specific residential developments located in Zone D may be required to demonstrate that aircraft noise intrusion has been considered in the design. **Table 12.8** in Chapter 12 of this EIAR (Noise & Vibration) sets out the objectives to be adhered to by applicants for developments in relevant noise zone. The proposed development site falls wholly within Noise Zone B, for which the corresponding objective is to *“manage noise sensitive development in areas where aircraft noise may give rise to annoyance and sleep disturbance, and to ensure noise insulation is incorporated within the development”*. For further information in this regard, refer to Chapter 12 (Noise & Vibration).

Figure 7.4 presents the self-reported health status of the population in The Ward ED, as reported in the 2016 Census. While the data are self-reported and, therefore, do not provide an entirely accurate picture of the health profile of the area, they do indicate a relatively high level of individual wellbeing in the area.

Figure 7.4 Self-reported general health- Ward ED, 2016 (CSO, 2017)



7.4 Predicted Impacts of the Proposed Development

7.4.1 Do-Nothing Impact

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

- (a) A continuation of the existing status and use of the lands (predominantly disused agricultural land and former golf course lands); or
- (b) Development (likely residential as per the Fingal Development Plan 2023-2029 zoning objectives) under the scope of a separate proposal and application at some point in the future.

Under scenario (a), no significant impacts would arise in relation to population and human health locally. In the context of the ongoing housing crisis in the Dublin Metropolitan Area (DMA), this scenario is considered to represent a socially suboptimal use of the Hollystown-Kilmartin Site 4 development lands. The opportunity cost, in this scenario, would include the 580no. residential units proposed and the accommodation that these would otherwise provide.

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

7.4.2 Construction Phase

The duration of the construction phase is anticipated to be in the range of c. 42 months. As such, associated effects are expected to be short-term in duration, at worst. During this time, there will be no community severance, loss of rights of way or amenities as a result of the proposed development.

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

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

These are considered in the following sections.

7.4.2.1 Air Quality & Climate

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

The German TA-Luft standard for dust deposition (non-hazardous dust) (German VDI, 2002) sets a maximum permissible emission level for dust deposition of 350 mg/(m²*day) averaged over a one month period at any receptors outside the site boundary. Recommendations from the Department of the Environment, Health & Local Government (DoEHLG, 2004) apply the Bergerhoff limit value of 350 mg/(m²*day) to the site boundary of quarries.

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

Chapter 11 (Air Quality & Climate) has rated the sensitivity of the area to dust soiling is considered medium and the sensitivity of the area to human health is considered low. Chapter 11 (Air Quality & Climate) states that there is an overall medium risk of dust soiling impacts and a low risk of dust-related human health impacts as a result of the proposed construction phase (earthworks, construction and trackout) in the absence of mitigation. There will also be requirement for HGV trucks to remove the surplus soil material off-site, which will generate fugitive dust emissions as a result of the transfer of the excavated materials comprised principally of soils and stones from stockpile to truck. The movements of construction vehicles on the site and off-site shall also generate wind-blown dust emissions. Furthermore, construction traffic to and from the site shall result in a short-term increase in

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

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

There is the potential for release of a number of greenhouse gas emissions to atmosphere during the construction of the proposed development. As detailed in Chapter 11, the impact of the proposed development in relation to GHG emissions prior to mitigation measures being put in place is considered *short-term, adverse and significant*. There is also potential for impacts due to climate change on the proposed development. As detailed in Chapter 11, in relation to climate change vulnerability, as the construction phase is not within the timescale where the worst of climate change is proposed to have occurred. The impact of the proposed development in relation to construction phase climate vulnerability emissions is therefore considered *short-term, minor adverse and not significant*.

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

7.4.2.2 Noise and Vibration

Chapter 12 (Noise & Vibration) has assessed the potential noise and vibration impacts of the proposed development during the construction phase in relation to construction activities, plant and equipment, and construction traffic.

The closest NSLs to the proposed development are residential dwellings proposed within the adjacent Sites 2 and 3 of Hollystown Residential development (NSL1), located to the east of the proposed development at distances of between 35 and 40m from the closest site works. Other adjacent sensitive locations are at Hollystown Park to the north of the site (NSL2) at a distance of approximately 50m from the closest site boundary and approximately 100m from the closest proposed buildings. To the south-east, the closest NSL is the Le Chéile Secondary School at a distance of approximately 100m from the closest site boundary and development buildings (NSL3). To the north-east of the construction haul route, the closest residential NSL (NSL4) is located on the Ratoath Road, at a distance of approximately 100m from the redline boundary. **Figure 12.5** in Chapter 12 illustrates the closest noise sensitive locations to the development site and illustrates the approximate boundary of the site.

For the purposes of the noise impact assessment, 'Category A' noise threshold level with threshold value of 65 dB(A) will be applied to the nearest noise sensitive locations. In the absence of mitigation, the construction phase activities such as site clearance, excavation and road works will have be *negative, slight and short-term* at distances of 50m and beyond. For noise sensitive receptors within 50m of the works to the east the impact will be *negative, moderate and short-term*.

In relation to construction vibration, the assessment has determined that the low vibration levels at very close distances to the piling rigs, vibration levels at the nearest off-site buildings will be orders of magnitude below those associated with building response or human response to vibration as referred to in **Table 12.4** and **Table 12.5** (Chapter 12). Accordingly, the predicted vibration impact during the construction phase is *neutral, imperceptible and short-term impact*.

All construction HGV traffic for the required works will enter the site via a haul route accessed from Ratoath Road and the former Hollystown Golf Club entrance. Ancillary access for non-HGV construction traffic will also be possible via The Avenue (south of the existing Bellingsmore development and through Sites 2&3). Ratoath Road will be the primary haul route, while The Avenue will be a secondary access

route to the construction site. As per the noise impact assessment in Chapter 12, the overall impact at properties along the road edge within the completed Site 3 and at NSL4 is determined to be ***negative, slight to moderate and short-term***.

Along the surrounding road network, in the overall context of the noise environment along the R121 and wider road network in the vicinity of the proposed development, based on the forecasted peak construction HGV traffic, the increase in traffic volumes along the local road network an increase in baseline noise level in the range of 0.3 – 2.7 dB is predicted. Therefore, the short-term noise environment assumed for this project is expected to be above the baseline scenario but below the construction noise threshold outlined in Section 12.2.1, which would give a magnitude of increase in traffic noise that is ***negative, imperceptible to slight and short-term***.

7.4.2.3 Traffic

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

All construction HGV traffic for the required works will enter the site via a haul route accessed from Ratoath Road and the former Hollystown Golf Club entrance. Ancillary access for non-HGV construction traffic will also be possible via The Avenue (south of the existing Bellingsmore development and through Sites 2&3). Ratoath Road will be the primary haul route, while The Avenue will be a secondary access route to the construction site. The construction compound will be located within the extents of the subject site. Warning signage will be provided at both haul route locations for pedestrians and other road users on all approaches in accordance with Chapter 8 of the Traffic Signs Manual and the Contractor's Traffic Management Plan.

A significant benefit of the development site's characteristics is that all construction traffic vehicle parking demands can be accommodated on-site thereby minimising the impact upon the operational performance and safety levels of the adjacent public road network.

Chapter 16 (Traffic & Transportation) has assessed the potential impacts of the proposed development in this regard, and concluded that following the implementation of an appropriately detailed Construction Traffic Management Plan construction traffic will ***not give rise to any significant*** traffic concerns or impede the operational performance of the local road network, including junctions.

7.4.2.4 Landscape and Visual Impacts

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

Chapter 13 (Landscape & Visual) has assessed the impacts of the proposed development in this regard. It states that potential landscape and visual impacts from the construction phase are associated with:

- Site-based landscape disturbance, earthworks, stockpiling of soils and materials;

- Removal of trees / hedgerows;
- General construction activity and traffic; and
- Inconvenience and / or visual effects from dust, dirt and noise.

Chapter 13 has concluded that, in the absence of mitigation, the worst-case impacts in this regard are predicted to **significant, negative, short-term**. Corresponding mitigation measures have been set out, and are discussed below.

7.4.2.5 Waste Management

Incorrect management of waste material during the construction phase can result in littering, presence of vermin and / or pollution, with associated potential for negative impacts on human health and residential amenity. Chapter 17 (Material Assets – Waste) assesses the impacts of the proposed development in this regard. In the absence of proper waste management procedures (e.g. littering or use of non-permitted waste contractors / facilities), a **negative, significant and short-term impact** is predicted. Corresponding mitigation measures have been proposed in Chapter 17, and are discussed in Section 7.5, below.

7.4.2.6 Interruptions to Services

As detailed in Chapter 18, works to existing utilities infrastructure will be required during the construction phase to provide connections to the proposed development. Such works have the potential to result in interruptions to supply / services in neighbouring areas, e.g. power outages. All works will be carried out in a strictly controlled and coordinated manner, in accordance with the relevant standards and codes of the respective service providers / authorities (i.e. Uisce Éireann, ESB, GNI, Eir, Virgin Media), in order to avoid / minimise interruptions insofar as practicable. In the absence of mitigation measures **negative, slight and short-term impacts** are predicted in relation to built services or infrastructure during the construction phase.

7.4.2.7 Daylight and Sunlight

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

7.4.2.8 Economic Impacts

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

Significant negative economic impacts are not expected to occur as a result of the proposed works, considering that there are relatively few commercial businesses in areas immediately adjacent to the site (with the exception of the Local Centre area), access and egress will be maintained to local

businesses throughout, and standard best practice measures (including good housekeeping) will be implemented throughout.

7.4.3 Operational Phase

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

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

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

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

7.4.3.1 Air Quality and Climate

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

Furthermore, Chapter 11 has considered the following climate hazards in the context of the proposed development: flooding (coastal, pluvial, fluvial); extreme heat; extreme cold; wildfire; drought; extreme wind; lightning, hail, landslides and fog. It has been assessed that there is a medium risk as a result of future climate change hazards. However, the above accounts for embedded design mitigation being put in place. Without this mitigation in place, the impact of the proposed development in relation to climate vulnerability emissions is considered ***long-term, adverse and significant***.

In addition, the proposed development has been designed to reduce the impact to climate where possible (see the project Energy Analysis Report prepared by IN2 Engineering Partnership (2023) for full details).

7.4.3.2 Noise and Vibration

During the operational phase, the proposed development will generate noise typical of a development of this nature and scale. The main potential noise impact associated with the proposed development is considered therefore to relate to the generation of additional traffic to and from the site as a result of the new residential element. This is largely due to the existing volume of traffic along the surrounding road network onto which the development traffic will travel. As described in Chapter 12 (Noise and

Vibration), the calculated change in traffic noise associated with the addition of development related traffic is less than 2 dB (A) during the Future Design Year. The resultant impact will be **neutral, imperceptible to non significant and long-term**.

There are no sources of mechanical or electrical plant associated with the building types across the development with potential to emit audible noise levels beyond the site boundary at off-site noise sensitive locations. Once the relevant noise criteria are not exceeded within the proposed development, the related noise impact to existing noise sensitive locations offsite will be **neutral, imperceptible and long-term**.

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

The operational phase noise impact assessment also included inward noise impact assessment, particularly with regard to aircraft noise from Dublin Airport. An Acoustic Design Statement (ADS) has been prepared in accordance with the *Professional Practice Guidance on Planning & Noise* ('ProPG') for new residential development (ANC, IOA & CIEH, 2017). The ADS used the noise maps produced by Fingal County Council and the Dublin Airport Authority (daa) in accordance with the European Noise Directive; and the noise zone contours produced by Fingal County Council for the future operation of the airport, including the north runway; to determine the existing and future inward noise impact of the airport on the proposed development site. The initial site noise risk assessment has concluded that the level of noise risk across the site is 'medium'. ProPG states the following with respect to the level of risk:

- **Medium Risk:** *"As noise levels increase, the site is likely to be less suitable from a noise perspective and any subsequent application may be refused unless a good acoustic design process is followed and is demonstrated in an ADS which confirms how the adverse impacts of noise will be mitigated and minimised, and which clearly demonstrate that a significant adverse noise impact will be avoided in the finished development."*

Based on the ProPG guidance, in practice, good acoustic design (GAD) should deliver the optimum acoustic design for a particular site without adversely affecting residential amenity or the quality of life of occupants or compromising other sustainable design objectives.

Due to the height at which aircraft noise will be incident to the proposed development, an acoustic barrier or similar would not be an effective or appropriate mitigation measure in this case. External amenity areas and external spaces (e.g. balconies) located in Zone B will be subject to noise levels above the desirable threshold of 55 dB LAeq,16hr provided in the ProPG. For residential units where it will not be possible to achieve a desirable internal acoustic environment with windows open in Zone B, it is proposed to provide enhanced acoustic glazing and acoustic attenuated passive ventilation such that when windows are closed, a good internal acoustic environment is achieved.

The ADS has concluded that *"Considering the constraints of the site, in so far as possible and without limiting the extent of the development area, the principles of GAD have been applied to the proposed development"*.

Significant negative human health impacts are not likely to occur as a result of inward noise impacts (e.g. due to aircraft noise) during the operational phase. Taking into consideration the subjective nature of noise nuisance impacts, the residual inward impact on the proposed development is expected to be **neutral, not significant and long-term**.

7.4.3.3 Traffic

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

Chapter 16 (Traffic & Transportation) has assessed the potential impacts of the proposed development in this regard, taking account of future trip generation of other committed residential developments in the locality; namely the Hollystown Site 1 (Planning Reg. Ref. FW21A/0042), permitted Hollystown Sites 2 and 3 & Kilmartin Local Centre – Residential Development (ABP Ref:TA06F.312271), proposed Tyrrelstown Local Centre (Ref: FW22A/0169), Kilmartin LAP- proposed secondary school and primary school facilities, permitted Primary School, Hollyswoodrath Avenue/Bay Meadows Avenue (FW22A/0263).

Traffic modelling was carried out of the impacts of operational traffic flows on the five key junctions on the surrounding road network, as detailed in Chapter 16. All junctions were analysed to be within capacity during the Opening Year (2024) as well as the Future Design Years (2029 and 2039). Prior to mitigation during the operational phase, impacts are considered in the range of ***slight to moderate*** during the AM peak period and ***slight to not significant*** during the PM peak. Junction impacts are between the negative-low to negative-medium in terms of the quality and the scale during both peak periods.

7.4.3.4 Landscape and Visual Impacts

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

Chapter 13 (Landscape & Visual) has assessed the impacts of the proposed development in this regard. It states that potential landscape and visual impacts from the operational phase are associated with:

- Design, character and quality of proposed buildings;
- Design, amenity and quality of proposed open spaces; and
- Overall quality of finish and management of development.

It has concluded that, in the absence of mitigation measures, the worst-case landscape and visual impact is predicted to be ***moderate / significant, negative, long-term***. Corresponding mitigation measures have been set out, and are discussed below

7.4.3.5 Waste Management

Incorrect management of waste material during the operation phase can result in littering, presence of vermin and / or pollution, with associated potential for negative impacts on human health and residential amenity. Chapter 17 (Material Assets – Waste) assesses the impacts of the proposed development in this regard. In the absence of proper waste management procedures (e.g. littering or use of non-permitted waste contractors / facilities), a ***negative, significant and long-term impact*** is predicted. Corresponding mitigation measures have been proposed in Chapter 17, and are discussed in Section 7.5, below.

7.4.3.6 Daylight and Sunlight

The unit types that include shared access, such as Apartments, Maisonettes, and Duplexes, are required to be assessed for internal daylight and sunlight. The CH type units (Courtyard Houses), due to their innovative design, were also assessed to show exemplar performance. The internal daylight analysis has been undertaken for aforementioned units, assessing both KLD and bedroom spaces for SDA. The analysis determined that 100% of rooms assessed were in excess of the BRE Guidelines for Spatial Daylight Autonomy (SDA). Daylight assessment of courtyard house typology was also undertaken due to their unique arrangements, and Maisonettes were assessed because they comprise apartments that share common access. The daylight results indicate a 100% compliance rate across the entire scheme, negating the need for any compensatory measures. **No significant negative impacts** are predicted during the operational phase. The overall impact in this regard is predicted to be **permanent, neutral and imperceptible**.

Annual sunlight availability was analysed for the public and communal open spaces of the proposed development, calculating the extent of each area that can receive at least 2 hours of potential sunlight on 21st March. The proposed public open space was found to receive excellent overall sunlight availability. The results demonstrate each of the amenity open spaces easily achieve compliance with the BRE guidance, with 100% of amenity open space across the site receiving two hours or more of sunlight on 21st March and the shared residential amenity spaces for the Apartment, Duplexes and Later Living Units (Bungalow, H1 & H2 types) were all fully compliant. **No significant negative impacts** are predicted during the operational phase. The overall impact in this regard is predicted to be **permanent, neutral and imperceptible**.

An analysis was undertaken for Apartments, Maisonettes, and Duplexes, and CH type units of the proposed to assess the exposure to sunlight that each unit can receive based on the BRE guidelines. The assessment determined that 100% of the assessed units would exceed the minimum guideline recommendations. **No significant negative impacts** are predicted during the operational phase. The overall impact in this regard is predicted to be **permanent, neutral and imperceptible**.

7.4.3.7 Economic Impacts

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

Additionally, the proposed development is expected to increase the local population by the order c. 1358 persons⁹, creating additional demand for goods and services in the local area, benefitting local businesses and resulting in a **positive, moderate and long-term** socioeconomic impact.

The proposed development will provide a large number (580 no.) new, high-quality homes at Hollystown-Kilmartin Site 4, of which c. 10% each will be affordable and social housing. In the context of an ongoing housing crisis in Dublin, the predicted impact is **moderate to significant and positive** at the scale of the metropolitan area.

At the same time, a substantial new residential population can place strain on the capacity of existing infrastructure, goods, services and amenities in an area. In this regard, Social Infrastructure and Childcare Demand Analysis report has been prepared and submitted under separate cover as part of

⁹ Assuming occupancy rates of 1.5 persons per 1-bed or 2-bed unit, and 3.5 persons per 3-bed or 4-bed unit.

the planning application. The assessment concluded that there is sufficient infrastructure in the area to meet the resultant demand for school places and community amenities. ***Significant negative impacts are not predicted*** in this regard.

7.5 Mitigation Measures

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

7.5.1 Construction Phase

- A Construction and Environmental Management Plan (CEMP) has been prepared in respect of the proposed development by DBFL Consulting Engineers (2023) (refer to document submitted under separate cover). The CEMP will remain a 'live document' and will be further updated by the Contractor (subject to planning approval) in advance of the proposed works, in agreement with Fingal County Council. The CEMP will be fully implemented throughout the proposed works. It will set out the measures to be implemented during the proposed works to mitigate potential impacts on the environment and local population, e.g. measures in relation to good housekeeping, site hoarding and security, traffic management, pollution control and safety;
- A Community Liaison Officer (CLO) will be appointed by the contractor for the duration of the construction phase. They will be responsible for keeping the local community and businesses informed of the timing and duration of potentially disruptive works, and for receiving and addressing concerns of local residents and businesses in relation to the proposed works;
- Chapter 11 (Air Quality & Climate) includes a suite of mitigation measures to minimise air quality (including dust) impacts during the construction phase. Dust Management Plan included in **Appendix 11.1**, shall be finalised by the appointed contractor in agreement with Fingal County Council, and implemented during the proposed works;
- Chapter 12 (Noise & Vibration) includes a suite of mitigation measures to minimise noise impacts during the construction phase. Mitigation measures are included in relation to selection of quiet plant, noise control at source, screening, adherence to noise limits, community liaison and project programme / phasing;
- Chapter 13 (Landscape & Visual) includes a number of mitigation measures to minimise the impacts of the proposed works on landscape and visual amenity. These include measures in relation to site screening and tree protection;
- Chapter 16 (Traffic & Transportation) includes a suite of measures in relation to construction traffic and parking management to minimise the impacts of construction traffic on the local community and the operation of the existing road network in the area. It requires the implementation of a Construction Traffic Management Plan, to be prepared by the appointed contractor during pre-construction phase in agreement with Fingal County Council;

- Chapter 17 (Material Assets - Waste) includes a suite of measures in relation to management of construction waste to minimise the impacts of all site construction activities. A Resource and Waste Management Plan prepared as part of the application shall be implemented throughout the construction phase of the proposed development;
- Chapter 18 (Material Assets – Services) includes a suite of measures in relation to management of services in the vicinity of the works and regard shall be had to the Gas Networks Ireland *Guidelines for Designers and Builders – Industrial and Commercial (Non-Domestic) Sites (2018)*, the Health & Safety Authority (HSA) *Code of Practice for Avoiding Danger from Underground Services (2016)*, and the ESB Networks & Health and Safety Authority *Code of Practice for Avoiding Danger from Overhead Electricity Lines (2019)*.

7.5.2 Operational Phase

- Chapter 16 (Traffic & Transportation) includes a suite of measures in relation to mobility management and car parking management during the operational phase. It requires the implementation of a Mobility Management Plan, to encourage sustainable travel patterns among residents of the proposed development;
- Chapter 13 (Landscape & Visual) includes a number of mitigation measures to minimise the impacts of the proposed works on landscape and visual amenity. These include measures in relation to good quality architectural design, provision of open spaces, retention, enhancement and management of existing hedgerows, enhanced and additional tree planting etc;
- Chapter 11 (Air Quality & Climate) includes a suite of mitigation measures to minimise future climate change impacts during the operational phase. These measures have been incorporated into the design of the development to mitigate against the impacts of future climate change. For example, adequate attenuation and drainage have been incorporated into the design of the development to avoid potential flooding impacts as a result of increased rainfall events in future years. The proposed development has been designed to reduce the impact on climate as a result of energy usage during operation;
- Chapter 17 (Material Assets- Waste) includes a suite of measures in relation to management of operational phase waste to minimise the impacts of the operational phase of the proposed development. An Operational Waste Management Plan prepared as part of the application shall be implemented throughout the operational phase of the proposed development.

7.6 Residual Impacts

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

The implementation of the mitigation measures set out in Chapter 12 (Noise & Vibration) will ensure that noise impacts are minimised. Nevertheless, assuming a worst-case scenario, the potential persists

for ***neutral to negative, imperceptible to moderate*** and ***short-term*** at the closest noise sensitive locations during the construction phase and the residual inward impact on the proposed development is expected to be ***neutral, not significant*** and ***long-term*** during the operational phase.

The implementation of the mitigation measures set out in Chapter 11 (Air Quality & Climate) will ensure that air quality and climate impacts are minimised. However, the predicted residual air quality impacts during the construction phase are ***short-term, direct, negative, localised*** and ***imperceptible*** and dust-related, human health residual impact during the construction phase of the proposed development is ***negative, direct, short-term*** and ***imperceptible***. The predicted residual air quality impacts during the operational phase as a result of increased traffic volumes will be ***localised, neutral, direct, imperceptible*** and ***long-term*** and residual impacts to human health related to air quality will be ***long-term, neutral, direct*** and ***imperceptible***. The predicted residual impact of the proposed development in relation to greenhouse gas emissions is considered ***long-term, minor adverse and not significant*** and predicted residual impact development in relation to construction phase climate vulnerability emissions is therefore considered ***short-term, minor adverse and not significant***. The predicted operational phase residual impact in relation to GHG emissions is considered ***long-term, minor adverse and not significant*** and in relation to climate vulnerability emissions is therefore considered ***long-term, minor adverse and not significant***.

Furthermore, implementation of mitigation measures in Chapter 13 (Landscape and Visual) will ensure that noise impacts are minimised. The construction phase will result in a change from areas of open land of former agricultural and amenity uses to a built-up area of mainly residential development with some open space and amenity provision. The residual landscape effects resulting from the construction stage would be slight to ***moderate, negative and short-term***. The residual visual effects resulting from the construction stage would be ***moderate, negative, short-term***.

7.7 Monitoring

Monitoring and maintenance recommended in Chapters 11 (Air Quality & Climate), 12 (Noise & Vibration), 16 (Traffic & Transportation), 17 (Material Assets - Waste) and 18 (Material Assets – Services) shall be implemented in full during the construction and / or operational phases of the proposed development, as specified in those respective chapters. Beyond that which has been recommended elsewhere in this EIAR, no additional monitoring is considered necessary in respect of population and human health.

7.8 Interactions

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

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

Air Quality & Climate (Chapter 11)

There is potential for nuisance impacts on the local receptors due to dust-generating activities of proposed development during construction phase. With appropriate mitigation measures in place the interaction will be **negative, imperceptible and short-term impact**. During operation phase of the proposed development the predicted impact on population and health due to air quality and climate will be **long-term, imperceptible and neutral**.

Noise & Vibration (Chapter 12)

The interaction between population and human health and noise and vibration during construction phase is due to potential nuisance and disturbance due to noisy construction activities, plant and equipment and construction traffic noise. Appropriate mitigation measures will be implemented in this regard. The predicted impact will be **negative, slight to moderate and short-term** at the closest noise sensitive locations.

During the operational phase there is potential for nuisance and disturbance due to the operation of Dublin Airport and potential disturbance due to additional operational phase traffic. With appropriate mitigation measures in place, the predicted impact due to interaction between population and human health and noise and vibration will be **neutral, not significant and long-term**.

Landscape & Visual (Chapter 13)

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

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

Traffic & Transportation (Chapter 16)

There is potential for impacts on population and human health during the construction phase due to negative impacts on journey characteristics due to additional (construction) traffic on road network and the potential for nuisance and disturbance due to construction traffic noise. With appropriate mitigation measures in place such as warning signage and designated haul route for HGVs the predicted impact will be **neutral, slight and short-term**.

During the operational phase there is potential for negative impacts on population and human health due to journey characteristics and additional traffic on road network during the operational phase and potential for nuisance and disturbance due to operational traffic noise. With appropriate mitigation measures in place the predicted impact will be **neutral, imperceptible to slight and long-term**.

Microclimate- Daylight & Sunlight (Chapter 15)

There is potential impacts due to changes to daylight and sunlight availability on the population and human health e.g. overshadowing of neighbouring buildings, can negatively or positively affect residential amenity in the receiving environment. Following the BRE Guide's recommendations for essential daylight and sunlight, internal daylighting is required to meet more than 50% of the targeted illuminance in lux throughout the year. In terms of sunlight, each unit needs to receive over 1.5 hours of sunlight on March 21st. As detailed above, 100% of rooms assessed were in excess of the BRE Guide

recommendation for daylight and also 100% of the assessed units exceeded the minimum guideline recommendation. The results demonstrate each of the amenity open spaces easily achieve compliance with the BRE guidance, with 100% of amenity open space across the site receiving two hours or more of sunlight on 21st March and the shared residential amenity spaces for the Apartment, Duplexes and Later Living Units (Bungalow, H1 & H2 types) were all fully compliant. No impacts to neighbouring residential areas are predicted, and the proposed development itself will provide well-lit homes and amenity areas.

Material Assets- Waste (Chapter 17)

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

Material Assets- Services (Chapter 18)

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

7.9 Cumulative Impacts

The potential for cumulative impacts to arise as a result of the proposed development in combination with other existing / proposed plans and projects, as listed in **Table 20.1** in Chapter 20 (Cumulative Impacts) in respect of the EIA topics and environmental media of relevance to population and human health, has been discussed in the respective EIAR chapters – refer to Chapters 11 (Air Quality & Climate), 12 (Noise & Vibration), 13 (Landscape & Visual), 15 (Microclimate- Daylight and Sunlight) and 16 (Traffic & Transportation).

It is considered that the potential impacts of the proposed development on population and human health have been mitigated by the design of the proposed development, and mitigation measures set out herein, such that significant negative cumulative impacts on population and human health are not likely to occur as a result of the proposed development in combination with one or more of the plans / projects set out in Chapter 20 (Cumulative Impacts).

7.10 Difficulties Encountered

No difficulties were encountered in the preparation of this chapter.

7.11 References

- CSO (2012). 2011 Census Data
- CSO (2017). 2016 Census Data.
- CSO (2022). 2022 Summary Census Data.
- Department of Housing, Planning & Local Government (2023). *My Plan Map Viewer*.
- EPA (2022). *Guidelines on the information to be contained in Environmental Impact Assessment Reports*.
- Fingal County Council (2013). *Kilmartin Local Area Plan 2013 -2019 as extended* (expired on 11th May 2023);
- Government of Ireland (2022). *Health in Ireland- Key Trends 2022*.
- IEMA (2022). *Effective Scoping of Human Health in Environmental Impact Assessment*.
- IEMA (2022). *Determining Significance for Human Health in Environmental Impact Assessment*.
- IEMA (2017). *Health in Environmental Impact Assessment: A Primer for a Proportionate Approach*.

8 Biodiversity

8.1 Introduction

This Chapter of the EIAR comprises an assessment of the likely effects on Biodiversity (Flora & Fauna) of the proposed residential development at Hollystown – Kilmartin Site 4, Dublin 15.

The proposed development is described in detail in Chapter 5 of this EIAR.

The potential for any impacts on sites designated as European (Natura 2000) sites, under the EU Habitats and Birds Directives was also appraised, and the results of that study are presented in a separate report (Appropriate Assessment (AA) Screening Report) that accompanies this application under separate cover.

This chapter has been prepared by Namrata Kaile, Ecologist & Environmental Consultant and reviewed by Matthew Hague, Associate and Senior Ecologist at Brady Shipman Martin. Refer to **Table 1.4** in Chapter 1 (Introduction) for qualifications of authors and reviewers.

8.2 Methodology

A comprehensive desk-based assessment was undertaken between July 2022 and August 2023, and numerous site visits have been carried out by the authors and other specialist ecologists, between December 2019 and August 2023, as detailed in the following sections.

8.2.1 Desk Study

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

- EPA Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022);
- Environmental Impact Assessment of Projects – Guidance on Screening (European Commission, 2017);
- OPR Practice Note PN02: Environmental Impact Assessment Screening (Office of the Planning Regulator (OPR) (2021);
- Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment (European Commission, 2013);
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning and Local Government, August 2018);
- Guidelines for Assessment of Ecological Impacts of National Road Schemes (Transport Infrastructure Ireland (formerly the National Roads Authority, 2009);
- Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland: Terrestrial, Freshwater, Coastal and Marine ('the CIEEM Guidelines') published by the Chartered Institute of Ecology and Environmental Management (CIEEM), September 2018, updated in September 2019 (V1.1), further updated in April 2022 (V1.2).

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

- The Planning and Development Act 2000, as amended (the "Planning Acts");
- The Planning and Development Regulations 2001, as amended (the "Planning Regulations");
- The Wildlife Act 1976 to 2022 and the Wildlife (Amendment) Act 2000;

- Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (the “Habitats Directive”);
- Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (the “Birds Directive”);
- European Communities (Birds and Natural Habitats) Regulations 2011, as amended;
- Flora (Protection) Order 2022 (SI No. 235 of 2022);
- Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment;
- European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018).

The report has regard to the following **Policies and Plans**:

- *Third National Biodiversity Plan 2017 – 2021* (Department of Culture, Heritage and the Gaeltacht, 2017);
- Draft for Public Consultation, Ireland’s 4th National Biodiversity Action Plan (Department of Housing, Local Government and Heritage, 2022);
- *Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters* (Inland Fisheries Ireland, 2016);
- *Planning for Watercourses in the Urban Environment* (Inland Fisheries Ireland, 2020);
- *All-Ireland Pollinator Plan 2021-2025* (National Biodiversity Data Centre);
- *Fingal Development Plan 2023 – 2029, including the accompanying Appropriate Assessment documentation (Natura Impact Report); and*
- *Kilmartin Local Area Plan 2013-2019 as extended* (expired on 11th May 2023).

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

- Data on rare and protected plant and animal species contained in the following databases:
 - The National Parks and Wildlife Service (NPWS) of the Department of Housing, Local Government and Heritage (www.NPWS.ie);
 - The National Biodiversity Data Centre (NDBC) (www.biodiversityireland.ie);
 - Birdwatch Ireland (www.birdwatchireland.ie);
 - Bat Conservation Ireland (www.batconservationireland.org);
- Recent aerial photography and photographs taken at the site;
- Recent and historic ordnance survey mapping (www.geohive.ie, Google Earth);
- Information on protected areas, as well as watercourses, catchments and water quality in the area available from <https://gis.epa.ie/EPAMaps/>;
- Information on soils, geology and hydrogeology in the area available from www.gsi.ie ;
- Information on the Status of EU Protected Habitats and Species in Ireland (NPWS, August 2019), Article 17 Reports:-
 - The Status of EU Protected Habitats and Species in Ireland – Volume 1 (NPWS, 2019a);
 - The Status of EU Protected Habitats and Species in Ireland – Volume 2 (Habitat Assessments) (NPWS, 2019b);
 - The Status of EU Protected Habitats and Species in Ireland – Volume 3 (Species Assessments) (NPWS, 2019c);

- Information on land-use zoning from the online mapping of the Department of the Environment, Community and Local Government www.myplan.ie/en/index.html.

8.2.2 Field Surveys

A significant amount of research has been undertaken by the author and other qualified and experienced ecologists at the site, since December 2019.

Preliminary biodiversity surveys were first undertaken at the site by Brady Shipman Martin on 6 December 2019. In order to provide a comprehensive baseline on the local ecological environment, further, detailed ecological surveys were carried out on the following dates:

- 11 March 2020;
- 16 June 2020;
- 2 July 2020;
- 16 February 2021;
- 24 September 2021;
- 15 October 2021;
- 1 March 2022;
- 4 October 2022.

The surveys undertaken comprised habitat, invasive species, mammal, bird and day-time bat surveys.

A final site visit was undertaken by the authors on 4 May 2023.

An assessment of habitat suitability for species with links to European sites was undertaken, in order to appraise the potential for *ex-situ* effects on European sites.

In addition to the ecological surveys undertaken by the authors, specialist bat ecologist Mr Brian Keeley (a suitably qualified and experienced ecologist) carried out dedicated dusk and dawn bat surveys at the site on 26 and 27 July 2022 and further updated surveys were undertaken on 2 and 3 August 2023.

The bat surveys undertaken are consistent with the level of survey recommended in the NPWS document *Bat Mitigation Guidelines for Ireland – Wildlife Manuals No. 134 and No. 25*. A detailed bat survey report is submitted as part of the planning application, as an appendix to the EIAR.

In addition to the biodiversity surveys, a specialist tree survey was undertaken during April 2022 and again in May 2023 by experienced arborist John Morgan (Independent Tree Surveys Ltd.) and an arboricultural impact assessment, method statement and tree protection plan have been prepared in accordance with BS5837: *Trees in relation to design, demolition and construction (2012)* of the significant trees on the land proposed for development.

There are no bat species listed as Qualifying Interests in any European sites within the Zone of Influence (see Section 8.3.7). However, Article 12 of the Habitats Directive requires Member States to take *requisite measures to establish a system of strict protection of animal species listed in Annex IV(a) in their natural range*.

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

- Habitats;
- Invasive species;
- Rare and/or protected plants;

- Bat activity and assessment of bat roosts;
- Large mammals (including badger and otter);
- Suitability for breeding and wintering birds;
- Amphibian and common lizard.

8.2.2.1 Habitats and Flora

During the course of the site visits, the habitats were identified, described and mapped. Habitats were surveyed using the *Best Practice Guidance for Habitat Survey and Mapping*¹⁰ and were classified using *A Guide to Habitats in Ireland*¹¹ with due regard to the *Interpretation Manual of European Habitats*¹². Vascular plant nomenclature follows that of the *New Flora of the British Isles 3rd Edition*¹³.

8.2.2.2 Fauna

On each visit, the site was searched for evidence of large mammals, such as badger, both within the site itself as well as in the wider area of the former golf course lands. The proposed development site was also searched for evidence of breeding birds during each visit. A comprehensive series of bat surveys was also undertaken and the Bat Survey Report is included in **Appendix 8.1** of this EIAR.

8.2.2.3 Watercourses

Biological kick-sampling, a method of assessing the ecological quality of a watercourse, was not undertaken in any of the ditches on site, due to the unsuitable substrate of the ditches, and their overall condition (successful kick-sampling requires a substrate comprising gravel or stone, which is not present at the subject site).

A visual assessment of the drainage ditches was carried out, and a review of the proposed site drainage and potential links to the Tolka (and other watercourses) was undertaken in conjunction with the project engineers¹⁴.

8.2.3 Evaluation of Ecological Features

The methodologies used to determine the value of ecological resources, to characterise impacts of the proposed development, and to assess the significance of impacts and any residual effects are consistent with the EPA *Guidelines on the information to be contained in Environmental Impact Assessment Reports* (2022) (the 'EPA Guidelines') and are in accordance with the NRA *Guidelines for Assessment of Ecological Impacts of National Road Schemes* (2009) (the 'NRA Guidelines')¹⁵. This methodology is in turn consistent with the CIEEM *Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland – Terrestrial, Freshwater, Coastal and Marine (Version 1.2)* (2018, updated 2022) (the 'CIEEM Guidelines'). The methodology allows the baseline to be comprehensively evaluated. This then makes it possible to assess the potential impacts (including cumulative impacts) of the proposed development,

¹⁰ Smith G. F., O'Donoghue P., O'Hara K. and Delaney E. (2010)

¹¹ Fossitt J. (2000)

¹² https://ec.europa.eu/environment/nature/legislation/habitatsdirective/docs/Int_Manual_EU28.pdf

¹³ Stace, C. (2010)

¹⁴ Refer to the Infrastructure Design Report prepared by DBFL Consulting Engineers and submitted as part of this application under separate cover.

¹⁵ The NRA Guidelines, while originally developed for roads projects, provide clear, comprehensive and logical methods for evaluating the potential impacts of significant projects of all kinds in Ireland. The methodologies presented in the Guidelines are reproducible and reliable and are thus appropriate to the proposed development.

to set out appropriate mitigation measures and to assess the residual impacts of the proposed development.

In accordance with the NRA Guidelines, impact assessment is undertaken of sensitive ecological receptors (Key Ecological Receptors) within the Zone of Influence of the proposed development. According to the NRA Guidelines, the Zone of Influence is the “effect area” over which change resulting from the proposed development is likely to occur and the Key Ecological Receptors are defined as features of sufficient value as to be material in the decision-making process for which potential impacts are likely. In the context of the proposed development at Hollystown – Kilmartin Site 4, a Key Ecological Receptor is defined as any feature valued as follows:

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

Features of local importance (Lower Value) and features of no ecological value are not considered to be Key Ecological Receptors.

8.3 Baseline Environment

8.3.1 General Description

The proposed development relates to a site of 20.6 ha at the townlands of Hollystown and Kilmartin, Dublin 15. The proposed development site is located within Fingal County Council, approximately 3.5 km north of Blanchardstown town centre and 2.5 km south-west of the M2/N2 motorway.

A review of most recent aerial imagery (Google Maps, 2023) (and as confirmed by the walkover surveys) indicates that the site is dominated by formerly cultivated lands, while the northern part of the proposed development falls under the former lands of the Hollystown golf club. Both these activities have ceased and the trees and hedges have been left unmanaged. The south-western part of the proposed development site includes an area of disused lands dominated by willow scrub. An overhead powerline runs within the northern section of the proposed development site.

8.3.2 Designated Conservation Areas

This assessment uses a source-pathway-receptor model to assess environmental risk. For the risk of an adverse effect to occur there must be a ‘source’, such as a construction site; a ‘receptor’, such as a site designated for nature conservation; and a ‘pathway’ between the source and the receptor, such as a watercourse that links the construction site to the proposed development site. Although there may be a risk of an impact, it may not necessarily occur, and if it does occur, it may not be significant.

The potential for any impacts on European sites from the proposed development site was considered. Full details of that study are presented in a separate report (Appropriate Assessment (AA) Screening Report), submitted as part of this application under separate cover.

8.3.2.1 Relevant European Sites

There are no European sites within the immediate vicinity of the proposed development site at Hollystown – Kilmartin Site 4.

The nearest such sites are as follows (see **Figure 8.1**):

■ Special Areas of Conservation (SAC):

- Rye Water Valley/ Carton SAC (site code 001398), c. 9.4 km to the south-west;
- Malahide Estuary SAC (site code 000205), c. 12.7 km to the north-east;
- Rogerstown Estuary SAC (site code 000208), c. 15.1 km to the north-east;
- South Dublin Bay SAC (site code 000210), c. 15.6 km to the south-east;
- North Dublin Bay SAC (site code 000206), c. 15.6 km to the south-east;
- Baldoyle Bay SAC (site code 000199), c. 16.4 km to the east;
- Howth Head SAC (site code 000202), c. 20.3 km to the south-east;
- Rockabill to Dalkey Island SAC (site code 003000), c. 20.9 km to the east;
- Ireland's Eye SAC (site code 002193), c. 21.2 km to the east;
- Lambay Island SAC (site code 000204), c. 24.4 km to the north-east.

■ Special Protected Areas (SPA):

- Malahide Estuary SPA (site code 004025), c. 12.9 km to the north-east;
- South Dublin Bay and River Tolka Estuary SPA (site code 004024), c. 13.0 km to the south-east;
- North Bull Island SPA (site code 004006), c. 15.6 km to the south-east;
- Rogerstown Estuary SPA (site code 004015), c. 15.8 km to the north-east;
- Baldoyle Bay SPA (site code 004016), c. 16.4 km to the east;
- North-west Irish Sea SPA (site code 004236), c. 17.9km to the east;
- Ireland's Eye SPA (site code 004117), c. 21.0 km to the east;
- Howth Head Coast SPA (site code 004113), c. 22.5 km to the south-east;
- Lambay Island SPA (site code 004069), c. 24.4 km to the north-east;
- Dalkey Island SPA (site code 004172), c. 25.4km to the south-east.

The site of the proposed development is not under any designation for nature conservation. There are no European sites in the immediate vicinity. The nearest such site is the Rye Water Valley / Carton SAC, c. 9.4km south-west – to which there is no potential impact pathway. Note that the above-listed distances are linear (i.e. 'as the crow flies').

No designated conservation areas occur within or in the immediate vicinity of the site of the proposed development. There are a number of designated sites within the Zone of Influence of the proposed development; however, the AA Screening report concludes that, on the basis of objective information, it can be excluded that the construction and operational phases of the proposed development, individually or in-combination with other plans or projects, will have significant effects on any European site.

Full details of the European sites with potential links to the proposed development site are contained in the AA Screening Report, submitted as part of this application under separate cover.

8.3.2.2 Other Designated Conservation Areas

Designated sites other than European sites (i.e. Proposed Natural Heritage Areas (pNHA) and designated Natural Heritage Areas (NHA)) within the potential Zone of Influence have been included in this assessment in order to address their potential to act as supporting sites for European sites. They are as follows (see **Figure 8.2**):

- Royal Canal pNHA (site code 002103), c. 5.2 km south;
- Liffey Valley pNHA (site code 000128), c. 6.3 km south;

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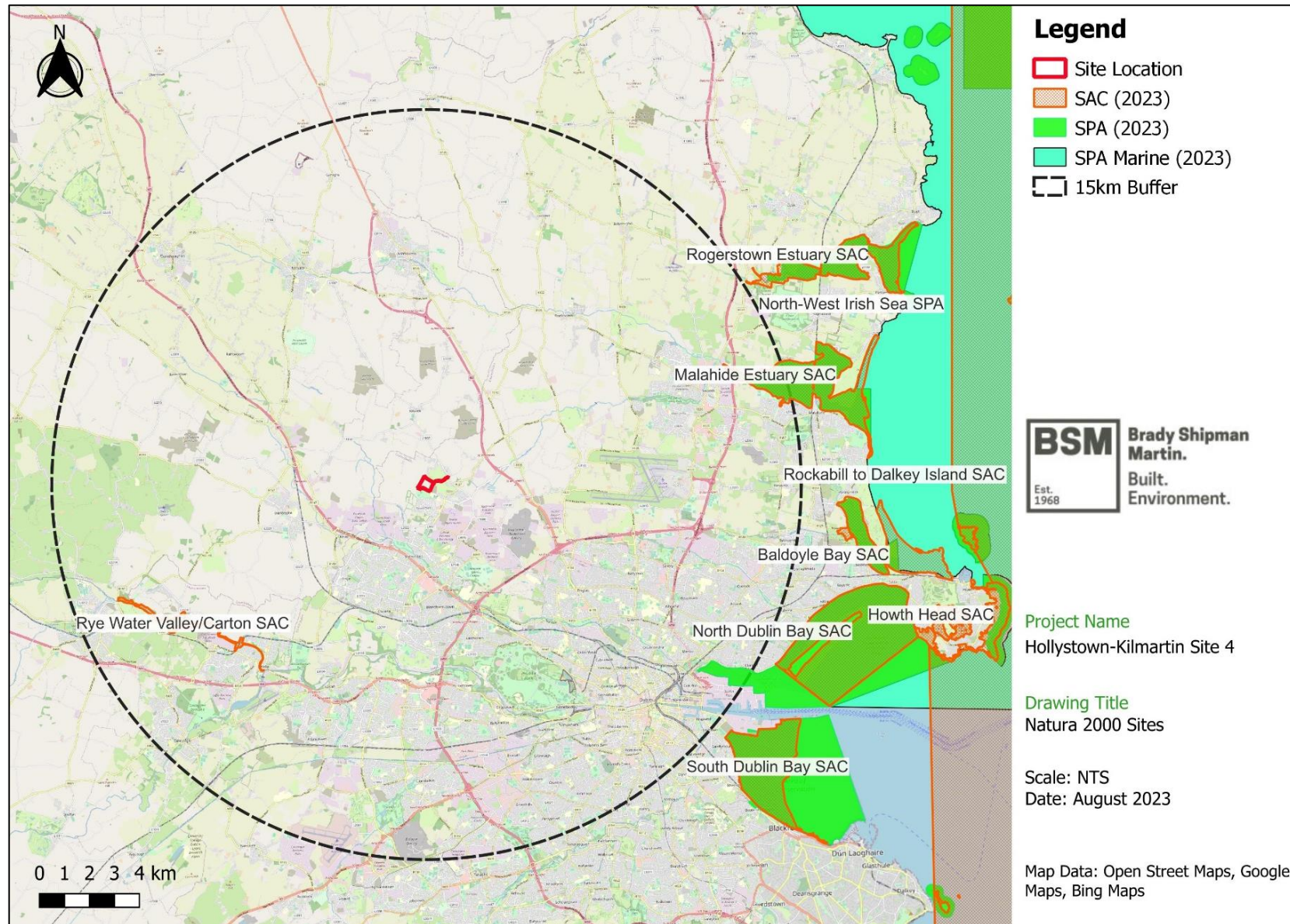
- Santry Demesne pNHA (site code 000178), c. 8.9 km south-east;
- Rye Water Valley/Carton pNHA (site code 001398), c. 9.4 km to the south-west;
- Grand Canal pNHA (site code 002104), c. 10.9 km south;
- Feltrim Hill pNHA (site code 001208), c. 12.5 km north-east;
- Malahide Estuary pNHA (site code 000205), c. 12.6km north-east;
- Sluice River Marsh pNHA (site code 001763), c. 15.6 km east;
- North Dublin Bay pNHA (site code 000206), c. 12.8 km to the south-east;
- South Dublin Bay pNHA (site code 000210), c. 15.5 km to the south-east;
- Dolphins, Dublin Docks pNHA (site code 000201), c. 15.8 km south-east;
- Booterstown Marsh pNHA (site code 001205), c. 17.8km south-east;
- Dalkey Coastal Zone and Killiney Hill pNHA (site code 001206), c. 22.8 km south-east.

There are no fully designated Natural Heritage Areas (NHA) within the potential Zone of Influence of the proposed development.

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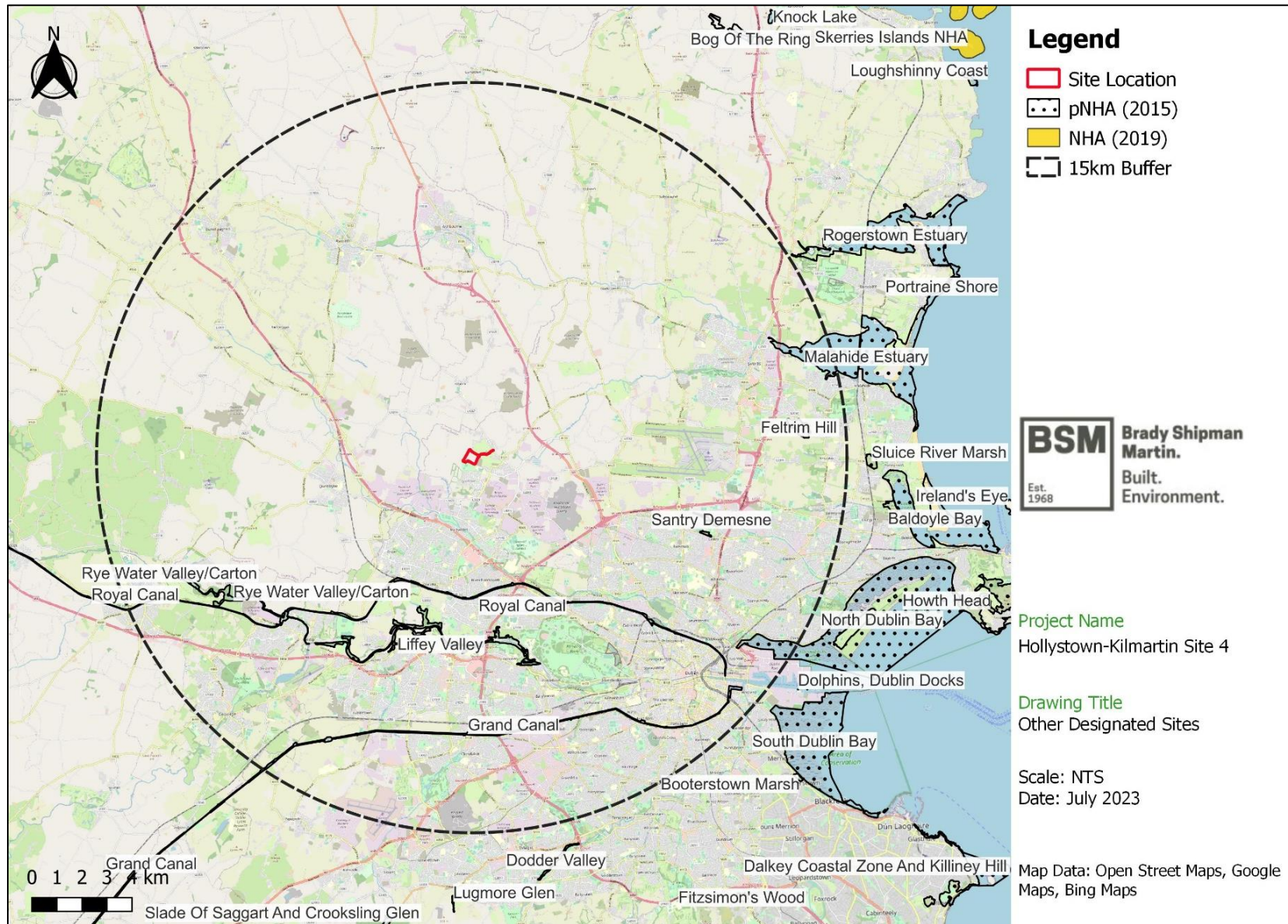
Figure 8.1 European sites within zone of influence of the proposed development. A 15km radius is shown for scale. (© OpenStreetMap, 2023)



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Figure 8.2 pNHA sites within zone of influence of the proposed development. A 15km radius is shown for scale. (© OpenStreetMap, 2023)

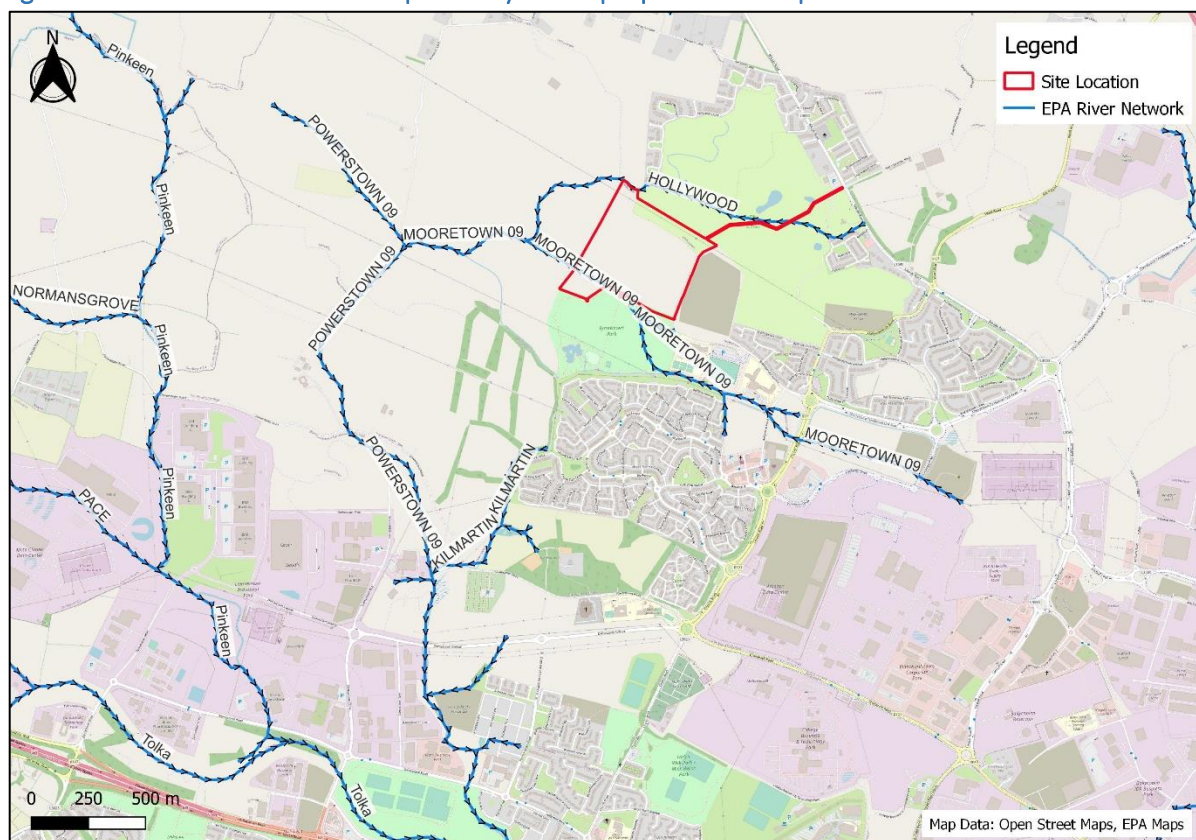


8.3.3 The Aquatic Environment

There are no significant watercourses within the proposed development site (see **Figure 8.3**), however, it is located within the Tolka (SC-010) sub-catchment of the Liffey and Dublin Bay (09) catchment and is within the Powerstown (Dublin) (010) WFD river sub basin.

A review of the Environmental Protection Maps (EPA) web-tool indicates that Hollywood stream (EPA code 09H15) flows along the north-west boundary of the proposed development site in an east west direction and flows south to merge with Mooretown 09 stream (EPA code 09M24) which in turn flows through the southern boundary of the site in east west direction. This feature eventually discharges to the Pinkeen East River (also known as the Powerstown Stream (EPA code 09P21)), which then joins the River Tolka at Mulhuddart. The Tolka, a very significant habitat corridor, flows into Dublin Bay, approximately 13.5 km to the east (linear distance).

Figure 8.3 EPA waterbodies in the proximity of the proposed development



8.3.4 Rare and Protected Plant Species

The NPWS and NBDC databases were consulted with regard to rare species¹⁶ and species protected under the *Flora Protection Order* (2022). According to the NBDC database, there are no known records of rare or protected plant species within the proposed development site or within the 2 km grid square (O04R) that covers the site, and none were recorded during any of the site visits undertaken.

8.3.5 Invasive Alien Plant Species

No species listed on the Third Schedule of the Birds and Habitats Regulations 2011 (as amended), such as Japanese knotweed (*Reynoutria japonica*), giant hogweed (*Heracleum mantegazzianum*), Himalayan

¹⁶ Curtis & McGough (1988)

balsam (*Impatiens glandulifera*) or three-cornered leek (*Allium triquetrum*) have been recorded at the proposed development site during the surveys undertaken in the preparation of this report.

8.3.6 Habitats

The habitats present on the proposed development site are shown in **Figure 8.4**, below.

The majority of the site comprises the eastern half of a large agricultural field. This has been used for growing potatoes in recent years (**BC1**) but is currently lying fallow (**BC3**). The foul sewer, permitted under FW21A/0042 has recently been constructed through the centre of the field.

This main field is bounded on three sides by hedgerows and tree lines (**WL1/WL2**) with associated drainage ditches (**FW4**).

The drainage ditches (**FW4**) associated with the field boundaries are deep and steep-sided, however they contain only small volumes of water. Species that are present include nettle, fool's watercress (*Apium nodiflorum*), hairy willowherb (*Epilobium hirsutum*) and occasional angelica (*Angelica sylvestris*).

The eastern site boundary, which separates the site from the proposed development (Hollystown Sites 2 & 3) to the east, comprises a very gappy line of tall, mature ash (*Fraxinus excelsior*) trees. These trees are all very heavily affected by ash dieback disease. The understorey comprises gappy hawthorn bushes. Ground flora is notably poor along this boundary, mainly comprising ivy (*Hedera helix*), nettle (*Urtica dioica*) and the occasional patch of herb-Robert (*Geranium robertianum*).

The northern field boundary is more dense, with ash (again very badly affected by dieback), hawthorn, elder and wych elm forming a degraded hedgerow along the deep drainage ditch.

From east to west, the southern field boundary, between the proposed development site and Tyrrelstown Park, comprises firstly a young hawthorn hedgerow planted along the park boundary. Further west this hedgerow becomes a line of scrubby hawthorn and bramble on the northern side of the associated drainage ditch. Further west again this line of scrub opens out and the deep ditch is more accessible.

The south-western corner of the site, to the west of Tyrrelstown Park, is unmanaged, and contains a section of a hawthorn hedgerow (**WL1**) with extensive bramble-dominated scrub (**WS1**). To the east of this section of hedgerow this part of the site is dominated by naturally regenerated willow scrub.

The northern-most part of the site, between the main field and the high-voltage powerlines, is located within the former Hollystown Golf Course. This area comprises a mix of habitats, much of which have begun to regenerate naturally since golf course management ceased. This area is dominated by scrub and immature woodland (**WS1/WS2**), containing young and semi-mature silver birch (*Betula pendula*), field maple (*Acer campestre*), Scots pine (*Pinus sylvestris*), crack willow (*Salix fragilis*) and wych elm (*Ulmus glabra*), with some groups of more mature specimens of the same trees as well as the occasional horse chestnut (*Aesculus hippocastanum*) and beech (*Fagus sylvatica*) also present. The remainder of this part of the site comprises dense bramble (*Rubus fruticosus* Agg.) and dogwood (*Cornus* sp.) scrub with patches of elder (*Sambucus nigra*), willow and blackthorn (*Prunus spinosa*), with the former amenity grassland immediately to the north. This has begun to develop into more diverse grassland habitat (**GS2**). Species present, and increasing in distribution here, include grasses (meadow fescue (*Festuca pratensis*), Timothy (*Phleum pratense*), cock's-foot (*Dactylis glomerata*), red fescue (*Festuca rubra*)), as well as germander speedwell (*Veronica chamaedrys*), bush vetch (*Vicia sepium*), herb-Robert, nettle, ivy, creeping buttercup (*Ranunculus repens*) and hogweed (*Heracleum sphondylium*).

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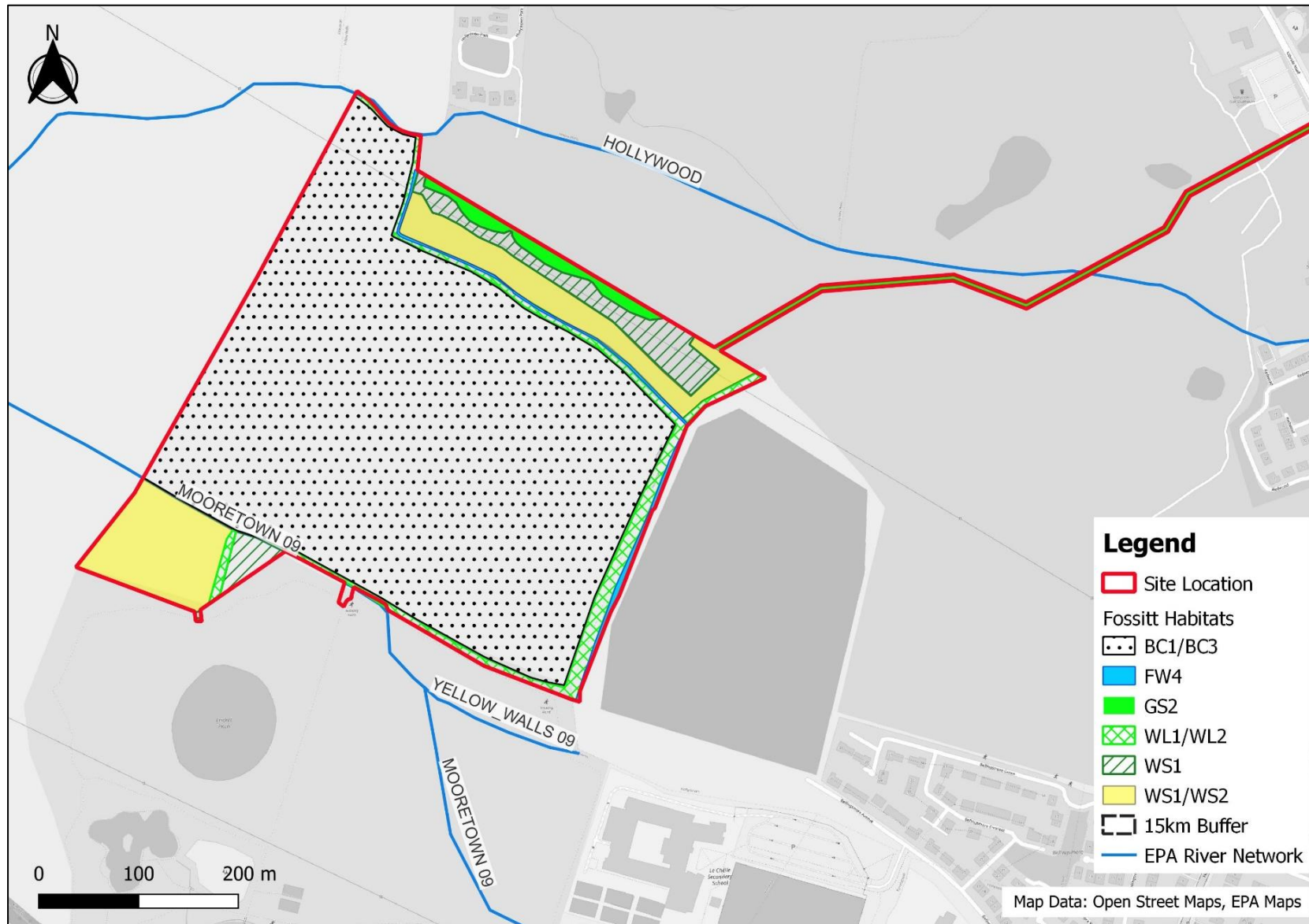
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The haul route to the site from Ratoath Road, on the north-east corner of the development site, is through the former golf club lands (GS2).

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Figure 8.4 Habitat map (© OpenStreetMap, 2023)



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Figure 8.5 The proposed development site looking east along the hedge dividing the field from the old golf course



Figure 8.6 The proposed development site looking north and east from the south



Figure 8.7 Willow scrub and bramble in the south-west corner of the site



Figure 8.8 The southern boundary hedgerow, separating the site from Tyrrelstown Park



Figure 8.9 Trees on the northern part of the site (within the golf club lands)



Figure 8.10 Bramble and dogwood scrub on the northern part of the site (within the golf club lands)



8.3.7 Fauna

8.3.7.1 Birds

All of the bird species recorded within the proposed development site are very common in Ireland. Species recorded during the course of the surveys undertaken in the preparation of this EIA chapter included blackbird, blue tit, buzzard, chaffinch, goldfinch, robin, song thrush, wood pigeon, wren, jackdaw, rook and magpie. All of these species are on the green list of Birds of Conservation Concern in Ireland (BoCCI) (2020 – 2026)¹⁷, indicating that they are not currently species of conservation concern.

The bat survey recorded two young long-eared owls within the proposed site and are possibly nesting close to the site in or near the trees close to the north-east corner.

An appraisal of the site was undertaken to assess its suitability for use by birds that favour open farmland or rough pasture, such as lapwing and curlew (red list species) or pale-bellied Brent goose (amber list). However, no signs of these or any similar species were recorded and the site itself is not of any significant value for these species. The site does not support any QI or SCI species associated with any European site within the zone of influence.

Birds, as well as their nests and eggs, are fully protected under the Wildlife Act (1976) and subsequent amendments.

8.3.7.2 Bats

There are no buildings or other structures on the site. As noted in the bat survey report included at **Appendix 8.1** of the EIAR, there are a number of trees that offer low roost potential around the perimeter of the site, however no bats were seen to emerge from or enter any tree during the surveys undertaken.

Three species of bat – common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*) and Leisler's bat (*Nyctalus leisleri*) – were recorded feeding within the Hollystown – Kilmartin Site 4 lands during the surveys undertaken in both 2022 and 2023. As noted in the bat survey report (July 2022):

“The most widespread bat species was the common pipistrelle with records of this species throughout the site but very low activity within the open field. Common pipistrelles were present both after sunset and prior to sunrise and it is probable that there are roosts in neighbouring sites, but none were present within the site. Leisler's bat activity was highest along the southern perimeter of the site and was most active after sunset and was only occasionally heard prior to sunrise within the site. Soprano pipistrelle activity was higher in the northern area of the site and very low in the southern area with no bats noted within the centre of the field.”

And:

“Bats flew below tree top height on occasion as well as flying high up over the site. Common pipistrelles were much more notable in the southern section of the field and were primarily noted along the hedgerow to the rear of the Cricket Club. Both common pipistrelles and Leisler's bats were present prior to sunrise at the southern section of the site but none entered any tree within the site. There are opportunities in nearby houses for roosting bats.”

¹⁷ <https://birdwatchireland.ie/app/uploads/2021/04/BOCCI-2020-2026.pdf>

Further the bat survey report notes that during the survey in August 2023:

“The common pipistrelle was the most widely recorded species during the August 2023 survey, although soprano pipistrelles and Leisler’s bats were also recorded several times. Leisler’s bats appeared to be more active towards the north of the site on this occasion (which may be related to the increased tree cover to this side) while the southern part of the site had a more even balance of species. Immediately prior to dawn, much more activity was observed in the northern portion of the site (especially along the hedge) compared to the southern portion, which may also be an effect of the increased tree cover to the north.”

And:

“The number of common pipistrelle passes recorded by the static monitor, placed midway along the eastern field boundary, indicates that this hedge is an important feeding and commuting route for this species – as with the large number of Leisler’s bat passes recorded during the 2022 survey, this mostly represents repeated passes by the same bats flying back and forth along the length of the hedge while feeding. As no common pipistrelles were recorded immediately before sunrise, these bats were likely to be roosting further from the survey area and had already left the site by that time (with the last common pipistrelle record on the static monitor being at 04:05 hours). Very little bat activity was recorded in the middle of the field at any point over the night.”

All Irish bat species are fully protected under the Wildlife Act (1976) and subsequent amendments, and under the *EU Habitats Directive*, via the *European Communities (Birds and Natural Habitats) Regulations, 2011 (as amended)*. They are also protected under Article 12 of the Habitats Directive.

8.3.7.3 Large Mammals

No evidence of badger activity was recorded during the surveys carried out as part of the current planning application, and no evidence of badgers has been recorded at Hollystown-Kilmartin Site 4 since the author commenced survey work at the site in December 2019. Similarly, no evidence of otters has been recorded within the proposed development site, or along any of the drainage ditches in the area.

Badgers are fully protected under the Wildlife Act (1976) and subsequent amendments. Otters are fully protected under the Wildlife Act (1976) and subsequent amendments, and in the *European Communities (Birds and Natural Habitats) Regulations, 2011 (as amended)*. As with bats, otters are also protected under Article 12 of the Habitats Directive.

Foxes and rabbits, which are not protected under wildlife legislation, were seen at the site by the author on several occasions.

8.3.7.4 Other Species

Overall, the proposed development site (i.e. the main field the former golf course lands and the area of scrub in the south-west corner) is dry, however the drainage ditches offer some suitable breeding habitat for amphibians (newts and frogs). Amphibians have not been observed in significant numbers during the surveys undertaken to date at the site (one adult frog was found on the golf course itself in September 2021). Nevertheless, even minor wet areas and temporary ponds may be of value for amphibians, in particular during the spring breeding season.

No evidence of common lizard has been recorded. While it is possible that lizards may occur within the site, the area of suitable habitat (such as exposed rock) is negligible.

Amphibians and reptiles are fully protected under the Wildlife Act (1976) and subsequent amendments.

The site was assessed for the presence of butterflies and for the suitability of the habitats for butterfly abundance and diversity. A number of common species of butterfly (ringlet, red admiral, peacock and meadow brown), were all recorded on the site in 2020, 2021 and 2022. No evidence of Ireland's only protected insect, the marsh fritillary butterfly, or its food plant (devil's bit scabious (*Succisa pratensis*)) was recorded on the site.

8.3.8 Overall Evaluation of the Proposed Development Site

The proposed development site is not under any wildlife or conservation designation. Furthermore, no rare, threatened or legally protected plant species, as listed in the *Irish Red Data Book 1 – Vascular Plants* (Curtis & McGough, 1988), the *Flora Protection Order*, 2022 or the *EU Habitats Directive*, are known to occur within the site, and none were recorded.

No rare habitats or habitats of particularly high ecological value (i.e. International, National or County Importance) are present at the site. No rare plants have been recorded during any of the site visits undertaken. The gappy tree lines / hedgerows, as well as the scrub in the golf course and in the south-western corner do not form significant areas of habitat, although they do provide habitat corridors to the north via the former golf course and to the south via Tyrrelstown Park.

All of the bird species recorded are very common, and no red-listed species were noted. The site does have value for commuting and foraging bats, and for breeding birds. The site is not utilised by any wintering bird species, including those species listed as SCI species in any European sites.

No evidence of badger activity was recorded during the surveys carried out as part of the current planning application. No evidence of otters has been recorded within the proposed development site, or along any of the drainage ditches in the area.

Other than the adult frog found in the former golf course in September 2021, no evidence of amphibians or reptiles has been recorded in the vicinity of the proposed development site.

Overall the site is of **Local Importance (Lower Value)** as defined by the ecological resource valuations presented in the National Roads Authority/Transport Infrastructure Ireland Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA/TII, 2009 (Rev. 2)), being dominated by cultivated land of limited biodiversity value along with former golf course lands to the north of the site and disused grassland dominated by willow scrub to the south-west.

8.4 Predicted Impacts of the Proposed Development

8.4.1 Do-nothing Scenario

As noted in this EIAR, the proposed development site is of low local ecological importance at most. Should the site remain undeveloped and the current uses continue, no significant changes to the biodiversity value of the site can be expected. Should the site be developed at a later stage under the scope of a different application, it is reasonable to expect that any potential impacts would be similar to those predicted to arise as a result of the proposed development.

8.4.2 Construction Phase

8.4.2.1 Designated Conservation Areas

The potential for any significant effects on European designated sites (sites designated for nature conservation under the EU Habitats and Birds Directives) has been assessed separately, and a stand-alone report (AA Screening Report), compiled in consultation with the wider design team including the project engineers, has been prepared for submission as part of the overall planning application and is submitted under separate cover.

Based on the studies undertaken and the features of the proposed development, the AA Screening process concluded that none of the habitats and species listed as qualifying interests or special conservation interests in any European site designation will be affected by the proposed development and full AA, including the preparation of a Natura Impact Statement (NIS), is not required. The following paragraphs are extracted from the AA Screening report conclusions:

“In view of best scientific knowledge, this report concludes that the proposed development at Hollystown – Kilmartin Site 4, Dublin 15, individually or in combination with another plan or project, will not have a significant effect on any European sites. This conclusion was reached without considering or taking into account mitigation measures or measures intended to avoid or reduce any impact on European sites.

It is considered that this report provides sufficient relevant information to allow Fingal County Council to carry out an AA Screening, and to reach a determination that the proposed development will not have any likely significant effects on European sites under Article 6 of the Habitats Directive in light of their conservation objectives.”

Similarly, there is no direct or indirect pathway between the proposed development site and any pNHA not already designated as a European site, and therefore no impacts on any pNHA will occur.

8.4.2.2 Habitat Loss & Disturbance

None of the existing habitats on the overall site are of more than local ecological significance.

In developing the design and layout of the proposed residential scheme, detailed consideration has been given to incorporating landscape and ecological features, with significant areas of open space being provided throughout the site, as well as under the overhead electricity cables that bound the site to the north. The landscape design (by Bernard Seymour Landscape Architects (BSLA)) builds on the existing features, with the open space being enhanced and developed with a focus on retaining and enhancing the existing features where practicable, while taking account of surface water drainage attenuation requirements (refer to the Infrastructure Design Report, prepared by DBFL Consulting Engineers and submitted separately).

Specifically, the boundary hedgerows to the north and south, as well as the hedge in the south-west corner are to be protected and enhanced (refer to the Tree Protection Plan (23021_TPP) prepared by Independent Tree Surveys and submitted separately). Given the very poor condition of the eastern boundary, the trees (all affected by ash dieback) are to be removed. This hedgerow is to be replaced with a new, diverse and high quality native hedgerow (refer to the Landscape Strategy and Landscape Masterplan (Drawing no. DN 2202-LP-S4-O) prepared by Bernard Seymour Landscape Architects and submitted separately).

The development for housing of the remainder of the site will result in the removal of the existing arable (potato) field.

- In the absence of mitigation, the loss of the arable field, removal of scrub in the south-west corner as well as removal of scrub and planting within the former golf club is considered to be a ***permanent, minor to moderate impact at the site level***.
- However, the extensive landscaping and planting proposed, including the protection and enhancement of the boundary hedges, tree lines and ditches as well as the enhancement of the open space to the north (the section of the site to the north of the field) will, over time, reduce this impact to ***neutral*** or ***slight positive***.

8.4.2.3 Disturbance to or Loss of Habitat for Fauna

The loss of a proportion of the scrub on the site (to the south-west and within the former golf club lands to the north) will result in some impacts on nesting birds. However, it is not expected that these impacts will be significant, particularly in view of the fact that the habitat areas within the open space will be retained and enhanced. The landscaping proposed (refer to the Landscape Strategy) will provide new and replacement habitat (feeding and nesting) for birds. There will be no impacts on wintering birds as a result of the proposed development.

The proposed development will require the removal of trees, particularly on the eastern boundary, that are severely affected by ash dieback and the Tree Survey Report (Independent Tree Surveys) has recommended their removal. As noted in the Bat Survey Report (**Appendix 8.1**) no bat roosts were recorded on the site, however bats are highly mobile creatures, and may use small features in trees (cracks, fissures) for roosting occasionally. Therefore, in the absence of mitigation, the loss of trees is a potential ***long-term moderate negative impact at the site level***. There are however few high-quality trees within the boundary of the site. As set out in **Section 8.5**, this mitigation will include the installation of bat boxes prior to the commencement of development, as well as pre-felling checks of all trees to be removed.

There will be a limited loss of scrub but a loss/replacement of some mature trees and sections of hedgerow (varying between poor and moderate quality) which provide shelter for insects and areas for bats to feed. This will reduce insect abundance and feeding and commuting corridors. In the absence of mitigation this is a ***long-term to permanent moderate negative impact at the site level*** without the implementation of mitigation.

At present the site is an unlit field with no light overspill. Lighting may affect bat species, in particular, light-intolerant bat species during foraging, and if directed at emergence points would affect all bat species, even those that will feed in illuminated areas. This is a ***long-term, moderate, negative impact at the site level*** without the implementation of mitigation.

Badgers and their setts will not be directly affected by the proposed development. No badger activity has been recorded anywhere within the study area. No direct or indirect impacts on badger setts or badger territories are expected as a result of the proposed development. Even so, the landscape design proposed includes the maintenance and creation of habitat corridors within the site and connecting to the wider area, meaning that, should badgers occupy territories in the vicinity in the future, they will be able to access the parkland and open space areas.

There will be no significant impacts on reptiles, lepidoptera or any other species groups as a result of the proposed development. The loss of any small ponds, or work that may affect the existing drainage

ditches, could impact on breeding amphibians. However it is not expected that these impacts would be significant, and the proposed landscaping will contain features suitable for use by amphibians and the proposed sustainable drainage systems (SuDS) features will ensure that surface water quality is maintained.

The implementation of biosecurity measures will ensure that no transfer of invasive plant material takes place during the construction phase that could potentially lead to species such as giant hogweed or Japanese knotweed becoming established in the area. Biosecurity measures as set out in **Appendix 8.2** (Outline Biosecurity Plan) will be implemented to minimise the risk of introduction / dispersal of invasive species to the proposed development site.

8.4.2.4 Water Quality, Dust and Other Emissions

Both the construction and operational phases of the proposed development at Hollystown-Kilmartin Site 4 could have impacts on air and water quality, via dust and contaminated run-off and sedimentation. However, all construction works will proceed in line with the measures provided in the Construction & Environmental Management Plan (CEMP) for the proposed development (prepared by DBFL Consulting Engineers and submitted under separate cover). See also Chapters 9 (Land, Soils, Geology & Hydrogeology), 10 (Hydrology) and 11 (Air Quality & Climate) prepared by AWN Consulting for further information and specific mitigation. Localised contamination from dust, foul water, hydrocarbons, silt or other pollutants will be prevented by these mitigation measures.

- Provided that site facilities are correctly designed and proper working procedures are strictly adhered to, ***no impacts on existing air quality or on watercourses are expected***, either during the construction or operation of the proposed development.

8.4.3 Operational Phase

8.4.3.1 Impacts of Lighting from the Proposed Development

As noted in **Section 8.4.2.3** increased lighting and increased human activity have the potential to impact on bat feeding and commuting behaviour. The proposed lighting for the development has been designed by IN2 and has had regard to the following guidelines:

- *Bats and Lighting – Guidance Notes for Planners, Engineers, Architects and Developers* (Bat Conservation Ireland, 2010);
- *Guidance Notes for the Reduction of Obtrusive Light GN01* (Institute of Lighting Professionals, 2011); and
- *Bats and Lighting in the UK – Bats and the Built Environment Series* (Bat Conservation Trust UK, 2018).

Provided that the lighting is installed as designed, ***no impacts on bats are expected***, either during the construction or operation of the proposed development.

8.4.3.2 Discharges to Surface Water from the Proposed Development

As per the Infrastructure Design Report, prepared by DBFL Consulting Engineers and submitted under separate cover as part of this application, all attenuated surface water run-off from the proposed development will discharge to the ditches in the north-west and south-west corners of the subject site.

It is proposed to use a SuDS approach to storm water management throughout the site. SuDS are a requirement of Fingal City Council under the *Greater Dublin Strategic Drainage Strategy* (GDSDS) and the Regional Code of Practice for Drainage Works. Additionally, these systems are recommended under the 2009 guidelines published by the OPW, *The Planning System and Flood Risk Management* ('the OPW Guidelines'). All surface water calculations utilised in the drainage design include additional capacity (20%) to account for climate change. As confirmed in the AA Screening Report, even in the total absence of any SuDS measures there would be no impacts on the European sites of Dublin Bay. The natural characteristics of the bay ensure rapid mixing of water such that there is no appreciable effect on water quality in European sites.

- Operational impacts related to surface water (or ground water) management, in the context of biodiversity, as a result of the proposed development, will ***not be significant***.

A Site-Specific Flood Risk Assessment (SSFRA) has been prepared by DBFL and submitted under separate cover. The SSFRA indicates that the proposed development site is located within Flood Zone C, which, according to the OPW Guidelines, is suitable for all kinds of development, including residential developments such as that proposed, which are classified as "highly vulnerable".

- Operational impacts related to flooding, in the context of biodiversity, as a result of the proposed development, will ***not be significant***.

8.4.3.3 Discharges to Foul Sewer from the Proposed Development

As per the Infrastructure Design Report prepared by DBFL, a new foul network will be constructed.

A pre-connection enquiry was made to Uisce Éireann and a Confirmation of Feasibility letter (08 June 2023) has been received. This letter is included as an appendix to the Infrastructure Design Report (IDR), prepared by DBFL Consulting Engineers (2023) and submitted separately. A Statement of Design Acceptance has been issued by Uisce Éireann in August 2023 and is also included as an appendix to the IDR.

Foul water discharge from the site will connect to the public sewer network via the existing 450 mm sewer that is currently under construction under FCC Ref FW21A/0042. At the time of writing (July 2023) this trunk sewer is largely complete. It traverses the central primary link street of the subject site from east to west and ultimately discharges to the existing 750 mm diameter foul sewer approx. 3 km to the south adjacent to Powerstown Road. The foul trunk main has been designed to accommodate foul flows from the subject site and also the foul flows from the Hollystown Sites 2&3 SHD (ABP Reg. Ref. 312271, permitted in March 2023), Bellingsmore Residential Development to the east and from Hollystown Site 1 to the north east of the subject site (permitted under FCC Reg reference FW21A/0042). It is also designed to facilitate a future connection from Hollystown Park Foul Pumping Station which has also been permitted under FCC Ref FW21A/0042.

Foul sewage will be directed to the Uisce Éireann Wastewater Treatment Plant (WwTP) at Ringsend prior to final discharge to Dublin Bay. The Ringsend WwTP operates under licence from the EPA (Licence no. D0034-01) and received planning permission (ABP Reg. Ref.: 301798) in 2019 for upgrade works, which are expected to be completed within five years. This will increase the plant capacity from 1.65m PE (population equivalent) to 2.4m PE. Regardless of the status of the WwTP upgrade works, the peak discharge from the proposed development is not significant in the context of the existing capacity available at Ringsend. Though the WwTP is currently over capacity (the plant is currently

accommodating 1.9m PE), recent water quality assessment undertaken in Dublin Bay (published by the EPA) confirms that Dublin Bay is classified as “*unpolluted*”, indicating that the over-capacity issues at Ringsend are not having any impacts on water quality in Dublin Bay. Regardless of the foregoing, the loading from the proposed development is inconsequential in the context of the WwTP.

- Operational impacts related to foul water management, in the context of biodiversity, as a result of the proposed development, will ***not be significant***.

8.5 Mitigation Measures

8.5.1 Construction Phase

8.5.1.1 Incorporated Design Mitigation

The proposed development incorporates a comprehensive landscape design, with biodiversity-focussed planting (refer to Chapter 13 (Landscape & Visual, prepared by Brady Shipman Martin) and the Landscape Strategy and Landscape Masterplan drawings, prepared by Bernard Seymour Landscape Architecture (BSLA) and submitted as part of this application under separate cover). The planting and long-term management proposed in the Landscape Strategy will enhance the biodiversity resource on the proposed development site by enhancing the retained habitats (principally the boundary hedges and ditches) and creating new, pollinator-friendly habitats.

8.5.1.2 Designated Conservation Areas

No designated conservation areas will be impacted in any way by the proposed development and no mitigation measures are required in this regard. Refer to the AA Screening Report that accompanies the planning application for full details in relation to European designated sites.

8.5.1.3 Habitats

There will be no significant habitat loss as a result of the proposed development, and no significant impacts on Key Ecological Receptors.

Regardless, as set out in the BSLA Landscape Strategy and Landscape Masterplan drawings, a significant amount of new planting has been incorporated into the landscape design, and the planting has been designed with a view to maximising the new biodiversity resource at the proposed development site. The proposed planting / landscaping strategy includes a mix of appropriate species, incorporating species that will attract feeding invertebrates, including moths, butterflies and bees. It takes account of and implements the policies and objectives of the *All-Ireland Pollinator Plan (2020 - 2025)*¹⁸. As set out in the Landscape Strategy (BSLA, 2023), small orchard-type tree groups, areas of unmowed grass areas and bulb planting for pollinators, and nest boxes, bat boxes and insect hotels will be incorporated in the development.

Apart from the provision of 2.25 Ha of Class 2 open spaces throughout the proposed development, additional open space (2.41 Ha) as linear park areas, drain/hedgerow corridor and ancillary spaces and further additional open space (1.86Ha) as linear park areas will be provided. The additional open space includes riparian zones along the existing drains, ancillary spaces and the buffer area under the ESB powerlines.

¹⁸ [NBDC \(2021\)](#)

As set out in some detail in the accompanying Landscape Strategy (BSLA, 2023) and as noted in this EIAR chapter, the northern and southern (existing) hedgerows are to be retained, protected and enhanced (except where new connections are required). The eastern hedgerow / tree line is in very poor ecological and arboricultural condition, and is therefore to be replaced with a dense and diverse new native hedgerow. This work will be undertaken under the supervision of the appointed project arborist and project ecologist.

The proposed planting schedule contains no invasive species and none will be introduced, either deliberately or inadvertently, to the proposed development site. As noted in **Section 8.4.1.3** appropriate biosecurity measures will be implemented during the construction phase of the proposed development under the scope of a Biosecurity Plan (refer to **Appendix 8.2** – Outline Biosecurity Plan).

8.5.1.4 Fauna

The clearance of scrub and other vegetation that may be suitable for use by nesting birds will be undertaken outside the bird nesting season (avoiding the period 1 March to 31 August). Should the construction programme require vegetation clearance between March and August, and this is unavoidable, bird nesting surveys will be undertaken by suitably qualified ecologists. If no active nests are recorded, vegetation clearance will take place within 24 hours. In the event that active nests are observed, an appropriately sized buffer zone (up to 5 m radius around the nest) will be maintained around the nest until such time as all the eggs have hatched and the birds have fledged – a period that may be three weeks from the date of the survey. Once it is confirmed that the birds have fledged and no further nests have been built or occupied, vegetation clearance may take place immediately.

There will be no impacts on badgers or other large mammals. Regardless, a pre-construction check for badgers will be undertaken prior to the commencement of construction, to ensure this remains the case.

As bats are highly mobile creatures, a bat specialist shall examine the trees for bat roost potential and for the presence of bats before felling commences. The trees shall be assessed by a bat specialist from a height access if due for felling in winter or by a bat detector assessment (or a combination of both) if felling occurs at any other time. The discovery of any bat roosts shall require a derogation from the National Parks and Wildlife service.

If a bat survey has been undertaken by a bat specialist and bats have been determined to be absent, felling may proceed under the supervision of a bat specialist. If there is any doubt regarding the presence of bats, height access shall be provided to allow the examination of any trees with roost potential prior to felling.

It is proposed to install a significant number of bat and bird boxes both throughout the proposed development site. The reason for the installation of bat boxes is not to provide replacement roosts; rather, it is to augment the overall ecological value of the site. This will contribute to maximising the ecological value of the proposed development.

To that end a number of bat and bird boxes will be erected, with advice from the project Ecologist, in appropriate areas (within unlit areas away from traffic and likely disturbance within the site, no less than 3m above the ground in uncluttered areas, facing in a southerly direction). The locations of the bat boxes shall be agreed with a bat specialist. The boxes proposed are as follows (this list is subject to revision based on the availability of suitable boxes in the future):

- 6 no. Schwegler 2F or similar. These boxes may be attached to buildings, trees, or poles. Alternatively, inbuilt bat boxes may be used in 6 houses. The following are options: Integrated Eco Bat Box and Vivara Pro Build-in WoodStone Bat Box. The locations of bat boxes shall be agreed with a bat specialist;
- 9 no. assorted wooden or woodcrete bird boxes, suitable for use by robins, blue tits and tree creepers.

Bats are sensitive to light at night, and the lighting design will ensure that the proposed development will not result in impacts on bats that do commute / forage in or near the proposed development site.

The lighting design for the proposed development (see **Section 8.4.3.1**) includes the following measures:

- Where human safety permits it, dark corridors and dark areas will be incorporated into the open space and landscape design for the proposed development;
- All luminaires shall lack UV elements when manufactured and shall be LED;
- A warm white spectrum shall be adopted to reduce blue light component; and
- Luminaires shall feature peak wavelengths higher than 550 nm.

8.5.1.5 Surface Water

There will be no surface water related impacts on biodiversity as a result of the proposed development.

The surface water mitigation measures proposed in Chapter 10 (Hydrology) and in the CEMP, to be finalised by the appointed contractor in agreement with Fingal County Council, will ensure that no sediment contamination, contaminated run-off or untreated wastewater will enter any on-site surface water ditches and drains and, in particular, the Rivers Tolka and Pinkeen East (downstream of the site) as a result of the construction of the proposed development.

8.5.2 Operational Phase

8.5.2.1 Foul Water

As noted in **Section 8.3.2**, there will be no impacts on foul water treatment capacity at the Ringsend WwTP as a result of the proposed development. No mitigation measures are required.

8.5.2.2 Surface Water

There will be no impacts related to surface water, including on downstream rivers (that is, the River Tolka), as a result of the proposed development. The development is designed in accordance with the principles of SuDS as embodied in the recommendations of the GDSDS, which addresses the issue of sustainable water management by requiring designs to comply with a set of drainage criteria which aim to minimize the impact of urbanization, by replicating the run-off characteristics of the greenfield site. The criteria provide a consistent approach to addressing the increase in both rate and volume of run-off, as well as ensuring the environment is protected from any pollution from roads and buildings. No corresponding mitigation measures are required.

8.6 Residual Impacts

Following the implementation of the proposed mitigation measures there will be a long-term to permanent slight negative impact on commuting and foraging bats. Overall however, although the

proposed development may have temporary negative impacts on biodiversity at the site level, these impacts will be fully mitigated over time and there will be *no long-term, residual impact*.

There will be no other negative impacts on habitats or fauna following the full and proper implementation of the mitigation measures set out in this EIAR chapter.

8.7 Monitoring

A suitably experienced Project Ecologist will be appointed for the duration of the construction phase and regular monitoring of all related works will take place to ensure the correct and full implementation of all mitigation measures. The Project Ecologist will ensure that all construction works take place in accordance with planning conditions, the project CEMP and the mitigation measures set out in this EIAR.

As noted in **Section 8.5.1.4**, vegetation clearance will only be permitted outside the bird-nesting season. Should vegetation clearance be required during the bird nesting season, and should this work be unavoidable, such clearance will take place only after the Project Ecologist has undertaken a survey to ensure that no active bird nests or recently fledged birds are present. Pre-construction surveys will be required to ensure that any necessary tree felling or works to buildings continue to have no impact on roosting bats.

No long-term ecological monitoring is required, other than post-construction monitoring of the bat and bird boxes installed. The bat and bird boxes installed on the site will be checked annually for a period of two years post-completion of the works, to ensure that they continue to be accessible to these species. If necessary they will be repositioned within the site.

On completion of construction, the lighting installed will be reviewed by the Project Ecologist and a bat specialist, to ensure that it is operating according to the approved specifications.

8.8 Reinstatement

The long-term management of the proposed development will incorporate best practice measures to maintain and enhance the level of biodiversity at the site.

Given the comprehensive mitigation and landscape design proposed, no other ecological reinstatement is required.

8.9 Interactions

At the proposed development site, the main interactions of importance to biodiversity relate to Landscape & Visual (Chapter 13), Hydrology (Chapter 10), Land, Soils, Geology & Hydrogeology (Chapter 9) and Air Quality & Climate (Chapter 11). The mitigation measures for the proposed development have been designed to minimise the potential impact that the construction, and operational phases may have on the receiving environment.

8.9.1 Land, Soils, Geology & Hydrogeology (Chapter 9)

Effects and impacts in relation to the geological and hydrogeological environment have the potential to negatively affect biodiversity. For example, soil stripping and excavations on the site will result in the loss of existing habitats. There is also the potential for negative impacts on aquatic ecology due to discharge of sediment-laden run-off and / or groundwater pollution during the proposed works. With

the mitigation measures in place, the predicted impact during construction phase due to this interaction will be ***negative, imperceptible and short-term***.

There are no potentially significant interactions identified between Land, Soils and Hydrogeology, and Biodiversity during the operational phase.

8.9.2 Hydrology (Chapter 10)

Effects and impacts in relation to surface water have the potential to negatively affect biodiversity. For example, unmitigated water quality impacts may result in negative impacts on aquatic ecology. With the mitigation measures in place, the predicted impact during construction phase due to this interaction will be ***negative, imperceptible and short-term***.

There are no potentially significant interactions identified between Hydrology, and Biodiversity during the operational phase.

8.9.3 Air Quality and Climate (Chapter 11)

Dust emissions from construction works have the potential to impact vegetation in the vicinity of the site. Vehicular emissions during construction and operation also have the potential to impact vegetation as a result of NOx emissions leading to nitrogen deposition. With the mitigation measures in place, the predicted impact during construction phase due to this interaction will be ***neutral, imperceptible and short-term***.

There are no potentially significant interactions identified between Hydrology, and Biodiversity during the operational phase.

8.9.4 Landscape & Visual (Chapter 14)

The landscape design for the proposed development takes into account the requirements to maximise the benefits to biodiversity, both locally and within the wider landscape. The landscape scheme (refer to Chapter 13 and the Landscape Strategy and Landscape Masterplan, prepared by Bernard Seymour Landscape Architects (2023) and submitted as part of this application under separate cover) proposes significant ecologically sensitive planting to provide for potentially diverse habitats. With the mitigation measures in place, the predicted impact during construction phase due to this interaction will be ***negative, slight and short-term*** and during operational phase will be ***neutral to positive over time, slight and long term***.

As noted in Chapter 19 (Interactions) the potential significant impacts of biodiversity have been considered within the relevant discipline, and mitigation measures outlined, where required. With mitigation measures in place, no significant residual negative impacts are predicted.

8.10 Cumulative Impacts

This chapter has been prepared with reference to the list of other developments in the vicinity set out in Chapter 20 (Cumulative Impacts). Neither the development proposed nor any other developments will give rise to any significant impacts on biodiversity and there are no predicted cumulative impacts in relation to biodiversity, for example in terms of habitat loss or disturbance to protected species, as a result of the proposed development in combination with existing / proposed plans or projects.

8.11 Difficulties Encountered

No difficulties were encountered in compiling the Biodiversity Chapter of this EIAR. All surveys were undertaken to an appropriate level, given the nature of the site and the proposed development.

8.12 Conclusion

There will be ***no significant long-term residual impact*** on ecological receptors, either within or in the vicinity of the proposed development, or associated with any site designated for nature conservation as a result of the proposed development.

8.13 References

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- CIEEM (2022). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management, Winchester, United Kingdom (V1.2)
- Council Directive 79/409/EEC on the Conservation of Wild Birds. (The EU Birds Directive)
- Council Directive 92/43/EEC of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora. (The EU Habitats Directive)
- Council Directive 2000/60/EC of the European Parliament and of the Council establishing a Framework for the Community Action in the Field of Water Policy (The Water Framework Directive)
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9 Land, Soils, Geology & Hydrogeology

9.1 Introduction

This chapter assesses and evaluates the potential impacts of the proposed development on the land, soil, geological and hydrogeological aspects of the proposed site and surrounding area, in accordance with the requirements of Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment (i.e. the EIA Directive) (European Union, 2014a).

This chapter evaluates the effects, if any, which the proposed development will have on Land, Soils, Geology and Hydrogeology and contains the information as defined in the Environmental Protection Agency (EPA) 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (EPA, 2022), Article 94 and Schedule 6 of the Planning and Development Regulations 2001 (as amended), and Article 5 and Annex IV of the EIA Directive (2011/92/EU, as amended). This Chapter also provides a characterisation of the receiving hydrogeological environment within the proposed development and within a wider study area in the vicinity of the proposed development. In assessing likely potential and predicted effects, account is taken of both the importance of the attributes and the predicted scale and duration of the likely effects.

This chapter has been prepared by Marcelo Allende and Luke Maguire, Senior Hydrologist and Environmental Consultant at AWN Consulting Ltd, respectively. Refer to **Table 1.4** in Chapter 1 (Introduction) for qualifications of authors and reviewers.

9.2 Method

The baseline assessment has been carried out in accordance with the following guidance and established best practice:

- Environmental Protection Agency (EPA) Guidelines on the Information to be contained in Environmental Impact Statements (EPA, 2022).
- Transport Infrastructure Ireland (TII) / National Roads Authority (NRA) Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (TII/formerly NRA, 2009).
- Water Framework Directive (WFD) - Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy. This relates to the improvement of water quality across Ireland including rivers and groundwater bodies.
- River Basin Management Plan 2018-2021 (including regional plans by Local Authority Waters Programme (Waters and Communities 2020)). Draft River Basin Management Plan 2022-2027.
- Institute of Geologists Ireland (IGI) -Geology in Environmental Impact Statements, a guide (IGI, 2002) and Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements (IGI, 2013).

Water resource management in Ireland is dealt with in the following key pieces of legislation and guidelines:

- European Communities Environmental Objectives (Groundwater) Regulations 2010 (S.I. No. 9 of 2010).

- European Communities Environmental Objectives (Groundwater) Amendment Regulations 2016 (S.I. No. 366 of 2016); European Communities Environmental Objectives (Groundwater) (Amendment) Regulations 2022 S.I. No. 287 of 2022.
- Part IV of the First Schedule of the Planning and Development Act 2000, as amended.
- European Union (Water Policy) Regulations 2014 (S.I. No. 350 of 2014)
- Environmental Protection Agency ‘Towards Setting Guideline Values for the Protection of Groundwater in Ireland Interim Report’, (EPA 2003).
- European Union (Drinking Water) Regulations 2014 (S.I. No. 122/2014).
- European Union (Drinking Water) Regulations 2023 S.I. No. 99/2023

9.2.1 Criteria for Rating of Effects

This chapter is prepared in line with the ‘*Guidelines on the Information to be contained in Environmental Impact Assessment Reports*’ (EPA, 2022) and due consideration is also given to the guidelines provided by the Institute of Geologists of Ireland (IGI) in the document entitled ‘*Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements*’ (IGI 2013).

The document entitled ‘*Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes*’ by the Transport Infrastructure Ireland (TII) formerly National Roads Authority (NRA) (TII, 2009) is referenced where the methodology for assessment of impact is appropriate. Furthermore, in line with the TII Guidelines, an assessment of the attribute importance has been undertaken in order to provide a basis for the assessment of impact provided. The attribute importance considers the potential as well as the existing use of the surface water features as a water resource (i.e., water supply, fisheries and other uses) as well as ecological habitat requirements.

The rating of potential environmental effects on the land, soil, geological and hydrogeological environment is based on the effect characterisation as per the EPA 2022 guidelines (refer to **Table 1.5** included in Chapter 1) which takes account of the quality, significance, duration, and type of effect characteristic identified.

The duration of each effect is considered to be either momentary, brief, temporary, short-term, medium term, long-term, or permanent. Momentary effects are considered to be those that last from seconds to minutes. Brief effects are those that last less than a day. Temporary effects are considered to be those which are construction related and last less than one year. Short term effects are seen as effects lasting one to seven years; medium-term effects lasting seven to fifteen years; long-term effects lasting fifteen to sixty years; and permanent effects lasting over sixty years.

The TII criteria for rating the magnitude and significance of impacts on the geological related attributes and the importance of hydrogeological attributes at the site during the EIA stage are also relevant in assessing the impact and are presented in Tables 1-5 in **Appendix 9.1**.

The principal attributes (and effects) to be assessed include the following:

- Water Framework Directive (WFD) Status and potential for increased risk of deterioration of this status due to the activities of the site;
- Geological heritage sites in the vicinity of the perimeter of the development site;
- Landfills, industrial sites in the vicinity of the subject site and the potential risk of encountering contaminated ground;
- The quality, drainage characteristics and range of agricultural uses of soil around the site;

- Quarries or mines in the vicinity, the potential implications (if any) for existing activities and extractable reserves;
- The extent of topsoil and subsoil cover and the potential use of this material on site as well or requirement to remove it off-site as waste for disposal or recovery;
- High-yielding water supply springs/ wells in the vicinity of the subject site to within a 2km radius and the potential for increased risk presented by the proposed development;
- Classification (regionally important, locally important etc.) and the extent of aquifers underlying the site perimeter area and increased risks presented to them by the proposed development associated with aspects such as for example removal of subsoil cover, removal of aquifer (in whole or part), drawdown in water levels, alteration in established flow regimes, change in groundwater quality;
- Natural hydrogeological / karst features in the area and potential for increased risk presented by the activities at the site; and
- Groundwater-fed ecosystems and the increased risk presented by operations both spatially and temporally.

9.2.2 Sources of Information

Desk-based geological information on the substrata (both quaternary deposits and bedrock geology) underlying the extent of the subject site was obtained through accessing databases and other archives where available. Data was sourced from the following:

- Geological Survey of Ireland (GSI) - on-line mapping, Geo-hazard Database, Geological Heritage Sites & Sites of Special Scientific Interest, Bedrock Memoirs and 1:100,000 mapping;
- Teagasc soil and subsoil database;
- Ordnance Survey Ireland - aerial photographs and historical mapping;
- Environmental Protection Agency (EPA) – website mapping and database information;
- National Parks and Wildlife Services (NPWS) – Protected Site Register.
- Ireland Topographic Map, Elevation, Terrain (Source: <https://en-ie.topographic-map.com/map-rgp/Ireland>)

Site specific data was derived from the following sources:

- Various design site plans and drawings; and
- Consultation with site engineers.

9.3 Baseline Environment

9.3.1 General Description and Previous Land Use of the Site

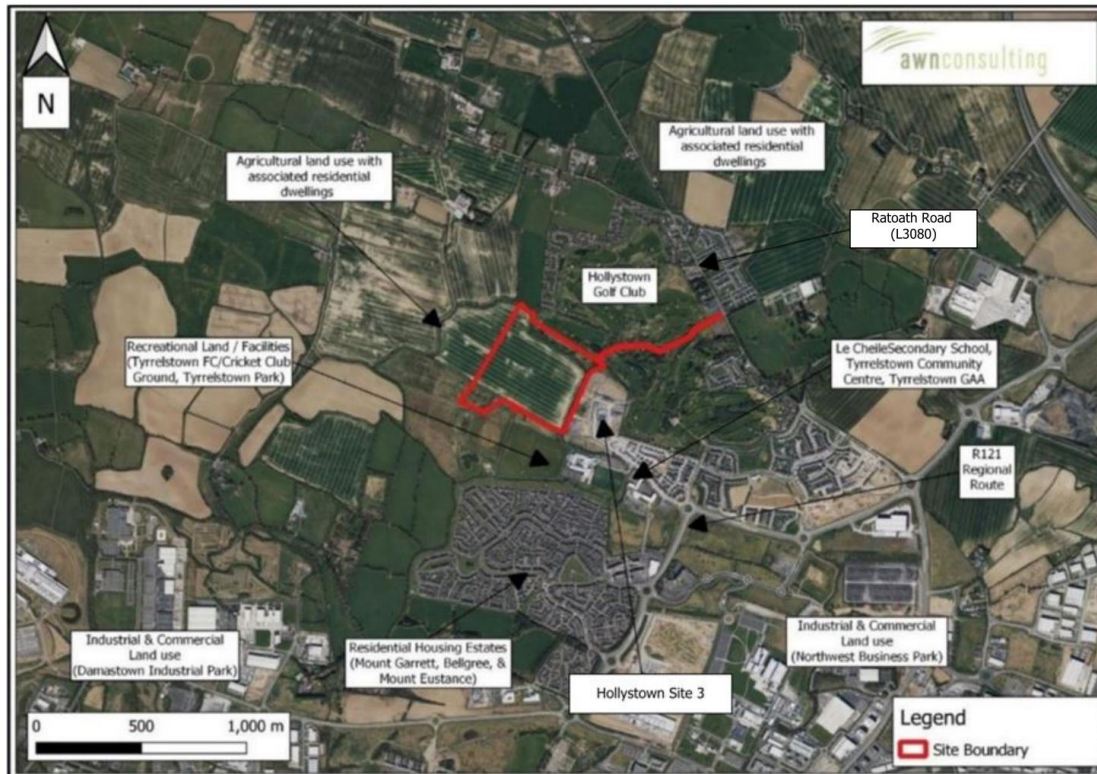
The proposed development relates to a site of c.20.6 ha referred to as Hollystown-Kilmartin Site 4 located to the north-west of Dublin city centre in the townland of Hollystown and Kilmartin, Dublin 15. The site is bound by lands which previously formed part of the former Hollystown Golf Club and the residential area of Hollystown Park to the north, lands forming part of a permitted Strategic Housing Development (SHD) application to the east (ABP Reg. Ref. 312271), Tyrrelstown Park to the south, and rural zoned agricultural lands to the west. The proposed development will include for the development of 580 no. residential units, consisting of 112 no. apartments/duplexes and 468 no. houses ranging from 1 – 3 storeys and will also include for car parking, cycle parking, new pedestrian/ cycle links, storage, services and plant areas. Landscaping will include for high quality private open space, communal amenity areas and public open space provision.

The majority of proposed development is currently a greenfield site, used for agricultural purposes, while a minor northern portion of the site (adjacent to the north-east boundary) and the haul road to the site from Ratoath Road (L3080) is brownfield, comprising the former Hollystown Golf Course (made ground). There are two existing surface watercourses (drainage network) on-site which are located adjacent to the sites northern/north-western and southern boundaries (Hollywood Stream and Mooretown Stream respectively). The site is comprising portions of two fields separated by hedgerows (agricultural plots), coupled with a portion of land in the west of the former Hollystown Golf Course. The site lies at an average elevation between 71 and 72 mAOD, has a high point running from east to west and is characterised by topography which generally slopes / falls to the north-west and south-west to the existing drainage ditches / streams. Surface water, rainfall, is generally percolated through the site via grass and soil. The topographic survey has confirmed that the internal and boundary hedgerows contain ditches which convey flow to an unnamed ditch system to the north-west and south of the site, during heavier rainfall events.

Surface water, rainfall, is generally percolated through the grass and soil via gravity. The topographic survey has confirmed that the internal and boundary hedgerows contain ditches which convey flow to an unnamed ditch system to the north and west and south of the site, during heavier rainfall events. There are existing drainage ditches located along the northern and eastern boundaries of the subject site which are connected to existing watercourses (Hollywood & Mooretown Stream) located along the proposed development sites northern and southern boundaries, respectively. The Hollywood Stream generally flows in a westerly direction passing through the former Hollystown Golf Course, the proposed haul road route and along the northern boundary of the development site, while the Mooretown Stream generally flows from the south-east in a north-west direction along the southern site boundary and traversing the western site boundary. These two streams merge at a confluence point located approximately 0.3km west of the site.

The proposed development has no existing connection to the public drainage system as it is predominantly a greenfield site. There are existing drainage ditches located adjacent to / along the northern, southern and eastern boundaries of the subject site which are connected to existing watercourses (Hollywood & Mooretown Stream) located along the proposed development sites north-western and southern boundaries, respectively. The Hollywood Stream and Mooretown Stream to the south) generally convey flow in a westerly direction to join the Pinkeen river approximately 0.8 km west of the site, which subsequently discharges downstream to the Tolka River approximately 2.7 km south of the subject site (c. 3.4km downstream) at Mulhuddart Village (refer to **Figure 9.1** below). The Pinkeen River is a tributary of the Tolka River, which in turn outfalls to the Irish Sea at South Dublin Bay and River Tolka Estuary Special Protection Area (SPA).

Figure 9.1 Site location and surrounding activities



The majority of the proposed development is currently in use for arable agricultural activities. There are two proposed vehicular access points proposed to serve the subject development, these 2 access points are an extension of the primary and secondary link streets from the Hollystown 2 development. The Hollystown Site 4 scheme proposes access via an extension of the existing partially constructed Link Street which currently serves the Le Chéile Secondary School. A haul road will provide access to the site from Ratoath Road (L3080) to the North via (traversing through) the former Hollystown Golf Course.

The site is unoccupied by any building structures and is characterised by an agricultural function coupled with a former recreational land (previously known as Hollystown Golf Club).

According to the EPA (2023) there are multiple IEL licensed activities currently active in the vicinity of the subject site (between 550 m and 1 km to the south of the southern boundary of the development site). Some of these include:

- Energia Power Limited (P0077-02);
- Huntstown Power Company (P0483-04);
- Huntstown Bioenergy Limited (P0993-02).

Huntstown quarry is a licensed inert waste recovery facility operating under license number W0277-03 issued in 2015. From a review of the Annual Environmental Reports and Licensee Reports related to the activities at the Huntstown Power Station and Huntstown Quarry on the EPA website a number of noncompliance issue were noted. However, there is no indication that these would result in adverse environmental impact on the subject site as it is located downgradient and therefore there would no effects on soils or groundwater underlying the subject site due to its operation.

Consultation with Fingal County Council have confirmed that there are no known illegal/historic landfills within 500 metres of the site. Historical Ordnance Survey maps were examined for the purpose of this assessment. O.S. maps were available from 1830 (the historic 6" maps) and 1900 from the historic 25"

maps. The historic maps indicate that the subject site was greenfield up to the present. No evidence was noted to indicate commercial or industrial processes have been undertaken on the subject site. The subject site appears to be used for agricultural purposes possibly grazing, cropping, storing cattle. According to historical maps and aerial photographs this land use has not changed from 1830 to present, with the exception of the minor land portion of the site which previously belonged to the former Hollystown Golf Club.

9.3.2 Site Investigation Works

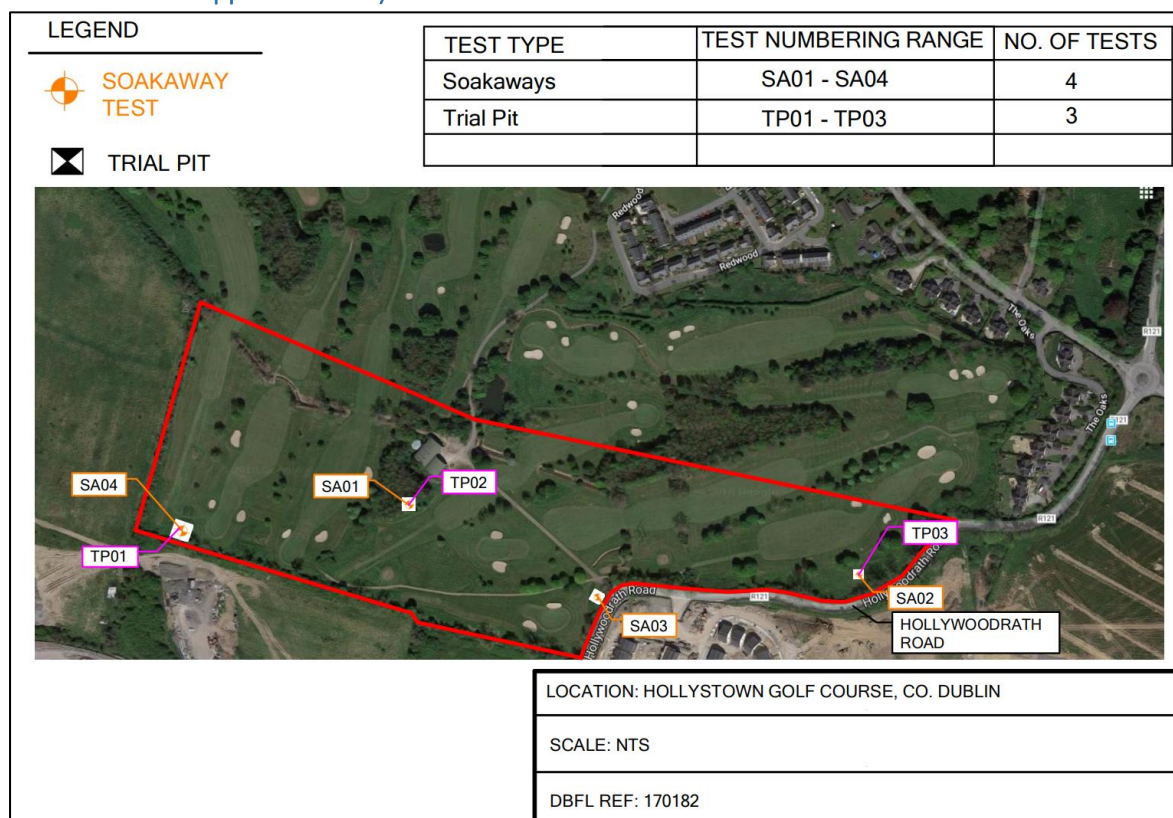
Site investigations were carried out by GII (2018) to the east of the site on/within former Hollystown Golf Course. These investigations included the following:

- Carry out 4 No. Trial Pit to a maximum depth of 2.00m BGL;
- Carry out 4 No. Soakaway to determine a soil infiltration value to BRE digest 365.

Trial pit and borehole logs are included in **Appendix 9.2**, which include a description of the lithologies observed in each excavation, depth to bedrock, type of bedrock and any water strikes encountered during the excavations.

The locations of trial pits and boreholes from which representative samples were collected are presented in **Figure 9.2** below.

Figure 9.2 Representative site investigation locations (GII, 2018) (Note : Red line is not subject application site)



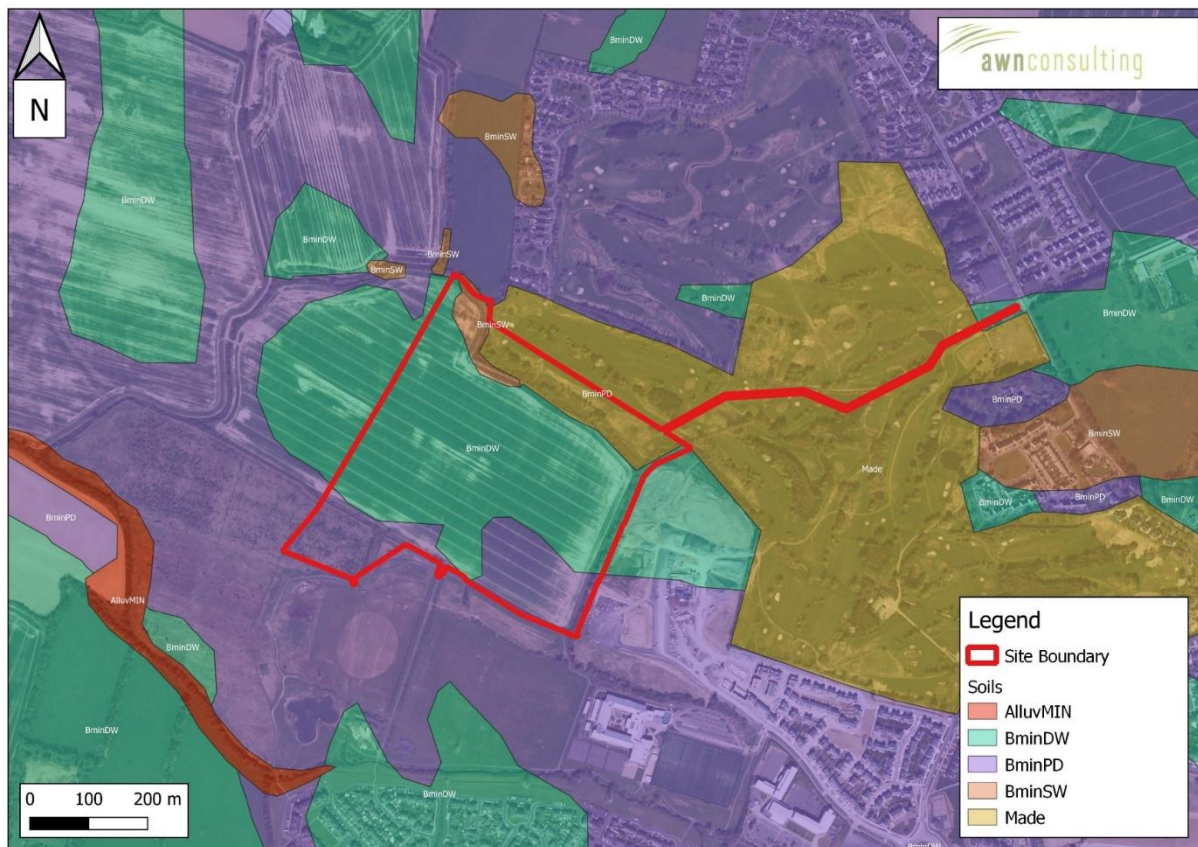
9.3.3 Soils

The GSI / Teagasc mapping shows that the soil type beneath the local area is composed predominantly of 'BMinDW - mainly basic deep well-drained mineral soils', while a localized zone of 'BminSW - mainly

basic shallow well drained soils' is found in lesser abundance underlying land in the north of the site. According to GSI mapping 'Made Ground' is underlying the north-east portion of the proposed development and the proposed haul road to the site from Ratoath Road (L3080), both of which occupy / traverse land of the former Hollystown Golf Course, located in the north-east of the site. 'BminPD - mainly basic poorly drained soils' are depicted in the south and south-west of the site as presented in **Figure 9.3** below.

A ground investigation undertaken by Ground Investigations Ireland (2018) reported the ground conditions on /within the former Hollystown Golf Course to be consistent with cohesive brown and brown grey slightly sandy slightly gravelly CLAY with occasional Limestone clasts encountered.

Figure 9.3 Soils map (Source: Teagasc, 2023)



9.3.4 Subsoils

The Quaternary geological period extends from about 1.5 million years ago to the present day and can be sub-divided into the Pleistocene Epoch, which covers the Ice Age period, and which extended up to 10,000 years ago and the Holocene Epoch, which extends from that time to the present day.

The GSI / Teagasc mapping database of the subsoils in the area of the proposed development indicates one principal soil type, as shown in **Figure 9.4** below. The quaternary subsoil type present across the site is:

- LIMESTONE till Carboniferous (TLs). The subject site is composed primarily of TILL derived from limestone. This till is made up of glacial CLAYs which are less permeable than alluvium subsoils.
- Bedrock OUTCROP or shallow underlying SUBCROP. The northern portion of the site is underlain by a combination of bedrock outcrop and shallow buried subcrop according to the GSI mapping.

The EPA soil mapping indicates that the soils comprise primarily of Carboniferous limestone diamictons (tills). The EPA have classed this area as non-irrigated agricultural land with arable farming function. The site does not lie within the boundary of any previous mineral extraction sites.

Figure 9.4 Subsoils map (Source: GSI, 2023)



As mentioned above, site investigations were undertaken in 2018 to the east of the site redline boundary and adjacent lands to establish the shallow soil and water conditions. The soil profile encountered can be summarised accordingly as follows:

- 0- 0.15m BGL: Dark brown slightly sandy slightly gravelly TOPSOIL with grass rootlets
- 0.15- 0.5m BGL: Firm to stiff greyish brown slightly sandy slightly gravelly CLAY. Gravel is sub-angular to sub-rounded fine to coarse limestone.
- 0.5- 0.9m BGL: Firm to stiff brown slightly sandy gravelly CLAY with occasional angular to sub-angular cobbles of limestone. Gravel is sub-angular to sub-rounded fine to coarse limestone.
- 0.9- 1.6m BGL: Firm grey mottled brown slightly sandy slightly gravelly CLAY with rare cobbles of sub-rounded limestone. Gravel is sub-angular to sub-rounded fine to coarse limestone.
- No Bedrock was encountered during ground investigation.

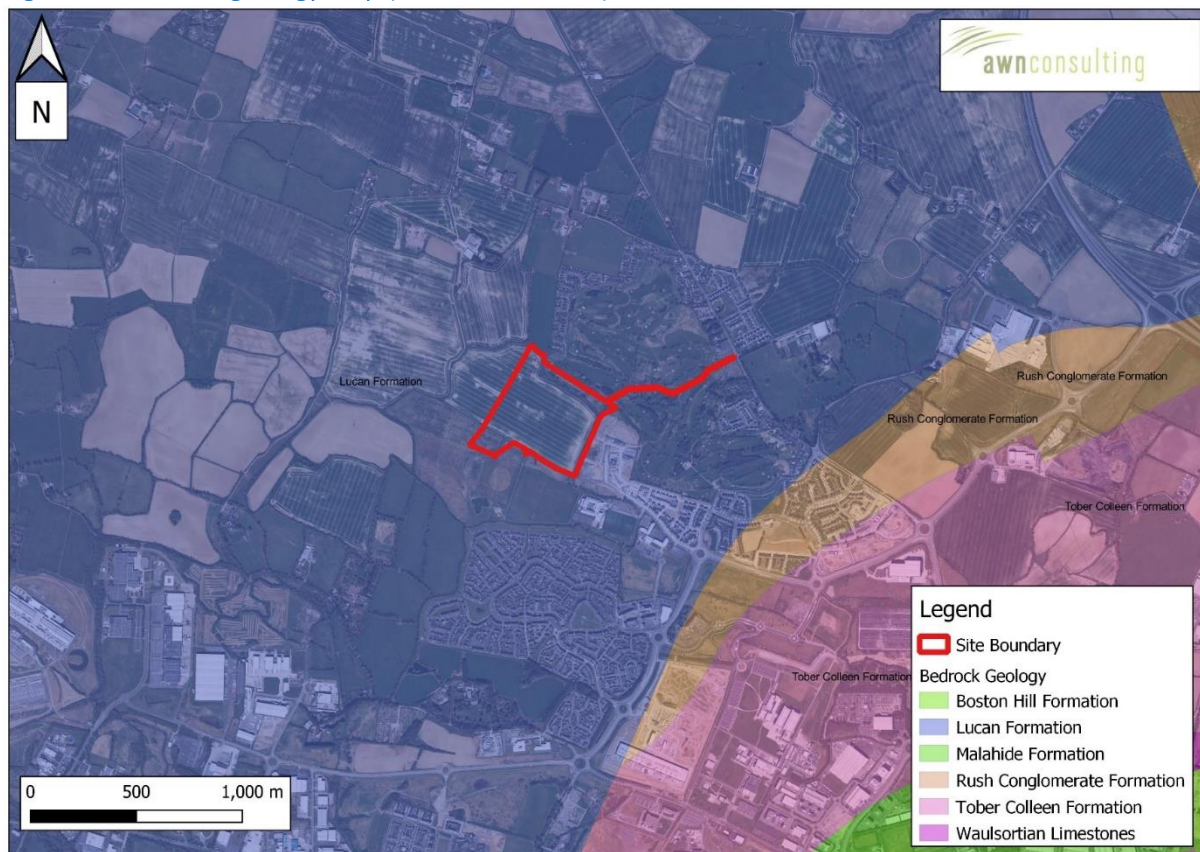
This profile encountered at the site investigation within the former Hollystown Golf Club is considered to be representative for characterising the site in question, with the exception of some land in the north of the site which consists of gravelly clay FILL material and underlying MADE GROUND described as *Brown slightly sandy slightly gravelly Clay with rare sub-angular limestone cobbles and rare fragments of plastic*. The made ground present is likely a result of landscaping for the former Hollystown Golf Club. Refer to **Figure 9.2** above for locations of trial pits and boreholes. Trial pit and borehole logs from the above investigation can be viewed in **Appendix 9.2**.

9.3.5 Bedrock Geology

Inspection of the available GSI (2023) records (Data Sheet 16 and online mapping database) shows that the bedrock geology of the proposed development and the immediate vicinity is dominated by Carboniferous dark limestone & shale (‘calp’) referred to as part of the Lucan Formation (Rock Unit code: CDLUCN).

The surrounding regional area has greater geological variability. GSI (2023) maps depict lands to the south-east of the site overlying the Rush Conglomerate Formation (Rock Unit code: CDRUSC) coupled with Calcareous shale and limestone conglomerates referred to as part of the Tober Colleen Formation (Rock Unit code: CDTOBE), which is bordered to the south-east by massive unbedded lime-mudstone of the Waulsortian Limestones (which have been noted to underly the Tober Colleen), and further to the south by Argillaceous bioclastic limestone and shale of the Malahide formation. No faults transverse through the site (refer to **Figure 9.5** below).

Figure 9.5 Bedrock geology map (source: GSI, 2023)



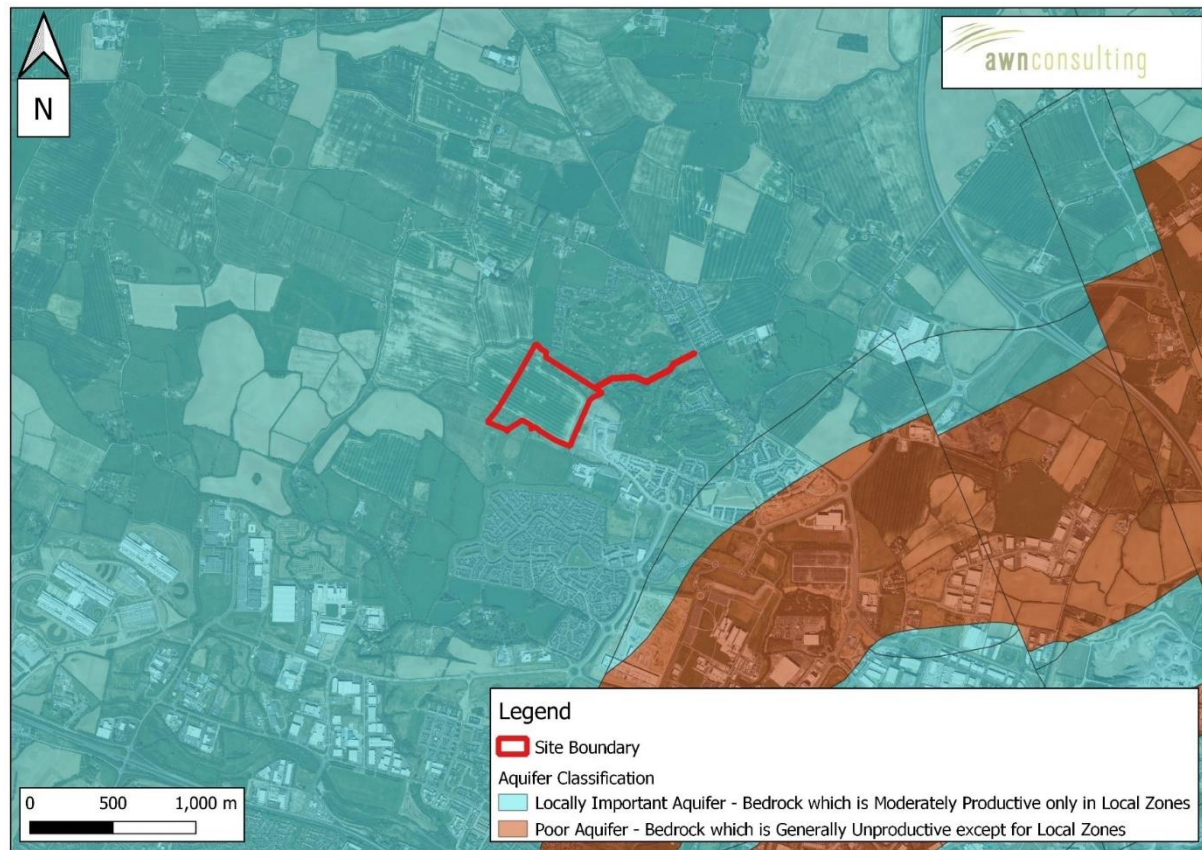
9.3.6 Regional Hydrogeology

The GSI has devised a system for classifying the bedrock aquifers in Ireland. The aquifer classification for bedrock depends on a number of parameters including, the area extent of the aquifer (km²), well yield (m³/d), specific capacity (m³/d/m) and groundwater transmissivity (mm³/d). There are three main classifications: regionally important, locally important and poor aquifers. Where an aquifer has been classified as regionally important, it is further subdivided according to the main groundwater flow regime within it. This sub-division includes regionally important fissured aquifers (Rf) and regionally important karstified aquifers (Rk). Locally important aquifers are sub-divided into those that are generally moderately productive (Lm) and those that are generally moderately productive only in local

zones (LI). Similarly, poor aquifers are classed as either generally unproductive except for local zones (PI) or generally unproductive (Pu).

From analysis of GSI National data the bedrock aquifer underlying the proposed development is classified as Locally Important Aquifer (LI) which is moderately productive only in Local Zones. GSI mapping shows an area of Poor (PI) aquifer which is characterised as Generally Unproductive except for Local Zones, located in close proximity to the south-east of the subject site (refer to **Figure 9.6** below).

Figure 9.6 Aquifer Classification Map (source: GSI, 2023)



9.3.7 Aquifer Vulnerability

Aquifer vulnerability is a term used to represent the intrinsic geological and hydrogeological characteristics that determine the ease with which groundwater may be contaminated generally by human activities. Due to the nature of the flow of groundwater through bedrock in Ireland, which is almost completely through fissures, the main feature that protects groundwater from contamination, and therefore the most important feature in protection of groundwater, is the subsoil (which can consist solely or of mixtures of peat, sand, gravel, glacial till, clays or silts).

The GSI currently displays / shows varied aquifer vulnerability across the development site and its vicinity. The south and south-west of the proposed development overlies a 'Moderate' vulnerable aquifer. The haul road to the site from Ratoath Road (L3080) which traverses the former Hollystown overlies land which is classified as 'Moderate' vulnerability, which indicated an overburden thickness of 5-10m of low permeability soils. While moving north the vulnerability progresses to 'High' and 'Extreme' in the central and north portion of the site, respectively. The very south-east corner of the site is characterised by low vulnerability. As can be seen from **Table 9.1** below an 'Extreme' vulnerability with

clayey subsoil denotes a depth to bedrock of 0-3 mbgl, while 'High' vulnerability signifies 3-5 mbgl. The aquifer vulnerability class in the region of the site is presented below as **Figure 9.7**.

Figure 9.7 Aquifer vulnerability map (source: GSI, 2023)

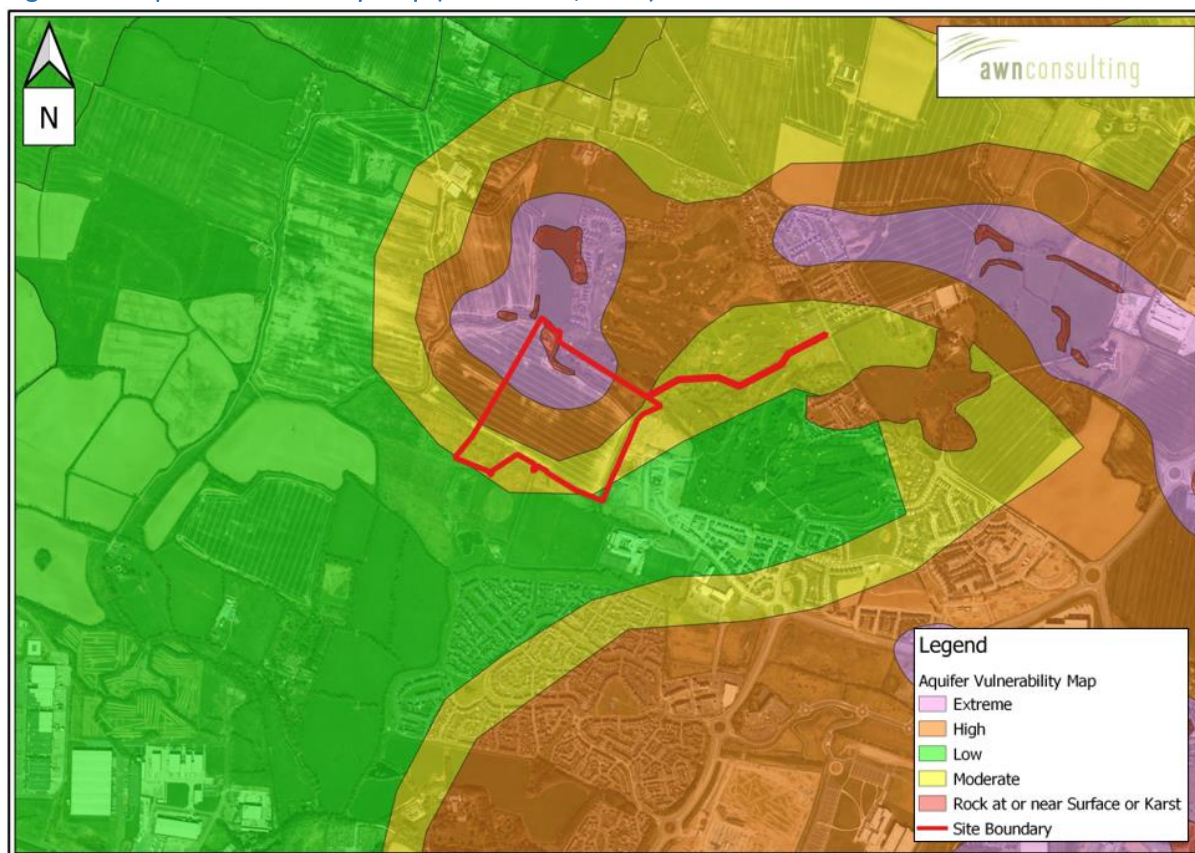


Table 9.1 Vulnerability mapping guidelines (source: GSI, 2023)

Vulnerability Rating	Hydrogeological Condition				
	Subsoil Permeability (type) and Thickness ¹⁹			Unsaturated Zone	Karst Features
	High Permeability (sand/gravel)	Moderate Permeability (e.g. sandy subsoil)	Low Permeability (e.g. clayey subsoil, clay, peat)	(Sand/ gravel aquifers only)	(<30 m radius)
Extreme (E)	0 - 3 m	0 - 3 m	0 - 3 m	0 - 3 m	-
High (H)	> 3 m	3 - 10 m	3 - 5 m	> 3 m	n/a
Moderate (M)	n/a	> 10 m	5 - 10 m	n/a	n/a
Low (L)	n/a	n/a	> 10 m	n/a	n/a

No bedrock was encountered up to 2 mbgl during ground investigations onsite (GII, 2018).

9.3.8 Groundwater Wells and Flow Direction

The GSI Well Card Index is a record of wells drilled in Ireland, water supply and site investigation boreholes. It is noted that this record is not comprehensive as licensing of all wells is not currently a requirement in the Republic of Ireland. This current index does not show any wells drilled or springs at the site or in the immediate vicinity. The well in closest proximity to the site is located approximately

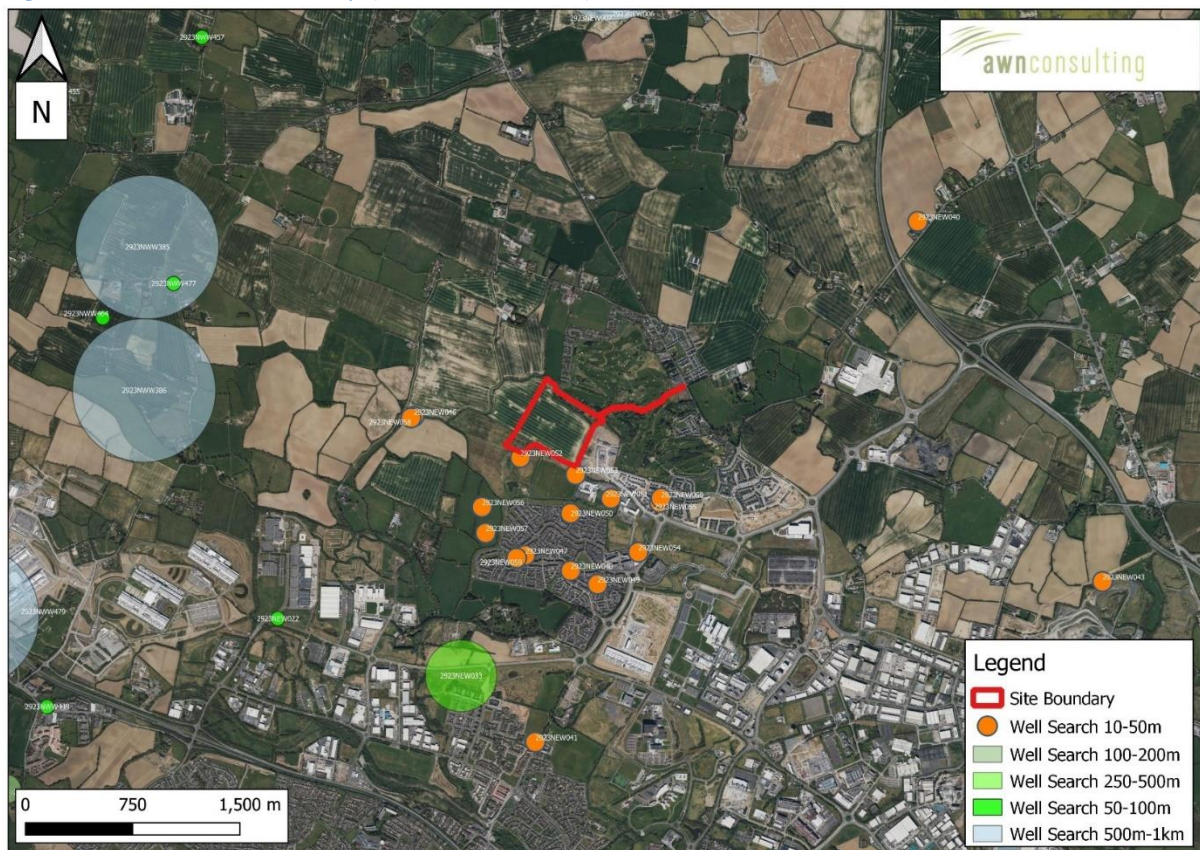
¹⁹ Precise permeability values cannot be given at present

2.1 km to the south (TW1) which is listed for industrial use and is characterised by a 'Good' yield class. None of the wells in the immediate surrounding area listed are categorised as domestic use, with the nearest found located circa 3.2 km west of the subject site. The area is serviced by Local Authority mains therefore it is unlikely that any wells are used for potable supply. The site is not located near any public groundwater supplies or group schemes. There are no groundwater source protection zones in the immediate vicinity of the site. The closest is approximately 5.1 km to the west (Dunboyne PWS) and the proposed site is outside of the zone of contribution of this supply.

Figure 9.8 below presents the GSI well search for the area surrounding the proposed development (note this source does not include all wells). There are no details of this recorded well in the GSI Well Card Index.

Regional groundwater flow would most likely be to the south and south-east towards the River Tolka and Dublin Bay. It is understood that dewatering activities are taking place at Huntstown quarry c. 5km south-east of the proposed development. However there will be no likely influence on the subject site from dewatering operations at Huntstown Quarry as it is located downgradient and therefore there would be no effects on soils or groundwater underlying the subject site due to its operation.

Figure 9.8 GSI well search map (source: GSI, 2023)



9.3.9 Groundwater Quality

The Water Framework Directive (WFD) Directive 2000/60/EC was adopted in 2000 as a single piece of legislation covering rivers, lakes, groundwater and transitional (estuarine) and coastal waters. In addition to protecting said waters, its objectives include the attainment of 'Good Status' in water bodies that are of lesser status at present and retaining 'Good Status' or better where such status exists at present. 'Good Status' was to be achieved in all waters by 2015, as well as maintaining 'high status'

where the status already exists. The EPA co-ordinates the activities of the River Basin Districts, local authorities and state agencies in implementing the directive, and operates a groundwater quality monitoring programme undertaking surveys and studies across the Republic of Ireland.

Presently, the groundwater body in the region of the site (Dublin GWB) is classified under the WFD Risk Score system as under 'Review'.

The Dublin GWB was given a classification of "Good" for WFD cycle (2013-2018) and was also given a classification of "Good" for the latest WFD cycle (2016-2021).

9.3.10 Economic Geology

The GSI (2023) mineral database was consulted to determine whether there were any mineral sites in the area of the development site. The Huntstown Quarry is located c. 5 km to the south-east of the subject site and is an active limestone quarry.

9.3.11 Geological Heritage

The Geological Survey of Ireland (GSI) Public Viewer (www.gsi.ie/mapping) was reviewed to identify sites of geological heritage for the proposed development and surrounding area. The previously mentioned Huntstown Quarry (Site Code DF022) c. 3.5 km to the east/south-east is the closest audited site. The Phoenix Park and Glasnevin Cemetery are located approximately 6.7 and 8.9 km to the south and south-east of the site respectively.

9.3.12 Radon

According to the EPA pre May 2022 (now incorporating the Radiological Protection Institute of Ireland) the site location in Hollystown is a Low Radon Area where it is estimated that less than 1% of dwellings within the given 10 km grid square will exceed the Reference Level of 200 Bq/m³. This is the lowest of the five radon categories which are assessed by the EPA. In addition, according to the current Radon Risk Map of Ireland where the majority over the proposed development is located, about 1 in 20 homes in this area is likely to have high radon levels, with the exception a portion of land in the northern part of the development site whereby 1 in 10 homes in this area is likely to have high radon levels.

9.3.13 Geohazards

Much of the Earth's surface is covered by unconsolidated sediments which can be especially prone to instability. Water often plays a key role in lubricating slope failure. Instability is often significantly increased by man's activities in building houses, roads, drainage and agricultural changes. Landslides, mud flows, bog bursts (in Ireland) and debris flows are a result. In general, Ireland suffers few landslides. Landslides are more common in unconsolidated material than in bedrock, and where the sea constantly erodes the material at the base of a cliff and leads to recession of the cliffs. Landslides have also occurred in Ireland in recent years in upland peat areas due to disturbance of peat associated with construction activities. The GSI landslide database was consulted and the landslide in closest proximity to the proposed development was approximately 3.7 km to the south-west of the site, referred to as the M3 J4 Clonee 2014 which occurred on 3rd February 2014. There have been no recorded landslide events at the site. Due to the generally flat / level local topography and the underlying strata there is a negligible risk of a landslide event occurring at the site.

In Ireland, seismic activity is recorded by the Irish National Seismic Network. The Geophysics Section of the School of Cosmic Physics at the Dublin Institute for Advanced Studies (DIAS) has been recording

seismic events in Ireland since 1978. The station configuration has varied over the years. Currently there are five permanent broadband seismic recording stations in Ireland and operated by DIAS. The seismic data from the stations comes into DIAS in real-time and are studied for local and regional events. Records since 1980 show that the nearest seismic activity to the proposed location was in the Irish Sea (1.0 – 2.0 Ml magnitude) and ~55 km to the south in the Wicklow Mountains. There is a very low risk of seismic activity to the proposed development site.

There are no active volcanoes in Ireland so there is no risk from volcanic activity.

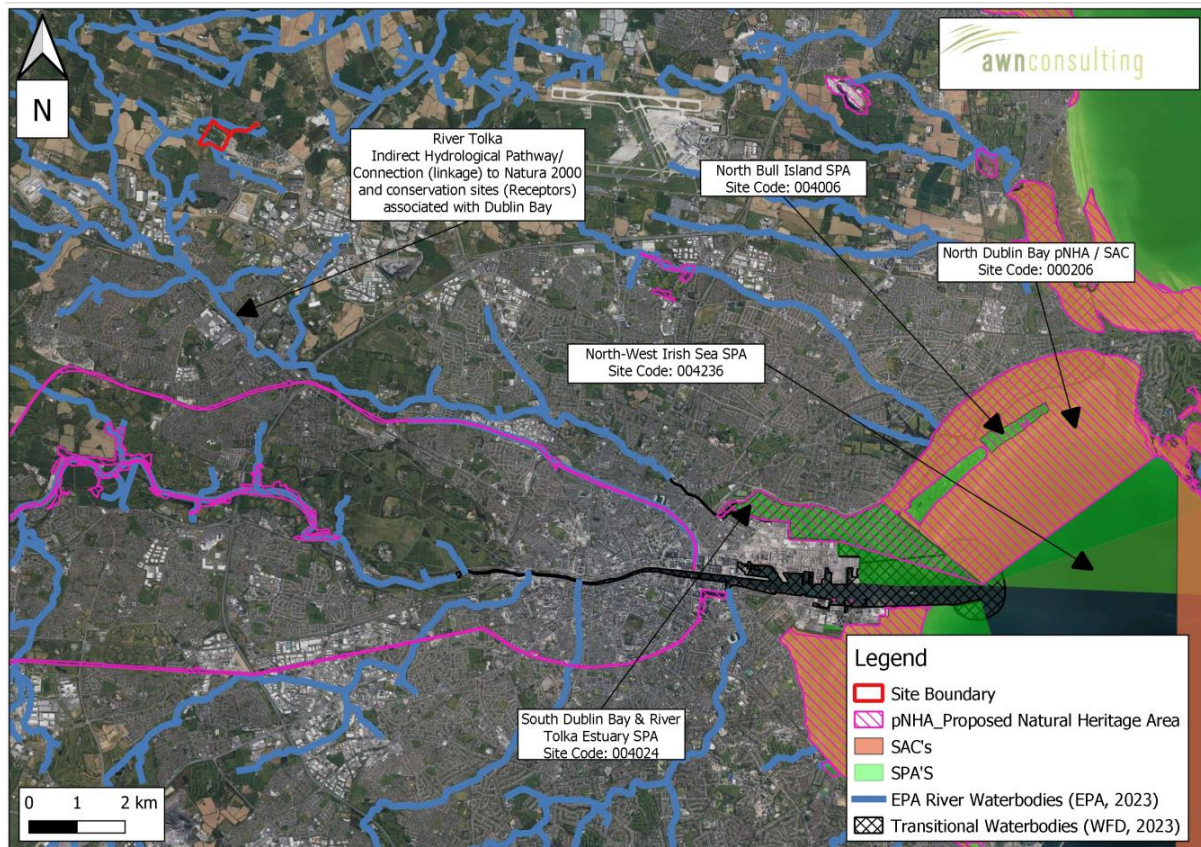
9.3.14 Areas of Conservation

According to the NPWS (2023) online database there are no special protected area on or in the vicinity of the proposed development. The closest European listed sites are as follows:

- The Royal Canal (002103) pNHA - circa. 5.2 km to the south of the site.
- The South Dublin Bay & River Tolka (0004024) SPA – circa 13.1 km to the south-east of the site.
- North Bull Island (004006) SPA- circa 15.6 km to the south-east of the site.
- North Dublin Bay (000206) pNHA/SAC- circa 15.6 km to the south-east of the site.
- North-West Irish Sea SPA [004236] c.>18 km downstream of the proposed development site.

The proposed development would have an indirect hydrological pathway or connection with the South Dublin Bay and River Tolka Estuary SPA through the local drainage network, the Mooretown and Powerstown Streams both merge and outfall downcourse into the Pinkeen River, a tributary of the Tolka River (refer to Chapter 10). Subsequently, the Tolka River discharges downstream into South Dublin Bay and River Tolka Estuary SPA/pNHA. **Figure 9.9** below presents the location of these protected areas in the context of the proposed development. It should be noted that those protected sites located in Dublin Bay (South Dublin Bay & River Tolka SPA and North Dublin Bay SAC) host groundwater dependent ecosystems.

Figure 9.9 Natura sites in the context of the subject site (source: NPWS, 2023)



9.3.15 Conceptual Site Model

According to GSI (2023) mapping database and the ground investigation undertaken by GII (2018) in the south of the former Hollystown Golf Club (to the east of the proposed development site) the subsoil underlying the site is classified as glacial Tills derived from limestone (generally low permeable) and described as firm to stiff brown slightly sandy gravelly CLAY with occasional angular to sub-angular cobbles of limestone. Gravel is sub-angular to sub-rounded fine to coarse limestone clasts. The underlying limestone aquifer is a Locally Important Aquifer which depicts a varied range of vulnerability across the site based on GSI (2023).

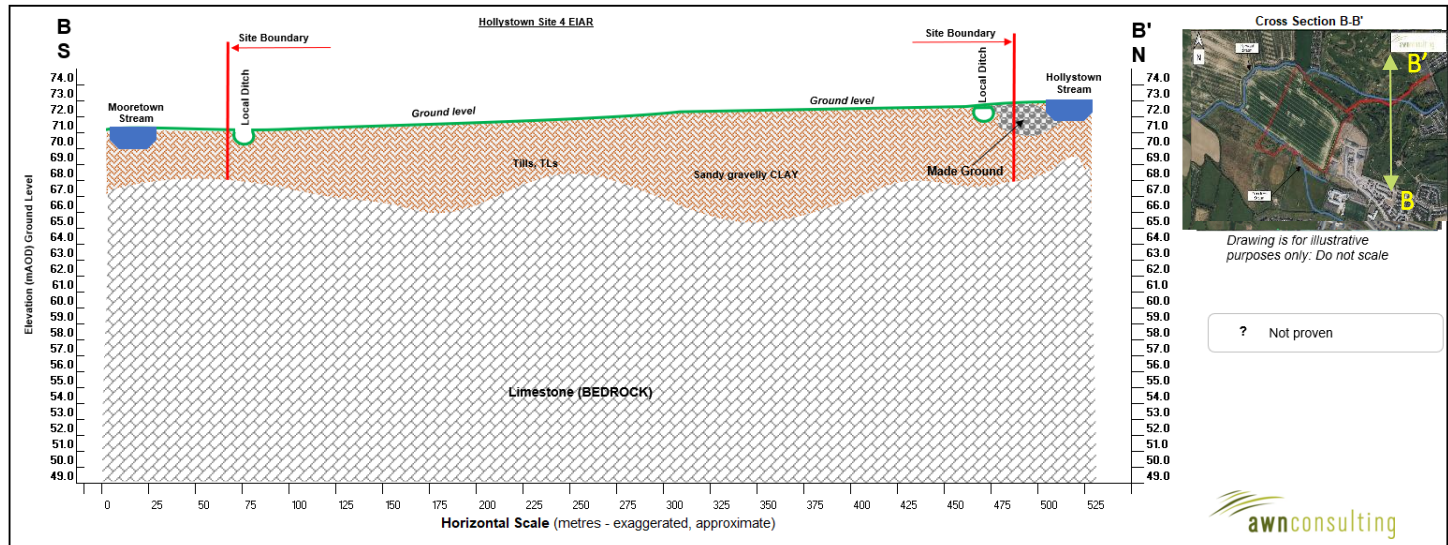
The soil profile encountered can be summarised as follows (based on location SA04):

- Topsoil: From ground level up to 0-0.15 mbgl.
- Subsoil: Cohesive Deposits (sandy gravelly Clay) underlie topsoil up to depths of 1.6-1.7 mbgl (Trial pit termination/completion depth).
- No Bedrock was encountered below subsoil.

Review of the hydrogeology and geology in the surrounding region indicates that there are no sensitive receptors such as groundwater-fed wetlands, Council Water Supplies / Group Water Schemes or geological heritage sites which could be impacted by this development. No evidence of disposal of waste material was identified the location area proposed for excavation.

A local cross-section can be seen in **Figure 9.10** below.

Figure 9.10 Local cross-section



9.3.16 Rating of Importance of Geological and Hydrogeological Attributes

Based on the TII methodology (2009) (See **Appendix 9.1**), criteria for rating site importance of geological features, the importance of the bedrock and soil features at this site is rated as 'Low Importance' whereby the attribute has a low significance/quality or value on a local scale

Based on the TII methodology (2009) (See **Appendix 9.1**) the importance of the hydrogeological features at this site is rated as 'Medium' based on the assessment that the attribute has a medium quality significance or value on a local scale. The aquifer is a locally important but is not widely used for public water supply or generally for potable use.

9.4 Predicted Impacts of the Proposed Development

An analysis of the potential effects of the proposed development on the land, soils, geology and hydrogeological environment during the construction and operation is outlined below. Due to the inter-relationship between soils, geology and hydrogeology and surface water (Hydrology), the following impacts discussed are applicable to both Chapter 9 and 10 (Hydrology) of the EIAR. Mitigation measures included in the design of this project to address these potential impacts are presented in **Section 9.5** below.

9.4.1 Do-Nothing Impact

If the proposed development was not to go ahead (i.e. in the Do-Nothing scenario) there would be no, excavation or construction at this site. There would, therefore, be a neutral effect on the geological and hydrogeological environment in terms of waste.

The site is zoned for development, and it is likely that in the absence of this subject proposal that a development of a similar nature would be progressed on the site that accords with national and regional policies and therefore the likely significant effects would be similar to this proposal. A potential increase in hardstanding areas would result in local changes to recharge and hydrological flow patterns.

9.4.2 Construction Phase

In the absence of mitigation, the following potential effects to land, soil and groundwater (hydrogeology) have been considered for the construction phase.

9.4.2.1 Excavation and Infilling

Due to the lack of previous development at the site and the historical residential and agricultural use at the site, the risk of contaminated soils being present onsite is low and this was confirmed by onsite soil sampling and analysis. Nonetheless material, which is exported from site, if not correctly managed or handled, could impact negatively on human beings (onsite and offsite) as well as water and soil environments.

The levelling of ground and excavation for foundations will require the excavation of topsoil, subsoil and potentially bedrock, as the depth of bedrock is not proven. The maximum excavation level would be c. 6mbgl. However, aquifer vulnerability class varies across the site from extreme, high and moderate in the north, middle (centre) and south of the site, respectively. While the GII (2018) ground investigation did not encounter bedrock down to a depth range 1.5 - 1.7 m BGL, vulnerability mapping database suggests bedrock is expected to exist between the following ranges given the impermeable Clayey subsoil; 1.7-3m BGL, 3-5m BGL, and 5-10m BGL in the north, middle, and south of the site, respectively.

It has been estimated that 55,000m³ of excavated subsoil and topsoil will be generated with a net infill / reuse of 45,000m³. It is intended that all excavated material will be reused on site for landscaping of the berms. Import of fill will be required. Topsoil is reused on site and site levels are maintained as close as possible above existing thereby minimising the need for importation and exportation of soil and stone.

Site investigation and laboratory analysis has not identified any existing contamination. However, if contaminated soil / water is encountered, it will be required to be removed by a licensed waste contractor.

As previously stated, it is noted that the deepest excavation is c. 6 mbgl. Therefore, groundwater ingress can be expected. However, this groundwater volume would be minor given the ground condition of relatively impermeable clay overlying rock. As inflow rates are expected to be low, there will be a localised zone of contribution which will not likely extend beyond the site boundary.

It is expected during the excavation works that localised dewatering of the subsoils will be required to address perched groundwater. It can be expected minor ingress of rainfall in the excavation during construction phase.

In the absence of mitigation, the effect on the local and regional environment is likely to be **short-term, slight** and **negative**. The effect is considered to be 'slight' as there will not be intervention on the geological and hydrological regime on a local or regional scale.

9.4.2.2 Accidental Spills and Leaks

As with all construction projects there is potential for water (rainfall and/or groundwater) to become contaminated with pollutants associated with construction activity. Contaminated water which arises from construction sites can pose a significant temporary risk to groundwater quality for the duration of the construction if contaminated water is allowed percolate to the aquifer.

During construction of the development, there is a risk of accidental pollution incidences from the following sources:

- Suspended solids (muddy water with increase turbidity) – arising from excavation and ground disturbance;

- Cement/concrete (increase turbidity and pH) – arising from construction materials;
- Hydrocarbons (ecotoxic) – accidental spillages from construction plant or onsite storage;
- Wastewater (nutrient and microbial rich) – arising from accidental discharge from on-site toilets and washrooms.

Accidental spillages which are not mitigated may result in localised contamination of soils and groundwater underlying the site, should contaminants migrate through the subsoil's and impact the underlying groundwater. Groundwater vulnerability at the site is currently classified as extreme, high, and moderate in the north, central and south respectively. Any soil stripping will also further reduce the thickness of subsoil and the natural protection they provide to the underlying aquifer.

In the absence of mitigation, the effect on the local and regional environment is likely to be **short-term, slight** and **negative**. The effect is considered to be 'slight' as there will not be intervention on the geological and hydrological regime on a local or regional scale.

9.4.2.3 Loss of Agricultural Land

There will be local loss of agricultural soil, however, the area of development is small in the context of the overall agricultural land available in the region. The majority of the land is zoned for development. Within the overall context of Ireland's available farmland, the loss is negligible. There will be **no impact** to mineral resources in the area as a result of the proposed development.

9.4.3 Operational Phase

Any accidental spills of chemicals during storage, transfer, or delivery or leakage in the car parks could cause localised contamination if the emissions enter the soil and groundwater environment without adequate mitigation. However, it is noted that any accidental discharge will more likely impact stormwater drainage due to the hardstand and drainage infrastructure proposed and any releases to drainage will be mitigated through a Class 1 Petrol interceptor which is proposed to be installed before surface water outfalls to the existing ditch system (refer to Chapter 5 for further details).

There will be an increase in hardstand as a result of the proposed development. Incorporation of hardstand area on previous greenfield area and the use of SUDs techniques will have a minor effect on local recharge to ground; however, the impact on the overall groundwater regime will be insignificant considering the proportion of the site area in relation to the total aquifer.

In the absence of mitigation, the effect on the geological and hydrogeological environment is likely to be **long-term, slight** and **negative**. The effect is considered to be 'slight' due to there will not be intervention on the geological and hydrological regime on a local or regional scale.

9.5 Mitigation Measures

The design has taken account of the potential impacts of the development on the soils, geology and hydrogeology environment local to the area where construction is taking place and containment of contaminant sources during operation. Measures have been incorporated in the design to mitigate the potential effects on the surrounding soils, geology and hydrogeology. These are described below.

Due to the inter-relationship between soils, geology, hydrogeology and hydrology, the following mitigation measures discussed will be considered applicable to all. Waste Management is also considered an interaction in some sections.

9.5.1 Construction Phase

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

The CEMP will be a live document and it will go through a number of iterations before works commence and during the works. The appointed contractor will be responsible for updating the CEMP, as required; e.g. to reflect the publication of relevant new or revised guidelines and / or new statutory requirements. It will set out requirements and standards which must be met during the construction stage and will include the relevant mitigation measures outlined in the EIA Report and any subsequent planning conditions relevant to the proposed development.

As a minimum, the CEMP has been formulated in accordance with best international practice including but not limited to:

- Construction Industry Research and Information Association CIRIA, (2001), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors, (C532);
- Construction Industry Research and Information Association CIRIA (2005), Environmental Good Practice on Site (C650);
- BPGCS005, Oil Storage Guidelines;
- Eastern Regional Fisheries Board, (2006), Fisheries Protection Guidelines: Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites;
- IFI (2016) Guidelines on Protection of Fisheries during construction works in and adjacent to waters.
- CIRIA 697, The SUDS Manual, 2007; and
- UK Pollution Prevention Guidelines (PPG) UK Environment Agency, 2004.

In order to reduce impacts on the soil, geological and hydrogeological environment, a number of mitigation measures will be adopted as part of the construction works on site as outlined below.

9.5.1.1 Contamination of Groundwater

There is a potential risk that ground water could become contaminated with lime, a component of cement, which could subsequently pollute the local adjacent watercourses. The measures proposed to be put in place to mitigate any potential damage from the effluent of contaminated ground water would be to create an exclusion zone, as far as reasonably practicable.

In order to prevent sedimentation of groundwater and erosion from occurring (due to elevated surface water runoff generated onsite during the construction phase) surface water discharge from the whole site, including the haul road, will be managed and controlled for the duration of the construction works until the permanent surface water drainage system (including attenuation and storage) for the proposed site is complete. A temporary positive drainage system shall be installed prior to the commencement of the construction works to collect and store surface water runoff by the site during construction. A series of geotextile lined cascading, high level outfall, settling basins will be installed upstream of the agreed discharge point. These settlement basins will also provide storage for the groundwater. This temporary surface water management facility will throttle runoff, provide storage for run-off and allow suspended solids to be settled out and removed before being discharged in a

controlled manner to the agreed outfall via high level overflows. All inlets to the cascading settling basins will be riprapped to prevent scour and erosion near the inlet.

9.5.1.2 Control of Soil Excavation

Site preparation, excavations and levelling works required to facilitate construction of foundations, access roads and the installation of services will not require imported material. Topsoil is reused on site and site levels are maintained as close as possible above existing thereby minimising the need for importation and exportation of soil and stone. Suitable soils will be reused on site as backfill in the grassed areas, where possible. Contractors shall be required to submit and adhere to a method statement indicating the extent of areas likely to be affected and demonstrating that this is the minimum disturbance necessary to achieve the required works.

According to the GSI (2023) mapping database the bedrock vulnerability is 'Moderate' to 'Extreme'. However, removal and reinstatement of subsoil cover will not alter the vulnerability category of the underlying bedrock. The deposition of infill soil would increase the overburden thickness and thus may even decrease the groundwater vulnerability.

Temporary storage of soil will be carefully managed in such a way as to prevent any potential negative impact on the receiving environment and the material will be stored away from any open surface water drains. Movement of material will be minimised in order to reduce degradation of soil structure and generation of dust.

Although there is no evidence of historical contamination in the proposed development area, all excavated materials will be visually assessed for signs of possible contamination such as staining or strong odours. Site investigations classified the subsoils as 'inert'. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of possible contaminants in order to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be disposed of by a licensed waste disposal contractor.

Stockpiles have the potential to cause negative impacts on air and water quality. The effects of soil stripping and stockpiling will be mitigated against through the implementation of appropriate earthworks handling protocol during construction. It is anticipated that any stockpiles will be formed within the boundary of the site and there will be no direct link or pathway from this area to any surface water body. Overburden material will be protected from exposure to wind by storing the material in sheltered parts of the site, where possible.

9.5.1.3 Fuel and Chemical Handling

Only approved storage system for oil / diesel within the site will be permitted, (i.e. all oil / diesel storage to be located within a designated area placed furthest away from adjacent watercourses and contained within constructed bunded areas e.g. placed on 150mm concrete slab with the perimeter constructed with 225mm solid blockwork rendered internally). The bunded area will accommodate the relevant oil / diesel storage capacity in case of accidental spillage. Any accidental spillages will be dealt with immediately on site by containment /removal from site.

To minimise any impact on the underlying subsurface strata from material spillages, all oils, solvents and paints used during construction will be stored within a temporary bunded construction hardstand area which is also remote from any surface water features (when not possible to carry out such activities off site). Oil and fuel storage tanks shall be stored in designated areas, and these areas shall

be bunded to a volume of 110% of the capacity of the largest tank / container within the bunded area(s) (plus an allowance of 30 mm for rainwater ingress). Drainage from the bunded area(s) shall be diverted for collection and safe disposal.

Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area (or where possible off the site) which will be away from surface water gulleys or drains. In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in this area. All relevant personnel will be fully trained in the use of this equipment. Guidelines such as “Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors” (CIRIA 532, 2001) will be complied with.

Where feasible all ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to the underlying subsoil. Wash down and washout of concrete transporting vehicles will take place at an appropriate facility offsite.

In the case of drummed fuel or other chemical which may be used during construction, containers should be stored in a dedicated internally bunded chemical storage cabinet and labelled clearly to allow appropriate remedial action in the event of a spillage.

9.5.1.4 Control of Water during Construction

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

Care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts.

Should any discharge of construction water be required during the construction phase, discharge will be to foul sewer. Pre-treatment and silt reduction measures on site will include a combination of silt fencing, settlement measures (silt or sediment traps, 20 m buffer zone between machinery and watercourses, refuelling of machinery off site) and hydrocarbon interceptors. All water runoff from designated refuelling areas will be channelled to an oil interceptor or an alternative treatment system prior to discharge.

Any minor ingress of groundwater and collected rainfall in the excavation will be pumped out during construction. It is estimated that the inflow rate of groundwater will be low and limited to the north-east, north and centre of the proposed development, due to the overburden thickness at these areas. It is therefore proposed that the water be discharged via the existing stormwater sewer network. Extensive monitoring will be adopted to ensure that the water is of sufficient quality to discharge to the sewer. The use of silt traps and an oil interceptor (if required) will be adopted if the monitoring indicates the requirements for the same with no silt or contaminated water permitted to discharge to the sewer. There may be localised pumping of surface run-off from the excavations during and after heavy rainfall events to ensure that the excavations are kept relatively dry. Due to the very low permeability of the Dublin Boulder Clay and the relative shallow nature for excavations, infiltration to the underlying aquifer is not anticipated.

Should any discharge of construction water be required during the construction phase, discharge will be to foul sewer.

9.5.1.5 Monitoring Measures

Daily visual inspection will be undertaken by the contractor at the silt trap / settlement tank to ensure adequate internal settlement is occurring. Where the visual assessment highlights elevated suspended sediments higher than expected, the water will be re-circulated for further settlement.

Weekly checks will be carried out to ensure surface water drains are not blocked by silt, or other items, and that all storage is located at least 20 m from surface water receptors. Regular inspection of surface water run-off and any sediment control measures will be carried out during the construction phase.

Regular auditing of construction / mitigation measures will be undertaken, e.g. concrete pouring, refuelling in designated areas, etc. A log of regular inspections will be maintained, and any significant blockage or spill incidents will be recorded for root cause investigation purposes and updating procedures to ensure incidents do not occur.

9.5.2 Operational Phase

A number of design measures will be put in place to minimise the likelihood of any spills entering the groundwater environment to include the design of the car park with hydrocarbon interceptors. In the event of an accidental leakage of oil from the parking areas, this will be intercepted by the drainage infrastructure.

9.6 Residual Impacts

9.6.1 Construction Phase

The implementation of mitigation measures outlined above will ensure that the predicted impacts on the geological and hydrogeological environment do not occur during the construction phase and that the residual impact will be ***short-term, imperceptible and neutral***. Following the TII criteria (refer to **Appendix 9.1**) for rating the magnitude and significance of impacts on the geological and hydrogeological related attributes, the magnitude of impact is considered ***negligible***.

9.6.2 Operational Phase

The implementation of mitigation measures outlined above will ensure that the predicted impacts on the geological and hydrogeological environment do not occur during the operational phase and that the residual impact will be ***long-term, imperceptible and neutral***. Following the TII criteria (refer to **Appendix 9.1**) for rating the magnitude and significance of impacts on the geological and hydrogeological related attributes, the magnitude of impact is considered ***negligible***.

9.7 Monitoring

During construction phase the following monitoring measures will be implemented:

- Regular inspection of surface water run-off and sediments controls (e.g., silt traps);
- Regular auditing of construction / mitigation measures will be undertaken e.g. concrete pouring, refuelling etc.
- Soil sampling to confirm disposal options for excavated soils in order to avoid contaminated run-off; and

- Regular inspection of construction / mitigation measures (e.g., concrete pouring, refuelling, etc).

During operational phase, maintenance of the surface water drainage system, including interceptors, and foul sewers is recommended to minimise any accidental discharges to soil or groundwater.

9.8 Reinstatement

Reinstatement of excavations and haul route during the construction phase of the proposed development will meet the design criteria presented in the design specification of this application. All fill material used will be clean and graded to engineers' specifications.

9.9 Interactions

This section discusses interactions between this Chapter and other specialist environmental topics considered in this EIAR. The main interactions of importance to land, soils, geology, and hydrogeology relate to Biodiversity, Hydrology and Air Quality and Climate and Material Assets as follows:

9.9.1 Hydrology

9.9.1.1 Construction Phase

The construction phase of the proposed development has the potential to result in increased sediment runoff which has the potential to interact negatively on surface water quality. The proposed construction phase mitigation, and the lack of a direct pathway means that the proposed development will not result in significant negative impact on surface water quality in the local area.

Taking into account the design and mitigation measures set out in Chapter 9 and 10 of this EIA Report, there is a residual negative interaction between Land, Soil, and Hydrology during the construction phase. The interaction is considered to be *neutral, not significant, and short term*.

9.9.1.2 Operational Phase

Taking into account the design and mitigation measures set out in Chapter 9 (Land, Soils, Geology and Hydrogeology) and 10 (Hydrology) of this EIA Report there are no potentially significant interactions identified between Land, Soils and Hydrogeology, and Hydrology during the operational phase.

9.9.2 Biodiversity

9.9.2.1 Construction Phase

In the absence of mitigation measures to control the construction phase there is potential for silt laden material or pollution to enter the watercourse and impact on local biodiversity and European sites downstream from the works. Furthermore, dust emissions from exposed earthworks have the potential to settle on plants causing impacts to local ecology.

There is no groundwater dewatering proposed / required for this development. Therefore no potential impacts or interactions are identified between biodiversity, the Dublin GWB (which is confined within bedrock and is indirectly connected to with a number of nationally and internationally important habitats) and Land, Soils and Hydrogeology.

Taking into account the design and mitigation measures set out in Chapter 9 (Land, Soils and Hydrogeology), and Chapter 8 (Biodiversity) of this EIA Report, there remains a residual negative

interaction between Land, Soil, Geology and Hydrogeology and Biodiversity during the construction phase. The interaction is considered to be ***negative, not significant, and short term.***

9.9.2.2 Operational Phase

There are no potentially significant interactions identified between Land, Soils and Hydrogeology, and Biodiversity during the operational phase.

9.9.3 Air Quality and Climate

9.9.3.1 Construction Phase

Construction phase activities such as land clearing, excavations, stockpiling of materials etc. have the potential for interactions between air quality and land and soils and the water environment (hydrology) in the form of dust emissions. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that interactions between air quality and land and soils and hydrology will be ***short-term and imperceptible.***

9.9.3.2 Operational Phase

Climate change has the potential to lead to increased rainfall in future years which may result in flood impacts and interactions between Hydrology and Land, Soils and Geology. A detailed Site Specific Flood Risk Assessment (SSFRA) was carried out for the proposed development which states that 1% AEP flood event (1 in 100 year) does not inundate the site. The development was concluded as having a good level of flood protection up to the 100-year return event. For pluvial floods exceeding the 100-year capacity of the drainage system then proposed flood routing mitigation measures are recommended (refer to 'Site Specific Flood Risk Assessment' prepared by DBFL Consulting Engineers (2023) and submitted under a separate cover as part of the planning application) for further information.

The new infrastructure is designed to accommodate rainfall runoff/ flows up to 1% AEP event. In addition, the surface water network has been designed to include an additional allowance of 20% in rainfall intensities due to climate change.

Therefore it can be determined that there is no significant risk to the proposed development as a result of increased rainfall and climate. No significant interactions between Climate, Hydrology and Land, Soils and Geology is predicted.

9.9.4 Material Assets

9.9.4.1 Construction Phase

In the absence of mitigation, surface water run-off during the construction phase may contain increased silt levels or otherwise become polluted from construction activities. Suspended solids in runoff water may result in an increase in suspended sediment load, resulting in increased turbidity, which may damage downstream infrastructure.

During the construction phase, excavated topsoil and subsoil (c. 55,000m³) will be generated from the excavations required to facilitate site levelling, construction of new foundations and installations of site services. It is estimated that c. 10,000m³ of excavated material will need to be removed off-site. Where material has deemed unsuitable to be reused onsite it will be taken off-site, it will be taken for reuse or recovery, where practical, with disposal as a last resort. Adherence to the mitigation measures in

Chapter and the requirements of the Resource & Waste Management Plan, will ensure the effect is *long-term, imperceptible and neutral*.

9.9.4.2 Operational Phase

There are no potentially significant interactions identified between Land, Soils and Hydrogeology, and Material Assets Utilities and Waste (Chapter 17 & 18) and Traffic & Transportation (Chapter 16) during the operational phase of the proposed development.

9.10 Cumulative Impacts

The following considers the cumulative impacts of the proposed development and proposed and permitted and operating facilities in the surrounding area in relation to Land, Soils, Geology and Hydrogeology. This considers the proposed development and other surrounding proposed and permitted developments listed under **Chapter 20 Cumulative Impacts**.

As has been identified in the receiving environment section all cumulative developments that are already built and in operation contribute to our characterisation of the baseline environment. As such any further environmental impacts that the proposed development may have in addition to these already constructed and operational cumulative developments has been assessed in the preceding sections of this chapter. Assuming the full and proper implementation of the mitigation measures set out in this EIAR, no significant negative cumulative impacts are likely to arise during the construction or operational phases of the proposed development.

9.10.1 Construction Phase

In relation to the potential for cumulative impacts on land, soils, geology and hydrogeology during the construction phases, the construction works which would have potential cumulative impacts are as follows:

- Surface water run-off during the construction phase may contain increased silt levels or become polluted from construction activities. Run-off containing large amounts of silt can cause damage to surface water systems and receiving watercourses.
- Stockpiled material will be stored on hardstand away from surface water drains, and gullies will be protected during works to ensure there is no discharge of silt-laden water into the surrounding surface water drainage system.
- Contamination of local water sources from accidental spillage and leakage from construction traffic and construction materials is possible unless project-specific measures are put in place for each development and complied with.

A review of the permitted and proposed developments set out in **Chapter 20 (Table 20.1)** has been undertaken to identify any substantial projects that are concurrent with the construction phase of the proposed development that may result in cumulative effects in respect of land soils geology and hydrogeology.

The implementation of mitigation and monitoring measures detailed in Section 9.5.1 as well as the compliance of the permitted developments (refer to **Table 20.1** in **Chapter 20**) with their respective planning conditions, will ensure there will be minimal cumulative potential for change to the land, soils, geological and hydrogeological environment during the construction phase of the proposed development.

It is also acknowledged that the works contractors for other planned or permitted developments will be obliged to ensure that measures are in place to protect soil and water quality in compliance with legislative standards for receiving water quality (European Communities Environmental Objectives (Groundwater) Regulations (S.I. 9 of 2010 and S.I. 266 of 2016)).

As a result, the residual cumulative impact of the proposed development in combination with other planned or permitted developments can therefore be considered to be ***neutral, imperceptible and short-term***.

9.10.2 Operational Phase

In relation to the potential cumulative impact on land, soils, geology and hydrogeology during the operational phases, the operational activities which would have potential cumulative impacts are as follows:

- Increased risk of accidental discharge of hydrocarbons from car parking areas, and along roads is possible unless diverted to surface water system with petrol interceptor.

A review of the permitted and proposed developments set out in **Chapter 20 (Table 20.1)** has been undertaken to identify any substantial projects that are concurrent with the construction phase of the proposed development that may result in cumulative effects in respect of land, soils, geology and hydrogeology.

The implementation of mitigation and monitoring measures detailed in Section 9.5.2 as well as the compliance of the permitted developments (refer to **Table 20.1** in **Chapter 20**) with their respective planning conditions, will ensure there will be minimal cumulative potential for change to the land, soils, geological and hydrogeological environment during the operational phase of the proposed development.

Furthermore, all developments listed in Chapter 20 of this EIA Report are required to ensure they do not have an impact on the receiving water environment in accordance with the relevant legislation (Water Framework Directive and associated legislation) such that they would be required to manage run-off and fuel leakages.

It is also acknowledged that all developments are required to manage groundwater discharges in accordance with S.I. 9 of 2010 and S.I. 266 of 2016 amendments. As such there will be no cumulative impact to groundwater quality and therefore there will be no cumulative impact on the Groundwater Body Status.

The residual cumulative impact of the proposed development in combination with other planned or permitted developments can therefore be considered to be ***long-term, imperceptible*** significance with a ***neutral*** impact on soil and water quality.

9.11 Difficulties Encountered

There were no difficulties encountered in compiling and assessing the data for this section of the EIAR.

9.12 References

- CIRIA (2005). Environmental Good Practice on Site (C650).
- CIRIA (2007). CIRIA 697: The SUDS Manual.
- Enterprise Ireland (n.d.). Best Practice Guide BPGCS005: Oil Storage Guidelines.

- EPA (2022). Guidelines on the Information to be Contained in Environmental Impact Assessment Reports.
- EPA (2023). EPA Maps.
- GSI (2023). GSI Map Viewer.
- Institute of Geologists of Ireland (2013). Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements.
- NPWS (2023). Designations Viewer.
- NRA (2009). Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes.
- Teagasc (2023). Teagasc Map Viewer.
- National Roads Authority (NRA) (2009). Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes.

10 Hydrology

10.1 Introduction

The purpose of this Chapter is to assess and evaluate the likely significant effects of the proposed development on the hydrological aspects of the site and surrounding area. This chapter evaluates the effects, if any, which the proposed development will have on Hydrology as defined in the Environmental Protection Agency (EPA) 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (EPA, 2022).

The chapter initially provides a description of the receiving environment of the site and the potential impacts of the development. When assessing the potential impacts, this assessment considers the significance of the environmental attributes, and the predicted scale, and duration of the likely effects.

The chapter also outlines the proposed mitigation measures that will reduce or eliminate the identified potential impacts and define the residual effects of the proposed development (the effect after the implementation of mitigation measures).

This chapter has been prepared by Marcelo Allende and Luke Maguire, Senior Hydrologist and Environmental Consultant at AWN Consulting Ltd, respectively. Refer to **Table 1.4** in Chapter 1 (Introduction) for qualifications of authors and reviewers.

10.2 Method

The methodology used in this assessment follows current European and Irish guidance as outlined in:

- Environmental Protection Agency (EPA) Guidelines on the Information to be contained in Environmental Impact Statements (EPA, 2022).
- Transport Infrastructure Ireland (TII) / National Roads Authority (NRA) Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (TII/formerly NRA, 2009).
- Water Framework Directive (WFD) - Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy. This relates to the improvement of water quality across Ireland including rivers and groundwater bodies.
- River Basin Management Plan 2018-2021 (including regional plans by Local Authority Waters Programme (Waters and Communities 2020)). Draft River Basin Management Plan 2022-2027.

10.2.1 Criteria for Rating of Effects

This chapter is prepared in line with the '*Guidelines on the Information to be contained in Environmental Impact Assessment Reports*' (EPA, 2022) and due consideration is also given to the guidelines provided by the Institute of Geologists of Ireland (IGI) in the document entitled '*Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements*' (IGI 2013).

The document entitled '*Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes*' by the Transport Infrastructure Ireland (TII) formerly National Roads Authority (NRA) (TII, 2009) is referenced where the methodology for assessment of impact is appropriate. Furthermore, in line with the TII Guidelines, an assessment of the attribute importance has been undertaken in order to provide a basis for the assessment of impact provided.

The attribute importance considers the potential as well as the existing use of the surface water features as a water resource (i.e., water supply, fisheries and other uses) as well as ecological habitat requirements.

The rating of potential environmental effects on the hydrological environment is based on the effect characterisation as per the EPA 2022 guidelines (refer to **Table 1.5** included in Chapter 1) which takes account of the quality, significance, duration, and type of effect characteristic identified.

The TII criteria for rating the magnitude and significance of impacts and the importance of hydrological attributes at the site during the EIA stage are also relevant in assessing the impact and are presented in Table 1 in **Appendix 10.1**.

The duration of each effect is considered to be either momentary, brief, temporary, short-term, medium term, long-term, or permanent. Momentary effects are considered to be those that last from seconds to minutes. Brief effects are those that last less than a day. Temporary effects are considered to be those which are construction related and last less than one year. Short term effects are seen as effects lasting one to seven years; medium-term effects lasting seven to fifteen years; long-term effects lasting fifteen to sixty years; and permanent effects lasting over sixty years.

The principal attributes (and effects) to be assessed include the following:

- Water Framework Directive (WFD) Status and potential for increased risk of deterioration of this status due to the activities of the site;
- River and stream water quality in the vicinity of the site (where available);
- Surface watercourses near the site and potential impact on surface water quality arising from proposed development related works including any discharge of surface water run-off;
- Localised flooding (potential increase or reduction) and floodplains including benefitting lands and drainage districts (if any); and
- Surface water features within the area of the site.

10.2.2 Sources of Information

Desk-based hydrological information in the vicinity of the site was obtained through accessing databases and other archives where available. Data was sourced from the following:

- Environmental Protection Agency (EPA) – website mapping and database information. Envision water quality monitoring data for watercourses in the area;
- River Basin Management Plan for Ireland 2018-2021;
- *Draft* River Basin Management Plan for Ireland 2022-2027;
- Greater Dublin Strategic Drainage Study 2018 (including Strategic Flood Risk Assessment);
- Fingal Development Plan 2023-2029 (including Strategic Flood Risk Assessment);
- Ireland Topographic Map, Elevation, Terrain (Source: <https://en-ie.topographic-map.com/map-rgp/Ireland>);
- The Planning System and Flood Risk Management, Guidelines for Planning Authorities (Department of the Environment, Heritage and Local Government (DoEHLG) and the Office of Public Works (OPW);
- Office of Public Works (OPW) flood mapping data (www.floodmaps.ie);
- Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors' (CIRIA 532, 2001); and

- National Parks and Wildlife Services (NPWS) – Protected Site Register.

Site specific data was derived from the following sources:

- Construction & Environmental Management Plan (DBFL Consulting Engineers, 2023);
- Site Specific Flood Risk Assessment Report (DBFL Consulting Engineers, 2023);
- Infrastructure Design Report (DBFL Consulting Engineers, 2023);
- Various design site plans and drawings; and
- Consultation with the project engineers.

10.3 Baseline Environment

10.3.1 General Description

The proposed development relates to a site of c.20.6 ha referred to as Hollystown-Kilmartin Site 4 located to the north-west of Dublin city centre in the townland of Hollystown and Kilmartin, Dublin 15. The site is bound by lands which previously formed part of the former Hollystown Golf Club and the residential area of Hollystown Park to the north, lands forming part of a permitted Strategic Housing Development (SHD) application to the east (ABP Reg. Ref. 312271), Tyrrelstown Park to the south, and rural zoned agricultural lands to the west. The site is circa 5.5km north-west of the M50, and circa 3km west of the N2 and is located to the north-west of the existing Tyrrelstown Local Centre (refer to Chapter 1).

The proposed development will include for the development of 580 no. residential units, consisting of 112 no. apartments/duplexes and 468 no. houses ranging from 1 – 3 storeys and will also include for car parking, cycle parking, new pedestrian/ cycle links, storage, services and plant areas. Landscaping will include for high quality private open space, communal amenity areas and public open space provision.

The majority of proposed development is currently a greenfield site, used for agricultural purposes, while a minor northern portion of the site (adjacent to the northeast boundary) and the haul road to the site from Ratoath Road (L3080) is brownfield, comprising the former Hollystown Golf Course (made ground). There are two existing surface watercourses (drainage network) on-site which are located adjacent to the sites northern/north-western and southern boundaries (Hollywood Stream and Mooretown Stream respectively). The site is comprising portions of two fields separated by hedgerows (agricultural plots), coupled with a portion of land in the west of the former Hollystown Golf Course. The site lies at an elevation of 72 mAOD, has a high point running from east to west and is characterised by topography which generally slopes / falls to the north-west and south-west to the existing drainage ditches / streams.

Surface water, rainfall, is generally percolated through the grass and soil via gravity. The topographic survey has confirmed that the internal and boundary hedgerows contain ditches which convey flow to an unnamed ditch system to the north-west and south of the site, during heavier rainfall events. There are existing drainage ditches located along the northern and eastern boundaries of the subject site which are connected to existing watercourses (Hollywood & Mooretown Stream) located along the proposed development sites northern and southern boundaries, respectively (refer to **Figure 10.1** below). The Hollywood Stream generally flows in a westerly direction passing through the former Hollystown Golf Course, the proposed haul road route and along the northern boundary of the development site, while the Mooretown Stream generally flows from the south-east in a north-west

direction along the southern site boundary and traversing the western site boundary. These two streams merge at a confluence point located approximately 0.3km west of the site.

The proposed development has no existing connection to the public drainage system as it is predominantly a greenfield site. There are existing drainage ditches located adjacent to / along the northern, southern and eastern boundaries of the subject site which are connected to existing watercourses (Hollywood & Mooretown Stream) located along the proposed development sites north-western and southern boundaries, respectively. The Hollywood Stream and Mooretown Stream to the south) generally convey flow in a westerly direction to join the Pinkeen river approximately 0.8 km west of the site, which subsequently discharges downstream to the Tolka River approximately 2.7 km south of the subject site (c. 3.4km downstream) at Mulhuddart Village. The Pinkeen River is a tributary of the Tolka River, which in turn outfalls to the Irish Sea at South Dublin Bay and River Tolka Estuary Special Protection Area (SPA).

A full description of the proposed development can be found in **Chapter 5** (Description of the Proposed Development).

Figure 10.1 Local Hydrological Environment (EPA, 2023)



It is proposed to discharge attenuated surface water to these ditches in the north-west corner and south-west corners of the subject site. These ditches discharge to the Hollywood Stream and Mooretown Stream which discharges to the Pinkeen River west of the site. The Pinkeen River ultimately discharges to the Tolka River to the south of the proposed development site (c. 3.4km downstream).

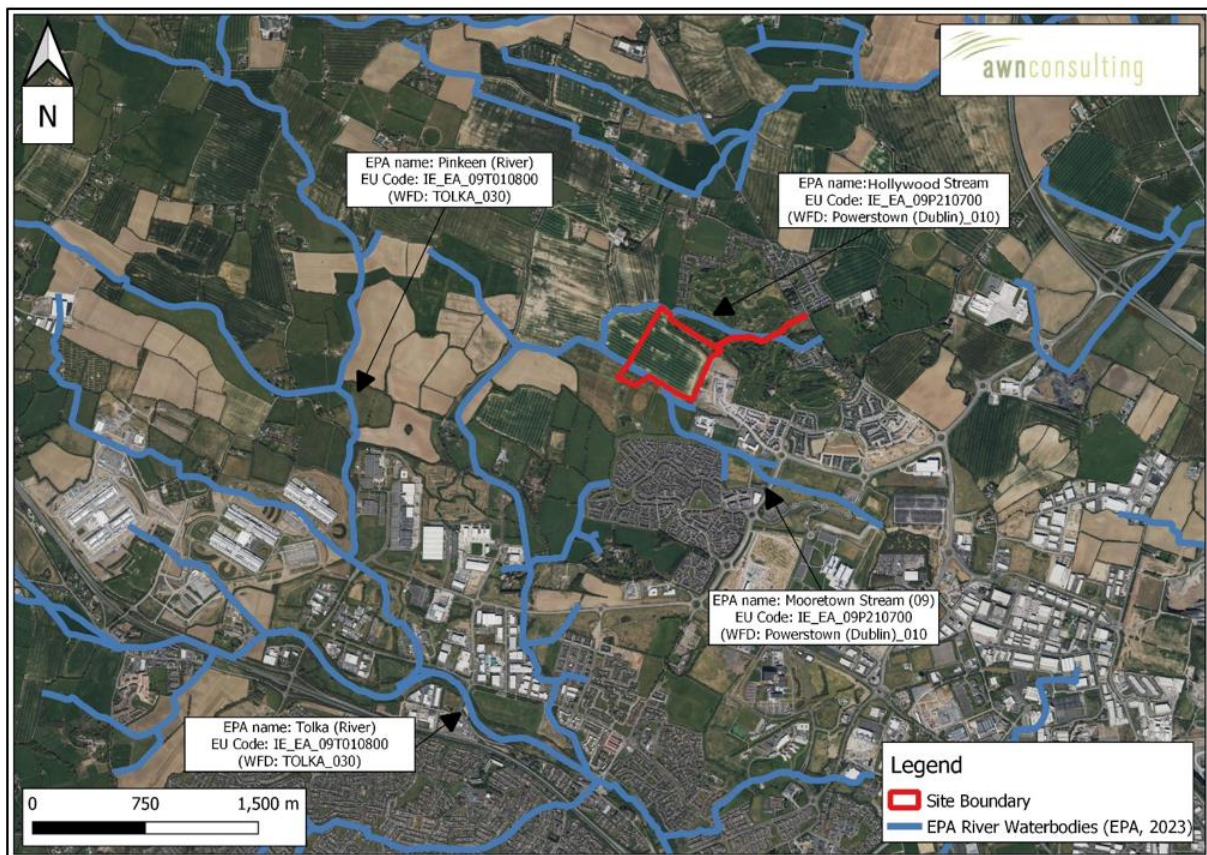
10.3.2 Hydrology

The proposed development site is located within the former Eastern River Basin District (ERBD) (now the Irish River Basin District), as defined under the European Communities Directive 2000/60/EC, establishing a framework for community action in the field of water policy – this is commonly known as the Water Framework Directive (WFD). According to the EPA maps, the proposed development site lies within the Liffey and Dublin Bay Catchment (Catchment ID: 09) and the Tolka_SC_010 Sub-Catchment.

The current EPA watercourse mapping shows two watercourses within / adjacent to the proposed development site. The Mooretown Stream flows in a westerly direction along the majority of the southern boundary of the site and traverses the sites south-western corner. The Hollywood Stream flows along a small portion of the sites most north-western boundary before entering the Mooretown Stream c. 0.6km downstream of the proposed development site. The Mooretown then flows in a southerly direction before entering the Pinkeen River c. 0.8km west of the development site. The Pinkeen River ultimately discharges to the Tolka River c. 3.4km downstream of the proposed development site to the South (refer to **Figure 10.2** below).

The closest hydrological connection between the proposed development site and Natura 2000 sites (SAC's/SPA's/pNHA's) is with South Dublin Bay and River Tolka Estuary SPA [004024], North Bull Island SPA [004006], South Dublin Bay SAC [000210] and North Dublin Bay SAC [000206] located approximately 13km to the south-east and c. > 20km downstream of the proposed development site.

Figure 10.2 Regional Hydrological Environment (EPA, 2023)



10.3.3 Surface Water Quality

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; commonly known as the Water Framework Directive (WFD) establishes a framework for community action in the field of water policy.

The WFD requires 'Good Water Status' for all European waters to be achieved through a system of river basin management planning and extensive monitoring by 2015 or, at the least, by 2027. 'Good status' means both 'Good Ecological Status' and 'Good Chemical Status'. In 2009 the first River Basin Management Plan (RBMP) 2009-2015 was published. The second cycle river basin management plan was carried out between 2018-2021 with the previous management districts now merged into one Ireland River Basin District (Ireland RBD). The third cycle (2022-2027) is currently being undertaken.

During the development of this Plan, a prioritisation exercise was undertaken by the local authorities, the EPA and other stakeholders to identify those water bodies that require immediate action within this plan cycle to 2021. During the catchment characterisation, the EPA identified those water bodies either 'At Risk' of not achieving their objectives or 'Under Review'. The outcome of this prioritisation process was the selection of 190 Areas for Action across the 5 Local Authority regions. Within these 190 areas, a total of 726 water bodies were selected for initial actions during this RBMP cycle. There are 832 water bodies identified as being 'At Risk' of not achieving their environmental objectives under this Plan that have not been included in the Areas for Action. For most of these water bodies, targeted actions will be undertaken in the third cycle RBMP from 2022-2027. The draft 3rd cycle RBMP has been reviewed in the context of ensuring mitigation measures comply with current and expected future measures required to be implemented for protection of water body status within the context of the Proposed Development.

The strategies and objectives of the WFD in Ireland have influenced a range of national legislation and regulations. These include the following:

- European Communities (Water Policy) Regulations, 2003 (S.I. No. 722 of 2003);
- European Communities (Drinking Water) Regulations 2014 (S.I. 122 of 2014);
- European Union (Water Policy) Regulations 2014 (S.I. No. 359/2014);
- European Communities Environmental Objectives (Surface Waters) Regulations, 2009 (S.I. No. 272 of 2009 as amended SI No. 77 of 2019)
- European Communities Environmental Objectives (Groundwater) Regulations, 2010 (S.I. No. 9 of 2010, S.I. No. 366 of 2016);
- European Communities (Good Agricultural Practice for Protection of Waters) Regulations, 2010 (S.I. No. 610 of 2010);
- European Union (Good Agricultural Practice for Protection of Waters) Regulations 2022 S.I. No. 113/2022
- European Communities (Technical Specifications for the Chemical Analysis and Monitoring of Water Status) Regulations, 2011 (S.I. No. 489 of 2011);
- Statutory Instrument (SI) No. 293 of 1988 European Communities (Quality of Salmonid Waters) Regulations 1988;
- Local Government (Water Pollution) Acts 1977-1990;
- SI No. 258 of 1988 Water Quality Standards for Phosphorus Regulations 1998;

- Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites (Eastern Regional Fisheries Board) (2016);
- Central Fisheries Board Channels and Challenges – The enhancement of Salmonid Rivers (2006);
- CIRIA C532 Control of Water Pollution from Construction Sites Guidance for Consultants and Contractors (2001);
- CIRIA C648 *Control of water pollution from linear construction projects (Technical Guidance)* (2006); and
- Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes (NRA/TII, 2006).

Surface water quality is monitored periodically by the EPA at various regional locations along with principal and other smaller watercourses. The EPA assess the water quality of rivers and streams across Ireland using a biological assessment method, which is regarded as a representative indicator of the status of such waters and reflects the overall trend in conditions of the watercourse. The biological indicators range from Q5 - Q1. Level Q5 denotes a watercourse with good water quality and high community diversity, whereas Level Q1 denotes very low community diversity and bad water quality.

In relation to the subject site, the nearest active EPA monitoring stations located in the vicinity of the site is:

- Br SE of Powerstown House (Station Code: RS09P210700), located in the Pinkeen River c. 1.8km downstream of the proposed development site. The most recent status recorded by the EPA (2022) is classified as *Q3/Poor*.
- Mulhuddart Br (Station Code: RS09T010800), located in the Tolka River c. 4.2km downstream of the proposed development site. The most recent status recorded by the EPA (2022) is classified as *Q2-3/Poor*.

Refer to **Figure 10.3** below for locations of these EPA water quality monitoring points in the context of the proposed development site.

Figure 10.3 EPA Surface Water Quality Stations (Source: EPA, 2023)



The Mooretown Stream, Hollywood Stream and Pinkeen River belong to the Powerstown (Dublin)_010 WFD surface water body. Both are currently classified by the EPA as having WFD Status (2016-2021) 'Poor' water quality status and are 'At risk of not achieving good status'. The main pressures identified on the Mooretown and Hollywood Streams are associated with urban run-off and agriculture. This poor status is likely attributable to a combination of elevated nitrates, poor biological status, poor ecological status, and poor invertebrate status from agricultural sources (refer to www.catchments.ie).

The Pinkeen River also belongs to the Tolka_030 WFD surface water body which also received a 'Poor' WFD (2016-2021) water quality status and is 'At risk of not achieving good status'. The main pressures identified on the Pinkeen River are associated with urban run-off and agriculture. This poor status is likely attributable to a combination of elevated nitrates and poor ecological status from diffuse urban sources (refer to www.catchments.ie).

The River Tolka located c. 3.4km downstream of the proposed development site belongs to the Tolka_040 WFD surface water body which received a 'Poor' WFD Status (2016-2021) water quality status and is 'At risk of not achieving good status'. The main pressures identified on the River Tolka are associated with urban run-off. This poor status is likely attributable to a combination of elevated ammonium levels and poor ecological status from agricultural sources, as well as diffuse urban sources (refer to www.catchments.ie).

10.3.4 Bathing Waters and Recreational Waterbodies

The local environment including areas of natural resources that relate to populations and human health that may be impacted by the proposed development, including economic resources, recreational and bathing waters, and drinking water resources were assessed.

A review of Environmental Sensitivity Mapping online maps that includes the Register of Protected Areas (RPA) under the Water Framework Directive (WFD) has shown that there are no Recreational Waters, Bathing Waterbodies, or Surface Water Drinking RPA, located downstream in the Mooretown Stream, Hollywood Stream and Pinkeen River.

10.3.5 Local Drainage Infrastructure

The development site has no existing connection to the public drainage system and is currently a greenfield site. Surface water, rainfall, is generally percolated through the grass and soil via gravity. The EPA mapping database has confirmed that the internal and boundary hedgerows contain ditches which convey flow to an unnamed ditch system to the north-west and south of the site, during heavier rainfall events. There are existing drainage ditches located along the northern and eastern boundaries of the subject site which are connected to existing watercourses (Hollywood & Mooretown Stream) located along the proposed development sites northern and southern boundaries, respectively (refer to **Figure 10.1 above**). These streams/watercourses merge with the Pinkeen river which subsequently discharges to the River Tolka to the south of the site.

10.3.6 Foul Water

The development site has no existing connection to the public drainage system and is currently a greenfield site.

10.3.7 Water Supply

The development site has no existing connection to the public drainage system and is currently a greenfield site.

10.3.8 Flood Risk Assessment

DBFL Consulting Engineers have undertaken a 'Site Specific Flood Risk Assessment' (SSFRA) for a proposed development at Hollystown-Kilmartin Site 4, Co. Dublin. This Flood Risk Assessment was undertaken in accordance with 'The Planning System and Flood Risk Management Guidelines' and is in agreement with the core principles contained within. The SSFRA is in agreement with the core principles contained within the Planning Guidelines. The FRA comprises the following:

- Stage 1 – Flood Risk Identification;
- Stage 2 – Initial Flood Risk Assessment Stage; and
- Stage 3 – Detailed Flood Risk Assessment Stage.

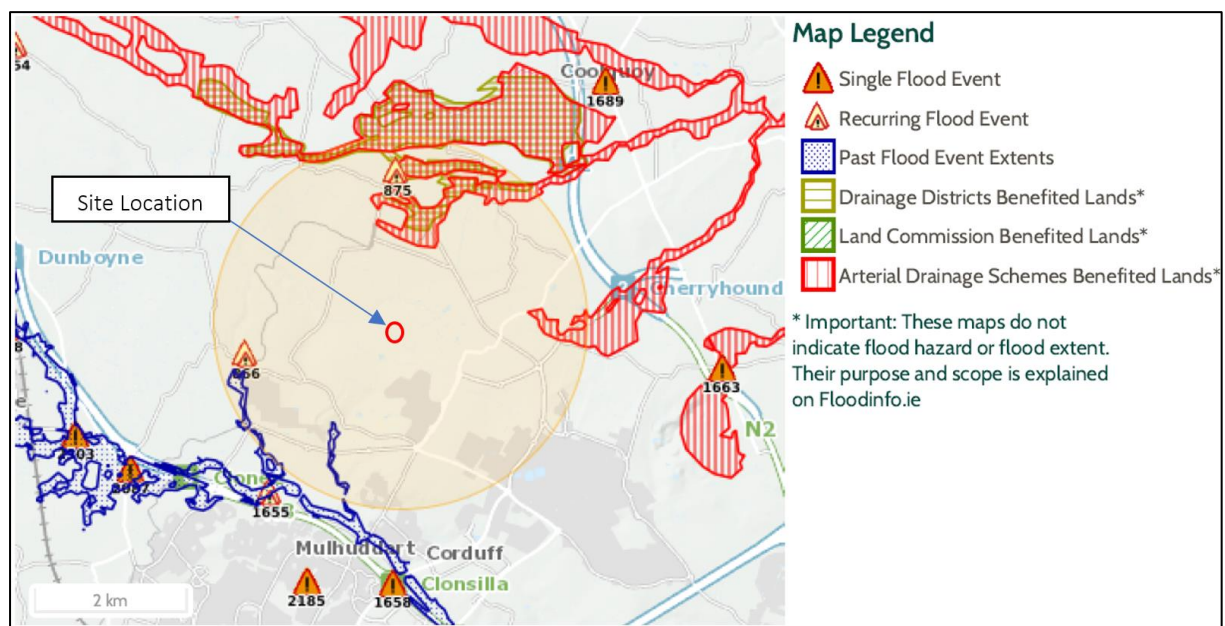
The Strategic Flood Risk Assessment for the Fingal Development Plan 2023-2029 was examined as part of this flood risk assessment. The flood maps developed by RPS for this flood risk assessment indicate that the subject site is in **Flood Zone C** and is therefore not affected by fluvial flooding.

Tidal flooding is not relevant to the proposed site as Hollystown is approximately 13km from the coast and more than 69m above sea level.

The surface water network, attenuation storage and site levels are designed to accommodate a 1% AEP (Annual Exceedance Probability) storm event and includes climate change provision. Floor levels of houses are set above the 1% AEP flood levels by a minimum of 500mm for protection. All footpaths are falling away from houses. For storms events, exceeding a 1% AEP (Annual Exceedance Probability) storm event, the development has been designed to provide overland flood routes along the various development roads towards green areas, where possible.

The OPW host a National Flood hazard mapping website, www.floodinfo.ie, which highlights areas at risk of flooding through the collection of recorded data and observed flood events. See **Figure 10.4** below for the past, single and recurring flood events in the surrounding area of the proposed development site.

Figure 10.4 Extract from Floodinfo.ie (DBFL Consulting Engineers, SSFRA, 2023)



Following the flood risk assessment stages (Stage 1, 2 & 3), it was determined that the site is within **Flood Zone C** as defined by the Guidelines. It is concluded that the:

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

The development was concluded as having a good level of flood protection up to the 100-year return event. For pluvial floods exceeding the 100-year capacity of the drainage system then proposed flood routing mitigation measures are recommended (refer to 'Site Specific Flood Risk Assessment' prepared by DBFL Consulting Engineers (2023) and submitted under a separate cover as part of the planning application) for further information.

10.3.9 Areas of Conservation

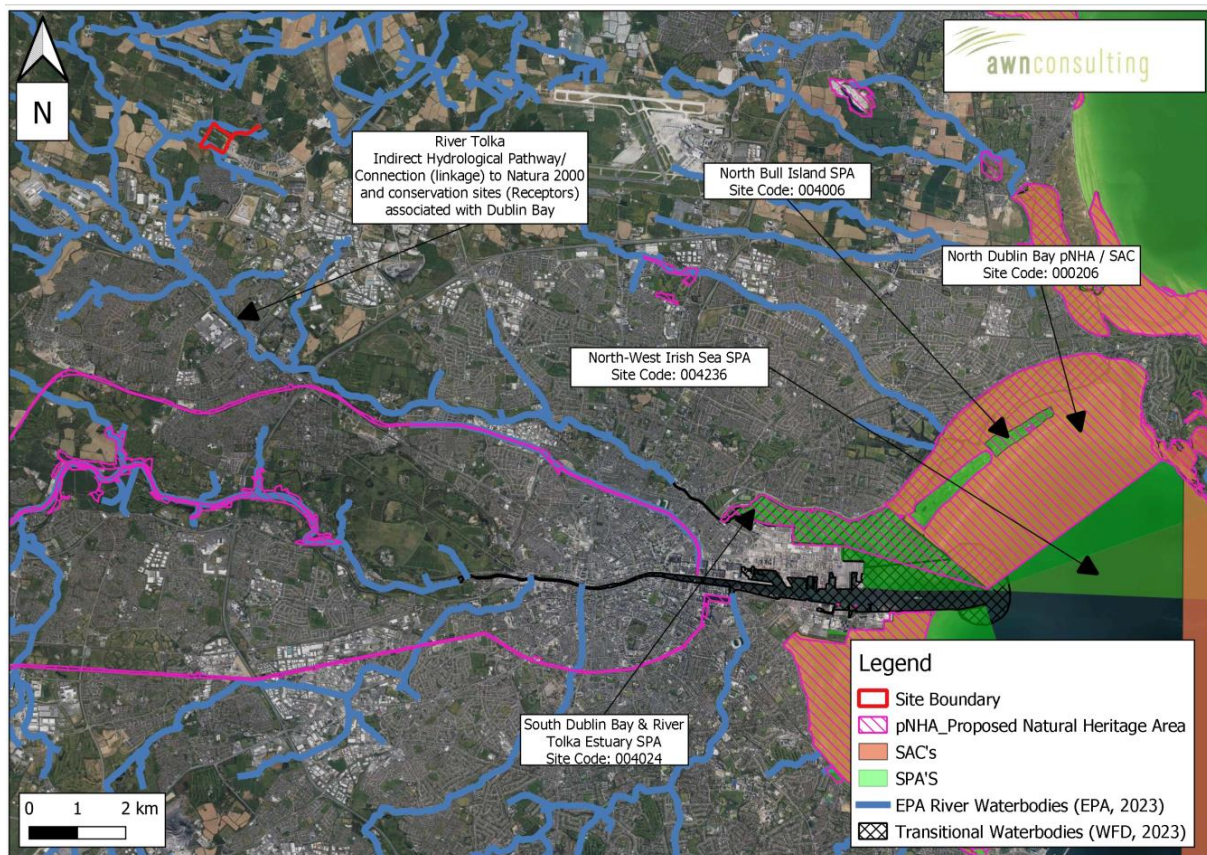
According to the NPWS (2023) online database there are no special protected area on or within the boundary of the proposed development site. The closest European listed site(s) (Natura 2000) that have potential hydrological connectivity with the proposed development are as follows:

- The Royal Canal (002103) pNHA - circa. 5.2 km to the south of the site (linear distance) / 10.2 km Hydrological distance downstream.
- The South Dublin Bay & River Tolka (0004024) SPA – circa 13.1 km to the south-east of the site (linear distance) / 18.1 km Hydrological distance downstream.
- North Bull Island (004006) SPA- circa 15.6 km to the south-east of the site (linear distance) / 20.6 km Hydrological distance downstream.
- North Dublin Bay (000206) pNHA/SAC- circa 15.6 km to the south-east of the site (linear distance) / 20.6 km Hydrological distance downstream.
- North-West Irish Sea SPA [004236] c.>18 km downstream of the proposed development site (linear distance) / >23 km Hydrological distance downstream.

The proposed development would have an indirect hydrological pathway / linkage or connection with the South Dublin Bay and River Tolka Estuary SPA through the local drainage network, the Mooretown and Powerstown Streams both merge and outfall downcourse into the Pinkeen River, a tributary of the Tolka River. Subsequently, the Tolka River discharges downstream into South Dublin Bay and River Tolka Estuary SPA/pNHA. **Figure 10.5** below presents the location of these protected areas in the context of the proposed development. It should be noted that those protected sites located in Dublin Bay (South Dublin Bay & River Tolka SPA and North Dublin Bay SAC) host groundwater dependent ecosystems.

Figure 10.5 below presents the location of these protected areas in the context of the proposed development site.

Figure 10.5 Conservation Areas (NPWS, 2023)



In addition to European sites, there are also proposed Natural Heritage Areas (pNHAs) located in Dublin Bay, North Dublin Bay and South Dublin Bay pNHA's [000210].

The drainage ditches within the proposed development site flow to the Hollywood Stream and Mooretown Stream. The Mooretown Stream flows in a westerly direction along the majority of the southern boundary of the site and traverses the sites south-western corner. The Hollywood Stream flows along a small portion of the sites most north-western boundary. The Mooretown then flows in a southerly direction entering the Pinkeen River c. 0.8km downstream of the proposed development site. The Pinkeen River ultimately discharges to the Tolka River c. 3.4km downstream of the proposed development site where it continues to flow in an easterly direction towards Dublin Bay and the SAC's/SPA's/pNHA's it hosts.

There will be a potential hydrological link to the European sites associated with Dublin Bay, via foul water – foul waste arising at the site that will discharge to Ringsend Waste Water Treatment Plant (license no. D0034-01).

The Appropriate Assessment (AA) Screening Report provides a detailed account of all European sites in the potential Zone of Influence. Refer to AA Screening Report, submitted under separate cover as part of the planning application, and / or Chapter 8 (Biodiversity) in this EIAR.

10.3.10 Rating of Importance of Hydrological Attributes

Based on the TII methodology (2009) (see **Appendix 10.1**) the importance of the hydrological features at this site is rated as '*low importance*' based on the assessment that the attribute has a low-quality significance or value on a local scale.

10.4 Characteristics of the Proposed Development

The proposed development will include for the development of 580 no. residential units, consisting of 112 no. apartments/duplexes and 468 no. houses ranging from 1 – 3 storeys and will also include for car parking, cycle parking, new pedestrian/ cycle links, storage, services and plant areas. Landscaping will include for high quality private open space, communal amenity areas and public open space provision.

A full description of the proposed development can be found in **Chapter 5** of the EIAR (Description of the Proposed Development). The activities associated with the proposed development which are relevant to the hydrological environment are as follows:

10.4.1 Construction Phase

The activities required for the construction phase of the proposed development represents the greatest risk of potential impact on the hydrological environment. These activities primarily pertain to the site preparation, excavation, levelling and infilling activities required to facilitate construction of the proposed development, and ancillary services.

10.4.1.1 Site Preparation, Excavation, Levelling and Infilling Activities

Land clearing, earthworks and excavations will be required for construction phase operations to facilitate site clearance, construction of new buildings, foundations and installation of services. This will include site levelling, construction, and building foundation excavation, this will necessitate the removal of vegetation cover and the excavation of soil and subsoils.

The volume of material to be excavated has been estimated by the project engineers at c. 55,000 m³ with a total of c. 45,000 m³ required for infill/reuse. It is envisaged that all excavated material will be re-used on-site, however, some allowance is made for unsuitable material. The maximum depth of excavations will be c. 6mbgl.

10.4.1.2 Storage of Hazardous Construction Materials

Construction activities will include the storage of fuel and use of machinery, and temporary storage of fuel required for on-site construction traffic. Liquid materials i.e., fuel storage will be located within temporary bunded areas, doubled skinned tanks or bunded containers (all bunds will conform to standard bunding specifications - BS8007-1987) to prevent spillage. These will be stored within the contractor yard.

10.4.1.3 Foul Drainage During Construction

Welfare facilities will be provided for the contractors via portable sanitary facilities within the construction compound site during the construction works. It is anticipated that initially, waste will be collected by tanker and disposed of appropriately, and that temporary connections to the existing

services will be established to provide service and utilities subject to relevant applications and approvals.

There shall not be discharge of silty (contaminated) water from the works to any watercourse, should any discharge of contaminated construction water be required during the construction phase, the discharge will be to foul sewer following agreement with Fingal County Council / Uisce Éireann (formerly Irish Water).

10.4.1.4 Surface Water Discharge During Construction

There shall not be discharge of *untreated*, silty, or contaminated water from the works to any watercourse or stormwater network. Should any discharge of *untreated* construction water be required during the construction phase, the discharge will be to foul sewer following agreement with Fingal County Council / Uisce Éireann (formerly Irish Water).

There is no significant dewatering required during the construction phase which would result in the localised lowering of the water table. It is expected during the excavation works that localised dewatering of the subsoils will be required to address perched groundwater. There may be localised pumping of surface run-off from the excavations during and after heavy rainfall events to ensure that the excavation is kept relatively dry.

The Site Management Team will maintain a record of all receipts for the removal of toilet or interceptor waste off-site to insure its disposal in a traceable manner. These will be available for inspection by the Environmental Section of Fingal County Council.

Discharge from any vehicle wheel wash areas is to be directed to on-site settlement tanks / ponds, debris and sediment captured by vehicle wheel washes are to be disposed off-site at a licensed facility.

10.4.2 Operational Phase

The proposed development characteristics which relate to the water and hydrological environment during operation of the proposed development are summarised below:

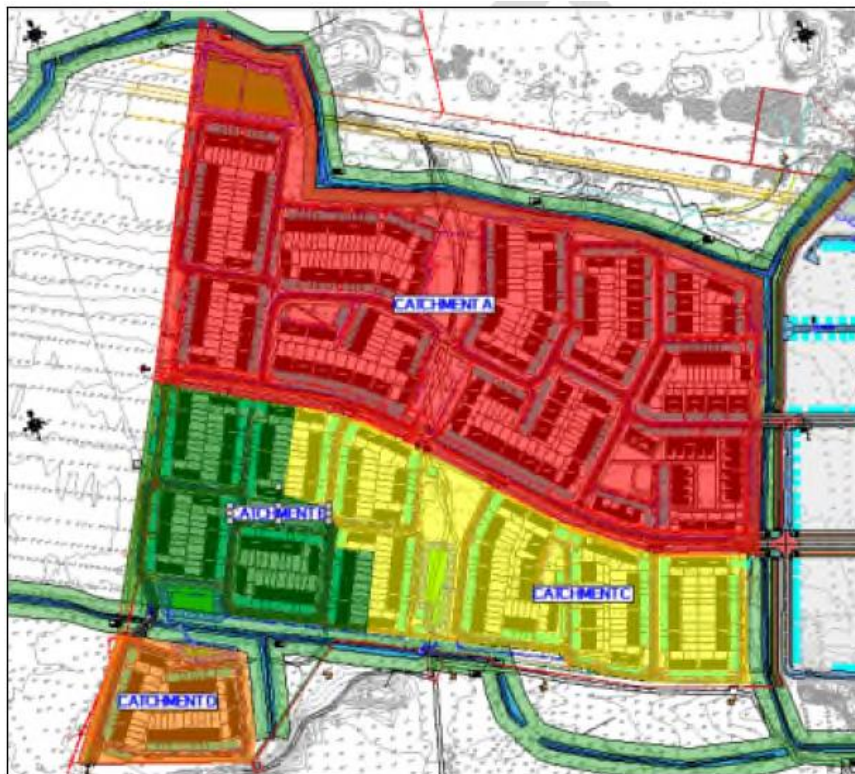
10.4.2.1 Surface Water Drainage and Infrastructure

It is proposed to discharge controlled surface water run-off to the existing drainage ditches in both the north-west and south-west corner of the subject site. Refer to 'Infrastructure Design Report' prepared by DBFL Consulting Engineers (2023) and submitted under a separate cover as part of the planning application, for details of the surface water catchment plan.

Attenuated surface water runoff from the proposed development will discharge to the stream Hollywood / Mooretown to the west of the site in both the north-west and south-west corner of the subject site.

To manage surface water runoff from the proposed development, the site will be split into 4 surface water catchments (refer to **Figure 10.6** below).

Figure 10.6 Surface Water Catchments (DBFL, 2023)



Surface water runoff from the subject site will be attenuated to a greenfield run-off rate as required in the 'Greater Dublin Strategic Drainage Study' (GDSDS), with runoff exceeding the allowable outflow stored on site for up to a 1% AEP (Annual Exceedance Probability) event, plus 20% for climate change.

Where possible, detention basins have been shaped to aesthetically fit within the scheme design and incorporated into the landscape design to maximise the usability of open space.

It is proposed to store runoff for a 1% AEP (Annual Exceedance Probability) storm event plus 20% allowance for climate change in detention basins, linear swales and underground Stormtech tanks. Detention basins will retain unlined to allow for filtration through the wetted base and sides.

The treatment train approach divides the drainage elements of the development into sub catchments with different drainage characteristics and land uses, such as a dwelling with permeable paving. The treatment train approach applied to the proposed development, include in curtilage SuDS comprising permeable paving in driveways and roof runoff discharging to the stone layer under the permeable paving.

Runoff from roads and other hard surfaces such as paths and cycle paths are directed to swales and tree pits where possible. All runoff enters unlined detention basins with hydrobrakes in which attenuated storm volumes are temporarily stored. Restricted baseflow from detention basins through the hydro brakes enter petrol interceptors and grease traps before finally discharging into natural drainage lines.

To prevent pollutants or sediments discharging into water courses the GDSDS requires "*interception storage*" to be incorporated into the development. The volume of interception required is based on 5mm of rainfall depth from 80% of the runoff from impermeable areas (8.08ha) as defined in the GDSDS.

SuDS features will be integrated into the surface water drainage network for the proposed development, with the objective of controlling the quantity of surface water runoff, managing the quality of runoff to prevent pollution, and creating and sustaining local ecosystems. The four main categories of benefits that can be achieved by SuDS are water *quantity*, *quality*, *amenity*, and *biodiversity*. The SuDS features proposed for the development include the following:

- Swales within the link street grass verges;
- Permeable paving within private curtilage parking;
- Bioretention areas;
- Rain gardens;
- Tree pits;
- Detention basins;
- Hydrobrake flow controls; and
- Petrol interceptors.

Surface water management for the proposed development is designed to comply with the GDSDS policies and guidelines and the requirements of Fingal County Council. Refer to 'Infrastructure Design Report' (prepared by DBFL Consulting Engineers (2023) and submitted under a separate cover as part of the planning application) for further information.

10.4.2.2 Foul Drainage

It is proposed to connect to the existing 450mm diameter trunk foul sewer that is currently under construction under FCC Ref FW21A/0042. This trunk sewer traverses through the central primary link street of the subject site from east to west and ultimately discharges to the existing 750mm diameter foul sewer approx. 3km to the south adjacent to Powerstown Road.

The foul trunk main has been designed to accommodate foul flows from the proposed development and also the foul flows from the proposed Hollystown Sites 2&3 SHD which have been granted planning permission from ABP under ABP Ref. TA06F.312271. The trunk main also accommodates foul flows from Bellingsmore Residential Development to the east and from Hollystown Site 1 to the north-east of the proposed development which was recently granted planning permission under with Fingal County Council under FCC Reg reference FW21A/0042. It is also designed to facilitate a future connection from Hollystown Park Foul Pumping Station which has also been permitted under FCC Ref FW21A/0042.

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

A pre-connection enquiry form for the subject site was issued to Uisce Éireann (formerly Irish Water) and a copy of the Confirmation of Feasibility from Uisce Éireann is included in 'Infrastructure Design Report' (prepared by DBFL Consulting Engineers (2023) and submitted under a separate cover as part of the planning application).

10.4.2.3 Water Supply

It is proposed to connect to the 225mm diameter PE Watermain to the east of the subject site which will be constructed as part of the Hollystown – Kilmartin Sites 2&3 SHD under An Bord Pleanála reference Ref.312271. This watermain connects to the existing 300mm diameter watermain on Hollywoodrath Road (R121). The connection to the public water main will include a bulk meter and sluice valves and scour valve in accordance with the Uisce Éireann's requirements. The water main layout and details are in accordance with Irish Water Connection and Developer Services, 'Code of Practice for Water Infrastructure' and 'Water Infrastructure Standard Details'.

The Infrastructure Design Report prepared by DBFL Consulting Engineers states that the total water requirement from the public supply, for the proposed development, is estimated at 150l/person/day.

A pre-connection enquiry form for the subject site was issued to Uisce Éireann (formerly Irish Water) and a copy of the Confirmation of Feasibility from Uisce Éireann is included in 'Infrastructure Design Report' (prepared by DBFL Consulting Engineers (2023) and submitted under a separate cover as part of the planning application).

10.5 Predicted Impacts of the Proposed Development

An analysis of the potential impacts of the proposed development on the hydrological environment during the construction and operational phases is outlined below. Due to the inter-relationship between surface water (hydrology) and soils, geology and hydrogeology, the following impacts discussed will be considered applicable to both Chapters 9 (Lands, Soils, Geology and Hydrogeology) and this Chapter of the EIAR. The potential for significant impacts to arise as a result of the interaction between these topics / environmental media has been comprehensively addressed herein.

The potential hydrological impacts during the construction and operational phases are presented below. Remediation and mitigation measures included in the design of the proposed development to address these potential impacts are presented in **Section 10.6**.

10.5.1 Do-Nothing Impact

If the proposed development was not to go ahead (i.e., in the Do-Nothing scenario) there would be no, excavation or construction at this site. There would, therefore, be a neutral effect on the hydrological environment in terms of hydrological environment.

The site is zoned for development, and it is likely that in the absence of this subject proposal that a development of a similar nature would be progressed on the site that accords with national and regional policies and therefore the likely significant effects would be similar to this proposal. A potential increase in hardstanding areas would be mitigated by requiring developers to maintain green field runoff rates as a result there would be no overall change to flooding but the trend in change of land use will result in local changes to recharge and hydrological flow patterns.

The temporal evolution of the current baseline in terms of water and hydrological environment involves climate change and its effects on the quantity or quality of the surface water. This can potentially affect the surrounding projected flooding. However, the CFRAM models used in the Site Specific Flood Risk Assessment already included this effect in their extent.

10.5.2 Construction Phase

During the construction phase of the proposed development the potential impacts in relation to hydrology (in the absence of mitigation) are assessed in the following sections.

10.5.2.1 Surface Water Quality

There is potential for water (rainfall and/or groundwater) to become contaminated with pollutants associated with construction activity. This contaminated water which arises from construction sites can pose a significant, and short-term risk to the Hollystown and Mooretown Streams and subsequently the Pinkeen River and River Tolka located downstream of the proposed development site.

During construction of the development, there is a risk of accidental pollution incidences from the following sources:

- Suspended solids (muddy water with increase turbidity) – arising from exposed ground, stockpiles and access roads and ground disturbance;
- Cement/concrete (increase turbidity and pH) – arising from construction materials;
- Hydrocarbons and other construction chemicals (ecotoxic) – accidental spillages from construction plant or onsite storage;
- Wastewater (nutrient and microbial rich) – arising from accidental discharge from on-site toilets and washrooms.

In the absence of mitigation, surface water run-off during the construction phase may contain increased silt levels or otherwise become polluted from construction activities. Suspended solids in runoff water may result in an increase in suspended sediment load, resulting in increased turbidity, which may damage downstream water quality.

Concreting operations carried out near surface water drainage points during construction activities could lead to discharges to a watercourse. Concrete (specifically, the cement component) is highly alkaline and any spillage to a local watercourse would be detrimental to water quality and local fauna and flora.

Potential impacts could arise from accidental spillage of fuels, oils, paints etc. which could impact surface water if allowed to infiltrate to runoff to surface water systems and/or receiving watercourses.

Welfare facilities will be provided for the contractors on site during the construction works. These facilities will be connected to the proposed foul drainage system on-site or portable sanitary facilities will be provided with waste collected and disposed of appropriately.

The potential impacts on surface water quality are not considered on areas of conservation located downstream to the southeast of the proposed development site in Dublin Bay, specifically the South Dublin Bay and River Tolka Estuary SPA [004024], North Bull Island SPA [004006], South Dublin Bay SAC [000210] and North Dublin Bay SAC [000206] as the hydrological distance downstream is so great (c. 18.1 km).

The potential impacts on Natura 2000 sites are further explained in Chapter 8 (Biodiversity).

The potential impact due to land clearing, earthworks and excavations as a result of the construction phase is *negative, indirect, slight, temporary/short-term*.

10.5.2.2 Non-sediment Contaminated Surface Water Runoff or Drainage from Construction Works

Non-sediment contaminants consist of general site and materials management measures that directly or indirectly discharge into receiving environments from site activities. During the construction phase, in the absence of mitigation, there is a risk of accidental pollution incidences from the following sources:

- Spillage or leakage of oils and fuels stored on-site or refuelling on-site;
- Spillage of oil or fuel from refuelling machinery on-site;
- Spillage or leakage of oils and fuels from construction machinery or site vehicles; and
- Alkaline run-off from the use of wet concrete and cement.

In the absence of mitigation, surface water run-off during the construction phase may contain increased levels of hydrocarbons, and other pollutants. These pollutants such as hydrocarbons that are a known carcinogen (cause cancer) in many animals and suspected to be carcinogenic to humans and changes in water pH in runoff water may result in adverse changes in water chemistry (Dissolved Oxygen content, Biological Oxygen Demand etc). These pollutants could have a temporary impact (exceeding statutory guideline levels until adequately diluted (likely in a few days) on downstream water quality.

This contaminated water which arises from construction sites can pose a temporary risk to the Tolka River and downstream Estuary, Dublin Bay and Irish Sea.

Therefore, there is potential (in the absence of mitigation) for temporary (a number of days) water quality impact from the proposed construction works by an indirect hydrological link to the River Tolka via the Hollystown Stream, Mooretown Stream and Pinkeen River. Given the distance between the site and the Natura 2000 sites downstream of the proposed development site in Dublin Bay (c. >13km linear distance), it is unlikely that there will be an impact on them or their WFD status due to the expected loading associated with the above pollutants and significant dilution in the stormwater system and the River Tolka. In the absence of mitigation measures the potential impacts during the construction phase on surface water quality are ***negative, not significant*** and ***short term***.

Land clearing, earthworks and excavations will be required for construction phase operations to facilitate site clearance, construction of new buildings, foundations and installation of services. This will include site levelling, construction, and building foundation excavation, this will necessitate the removal of vegetation cover and the excavation of soil and subsoils.

The gradual introduction of impermeable surfaces and the compaction of soils across the construction site as a result of the land clearing and earthworks will reduce the infiltration capacity and increase the rate and volume of direct surface run-off. The potential impact of this is a possible increase in surface water run-off and sediment loading, which could potentially impact local drainage if not adequately mitigated.

This increase in the rate and volume of direct surface run-off can result in increased sediment loading, scouring impacts on local drainage and watercourse, and downstream impacts.

There are no surface water abstractions proposed, therefore no potential impacts on the quantity of surface water.

There are no proposed diversions of any drainage ditches or waterbodies as part of the proposed development.

These potential impacts on surface water flow and quantity may also have a potential impact on areas of conservation located downstream, specifically the South Dublin Bay and River Tolka Estuary SPA, North Dublin Bay pNHA / SAC, and North Bull Island SPA. The potential impacts on Natura 2000 sites are further explained in Chapter 8 (Biodiversity).

10.5.2.2.1 Human Health and Populations

A reduction in water quality via unmitigated pollutants entering the Hollywood and Mooretown Streams and subsequently the Pinkeen River and River Tolka downstream of the proposed development site has the potential to lead to negative impacts on human health and populations. Hydrocarbons and petroleum products for example have the greatest risk for human health when they are in drinking water. However, it is noted that there are no recorded Recreational Waters, Bathing Waterbodies, or Surface Water Drinking RPA, located downstream of the site.

However, as yet unknown recreational, bathing or surface water abstractions may exist. Therefore, on this basis in the absence of mitigation measures the potential impacts during the construction phase on human health and populations due to changes to the hydrological environment are ***negative, not significant*** and ***short term***.

10.5.2.2.2 Water Framework Directive Status

There is a potential of accidental discharges during the construction phase (as set out in Section 10.5.2.1), however these are temporary short-lived events that will not impact on the surface water status of the Hollystown Stream, Mooretown Stream, Pinkeen River and River Tolka long-term and as such will not impact on trends in water quality and overall WFD status assessment.

There is no potential impact on water framework directive status, therefore no specific mitigation measures are required.

10.5.3 Operational Phase

During the operational phase of the proposed development the potential impacts in relation to hydrology (in the absence of mitigation) are assessed in the following sections.

10.5.3.1 Increase in Hardstanding and Potential for Increase in Surface Water Runoff

The proposed increase in hardstanding area has the potential to resulting in increase in run-off from the site if not adequately mitigated. An increase in surface water run off can have an adverse effect on the hydrological regime of downstream environments via flooding and inundation to downstream properties.

However, the proposed developments stormwater drainage network design includes sustainable drainage systems (SuDS) these measures by design ensure the stormwater leaving the site is of a suitable quality and quantity. SuDS are drainage systems that are environmentally beneficial, causing minimal or no long-term detrimental damage.

The SuDS measures include swales within the link street grass verges, permeable paving within private curtilage parking, bioretention areas, rain gardens, tree pits, detention basins, hydrobrake flow controls and petrol interceptors. Further details on the proposed design of the surface water drainage is within 'Infrastructure Design Report' (prepared by DBFL Consulting Engineers, 2023 and submitted separately under planning documentation).

Taking into account the designed measures (characteristics) of the proposed development the potential impact due the increase in hardstanding and potential for increase in surface water runoff as a result of the operational phase is ***neutral, imperceptible, long-term***, on the downstream surface waters.

10.5.3.2 Potential for Contaminated Surface Water Drainage

Surface water runoff from roads and car parking areas can potentially contain elevated levels of contaminants such as hydrocarbons. These pollutants such as hydrocarbons that are a known carcinogen (cause cancer) in many animals and suspected to be carcinogenic to humans and changes in water pH in runoff water may resulting in adverse changes in water chemistry (Dissolved Oxygen content, Biological Oxygen Demand etc).

The SuDS strategy adopted for the proposed development provides a comprehensive approach to the management of storm water on the site in line with the SuDS triangle namely, water quality, water quantity and amenity / biodiversity. The treatment train approach has been adopted for the design of the storm water system for the development. This approach uses suitable SuDS measures in providing source, site and regional controls.

The SuDS recommendations included in the Hollystown-Kilmartin Site 4 have been assessed and have been included where deemed appropriate and suitable for this development. The treatment train approach applied to the proposed development, include in curtilage SuDS comprising permeable paving in driveways and roof runoff discharging to the stone layer under the permeable paving. Runoff from roads and other hard surfaces such as paths and cycle paths are directed to swales and tree pits where possible. All runoff enters unlined detention basins with hydrobrakes in which attenuated storm volumes are temporarily stored. Restricted baseflow from detention basins through the hydro brakes enter petrol interceptors and grease traps before finally discharging into natural drainage lines.

Further details on the proposed design of the surface water drainage is within 'Infrastructure Design Report' (prepared by DBFL Consulting Engineers, 2023 and submitted separately under planning documentation).

Taking into account the designed measures (characteristics) of the proposed development the potential impact due to contaminated surface water drainage as a result of the operational phase is ***neutral, imperceptible, long-term***, on the downstream surface waters.

10.5.3.3 Potential Impacts in Relation to Wastewater Loading

It is proposed to connect to the existing 450mm diameter trunk foul sewer that is currently under construction under FCC Ref FW21A/0042. This trunk sewer traverses through the central primary link street of the subject site from east to west and ultimately discharges to the existing 750mm diameter foul sewer approx. 3km to the south adjacent to Powerstown Road.

There is an indirect connection through the proposed foul sewer which will eventually discharge to the Ringsend WWTP and ultimately discharges to Dublin Bay SAC/SPA/pNHA. The future development has a peak foul discharge that would equate to 0.144% of the licensed discharge at Ringsend WWTP (peak hydraulic capacity). Therefore, even without treatment at the Ringsend WWTP, the peak effluent discharge, calculated for the proposed development as 18 l/s (which would equate to 0.144% of the licensed discharge at Ringsend WWTP [peak hydraulic capacity]), would not have a measurable impact

on the overall water quality within Dublin Bay and therefore would not have an impact on the current Water Body Status (as defined within the Water Framework Directive).

On the basis of the design of characteristics of the proposed development, and feasibility of the connection with Uisce Éireann to Ringsend WWTP, there are *neutral, imperceptible, long-term* in respect of wastewater loading.

Further details on the proposed design of the foul water drainage is within the Infrastructure Design Report' (prepared by DBFL Consulting Engineers, 2023 and submitted separately under planning documentation).

10.5.3.4 Potential Impacts on Water Framework Directive Status

There are no long-term discharges planned which could have an impact on the status of the surface water bodies. In the scenario of an accidental release there is potential for a temporary impact only which would not be of a sufficient magnitude to effect a change in the current water body status.

As stated above, even without treatment at the Ringsend WWTP, the foul water loading, calculated for the proposed development as 15.86 l/s (which would equate to 0.14 % of the licensed discharge at Ringsend WWTP [peak hydraulic capacity]), would not have a measurable impact on the overall water quality within Dublin Bay and therefore would not have an impact on the current Water Body Status (as defined within the Water Framework Directive).

10.5.3.5 Potential Impacts in relation to Potable Water Usage

It is proposed to connect to the 225mm diameter PE Watermain to the east of the subject site which will be constructed as part of the Hollystown Sites 2&3 SHD under ABP Ref. 312271. This watermain connects to the existing 300mm diameter watermain on Hollywoodrath Road (R121). The connection to the public water main will include a bulk meter and sluice valves in accordance with the Irish Water's requirements. The water main layout and details are in accordance with Irish Water Connection and Developer Services, 'Code of Practice for Water Infrastructure' and 'Water Infrastructure Standard Details'.

Watermain works, water conservation measures, metering and pressure control will be strictly in accordance with Uisce Éireann and Fingal County Council requirements, specifications and standard details.

Further details on the proposed design of the water supply is included the Infrastructure Design Report' (prepared by DBFL Consulting Engineers, 2023 and submitted separately under planning documentation).

Due to the design of characteristics and design of the proposed development, and agreement with Uisce Eireann (formerly Irish Water), there is *neutral, imperceptible* and *long-term* in respect of potable water consumption.

10.6 Mitigation Measures

The design of the proposed development has taken account of the potential impacts of the proposed development and the risks to the water environment specific to the areas where construction is taking place. These measures seek to avoid or minimise potential effects during construction and operational

phase through the implementation of best practice construction methods and adherence to all relevant legislation.

10.6.1 Construction Phase

All works carried out as part of these infrastructure works carried out by the contractor will be in full cooperation with the Environmental Section of Fingal County Council and will comply with all Statutory Legislation including the Local Government (Water Pollution) acts, 1977 and 1990 (as amended).

10.6.1.1 Implementation of the Construction & Environmental Management Plan

DBFL Consulting Engineers have prepared a Construction & Environmental Plan (2023) that is submitted separately under planning documentation. It contains best practice measures and protocols to be implemented during the construction phase of the proposed development to avoid / minimise environmental impacts, including in relation to surface water.

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

The CEMP was formulated in accordance with best international practice including but not limited to:

- CIRIA (2001). Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (C532);
- CIRIA (2002). Control of Water Pollution from Construction Sites: Guidance for Consultants and Contractors (SPI56);
- CIRIA (2005). Environmental Good Practice on Site (C650);
- CIRIA (2007). CIRIA 697: The SUDS Manual;
- Eastern Regional Fisheries Board (2006). Fisheries Protection Guidelines: Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites;
- IFI (2016) Guidelines on Protection of Fisheries during construction works in and adjacent to waters;
- Enterprise Ireland (n.d.). Best Practice Guide BPGCS005: Oil Storage Guidelines; and
- UK Pollution Prevention Guidelines (PPG) UK Environment Agency, 2004.

10.6.1.2 Surface Water Quality

10.6.1.2.1 Surface Water Quality and Flow

Similar to the above, groundwater needs to be protected from sedimentation and erosion due to direct surface water runoff generated onsite during the construction phase. To prevent this from occurring, surface water discharge from the whole site, including the haul road, will be managed and controlled for the duration of the construction works until the permanent surface water drainage system (including attenuation and storage) for the proposed site is complete. A temporary positive drainage system shall be installed prior to the commencement of the construction works to collect and store surface water runoff by the site during construction. A series of geotextile lined cascading, high level outfall, settling basins will be installed upstream of the agreed discharge point. These settlement basins will also provide storage for the groundwater. This temporary surface water management facility will

throttle runoff, provide storage for run-off and allow suspended solids to be settled out and removed before being discharged in a controlled manner to the agreed outfall via high level overflows. All inlets to the cascading settling basins will be riprapped to prevent scour and erosion near the inlet. Surface water discharge from site will be managed and controlled for the duration of the construction works until the permanent surface water drainage system is complete.

In order to manage the potential impact associated with sediment and sediment runoff the following mitigation measures will be implemented during the construction phase:

- Riparian corridors of 10m from all existing open drains and watercourses on-site will be established early in the construction phase where no construction works will take place;
- During earthworks and excavation works care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts;
- Run-off water containing silt will be contained on site via settlement tanks and treated to ensure adequate silt removal;
- Silt reduction measures on site will include a combination of silt fencing and settlement measures (silt traps, silt sacks and settlement tanks/ponds);
- Any hard surface site roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only;
- A power washing facility or wheel cleaning facility will be installed near to the site compound for use by vehicles exiting the site when appropriate;
- A stabilised entranceway consisting of an aggregate on a filter cloth base that is located at any entry or exit point of the construction site;
- Aggregate will be established at the site entrance points from the construction site boundary extending for at least 10 m;
- The temporary storage of soil will be carefully managed. Stockpiles will be tightly compacted to reduce runoff and graded to aid in runoff collection;
- Construction materials, including aggregates etc. will be stored a minimum of 20 meter buffer distance from any surface water bodies and surface water drainage points;
- Aggregate materials such as sands and gravels will be stored in clearly marked receptacles within a secure compound area to prevent contamination;
- Movement of material will be minimised to reduce the degradation of soil structure and generation of dust;
- Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise the potential for water ingress into excavations; and
- Weather conditions will be considered when planning construction activities to minimise the risk of run-off from the site.

In addition to the measures above, all excavated materials will be visually assessed by suitably qualified persons for signs of possible contamination such as staining or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of potential contaminants to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be segregated and appropriately disposed of by a suitably permitted / licensed waste disposal contractor.

Surface water discharge from the site will be managed and controlled for the duration of the construction works until the permanently attenuated surface water drainage system of the proposed site is complete. A temporary drainage system shall be established prior to the commencement of the initial infrastructure construction works to collect and discharge any treated construction water during construction. Once the initial infrastructure phase of construction works are completed the construction works will proceed on a unit-by-unit basis. The construction contractor for that unit will be required to manage suspended solids within the curtilage of the unit and will be permitted to discharge treated construction water to the established stormwater network.

For the avoidance of doubt, there shall not be discharge of **untreated**, silty, or contaminated water from the works to any watercourse or stormwater network. Should any discharge of contaminated construction water be required during the construction phase, discharge will be to tankered off site or discharged to foul sewer following agreement with Fingal County Council / Uisce Éireann.

The discharge of **treated** clean construction water from rainfall into excavated areas, or from any localised dewatering may be required during construction. Monitoring will be adopted to ensure that the water is of sufficient quality to discharge to the stormwater network. The use of slit traps and petrol interceptors (if required) will be adopted if the monitoring indicates the requirements for the same with no silt or contaminated water permitted to discharge to the stormwater network.

10.6.1.2.2 Cement / Concrete Works

There is a risk that ground water could become contaminated with lime from cement which could subsequently find its way into the local adjacent watercourses. The measures proposed to be put in place to mitigate any potential damage from the effluent of contaminated ground water would be to create an exclusion zone, as far as reasonably practicable.

Where feasible all ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to the underlying subsoil.

No wash-down or wash-out of ready-mix concrete vehicles during the construction works will be carried out at the site within 10 meters of an existing surface water drainage point. Wash-outs will only be allowed to take place in designated areas with an impervious surface where all wash water is contained and removed from site by road tanker or discharged to foul sewer submit to agreement with Uisce Éireann / FCC.

The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the site will be suitably trained in the implementation of the procedures.

10.6.1.2.3 Hydrocarbons and Other Construction Chemicals

The following mitigation measures will be implemented during the construction phase in order to prevent any spillages to ground of fuels and other construction chemicals and prevent any resulting to surface water and groundwater systems:

- Designation of bunded refuelling areas on the site;
- Provision of spill kit facilities across the site;
- Where mobile fuel bowsers are used, the following measures will be taken:

- Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use;
- The pump or valve will be fitted with a lock and will be secured when not in use;
- All bowzers to carry a spill kit and operatives must have spill response training;
- Portable generators or similar fuel containing equipment will be placed on suitable drip trays.

In the case of drummed fuel or other potentially polluting substances which may be used during the construction phase, the following measures will be adopted:

- Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded area;
- Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be stored within temporary bunded areas, doubled skinned tanks or bunded containers to a volume of 110% of the capacity of the largest tank/container. Drainage from the bunded area(s) shall be diverted for collection and safe disposal.
- Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage;
- All drums to be quality approved and manufactured to a recognised standard;
- If drums are to be moved around the site, they will be secured and on spill pallets; and
- Drums will be loaded and unloaded by competent and trained personnel using appropriate equipment.

Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area or within the construction compound (or where possible off the site) which will be away from surface water gulleys or drains minimum 20 m buffer zone). In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in this area. All relevant personnel will be fully trained in the use of this equipment. Guidelines such as “Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors” (CIRIA 532, 2001) will be complied with.

The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the site will be suitably trained in the implementation of the procedures.

10.6.1.2.4 Wastewater Management

Foul drainage for the proposed development will be in accordance with the relevant standards for design and construction as detailed ‘Infrastructure Design Report’ (prepared and submitted by DBFL Consulting Engineers (2023) as part of the planning application).

Foul wastewater discharge from the site will be managed and controlled for the duration of the construction works.

Site welfare facilities will be established to provide sanitary facilities for construction workers on site. The main contractor will ensure that sufficient facilities are available at all times to accommodate the number of employees on site. Foul water from the offices and welfare facilities on the site will discharge into the existing sewer on site (the cabins may initially need to have the foul water collected by a licensed waste sewerage contractor before connection to the sewer line can be made).

There shall not be discharge of silty (contaminated) water from the works to any watercourse, should any discharge of contaminated construction water be required during the construction phase, the discharge will be to foul sewer following agreement with Fingal County Council / Uisce Éireann.

The construction contractor will implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the site will be suitably trained in the implementation of the procedures.

10.6.1.3 Human Health and Populations

It has been established (Section 10.3.4) that there are no recorded recreational waters, bathing waterbodies, or surface water drinking RPA, located adjacent to and / or downstream of the proposed development site. On a precautionary basis, the mitigation measures set out in Section 10.6.1 will be implemented during the construction works for the protection of human health and populations.

10.6.1.4 Potential Impacts on Water Framework Directive Status

It has been established that while, there is a potential of accidental discharges during the construction phase this will not impact on trends in water quality and overall WFD status assessment. On a precautionary basis, the mitigation measures set out in Section 10.6.1, and Section 10.6.2 will be implemented during the construction/operational works for the protection of surface water quality.

10.6.2 Operational Phase

10.6.2.1 Surface Water Quality

The design has taken account of the potential impacts of the development on surface water quality; measures have been incorporated in the design to mitigate these potential impacts.

The proposed development stormwater drainage network design includes sustainable drainage systems (SuDS) these measures by design ensure the stormwater leaving the site is of a suitable quality prior to discharge into the adjacent ditches. SuDS are drainage systems that are environmentally beneficial, causing minimal or no long-term detrimental damage. As set out in 'Infrastructure Design Report' (prepared and submitted by DBFL Consulting Engineers (2023) as part of the planning application), the proposed/existing surface water drainage system for this development has been designed as a sustainable urban drainage system and uses on-line overground detention basins together with a flow control device, grass swales, permeable paving, rainwater harvesting and petrol interceptors to:

- Treat runoff and remove pollutants to improve quality;
- Restrict outflow and to control quantity ;
- Increase amenity value.

Strict separation of surface water and wastewater will be implemented within the development. Drains will be laid out to minimise the risk of inadvertent connection of waste pipes etc. to the surface water system.

In respect of the indirect hydrological link to the European sites associated with Dublin Bay, via foul water – foul waste arising at the site that will discharge to Ringsend Wastewater Treatment Plant (license no. D0034). The Ringsend Wastewater Treatment Plant has sufficient capacity to treat this

wastewater. A pre-connection application has been submitted to Uisce Éireann for the proposed development.

The design has taken account of the potential impacts of the development on surface water flow; measures have been incorporated in the design to mitigate these potential impacts.

As set out in the DBFL Consulting Engineers Infrastructure Design Report, flow restriction is achieved by means of a hydrobrake, or similar approved, installed at the outfall manhole of each surface water catchment within the development, with the excess storm water stored on site for the duration of the storm periods of up to 1 in 100 years.

The surface water network has been designed to provide sufficient capacity to contain and convey all surface water run-off associated with the 1-in-100 year event to the attenuation basins without any overland flooding including an additional allowance of 20% in rainfall intensities due to climate change.

With reference to DBFL Consulting Engineers Site Specific Flood Risk Assessment the following design mitigation are included within the project design in respect of flood risk. Proposed mitigation measures to address residual flood risks include the proposed drainage system to be maintained on a regular basis to reduce the risk of a blockage, in the event of storms exceeding the 100-year design capacity of the drainage system, then possible flood routing for overland flows towards the drainage outfalls to the north should not be blocked and finished floor levels are set a minimum of 500mm above predicted 100 year flood levels.

10.6.2.2 Increase in Hardstanding and Potential for Increase in Surface Water Runoff

In order to mitigate any potential impacts in relation to the increase in hardstanding and potential for increase in surface water runoff the designed SuDS measures set out in Section 10.5.3.2 above, and the Infrastructure Design Report (DBFL, 2023) will be implemented. These measures include swales within the link street grass verges, permeable paving within private curtilage parking, bioretention areas, rain gardens, tree pits, detention basins, hydrobrake flow controls and petrol interceptors. The proposed new storm water drainage arrangements will be designed and carried out in accordance with the:

- Greater Dublin Strategic Drainage Study Volume 2 (2018);
- Greater Dublin Regional Code of Practice for Drainage Works (2021);
- BS EN – 752:2008, Drains & Sewer Systems Outside Buildings;
- Part H, Building Drainage of the Building Regulations.

There are a number of mitigation and SUDs design measures that will be put in place to manage storm water drainage from the site of the proposed development, as follows:

- Run-off from roads and driveways will be collected by gullies. Run-off of clean roof water will discharge to a clean stone build-up under block paving to promote infiltration prior to discharging to the main surface water drainage system via individual connections;
- It is proposed to discharge all attenuated surface water run-off to the existing drainage ditches in both the northwest and southwest corner of the subject site;
- Swales within the link street grass verges: shallow drainage channels covered in grass which can treat, convey and attenuate run-off, at source, and can infiltrate to the ground where the subgrade is suitable. Swales also can promote biodiversity. Swales will be running parallel to road carriageways/footpaths;

- Bio-retention Areas: Shallow landscaped depressions, which are under drained with engineered soils and enhanced vegetation and planting on the surface which manage and treat run-off, at source, and promote biodiversity development. Located generally at suitable low points along roads in lieu of gullies throughout site;
- Permeable Paving within private curtilage parking, and Bio-Retention areas/zones;
- Silt and Hydrocarbon / Petrol interceptors for carpark areas;
- Rain gardens;
- Tree Pits;
- Detention basins;
- Infiltration blankets;
- 'Hydrobrake' flow controls;
- As standard, site inspections of the surface water drainage and air testing of same will also be undertaken to ensure no infiltration to the ground below.

10.6.2.3 Human Health and Populations

It has been established (Section 10.3.4 that there are no recorded Recreational Waters, Bathing Waterbodies, or Surface Water Drinking RPA, located adjacent to and/or downstream of the proposed development site. On a precautionary basis, the mitigation measures set out in Section 10.6.2 will be implemented during the operational phase for the protection of human health and populations, and downstream material assets.

10.6.2.4 Potable Water Usage

All watermain works, Water Conservation Measures, Metering and Pressure Control will be strictly in accordance with Uisce Éireann and Fingal County Council requirements, specifications and standard details.

In addition, emerging conservation technologies will be kept under review and adopted if deemed appropriate. During the operational stage of the project, a Water Conservation Plan will be developed by the Management Company which will encourage the residents to adopt water conservation measures in their day to day activities. No further mitigation measures are required.

10.6.2.5 Potential Impacts on Water Framework Directive Status

It has been established that while, there is a potential of accidental discharges during the operational phase this will not impact on trends in water quality and overall WFD status assessment. On a precautionary basis, the mitigation measures set out in Section 10.6.2 will be implemented during the operational phase for the management of surface water flows the indirect discharges. The surface water discharges from the site are indirect, and will be adequately attenuated via SuDS measures, hydrobrake (or equivalent) and oil / water interceptor to ensure there is no long-term negative impact to the WFD water quality status of the Hollywood and Mooretown Streams and subsequently the Pinkeen River and River Tolka downstream of the proposed development site.

10.7 Residual Impacts

The proposed development with mitigation will have no significant impact on the natural surface water regime either qualitatively or quantitatively.

10.7.1 Construction Phase

10.7.1.1 Residual Impacts for Increases in Sediment Runoff from Earthworks

While there is an indirect connection to the Dublin Bay c. >13km southeast of the proposed development site and the Designated Sites located therein, there will be no impact to the quality of these watercourses or the Designated Sites due to the lack of direct hydraulic connectivity, nature of the hazard (suspended sediment primarily) and hydrological distance should mitigation fail as set out in Section 10.6.1. Furthermore, following the implementation of mitigation measures; it is expected that there would be no change in the habitat requirements in relation to water quality and the current water quality status under the WFD of the Hollystown and Mooretown Streams and subsequently the Pinkeen River and River Tolka located downstream of the proposed development site.

Following the implementation of mitigation measures detailed in Section 10.6.1, the predicted impact as a result of increase sediment runoff on the environment during the construction phase is considered to be *neutral, imperceptible* and *short-term*.

10.7.1.2 Residual Impacts for Non-sediment Contaminated Surface Water Runoff or Drainage

While there is an indirect connection to the Dublin Bay which is circa 13.1km southeast of the proposed development site and the Designated Sites located therein, it is concluded that there are no pollutant linkages as a result of the operation of the Proposed Development which could result in a water quality impact which could alter the habitat requirements of the Natura 2000 sites within Dublin Bay. Furthermore, following the implementation of mitigation measures; it is expected that there would be no change in habitat requirements in relation to water quality and the current water quality status under the WFD of the Hollystown and Mooretown Streams and subsequently the Pinkeen River and River Tolka located downstream of the proposed development site.

Following the implementation of mitigation measures detailed in Section 10.6.1, the predicted impact as a result to contaminated surface water on the surface water environment during the construction phase is considered to be *neutral, imperceptible* and *short-term*.

10.7.1.3 Surface Water Quality

The implementation of the mitigation and monitoring measures detailed in Section 10.6.1, will ensure that the potential impacts on surface water quality during the construction phase are adequately mitigated. The residual effect on surface water quality during the construction phase is considered to be *neutral, imperceptible* and *short-term*.

10.7.1.4 Surface Water Flow and Quantity

The implementation of the mitigation and monitoring measures detailed in Section 10.6.1, will ensure that the potential impacts on surface water flow and quantity during the construction phase are adequately mitigated. The residual effect on surface water flow and quantity during the construction phase is considered to be *neutral, imperceptible* and *short-term*.

10.7.1.5 Human Health and Populations

The implementation of the mitigation and monitoring measures detailed in Section 10.6.1, will ensure that the potential impacts on human health and populations (and material assets) during the

construction phase are adequately mitigated. The residual effect on human health and populations during the construction phase is considered to be *neutral, imperceptible* and *short-term*.

10.7.1.6 Water Framework Directive Status

Even in the absence of the mitigation and monitoring measures detailed in Section 10.6.1, there will be no predicted degradation of the current water body (chemically, ecological and quantity) or any impact on its potential to meet the requirements and/or objectives in the second RBMP 2018-2021 (River Basin Management Plan) and draft third RBMP 2022-2027.

There are appropriately designed mitigation measures which will be implemented during the construction phase to protect the hydrological environment. There is a potential of accidental discharges during the construction phase, however these are temporary short-lived events that will not impact on the water status of waterbodies long-term and as such will not impact on trends in water quality and over all status assessment.

The residual effect on human health and populations during the construction phase is considered to be *neutral, imperceptible* and *short-term*.

10.7.2 Operational Phase

10.7.2.1 Residual Impact for increase in Surface Water Runoff

Following implementation of the project design, and mitigation measures proposed in Section 10.6.2, the residual impact on the surface water environment once the proposed development is constructed and operational is considered to be *neutral, imperceptible* and *long-term*.

There will be a *neutral, imperceptible, and long-term*, residual impact to local watercourses due to the lack of direct hydraulic connectivity and the mitigation measures cited. Overall, the attenuation proposed for the development and installation of interceptors will maintain flood management and water quality.

10.7.2.2 Residual Impact for Contaminated Surface Water Drainage

Following implementation of the project design, and mitigation measures proposed in Section 10.6.2, the residual impact on the surface water environment once the proposed development is constructed and operational is considered to be *neutral, imperceptible* and *long-term*.

There will be no impact to the quality of local watercourses or nearby Designated Sites due to the lack of direct hydraulic connectivity and the mitigation measures cited. Overall, the attenuation proposed for the project and installation of interceptors will improve flood management and water quality.

While there is an indirect connection to the Dublin Bay c. >18km downstream of the proposed development site and the Designated Sites located therein, it is concluded that there are no pollutant linkages as a result of the operation of the Proposed Development which could result in a water quality impact which could alter the habitat requirements of the Natura 2000 sites within Dublin Bay. Furthermore, following the implementation of mitigation measures; it is expected that there would be no change in habitat requirements in relation to water quality and the current water quality status under the WFD of the Hollywood and Mooretown Streams and subsequently the Pinkeen River and River Tolka located downstream of the proposed development site.

10.7.2.3 Surface Water Quality

There will be no impact to the quality of downstream designated sites due to the lack of direct hydraulic connectivity and the mitigation measures cited. In addition, the SuDS, attenuation proposed for the project and installation of hydrocarbon interceptors will improve flood management and water quality.

The implementation of the mitigation and monitoring measures detailed in Section 10.6.2, will ensure that the potential impacts on surface water quality once the proposed development is constructed and operational are adequately mitigated. The residual effect on surface water quality during the operational phase is considered to be *neutral, imperceptible* and *long-term*.

10.7.2.4 Surface Water Flow and Quantity

There will be no impact to the quality of downstream designated sites due to the lack of direct hydraulic connectivity and the mitigation measures cited. Overall, the attenuation proposed for the project and installation of interceptors will improve flood management and water quality.

The implementation of the mitigation and monitoring measures detailed in Section 10.6.2 will ensure that the potential impacts on surface water flow and quantity once the proposed development is constructed and operational are adequately mitigated. The residual effect on surface water flow and quantity during the operational phase is considered to be *neutral, imperceptible* and *long-term*.

10.7.2.5 Human Health and Populations

The implementation of the mitigation and monitoring measures detailed in Section 10.6.2, will ensure that the potential impacts on human health and populations (and material assets) once the proposed development is constructed and operational are adequately mitigated. The residual effect on human health and populations during the operational phase is considered to be *neutral, imperceptible* and *long-term*.

10.7.2.6 Water Framework Assessment

Even in the absence of the mitigation and monitoring measures detailed in Section 10.6.2, there will be no predicted degradation of the current water body (chemically, ecological and quantity) or any impact on its potential to meet the requirements and/or objectives in the second RBMP 2018-2021 (River Basin Management Plan) and draft third RBMP 2022-2027.

There are appropriately designed mitigation measures which will be implemented during the operational phase to protect the hydrological environment. There is a potential of accidental discharges during the operational phase, however these are temporary short-lived events that will not impact on the water status of waterbodies long-term and as such will not impact on trends in water quality and overall status assessment.

There are no untreated discharges of wastewater during the operational phase to any open waterbody / watercourse. The discharges to surface water will be adequately treated via SuDS measures, hydrobrake (or equivalent) and oil / water interceptor to ensure there is no long-term negative impact to the WFD water quality status of the receiving watercourse. The SuDS and proposed measures have been designed in detail with the ultimate aim of protecting the hydrological (& hydrogeological) environment. The SuDS and project design measures will be maintained correctly as per specifications to ensure long-term / on-going integrity of same.

10.8 Monitoring

10.8.1 Construction Phase

During construction phase the following monitoring measures will be considered:

- Weekly checks will be carried out to ensure surface water drains are not blocked by silt, or other items, and that all storage is located at least 20 m from surface water receptors;
- Regular inspection of surface water run-off and any sediment control measures (e.g. silt traps) will be carried out during the construction phase. Inspection and maintenance of the silt fences during construction phase is crucial to ensuring that they work as intended. They will remain in place throughout the entire construction phase;
- Runoff diversion channels / bunds need regular maintenance to keep functioning throughout their life;
- Regular auditing of construction / mitigation measures will be undertaken, e.g. concrete pouring, refuelling in designated areas, etc;
- A log of regular inspections will be maintained, and any significant blockage or spill incidents will be recorded for root cause investigation purposes and updating procedures to ensure incidents do not reoccur;
- Regular inspection of surface water run-off and sediments controls e.g. silt traps will be carried during the construction phase.
- Soil sampling to confirm disposal options for excavated soils in order to avoid contaminated run-off;
- Regular inspection of construction / mitigation measures will be undertaken e.g. concrete pouring, refuelling etc; and
- Monitoring will be adopted to ensure that the water is of sufficient quality to discharge to the stormwater network.

10.8.2 Operational Phase

No future surface water monitoring is proposed for the proposed development due to the low hazard potential at the site. Oil interceptors will be maintained and cleaned out in accordance with the manufacturer's instructions. Maintenance of the surface water drainage system and foul sewers as per normal urban developments is recommended to minimise any accidental discharges to surface water.

10.9 Reinstatement

Reinstatement of excavations during the construction phase of the proposed development will meet the design criteria presented in the design specification of this application. All fill material used will be clean and graded to engineers' specifications.

10.10 Interactions

Due to the inter-relationship between soils, geology, hydrogeology and hydrology, the assessed impacts and mitigation measures discussed will be considered applicable to both chapters.

This section discusses interactions between this Chapter and other specialist environmental topics considered in this EIAR. The main interactions of importance to Hydrology relate to Biodiversity, Hydrology and Air Quality and Climate and, Material Assets as follows:

10.10.1 Land, Soil, Geology and Hydrogeology

10.10.1.1 Construction Phase

The construction phase of the proposed development has the potential to result in increased sediment runoff which has the potential to interact negatively on surface water quality. The proposed construction phase mitigation, and the lack of a direct pathway means that the proposed development will not result in significant negative impact on surface water quality in the local area.

Taking into account the design and mitigation measures set out in Chapter 9 and 10 of this EIA Report, there is a residual negative interaction between Land, Soil, and Hydrology during the construction phase. The interaction is considered to be ***neutral, not significant, and short term***.

10.10.1.2 Operational Phase

Taking into account the design and mitigation measures set out in Chapter 9 (Land, Soils, Geology and Hydrogeology) and 10 (Hydrology) of this EIA Report there are no potentially significant interactions identified between Land, Soils and Hydrogeology, and Hydrology during the operational phase.

10.10.2 Biodiversity

10.10.2.1 Construction Phase

Dust emissions have the potential to settle on plants causing impacts to local ecology. Mitigation measures during the construction phase of the proposed development will ensure that dust generation is minimised and the effect on biodiversity will be ***short term, imperceptible and neutral***.

There is potential for impacts to biodiversity associated with uncontrolled discharges to surface waters. In this instance the surface water system discharges into the ground and the stormwater sewer which ultimately discharges into the Hollywood/Mooretown Stream and Tolka River, and the foul water provision discharges to Ringsend WWTP. There is a hydrological connection or pathway through the Hollywood/Mooretown Stream, Tolka River and Dublin Bay with a number of nationally and internationally important habitats; however, this is considered to be of negligible significance due to the significant distance from the site (c. 20 km). The use of standard construction control measures as provided in the CEMP and the sustainable urban drainage systems, along with the water treatment processes and monitoring of treated effluent at Ringsend will result in no potential for impact on biodiversity downstream of Ringsend WWTP. The impact upon biodiversity from hydrological impacts would be long-term and neutral.

Taking into account the design and mitigation measures set out in Chapter 10 (Hydrology), and Chapter 8 (Biodiversity) of this EIA Report, there remains a residual negative interaction between Hydrology and Biodiversity during the construction phase. The interaction is considered to be ***negative, not significant, and short term***.

10.10.2.2 Operational Phase

There is potential for impacts to biodiversity associated with uncontrolled discharges to surface waters. In this instance the surface water system discharges into the ground and the stormwater sewer which ultimately discharges into the Tolka River, and the foul water provision discharges to Ringsend WWTP. There is a hydrological connection or pathway through the Hollywood/Mooretown Stream, Tolka River and Dublin Bay with a number of nationally and internationally important habitats; however, this is

considered to be of negligible significance due to the significant distance from the site (c. 20 km). The design of sustainable urban drainage systems, along with the water treatment processes at Ringsend will result in no potential for impact on biodiversity downstream of Ringsend WWTP. The impact upon biodiversity from hydrological impacts would be ***long-term and neutral***.

Taking into account the design and mitigation measures set out in Chapter 8 of this EIA Report, the interaction between Hydrology, and Biodiversity during the operational phase is considered to be ***neutral, and long term***.

10.10.3 Air Quality and Climate

10.10.3.1 Construction Phase

Construction phase activities such as land clearing, excavations, stockpiling of materials etc. have the potential for interactions between air quality and land and soils in the form of dust emissions that may deposit in surface waters.

Mitigation measures implemented during the construction phase will ensure that the deposition of dust is minimised. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that there will be no significant interactions between air quality and hydrology. The interaction is considered to be ***negative, not significant, and short term***.

There are no potentially significant interactions identified between Hydrology, and Climate during the construction phase.

10.10.3.2 Operational Phase

Climate change has the potential to lead to increased rainfall in future years which may result in flood impacts and interactions between Hydrology and Land, Soils and Geology. A detailed Site Specific Flood Risk Assessment (SSFRA) was carried out for the proposed development which states that 1% AEP flood event (1 in 100 year) does not inundate the site. The development was concluded as having a good level of flood protection up to the 100-year return event. For pluvial floods exceeding the 100-year capacity of the drainage system then proposed flood routing mitigation measures are recommended (refer to 'Site Specific Flood Risk Assessment' prepared by DBFL Consulting Engineers (2023) and submitted under a separate cover as part of the planning application) for further information.

The new infrastructure is designed to accommodate rainfall runoff/ flows up to 1% AEP event. In addition, the surface water network has been designed to include an additional allowance of 20% in rainfall intensities due to climate change.

Therefore it can be determined that there is no significant risk to the proposed development as a result of increased rainfall and climate. No significant interactions between Climate, Hydrology and Land, Soils and Geology is predicted.

10.10.4 Material Assets

10.10.4.1 Construction Phase

There are no potentially significant interactions identified between Hydrology and Material Assets Utilities and Waste (Chapter 17 & 18) and Traffic & Transport (Chapter 16) during the construction phase of the proposed development.

10.10.4.2 Operational Phase

The use of SuDS during operations will mean that the development will result in neutral water impacts in the operational phase with regard to runoff rates and flooding risk. As a part of the SuDS features, it is anticipated that small amounts of hydrocarbon sludge waste and debris may be generated in the hydrocarbon interceptors which will treat the surface water run-off.

Hydrocarbon sludge waste and debris will be generated in the hydrocarbon interceptors which will treat the surface water run-off from the proposed development during the operational phase. This waste stream will be managed in accordance with the relevant legislation. The interaction is considered to be ***negative, not significant, and long-term.***

Refer to **Chapter 19** Interactions for further details in relation to these interactions.

10.11 Cumulative Impacts

The following considers the cumulative impacts of the proposed development and proposed and permitted and operating facilities in the surrounding area in relation to Hydrology. This considers the proposed development and other surrounding proposed and permitted developments considered in **Chapter 20**.

As has been identified in the receiving environment section all cumulative developments that are already built and in operation contribute to our characterisation of the baseline environment. As such any further environmental impacts that the proposed development may have in addition to these already constructed and operational cumulative developments has been assessed in the preceding sections of this chapter. Assuming the full and proper implementation of the mitigation measures set out in this EIAR, no significant negative cumulative impacts are likely to arise during the construction or operational phases of the proposed development.

10.11.1 Construction Phase

In relation to the potential cumulative impact on hydrology during the construction phases, the construction works which would have potential cumulative impacts are as follows:

- Surface water run-off during the construction phase may contain increased silt levels or become polluted from construction activities. Run-off containing large amounts of silt can cause damage to surface water systems and receiving watercourses. There are no notable surface water features on-site. Stockpiled material will be stored on hardstand away from surface water drains, and gullies will be protected during works to ensure there is no discharge of silt-laden water into the surrounding surface water drainage system.
- Contamination of local water sources from accidental spillage and leakage from construction traffic and construction materials is possible unless CEMPs are put in place for each development and complied with.

A review of the permitted and proposed developments set out in **Chapter 20 (Table 20.1)** has been undertaken to identify any substantial projects that are concurrent with the construction phase of the proposed development that may result in cumulative effects in respect of hydrology.

The implementation of mitigation and monitoring measures detailed in Section 10.6.1 as well as the compliance of the permitted developments (refer to **Table 20.1** in **Chapter 20**) with their respective

planning conditions, will ensure there will be minimal cumulative potential for change to the hydrological environment during the construction phase of the proposed development.

It is also acknowledged that the works contractors for other planned or permitted developments will be obliged to ensure that measures are in place to protect surface water quality in compliance with legislative standards for receiving water quality (European Communities Environmental Objectives (Surface Water) Regulations (S.I. 272 of 2009 and S.I. 77 of 2019)).

As a result, the residual cumulative impact of the proposed development in combination with other planned or permitted developments can therefore be considered to be ***neutral, imperceptible and short-term***.

10.11.2 Operational Phase

In relation to the potential cumulative impact on hydrology during the operational phases, the operational activities which would have potential cumulative impacts are as follows:

- Increased hard standing areas will reduce local recharge to ground and increase surface water run-off potential if not limited to the green field run-off rate from the site;
- Increased risk of accidental discharge of hydrocarbons from car parking areas and along roads is possible unless diverted to surface water system with petrol interceptor;
- Additional foul discharges to be discharge to the foul sewer system.

A review of the permitted and proposed developments set out in **Chapter 20 (Table 20.1)** has been undertaken to identify any substantial projects that are concurrent with the construction phase of the proposed development that may result in cumulative effects in respect of hydrology.

The implementation of mitigation and monitoring measures detailed in Section 10.5.2 as well as the compliance of the permitted developments (refer to **Table 20.1** in **Chapter 20**) with their respective planning conditions, will ensure there will be minimal cumulative potential for change to the hydrological environment during the construction phase of the proposed development.

Furthermore, all developments listed in Chapter 20 of this EIA Report are required to ensure they do not have an impact on the receiving water environment in accordance with the relevant legislation (Water Framework Directive and associated legislation) such that they would be required to manage run-off and fuel leakages.

Increase in wastewater loading and water supply requirement is an impact of all development. Each development will require approval from Irish Water (Uisce Éireann) confirming available capacity in the water and wastewater infrastructure. The surface water and foul drainage infrastructure and water supply requirements for the proposed development have been designed to accommodate the proposed development.

Development will result in an increase in hard standing which will result in localised reduced recharge to ground and increase in run-off rate (see Chapter 9 - Land, Soils, Geology & Hydrogeology). Each permitted development is required by the Local Authority and IW to comply with the Local Authority and Uisce Éireann requirements by providing suitable attenuation on-site and ensure that there is no increase in off-site flooding as a result of the development in question.

All developments are required to ensure they do not have an impact on the receiving water environment in accordance with the relevant legislation (Water Framework Directive and associated legislation) such that they would be required to manage run-off and fuel leakages.

The residual cumulative impact of the proposed development in combination with other planned or permitted developments can therefore be considered to be **long-term, imperceptible** significance with a **neutral** impact on soil and water quality.

10.12 Difficulties Encountered

There were no difficulties encountered in compiling this chapter of the EIAR.

10.13 References

- CIRIA (2001). Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors.
- CIRIA (2005). Environmental Good Practice on Site (C650).
- CIRIA (2007). CIRIA 697: The SUDS Manual.
- Department of Housing, Planning & Local Government (2018). River Basin Management Plan for Ireland 2018 – 2021.
- Eastern Regional Fisheries Board (2006). Fisheries Protection Guidelines: Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites.
- Enterprise Ireland (n.d.). Best Practice Guide BPGCS005: Oil Storage Guidelines.
- EPA (2022). Guidelines on the Information to be Contained in Environmental Impact Assessment Reports.
- EPA (2023). EPA Maps.
- GSI (2023). GSI Map Viewer.
- Institute of Geologists of Ireland (2013). Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements.
- NPWS (2023). Designations Viewer.
- NRA (2009). Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes.
- OPW (2023). Flood Maps.
- OPW (2009). The Planning System and Flood Risk Management: Guidelines for Planning Authorities.
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11 Air Quality & Climate

11.1 Introduction

This chapter assesses the likely air quality and climate impacts associated with the proposed c.20.6ha residential development referred to as Hollystown-Kilmartin 4 located in the townland of Hollystown and Kilmartin, Dublin 15. The site is bound by lands which previously formed part of the former Hollystown Golf Club and the residential area of Hollystown Park to the north, lands forming part of a permitted Strategic Housing Development (SHD) to the east (ABP Reg. Ref. 312271), Tyrrelstown Park to the south, and rural zoned lands to the west. A full description of the development is available in Chapter 5 – Description of the Proposed Development.

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11.2 Method

The principal guidance and best practice documents used to inform the assessment of potential impacts on Air Quality and Climate are summarised below.

In addition to specific Air Quality and Climate guidance documents, the following guidelines were considered and consulted in the preparation of this chapter:

- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (hereafter referred to as the Environmental Protection Agency (EPA) Guidelines) (EPA, 2022);
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Environment, Community and Local Government, August 2018);
- Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (EPA, 2003); and
- Environmental Impact Assessment of Projects – Guidance on the preparation of the Environmental Impact Assessment Report (European Commission 2017).

The assessment has made reference to national air quality guidelines where available, in addition to international standards and guidelines relating to the assessment of air quality impacts. These are summarised below:

- PE-ENV-01106: Air Quality Assessment of Specified Infrastructure Projects (Transport Infrastructure Ireland (TII), 2022a);
- Guidance on the Assessment of Dust from Demolition and Construction V1.1 (Institute of Air Quality Management (IAQM) IAQM 2016) (hereafter referred to as the IAQM Guidelines); and

- A Guide To The Assessment Of Air Quality Impacts On Designated Nature Conservation Sites (Version 1.1) (IAQM 2020).

The assessment has made reference to national climate guidelines where available, in addition to international standards and guidelines relating to the assessment of climate impacts. These are summarised below:

- Transport Infrastructure Ireland (TII) PE-ENV-01104: Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document (TII, 2022b);
- Transport Infrastructure Ireland (TII) PE-ENV-01105: Climate Assessment Standard for Proposed National Roads (PE-ENV-01105) (TII, 2022c);
- Institute of Environmental Management & Assessment (IEMA) Environmental Impact Assessment Guide to: Assessing GHG Emissions and Evaluating their Significance (hereafter referred to as the IEMA 2022 GHG Guidance) (IEMA, 2022);
- IEMA Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (hereafter referred to as the IEMA 2020 EIA Guide) (IEMA, 2020a);
- IEMA GHG Management Hierarchy (hereafter referred to as the IEMA 2020 GHG Management Hierarchy) (IEMA, 2020b);
- IEMA Principles Series: Climate Change Mitigation & EIA (IEMA, 2010);
- Publicly Available Specification (PAS) 2080:2016 on Carbon Management in Infrastructure (BSI, 2016); and
- Technical guidance on the Climate Proofing of Infrastructure in the Period 2021-2027 (European Commission, 2021a).

11.2.1 Criteria for Rating of Impacts

11.2.1.1 Ambient Air Quality Standards

In order to reduce the risk to health from poor air quality, national and European statutory bodies have set limit values in ambient air for a range of air pollutants. These limit values or “Air Quality Standards” are health or environmental-based levels for which additional factors may be considered. For example, natural background levels, environmental conditions and socio-economic factors may all play a part in the limit value which is set.

Air quality significance criteria are assessed on the basis of compliance with the appropriate standards or limit values. The applicable standards in Ireland include the Ambient Air Quality Standards Regulations 2022 (S.I. No. 739 of 2022), which incorporate EU Directive 2008/50/EC, which has set limit values for a number of pollutants. The limit values for NO₂, PM₁₀ and PM_{2.5}, are relevant to this assessment (see **Table 11.1**).

Table 11.1 Air Quality Standards Regulations

Pollutant	Regulation ^{Note 1}	Limit Type	Value
Dust Deposition	TA Luft (German VDI 2002)	Annual average limit for nuisance dust	350 mg/m ² /day
NO _x	2008/50/EC	Critical level for protection of vegetation	30 µg/m ³ NO + NO ₂
Nitrogen Dioxide (NO ₂)	2008/50/EC	Hourly limit for protection of human health - not to be exceeded more than 18 times/year	200 µg/m ³
		Annual limit for protection of human health	40 µg/m ³
Particulate Matter (as PM ₁₀)	2008/50/EC	24-hour limit for protection of human health - not to be exceeded more than 35 times/year	50 µg/m ³ PM ₁₀
		Annual limit for protection of human health	40 µg/m ³ PM ₁₀
Particulate Matter (as PM _{2.5}) Stage 1	2008/50/EC	Annual limit for protection of human health	25 µg/m ³ PM _{2.5}
Particulate Matter (as PM _{2.5}) Stage 2	2008/50/EC	Annual limit for protection of human health	20 µg/m ³ PM _{2.5}

^{Note 1} EU 2008/50/EC – Clean Air For Europe (CAFÉ) Directive replaces the previous Air Framework Directive (1996/30/EC) and daughter directives 1999/30/EC and 2000/69/EC

In April 2023, the Government of Ireland published the Clean Air Strategy for Ireland (Government of Ireland 2023), which provides a high-level strategic policy framework needed to reduce air pollution. The strategy commits Ireland to achieving the 2021 WHO Air Quality Guidelines Interim Target 3 (IT3) by 2026 (shown in **Table 11.2**), the IT4 targets by 2030 and the final targets by 2040 (shown in **Table 11.2**). The strategy notes that a significant number of EPA monitoring stations observed air pollution levels in 2021 above the WHO targets; 80% of these stations would fail to meet the final PM_{2.5} target of 5 µg/m³. The strategy also acknowledges that “meeting the WHO targets will be challenging and will require legislative and societal change, especially with regard to both PM_{2.5} and NO₂”. Ireland will revise its air quality legislation in line with the proposed EU revisions to the CAFE Directive, which will set interim 2030 air quality standards and align the EU more closely with the WHO targets.

Table 11.2 WHO Air Quality Guidelines

Pollutant	Regulation	Limit Type	IT3 (2026)	IT4 (2030)	Final Target (2040)
NO ₂	WHO Air Quality Guidelines	24-hour limit for protection of human health	50µg/m ³ NO ₂	50µg/m ³ NO ₂	25µg/m ³ NO ₂
		Annual limit for protection of human health	30µg/ m ³ NO ₂	20µg/ m ³ NO ₂	10µg/m ³ NO ₂
PM (as PM ₁₀)		24-hour limit for protection of human health	75µg/ m ³ PM ₁₀	50µg/m ³ PM ₁₀	45µg/m ³ PM ₁₀
		Annual limit for protection of human health	30µg/ m ³ PM ₁₀	20µg/m ³ PM ₁₀	15µg/m ³ PM ₁₀
PM (as PM _{2.5})		24-hour limit for protection of human health	37.5µg/m ³ PM _{2.5}	25µg/m ³ PM _{2.5}	15µg/m ³ PM _{2.5}
		Annual limit for protection of human health	15µg/m ³ PM _{2.5}	10µg/m ³ PM _{2.5}	5µg/m ³ PM _{2.5}

11.2.1.2 Dust Deposition Guidelines

The concern from a health perspective is focused on particles of dust that are less than 10 microns (PM₁₀) and less than 2.5 microns (PM_{2.5}) and the EU ambient air quality standards outlined in **Table 11.1** have set ambient air quality limit values for PM₁₀ and PM_{2.5}.

With regards to larger dust particles that can give rise to nuisance dust, there are no statutory guidelines regarding the maximum dust deposition levels that may be generated during the construction phase of a development in Ireland. Furthermore, no specific criteria have been stipulated for nuisance dust in respect of this development.

With regard to dust deposition, the German TA-Luft standard for dust deposition (non-hazardous dust) (German VDI, 2002) sets a maximum permissible emission level for dust deposition of 350 mg/m²/day averaged over a one-year period at any receptors outside the site boundary. Recommendations from the Department of the Environment, Heritage & Local Government (DEHLG, 2004) apply the TA Luft limit of 350 mg/m²/day to the site boundary of quarries. This limit value can also be implemented with regard to dust impacts from construction of the proposed development.

11.2.1.3 Climate Agreements

In 2015, the Climate Action and Low Carbon Development Act 2015 (No. 46 of 2015) (Government of Ireland, 2015) was enacted (the Act). The purpose of the Act was to enable Ireland 'to pursue, and achieve, the transition to a low carbon, climate resilient and environmentally sustainable economy by

the end of the year 2050’ (3.(1) of No. 46 of 2015). This is referred to in the Act as the ‘national transition objective’. The Act made provision for a national mitigation plan, and a national adaptation framework. In addition, the Act provided for the establishment of the Climate Change Advisory Council with the function to advise and make recommendations on the preparation of the national mitigation and adaptation plans and compliance with existing climate obligations.

The first Climate Action Plan (CAP) was published by the Irish Government in June 2019 (Government of Ireland, 2019). The Climate Action Plan 2019 outlined the current status across key sectors including Electricity, Transport, Built Environment, Industry and Agriculture and outlined the various broadscale measures required for each sector to achieve ambitious decarbonisation targets. The 2019 CAP also detailed the required governance arrangements for implementation including carbon-proofing of policies, establishment of carbon budgets, a strengthened Climate Change Advisory Council and greater accountability to the Oireachtas. The Government published the second Climate Action Plan in November 2021 (Government of Ireland, 2021a) and a third update in December 2022 (Government of Ireland, 2022) with an Annex of Action published in March 2023.

Following on from Ireland declaring a climate and biodiversity emergency in May 2019, and the European Parliament approving a resolution declaring a climate and environment emergency in Europe in November 2019, the Government approved the publication of the General Scheme in December 2019, followed by the publication of the Climate Action and Low Carbon Development (Amendment) Act 2021 (hereafter referred to as the 2021 Climate Act) in March 2021. The Climate Act was signed into Law on the 23rd July 2021, giving statutory effect to the core objectives stated within the CAP.

The purpose of the 2021 Climate Act (Government of Ireland, 2021b) is to provide for the approval of plans “for the purpose of pursuing the transition to a climate resilient, biodiversity rich and climate neutral economy by no later than the end of the year 2050”. The 2021 Climate Act will also “provide for carbon budgets and a decarbonisation target range for certain sectors of the economy”. The 2021 Climate Act defines the carbon budget as “the total amount of greenhouse gas emissions that are permitted during the budget period”.

In relation to carbon budgets, the 2021 Climate Action and Low Carbon Development (Amendment) Act states that ‘a carbon budget, consistent with furthering the achievement of the national climate objective, shall be proposed by the Climate Change Advisory Council, finalised by the Minister and approved by the Government for the period of 5 years commencing on the 1 January 2021 and ending on 31 December 2025 and for each subsequent period of 5 years (in this Act referred to as a ‘budget period’)’. The carbon budget is to be produced for 3 sequential budget periods, as shown in **Table 11.3**. The carbon budget can be revised where new obligations are imposed under the law of the European Union or international agreements or where there are significant developments in scientific knowledge in relation to climate change. In relation to the sectoral emissions ceiling, the Minister for the Environment, Climate and Communications (the Minister for the Environment) shall prepare and submit to government the maximum amount of Greenhouse Gas (GHG) emissions that are permitted in different sectors of the economy during a budget period and different ceilings may apply to different sectors. The sectoral emission ceilings for 2030 were published in July 2022 and are shown in **Table 11.4**. Buildings (Residential) have a 40% reduction requirement and a 2030 emission ceiling of 4 MtCO₂eq²⁰.

²⁰ Mt CO₂eq denotes million tonnes carbon dioxide equivalent

Table 11.3 5-Year Carbon Budgets 2021-2025, 2026-2030 and 2031-2035

Budget Period	Carbon Budget	Reduction Required
2021-2025	295 Mt CO ₂ eq	Reduction in emissions of 4.8% per annum for the first budget period.
2026-2030	200 Mt CO ₂ eq	Reduction in emissions of 8.3% per annum for the second budget period.
2031-2035	151 Mt CO ₂ eq	Reduction in emissions of 3.5% per annum for the third provisional budget.

Table 11.4 Sectoral Emission Ceilings 2030

Sector	Baseline (Mt CO _{2e})	Carbon Budgets (Mt CO _{2e})		2030 Emissions (Mt CO _{2e})	Indicative Emissions % Reduction in Final Year of 2025-2030 Period (Compared to 2018)
	2018	2021-2025	2026-2030		
Transport	12	54	37	6	50
Electricity	10	40	20	3	75
Built Environment - Residential	7	29	23	4	40
Built Environment - Commercial	2	7	5	1	45
Agriculture	23	106	96	17.25	25
LULUCF ¹	5	xxx	xxx	xxx	xxx
Industry	7	30	24	4	35
Other (F-gases, waste, petroleum refining)	2	9	8	1	50
Unallocated Savings	-	7	5	-5.25	-
Total	68	xxx	xxx	-	-
Legally Binding Carbon Budgets and 2030 Emission Reduction Targets	-	295	200	-	51

In December 2022, CAP23 was published (Government of Ireland 2022). This is the first CAP since the publication of the carbon budgets and sectoral emissions ceilings, and it aims to implement the required changes to achieve a 51% reduction in carbon emissions by 2030. The CAP has six vital high impact sectors where the biggest savings can be made: renewable energy, energy efficiency of buildings, transport, sustainable farming, sustainable business and change of land-use. CAP23 states that the decarbonisation of Ireland's manufacturing industry is key for Ireland's economy and future competitiveness. There is a target to reduce the embodied carbon in construction materials by 10% for materials produced and used in Ireland by 2025 and by at least 30% for materials produced and used in Ireland by 2030. CAP23 states that these reductions can be brought about by product substitution for construction materials and reduction of clinker content in cement. Cement and other high embodied carbon construction elements can be reduced by the adoption of the methods set out in the Construction Industry Federation 2021 report Modern Methods of Construction. In order to ensure

economic growth can continue alongside a reduction in emissions, the IDA Ireland will also seek to attract businesses to invest in decarbonisation technologies.

In April 2023 the Government published a draft Long-term Strategy on Greenhouse Gas Emissions Reductions (Government of Ireland 2023). This strategy provides a long-term plan on how Ireland will transition towards net carbon zero by 2050, achieving the interim targets set out in the Climate Action Plan. The strategy will be updated on the basis of a second round of public consultation throughout 2023 with an updated strategy published after this is complete.

The Fingal County Council Climate Change Action Plan published in 2019 (Fingal County Council and Codema, 2019) outlines a number of goals and plans to prepare for and adapt to climate change. A progress report of the plan is presented annually. There are five key action areas within the plan: energy and buildings, transport, flood resilience, nature-based solutions and resource management. Some of the measures promoted within the Action Plan under the 5 key areas involve building retrofits, energy master-planning, development of segregated cycle routes, the promotion of bike share schemes, development of flood resilient designs, promotion of the use of green infrastructure and water conservation initiatives. The implementation of these measures will enable the Fingal County Council area to adapt to climate change and will assist in bringing Ireland closer to achieving its climate related targets in future years. New developments need to be cognisant of the Action Plan and incorporate climate friendly designs and measures where possible. In 2023 Fingal County Council sought to increase the level of ambition to align with the actions and targets in the CAP23. The Fingal County Council targets include reducing carbon emissions by 30% and increasing energy efficiency by 33% by 2030 will be increased to 50% respectively.

11.2.2 Air Quality Construction Phase

11.2.2.1 Dust Assessment

The Institute of Air Quality Management in the UK (IAQM) guidance document '*Guidance on the Assessment of Dust from Demolition and Construction*' (2014) outlines an assessment method for predicting the impact of dust emissions from demolition, earthworks, construction and haulage activities based on the scale and nature of the works and the sensitivity of the area to dust impacts. The IAQM methodology has been applied to the construction phase of this development to predict the likely risk of dust impacts in the absence of mitigation measures and to determine the level of site specific mitigation required. Transport Infrastructure Ireland (TII) recommends the use of the IAQM guidance (2014) in the TII guidance document *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022a).

The major dust generating activities are divided into four types within the IAQM guidance (2014) to reflect their different potential impacts. These are:

- Demolition;
- Earthworks;
- Construction; and
- Trackout (movement of heavy vehicles).

The magnitude of each of the four categories is divided into Large, Medium or Small scale depending on the nature of the activities involved. The magnitude of each activity is combined with the overall

sensitivity of the area to determine the risk of dust impacts from site activities. This allows the level of site-specific mitigation to be determined.

11.2.2.2 Traffic Assessment

Construction phase traffic also has the potential to impact air quality. The TII guidance *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022a), states that road links meeting one or more of the following criteria can be defined as being ‘affected’ by a proposed development and should be included in the local air quality assessment. While the guidance is specific to infrastructure projects, the approach can be applied to any development that causes a change in traffic.

- Annual average daily traffic (AADT) changes by 1,000 or more;
- Heavy duty vehicle (HDV) AADT changes by 200 or more;
- Daily average speed change by 10 kph or more;
- Peak hour speed change by 20 kph or more;
- A change in road alignment by 5m or greater.

DBFL have prepared a Traffic and Transport Impact Assessment for the proposed development enclosed separately and have prepared Chapter 16 of this EIAR (Traffic and Transportation). Assuming construction takes place over one consecutive period and assuming a maximum of 20 truckloads per day, this equates to approx. 28 days (~ 5 weeks) of materials exported as part of the adopted worst-case assessment to export the estimated quantum of materials. Based on this and construction staff vehicle use (see Chapter 16 of this EIAR (Traffic and Transportation)), it can be determined that the construction stage traffic will not increase by 1,000 AADT, or 200 HDV AADT, the development will not result in speed changes or changes in road alignment. Therefore, the traffic does not meet the above scoping criteria. A detailed air quality assessment of construction stage traffic emissions has been scoped out from any further assessment as there is no potential for significant impacts to air quality.

11.2.3 Air Quality Operational Phase

Operational phase traffic has the potential to impact local air quality as a result of increased vehicle movements associated with the proposed development. The TII scoping criteria detailed in Section 11.2.2.2 were used to determine if any road links are affected by the proposed development and require inclusion in a detailed air dispersion modelling assessment. DBFL have prepared a Traffic and Transport Impact Assessment for the proposed development enclosed separately and have prepared Chapter 16 of this EIAR (Traffic and Transportation). It has been determined by DBFL that the proposed development will result in the operational phase traffic increasing by more than 1,000 AADT on a small number of road links. Therefore, in accordance with the TII scoping criteria a detailed air dispersion modelling assessment of operational phase traffic emissions was conducted.

The impact to air quality as a result of changes in traffic is assessed at sensitive receptors in the vicinity of affected roads. The TII guidance (2022a) states that a proportionate number of representative receptors which are located in areas that will experience the highest concentrations or greatest improvements as a result of the proposed development are to be included in the modelling. The TII criteria state that receptors within 200m of impacted road links should be assessed; roads which are more than 200m from a receptor will not impact pollutant concentrations at that receptor. The TII guidance (2022a) defines sensitive receptor locations as: residential housing, schools, hospitals, places

of worship, sports centres and shopping areas, i.e. locations where members of the public are likely to be regularly present. A total of 4 no. high sensitivity residential receptors (R1 – R4) were included in the modelling assessment (see **Figure 11.1**).

There are no ecological sites within 200m of any impacted road links. As a result, a detailed assessment has been scoped out as there is no potential for significant impacts to designated ecology from traffic emissions.

The TII guidance (2022a) states that modelling should be conducted for NO₂, PM₁₀ and PM_{2.5} for the Base, Opening and Design Years for both the Do Minimum (Do Nothing) and Do Something scenarios. Modelling of operational NO₂, PM₁₀ and PM_{2.5} concentrations has been conducted for the Do Nothing and Do Something scenarios using the TII Road Emissions Model (REM) online calculator tool (TII, 2022e).

The following inputs are required for the REM tool: receptor locations, light duty vehicle (LDV) annual average daily traffic movements (AADT), annual average daily heavy duty vehicles (HDV AADT), annual average traffic speeds, road link lengths, road type, project county location and pollutant background concentrations. The *Default* fleet mix option was selected along with the *Intermediate Case* fleet data base selection, as per TII Guidance (TII, 2022e). The *Intermediate Case* assumes a linear interpolation between the *Business as Usual* case – where current trends in vehicle ownership continue and the *Climate Action Plan (CAP)* case – where adoption of low emission light duty vehicles occurs.

Using this input data the model predicts the road traffic contribution to ambient ground level concentrations at the identified sensitive receptors using generic meteorological data. The TII REM uses county-based Irish fleet composition for different road types, for different European emission standards from pre-Euro to Euro 6/VI with scaling factors to reflect improvements in fuel quality, retrofitting, and technology conversions. The TII REM also includes emission factors for PM₁₀ emissions associated with brake and tyre wear (TII, 2022e). The predicted road contributions are then added to the existing background concentrations to give the predicted ambient concentrations. The ambient concentrations are then compared with the relevant ambient air quality standards to assess the compliance of the proposed development with these ambient air quality standards.

11.2.3.1 Traffic Data Used in Modelling Assessment

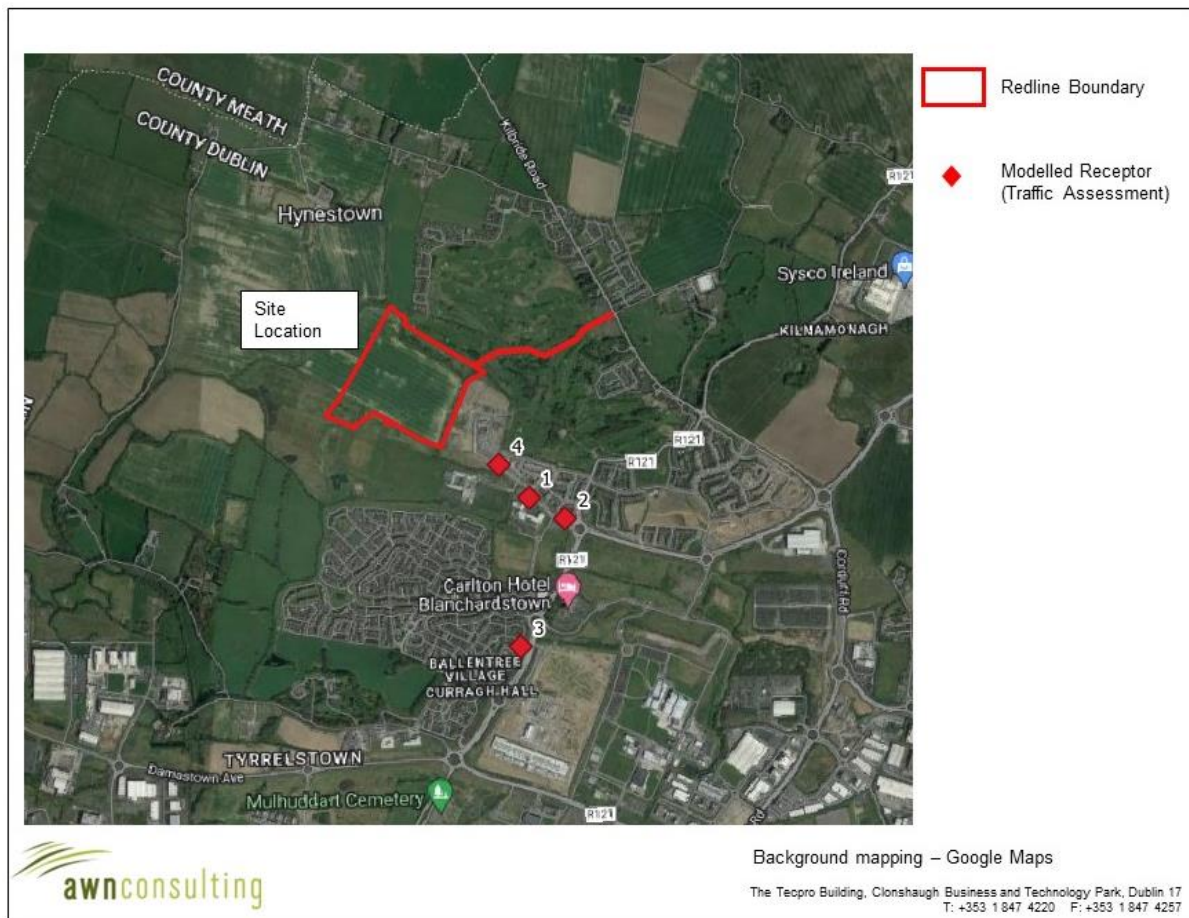
Traffic flow information detailed in **Table 11.5** was obtained from DBFL for the purposes of this assessment. Refer to **Figure 12.7 (Chapter 12 Noise & Vibration)** that illustrates the road links assessed as part of this study. Data for the Base Year 2022 and the Do Nothing and Do Something scenarios for the Opening Year 2025 and Design Year 2040 were provided. Indicative locations of these road links are shown in **Figure 11.1**. A conservative growth factor has been applied to the traffic data to allow for cumulative development within the area. Specific cumulative developments were also investigated but it was found that there were no specific permitted developments that would lead to cumulative traffic impacts due to their increased distance from the site (see Chapter 16 for further details).

The modelling assessment has been undertaken for road links that were within 200m of receptors which met the TII scoping criteria. Background concentrations have been included as per Section 11.3.2 of this chapter based on available EPA background monitoring data (EPA, 2022).

Table 11.5 Traffic Data used in Air Modelling Assessment

Road Name	Speed (kph)	Base Year	Opening Year		Design Year	
			Do Nothing	Do Something	Do Nothing	Do Something
		LDV AADT (HDV AADT)	LDV AADT (HDV AADT)	LDV AADT (HDV AADT)	LDV AADT (HDV AADT)	LDV AADT (HDV AADT)
A	60	6054 (45)	7185 (47)	7310 (47)	9426 (53)	9989 (53)
B	60	8367 (502)	9242 (526)	9390 (526)	10761 (593)	11337 (593)
C	60	15034 (569)	17014 (597)	17389 (597)	20878 (672)	22406 (672)
D	60	3412 (33)	4763 (35)	5410 (35)	6749 (40)	9252 (40)
E	60	15140 (580)	16967 (608)	17342 (608)	20500 (686)	22028 (686)
F	60	2754 (22)	2987 (23)	2987 (23)	3354 (26)	3354 (26)
G	60	15865 (591)	18823 (620)	19270 (620)	23058 (699)	24750 (699)
H	30	9466 (111)	11565 (117)	11637 (117)	13738 (132)	13902 (132)
I	60	2375 (22)	3353 (23)	4421 (23)	5502 (26)	8145 (26)
J	60	3189 (22)	4529 (23)	5177 (23)	6493 (26)	8995 (26)
K	30	1617 (0)	2978 (0)	3050 (0)	4095 (0)	4259 (0)
L	30	1617 (0)	2978 (0)	3050 (0)	4095 (0)	4259 (0)
M	30	2035 (11)	3416 (12)	3488 (12)	4717 (13)	4881 (13)
N	30	2436 (11)	2539 (12)	2539 (12)	4138 (13)	4138 (13)
O	60	5329 (45)	8809 (47)	8881 (47)	10771 (53)	10936 (53)
P	60	6729 (61)	8693 (64)	8765 (64)	10505 (73)	10669 (73)
Q	60	2765 (6)	4361 (6)	4361 (6)	5139 (7)	5139 (7)
R	60	3730 (33)	4531 (35)	4531 (35)	5298 (40)	5298 (40)

Figure 11.1 Sensitive Receptors and Indicative Road Links Included in Operational Phase Air Quality Modelling Assessment



11.2.4 Air Quality Significance Criteria

The TII document *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022a) details a methodology for determining air quality impact significance criteria for road schemes which can be applied to any project that causes a change in traffic. The degree of impact is determined based on the percentage change in pollutant concentrations relative to the ambient air quality standard. The TII significance criteria are outlined in Table 4.9 of *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022a) and reproduced in **Table 11.6** below. These criteria have been adopted for the proposed development to predict the impact of NO₂, PM₁₀ and PM_{2.5} emissions as a result of the proposed development.

Table 11.6 Air Quality Significance Criteria

Long term average concentration at receptor in assessment year	% Change in concentration relative to Air Quality Standard Value (AQLV)			
	1%	2-5%	6-10%	>10%
75% or less of AQLV	Neutral	Neutral	Slight	Moderate
76 – 94% of AQLV	Neutral	Slight	Moderate	Moderate
95 – 102% of AQLV	Slight	Moderate	Moderate	Substantial
103 – 109% of AQLV	Moderate	Moderate	Substantial	Substantial
110% or more of AQLV	Moderate	Substantial	Substantial	Substantial

Source: TII (2022a) Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106

11.2.5 Climate Construction Phase

11.2.5.1 Greenhouse Gas Assessment

As per the EU guidance document *Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment* (European Commission, 2013) the climate baseline is first established with reference to EPA data on annual GHG emissions (see Section 11.3.4). The impact of the proposed development on climate is determined in relation to this baseline. As per the IEMA guidance (2022) where expected emissions will not increase by over 1% compared with the baseline scenario then no further assessment is required as there is no potential for significant impacts to climate. However, the construction stage activities and potential for GHG emissions have been reviewed as part of the construction stage climate assessment and a quantitative assessment conducted.

PE-ENV-01104 (TII, 2022b) recommends the calculation of the construction stage embodied carbon using the TII Online Carbon Tool (TII, 2022d). Embodied carbon refers to the sum of the carbon needed to produce a good or service. It incorporates the energy needed in the mining or processing of raw materials, the manufacturing of products and the delivery of these products to site. The purpose of the embodied carbon assessment is to engage the design team in the consideration of embodied carbon at an early stage in the development and mitigate embodied carbon. This engagement aims to ensure carbons savings are made and assist in aligning the project to Irelands CAP23 goal of Net Carbon Zero for 2050.

The developer of the proposed project is implanting steps for their business and is committed to achieving Net Zero by 2050. For this reason a carbon assessment has not been completed for this individual development and instead details of the developers Net Zero Transition Plan are provided (**Appendix 11.2**) with regards the impacts on associated with construction phase climate.

11.2.5.2 Traffic Assessment

Emissions from road traffic associated with the proposed development have the potential to emit carbon dioxide (CO₂) which will impact climate.

The UK Highways Agency DMRB guidance document in relation to climate impact assessments *LA 114 Climate* (UK Highways Agency, 2019) contains the following scoping criteria to determine whether a detailed climate assessment is required for a proposed project during the construction stage. If any of the road links impacted by the proposed development meet or exceed the below criteria, then further assessment is required.

- A change of more than 10% in AADT;

- A change of more than 10% to the number of heavy duty vehicles; and
- A change in daily average speed of more than 20 km/hr.

PE-ENV-01104 (TII, 2022b) states that road traffic related emissions information should be obtained from an Air Quality Practitioner to show future user emissions during operation without the development in place. The Air Quality Practitioner calculates the traffic related emissions through the use of the TII REM tool (TII, 2022e) which includes detailed fleet predictions for age, fuel technology, engine size and weight based on available national forecasts. An air quality construction phase assessment has been scoped out as the change in construction traffic does not meet the scoping criteria. As a result a detailed assessment of construction stage traffic related carbon dioxide (CO₂) emissions was scoped out in order to prevent double counting.

11.2.6 Climate Operation Phase

11.2.6.1 Climate Change Vulnerability Assessment

The operational phase assessment involves determining the vulnerability of the proposed development to climate change. This involves an analysis of the sensitivity and exposure of the development to climate hazards which together provide a measure of vulnerability.

PE-ENV-01104 (TII, 2022b) states that the CCRA is guided by the principles set out in the overarching best practice guidance documents:

- EU (2021) Technical Guidance on the Climate Proofing of Infrastructure in the Period 2021-2027 (European Commission, 2021); and
- The Institute of Environmental Management and Assessment, Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (2nd Edition) (IEMA, 2020).

The baseline environment information provided in Section 12.2.2.1, future climate change modelling and input from other experts working on the proposed development (i.e. hydrologists) should be used in order to assess the likelihood of a climate risk.

The initial stage of an assessment is to establish a scope and boundary for the assessment taking into account the following criteria:

- Spatial boundary: As per PE-ENV-01104 (TII, 2022b), the study area with respect to the GHGA is Ireland's Climate budget. The study area with respect to the CCRA can be considered the project boundary and its assets. The study area will be influenced by current and future baselines (Section 11.3). This study area is influenced by the input of other experts within the EIAR team;
- Climate hazards: The outcomes of the climate screening i.e. vulnerability assessment and baseline assessment; and
- Project receptors: TII state that the project receptors are the asset categories considered in the climate screening. In addition, any critical connecting infrastructure and significant parts of the surrounding environment e.g. water bodies that should be considered as a part of the indirect, cumulative and in combination impact assessment should also be considered project receptors.

Technical guidance on the climate proofing of infrastructure in the period 2021-2027 (European Commission, 2021a) outlines an approach for undertaking a climate change risk assessment where there is a potentially significant impact on the proposed development due to climate change. The risk assessment assesses the likelihood and consequence of the impact occurring, leading to the evaluation

of the significance of the impact. The role of the climate consultant in assessing the likelihood and impact is often to facilitate the climate change risk assessment process with input from the design team or specific specialists such as hydrology.

The climate screening risk assessment or vulnerability assessment is carried out by determining the sensitivity and exposure of the project to climate change. Firstly the project asset categories must be assigned a level of sensitivity to climate hazards irrespective of the project location (example: sea level rise will affect seaport projects regardless of specific location). PE-ENV-01104 (TII, 2022b) provide the below list of asset categories and climate hazards to be considered. The asset categories will vary for project type and need to be determined on a project by project basis.

- **Receptors/Assets categories** - Pavements; drainage; structures; utilities; landscaping; signs, light posts, buildings, and fences.
- **Climate hazards** - Flooding (coastal, pluvial, fluvial); extreme heat; extreme cold; wildfire; drought; extreme wind; lightning and hail; landslides; fog.

The sensitivity is based on a High, Medium or Low rating with a score of 1 to 3 assigned as per the criteria below.

- **High sensitivity:** The climate hazard will or is likely to have a major impact on the asset category. This is a sensitivity score of 3.
- **Medium sensitivity:** It is possible or likely the climate hazard will have a moderate impact on the asset category. This is a sensitivity score of 2.
- **Low sensitivity:** It is possible the climate hazard will have a low or negligible impact on the asset category. This is a sensitivity score of 1.

Once the sensitivities have been identified the exposure analysis is undertaken. The exposure analysis involves determining the level of exposure of each climate hazard at the project location irrespective of the project type for example: flooding could be a risk if the project location is next to a river in a floodplain. Exposure is assigned a level of High, Medium or Low as per the below criteria.

- **High exposure:** It is almost certain or likely this climate hazard will occur at the project location i.e. might arise once to several times per year. This is an exposure score of 3.
- **Medium exposure:** It is possible this climate hazard will occur at the project location i.e. might arise a number of times in a decade. This is an exposure score of 2.
- **Low exposure:** It is unlikely or rare this climate hazard will occur at the project location i.e. might arise a number of times in a generation or in a lifetime. This is an exposure score of 1.

Once the sensitivity and exposure are categorised, a vulnerability analysis is conducted by multiplying the sensitivity and exposure to calculate the vulnerability, as shown in **Table 11.8**.

11.2.6.2 Climate and Traffic Emissions

Emissions from road traffic associated with the proposed development have the potential to emit carbon dioxide (CO₂) which will impact climate.

The UK Highways Agency DMRB guidance document in relation to climate impact assessments *LA 114 Climate* (UK Highways Agency, 2019) contains the following scoping criteria outlined in Section 11.2.5.2 which were used to determine whether a detailed climate assessment is required for the operational stage.

There are a small number of road links that will experience a change of over 10% in the AADT during the operational phase as a result of the proposed development. As a result a detailed assessment of traffic related carbon dioxide (CO₂) emissions was conducted.

PE-ENV-01104 (TII, 2022a) states that road traffic related emissions information should be obtained from an Air Quality Practitioner to show future user emissions during operation without the development in place. The Air Quality Practitioner calculated the traffic related emissions through the use of the TII REM tool (TII, 2022e) which includes detailed fleet predictions for age, fuel technology, engine size and weight based on available national forecasts. The output is provided in terms of CO₂e for the base year 2022, opening year 2025 and design year 2040. Both the Do Nothing and Do Something scenarios are quantified in order to determine the degree of change in emissions as a result of the proposed development. Traffic data was obtained from DBFL for the purpose of this assessment. Inputs include light duty vehicle (LDV) annual average daily traffic movements (AADT), annual average daily heavy-duty vehicles (HDV AADT), annual average traffic speeds, road link lengths, road type and project county location. The traffic data used in the operational phase modelling assessment is detailed in **Table 11.3**.

11.2.7 Climate Assessment Criteria

The climate assessment is divided into two distinct sections – a greenhouse gas assessment (GHGA) and a climate change risk assessment (CCRA).

- Greenhouse Gas Emissions Assessment (GHGA) – Quantifies the GHG emissions from a project over its lifetime. The assessment compares these emissions to relevant carbon budgets, targets and policy to contextualise magnitude.
- Climate Change Risk Assessment (CCRA) – Identifies the impact of a changing climate on a project and receiving environment. The assessment considers a projects vulnerability to climate change and identifies adaptation measures to increase project resilience.

The significance criteria for each assessment are described below.

11.2.7.1 Significance Criteria for GHGA

The Transport Infrastructure Ireland (TII) guidance document entitled *PE-ENV-01104 Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document* (TII 2022a) outlines a recommended approach for determining the significance of both the construction and operational phases of a development. The approach is based on comparing the ‘Do Something’ scenario and the net project GHG emissions (i.e. *Do Something – Do Minimum*) to the relevant carbon budgets (Department of the Taoiseach 2022). With the publication of the Climate Action Act in 2021, sectoral carbon budgets have been published for comparison with the Net CO₂ project GHG emissions from the proposed development. The Residential Buildings sector emitted approximately 7 MtCO₂e in 2018 and has a ceiling of 4 MtCO₂e in 2030 which is a 45% reduction over this period (see **Table 11.4**).

The significance of GHG effects set out in PE-ENV-01104 (TII, 2022a) is based on IEMA guidance (IEMA, 2022) which is consistent with the terminology contained within Figure 3.4 of the EPA’s (2022) ‘*Guidelines on the information to be contained in Environmental Impact Assessment Reports*’.

The 2022 IEMA Guidance (IEMA, 2022) sets out the following principles for significance:

- When evaluating significance, all new GHG emissions contribute to a negative environmental impact; however, some projects will replace existing development or baseline activity that has a higher GHG profile. The significance of a project's emissions should therefore be based on its net impact over its lifetime, which may be positive, negative or negligible;
- Where GHG emissions cannot be avoided, the goal of the EIA process should be to reduce the project's residual emissions at all stages; and
- Where GHG emissions remain significant, but cannot be further reduced, approaches to compensate the project's remaining emissions should be considered.

TII (TII 2022a) states that professional judgement must be taken into account when contextualising and assessing the significance of a project's GHG impact. In line with IEMA Guidance (IEMA, 2022), TII states that the crux of assessing significance is *"not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050"*.

Significance is determined using the criteria outlined in **Table 11.7** (derived from Table 6.7 of PE-ENV-01104 (TII 2022a)) along with consideration of the following two factors:

- The extent to which the trajectory of GHG emissions from the project aligns with Ireland's GHG trajectory to net zero by 2050; and
- The level of mitigation taking place.

Table 11.7 GHGA Significance Criteria for CCRA

Effects	Significance level Description	Description
Significant adverse	Major adverse	■ The project's GHG impacts are not mitigated. ■ The project has not complied with do-minimum standards set through regulation, nor provided reductions required by local or national policies; and ■ No meaningful absolute contribution to Ireland's trajectory towards net zero.
	Moderate adverse	■ The project's GHG impacts are partially mitigated. ■ The project has partially complied with do-minimum standards set through regulation, and have not fully complied with local or national policies; and ■ Falls short of full contribution to Ireland's trajectory towards net zero.
Not significant	Minor adverse	■ The project's GHG impacts are mitigated through 'good practice' measures. ■ The project has complied with existing and emerging policy requirements; and ■ Fully in line to achieve Ireland's trajectory towards net zero.

Effects	Significance level Description	Description
	Negligible	■ The project's GHG impacts are mitigated beyond design standards. ■ The project has gone well beyond existing and emerging policy requirements; and ■ Well 'ahead of the curve' for Ireland's trajectory towards net zero.
Beneficial	Beneficial	■ The project's net GHG impacts are below zero and it causes a reduction in atmosphere GHG concentration. ■ The project has gone well beyond existing and emerging policy requirements; and ■ Well 'ahead of the curve' for Ireland's trajectory towards net zero, provides a positive climate impact.

11.2.7.2 Significance Criteria for CCRA

The CCRA involves an initial screening assessment to determine the vulnerability of the proposed development to various climate hazards. The vulnerability is determined by combining the sensitivity and the exposure of the proposed development to various climate hazards.

$$Vulnerability = Sensitivity \times Exposure$$

The vulnerability assessment takes any proposed mitigation into account. **Table 11.8** details the vulnerability matrix; vulnerabilities are scored on a high, medium and low scale. Where residual medium or high vulnerabilities exist the assessment may need to be progressed to a detailed climate change risk assessment and further mitigation implemented to reduce risks.

Table 11.8 Vulnerability Matrix

		Exposure		
		High (3)	Medium (2)	Low (1)
Sensitivity	High (3)	9 - High	6 – High	3 - Medium
	Medium (2)	6 - High	4 - Medium	2 - Low
	Low (1)	3 - Medium	2 – Low	1 - Low

11.3 Baseline Environment

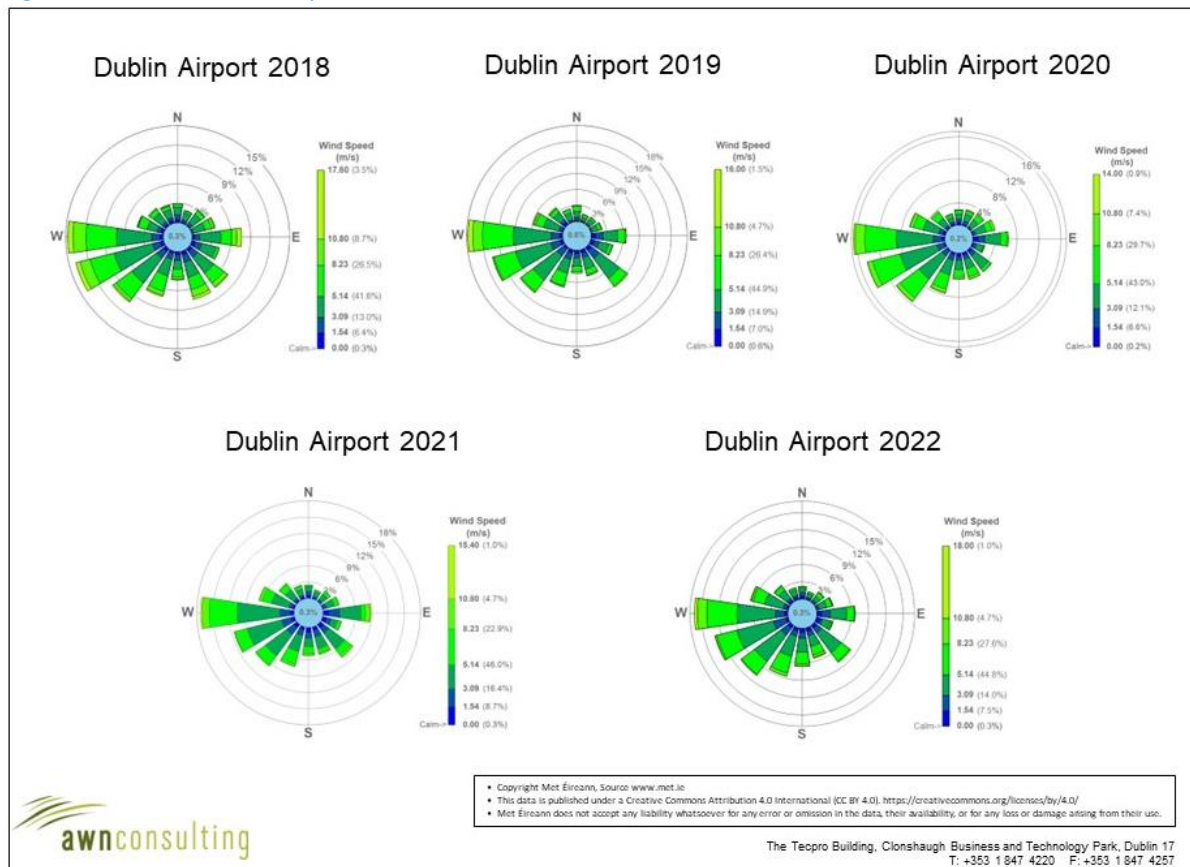
11.3.1 Meteorological Data

A key factor in assessing temporal and spatial variations in air quality are the prevailing meteorological conditions. Depending on wind speed and direction, individual receptors may experience very significant variations in pollutant levels under the same source strength (i.e. traffic levels) (WHO, 2006). Wind is of key importance in dispersing air pollutants and for ground level sources, such as traffic emissions, pollutant concentrations are generally inversely related to wind speed. Thus, concentrations

of pollutants derived from traffic sources will generally be greatest under very calm conditions and low wind speeds when the movement of air is restricted. In relation to PM_{10} , the situation is more complex due to the range of sources of this pollutant. Smaller particles (less than $PM_{2.5}$) from traffic sources will be dispersed more rapidly at higher wind speeds. However, fugitive emissions of coarse particles ($PM_{2.5}$ - PM_{10}) will actually increase at higher wind speeds. Thus, measured levels of PM_{10} will be a non-linear function of wind speed.

The nearest representative weather station collating detailed weather records is Dublin Airport meteorological station, which is located approximately 10 km east of the site. Dublin Airport met data has been examined to identify the prevailing wind direction and average wind speeds over a five-year period (see **Figure 11.2**). For data collated during five representative years (2018 – 2022), the predominant wind direction is westerly to south-westerly with a mean wind speed of 5.3 m/s over the 30-year period of 1990 - 2020 (Met Éireann, 2023).

Figure 11.2 Dublin Airport Windrose 2018 – 2022



Source: Met Éireann, 2022

11.3.2 Baseline Air Quality

Air quality monitoring programs have been undertaken in recent years by the EPA. The most recent annual report on air quality in Ireland is “*Air Quality In Ireland 2021*” (EPA, 2022a). The EPA website details the range and scope of monitoring undertaken throughout Ireland and provides both monitoring data and the results of previous air quality assessments (EPA, 2022b).

As part of the implementation of the Air Quality Standards Regulations 2022 (S.I. No. 739 of 2022) four air quality zones have been defined in Ireland for air quality management and assessment purposes

(EPA, 2022b). Dublin is defined as Zone A and Cork as Zone B. Zone C is composed of 23 towns with a population of greater than 15,000. The remainder of the country, which represents rural Ireland but also includes all towns with a population of less than 15,000, is defined as Zone D.

In terms of air monitoring and assessment, the proposed development site is within Zone A (EPA, 2022b). The long-term monitoring data has been used to determine background concentrations for the key pollutants in the region of the proposed development. The background concentration accounts for all non-traffic derived emissions (e.g. natural sources, industry, home heating etc.). In the area of the proposed development, the background sources within a kilometre of the site include a number of EPA licenced sites with main emission points to air (Licence Nos.: P1060-01, P1030-01, P0552-03 and P0522-01) to the east and west.

In 2020, the EPA reported (EPA, 2021) that Ireland was compliant with EU legal air quality limits at all location. However, this was largely due to the reduction in traffic due to Covid-19 restrictions. The EPA *Air Quality in Ireland 2020* report details the effect that the Covid-19 restrictions had on air monitoring stations, which included reductions of up to 50% at some monitoring stations which have traffic as a dominant source. 2020 concentrations are therefore predicted to be an exceptional year and not consistent with long-term trends. Therefore, data for 2020 is shown for representative purposes only and has not been used in determining the background levels of pollutants in this assessment.

Long-term NO₂ monitoring was carried out at the Zone A suburban background locations of Rathmines, Dún Laoghaire, Swords and Ballyfermot for the period 2016 – 2021 (EPA, 2022a). Long term average concentrations are significantly below the annual average limit of 40 µg/m³. Average results range from 11 – 22 µg/m³ for the suburban background locations. The NO₂ annual average for this six-year period suggests an upper average limit of no more than 19 µg/m³ (Table 11.9) for the urban background locations. The monitoring site in Swords is the most representative of the proposed development location. Concentrations of NO₂ at the Swords site ranged from 11 – 16 µg/m³ over the period 2016 – 2021. Based on the above information, a conservative estimate of the current background NO₂ concentration for the region of the proposed development is 17 µg/m³.

Table 11.9 Trends In Zone A Air Quality - Nitrogen Dioxide (NO₂)

Station	Averaging Period ^{Note 1}	Year					
		2016	2017	2018	2019	2020	2021
Rathmines	Annual Mean NO ₂ (µg/m ³)	20	17	20	22	13	14
	Max 1-hr NO ₂ (µg/m ³)	102	116	138	183	170	143
Dun Laoghaire	Annual Mean NO ₂ (µg/m ³)	19	17	19	15	14	16
	Max 1-hr NO ₂ (µg/m ³)	142	153	135	104	92	93
Swords	Annual Mean NO ₂ (µg/m ³)	16	14	16	15	11	11

Station	Averaging Period ^{Note 1}	Year					
		2016	2017	2018	2019	2020	2021
	Max 1-hr NO ₂ (µg/m ³)	206	107	112	108	84	79
Ballyfermot	Annual Mean NO ₂ (µg/m ³)	17	17	17	20	12	13
	Max 1-hr NO ₂ (µg/m ³)	127	148	217	124	108	90

Note 1 Annual average limit value - 40 µg/m³ (EU Council Directive 2008/50/EC & S.I. No. 739 of 2012). 1-hour limit value - 200 µg/m³ (EU Council Directive 2008/50/EC & S.I. No. 739 of 2022).

Continuous PM₁₀ monitoring was carried out at five Zone A locations from 2016 - 2021, Ballyfermot, Rathmines, Dún Laoghaire, Tallaght and Phoenix Park. These showed an upper average limit of no more than 16 µg/m³ (**Table 11.10**). Levels range from 9 - 16 µg/m³ over the six year period with at most 9 exceedances (in Rathmines) of the 24-hour limit value of 50 µg/m³ in 2019 (35 exceedances are permitted per year) (EPA, 2022a). Based on the EPA data, a conservative estimate of the current background PM₁₀ concentration in the region of the proposed development is 16 µg/m³.

Table 11.10 Trends In Zone A Air Quality - PM₁₀

Station	Averaging Period ^{Note 1}	Year					
		2016	2017	2018	2019	2020	2021
Ballyfermot	Annual Mean PM ₁₀ (µg/m ³)	11	12	16	14	12	12
	24-hr Mean > 50 µg/m ³ (days)	0	1	0	7	2	0
Dún Laoghaire	Annual Mean PM ₁₀ (µg/m ³)	13	12	13	12	12	11
	24-hr Mean > 50 µg/m ³ (days)	0	2	0	2	0	0
Tallaght	Annual Mean PM ₁₀ (µg/m ³)	14	12	15	12	10	10
	24-hr Mean > 50 µg/m ³ (days)	0	2	1	3	0	0
Rathmines	Annual Mean PM ₁₀ (µg/m ³)	15	13	15	15	11	12
	24-hr Mean > 50 µg/m ³ (days)	3	5	2	9	2	0
Phoenix Park	Annual Mean PM ₁₀ (µg/m ³)	11	9	11	11	10	10
	24-hr Mean > 50 µg/m ³ (days)	0	1	0	2	0	0

Note1 Annual average limit value - 40 µg/m³ (EU Council Directive 2008/50/EC & S.I. No. 739 of 2022). Daily limit value - 50 µg/m³ (EU Council Directive 2008/50/EC & S.I. No. 739 of 2022).

Average PM_{2.5} levels in Rathmines over the period 2016 - 2021 ranged from 8 - 10 µg/m³, with a PM_{2.5}/PM₁₀ ratio ranging from 0.68 – 0.75 (EPA, 2022a). Based on this information, a conservative ratio of 0.7 was used to generate an existing PM_{2.5} concentration in the region of the development of 11.2 µg/m³.

Based on the above information the air quality in the suburban Dublin area is generally good, with concentrations of the key pollutants generally well below the relevant limit values. However, the EPA have indicated that road transport emissions are contributing to increased levels of NO₂ with the potential for breaches in the annual NO₂ limit value in future years at locations within urban centres and roadside locations. In addition, burning of solid fuels for home heating is contributing to increased levels of particulate matter (PM₁₀ and PM_{2.5}). The EPA predict that exceedances in the particulate matter limit values are likely in future years if burning of solid fuels for residential heating continues (EPA, 2022).

The current estimated background concentrations have been used in the operational phase air quality assessment for both the opening and design year as a conservative approach in order to predict pollutant concentrations in future years. This is in line with the TII methodology (TII, 2022a).

11.3.3 Sensitivity of the Receiving Environment to Dust

In line with the UK Institute of Air Quality Management (IAQM) guidance document '*Guidance on the Assessment of Dust from Demolition and Construction*' (2014) prior to assessing the impact of dust from a proposed development, the sensitivity of the area must first be assessed as outlined below. Both receptor sensitivity and proximity to proposed works areas are taken into consideration. For the purposes of this assessment, high sensitivity receptors are regarded as residential properties where people are likely to spend the majority of their time. Commercial properties and places of work are regarded as medium sensitivity while low sensitivity receptors are places where people are present for short periods or do not expect a high level of amenity.

In terms of receptor sensitivity to dust soiling, there are some residential properties with 50m of the proposed works area. The site is bound by lands which previously formed part of the former Hollystown Golf Club and the residential area of Hollystown Park to the north, lands forming part of a permitted Strategic Housing Development (SHD) to the east (ABP Reg. Ref. 312271), Tyrrelstown Park to the south, and rural zoned lands to the west. There are other residential developments within closer proximity to the east of the proposed site boundary. It can conservatively be assumed that these will be built and occupied during the construction phase (**Figure 11.3**). With this assumption, it is likely that there will be between 10-100 high sensitivity residential receptors within 50m of the proposed development. Based on the IAQM criteria outlined in **Table 11.11**, the worst-case sensitivity of the area to dust soiling is considered medium.

Table 11.11 Sensitivity of the Area to Dust Soiling Effects on People and Property

Receptor Sensitivity	Number Of Receptors	Distance from source (m)			
		<20	<50	<100	<350
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

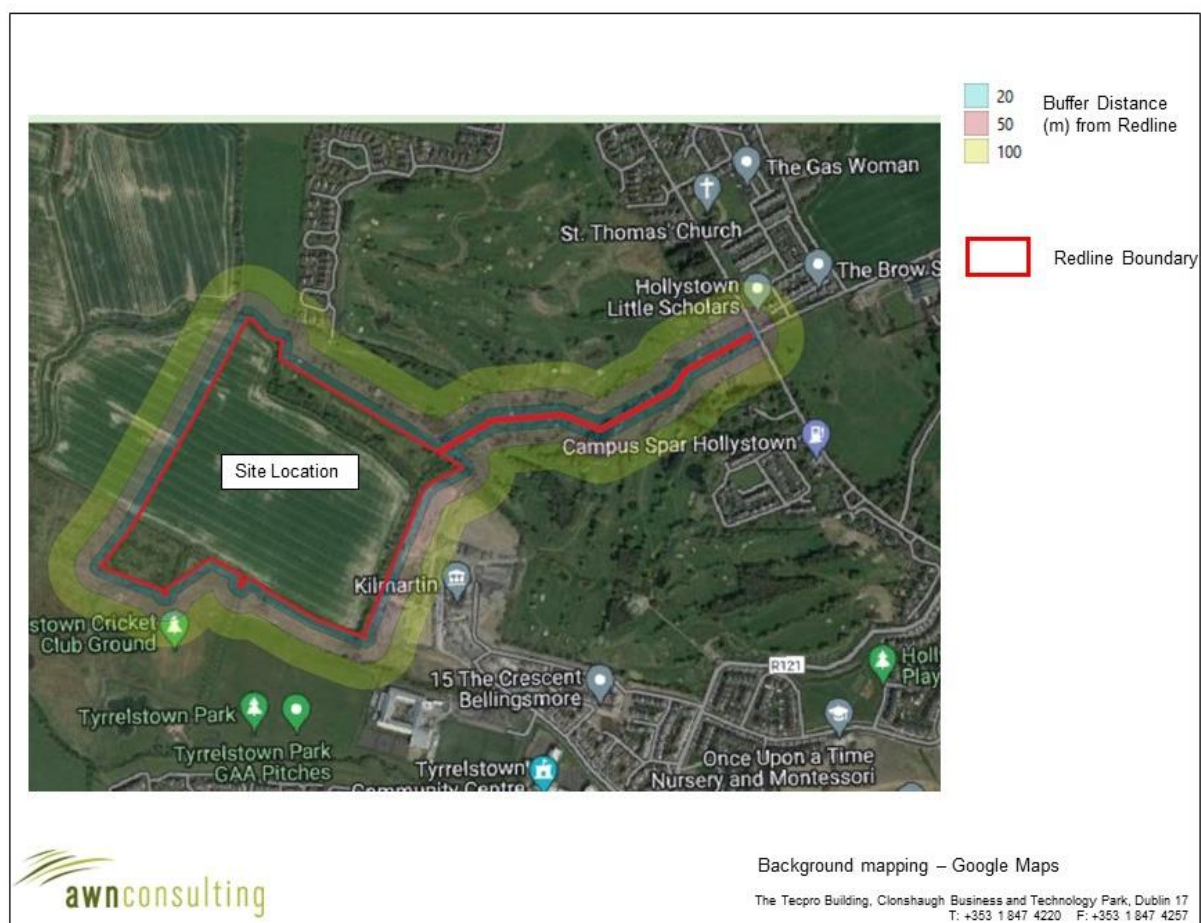
In addition to sensitivity to dust soiling, the IAQM guidelines also outline the assessment criteria for determining the sensitivity of the area to human health impacts. The criteria take into consideration the current annual mean PM₁₀ concentration, receptor sensitivity based on type (residential receptors are classified as high sensitivity) and the number of receptors affected within various distance bands from the construction works. A conservative estimate of the current annual mean PM₁₀ concentration in the vicinity of the proposed development is 16 µg/m³ and as discussed above, between 10-100 sensitive receptors within 50m of the proposed development. Based on the IAQM criteria outlined in **Table 11.12**, the worst-case sensitivity of the area to human health is considered low.

Table 11.12 Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM10 Concentration	Number Of Receptors	Distance from source (m)				
			<20	<50	<100	<200	<350
High	< 24 $\mu\text{g}/\text{m}^3$	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	< 24 $\mu\text{g}/\text{m}^3$	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Low	< 24 $\mu\text{g}/\text{m}^3$	>1	Low	Low	Low	Low	Low

The IAQM guidelines also outline the assessment criteria for determining the sensitivity of the area to dust-related ecological impacts. Dust emissions can coat vegetation leading to a reduction in the photosynthesising ability of the plant, as well as other effects. The guidance states that dust impacts to vegetation can occur up to 50m from the site and 50m from site access roads, up to 500m for the site entrance. There are no sensitive ecological receptors within these criteria. Based on the IAQM criteria outlined, ecology impacts are considered to be scoped out with respect to construction phase dust.

Figure 11.3 Location of Sensitive Receptors



11.3.4 Current Climate Baseline

PE-ENV-01104 (TII, 2022b) states that a baseline climate scenario should identify, consistent with the study area for the project, GHG emissions without the project for both the current and future baseline.

Ireland declared a climate and biodiversity emergency in May 2019 and in November 2019 there was European Parliament approval of a resolution declaring a climate and environment emergency in Europe. This, in addition to Ireland's current failure to meet its EU binding targets under Regulation 2018/842 (European Union, 2018) results in changes in GHG emissions either beneficial or adverse being of more significance than previously considered prior to these declarations.

According to projections from the EPA in relation to Ireland's Greenhouse Gas Emissions Projections 2022 – 2040 (EPA 2023) Ireland has exceeded its 2022 annual limit set under EU's Effort Sharing Decision (Decision No. 406/2009/EC on the effort of member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020) by 3.72 million tonnes CO₂e (Mt CO₂e). These annual limits have been reduced further from 2023 onwards as Ireland's Effort Sharing commitment increased from a 30% reduction on the 2005 level by 2030 to a 42% reduction. For 2022, the total national emissions were 60.764 Mt CO₂e (excluding LULUCF), as shown in **Table 11.13**. This represents a 1.9% increase compared to 2021 figures. The sector with the highest emissions is agriculture at 34% of the total, followed by transport at 17%. GHG emissions from the 'Waste' sector increased by 4.9% in 2022 (0.867 Mt CO₂e).

The future baseline with respect to the GHGA can be considered in relation to the future climate targets which the assessment results will be compared against. In line with TII (TII, 2022a) and IEMA Guidance (IEMA, 2022) the future baseline is a trajectory towards net zero by 2050, "*whether it [the project] contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050*".

The future baseline will be determined by Ireland meeting its targets set out in the CAP23, and future CAPs, alongside binding 2030 EU targets. In order to meet the commitments under the Paris Agreement, the European Union (EU) enacted '*Regulation (EU) 2018/842 on binding annual GHG emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No. 525/2013*' (hereafter referred to as the Regulation) (European Union, 2018). The Regulation aims to deliver, collectively by the EU in the most cost-effective manner possible, reductions in GHG emissions from the Emission Trading Scheme (ETS) and non-ETS sectors amounting to 43% and 30%, respectively, by 2030 compared to 2005. The Regulation was amended in April 2023 and Ireland must now limit its greenhouse gas emissions by at least 42% by 2030. The ETS is an EU-wide scheme which regulates the GHG emissions of larger industrial emitters including electricity generation, cement manufacturing and heavy industry. The non-ETS sector includes all domestic GHG emitters which do not fall under the ETS scheme and thus includes GHG emissions from transport, residential and commercial buildings and agriculture.

Table 11.13 Total National GHG Emissions in 2022

Sector	2021 Emissions (Mt CO ₂ e)	2022 Emissions (Mt CO ₂ e)	% Total 2022 (including LULUCF)	% Change from 2021 to 2022
Agriculture	23.626	23.337	34%	-2.1
Transport	10.978	11.634	17%	6.0

Sector	2021 Emissions (Mt CO ₂ e)	2022 Emissions (Mt CO ₂ e)	% Total 2022 (including LULUCF)	% Change from 2021 to 2022
Energy Industries	10.262	10.076	15%	-1.8
Residential	6.992	6.105	9%	-12.7
Manufacturing Combustion	4.614	4.288	6%	-7.1
Industrial Processes	2.475	2.289	3%	-7.5
F-Gases	0.745	0.741	1%	-0.5
Commercial Services	0.765	0.767	1%	0.2
Public Services	0.672	0.659	1%	-1.9
Waste ^{Note 2}	0.726	0.867	1%	4.9
LULUCF	7.338	7.305	11%	-0.5
National total excluding LULUCF	61.955	60.764	89%	-1.9
National total including LULUCF	62.293	68.069	100%	-1.8

11.3.5 Future Climate Baseline

Impacts as a result of climate change will evolve with a changing future baseline, changes have the potential to include increases in global temperatures and increases in the number of rainfall days per year. Therefore, it is expected that the baseline climate will evolve over time and consideration is needed with respect to this within the design of the proposed development.

Ireland has seen increases in the annual rainfall in the north and west of the country, with small increases or decreases in the south and east including in the region where the proposed development will be located (EPA, 2021b). The EPA have compiled a list of potential adverse impacts as a result of climate change including the following which may be of relevance to the proposed development (EPA, 2021a):

- More intense storms and rainfall events;
- Increased likelihood and magnitude of river and coastal flooding;
- Water shortages in summer in the east;
- Adverse impacts on water quality; and
- Changes in distribution of plant and animal species.

The EPA's State of the Irish Environment Report (Chapter 2: Climate Change) (EPA, 2020b) notes that projections show that full implementation of additional policies and measures, outlined in the 2019 Climate Action Plan, will result in a reduction in Ireland's total GHG emissions by up to 25% by 2030 compared with 2020 levels. Climate change is not only a future issue in Ireland, as a warming of approximately 0.8°C since 1900 has already occurred. The EPA state that it is critically important for the public sector to show leadership and decarbonise all public transport across bus and rail networks to the lowest carbon alternatives. The report (EPA, 2020b) underlines that the next decade needs to be

one of major developments and advances in relation to Ireland's response to climate change in order to achieve these targets. Ireland must accelerate the rate at which it implements GHG emission reductions. The report states that mid-century mean annual temperatures in Ireland are projected to increase by between 1.0°C and 1.6°C (subject to the emissions trajectory). In addition, heat events are expected to increase by mid-century (EPA, 2020b). While individual storms are predicted to have more severe winds, the average wind speed has the potential to decrease (EPA, 2020b).

TII's Guidance document PE-ENV-01104 (TII 2022a) states that for future climate change a moderate to high Representative Concentration Pathways (RCP) should be adopted. RCP4.5 is considered moderate while RCP8.5 is considered high. Representative Concentration Pathways (RCPs) describe different 21st century pathways of GHG emissions depending on the level of climate mitigation action undertaken.

Future climate predictions undertaken by the EPA have been published in 'Research 339: High-resolution Climate Projections for Ireland – A Multi-model Ensemble Approach (EPA 2020a). The future climate was simulated under both Representative Concentration Pathway 4.5 (RCP4.5) (medium-low) and RCP8.5 (high) scenarios. This study indicates that by the middle of this century (2041–2060), mid-century mean annual temperatures are projected to increase by 1 to 1.2°C and 1.3 to 1.6°C for the RCP4.5 and RCP8.5 scenarios, respectively, with the largest increases in the east. Warming will be enhanced at the extremes (i.e. hot days and cold nights), with summer daytime and winter night-time temperatures projected to increase by 1 to 2.4°C. There is a projected substantial decrease of approximately 50%, for the number of frost and ice days. Summer heatwave events are expected to occur more frequently, with the largest increases in the south. In addition, precipitation is expected to become more variable, with substantial projected increases in the occurrence of both dry periods and heavy precipitation events. Climate change also has the potential to impact future energy supply which will rely on renewables such as wind and hydroelectric power. More frequent storms have the potential to damage the communication networks requiring additional investment to create resilience within the network.

The EPA's Critical Infrastructure Vulnerability to Climate Change report (EPA, 2021b) assesses the future performance of Ireland's critical infrastructure when climate is considered. With respect to road infrastructure, fluvial flooding and coastal inundation/coastal flooding are considered the key climate change risks with snowstorm and landslides being medium risks. Extreme winds and heatwaves/droughts are considered low risk to road infrastructure. One of the key outputs of the research was a framework that will provide quantitative risk-based decision support for climate change impacts and climate change adaptation analysis for infrastructure.

11.4 Predicted Impacts of the Proposed Development

11.4.1 Air Quality Do-Nothing Impact

Under the Do Nothing Scenario, no construction works will take place and the identified impacts of fugitive dust and particulate matter emissions and emissions from equipment and machinery will not occur. Impacts from increased traffic volumes and associated air emissions will also not occur. The ambient air quality at the site will remain as per the baseline and will change in accordance with trends within the wider area (including influences from new developments in the surrounding area, changes in road traffic, etc.). Therefore, this scenario can be considered neutral in terms of air quality.

11.4.2 Air Quality Construction Phase

11.4.2.1 Dust

In order to determine the level of dust mitigation required during the proposed works, the potential dust emission magnitude for each dust generating activity needs to be taken into account, in conjunction with the previously established sensitivity of the area (see Section 11.3.3). The major dust generating activities are divided into four types within the IAQM (2016) guidance to reflect their different potential impacts.

These are:

- Demolition;
- Earthworks;
- Construction; and
- Trackout (movement of heavy vehicles).

Demolition

No demolition is required for the proposed development therefore, the assessment is scoped out.

Earthworks

Earthworks primarily involve excavating material, loading and unloading of materials, tipping and stockpiling activities. Activities such as levelling the site and landscaping works are also considered under this category. The dust emission magnitude from earthworks can be classified as small, medium or large based on the definitions from the IAQM guidance as transcribed below:

- **Large:** Total site area > 10,000 m², potentially dusty soil type (e.g. clay which will be prone to suspension when dry due to small particle size), > 10 heavy earth moving vehicles active at any one time, formation of bunds > 8 m in height, total material moved >100,000 tonnes;
- **Medium:** Total site area 2,500 m² – 10,000 m², moderately dusty soil type (e.g. silt), 5 - 10 heavy earth moving vehicles active at any one time, formation of bunds 4 – 8 m in height, total material moved 20,000 – 100,000 tonnes;
- **Small:** Total site area < 2,500 m², soil type with large grain size (e.g. sand), < 5 heavy earth moving vehicles active at any one time, formation of bunds < 4 m in height, total material moved < 20,000 tonnes, earthworks during wetter months.

The total developable site area is approximately 20,600 m² which is greater than 10,000 m², therefore the proposed earthworks can be classified as large. Based on a preliminary review of the existing survey data and proposed site levels, DBFL estimate that approximately 55,000 m³ of material will require

excavation as part of the proposed development proposals in regard to works associated with the swale, road construction and residential buildings. It is intended that the majority of this excavated topsoil and subsoil would be re-used as part of the development's permanent landscaped works. Although an allowance has been made for unsuitable material, with 45,000 m³ of infill / re-used material, resulting in 10,000 m³ unsuitable material to be exported from the subject site following the excavation works. The sensitivity of the area, as determined in Section 11.3.3, is combined with the dust emission magnitude for each dust generating activity to define the risk of dust impacts in the absence of mitigation. As outlined in **Table 11.14** and **Table 11.15**, combining the large dust emission magnitude with a medium sensitivity to dust soiling and low sensitivity to human health impacts, results in an overall medium risk of dust soiling impacts and a low risk of dust-related human health impacts as a result of the proposed earthworks activities in the absence of mitigation.

Table 11.14 Criteria for Rating Risk of Dust Impacts – Earthworks (IAQM, 2016)

Sensitivity of Area	Dust Emission Magnitude – Earthworks		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 11.15 Risk of Dust Impacts – Earthworks

Receptor	Receptor Sensitivity	Dust Emission Magnitude – Earthworks	Risk of Dust-Related Impacts
Dust Soiling	Medium	Large	Medium
Human Health	Low		Low

Construction

Dust emission magnitude from construction can be classified as small, medium or large based on the definitions from the IAQM guidance as transcribed below:

- **Large:** Total building volume > 100,000 m³, on-site concrete batching, sandblasting;
- **Medium:** Total building volume 25,000 m³ – 100,000 m³, potentially dusty construction material (e.g. concrete), on-site concrete batching;
- **Small:** Total building volume < 25,000 m³, construction material with low potential for dust release (e.g. metal cladding or timber).

The dust emission magnitude for the proposed construction activities can be classified as medium as a worst-case, as the total building volume will be less than 100,000 m³ and offsite pre-construction methods will be utilised, reducing the potential for dusty activities on site. As outlined in **Table 11.16** and **Table 11.17**, combining the large dust emission magnitude with a medium sensitivity to dust soiling and low sensitivity to human health impacts, results in an overall medium risk of dust soiling impacts and a low risk of dust-related human health impacts as a result of the proposed construction activities in the absence of mitigation.

Table 11.16 Criteria for Rating Risk of Dust Impacts – Construction (IAQM, 2016)

Sensitivity of Area	Dust Emission Magnitude – Construction		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 11.17 Risk of Dust Impacts – Construction

Receptor	Receptor Sensitivity	Dust Emission Magnitude – Construction	Risk of Dust-related Impacts
Dust Soiling	Medium	Medium	Medium
Human health	Low		Low

Trackout

Factors which determine the dust emission magnitude are vehicle size, vehicle speed, number of vehicles, road surface material and duration of movement. Dust emission magnitude from trackout can be classified as small, medium or large based on the definitions from the IAQM guidance as transcribed below:

- **Large:** > 50 HGV (> 3.5 t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length > 100m;
- **Medium:** 10 - 50 HGV (> 3.5 t) outward movements in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50 - 100m;
- **Small:** < 10 HGV (> 3.5 t) outward movements in any one day, surface material with low potential for dust release, unpaved road length < 50m.

The dust emission magnitude for the proposed trackout can be classified as medium as there will be less than 50 outward HGV movements per day. As outlined in **Table 11.18** and **Table 11.19**, combining the large dust emission magnitude with a high sensitivity to dust soiling and low sensitivity to human health impacts, results in an overall medium risk of dust soiling impacts and a low risk of dust-related human health impacts as a result of the proposed trackout activities in the absence of mitigation.

Table 11.18 Criteria for Rating Risk of Dust Impacts – Trackout

Sensitivity of Area	Dust Emission Magnitude – Trackout		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table 11.19 Risk of Dust Impacts – Trackout

Receptor	Receptor Sensitivity	Dust Emission Magnitude – Trackout	Risk of Dust-related Impacts
Dust soiling	Medium	Medium	Medium
Human health	Low		Low

Summary of Dust Emission Risk

The risk of dust impacts as a result of the proposed development are summarised in **Table 11.20** for each activity. The magnitude of risk determined is used to prescribe the level of site specific mitigation required for each activity to prevent significant impacts occurring.

Overall, to ensure that no dust nuisance occurs during the earthworks, construction and trackout activities, a range of dust mitigation measures associated with a medium risk of dust impacts must be implemented. When the dust mitigation measures detailed in the mitigation section of this chapter (Section 11.5.1) and **Appendix 11.1** are implemented, fugitive emissions of dust from the site will be insignificant and pose no nuisance at nearby receptors. In the absence of mitigation dust impacts are predicted to be *short-term, localised, negative and slight*.

Table 11.20 Summary of construction phase dust impact risk used to define site-specific mitigation

Potential Impact	Dust Emission Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	N/A	Medium Risk	Medium Risk	Medium Risk
Human Health	N/A	Low Risk	Low Risk	Low Risk

11.4.2.2 Traffic

There is also the potential for traffic emissions to impact air quality in the short-term over the construction phase. Particularly due to the increase in HGVs accessing the site. The construction stage traffic has been reviewed and a detailed air quality assessment has been scoped out as none of the road links impacted by the proposed development satisfy the TII assessment criteria in Section 11.2.2.2.

It is anticipated that the proposed development programme would be rolled out over a period of approximately 42 months post receipt of planning permission. Following the completion of the initial site clearance works, the generation of HGV movements during the build period will be evenly spread throughout the day and, as such, will not impact significantly during the peak traffic periods.

It can therefore be determined that the construction stage traffic will have an *imperceptible, neutral and short-term impact* on air quality.

11.4.2.3 Construction Phase Human Health

Dust emissions from the construction phase of the proposed development have the potential to impact human health through the release of PM₁₀ and PM_{2.5} emissions. As per section 11.3.3 the surrounding area is of low sensitivity to dust related human health impacts. It was determined that there is an overall low risk of dust related human health impacts as a result of the construction phase of the proposed development (**Table 11.20**). Therefore, in the absence of mitigation there is the potential for *imperceptible, negative, short-term impacts* to human health as a result of the proposed development.

11.4.3 Air Quality Operational Phase

11.4.3.1 Traffic

The potential impact of the proposed development has been assessed by modelling emissions from the traffic generated as a result of the development. The traffic data includes the Do Nothing and Do Something scenarios. The impact of NO₂, PM₁₀ and PM_{2.5} emissions for the Opening and Design Years

was predicted at the nearest sensitive receptors to the development. This assessment allows the significance of the development, with respect to both relative and absolute impacts, to be determined.

The TII guidance PE-ENV-01106 (TII, 2022a) details a methodology for determining air quality impact significance criteria for TII road schemes and infrastructure projects. However, this significance criteria can be applied to any development that causes a change in traffic. The degree of impact is determined based on both the absolute and relative impact of the proposed development. Results are compared against the 'Do-Nothing' scenario, which assumes that the proposed development is not in place in future years, to determine the degree of impact.

The results of the assessment of the impact of the proposed development on NO₂ in the Opening Year 2025 and Design Year 2040 are shown in **Table 11.21**. The annual average concentration is in compliance with the limit value at the worst-case receptors in 2025 and 2040. Concentrations of NO₂ are at most 48% of the annual limit value in 2025 and 46% of the annual limit value in 2040. There are predicted to be some increases in traffic between the Opening and Design Years. Therefore, any decrease in concentration is due to increased uptake in electric vehicles and lower vehicle exhaust emissions. In addition, the TII guidance (2022a) states that the hourly limit value for NO₂ of 200 µg/m³ is unlikely to be exceeded at roadside locations unless the annual mean is above 60 µg/m³. As predicted NO₂ concentrations are significantly below 60 µg/m³ (**Table 11.21**) it can be concluded that the short-term NO₂ limit value will be complied with at all receptor locations.

The impact of the proposed development on annual mean NO₂ concentrations can be assessed relative to "Do Nothing (DN)" levels. NO₂ concentrations at the receptors assessed will increase as a result of the proposed development when compared with the Do-Nothing scenario. There will be at most an increase of 0.31 µg/m³ at receptor R4, this is a 1.7% change from baseline conditions or 0.8% increase compared to the limit value. Where the predicted annual mean concentrations are less than 75% of the air quality standard (see **Table 11.1**) and there is a less than 5% change in concentrations compared with the air quality standard, then, the impact is considered neutral as per the TII significance criteria (see **Table 11.6**). Therefore, the impact of the proposed development on NO₂ concentrations is *neutral*.

In relation to changes in PM₁₀ concentrations as a result of the proposed development, the results of the assessment can be seen in **Table 11.22** for the opening year 2025 and design year 2040. The annual average concentration is in compliance with the limit value at the worst-case receptors in 2025 and 2040. Concentrations of PM₁₀ are at most 47% of the annual limit value in 2025 and 2040. In addition, the proposed development will not result in any exceedances of the daily PM₁₀ limit value of 50 µg/m³. The impact of the proposed development on annual mean PM₁₀ concentrations can be assessed relative to "Do Nothing (DN)" levels. PM₁₀ concentrations at the receptors assessed will increase as a result of the proposed development when compared with the Do-Nothing scenario. There will be at most an increase of 0.59 µg/m³ at receptor R4, this is a 3.4% change from baseline conditions or 1.5% increase compared to the limit value. As with NO₂, where the predicted annual mean concentrations are less than 75% of the air quality standard (see **Table 11.1**) and there is a less than 5% change in concentrations compared with the air quality standard then the impact is considered neutral as per the TII significance criteria (see **Table 11.6**). Therefore, the impact of the proposed development on PM₁₀ concentrations is *neutral*.

In relation to changes in PM_{2.5} concentrations as a result of the proposed development, the results of the assessment can be seen in **Table 11.23** for the Opening Year 2025 and Design Year 2040. The annual

average concentration is in compliance with the limit value at the worst-case receptors in 2025 and 2040. Concentrations of PM_{2.5} are at most 51% of the annual limit value in 2025 and 2040. The impact of the proposed development on annual mean PM_{2.5} concentrations can be assessed relative to “Do Nothing (DN)” levels. PM_{2.5} concentrations at the receptors assessed will increase as a result of the proposed development when compared with the Do-Nothing scenario. There will be at most an increase of 0.4 µg/m³ at receptor R4, this is a 3.4% change from baseline conditions or 1.6% increase compared to the limit value. As with NO₂, where the predicted annual mean concentrations are less than 75% of the air quality standard (see **Table 11.1**) and there is a less than 5% change in concentrations compared with the air quality standard, then, the impact is considered neutral as per the TII significance criteria (see **Table 11.6**). Therefore, the impact of the proposed development on PM_{2.5} concentrations is *neutral*.

Overall, the potential impact of the proposed development on ambient air quality in the operational stage when compared to the EU air quality limit values is considered *long-term, localised, neutral, imperceptible and non-significant*.

Table 11.21 Predicted Annual Mean NO₂ Concentrations (µg/m³)

Receptor	Impact Opening Year				Impact Design Year			
	DN	DS	DS-DN	Description	DN	DS	DS-DN	Description
R1	17.7	17.9	0.21	Neutral	17.4	17.6	0.19	Neutral
R2	19.1	19.3	0.19	Neutral	18.0	18.2	0.25	Neutral
R3	19.3	19.3	0.02	Neutral	17.9	17.9	0.02	Neutral
R4	18.0	18.3	0.31	Neutral	17.57	17.85	0.28	Neutral

Table 11.22 Predicted Annual Mean PM₁₀ Concentrations (µg/m³)

Receptor	Impact Opening Year				Impact Design Year			
	DN	DS	DS-DN	Description	DN	DS	DS-DN	Description
R1	16.6	16.7	0.16	Neutral	16.9	17.3	0.40	Neutral
R2	17.6	17.8	0.14	Neutral	18.1	18.6	0.53	Neutral
R3	17.9	17.9	0.02	Neutral	18.0	18.0	0.04	Neutral
R4	16.8	17.0	0.24	Neutral	17.2	17.8	0.59	Neutral

Table 11.23 Predicted Annual Mean PM_{2.5} Concentrations (µg/m³)

Receptor	Impact Opening Year				Impact Design Year			
	DN	DS	DS-DN	Description	DN	DS	DS-DN	Description
R1	11.5	11.6	0.09	Neutral	11.7	11.9	0.22	Neutral
R2	12.1	12.2	0.09	Neutral	12.4	12.7	0.29	Neutral
R3	12.3	12.3	0.01	Neutral	12.3	12.3	0.03	Neutral
R4	11.6	11.8	0.14	Neutral	11.8	12.2	0.40	Neutral

11.4.3.2 Human Health

Traffic related air emissions have the potential to impact air quality which can affect human health. A detailed air dispersion modelling assessment of traffic emissions was conducted and it was determined that emissions of air pollutants are predicted to be significantly below the ambient air quality standards which are based on the protection of human health. Therefore, it can be determined that the impact to human health during the operational stage is *long-term, neutral and imperceptible*.

11.4.4 Climate Do-Nothing Impact

In the Do Nothing scenario, the site will remain as per the baseline and the climate baseline will change in accordance with trends within the wider area (including influences from potential new developments in the surrounding area, changes in road traffic, etc). The Do Nothing scenario is considered neutral in terms of the climate assessment.

11.4.5 Climate Construction Phase

11.4.5.1 Greenhouse Gas Assessment

There is the potential for release of a number of greenhouse gas emissions to atmosphere during the construction of the proposed development. The developer of the Proposed Development, Glenveagh, has committed to achieving Net Zero by 2050 across its whole business.

Appendix 11.2 provides details of the developers Net Zero Transition Plan and Glenveagh Annual Report 2022 Final²¹, both of which detail a commitment to achieving Net Zero by 2050, which will include reductions of embodied emissions during the construction phase. This includes an intermediate target of a 46% reduction of Scope 1 (direct emissions from the company) and Scope 2 (indirect emissions from purchased electricity, steam, heat, and cooling) emissions by 2031 and 55% reduction of Scope 3 emissions (all other emissions associated with a company's activities) by 2031. These targets have been developed in line with guidance from the Science Based Targets initiative ('SBTi') and have been submitted to the SBTi for validation. 42% of the overall 2021 emissions were associated with the extraction and production of raw materials for construction, this will be a key target area for improvement by Glenveagh. In 2022 Glenveagh signed up to Business in the Community Ireland's ('BITCI') Low Carbon Pledge. The pledge commits all signatory companies to setting science-based carbon emissions reduction targets by 2024. As part of this the developer is committed to;

- Supplier and subcontractor engagement on Net Carbon Zero with robust governance;
- Key staff training in carbon reduction;
- Transition sites to renewable fuel on construction sites - In 2022, Glenveagh trialled Hydrotreated Vegetable Oil ('HVO') fuel on two sites and will now roll this out across all of our sites replacing the need for diesel or gas oil. They see this as a transition fuel and are currently researching longer term solutions including hydrogen;
- Transition fleet to electric vehicles - As of February 2023, 18% of Glenveagh's fleet is electric, with an aim to continue to add additional vehicles in line with lease renewals to achieve an electric fleet. EV charging infrastructure is available at offices; and
- Use of off-site manufacturing facilities in Dundalk, Carlow and Arklow. These aim to minimise waste, centralised procurement, source local materials and increase efficiencies within construction.

Scopes 1, 2 and 3 emissions for completed homes were 150.4 tCO₂e/100m² in 2020, this was reduced to 145.7 tCO₂e/100m² in 2022.

²¹ <https://glenveagh.ie/corporate/sustainability>

Figure 11.4 Glenveaghs Emission Data 2022

Indicator	Measure	Unit	2022	2021	2020
Climate – carbon emissions	100sqm of units completed	100sqm	1,563	1,255	875
	Scope 1 – combustion of fuel	tCO ₂ e	3,567	3,048	2,700
	Scope 2 – location based	tCO ₂ e	813	518	519
	Scope 2 – market based	tCO ₂ e	227	189	247
	Total Scopes 1 and 2 – location based	tCO ₂ e	4,380	3,566	3,219
	Total Scopes 1 and 2 – market based	tCO ₂ e	3,794	3,237	2,947
	Scopes 1 and 2 per 100sqm of completed units – location based	tCO ₂ e/100sqm	2.8	2.8	3.7
	Scopes 1 and 2 per 100sqm of completed units – market based	tCO ₂ e/100sqm	2.4	2.6	3.4
	Total Scope 3 GHG emissions	tCO ₂ e	223,332	188,618	128,645
	Total Scopes 1, 2 and 3 – location based	tCO ₂ e	227,712	192,184	131,864
	Total Scopes 1, 2 and 3 – market based	tCO ₂ e	227,126	191,854	131,592
	Emissions per 100sqm completed homes – Scopes 1, 2 and 3 – location based	tCO ₂ e/100sqm	145.7	153.1	150.7
	Emissions per 100sqm completed homes – Scopes 1, 2 and 3 – market based	tCO ₂ e/100sqm	145.3	152.8	150.4
	Scope 3 emissions categories				
	Waste	tCO ₂ e	195	120	78
	Business travel	tCO ₂ e	44	18	17
	Other fuel and energy	tCO ₂ e	1,119	894	1,077
	Upstream transportation and distribution	tCO ₂ e	7,143	6,442	4,715
	Employee commute	tCO ₂ e	1,093	908	879
	Capital goods – construction materials	tCO ₂ e	102,083	80,526	52,309
	Capital goods – assets	tCO ₂ e	678	769	176
	Purchased goods and services	tCO ₂ e	55,642	42,372	25,880
	Occupant energy use (over 50 yrs) – regulated	tCO ₂ e	17,637	24,855	22,539
	Occupant energy use (over 50 yrs) – unregulated	tCO ₂ e	30,888	26,770	17,639
	Occupant emissions – refrigerants	tCO ₂ e	1,388	1,085	508
	End-of-life treatment of product	tCO ₂ e	5,423	3,857	2,828
Climate – energy efficiency	Fuel and electricity consumption from sites and offices	mWh	16,707	13,779	13,580
	Operation energy intensity	mWh/100sqm	11	11	16

The proposed developer is committing to reducing climate impacts, on the Proposed Development, and all their other developments, and the development will comply with a goal of net carbon zero by 2050 – many of which are embedded design mitigations. As per the assessment criteria in **Table 11.7** the impact of the proposed development in relation to GHG emissions prior to mitigation measures being put in place is considered *short-term, adverse and significant* in EIA terms.

11.4.5.2 Climate Change Risk Assessment

Examples of potential climate impacts during operation are included in Annex D (Climate Proofing and Environmental Impact Assessment) of the Technical Guidance on the Climate Proofing of Infrastructure (European Commission, 2021a). Potential impacts of climate change on the proposed development include:

- Flood Risk due to increased precipitation, and intense periods of rainfall. This includes fluvial and pluvial flooding;
- Increased temperatures potentially causing drought, wildfires and prolonged periods of hot weather;
- Reduced temperatures resulting in ice or snow;
- Geotechnical impacts; and
- Major Storm Damage – including wind damage.

Each of these potential risks are considered with respect to the operational phase of the proposed development as detailed in Section 11.4.6. During the construction phase no assessment is required, however, consideration will be given to the project's vulnerability to climate impacts. During

construction, the Contractor will be required to mitigate against the effects of extreme rainfall / flooding through site risk assessments and method statements. The Contractor will also be required to mitigate against the effects of extreme wind / storms, temperature extremes through site risk assessments and method statements. All materials used during construction will be accompanied by certified datasheets which will set out the limiting operating temperatures. Temperatures can affect the performance of some materials, this will require consideration during construction.

During construction, the Contractor will be required to mitigate against the effects of fog, lighting and hail through site risk assessments and method statements.

In relation to climate change vulnerability, as the construction phase is not within the timescale where the worst of climate change is proposed to have occurred. The impact of the proposed development in relation to construction phase climate vulnerability emissions is therefore considered **short-term, minor adverse and not significant** in EIA terms prior to mitigation measures being put in place.

11.4.6 Climate Operational Phase

11.4.6.1 Greenhouse Gas Assessment

There is the potential for increased traffic volumes to impact climate. The change in traffic was reviewed against the PE-ENV-01104 screening criteria outlined in Section 11.2.6 (TII, 2022b) and a detailed climate assessment of traffic emissions was conducted.

The predicted concentrations of CO₂ for the future years of 2025 and 2040 are detailed in **Table 11.24**. These are significantly less than the 2025 and 2040 targets set out under EU legislation (targets beyond 2030 are not available). It is predicted that in 2025 the proposed development will increase CO₂ emissions by 0.00009% of the EU 2025 target. Similarly low increases in CO₂ emissions are predicted to occur in 2040 with emissions increasing by 0.0003% of the EU 2030 target.

Table 11.24 Climate Traffic Impact Assessment

Year	Scenario	CO ₂ eq (tonnes/annum)
2025	Do Nothing	1,235
	Do Something	1,270
2040	Do Nothing	1,359
	Do Something	1,460
Increment in 2025		35
Increment in 2040		101
Emission Ceiling (Tonnes) 2025		38,991,362
Emission Ceiling (Tonnes) 2030		33,381,312
Impact in 2025 (%)		0.00009%
Impact in 2040 (%)		0.00030%

Note 1 Target under Regulation (EU) 2018/842 of the European Parliament and of the Council of 30 May 2018 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No 525/2013

The proposed development is committing to reducing climate impacts, where feasible, and the development will comply with the Do-Minimum standards set through regulation – many of which are embedded design mitigations. As per the assessment criteria in **Table 11.7** the impact of the proposed development in relation to GHG emissions prior to mitigation measures being put in place is considered **long-term, adverse and significant** in EIA.

11.4.6.2 Climate Change Vulnerability Assessment

To determine the vulnerability of the proposed development to climate change, the sensitivity and exposure of the development to various climate hazards must first be determined. The following climate hazards have been considered in the context of the proposed development: flooding (coastal, pluvial, fluvial); extreme heat; extreme cold; wildfire; drought; extreme wind; lightning, hail, landslides and fog.

The sensitivity of the proposed development to the above climate hazards is assessed irrespective of the project location. **Table 11.25** details the sensitivity of the proposed development on a scale of high (3), medium (2) and low (1). Once the sensitivity has been established the exposure of the proposed development to each of the climate hazards is determined, this is the likelihood of the climate hazard occurring at the project location and is also scored on a scale of high (3), medium (2) and low (1). The product of the sensitivity and exposure is then used to determine the overall vulnerability of the proposed development to each of the climate hazards as per **Table 11.8**. The results of the vulnerability assessment are detailed in **Table 11.25**.

Table 11.25 Climate Change Vulnerability Assessment

Climate Hazard	Sensitivity	Exposure	Vulnerability
Flood (coastal, pluvial or fluvial)	2 (Medium)	1 (Low)	2 (Low Risk)
Extreme Heat	1 (Low)	2 (Medium)	2 (Low Risk)
Extreme Cold	1 (Low)	2 (Medium)	2 (Low Risk)
Drought	2 (Medium) (associated with Landscaping)	2 (Medium)	4 (Medium Risk)
Wind	2 (Medium) (associated with Landscaping)	2 (Medium)	4 (Medium Risk)
Wildfire	1 (Low)	1 (Low)	1 (Low Risk)
Fog	1 (Low)	1 (Low)	1 (Low Risk)
Lightning & Hail	1 (Low)	1 (Low)	1 (Low Risk)
Landslides	2 (Medium)	1 (Low)	2 (Low Risk)

The proposed development has a worst-case medium vulnerability to flooding, extreme heat and extreme cold. The Site-Specific Flood Risk Assessment (SSFRA) carried out by DBFL and submitted with this planning application states the risk from overland flooding (pluvial) from surrounding areas is low due to the finished buildings/ floor levels, being set 500mm above the top water level of the attenuation system in the 1:100-year storm and between 150mm and 300mm higher than the surrounding area. All drainage and flood risk calculations include 20% climate change in accordance with Fingal County Council Requirements. This is in line with medium risk future scenarios for climate change (RCP4.5). The sensitivity remains at 2 rather than a 1 due to the fact that while this is not an area that is likely to be exposed to flood risk, only the medium risk future scenarios for climate change (RCP4.5) is accounted for. The high-risk future scenarios for climate change (RCP8.5) requires a 30% uplift.

Surface water discharging from the development will be limited by a hydrobrake flow restriction device to ensure the maximum discharge rate from the site is limited to 3.7 l/s/Ha, as agreed with Fingal County Council as part of the overall Hollystown-Kilmartin site development. Please refer to SSFRA report for further info.

The landscaping for the proposed development has been designed for the long term and takes account of the need for climate resilience. The planting chosen has regard to the policies of the Fingal County Development Plan 2022 – 2028 and the Fingal Biodiversity Action Plan 2022 – 2030.

Regarding landscaping the site is located in a very exposed area and the planting can be sensitive to winds, especially at the establishment period. There are also existing hedgerows and trees that can be damaged during storms. As mitigation the landscaping team will be mounding the ground locally around activity areas. Within the site there are many SuDS features such as rain gardens, street tree pits, areas with permeable paving and open drain features in order to mitigate flood risk.

Extreme temperatures, both extreme heat and extreme cold, have the potential to impact the building materials and some related infrastructure. However, high quality, durable building materials will be selected for the proposed development. The building detailed design will be finalised with potential future climate hazards in mind and in accordance with:

- IS EN 1991-1-4 Windloading;
- IS EN 1991-1-7 Accidental loading;
- IS EN 1991-1-5 Temperature loads;
- IS EN 1991-1-3 Snow loading;
- IS EN 1992 Concrete;
- IS EN 1993 Steel;
- IS EN 1996 Masonry;
- IS EN 1995 Timber.

Therefore, overall the proposed development has a worst-case medium vulnerability due to potential sensitivities to the landscaping to future wind or drought related impacts. All other vulnerabilities have been identified as low and therefore are not a risk. With future climate change increased heat, cold, drought or wind events are likely to occur and therefore the exposure is classed as medium.

In relation to climate change vulnerability, it has been assessed that there is a medium risk as a result of future climate change hazards. However, the above accounts for embedded design mitigation being put in place. Without this mitigation in place, the impact of the proposed development in relation to climate vulnerability emissions is considered **long-term, adverse and significant** in EIA terms if the final design did not take account of climate vulnerability mitigation measures and updates to design requirements which may occur between the publication of this EIAR and the detailed design phase.

In addition, the proposed development has been designed to reduce the impact to climate where possible (see the project Energy Analysis Report prepared by IN2 Engineering Partnership (2023) for full details). This will primarily be through passive strategies such as design to Nearly Zero Energy Building (NZEB) standard, an energy efficient envelope which in turn reduces the demands relating to items such as HVAC and renewable energy systems. The homes will strive to achieve a A2/A3 BER. The developer of these homes is Glenveagh, in 2022 55% of the homes constructed by Glenveagh had an A1 BER, 44% had an A2 BER and 0.2% had an A3 BER.

Between 2020 and 2022 the operational energy intensity of the homes constructed dropped from 46 kWh/M²/year to 30 kWh/M²/year. This is below the London Energy Transformation Initiative (LETI) Climate Emergency Design Guide (LETI 2020) which sets a target of 35 kWh/M²/year. In 2022, 99.7% of their homes incorporated renewable energy, this is an increase from 71% in 2020. **Appendix 11.2** provides details of Glenveagh's, the developers, Net Zero Transition Plan and Glenveagh Annual Report

2022 Final, both of which detailed Glenveagh's commitment to achieving Net Zero by 2050. This includes an intermediate target of a 46% reduction of Scope 1 (direct emissions from the company) and 2 (indirect emissions from purchased electricity, steam, heat, and cooling) emissions by 2031 and 55% reduction of Scope 3 emissions (all other emissions associated with a company's activities) by 2031.

11.5 Mitigation Measures

11.5.1 Air Quality Construction Phase

The proactive control of fugitive dust will ensure the prevention of significant emissions, rather than an inefficient attempt to control them once they have been released. The main contractor will be responsible for the coordination, implementation and ongoing monitoring of the Dust Management Plan. The key aspects of controlling dust are listed below. Full details of the Dust Management Plan can be found in **Appendix 11.1**. These measures will be incorporated into the Construction Environmental Management Plan (CEMP) prepared for the site. The CEMP has been prepared by DBFL Consulting Engineers (2023) and is enclosed separately. The CEMP will be a working document and will be finalised by the Contractor following appointment and prior to commencing works on site.

The Dust Management Plan notes the following measures in summary:

- The Principal Contractor or equivalent must monitor the contractors' performance to ensure that the proposed mitigation measures are implemented and that dust impacts and nuisance are minimised;
- During dry and windy periods, and when there is a likelihood of dust nuisance, watering shall be conducted to ensure moisture content of materials being moved is high enough to increase the stability of the soil and thus suppress dust;
- Drop heights from conveyors, loading shovels, hoppers and other loading equipment will be minimised, if necessary fine water sprays should be employed.

At all times, these procedures will be strictly monitored and assessed. In the event of dust nuisance occurring outside the site boundary, movements of materials likely to raise dust would be curtailed and satisfactory procedures implemented to rectify the problem before the resumption of construction operations.

11.5.2 Air Quality Operational Phase

There is no mitigation required for the operational phase of the development as impacts to air quality are predicted to be *neutral* and *imperceptible*.

11.5.3 Climate Construction Phase

Embodied carbon of materials and construction activities will be the primary source of climate impacts during the construction phase. Measures to reduce the embodied carbon of the construction works include:

- Creating a construction program which allows for sufficient time to determine reuse and recycling opportunities for wastes;
- Appointing a suitably competent contractor who will undertake waste audits detailing resource recovery best practice and identify materials can be reused/recycled;
- Materials will be reused on site within the new build areas where possible;
- Prevention of on-site or delivery vehicles from leaving engines idling, even over short periods;

- Ensure all plant and machinery are well maintained and inspected regularly;
- Minimising waste of materials due to poor timing or over ordering on site will aid to minimise the embodied carbon footprint of the site; and
- Sourcing materials locally where possible to reduce transport related CO₂ emissions.

11.5.4 Climate Operational Phase

A number of measures have been incorporated into the design of the development to mitigate against the impacts of future climate change. For example, adequate attenuation and drainage have been incorporated into the design of the development to avoid potential flooding impacts as a result of increased rainfall events in future years. These measures have been considered when assessing the vulnerability of the proposed development to climate change (see **Section 11.4.6.2**).

The proposed development has been designed to reduce the impact on climate as a result of energy usage during operation. The Energy Analysis Report prepared by IN2 Engineering Partnership (submitted under separate cover with this planning application) and reports in **Appendix 11.2** detail a number of design mitigation measures that have been incorporated into the design of the development to reduce the impact on climate wherever possible. Such measures included in the proposed development to reduce the impact to climate from energy usage are:

- Achieve air tightness standards of 3 m³/m²/hr;
- Heat generation through Air Source Heat Pump;
- Ensure thermal bridging details are designed to achieve thermal bridging factors of 0.08W/m²K (0.15 W/m²k required in Part L);
- Energy Performance Coefficient (EPC) < 0.30
- Carbon Performance Coefficient (CPC) < 0.35
- Renewable Energy Ratio (RER) > 0.20
- Meet or exceed minimum U-Value standards identified in *Part L 2022 Dwellings*;
- Provide an appropriate combination of technologies to ensure energy consumption is in line with *Part L 2022 Dwellings* requirements; and
- All in-curtilage parking spaces will be capable of being fitted with EV charging points. All off-curtilage spaces will be ducted for EV charging, with 20% fitted out from the outset.

These above identified measures will aid in reducing the impact to climate during the operational phase of the proposed development in line with the goals, relevant policies and objectives of the Fingal Development Plan 2023-2029, including climate mitigation measures. For an overview of consistency, please refer to the Planning Report and Statement of Consistency prepared by BSM and submitted under a separate cover.

11.6 Residual Impacts

11.6.1 Air Quality Construction Phase

In order to minimise dust emissions during construction, a series of mitigation measures have been prepared in the form of a Dust Management Plan (**Appendix 11.1**). Provided the dust minimisation measures outlined in the plan are adhered to, the predicted residual air quality impacts during the construction phase are *short-term, direct, negative, localised* and *imperceptible*.

Best practice mitigation measures are proposed for the construction phase of the proposed development, which will focus on the proactive control of dust and other air pollutants, to minimise generation of emissions at source. The mitigation measures that will be put in place during construction will ensure that the impact complies with all EU ambient air quality legislative limit values, which are based on the protection of human health (see **Table 11.1**). Therefore, the predicted residual, dust-related, human health impact of the construction phase of the proposed development is **negative, direct, short-term** and **imperceptible**.

11.6.2 Air Quality Operational Phase

Dispersion modelling of traffic emissions at sensitive receptors in proximity to impacted road links during the operational phase indicate pollutant emissions will be in compliance with the relevant air quality standards. Section 11.4.3 determined that the impact to air quality as a result of increased traffic volumes during the operational phase of the proposed development will be **localised, neutral, direct, imperceptible** and **long-term**.

Emissions of air pollutants during the operational phase are predicted to be significantly below the ambient air quality standards, which are based on the protection of human health. Therefore, residual impacts to human health related to air quality will be **long-term, neutral, direct** and **imperceptible**.

11.6.3 Climate Construction Phase

The proposed development will result in some impacts to climate through the release of GHGs. TII state that the crux of assessing significance is “not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050”. **Appendix 11.2** provides details of the developers Net Zero Transition Plan and Glenveagh Annual Report 2022 Final²², both of which detailed commitment to achieving Net Zero by 2050. The proposed development is committing to reducing climate impacts, where feasible, and the development will comply with the Do-Minimum standards set through regulation. As per the assessment criteria in **Table 11.7** the impact of the proposed development in relation to GHG emissions is considered **long-term, minor adverse and not significant** in EIA terms provided the final design and construction phase take account of GHG mitigation measures set out in Fingal and National Climate Action Plans.

In relation to climate change vulnerability, as the construction phase is not within the timescale where the worst of climate change is proposed to have occurred. The impact of the proposed development in relation to construction phase climate vulnerability emissions is therefore considered **short-term, minor adverse and not significant** in EIA terms provided the CEMP takes account of climate vulnerability mitigation measures.

11.6.4 Climate Operational Phase

The proposed development will result in some impacts to climate through the release of GHGs however the projects Energy Analysis Report which aims to minimise operational phase energy requirements and the developers commitment to Net Zero by 2050 (**Appendix 11.2**). TII state that the crux of assessing significance is “not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable

²² <https://glenveagh.ie/corporate/sustainability>

baseline consistent with a trajectory towards net zero by 2050". As per the assessment criteria in **Table 11.7** the impact of the proposed development in relation to GHG emissions is considered **long-term, minor adverse and not significant** in EIA terms provided the final design and operational phase emissions take account of GHG mitigation measures set out in Fingal and National Climate Action Plans.

In relation to climate change vulnerability, it has been assessed that there is a *medium risk* as a result of future climate change hazards. This is due to potential sensitivities to the landscaping to future wind or drought related impacts. The impact of the proposed development in relation to climate vulnerability emissions is therefore considered **long-term, minor adverse and not significant** in EIA terms provided the final design takes account of climate vulnerability mitigation measures and design requirements.

11.7 Monitoring

11.7.1 Air Quality Monitoring

Monitoring of construction dust deposition along the site boundary to nearby sensitive receptors during the construction phase of the proposed development is recommended to ensure mitigation measures are working satisfactorily. This can be carried out using the Bergerhoff method in accordance with the requirements of the German Standard VDI 2119. The Bergerhoff Gauge consists of a collecting vessel and a stand with a protecting gauge. The collecting vessel is secured to the stand with the opening of the collecting vessel located approximately 2m above ground level. The TA Luft limit value is 350 mg/m²/day during the monitoring period of 30 days (+/- 2 days).

11.7.2 Climate Monitoring

There is no monitoring required for the construction or operational phases.

11.8 Reinstatement

Reinstatement is not required.

11.9 Interactions

11.9.1 Air Quality Interactions

Air quality does not have a significant number of interactions with other topics. The most significant interactions are between population and human health and air quality. An adverse impact due to air quality in either the construction or operational phase has the potential to cause health and dust nuisance issues. The mitigation measures that will be put in place at the proposed development will ensure that the impact of the proposed development complies with all ambient air quality legislative limits. Therefore, the predicted impact is **short-term, imperceptible** and **negative** with respect to population and human health during construction and **long-term, imperceptible** and **neutral** during operation phase.

Interactions between air quality and traffic (Chapter 16) can be significant. With increased traffic movements and reduced engine efficiency, i.e. due to congestion, the emissions of vehicles increase. The impacts of the proposed development on air quality are assessed by reviewing the change in annual average daily traffic on roads close to the site. In this assessment, the impact of the interactions between traffic and air quality are considered to be **long-term, imperceptible** and **neutral**.

Construction phase activities such as land clearing, excavations, stockpiling of materials etc. have the potential for interactions between air quality and land and soils in the form of dust emissions. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that there will be no significant interactions between air quality and land and soils.

As set out in Chapter 9 (Land, Soils, Geology and Hydrogeology), dust generation can occur during extended dry weather periods as a result of construction traffic. Dust suppression measures (e.g. dampening down) will be implemented as necessary during dry periods and vehicle wheel washes will be installed, for example. The works involve stripping of topsoil and excavations, which will remove some vegetation such as trees and scrub. It will also generate dust and potentially impact on the air quality in the locality. However, the generation of dust will be temporary during construction phase and is not anticipated to have a significant impact on biodiversity.

The impact of the interactions between land, climate, soils and geology, biodiversity and air quality are considered to be *short-term, imperceptible* and *neutral*.

No other significant interactions with air quality have been identified.

11.9.2 Climate Interactions

Climate has the potential to interact with a number of other environmental attributes, including Chapter 8 (Biodiversity), Chapter 9 (Land, Soils, Geology and Hydrogeology), Chapter 10 (Hydrology), Chapter 15 (Microclimate (Daylight and Sunlight)) Chapter 16 (Traffic and Transportation) and Chapter 17 (Material Assets -Waste). Interactions occur due to the impact on the chapter from climate change occurring (i.e. biodiversity or hydrology) or due to GHG emissions being generated (i.e. Material Assets – Waste or Traffic and Transportation).

The impact of flood risk has been assessed and the surface water drainage network will be designed to cater for run-off from the building and the surrounding hardscaped areas in accordance with a minimum 1 in 100-year event plus 20% climate change allowance. Waste management measures will be put in place to minimise the amount of waste entering landfill, which has higher associated embodied carbon emissions than other waste management such as recycling. In addition, climate impacts will interact with the proposed developments design both with respect to embodied carbon but also through its vulnerability to future climate change impacts (e.g. wind loading, extreme temperatures). The building detailed design will be finalised with potential future climate hazards in mind. Building design will also take into account energy efficiency measures to reduce construction phase and operational carbon emissions. The impact of the interactions between design considerations (flood mitigation design, landscaping design and building design) and climate are considered to be *long-term and significant*.

11.10 Cumulative Impacts

11.10.1 Air Quality Construction Phase

A list of cumulative developments is detailed in **Table 20.1** and **Figure 20.1**. According to the IAQM guidance (2016) should the construction phase of the proposed development coincide with the construction phase of any other developments within 350m then there is the potential for cumulative construction dust related impacts to nearby sensitive receptors.

Provided the mitigation measures outlined in **Section 11.5** and **Appendix 11.1**, are implemented throughout the construction phase of the proposed development significant cumulative dust impacts are not predicted.

With mitigation and monitoring measures (as per **Sections 11.5 and 11.7**) in place, there are no significant cumulative impacts to air quality predicted for the construction phase.

11.10.2 Air Quality Operational Phase

The traffic data used to assess the operational stage impacts to air quality included the cumulative traffic associated with the proposed development as well as other existing and permitted developments in the local area (see Chapter 16 Traffic and Transport). Therefore, the cumulative impact is included within the operational stage impact for the proposed development. The impact is predicted to be **long-term, neutral** and **imperceptible** with regards to air quality.

11.10.3 Climate

With respect to the requirement for a cumulative assessment PE-ENV-01104 (TII, 2022b) states that *“for GHG Assessment is the global climate and impacts on the receptor from a project are not geographically constrained, the normal approach for cumulative assessment in EIA is not considered applicable.”*

However, by presenting the GHG impact of a project in the context of its alignment to Ireland’s trajectory of net zero and any sectoral carbon budgets, this assessment demonstrates the potential for the project to affect Ireland’s ability to meet its national carbon reduction target. Therefore, the assessment approach is considered to be inherently cumulative.

In relation to climate change vulnerability, there is no significant additional risks to the Proposed Development due to cumulative developments. This includes for flood risk as the site-specific flood risk assessment takes account of the location of the site and potential cumulative impacts. In addition, there are legal requirements for the design of developments to mitigate such climate hazards. The cumulative impact of the proposed development in relation to climate vulnerability emissions is therefore considered **long-term, minor adverse and not significant** in EIA terms provided the final design of cumulative developments take account of climate vulnerability mitigation measures and design requirements.

11.11 Difficulties Encountered

There were no difficulties encountered when compiling this assessment.

11.12 References

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Dublin City Council (2018) Air Quality Monitoring and Noise Control Unit's Good Practice Guide for Construction and Demolition

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Environmental Protection Agency (2022) Air Quality Monitoring Report 2021 (& previous annual reports)

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Government of Ireland (2022) Climate Action Plan 2023

Government of Ireland (2023) Long-term Strategy on Greenhouse Gas Emissions Reductions

Institute of Air Quality Management (IAQM) (2016) Guidance on the Assessment of Dust from Demolition and Construction Version 1.1

Institute of Environmental Management & Assessment (IEMA) (2010). IEMA Principles Series on Climate Change Mitigation & EIA

Institute of Environmental Management & Assessment (IEMA) (2017) Assessing Greenhouse Gas Emissions and Evaluating their Significance

Institute of Environmental Management & Assessment (IEMA) (2020a) EIA Guide to: Climate Change Resilience and Adaptation.

Institute of Environmental Management & Assessment (IEMA) (2020b) GHG Management Hierarchy. Assessing Greenhouse Gas Emissions and Evaluating their Significance

Institute of Environmental Management & Assessment (IEMA) (2022) Assessing Greenhouse Gas Emissions and Evaluating their Significance

LETI (2020) Climate Emergency Design Guide

Met Éireann (2023) Met Eireann website: <https://www.met.ie/>

The Scottish Office (1996) Planning Advice Note PAN50 Annex B: Controlling The Environmental Effects Of Surface Mineral Workings Annex B: The Control of Dust at Surface Mineral Workings

Transport Infrastructure Ireland (2022a) Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106

Transport Infrastructure Ireland (TII) (2022b) PE-ENV-01104: Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline & Greenways) – Overarching Technical Document

Transport Infrastructure Ireland (TII) (2022c) PE-ENV-01105: Climate Assessment Standard for Proposed National Roads (PE-ENV-01105)

Transport Infrastructure Ireland (TII) (2022d) GE-ENV-01106: TII Carbon Assessment Tool for Road and Light Rail Projects and User Guidance Document

TII Road Emissions Model (REM) online calculator tool (TII, 2022e)

Transport Infrastructure Ireland (TII) (TII 2021) Sustainability Implementation Plan – Our Future

UK Highways Agency (2019) UK Design Manual for Roads and Bridges (DMRB) Volume 11 Environmental Assessment, Section 3 Environmental Assessment Techniques, Part 14 LA 114 Climate

UK Office of Deputy Prime Minister (2002) Controlling the Environmental Effects of Recycled and Secondary Aggregates Production Good Practice Guidance

USEPA (1997) Fugitive Dust Technical Information Document for the Best Available Control Measures

World Health Organisation (2006) Air Quality Guidelines - Global Update 2005 (and previous Air Quality Guideline Reports 1999 & 2000)

12 Noise & Vibration

12.1 Introduction

The following chapter presents an assessment of the impacts of the proposed mix use development at Hollystown-Kilmartin Site 4, Dublin 15, in terms of noise and vibration in the local environment. The assessment for noise and vibration is based on the most up to date applicable guidance and assessment documents available both nationally and internationally.

The noise and vibration assessment has been prepared by Dr. Aoife Kelly (Senior Acoustic Consultant) who holds a BSc (Hons) in Environmental Health, a Diploma in Acoustics and Noise Control, a PhD in Occupational Noise and is a member of the Institute of Acoustics (MIOA). She has specialised in acoustics since 2014 and has extensive knowledge and experience in the field of occupational noise risk assessments, environmental noise and vibration impact assessment and inward impact assessments. She has completed noise and vibration chapters for numerous mixed residential planning applications of varying scales in Ireland.

Noise and vibration will be considered in terms of two aspects. The first is the outward effect of the development on its surrounding environment, and the second is the inward effect of the existing noise sources in the surrounding environment on the development itself. A full project description is included in Chapter 5 of this Environmental Impact Assessment Report (EIAR).

12.2 Method

The assessment of impacts has been undertaken with reference to the most appropriate guidance documents relating to environmental noise and vibration which are set out within the relevant sections of this report. In addition to specific guidance documents for the assessment of noise and vibration impacts which are discussed further in the relevant sections, the following guidelines were considered and consulted for the purposes of this report:

- EPA Guidelines on the information to be contained in Environmental Impact Assessment Reports, 2022; and
- EPA Advice Notes on current practise in the preparation of Environmental Impact Statements, 2003.

The study has been undertaken using the following methodology:

- A review of the most applicable standards and guidelines has been conducted in order to set a range of acceptable noise and vibration criteria for the construction and operational phases of the proposed development;
- A desk-top assessment of the published noise environment from aircraft noise has been carried out based on available noise mapping, and attended noise monitoring previously undertaken in the wider area of the development site has been reviewed, in order to characterise the receiving noise environment;
- Predictive calculations have been performed to estimate the likely noise emissions during the construction phase of the proposed development at the nearest noise sensitive locations (NSLs) to the site;
- Predictive calculations have been performed to assess the potential impacts associated with the operation of the development at NSLs surrounding the development site;

- An assessment has been completed of potential cumulative impacts that may arise as a result of the proposed development and other existing or proposed plans and projects;
- A schedule of mitigation measures has been proposed, where relevant, to control the noise and vibration emissions associated with both the construction and operational phases of the proposed development; and
- The inward effect of noise from the surrounding environment into the proposed residential buildings has also been assessed to determine the requirements, for additional noise mitigation to ensure a suitable internal noise environment for residential amenity.

12.2.1 Construction Phase

12.2.1.1 Criteria for Assessing Construction Noise Impacts

There is no published statutory Irish guidance relating to the maximum permissible noise level that may be generated during the construction phases of a project. Local authorities normally control construction activities by imposing limits on the hours of operation and consider noise limits at their discretion.

In the absence of specific noise limits, appropriate criteria relating to permissible construction noise levels for a development of this scale may be found in the British Standard BS 5228 – 1: 2009+A1:2014: *Code of practice for noise and vibration control on construction and open sites – Noise*.

The approach adopted here calls for the designation of a NSL into a specific category (A, B or C) based on existing ambient noise levels in the absence of construction noise. This then sets a Construction Noise Threshold (CNT) that, if exceeded, indicates a potential significant noise impact is associated with the construction activities.

This document sets out guidance on permissible noise levels relative to the existing noise environment. **Table 12.1** sets out the values which, when exceeded, signify a potential significant effect at the façades of residential receptors, as recommended by BS 5228-1:2009+A1:2014.

Table 12.1 Example thresholds of potential significant effect at dwelling

Assessment category and threshold value period (L _{Aeq})	Construction Noise Threshold (CNT), in decibels (dB)		
	Category A ²³	Category B ²⁴	Category C ²⁵
Night-time (23:00 to 07:00hrs)	45	50	55
Evenings and weekends ²⁶	55	60	65
Daytime (07:00 - 19:00) and Saturdays (07:00 – 13:00hrs)	65	70	75

It should be noted that this assessment method is only valid for residential properties, and if applied to commercial premises without consideration of other factors, may result in an excessively onerous thresholds being set.

²³ Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are less than these values.

²⁴ Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are the same as category A values.

²⁵ Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than category A values.

²⁶ 19:00 – 23:00 weekdays, 13:00 – 23:00 Saturdays and 07:00 – 23:00 Sundays.

Proposed Threshold Levels for Noise

Taking into account the proposed document outlined above and making reference to the baseline noise environment monitored around the development site (referred to in Section 12.3.2), CNTs are set using Category A for the closest NSLs to the proposed development.

Interpretation of the Construction Noise Levels (CNL)

In order to assist with interpretation of the significance of a CNL, **Table 12.2** includes guidance as to the likely magnitude of impact associated with construction activities, relative to the CNT. This guidance is taken from the UK document *Design Manual for Roads and Bridges (2020) LA 111 Sustainability & Environmental Appraisal. Noise and Vibration Rev 2 (DMRB: Noise and Vibration - UKHA 2020)* and adapted to include the EPA 2022 EIAR Guidelines.

Table 12.2 Interpretation of CNL at dwelling

Impact Guidelines for Noise Impact Assessment Significance (Adapted from DMRB)	CNL per Period	EPA EIAR Guidelines	Determination
Negligible	Below or equal to baseline noise level	Not Significant	Depending on range of CNL and baseline noise level
Minor	Above baseline and below or equal to CNT	Slight to Moderate	
Moderate	Above baseline and below or equal to CNT +5 dB	Moderate to Significant	
Major	Above CNT +5 dB	Significant to Very Significant	

The adapted DMRB guidance outlined will be used to assess the predicted construction noise levels at NSLs and comment on the likely impacts during the construction stages.

Construction Vehicular Traffic

In order to assist with interpretation of construction traffic noise, **Table 12.3** includes guidance as to the likely magnitude of impact associated with changes in traffic noise levels along an existing road. This guidance is taken from the *DMRB: Noise and Vibration* (UKHA 2020). For construction traffic, due to the short-term period over which this impact occurs, the magnitude of impacts is assessed against the 'short-term' period in accordance with the DMRB document.

Table 12.3 Likely effect associated with change in traffic noise level – construction noise (DMRB 2020)

Increase in Traffic Noise Level (dB)	DMRB Magnitude of Impact	EPA Significance of Effect
<1.0	Negligible	Imperceptible
1.0 – 2.9	Minor	Not Significant to Slight
3 – 4.9	Moderate	Slight to Moderate
>5.0	Major	Significant

The DMRB guidance outlined will be used to assess the predicted increases in traffic levels on public roads associated with the proposed development and comment on the likely impacts during the construction stage.

For both construction noise and construction traffic, a significant effect is deemed to occur where a moderate or major impact is likely to occur for a period of greater than 10 days/nights over 15 consecutive day/nights, or greater than 40 days over 6 consecutive months.

12.2.1.2 Criteria for Assessing Construction Vibration Impacts

Vibration standards come in two varieties: those dealing with human comfort and those dealing with cosmetic or structural damage to buildings. For the purpose of the proposed development, the range of relevant criteria used for surface construction works for both building protection and human comfort are expressed in terms of Peak Particle Velocity (PPV) in mm/s.

Peak Particle Velocity (PPV)

PPV is commonly used to assess the structural response of buildings to vibration. Reference to the following documents has been made for the purposes of this assessment in order to discuss appropriate PPV limit values:

- British Standard BS 7385: 1993: *Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration*, and;
- British Standard BS 5228: 2009 +A1 2014: *Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration* (BS5228-2).

BS7385-2:1993 and BS5228-2:2009+A1:2014 advise that, for soundly constructed residential properties and similar structures that are generally in good repair, a threshold for minor or cosmetic (i.e. non-structural) damage should be taken as a peak component particle velocity (in frequency range of predominant pulse) of 15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz and 50 mm/s at 40 Hz and above for transient vibration. Where the dynamic loading caused by continuous vibration is such as to give rise to dynamic magnification due to resonance, especially at the lower frequencies where lower guide values apply, then the guide values in Table B.2 of BS5228-2:2009+A1:2014 might need to be reduced by up to 50%. On a cautious basis, therefore, continuous vibration limits are set as 50% of those for transient vibration across all frequency ranges. For buildings or structures that are structurally unsound, lower vibration magnitudes will apply, typically 50% of those for structurally sound buildings. Protected or historic buildings are not automatically assumed to be more vulnerable to vibration unless they have existing structural defects.

The documents note that minor structural damage can occur at vibration magnitudes that are greater than twice those presented in **Table 12.4**. Major damage to a building structure is possible at vibration magnitudes greater than four times the values set out in the Table. It should be noted that these values refer to the vibration at base of the building.

Table 12.4 sets out the limits as they apply to vibration frequencies below 4 Hz, where the most conservative limits are required.

Table 12.4 Recommended Construction Vibration Thresholds for Buildings

Structure Type	Allowable vibration (in terms of PPV) at closest part of sensitive property to source of vibration, at frequency of ≤ 4 Hz	
	Transient vibration	Continuous vibration
Reinforced or framed structures. Industrial and heavy commercial buildings	50 mm/s	25 mm/s

Structure Type	Allowable vibration (in terms of PPV) at closest part of sensitive property to source of vibration, at frequency of ≤ 4 Hz	
	Transient vibration	Continuous vibration
Unreinforced or light framed structures. Residential or light commercial-type buildings	15 mm/s	7.5 mm/s

Human Perception

Humans are sensitive to vibration stimuli, and perception of vibration at high magnitudes may cause concern to building occupants. BS5228-2:2009+A1:2014 notes that vibration typically becomes perceptible at around 0.15 to 0.3 mm/s and may become disturbing or annoying at higher magnitudes. Higher levels of vibration are typically tolerated for single events or events of short-term duration, particularly during construction projects and when the origin of vibration is known.

Table 12.5 presents the significance table relating to potential impacts to building occupants during construction based on guidance from BS5228-2:2009+A1:2014 and the DMRB Noise and Vibration (UKHA 2020) document and the associated EPA significant ratings.

Table 12.5 Guidance on effects of human response to PPV magnitudes

Criteria	DMRB Impact Magnitude	EPA Significance Rating
≥ 10 mm/s PPV	Very High	Very Significant
≥ 1 mm/s PPV	High	Moderate to Significant
≥ 0.3 mm/s PPV	Medium	Slight to Moderate
≥ 0.14 mm/s PPV	Low	Not significant to Slight
< 0.14 mm/s PPV	Very Low	Imperceptible to Not significant

12.2.2 Operational Phase

12.2.2.1 Criteria for Assessing Operational Outward Noise Impacts

The main potential source of outward noise from the proposed development will be limited to traffic flows to and from the development site onto the public roads. There will also be an element of mechanical and electrical plant required to service apartment buildings. The relevant guidance documents used to assess potential operational noise and vibration impacts on the surrounding environment are summarised in the following sections.

Change in Traffic Noise Levels

In the absence of any Irish guidelines or standards describing the effects associated with changes in road traffic noise levels, reference has been made to the DMRB Noise and Vibration (UKHA 2020) document, refer to **Table 12.6**. This document provides magnitude rating tables relating to changes in road traffic noise. For the operational phase of the development, changes in traffic noise are assessed against the long-term magnitude criteria based on the future design year traffic flows along the surrounding road network (i.e. 15 years post opening). In summary, the assessment looks at the impact with and without development at the nearest noise sensitive locations.

Table 12.6 Likely impact associated with long-term change in traffic noise level (DMRB 2020)

Change in Noise Level (dB L _{A10})	DMRB Long-Term Term Magnitude	EPA Classification Magnitude of Impact
< 3.0	Negligible	Imperceptible to Not significant
3 – 4.9	Minor	Not Significant to Slight
5 – 9.9	Moderate	Slight to Moderate
10+	Major	Significant

The criteria above reflect the key benchmarks that relate to human perception of sound. A change of 3 dB(A) is generally considered to be the smallest change in environmental noise that is perceptible to the human ear. A 10 dB(A) change in noise represents a doubling or halving of the noise level. The difference between the minimum perceptible change and the doubling or halving of the noise level is split to provide greater definition to the assessment of changes in noise level.

Mechanical and Electrical Plant

The proposed development is residential in nature comprising a mixture of houses, duplex and apartments. There will be minimal mechanical and/ or electrical plant items required to service the development that will generate noise levels outside of the site boundary or at the developments buildings themselves. Plant contained within plant rooms has the least potential for impact, once consideration is given to appropriate design of the space.

The closest noise sensitive locations to any operational plant items are the residential dwellings within the proposed development. To ensure there is no adverse impact on the future inhabitants of the proposed development itself, it is appropriate to refer to internal noise targets derived from BS 8233: 2014: *Guidance on Sound Insulation and Noise Reduction for Buildings*. The recommended indoor ambient noise levels are set out in **Table 12.7** and are based on annual average data; that is to say, they omit occasional events where higher intermittent noisy events may occur.

Table 12.7 Internal noise design range for residential buildings (BS 8233:2014)

Activity	Location	Day (07:00 to 23:00hrs) dB L _{Aeq,16hr}	Night (23:00 to 07:00hrs) dB L _{Aeq,8hr}
Resting	Living room	35 dB L _{Aeq,16hr}	-
Dining	Dining room/ area	40 dB L _{Aeq,16hr}	-
Sleeping (daytime resting)	Bedroom	35 dB L _{Aeq,16hr}	30 dB L _{Aeq,8hr} 45 dB L _{Amax,T} ²⁷

12.2.2.2 Criteria for Assessing Inward Noise Impacts

Dublin Agglomeration Noise Action Plan 2018 – 2023

²⁷ The document comments that the internal L_{AFmax,T} noise level may be exceeded no more than 10 times per night without a significant impact occurring.

The *Dublin Agglomeration Noise Action Plan* (NAP) states the following with respect to assessing the noise impact on new residential development:

“In the scenario where new residential development or other noise sensitive development is proposed in an area with an existing climate of environmental noise, there is currently no clear national guidance on appropriate noise exposure levels. The EPA has suggested in the interim, that Action Planning Authorities should examine planning policy guidance notes, such as ProPG (2017). Such guidance notes have been produced with a view to providing practitioners with guidance on a recommended approach to the management of noise within the planning system.”

In addition, the following is provided:

“In advance of any national guidance relating to noise in the planning process, the following actions relating to planning and development will be considered for implementation:

- a) To integrate Noise Action Plans into the County Development Plans.*
- b) To develop guidelines relating to Noise and Planning for FCC. These guidelines should outline the considerations to be taken into account when determining planning applications for both noise-sensitive developments and for those activities which will generate noise. They should introduce the concept of a risk based approach to assessment of noise exposure, and for Good Acoustic Design to be encouraged as part of all new residential developments in FCC.*
- c) To require developers to produce a noise impact assessment and mitigation plans, where necessary, for any new development where the Planning Authority considers that any new development will impact negatively on pre-existing environmental noise levels within their Council area.*
- d) To ensure that future developments are designed and constructed in such a way as to minimise noise disturbances in accordance with Department of the Environment, Community and Local Government planning guidelines such as the Urban Design Manual. E.g. the position, direction and height of new buildings, along with their function, their distance from roads, and the position of noise barriers and buffer zones with low sensitivity to noise,*
- e) To ensure that new housing areas and in particular brown field developments will be planned from the outset in a way that ensures that at least the central area is quiet. This could mean designating the centre of new areas as pedestrian and cycling zones with future developments to provide road design layouts to achieve low speed areas where appropriate.*
- f) To incorporate street design in new developments, which recognise that residential streets have multi-function uses (e.g. movement, recreation) for pedestrians, cyclists and vehicles, in that priority order. The noise maps will be used to identify and classify the priority areas and streets. In the design of streets, cognisance should be given to the Irish Manual for Roads and Streets 2013.*

- g) *To require sound proofing for all windows, in all new residential developments, where noise maps have indicated undesirable high noise levels. This may also lead to a requirement to install ducted ventilation.*
- h) *To advise during pre-planning meetings regarding site specific design, the orientation of sensitive rooms and balconies away from noise, designing the layout and internal arrangement in apartments to ensure that similar rooms in individual units are located above each other or adjoin each other and that halls are used as buffer zones between sensitive rooms and staircases.”*

Given the development site is located within a designated aircraft noise zone, in accordance with this NAP policy, an Acoustic Design Statement (ADS) has been prepared as part of this EIAR to comply with the requirements of this policy and is presented in Section 12.8 of this chapter.

Fingal Development Plan Policy on Aircraft Noise

Four noise zones (Zones A to D) are included in the *Fingal Development Plan 2023 – 2029*, representing potential site exposure to aircraft exposure based on the operation of the north and south runways at Dublin Airport. The proposed Hollystown-Kilmartin Site 4 is located within aircraft Noise Zone B. **Table 12.8** outlines the objectives to be adhered to by applicants for developments in this zone.

Table 12.8 Dublin Aircraft Noise Zone B Objective

Zone	PNE ²⁸	Objective
B	$\geq 54 \text{ dB}$ and $< 63 \text{ dB } L_{Aeq, 16hr}$ and $\geq 55 \text{ dB } L_{night}$	To manage noise sensitive development in areas where aircraft noise may give rise to annoyance and sleep disturbance, and to ensure noise insulation is incorporated within the development. Noise sensitive development in this zone is less suitable from a noise perspective than in Zone C. A noise assessment must be undertaken in order to demonstrate good acoustic design has been followed. Appropriate well designed noise insulation measures must be incorporated into the development in order to meet relevant internal noise guidelines. An external amenity area noise assessment must be undertaken where external amenity space is intrinsic to the developments design. This assessment should make specific consideration of the acoustic environment within those spaces as required so that they can be enjoyed as intended. Ideally, noise levels in external amenity spaces should be designed to achieve the lowest practicable noise levels. Applicants must seek expert advice.

Professional Practice Guidance on Planning & Noise (ProPG 2017)

Residential Inward Noise Impact Assessment

The *Professional Practice Guidance on Planning & Noise (ProPG 2017)*²⁹ has been generally considered best practice guidance adopted in Ireland the absence of equivalent Irish guidance for inward noise impact assessments.

²⁸ Indication of potential noise exposure during airport operations.

²⁹ Association of Noise Consultants (ANC), the Institute of Acoustics (IOA) and the Chartered Institute of Environmental Health (CIEH)

The ProPG outlines a systematic risk based 2-stage approach for evaluating noise exposure on prospective sites for residential development. The two primary stages of the approach can be summarised as follows: -

- **Stage 1:** Comprises a high-level initial noise risk assessment of the proposed site considering either measured and or predicted noise levels.
- **Stage 2:** Involves a full detailed appraisal of the Proposed Development covering four “key elements” that include: -
 - **Element 1** – Good Acoustic Design Process
 - **Element 2** – Noise Level Guidelines
 - **Element 3** – External Amenity Area Noise Assessment
 - **Element 4** – Other Relevant Issues

The initial noise risk assessment is intended to provide an early indication of any acoustic issues that may be encountered. It calls for the categorisation of the site as a negligible, low, medium or high risk, based on the pre-existing noise environment. **Figure 12.1** presents the basis of the initial noise risk assessment; it provides appropriate risk categories for a range of continuous noise levels either measured and / or predicted on site.

It should be noted that a site should not be considered a negligible risk if more than 10 no. L_{AFMax} events exceed 60 dB during the night period, and the site should be considered a high risk if the L_{AFMax} events exceed 80 dB more than 20 times a night.

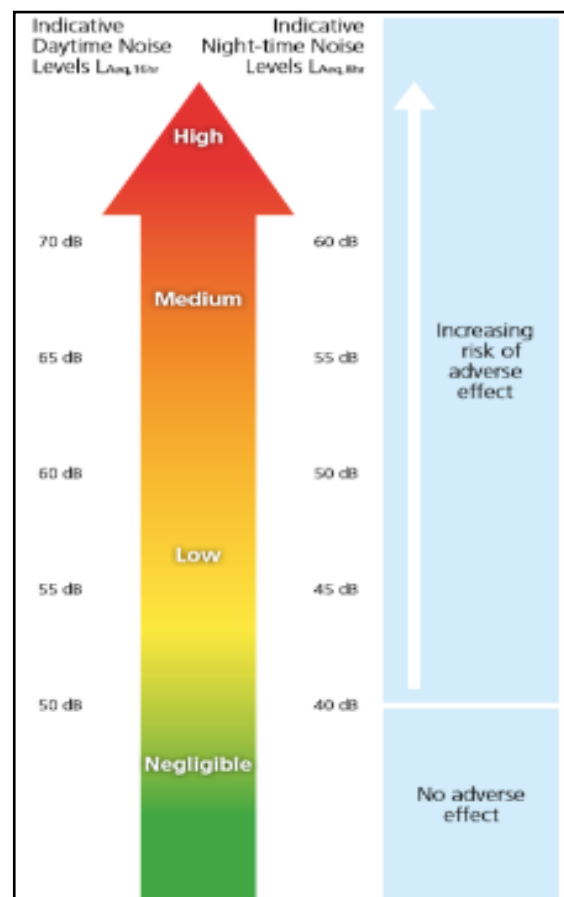
Element 2 of the ProPG document sets out recommended internal noise targets derived from BS 8233: 2014. The recommended indoor ambient noise levels are set out in **Table 12.7** above and are based on annual average data.

In addition to these absolute internal noise levels, ProPG provides guidance on flexibility of these internal noise level targets. For instance, in cases where the development is considered necessary or desirable, and noise levels exceed the external noise guidelines, then a relaxation of the internal L_{Aeq} values by up to 5 dB can still provide reasonable internal conditions.

ProPG provides the following advice with regards to external noise levels for amenity areas in the development: -

“The acoustic environment of external amenity areas that are an intrinsic part of the overall design should always be assessed and noise levels should ideally not be above the range 50 – 55 dB $L_{Aeq,16hr}$.”

Figure 12.1 ProPG Stage 1 - Initial Noise Risk Assessment



12.2.2.3 Criteria for Assessing Operational Vibration Impacts

There are no noteworthy sources of vibration associated with the operational stage, therefore vibration criteria have not been specified.

12.3 Baseline Environment

The proposed development relates to a site of c.20.6ha referred to as Hollystown-Kilmartin Site 4 located in the townland of Hollystown and Kilmartin, Dublin 15. The site is bound by lands which previously formed part of the former Hollystown Golf Club and the residential area of Hollystown Park to the north, lands forming part of a permitted Strategic Housing Development (SHD) to the east (ABP Reg. Ref. 312271), Tyrrelstown Park to the south, and rural zoned lands to the west.

12.3.1 Desk Based Study of Published Data

The key sources of available baseline data comprise published noise mapping studies undertaken by DAA for aircraft noise and TII for road traffic noise which feed into the Dublin Agglomeration NAP 2018 – 2023. The modelled noise maps are published on the EPA Geo Portal ([EPA Maps](#)) and include existing sources of major rail, road and aircraft noise within the Dublin Agglomeration area. This information provides a useful strategic high-level overview of noise levels in the study area. The parameters presented in terms of the noise mapping are the L_{den} and L_{night} noise parameters which are both long-term noise indicators based on annual traffic and transport modes.

The development site is within the noise mapping zone for Dublin Airport, hence a review of published noise maps has been undertaken to establish the baseline aircraft noise across the development site.

Figure 12.2 and **Figure 12.3** present the mapped existing noise levels across the development site for air traffic in terms of L_{den} and L_{night} .

Figure 12.2 Aircraft L_{den} noise contours

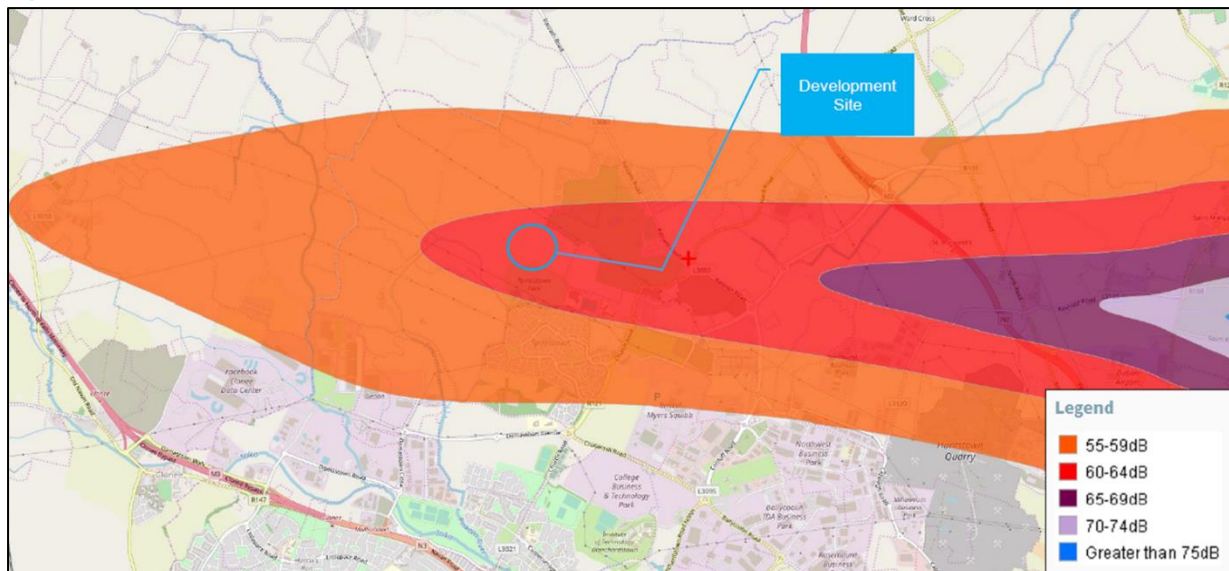
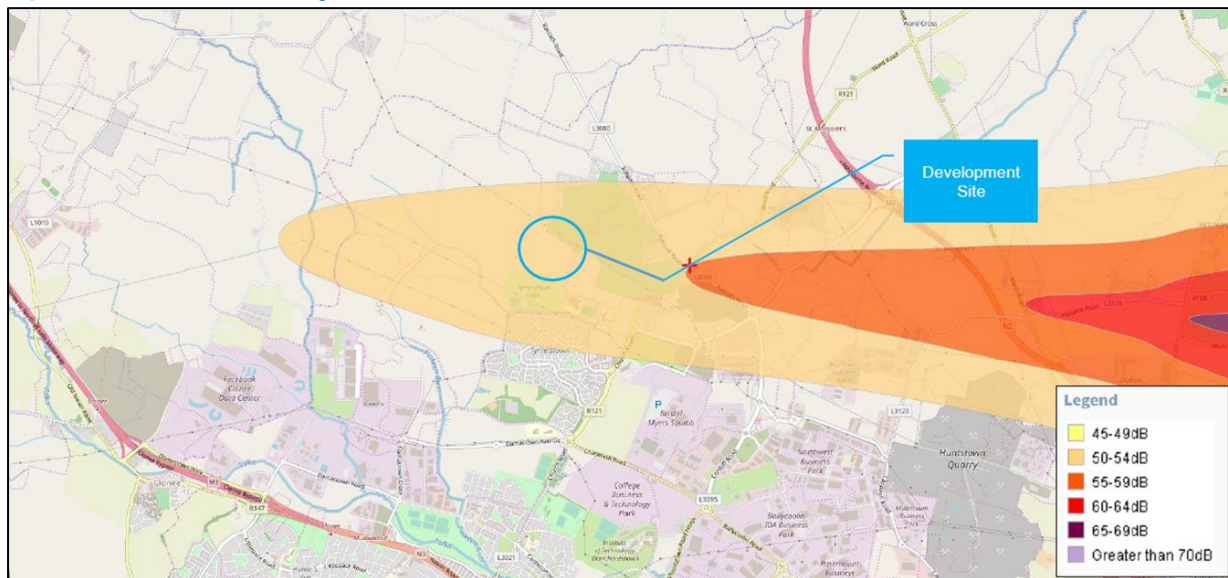


Figure 12.3 Aircraft L_{night} noise contours



The proposed development is set back from any major road network that is mapped under the EPA strategic noise maps, hence aircraft noise is the dominant noise source.

Making reference to the published noise maps, the development zone lies within the mapped 60 to 64 dB L_{den} and 50 to 54 dB L_{night} noise contour zones based on the published EPA maps, which are based on modelled data from 2016 and 2017.

12.3.1.1 Future Noise Environment

The major change to the local infrastructure that is likely to alter the noise environment is the operation of the North Runway at Dublin Airport. Under the permitted operation of the North Runway there will be no night-time use of the new runway and night-time use of the existing runway will be constrained compared to current operations. Fingal County Council has produced noise zone maps for the area surrounding the airport based on the future permitted operation of north and south runway. These maps present noise contours as follows:

- Zone A – ≥ 63 dB $L_{Aeq,16hr}$ and/or ≥ 55 dB L_{night} ;
- Zone B – ≥ 54 dB $L_{Aeq,16hr}$ and < 63 dB $L_{Aeq,16hr}$ and ≥ 55 dB L_{night} ;
- Zone C – ≥ 54 dB $L_{Aeq,16hr}$ and < 63 dB $L_{Aeq,16hr}$ and ≥ 48 dB L_{night} and < 55 dB L_{night} ; and
- Zone D – ≥ 50 dB $L_{Aeq,16hr}$ and < 54 dB $L_{Aeq,16hr}$ and ≥ 40 dB L_{night} and < 48 dB L_{night} .

Figure 12.4 presents the proposed development site in the context of these zones.

The proposed development lies within Zone B, hence using the upper noise range within this zone, the following operational noise are forecast across the development site:

- Daytime: (07:00 to 19:00hrs): 63 dB $L_{Aeq,16hr}$
- Night-time: (19:00 to 07:00hrs): 55dB $L_{Aeq,8hr}$

The noise levels above will be used to assess the inward noise impact to residential dwellings within the proposed development site.

Figure 12.4 FCC Aircraft Noise Zones



12.3.2 Environmental Noise Survey

Due to ongoing construction works at adjacent development sites, baseline noise monitoring was not undertaken specific to this assessment to avoid influence from this activity at NSLs. Environmental noise surveys undertaken as part of the proposed Hollystown Site 2 and 3 SHD development adjacent to the proposed development have been reviewed for this EIAR, which were undertaken in the absence of any significant construction activity.

The attended noise monitoring results during March 2021 have been used to identify the suitable construction noise thresholds at NSLs outside of the site boundary.

Baseline noise levels were measured at locations to the east of the Hollystown-Kilmartin Site 4. Road traffic and intermittent aircraft fly over were the main noise sources noted during the surveys. Baseline noise levels measured at the monitoring locations were typically below 55 dB LAeq,15 mins at the attended survey locations with noise levels up to 62 dB LAeq,15 mins recorded during aircraft flyover.

The noise survey results confirm that construction noise Category A would apply at the nearest noise sensitive locations outside the development site, i.e. ambient noise levels are less than 65 dB LAeq,T.

12.4 Predicted Impacts of the Proposed Development

12.4.1 Do-Nothing Impact

The 'Do Nothing' scenario includes retention of the current site without the proposed development in place. In the absence of the proposed development being constructed, the noise environment at the nearest noise sensitive locations and across the development site itself will remain largely unchanged. The 'Do Nothing' scenario is therefore considered to have a **neutral** impact.

12.4.2 Construction Phase

A variety of items of plant will be in use for the purpose of site clearance and construction works. There will also be vehicular movements to and from the site that will make use of existing roads. Due to the

nature of these activities, there is potential for the generation of elevated levels of noise in the vicinity of existing noise sensitive properties.

The proposed general construction hours are 08:00 to 19:00 hrs, Monday to Friday and 08:00 to 14:00 hrs on Saturdays.

The closest NSLs to the proposed development are residential dwellings within the adjacent Sites 2 and 3 of Hollystown Residential development (NSL1), located to the east of the proposed development at a distances of between 35 and 40m from the closest site works.

Other adjacent sensitive locations are at Hollystown Park to the north of the site (NSL2) at a distance of approximately 50m from the closest site boundary and approximately 100m from the closest proposed buildings. To the south-east, the closest NSL is the Le Cheile Secondary School at a distance of approximately 100m from the closest site boundary and development buildings (NSL3). To the north-east of the construction haul route, the closest residential NSL is located on the Ratoath Road, at a distance of approximately 100m from the redline boundary. **Figure 12.5** illustrates the closest NSLs to the development site and illustrates the approximate boundary of the site.

The following construction noise threshold levels are proposed for the construction stage of this development: -

- NSLs external to the proposed development including Le Cheile Secondary School, Construction Category A values are appropriate, which sets a daytime construction noise threshold value of 65 dB(A).

Figure 12.5 Noise sensitive locations in the vicinity of the proposed development



12.4.2.1 Construction Phase Noise

Due to the fact that the construction programme has been established in outline form, construction noise associated with activities on site during this phase are reviewed for the purposes of determining the likely significant effects. Indicative ranges of noise levels associated with construction may be calculated in accordance with the methodology set out in BS 5228-1:2009+A1:2014. This standard sets out sound power and sound pressure levels for plant items normally encountered on construction sites, which in turn enables the prediction of noise levels. However, it is not possible to conduct detailed accurate prediction calculations for the construction phase of a project due to the level of variability during different construction stages over short periods of time.

For site clearance, excavations and foundation works (excavators, loaders, dozers, concreting works, mobile cranes, generators), noise source levels are quoted in the range of 70 to 80 dB L_{Aeq} at distances of 10 m within BS 5228-1. For rotary piling or continuous flight auger piling works, noise levels are quoted in the range of 79 and 83 dB L_{Aeq} at distances of 10 m. For the purposes of this assessment, for initial stage works during clearance, excavations, foundations and piling, a sound power value of 115 dB L_{WA} has been used for construction noise calculations representing each of these phase of works. This would include, for example, 5 no. items of construction plant with a sound pressure level of 80 dB L_{Aeq} at 10 m, operating simultaneously along the closest works boundary, resulting in a total noise level of 87 dB L_{Aeq} along the closest works boundary. This scenario is a robust assumption made for a development of this size, on the basis that it is unlikely that more than 5 no. items of such plant/equipment would be operating simultaneously in such close proximity to each other at all times. In reality items of construction plant and machinery will be operating at varying distances from any one NSL.

Given the nature of the proposed construction phase which will include standard residential house building techniques across the site, once the ground preparation and foundation works have been completed, a large portion of the work will involve manual labour and cranes with lower overall noise levels. For the purpose of this assessment a combined sound power value of 106 dB L_{WA} has been used for construction noise calculations during ongoing building works and compounds. This would include, for example one item of plant at 75 dB L_{Aeq} and three items of plant at 70 dB L_{Aeq} operating simultaneously within a work area resulting in a total noise level of 78 dB L_{Aeq} along the closest works boundary.

Construction noise levels have been calculated at the closest NSLs, assuming the construction noise levels discussed above. For the purpose of the assessment, partial site screening (5 dB) has been assumed from the use of a standard site hoarding of 2.4 m high for noise sensitive boundaries. The calculations also assume that the equipment will operate for 66% of the working time. **Table 12.9** summarises the result of this assessment.

Table 12.9 Indicative construction noise levels at nearest noise sensitive locations

Construction phase	Sound power at construction works, dB L_{WA}	Calculated noise levels at varying distances, dB $L_{Aeq,T}$			
		35m	40m	50m	100m
Site Clearance, Excavation, Road Works	115	67	66	64	57
General Construction, Compounds, Landscaping,	106	60	58	56	50

The worst case predictions detailed in **Table 12.9** indicate that construction activities can operate within the adopted construction noise thresholds of 65 dB $L_{Aeq,T}$ at the closest NSLs located within 50m from building works with higher noise emissions associated with site clearance, excavations, road works etc. Reference to **Table 12.2** confirms the related impact is slight. The associated construction noise impact is determined to be ***negative, slight and short-term*** at distances of 50m and beyond.

During construction activities with higher noise emissions during the early work stages, there is potential for the CNT to be exceeded by a small margin at distances within 50m of the works, thus resulting in a ***negative, moderate and short-term*** impact at NSLs immediately east of the proposed development.

During the general construction working associated with house construction, compounds etc. the calculated noise levels in **Table 12.9** indicate that construction activities can operate within the adopted construction noise thresholds of 65 dB $L_{Aeq,T}$ at the closest NSLs. The associated construction noise impact is determined to be ***negative, slight and short-term***.

The construction phase will be controlled through the use of construction noise threshold values which the contractor will be required to work within as much as is practicable. In this regard, the choice of plant, scheduling of works on site, provision of localised screening and other best practice control measures will be employed. Further discussion on construction noise and vibration control measures are included in Section 12.5.1.

12.4.2.2 Construction Vibration

Potential for vibration impacts during the construction phase programme are likely to be limited given piling and excavations, depending on the methodologies used. There is potential for piling to be used for apartment buildings foundations. For the purposes of this assessment, the expected vibration levels during piling, assuming augured or bored piles, have been determined through reference to published empirical data. The British Standard BS 5228 – *Part 2: Vibration*, publishes the measured magnitude of vibration of rotary bored piling using a 600 mm pile diameter for bored piling into soft ground over rock:

- 0.54 mm/s at a distance of 5 m, for auguring;
- 0.22 mm/s at a distance of 5 m, for twisting in casing;
- 0.42 mm/s at a distance of 5 m, for spinning off; and
- 0.43 mm/s at a distance of 5 m, for boring with rock auger.

Considering the low vibration levels at very close distances to the piling rigs, vibration levels at the nearest off-site buildings (>200m from apartment buildings at Site 3) will be orders of magnitude below those associated with building response or human response to vibration referred to in **Table 12.4** and **Table 12.5**.

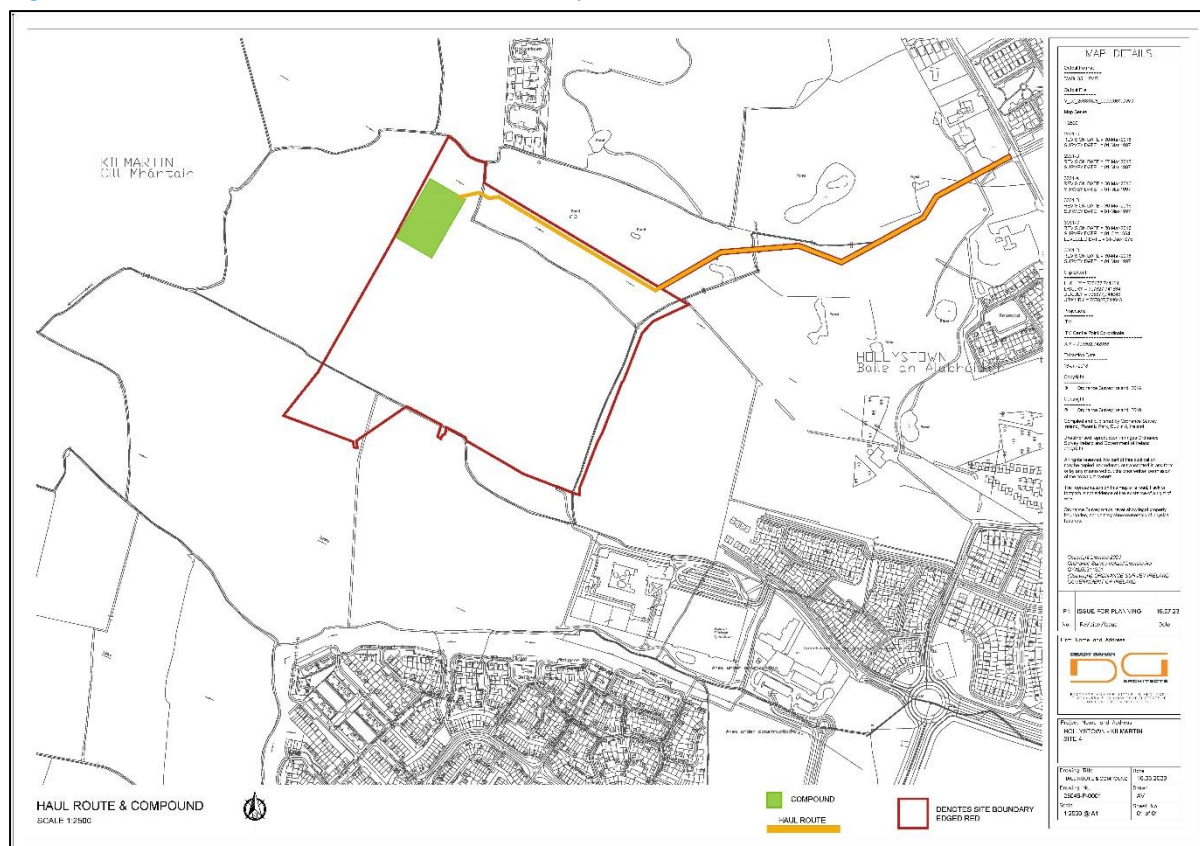
The predicted vibration impact during the construction phase is ***neutral, imperceptible*** and ***short-term***.

12.4.2.3 Construction Traffic

Construction traffic for the required works will enter the site via a haul route accessed from Ratoath Road and the former Hollystown Golf Club entrance. Ancillary access for non- HGV construction traffic i.e. construction staff using personal vehicles, will be via The Avenue (south of the existing Bellingsmore development and through Sites 2&3). Ratoath Road will be the primary haul route, while The Avenue

will be a secondary access route to the construction site. The primary haul route is presented in Figure 12.6.

Figure 12.6 Haul Route & Construction Compound for EIAR



Forecast construction traffic volumes to and from the construction site are set out in Chapter 16 Traffic and Transportation. The chapter notes that following the completion of the initial site clearance works, the generation of HGV movements during the build period will be evenly spread throughout the day and, as such, will not impact significantly during the peak traffic periods. For this scale of development, HGV vehicle movements are not expected to exceed 5 vehicles per hour during the busiest period of construction 'build' works.

Noise levels associated with passing event such as road traffic along the internal haul road may be expressed in terms of its Sound Exposure Level (L_{AX}). The Sound Exposure Level can be used to calculate the contribution of an event or series of events to the overall noise level in a given period using the following formulae:

$$L_{Aeq,T} = L_{AX} + 10\log_{10}(N) - 10\log_{10}(T) \text{ dB}$$

where:

- $L_{Aeq,T}$ is the equivalent continuous sound level over the time period T (in seconds);
- L_{AX} is the "A-weighted" Sound Exposure Level of the event considered (dB); and
- N is the number of events over the course of time period T.

A Sound Exposure Level (L_{AX}) reference values for HGVs is 85 dB at 5m from the road edge has been used for the assessment. The specific data has been obtained from specific source measurements undertaken from AWN's in-house data base of road vehicle sound exposure levels measured under

controlled conditions for other applications. The L_{AX} values relate to vehicles traveling at a low to moderate speed.

Using a total value of 5 HGV's per hour along the site access road, the calculated noise level is 56 dB $L_{Aeq,1hr}$ at 5m from the road edge. The related noise level is within the construction noise threshold value. Whilst construction traffic will increase traffic noise in the area, the overall traffic noise will be well within construction noise thresholds. The overall impact at properties along the road edge within the completed Site 3 and at NSL4 is determined to be ***negative, slight to moderate and short-term***.

The relative increase in noise level associated with traffic movements on existing roads and junctions with and without the construction phase peak traffic has been predicted, given that traffic from the development will make use of the existing road network. This is considered a worst case scenario. **Figure 12.6** illustrates the locations of the road links assessed as part of this study.

Traffic flows along the surrounding road network in terms of Annual Average Daily Traffic (AADT) for the Do Minimum and Do Something scenarios have been reviewed to calculate the change in traffic noise. The calculated change in noise levels based on traffic flows in base year 2022 are summarised in **Table 12.10** below and illustrated in **Figure 12.7**.

Table 12.10 Change in traffic noise level (Base Year 2022)

Location	AADT Do Nothing	AADT Do Something	Change in Noise Level $\pm$ dB
Link A	6,099	6,159	1.4
Link B	8,869	8,929	0.9
Link C	15,603	15,663	0.6
Link D	3,445	3,505	2.0
Link E	15,720	15,780	0.3
Link F	2,776	2,836	2.5
Link G	16,456	16,516	0.3
Link H	9,577	9,637	0.8
Link I	2,397	2,457	2.7
Link J	3,211	3,271	2.1
Ratoath Road	10,474	10,534	0.8

Along the surrounding road network, in the overall context of the noise environment along the R121 and wider road network in the vicinity of the proposed development, based on the forecasted peak construction HGV traffic, the increase in traffic volumes along the local road network an increase in baseline noise level in the range of 0.3 – 2.7 dB is predicted. Therefore, the short-term noise environment assumed for this project is expected to be above the baseline scenario but below the CNT threshold outlined in 12.2.1, which would give a magnitude of increase in traffic noise that is ***negative, imperceptible to slight and short-term***.

12.4.3 Operational Phase

The proposed development relates to a site of c.20.6ha referred to as Hollystown-Kilmartin 4 located in the townland of Hollystown and Kilmartin, Dublin 15. The site is bound by lands which previously formed part of the former Hollystown Golf Club and the residential area of Hollystown Park to the north,

lands forming part of a permitted Strategic Housing Development (SHD) to the east (ABP Reg. Ref. 312271), Tyrrelstown Park to the south, and rural zoned lands to the west.

The proposed development will include for the development of 580 no. residential units, consisting of 112 no. apartments/duplexes and 468 no. houses ranging from 1 – 3 storeys and will also include for car parking, cycle parking, new pedestrian/ cycle links, storage, services and plant areas. Landscaping will include for high quality private open space, communal amenity areas and public open space provision.

Once the development is operational, the potential noise impacts to the surrounding environment will be minimal. The residential aspect of the development is not expected to generate any significant noise sources over and above those which form part of the existing environment at neighbouring residential areas (estate vehicle movements, children playing etc.) and hence no significant impact is 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 new residential element. Potential noise impacts also relate to operational plant serving the commercial and apartment buildings, where relevant. Once operational, there are no vibration sources associated with the development site.

12.4.3.1 Additional Vehicular Traffic on Surrounding Roads

For the purposes of assessing the potential noise impact, it is appropriate to consider the relative increase in noise level associated with traffic movements on existing roads and junctions with and without the proposed development, given that traffic from the development will make use of the existing road network.

A traffic impact assessment relating to the proposed development has been prepared by the DBFL Consulting Engineers as part of this EIAR (refer to Chapter 16 – Traffic & Transportation). **Figure 12.7** illustrates the road links assessed as part of this study.

Traffic flows along the surrounding road network in terms of Annual Average Daily Traffic (AADT) for the Do Minimum and Do Something scenarios have been reviewed to calculate the change in traffic noise. The calculated change in noise levels during Future Design Year (2040) are summarised in **Table 12.11**.

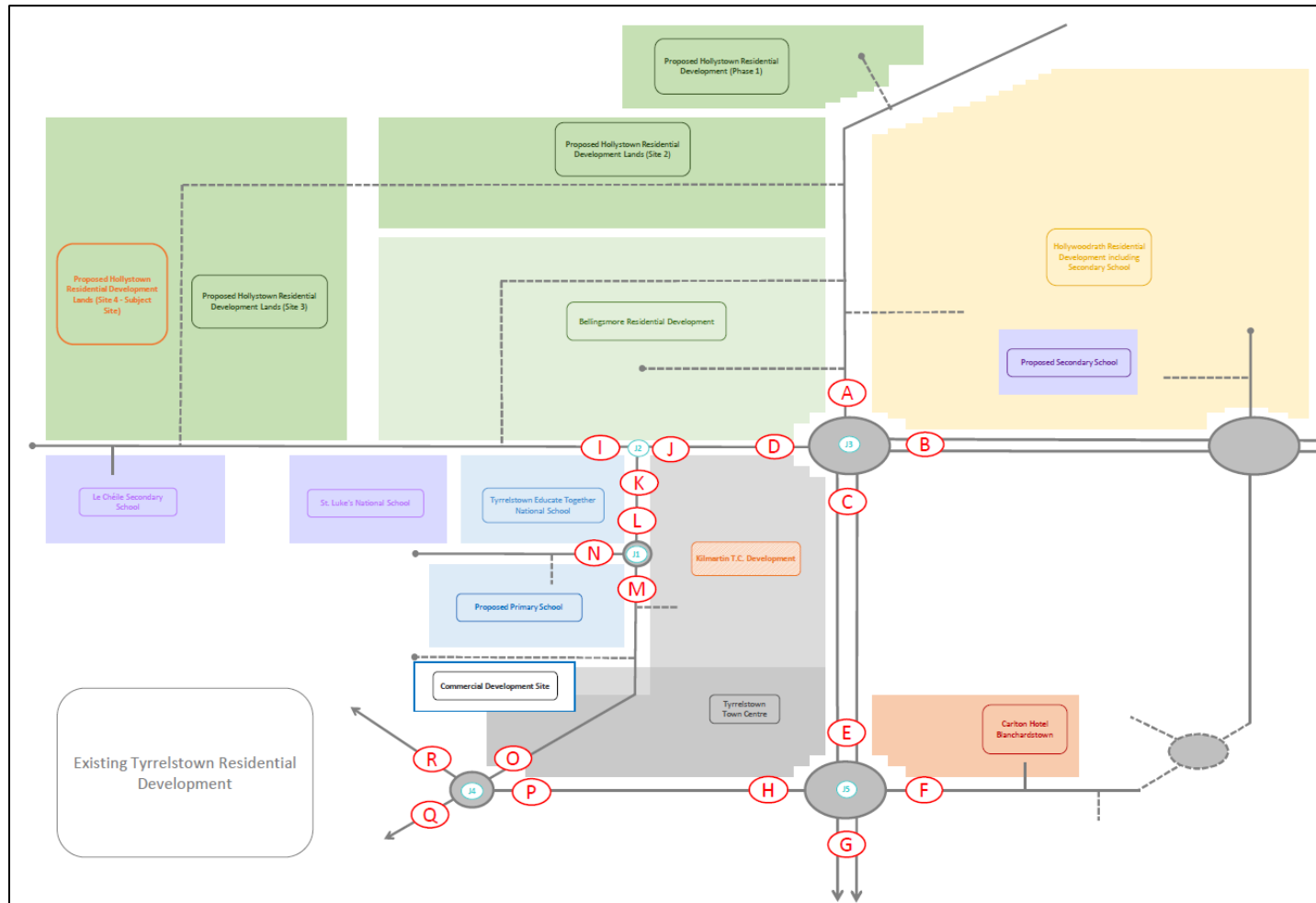
Table 12.11 Change in traffic noise level (Future Design Year 2040)

Location	AADT Do Nothing	AADT Do Something	Change in Noise Level ±dB
A	9,479	10,042	0.3
B	11,354	11,930	0.2
C	21,550	23,078	0.3
D	6,789	9,292	1.4
E	21,186	22,714	0.3
F	3,380	3,380	0.0
G	23,757	25,449	0.3
H	13,870	14,034	0.1
I	5,528	8,171	1.7
J	6,519	9,021	1.4

Location	AADT Do Nothing	AADT Do Something	Change in Noise Level ±dB
K	4,095	4,259	0.2
L	4,095	4,259	0.2
M	4,730	4,894	0.1
N	4,151	4,151	0.0
O	10,824	10,989	0.1
P	10,578	10,742	0.1
Q	5,146	5,146	0.0
R	5,338	5,338	0.0
Ratoath Road	13,328	14,067	0.2

The calculated change in traffic noise associated with the addition of development related traffic is less than 2 dB (A) during the Future Design Year. This is largely due to the existing volume of traffic along the surrounding road network onto which the development traffic will travel. Reference to **Table 12.6** confirms the related impact is *neutral, imperceptible to not significant and long-term*.

Figure 12.7 Road links for Traffic assessment



12.4.3.2 Building Services and Plant

There are no sources of mechanical or electrical plant associated with the building types across the development with potential to emit audible noise levels beyond the site boundary at off-site NSLs. Any required plant items will be selected, designed and located so that there is no negative impact on sensitive receivers within the development itself.

In this instance, best practice is to set appropriate noise limits that will inform the detailed design during the selection and layout of building services for the proposed development. The cumulative operational noise level from building services plant at the nearest noise sensitive location within the proposed development will be designed/attenuated to not exceed the internal noise levels discussed in **Table 12.7**.

Once the relevant noise criteria are not exceeded within the proposed development, the related noise impact to existing NSLs offsite will be *neutral, imperceptible and long-term*.

12.5 Mitigation Measures

12.5.1 Construction Phase

The assessment detailed in Section 12.4.2 has determined that construction activities can operate within the adopted construction noise threshold levels at the closest off-site NSLs due to the distance from the works. Vibration levels at the closest neighbouring buildings are expected to be orders of magnitude below the limits set out in **Table 12.4** to avoid any cosmetic damage to buildings.

Best practice noise and vibration control measures will be employed by the contractor during the construction phase in order to avoid exceedance of the adopted construction noise threshold values at the nearest NSLs. The best practice measures set out in BS 5228 (2009 +A1 2014) Parts 1 and 2 will be complied with. This includes guidance on several aspects of construction site mitigation measures, including, but not limited to:

- Selection of quiet plant;
- Noise control at source;
- Screening, and;
- Liaison with the public.

Further comment is offered on these items in the following paragraphs. Noise control measures that will be considered include the selection of quiet plant, enclosures and screens around noise sources, limiting the hours of work and noise monitoring, where required.

12.5.1.1 Selection of Quiet Plant

This practice is recommended in relation to static plant such as compressors and generators. It is recommended that these units be supplied with manufacturers' proprietary acoustic enclosures. The potential for any item of plant to generate noise will be assessed prior to the item being brought onto the site.

12.5.1.2 Noise Control at Source

The following best practice mitigation measures relate to controlling noise at source:

- Site compounds will be located away from noise sensitive boundaries within the site constraints.

- For mobile plant items such as cranes, dump trucks, excavators and loaders, maintaining enclosure panels closed during operation can reduce noise levels over normal operation. Mobile plant will be switched off when not in use and not left idling.
- For steady continuous noise, such as that generated by diesel engines, it may be possible to reduce the noise emitted by fitting a more effective exhaust silencer system and avoid idling of engines when not in use.
- For percussive tools such as pneumatic breakers, a number of noise control measures include fitting muffler or sound reducing equipment to the breaker tool and ensuring any leaks in the air lines are sealed.
- Erecting localised screens around breaker or drill bit when in operation in close proximity to noise sensitive boundaries.
- For all materials handling, ensure that materials are not dropped from excessive heights, lining drops chutes and dump trucks with resilient materials.
- For compressors, generators and pumps, these can be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation.
- All items of plant will be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures.

12.5.1.3 Screening

Screening is an effective method of reducing the noise level at a receiver location and can be used successfully as an additional measure to all other forms of noise control. Standard construction site hoarding (2.4 m in height) with a mass per unit of surface area greater than 7 kg/m² can provide adequate sound insulation. This is recommended, as a minimum around the north and southern boundaries of the proposed development site.

12.5.1.4 Liaison with the Public

A designated Community Liaison Officer (CLO) will be appointed to site during construction works. Any noise complaints will be logged and followed up in a prompt fashion by the CLO. In addition, prior to particularly noisy construction activity (e.g. piling), the CLO will inform the nearest noise sensitive locations of the time and expected duration of the noisy works.

12.5.1.5 Project Programme

The phasing programme will be arranged so as to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity. This will be reviewed in relation to other potential cumulative works occurring on adjacent construction site in close proximity to noise sensitive properties which have the potential to lead to significant construction noise impacts.

12.5.2 Operational Phase

12.5.2.1 Additional Traffic on Surrounding Road

During the operational phase of the development, noise mitigation measures with respect to the impact of traffic from the development are not deemed necessary.

12.5.2.2 Building Services and Plant

Proprietary noise and vibration control measures will be employed as part of the detailed design in order to ensure that noise emissions from building services plant do not exceed the relevant internal noise criteria within **Table 12.7** for residential dwellings within the proposed development. In addition, noise emissions should be broadband in nature and should not contain any tonal or impulsive elements.

Considering that sensitive receivers within the development are much closer than off-site sensitive receivers, once the relevant noise criteria is achieved within the development, there are no mitigation requirements to control building services and plant at off-site NSLs.

12.6 Residual Impacts

12.6.1 Construction Phase

During the construction phase of the proposed development, there is the potential for short-term noise impacts on nearby noise sensitive properties due to noise emissions from site activities. The application of binding noise limits and hours of operation, along with implementation of appropriate noise and vibration control measures, will ensure that noise and vibration impact is kept to a minimum as far as practicable. For the duration of the construction period, construction noise impacts will be short-term and negative, depending on the proximity of the works to the site boundary.

Residual noise impacts during the construction phase will be *neutral to negative, imperceptible to moderate* and *short-term* at the closest NSLs.

Vibration impacts during the construction phase will be *neutral, imperceptible* and *short-term*.

12.6.2 Operational Phase

12.6.2.1 Additional Traffic on Roads

The predicted change in noise levels associated with additional traffic is expected to be *neutral, not significant* and *long-term* along the existing road network.

12.6.2.2 Building Services and Plant

The impact from building services and plant is predicted to be *neutral, not significant and long term*.

12.7 Monitoring

12.7.1 Construction Phase

During the construction phase, spot check noise monitoring may be required where the construction noise thresholds have the potential to be exceeded at NSLs. The monitoring shall be carried out by the contractor and used to inform the requirement for any control measures on site to reduce construction noise levels. There are no significant vibration sources associated with the construction phase and no vulnerable structures identified adjacent to the site, hence vibration monitoring is not proposed during this phase.

Noise monitoring will be conducted in accordance with the International Standard ISO 1996: 2017: *Acoustics – Description, measurement and assessment of environmental noise* and be located a distance of greater than 3.5m away from any reflective surfaces, e.g. walls, in order to ensure a free-field measurement without any influence from reflected noise sources.

12.7.2 Operational Phase

There is no monitoring recommended for the operational phase of the development as impacts to noise and vibration are predicted to be imperceptible.

12.8 Operational Phase –Acoustic Design Statement (ADS)

The ADS has been presented separately as it refers to the inward impact assessment of the residential properties within the development, rather than the outward impact assessment carried out in Section **Table 12.4**. As discussed in Section 12.2.2, an acoustic design statement is required for residential developments located within airport Zone B as per the current Development Plan guidance and the guidance set out within the *Fingal Development Plan 2023 – 2029* Written Statement Document.

12.8.1 Stage 1 – Noise Risk Assessment

12.8.1.1 Methodology

The initial noise risk assessment is intended to provide an early indication of any acoustic issues that may be encountered. It calls for the categorisation of the site as a negligible, low, medium or high risk based on the pre-existing noise environment. **Figure 12.1** previously presents the basis of the initial noise risk assessment, it provides appropriate risk categories for a range of continuous noise levels either measured and/or predicted on site.

Paragraph 2.9 of ProPG states that:

“The noise risk assessment may be based on measurements or prediction (or a combination of both) as appropriate and should aim to describe noise levels over a “typical worst case” 24 hour day either now or in the foreseeable future.”

In this instance, it is proposed to use the noise maps produced by Fingal County Council and Dublin Airport Authority (daa) as part of the noise mapping requirements under the European Noise Directive (END). These maps present the noise levels incident across the site over the course of an annual average day or night. In addition, the noise zone contour produced by Fingal County Council for the future operation of Dublin Airport, including the North Runway, will be used to characterise the future noise environment as reviewed in Section 12.3.1.

ProPG states the following with respect to the initial risk assessment:

“The risk assessment should not include the impact of any new or additional mitigation measures that may subsequently be included in development proposals for the site and proposed as part of a subsequent planning application. In other words, the risk assessment should include the acoustic effect of any existing site features that will remain (e.g. retained buildings, changes in ground level) and exclude the acoustic effect of any site features that will not remain (e.g. buildings to be demolished, fences and barriers to be removed) if development proceeds.”

In this instance there are no buildings to be demolished and the site topography is not expected to change significantly during construction.

12.8.1.2 Noise Risk Assessment Conclusion

Giving consideration to the noise levels presented in Section 12.3.1 the initial site noise risk assessment has concluded that the level of noise risk across the site is 'medium'. ProPG states the following with respect to these levels of risk:

- **Medium Risk:** *"As noise levels increase, the site is likely to be less suitable from a noise perspective and any subsequent application may be refused unless a good acoustic design process is followed and is demonstrated in an ADS which confirms how the adverse impacts of noise will be mitigated and minimised, and which clearly demonstrate that a significant adverse noise impact will be avoided in the finished development."*

Given the above an Acoustic Design Strategy is required to demonstrate that suitable care and attention has been applied in mitigating and minimising noise impact to such an extent that an adverse noise impact will be avoided in the final development.

It should be noted that ProPG states the following with regard to how the initial site noise risk is to be used:

*"2.12: It is important that **the assessment of noise risk at a proposed residential development site is not the basis for the eventual recommendation to the decision maker**. The recommended approach is intended to give the developer, the noise practitioner, and the decision maker an early indication of the likely initial suitability of the site for new residential development from a noise perspective and the extent of the acoustic issues that would be faced. Thus, a site considered to be high risk will be recognised as presenting more acoustic challenges than a site considered as risk. A site considered as negligible risk is likely to be acceptable from a noise perspective and need not normally be delayed on noise grounds. A potentially problematical site will be flagged at the earliest possible stage, with an increasing risk indicating the increasing importance of good acoustic design."*

Therefore, following the guidance contained in ProPG does not preclude residential development on sites that are identified as having medium noise risk. It merely identifies the fact that a more considered approach will be required to ensure the developments on the higher risk sites are suitably designed to mitigate the noise levels. The primary goal of the approach outlined in ProPG is to ensure that the best possible acoustic outcome is achieved for a particular site.

12.8.2 Stage 2 – Full Acoustic Assessment

12.8.2.1 Element 1 – Good Acoustic Design Process

Based on the ProPG guidance, in practice, good acoustic design (GAD) should deliver the optimum acoustic design for a particular site without adversely affecting residential amenity or the quality of life of occupants or compromising other sustainable design objectives. It is important to note that ProPG specifically states that good acoustic design is not equivalent to overdesign or 'gold plating' of a new development but that it seeks to deliver the optimum acoustic environment for a given site.

Section 2.23 of the ProPG outlines the following checklist for Good Acoustic Design:

- Check the feasibility of relocating, or reducing noise levels from relevant sources;
- Consider options for planning the site or building layout;
- Consider the orientation of proposed building(s);

- Select construction types and methods for meeting building performance requirements;
- Assess the viability of alternative solutions; and
- Assess external amenity area noise.

In the context of the proposed development, each of the considerations listed above have been addressed in the following subsections.

Application of GAD Process to Proposed Application

Relocation or Reduction of Noise from Source

The main noise sources are located outside the site boundary and, therefore, it is beyond the scope of this proposed development to introduce any noise mitigation at source.

Planning, Layout and Orientation

The proposed development lies completely within Noise Zone B of the airport. Therefore, it would not have been possible to reduce noise levels by designing a site with an alternative layout.

Select Construction Types for meeting Building Regulations

A mixture of masonry, brick and timber insulated constructions will be used in the external walls of the proposed development. These construction types offers high levels of sound insulation performance. However, as is typically the case, the glazed elements and any required ventilation paths to achieve compliance with Part F of the Building Regulations will be the weakest elements in the façade in terms of sound insulation performance.

Consideration will therefore be given to the provision of upgraded glazing and acoustic ventilators, where required. For units where it will not be possible to achieve the desirable internal acoustic environments with windows open, the proposal here will be to provide dwelling units with glazed elements and ventilators that have good acoustic insulation properties so that when the windows are closed the noise levels internally are good. Inhabitants will be able to open the windows if they wish. However, doing so will increase the internal noise level. This approach to mitigation is supported in ProPG where it states the following (emphasis has been added in bold):

*“2.22: Using fixed unopenable glazing for sound insulation purposes is generally unsatisfactory and should be avoided; **occupants generally prefer the ability to have control over the internal environment using openable windows, even if the acoustic conditions would be considered unsatisfactory when open.** Solely relying on sound insulation of the building envelope to achieve acceptable acoustic conditions in new residential development, when other methods could reduce the need for this approach, is not regarded as good acoustic design. Any reliance upon building envelope insulation with closed windows should be justified in supporting documents.”*

“Note 5: Designing the site layout and the dwellings so that the internal target levels can be achieved with open windows in as many properties as possible demonstrates good acoustic design. Where it is not possible to meet internal target levels with windows open, internal noise levels can be assessed with windows closed, however any façade openings used to provide whole dwelling ventilation (e.g. trickle ventilators) should be assessed in the “open” position and, in this scenario, the internal LAeq target levels should not normally be exceeded.”

“2.34: Where the LPA accepts that there is a justification that the internal target noise levels can only be practically achieved with windows closed, which may be the case in urban areas and

at sites adjacent to transportation noise sources, special care must be taken to design the accommodation so that it provides good standards of acoustics, ventilation and thermal comfort without unduly compromising other aspects of the living environment. In such circumstances, internal noise levels can be assessed with windows closed but with any façade openings used to provide “whole dwelling ventilation” in accordance with Building Regulations Approved Document F (e.g. trickle ventilators) in the open position (see Supplementary Document 2). Furthermore, in this scenario the internal LAeq target noise levels should not generally be exceeded.”

It is very important to note that it is impractical to achieve the good internal noise levels with windows open across the vast majority of development sites in close proximity to major infrastructure such as airports. Such sites would need to be classified as having a negligible risk in accordance with the ProPG noise risk assessment approach. For this reason, there are no guidance documents either at a local level or an international level that AWN is aware of which would support the approach of achieving the ideal internal noise levels in the open window scenario. It is, therefore, considered entirely justifiable to provide building façades with a moderate degree of sound insulation, such that with windows closed but vents opened, a good internal acoustic environment is achieved.

Assess Viability of Alternative Solutions

The major noise sources incident on the site are road and aircraft noise. Due to the height at which aircraft noise would be incident to the dwellings and external amenity areas, an acoustic barrier or similar would be ineffective and is not proposed anywhere on the site.

Assess External Amenity Area Noise

ProPG provides the following advice with regards to external noise levels for amenity areas in the development:

“The acoustic environment of external amenity areas that are an intrinsic part of the overall design should always be assessed and noise levels should ideally not be above the range 50 – 55 dB LAeq,16hr.”

For the proposed development, it is noted that whilst external amenity areas located in Zone B would be above the desirable level of 55 dB LAeq,16hr, it is not possible to reduce the noise level across external spaces, due to aircraft noise being the dominant noise source.

Summary

Considering the constraints of the site, in so far as possible and without limiting the extent of the development area, the principles of GAD have been applied to the proposed development.

In terms of viable alternatives to acoustic treatment of façade elements, currently it is not considered likely that there will be further options for mitigation outside of proprietary acoustic glazing and ventilation.

12.8.2.2 Element 2 – Internal Noise Guidelines

Internal Noise Criteria

Element 2 of the ProPG document sets out recommended internal noise targets derived from BS 8233:2014. The recommended indoor ambient noise levels are set out previously in **Table 12.7**.

In addition to these absolute internal noise levels, ProPG provides guidance on flexibility of these internal noise level targets. For instance, in cases where the development is considered necessary or desirable, and noise levels exceed the external noise guidelines, then a relaxation of the internal L_{Aeq} values by up to 5 dB can still provide reasonable internal conditions.

Discussion on Open/Closed Windows

The typical level of sound reduction offered by a partially open window falls in the region of 10 to 15 dB. Considering the design goals outlined in **Table 12.7** and a sound reduction across an open window of 15 dB, the free-field noise levels that would be required to ensure that internal noise levels do not exceed good (i.e. at or below the internal noise levels) or reasonable internal noise levels (i.e. 5 dB above the internal noise levels) have been summarised in **Table 12.12**.

Table 12.12 External noise levels required to achieve internal noise levels

Level Desired	Day (07:00 to 23:00hrs)	Night (23:00hrs to 07:00)
Good (i.e. at or below the internal noise levels)	50 – 55 dB $L_{Aeq,16hour}$	45 dB $L_{Aeq,8hour}$
Reasonable (i.e. 5 dB above the internal noise levels)	55 – 60 dB $L_{Aeq,16hour}$	50 dB $L_{Aeq,8hour}$

Based on the noise levels ranges in **Table 12.12** and the external noise environment across the site. it will not be possible to achieve the defined “good” internal noise levels with windows open, for properties located within Zone B and, therefore, appropriate acoustic specifications to windows and passive vents will be provided to ensure the rooms are adequately ventilated and achieve the good internal noise levels detailed here.

Proposed Façade Treatment

The British Standard BS EN 12354-3: 2000: *Building acoustics – Estimation of acoustic performance of buildings from the performance of elements – Part 3: Airborne sound insulation against outdoor sound* provides a calculation methodology for determining the sound insulation performance of the external envelope of a building. The method is based on an elemental analysis of the building envelope and can take into account both the direct and flanking transmission paths. The Standard allows the acoustic performance of the building to be assessed taking into account the following:

- Construction type of each element (i.e. windows, walls, etc.);
- Area of each element;
- Shape of the façade, and;
- Characteristics of the receiving room.

The principals outlined in BS EN 12354-3 are also referred to in BS8233:2014, and Annex G of BS8233 provides a calculation method to determine the internal noise level within a building using the composite sound insulation performance calculated using the methods outlined in BS EN 12354-3. The methodology outlined in Annex G of BS8233 has been adopted here to determine the required performance of the building façades. This approach corrects the noise levels to account for the frequency content of aircraft noise, which has been determined by AWN from numerous noise surveys in the vicinity of Dublin Airport.

Glazing

As is the case in most buildings, the glazed elements of the building envelope are typically the weakest element from a sound insulation perspective. In this instance, the façades will be provided with glazing that, when closed, achieve the minimum sound insulation performance as set out in **Table 12.13**.

Table 12.13 Sound insulation performance requirements for glazing, SRI (dB)

SRI (dB) per Octave Band Centre Frequency (Hz)						dB R _w
125	250	500	1k	2k	4k	
26	28	36	40	40	40	38

The acoustic specification listed in **Table 12.12** can be achieved using an acoustic double-glazed unit. This performance could also be achieved using a suitably specified triple glazing window. It is important to note that the acoustic performance specifications detailed herein are minimum requirements which apply to the overall glazing system. In the context of the acoustic performance specification, the glazing system is understood to include any and all of the component parts that form part of the glazing element of the façade, i.e. glass, frames, seals, openable elements, etc.

Wall Construction

In general, all wall constructions (i.e. blockwork, concrete or timber frame) offer a high degree of sound insulation, much greater than that offered by glazing systems. Therefore, noise intrusion via the wall construction will be minimal. The calculated internal noise levels across the building façade have assumed a minimum sound reduction index of 50 dB R_w for this construction.

Ventilation

The ventilation strategy for the proposed development will be in accordance with Part F of the Building Regulations and will be finalised at the detail design stage. Options which will be considered to achieve compliance with background ventilation requirements will be a closed heat recovery system, adjustable hit-and-miss acoustic ventilators or trickle vents built into the façade or window frames, respectively.

For the proposed development, it is recommended that any through wall vents are specified to achieve a sound insulation performance of 41 dB D_{n,e,w}.

Roof

There is the potential for the roof structure to allow the passage of sound into the rooms. In order to control potential sound transmission via this route, the ceiling / roof construction will need to provide a sound reduction in excess of that required for the windows.

For the proposed development, the roof constructions that have been considered for the calculations are:

- Attic roof: Tile/slate Attic cavity insulation layer with 12.5 mm plasterboard.

The plasterboard should have a surface mass of 8 kg/m² or greater and there should be a layer of mineral / glassfibre quilt / slab in the void between the joists of at least 100 mm thickness (which will normally be greater than this for thermal reasons) with a density of 10 to 30 kg/m³. Any penetrations through the ceiling boards must be as small as possible and made good by fully filling with plaster or with an acoustic sealant.

Internal Noise Levels

Taking into account the external façade levels and the specified building envelope, the internal noise levels have been calculated. In all instances the good internal noise criteria are achieved for daytime and night-time periods.

12.8.2.3 Element 3– External Amenity Area Noise Assessment

As previously discussed, external amenity areas are not expected to achieve the recommended 55 dB $L_{Aeq,16hr}$ noise level recommended in ProPG. However, it is not possible to reduce the noise level across external spaces due to aircraft noise being the dominant noise source.

12.8.2.4 Element 4– Assessment of Other Relevant Issues

Element 4 gives consideration to other factors that may prove pertinent to the assessment, these are defined in the document as:

- 4(i) compliance with relevant national and local policy;
- 4(ii) magnitude and extent of compliance with ProPG;
- 4(iii) likely occupants of the development;
- 4(iv) acoustic design v unintended adverse consequences; and
- 4(v) acoustic design v wider planning objectives.

Each is discussed in turn below.

Compliance with Relevant National and Local Policy

There are no national policy documents relating to the acoustic design of residential dwellings. Locally, the *Fingal Development Plan 2023 - 2029* contains Objective DAO11 relating to development within the Airport Noise Zones:

“Strictly control inappropriate development and require noise insulation where appropriate in accordance with Table 8.1 above within Noise Zone B and Noise Zone C and where necessary in Assessment Zone D, and actively resist new provision for residential development and other noise sensitive uses within Noise Zone A, as shown on the Development Plan maps, while recognising the housing needs of established families farming in the zone. To accept that time based operational restrictions on usage of the runways are not unreasonable to minimise the adverse impact of noise on existing housing within the inner and outer noise zone.”

Furthermore, the Fingal Noise Action Plan recommends that the guidance contained within ProPG should be used in assessing the noise impact on new residential developments being introduced to existing noise sources. This Acoustic Design Statement has been prepared in compliance with the requirements of ProPG and therefore complies with the requirements of local policy.

Magnitude and Extent of Compliance with ProPG

As discussed within this chapter, the following conclusion has been drawn with regards to the extent of compliance with ProPG:

- All dwellings as part of the development have been designed to achieve the good level of internal noise levels specified within ProPG. The units require closed windows and open vents to achieve this level;

- External amenity areas have been assessed and calculated, due to aircraft noise they do not comply with the recommended criterion set out in ProPG.

Based on the preceding, it is concluded that the proposed development is in compliance with the requirements of ProPG.

Likely Occupants of the Development

The criteria adopted as part of this assessment are based on those recommended for permanent dwellings and are, therefore, considered robust and appropriate for the likely occupants.

Acoustic Design v Unintended Adverse Consequences

Unintended adverse consequences did not occur in relation to this proposed development.

Acoustic Design v Wider Planning Objectives

With reference to the *Fingal Development Plan 2023 – 2029*, the proposed development site is within Zone B. In particular, the acoustic design of the site has taken cognisance of Objective DA07 of the Development Plan, as varied, and ensured that all dwelling units are located on the area of the site that is outside Zone A.

12.8.3 Conclusion

An initial site noise risk assessment has been carried out in respect of the proposed development. The assessment has classified the Site 4 section of the site as having **‘medium’ noise risk**. This was determined through a review of noise maps available for the proposed development site.

Further discussion is presented in terms of the likely noise impact of both the external and internal areas of the proposed development. It will be necessary to provide enhanced acoustic glazing and vents to ensure that when windows are closed that the internal noise environment is good. The noise level internally with the windows open will be higher than ideal. However, inhabitants will have the option to close the window to reduce the noise level internally with acoustic attenuated passive ventilation.

The residual inward impact on the proposed development is expected to be **neutral, not significant** and **long-term**.

12.9 Reinstatement

During reinstatement the construction phase noise and vibration impacts outlined in Section 12.4.2 will apply.

12.10 Interactions

The potential interaction between noise and vibration and other specialist chapters in the EIAR is primarily limited to Chapter 7 (Population & Human Health) and Chapter 16 (Traffic & Transportation). This chapter has been prepared in consideration of and in conjunction with the relevant elements of these chapters. For example noise and vibration impacts associated with the Proposed Development have been fully considered within this Chapter of the EIA Report. However, commentary on the impact assessment and related noise levels are also summarised specifically with respect to potential human health impacts in Chapter 7. The traffic flow projections associated with the development provided by the traffic consultants in Chapter 16 (Traffic & Transportation) has been utilised in the construction and operational noise calculations in this Chapter of the EIAR report.

A description of construction effects, giving consideration to the EPA EIAR guidelines, have been presented in this EIAR chapter in **Table 12.2**, **Table 12.3** and **Table 12.5**. Similarly, a description of operational effects have been presented in this EIAR chapter in **Table 12.6**.

12.11 Cumulative Impacts

12.11.1 Construction Phase

There are a number of approved applications in the local area as outlined in Chapter 20 (Cumulative Impacts). Depending on the proximity of the construction works to the nearest NSLs it is possible that cumulative impacts could occur at the nearest receptors to the Hollystown-Kilmartin Site 4 should all sites progress construction simultaneously. The closest NSL with potential cumulative impacts relate to the Le Cheile Secondary School to the south of the site which is also in proximity to the proposed Strategic Housing Development (SHD) application to the east (ABP Reg. Ref. 312271). In the event both developments are under construction at the same time, there is potential for elevated construction noise emissions due to cumulative noise as well as a potential increase in the length of time that the receptor will be exposed to construction noise. As a worst case, assuming the same level of construction activity is occurring at both sites simultaneously, construction noise levels would be 3 dB higher than those in **Table 12.9**. However due to the distance from site works the construction noise threshold is unlikely to be exceeded at this location.

Notwithstanding, cumulative construction noise levels will need to be considered and managed during the construction phase. It is recommended that liaison between construction sites is on-going throughout the duration of the construction phase. Contractors should schedule work in a co-operative effort to limit the duration and magnitude of potential cumulative impacts on nearby sensitive receptors. Cumulative construction noise impacts are expected to be **negative, moderate** and **short-term**.

12.11.2 Operational Phase

During the operational phase any cumulative impacts will be due to an increase in road traffic noise. However, given the insignificant levels of noise increase as a result of the traffic associated with this proposed development, it is not expected that cumulative traffic noise will increase by any significant margin as a result of this proposed development.

12.12 Difficulties Encountered

No difficulties were encountered in the preparation of this chapter.

12.13 References

- ANC, IOA & CIEH (2017). *ProPG: Planning & Noise – Professional Practice Guidance on Planning & Noise – New Residential Development*.
- British Standard BS 8233: 2014: *Guidance on sound insulation and noise reduction for buildings*.
- British Standard BS 5228: 2009 +A1:2014: *Code of Practice for Control of Noise and Vibration on Construction and Open Sites Part 1: Noise & Part 2: Vibration*.
- British Standard BS 7385: 1993: *Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration*.
- Department of Transport Welsh Office, HMSO (1988). *Calculation of Road Traffic Noise*.

- Dublin City Council, DLR County Council, Fingal County Council & South Dublin County Council (2018). *Dublin Agglomeration Environmental Noise Action Plan 2018 – 2023*.
- EPA (2012). *Guidance Note for Noise – Licence Applications, Surveys and Assessments in Relation to Scheduled Activities NG4*.
- EPA (2022). *Guidelines on the Information to be contained in Environmental Impact Assessment Reports*.
- Fingal County Council (2019). *Noise Action Plan for Dublin Airport 2019 – 2023*.
- Fingal County Council (2023). *Fingal Development Plan 2023 – 2029*.
- The UK Highways Agency (2020). *Design Manual for Roads & Bridges – LA111 -Revision 2*.
- ISO 1996: 2017: *Acoustics – Description, measurement and assessment of environmental noise*.
- ISO 9613-2: 1996: *Acoustics – Attenuation of sound during propagation outdoors, Part 2: General method of calculation*.

13 Landscape & Visual

13.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) provides an assessment of the likely effects of the proposed development at Hollystown-Kilmartin Site 4 on the landscape and visual aspects of the environment.

The Landscape and Visual Impact Assessment, includes series of Photomontages prepared from the surrounding areas and included in **Appendix 13.1** of the EIAR, which are provided to illustrate the expected visual impacts on the baseline environment.

The assessment was carried out by Alex Craven BSc, MLA, MILI and reviewed by Thomas Burns, B.Agr.Sc. (Landscape), Dip. EIA Mgmt.; Ad Dip. En. & Plan. Law; MILI, MIELA. Thomas is a Landscape Architect, Environmental Planner and Partner with Brady Shipman Martin, environmental, landscape and planning consultants. Refer to **Table 1.4** in Chapter 1 (Introduction) for qualifications of authors and reviewers.

13.2 Assessment Methodology

13.2.1 Study Area

The study area includes the proposal site, and the surrounding landscape context.

13.2.2 Relevant Legislation, Policy and Guidelines

The assessment has been carried out with reference to the following legalisation, policy and guidelines.

13.2.2.1 Legislation

- Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment (the EIA Directive).
- Planning and Development Act 2000, as amended.
- Planning and Development Regulations 2001, as amended.
- European Landscape Convention 2000.

13.2.2.2 Policy

- Fingal Development Plan 2023-2029.
- Kilmartin Local Area Plan 2013-2019 as extended (expired on 11May 2023).

13.2.2.3 Guidelines

- Guidelines on the Information to be contained in Environmental Impact Assessment Reports (hereafter the 'EPA Guidelines') (EPA 2022).
- Guidelines for Landscape and Visual Impact Assessment (hereafter the 'GLVIA') 3rd edition (Landscape Institute and the Institute of Environmental Management and Assessment [IEMA] 2013).
- Technical Information Note 05/2017 (Revised 2018) on Landscape Character Assessment (hereafter the 'TCA') (Landscape Institute 2018).

- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (hereafter the 'GEIA') (Department of Housing, Planning and Local Government DHPLG 2018).
- Landscape Institute Technical Guidance Note 06/2019 on Visual Representation of Development Proposals (hereafter the 'VRDP') (Landscape Institute 2019).

While the EPA Guidelines (EPA 2022) provide a general methodology, impact ratings and assessment structure applicable across all environmental factors, the GLVIA (Landscape Institute and IEMA 2013) provides specific guidance for landscape and visual impact assessments. The TCA (Landscape Institute 2018) is a resource for the application of landscape character assessment to landscapes. Therefore, in this assessment, a combination of the approaches outlined in the EPA Guidelines (EPA 2022) and in the GLVIA (Landscape Institute and IEMA 2013), supported by the TCA (Landscape Institute 2018) and the professional experience and expertise of the assessor, is utilised in the landscape and visual assessment.

13.2.3 Key Definitions

The following key definitions are relevant to the methodology for the landscape and visual impact assessment:

- Landscape means an area, as perceived by people, whose character is the result of the action and interaction of natural and / or human factors (European Landscape Convention 2000).
- Landscape Character Assessment is the process of identifying and describing variation in the character of the landscape. It seeks to identify and explain the unique combination of elements and features (characteristics) that make landscapes distinctive (Natural England 2014).
- Landscape and Visual Impact Assessment is a tool used to identify and assess the significance of and the effects of change resulting from development on both the landscape as an environmental resource in its own right, and on people's views and visual amenity (Landscape Institute and IEMA 2013).
- Landscape Impact vs. Landscape Effect; 'Impact' is defined as the action been taken, whilst 'effect' is defined as result (change or changes) of that action, e.g. the 'impact' of the proposed development on the woodland has a significant 'effect' on the character of the landscape.

13.2.4 Data Collection and Collation

Data collection and collation is based on initial desk studies, supported by site full walkovers and augmented by further specific site reviews, within the study area, together with the selection and preparation of verified photomontages (**Appendix 13.1**) of the proposed development.

Desk studies, which allow for identification of designated and potential significant / sensitive areas, involved a review of:

- Fingal Development Plan 2023-2029.
- Kilmartin Local Area Plan 2013-2019 as extended (expired on 11 May 2023).
- Historical and current mapping and aerial photography (e.g. ordnance survey Ireland, google earth, google maps).
- Mapping of the proposed development.
- Other reports and documents relating to the receiving environment.

Site-based studies, which allow for verification of desk study findings and for analysis of current conditions in the baseline environment, involved:

- Full walkover surveys of the site and the area surrounding of the proposed development.
- Further field surveys to verify conditions at specific locations of the proposed development.
- Selection of locations for verified photomontages of the proposed development.

13.2.5 Assessment of Landscape and Visual Impacts

Assessment of potential effects involves: -

- Classifying the sensitivity of the receiving landscape and visual environment.
- Describing and classifying the magnitude of change in the landscape and visual environment resulting from the proposed development.

These factors are combined to provide a classification of significance of impacts of the proposed development.

13.2.6 Sensitivity of Landscape and Visual Environment

The sensitivity of the landscape and visual environment is a function of its existing land use, existing and emerging patterns and its scale, enclosure, visual characteristics and values. The nature and scale of the proposed development is taken into account, as are trends of change and relevant policy framework. Four categories are used to classify sensitivity, as set out in **Table 13.1**.

13.2.7 Magnitude of Change in Landscape and Visual Environment

The magnitude of change is a factor of the scale, extent and degree of change imposed on the landscape and visual environment by the proposed development, with reference to its key elements, features and characteristics and the affected surrounding character areas. Four categories are used to classify magnitude of change, as set out in **Table 13.1**.

Table 13.1 Rating of landscape / visual sensitivity and magnitude of change

Description of Baseline Sensitivity	Rating	Description of Magnitude of change arising from proposed development
Landscapes / views that are recognised in policy or otherwise designated as being of national value. The composition, character and quality of the landscape / view are such that its capacity to accommodate change is very low. The principle management objective for the landscape / view is its protection from change that reduces landscape value / visual amenity.	High	Change that is large in extent, resulting in the loss of or major alteration to key elements, features or characteristics of the townscape / view, and / or introduction of large elements considered totally uncharacteristic in the context. Such development results in fundamental change in the landscape / view.
Landscapes / views that may not have features or characteristics that are of particular value, but have no major detracting elements, and which thus provide some landscape value / visual amenity. These landscapes / views may have capacity for appropriate change and the principle management objective is to facilitate change to the composition that	Medium	Change that is moderate in extent, resulting in partial loss or alteration to key elements, features or characteristics of the landscape / view, and / or introduction of elements that may be prominent but not necessarily substantially uncharacteristic in the context. Such development results in change to the landscape / view.

Description of Baseline Sensitivity	Rating	Description of Magnitude of change arising from proposed development
does not detract from landscape value / visual amenity, or which enhances them.		
Landscapes / views that have no valued feature or characteristic, and where the composition and character are such that there is capacity for change. This category includes landscapes / views experienced by people involved in activities with no particular focus on the landscape. For such landscapes / views the principle management objective is to facilitate change that does not detract from landscape value / visual amenity or enhances them	Low	Change that is moderate or limited in scale, resulting in minor alteration to key elements, features or characteristics of the landscape / view, and / or introduction of elements that are not uncharacteristic in the context. Such development results in minor change to the landscape / view.
Landscapes / views that have no valued feature or characteristic, or in which the composition may be unsightly (e.g. in derelict landscapes). For such landscapes / views the principle management objective is to facilitate change that repairs, restores or enhances landscape value / visual amenity.	Negligible	Change that is limited in scale, resulting in no alteration to key elements features or characteristics of the landscape / view, and / or introduction of elements that are characteristic of the context. Such development results in no change to the landscape / view.

13.2.8 Significance of Effects on Landscape and Visual Environment

In classifying the significance of effects the magnitude of change is measured against the sensitivity of the landscape / view based on the guidance in the EPA Guidelines 2022 and presented in Figure 3.4 of the Guidelines, as adapted and included in **Figure 1.3** in Chapter 1 (Introduction) of this EIAR.

Determining significance of effects that are rational and justifiable is also based on the professional judgement, expertise and experience of the author.

13.2.9 Quality, Duration and Frequency of Landscape and Visual Effects

Consideration of quality (i.e. positive, neutral, negative), duration (i.e. temporary (lasting up to 1 year); short-term (lasting 1 to 7 years); medium-term (lasting 7 to 15 years); long-term (lasting 15 to 60 years); or permanent (lasting over 60 years)) and frequency of effects, is as described in Table 3.4 of the EPA Guidelines (EPA 2022), as listed in **Table 1.5** in Chapter 1 (Introduction) of this EIAR.

13.2.10 Photomontage Methodology

The methodology for the preparation of Photomontages has regard to the Landscape Institute Technical Guidance Note 06/19 Visual Representation of Development Proposals (Landscape Institute 2019), and is further informed by experience in photomontage production. The Photomontages are prepared as accurate verified photo-realistic views (equivalent to Type 4 as set out in VRDP (Landscape Institute 2019)). The method follows five main steps: -

- Photography.

- Survey.
- 3D modelling and camera matching.
- Rendering and finishing of photomontages.
- Presentation.

Photomontages are presented, in 'as existing' and 'as proposed' versions, on A3 pages in landscape format in **Appendix 13.1** of the EIAR.

13.3 Receiving Environment

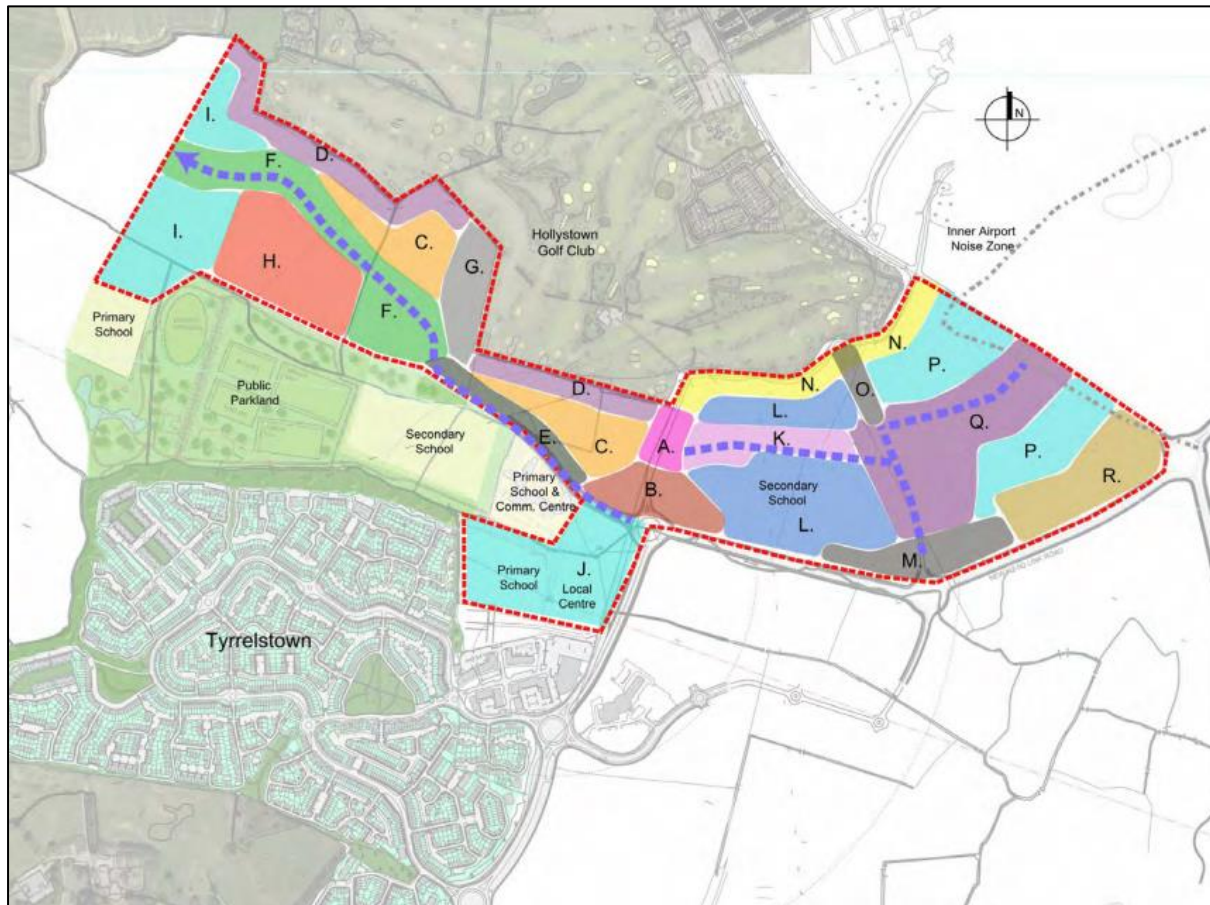
13.3.1 Proposed Development Site

13.3.1.1.1 Background

The proposed development comprises the fourth phase of development at Hollystown, located at Kilmartin in County Dublin. Developments on the overall lands are guided by the Kilmartin Local Area Plan, which identified lands for residential development and lands for wider open space provision. Although the plan is now expired it should be noted that previous development phases within the Hollystown-Kilmartin lands commenced while the local plan was still in force and the proposed development is considered a continuation of this overall development. The LAP prescribed intended character areas for proposed development. The Site includes the following character areas (Refer to **Figure 13.1**):

- C – Courtyard Housing / Homezones. *“Suitable for medium density housing with various orientations for dwellings. Parking to be provided in the vicinity/curtilage of dwellings. Homezones will be designed to provide playspaces. A north-south connection will be maintained.”*
- D – Hollystown Golf Club Boundary. *“A significant landscape buffer is to be provided which will include provision of a trimtrack/parcourse. Access to the LAP lands west of the R121 is gained to the south of this buffer area. Dwellings will be north facing with south facing rear gardens. This character area will support a medium density and a north-south connection will be facilitated.”*
- F - Kilmartin Avenue West Character 2 *“Houses fronting a wide tree lined avenue with a strong street edge with provision for private parking/public parking, and with space to accommodate buses. The design of the Avenue should have regard to the future accessibility of lands located further west. Trees and building lines will provide consistency over the entire length of the avenue. Additional car parking will be carefully incorporated into the design of houses. The area will accommodate medium density with dwellings north/south facing.”*
- H - Formal Open Space Area and Green Connection *“Defined by its relationship to the public open space to the east, the public parkland to the south and the avenue and small mixed-use development to the north. A strong north-south green connection is to be provided which will link to the existing line of poplar trees in the public parkland. Strong frontages are to be provided onto open space, the formal character of which will be defined by landscaping and the character of the surrounding dwellings. A medium density will prevail with various orientations for dwellings.”*
- I - West Kilmartin *“Characterised by low density housing addressing a primary school site, public parkland and agricultural land. Homezones will be designed to provide playspaces. Dwellings with various orientations offering views out to the surrounding agricultural land and onto the public parkland will predominate.”*

Figure 13.1 Extract from Map 10 of the Kilmartin LAP – showing the character areas which are coloured and labelled A-R.



13.3.1.2 Site Context

The proposed development relates to a site of 20.6 ha at the townlands of Hollystown and Kilmartin, Dublin 15, which includes lands in the former Hollystown Golf Club and agricultural urban fringe land with a residential zoning under the current Fingal Development Plan. The proposed development site is located within the Fingal County Council area, approximately 3.5 km north of Blanchardstown town centre and 2.5 km south-west of the M2 / N2 motorway.

The site is located approximately 12km away from Dublin City Centre and approximately 3.8km away from Blanchardstown. The lands are located in a transitional zonal area, situated between the existing built-up area of Tyrrelstown and the rural hinterland.

The majority of the site is composed of open arable land, with a northern portion of the site taking in part of the former lands of the Hollystown Golf Club, which was previously an area of highly managed amenity grassland with mature specimen trees and tree groups but is now disused and not maintained as such. The south-western corner of the proposed site includes an area of disused agricultural lands dominated by willow scrub. Towards the northern edge of the site a mixed native hedgerow separates the arable land from the former golf course, and an overhead high voltage power line marks the proposed development boundary. The eastern boundary is delineated by a gappy mature hedgerow and parts of the site perimeter also follow sections of existing hedgerow to the north and the south, however, the extents do not entirely correspond to the existing field pattern.

A number of schools and community facilities are located on lands near to the proposed development, including Tyrrelstown Educate Together National School, Tyrrelstown Community Centre, Tyrrelstown GAA Club, St. Luke's National School and Le Chéile Secondary School. Tyrrelstown Park is located to west of Le Chéile Secondary School.

While the wider area includes some more established residential developments including The Redwood and The Oaks around the former golf course lands. Emerging / new residential development is also a prominent feature at Hollywoodrath and Bellingsmore to the east of the site.

The Fingal Development Plan 2023-2029 provides a Landscape Character Assessment of the County. The Development Plan classifies the County into 6 'Landscape Character Types'. The LAP lands are located within Landscape Character Type 'Low Lying Character Type'. This character type has an open character combined with large field patterns, few tree belts and low roadside hedges. The area is characterised as having a modest value and a low sensitivity in the Fingal Development Plan Landscape Character Assessment.

The wider landscape is composed of urban fringe on the north-western edge of the Dublin conurbation. The landscape to the north and west remains predominantly rural but large-scale development is present in the form of the M3 motorway and commercial / industrial development at Clonee. To the south and east the townscape is dominated by a swathe of large scale commercial and industrial development, including ADSIL, Blanchardstown Corporate Park and Northwest Business Park, which stretches eastwards to meet the M50 corridor. Together these areas of development, as well as some remnant pockets of agricultural land and future development sites, create a band which spatially separates the Tyrrelstown and Kilmartin areas from other residential areas within the northern edge of the Dublin metropolitan area. The M2 / M3 link road is a substantial piece of new linear infrastructure which crosses the townscape to the south and east and defines the eastern extents of the emerging Hollystown / Kilmartin development area. The landscape is also influenced by the presence of Dublin Airport to the east with its westward flight paths crossing the area.

Overall, the landscape context has seen substantial change over the past few decades from a rural area to a peri-urban landscape / townscape with a mix of land-uses, and this trend of change is continuing with several local development areas currently under construction or recently completed.

13.3.1.3 Landscape, Cultural Heritage and Ecological Designations

There are no designated landscape or heritage features on the site or protected views in the vicinity. The nearest recorded heritage feature St. Thomas Church 600m north-east of the site on the Ratoath Road (L3080). There are archaeological records of geophysical and site investigations of crop marks identified on aerial photos on land within the site, but site investigation revealed no significant archaeology. There are no designated habitats within 4km of the proposal site.

13.3.1.4 Visibility

The generally flat topography, hedgerows along roads and field boundaries both on and outside the site, combine to reduce views into and out of the site, although some open views are present across the open agricultural land to the west. There is some visual permeability through the eastern hedgerow boundary allowing views through from the adjacent development areas. Filtered views can also be experienced from Tyrrelstown Park / Tyrrelstown Cricket Club Ground. Generally, nearby residential

areas are well screened by vegetation within their curtilages as well as by intervening hedgerows and trees, particularly those present within the former golf course.

13.3.1.5 Planning Context

The site is allocated in the current Fingal County Development Plan 2023-2029 largely as Residential Area. A portion of land within the former golf course, and a small section of land to the southern boundary, are designated as Open Space.

In the vicinity of the subject lands, large residential developments exist or are under construction. To the east there is the newly built Bellingsmore Development and Sites 2 and 3 have been recently granted by An Bord Pleanála for a development of 548 residential units (Reg. Ref. TA06F.312271). The land further east is allocated for General Employment and Heavy Industry, with High Technology allocated to the south-east. These areas are already under development in line with these uses. The land north of the site is allocated for open space. Combined with the current development in the area, the build out of these allocated uses and sites will create developed land comprising a variety of uses, massing and scale. The Kilmartin Local Area Plan 2013-2019 as extended (expired May 2023) sets out relevant landscape related considerations for the development including the Character Areas for the proposed development. Key characteristic requirements include medium density housing with cohesive green landscape edges to the golf course land, homes fronting tree lined avenues, the provision of well overlooked green corridors and linkages within the development and to adjacent green spaces and neighbourhoods.

13.3.1.6 Cumulative

The local area in which the subject development is located has a number of existing and permitted developments which will have a cumulative short-term construction impact and a long-term operational impact. Cumulative projects are described in detail in Chapter 20 of this EIAR and projects are listed in **Table 20.1**. Predicted landscape and visual effects are described in Section 13.7.4.

13.4 Characteristics of the Proposed Development

13.4.1 Proposed Development

The proposed development relates to a site of c.20.6ha referred to as Hollystown-Kilmartin 4 located in the townland of Hollystown and Kilmartin, Dublin 15. The site is bound by lands which previously formed part of the former Hollystown Golf Club and the residential area of Hollystown Park to the north, lands forming part of a permitted Strategic Housing Development (SHD) to the east (ABP Reg. Ref. 312271), Tyrrelstown Park to the south, and rural zoned lands to the west.

The proposed development will include for the development of 580 no. residential units, consisting of 112 no. apartments/duplexes and 468 no. houses ranging from 1 – 3 storeys and will also include for car parking, cycle parking, new pedestrian/ cycle links, storage, services and plant areas. Landscaping will include for high quality private open space, communal amenity areas and public open space provision.

The strategy for this land has been informed by the Kilmartin Local Area Plan, by BSM's detailed Framework Plan and by the topography and the natural features present on site.

The design concept is based on the structure of the historic settlements and villages: a neighbourhood core or central neighbourhood with higher density, higher scale and a distinctive character and lower

density and lower scale clusters on the edges, defined and separated by “landscape fingers” of multi-functional open space.

The key design elements are characterised as follows:

- Neighbourhood Core with higher scale buildings (duplex-apartments and 3-storeys semi-detached units);
- Built clusters in the outer area composed by lower scale houses typology that are characterised by varied and distinctive architectural characters, the central neighbourhood connects the northern area to the southern area of the site;
- The Primary Link Street running through the site from east (Site 3 and Bellingsmore Development) to west;
- A Secondary Link Street which is located to the north of the Primary Link Street and creates a loop with the Primary Link Street around the neighbourhood core;
- A Primary Local Street along the western edge of the site and allows the connection to the possible future school to the south-west of the site. Pedestrian and cycle connections are proposed through the centre of the site which will connect to the potential future school and to Tyrrelstown Park;
- The Primary Link Street is defined by higher scale urban edge (duplex-apartments and 3-storeys semi-detached units);
- A greenway is located at the centre of the site and develops from north to south connecting the two areas of zoned “open space” at the northern and southern edges of the site;
- The greenway is made up by three large open spaces that provide pedestrian and cycle links and play areas and are defined and overlooked by distinctive frontages;
- Several pedestrian and cycle connections are provided from north to south and from east to west; and
- Smaller pocket open spaces are scattered around the site and an additional large open space is located in the south-western corner to preserve existing hedgerows and drains.

13.4.1.1.1 Construction Stage

The construction stage of the proposed development will see construction works involving the following:

- Temporary fencing for security and for protection of retained hedgerows / tree-lines;
- Provision of a temporary site compound;
- Provision of temporary construction haulage route through former golf course;
- Topsoil stripping and temporary storage for re-use;
- Subsoil excavation and removal from site;
- Grading and preparation of the site for construction works;
- Construction of roads, houses, installation of services, etc.; and
- Construction of areas of public open space.

13.4.1.1.2 Operational Stage

The operational stage of the proposed development will see delivery of a new phase of residential development and an expansion of the emerging residential community at Kilmartin in accordance with the principals of the Kilmartin LAP and current Fingal Development Plan.

In effect the operational stage of Hollystown-Kilmartin Site 4 will complete the western portion of Hollystown development and also deliver key open spaces in the form of extended linear parks, riparian buffer zones and central open spaces. The central open space includes a series of public open spaces, which provide a key element of the green infrastructure, open space and amenity and recreational network for the wider lands.

The operational stage of the proposed development will involve: -

- Establishment of an extended residential development, with extended roads, roadside lighting and emerging community.
- Access to public open space, and to an expanded open network of spaces including routes to planned surrounding open spaces.

13.5 Potential Impact of the Proposed Development

13.5.1 Proposed Development

13.5.1.1 Construction Stage

Potential landscape and visual impacts from the construction stage are associated with: -

- Site-based landscape disturbance, earthworks, stockpiling of soils and materials.
- Removal of trees / hedgerows.
- General construction activity, traffic.
- Inconvenience and / or visual effects from dust, dirt, noise.

The construction phase will result in a change from areas of open land of former agricultural and amenity uses to a built-up area of mainly residential development with some open space. There will be the permanent loss of some valued features such as tree planting associated with the golf course and scrub vegetation to the south-west portion of the site, and the sense of openness and any residual rural character would be lost. There would also be the removal of the hedgerow along the eastern boundary which is degraded due to poor condition and disease. There will also be some openings cleared through the southern hedgerow. The changes to the landscape fabric would be irreversible, but the impacts associated with construction activity and disturbance would be short-term at most.

In a scenario where mitigation measures were not implemented or failed the worst-case landscape and visual impact of the construction stage is assessed as being of **significant, negative, short-term**.

13.5.1.2 Operational Stage

Potential landscape and visual impacts from the Operational Stage are associated with: -

- Design, character and quality of proposed buildings.
- Design, amenity and quality of proposed open spaces.
- Overall quality of finish and management of development.

The operational phase would involve permanent change to the landscape fabric and character from the transformation into a new residential area. The residual rural characteristics associated with the original agricultural land use will be permanently lost. There will be provision of areas of open space which will preserve some degree of openness and visual connectivity with surrounding landscape. Without the implementation of the mitigation measures detailed in Section 13.6.2 there would be substantial visual impacts on surrounding visual receptors from the introduction of new buildings into views of previously undeveloped character, with an associated loss of visual amenity.

In a scenario where mitigation measures were not implemented or failed the worst-case landscape and visual impact of the operational stage is assessed as being of *moderate / significant, negative, long-term*.

13.5.1.3 Do-Nothing Impact

The lands on which the proposed development are situated are zoned for residential and associated open space development in the FCC Development Plan (2023-2029). Therefore, should this proposed development not proceed (do-nothing), it is envisaged that some residential / open space development of a broadly similar nature will proceed on these lands at some stage, which would likely result in similar effects as the proposed development.

13.5.2 Cumulative

13.5.2.1 Construction Stage

Potential cumulative landscape and visual impacts from the construction stage are associated with: -

- Wider site-based landscape disturbance, earthworks, stockpiling of soils and materials on the proposed development site and other sites in the vicinity of the site;
- Operation of temporary haulage route through former golf course;
- Removal of trees / hedgerows on other sites in cumulation with the proposed development site;
- More intensive construction activity, traffic from a number of sites / sources;
- Wider inconvenience and / or visual effects from dust, dirt, noise.

13.5.2.2 Operational Stage

Potential cumulative landscape and visual impacts from the operational stage are associated with: -

- Design, character, quality and quantities of development;
- Design, amenity and quality of open spaces within and around the site; and
- Overall quality of finish and management of subject and surrounding developments.

13.5.2.3 Do-Nothing Impact

The lands are zoned for residential and associated open space development in the Fingal Development Plan (2023-2029). Therefore, should this and other proposed / approved developments not proceed (do-nothing), it is envisaged that some development of a broadly similar nature will proceed on these LAP lands at some stage which will result in similar effects on the landscape and visual resource.

13.6 Mitigation Measures

13.6.1 Construction Stage

Mitigation measures are proposed to avoid, reduce or remediate, wherever possible significant negative landscape and visual effects of the construction phase of the proposed development. In addition to the operation and management of all construction works in accordance to best methodologies and practice, that following measures are proposed for the mitigation of landscape / townscape and visual impacts:

- Construction works will be guided by a Construction Environmental Management Plan (CEMP), which shall provide the environmental management framework to be adhered to and monitored

during the pre-commencement and construction phases of the proposed development. The CEMP will incorporate all of the mitigating principles required to ensure that the work is carried out in a way that minimises the potential for environmental impacts to occur. Please refer to the CEMP prepared in respect of the proposed development by DBFL Consulting Engineers (2023), and submitted under a separate cover as part of the planning application.

- Construction compounds will not be located within the root protection area of trees or hedgerows to be retained and will be enclosed by solid hoarding. The compound areas will be fully decommissioned and reinstated at the end of the construction phase.
- Trees, hedgerows and vegetation to be retained within and adjoining the works area will be protected in accordance with 'BS 5837:2012 Trees in relation to design, demolition and construction. Recommendations'. Works required within the root protection area (RPA) of trees, hedgerows to be retained will follow a project specific arboricultural methodology for such works, prepared / approved by a professional qualified arborist. Please refer to the Tree Survey Report prepared in respect of the proposed development by Independent Tree Surveys, and submitted under separate cover as part of the planning application. It contains an Arboricultural Method Statement and general recommendations in relation to tree protection on construction sites. These measures will be implemented in full during the proposed construction works.
- Trees and vegetation identified for removal will be removed in accordance with 'BS 3998:2010 Tree Work – Recommendations' and best arboricultural practices as detailed and monitored by a professional qualified arborist.
- The construction site will be fully enclosed and secured. Construction traffic accessing the site will follow agreed routes and public roads will be maintained in a clean and safe manner (See Chapter 16 Traffic and Transportation for detailed mitigation).

Mitigation of landscape and visual impacts during the construction phase is focused on ensuring protection of elements to be retained (e.g. mature hedgerows) and providing for a degree of visual screening of particular aspects of the works (e.g. the construction compounds).

13.6.2 Operational Stage

The operational stage of the proposed development will not give rise to significant landscape and visual effects and therefore measures for the mitigation of significant landscape and visual impacts are not required. Nevertheless, the proposed development includes a number of measures which will ensure its integration within its setting. The proposed development includes:

- Provision of a good quality of architectural design, character and finish for the proposed buildings and development.
- Provision of significant areas of new and connected open space and park with play facilities as amenity and recreation for the new communities. The open spaces provide for retention and incorporation of townland boundaries and tree-lined hedgerows.
- Retention, enhancement and management of existing hedgerows.
- Planting of new trees along streetscapes and within open spaces. Species selected will be appropriate to the street environment and to the characteristics of this location.
- Provision of a high-quality of design and finish for landscape areas within the proposed development.
- Landscape areas will be maintained for twelve months during which any defective or dead material will be replaced.

13.7 Residual Impact of the Proposed Development

13.7.1 Construction Stage

13.7.1.1 Landscape Impact

Any development will give rise to some degree of landscape and visual impact. The greatest impacts tend to occur during the temporary / short-term construction stage when site disturbance associated with stripping of soils and movement of vehicles / machinery may be unfamiliar and draws particular visual attention to the site.

Parts of the site fabric have already been disturbed through previous infrastructural works associated with the surrounding areas. There is also a strong influence on the character of the area by ongoing or recent development within the LAP area. Nevertheless, there are elements of landscape value remaining most notably in the vegetation and plantings of the former golf course and the boundaries and ditches of the former agricultural field. The sensitivity of the receiving landscape environment is assessed as being *low / medium*.

The construction phase will result in a change from areas of open land of former agricultural and amenity uses to a built-up area of mainly residential development with some open space and amenity provision. There will be the permanent loss of some valued features such as tree planting associated with the golf course and scrub vegetation to the south-west portion of the site, but the field boundaries and ditches will be largely protected and retained. The changes would be irreversible but the construction phase impacts will be short-term. The magnitude of change would be *medium*.

The residual landscape effects resulting from the construction stage would be *slight to moderate, negative and short-term*.

13.7.1.2 Visual Impact

The site is moderately well enclosed and screened by mature field boundaries, and tree planting within the former golf course lands. Open views are available from the edge of newly developed residential areas to the east, and from Tyrrelstown Park (developed in 2017). The sensitivity of the receiving visual environment is assessed as being *medium*. The magnitude of change on the receiving visual environment would be *medium*. The residual visual effects resulting from the construction stage would be *moderate, negative, short-term*.

13.7.2 Operational Stage

On completion of the construction stage a new development begins to establish its presence on the environmental, physical and visual character of its environs. In this regard landscape and visual impacts must also be considered within the context of planned, emerging and likely future development proposals for the area. In this regard the Kilmartin LAP provides a detailed analysis of the area and provides a development framework for the lands, identifying development zones, as well as open spaces, green networks, connections and linkages, etc.

13.7.2.1 Landscape Impact

It is considered that the proposed development is appropriately sited, designed and laid out so as to be capable of being fully integrated into the new emerging residential character of the wider area. This integration is underpinned by the architectural approach and by the landscape masterplan and

landscape strategy that acknowledges and builds on the key requirements of the LAP, including proposed character areas, and the emerging character established in Phase 1 and proposed Sites 2 & 3. In developing the design and layout of the proposed development, major consideration has been given to incorporating landscape features into the final design, with significant areas of open space being provided throughout the site. The landscape design builds on the existing features, with the open space being enhanced and developed with a focus on retaining and enhancing the existing features where practicable.

The use of existing vegetation on site, notably the field hedgerows and ditches, has value in integrating the development into the existing landscape. These will be further preserved and enhanced through the use of buffer strips and, where feasible, integration into the proposed open space network.

The change in land use will inevitably result in the removal of a number of the existing trees across the site, in particular across the parts of the site that will occupy lands formerly used for the golf course and to the eastern boundary hedgerow. Trees to the former golf course are generally category C (indicates a tree of low quality and value) or category B (indicates a tree of moderate quality and value), however, there has been damage to some individuals through ESB works and wind uprooting. In addition, the context that these trees were intended to exist has been lost, through the disuse of the golf course. Trees to the eastern hedgerow are in poor condition due to disease or root damage. The taller ash trees which are associated with the original agricultural landscape are experiencing symptoms of ash dieback disease. The Arboricultural Report notes that:

“Efforts to retain ash trees already noted to be suffering from Ash Dieback are likely to be wasted, as the trees will probably continue to decline until their final death. Such trees should be removed and replaced with new planting of mixed tree species”.

A change to vegetation patterns that respond to the new land use patterns would be a positive aspect of the design. Although the proposed development will have a short-term negative impact on trees and vegetation, over time with establishment of new replacement / compensatory planting, and the integration of the built proposals, there will be an overall positive impact on the emerging local character.

It is considered that the operational stage of the development will make a continued positive contribution to the emerging residential community of the wider area, as well as enhancing green infrastructure and green space connectivity. The sensitivity of the receiving landscape environment is assessed as being **low / medium**. The magnitude of change would be **medium**. The residual landscape impact of the operation stage is assessed as being of **slight to moderate, neutral, short-term**, becoming **positive** in the long-term as the landscape (including replacement tree planting) matures.

13.7.2.2 Visual Impact

The visual impact on residential properties in the local area to the north will be limited by the presence of tree planting and hedgerows, most notable the tree planting present as part of the former golf course. The sensitivity of receptors in this part of the receiving visual environment is assessed as being **medium / high** and the magnitude of change would be **low**. The visual impact of the operation stage on views in this area is assessed as being of **slight, negative, short-term**, becoming **neutral in the long-term** as the context of the views becomes more residential and the proposed landscaping matures.

Views of the proposals are likely to be experienced from Le Cheile Secondary School. Residential areas bordering Tyrrelstown Park to the south are also likely to have views, although these will be experienced through intervening overhead powerlines and pylons in the foreground.

The construction of the buildings on the southern portion of the site has potential for some of the most significant visual effects, due to the proximity of the buildings to Tyrrelstown Park and residences to the south. However, the proposals will be consistent with the objectives of the Kilmartin LAP and will be visually appropriate for the emerging residential area.

It is considered that the operational stage of the development will make a positive contribution to the emerging residential community of the wider area, and the change in the views will represent a continuation of the ongoing trend of change towards a new residential neighbourhood. The presence of screening vegetation and the low lying nature of the topography will generally limit adverse impacts. The sensitivity of the receiving visual environment is assessed as being *medium*. The magnitude of change would be *medium*. The residual visual impact of the operation stage is assessed as being of *moderate, neutral, short-term*, becoming *positive* overall in the long-term as the landscape matures.

13.7.3 Photomontages

Photomontages of the proposed development have been prepared and included in **Appendix 13.1** of the EIAR. Each view is presented in an 'As Existing' and 'As Proposed' version. The views have been selected on the basis that they present the highest potential for visual impact within the existing landscape.

View 1

This view looks north from Tyrrelstown Park towards the site, the south-west corner of which is defined by a hedgerow and area of scrubby vegetation in the middle distance. The park was developed as part of the Hollystown masterplan area with the intention of serving both existing and future residential development in the immediate area. The foreground is composed of an asphalt footpath passing through an area of mown and rough grassland. The character of the view is one of an area of low-lying amenity land with little evident development. The landscape is gently undulating with some moderately sized trees but few other vertical elements.

The proposed houses along the southern edge of the development would be visible in the middle distance forming a new built-up edge to the park. The massing of the buildings will be broken up by the canopies of intervening trees within the park and along the boundary. The proposals will result in notable increase in built form in the view, however, this will have a positive impact on the view in the form of increasing a sense of enclosure and a defined edge to the public open space. The development will aid in establishing the developed context to the open space and fulfilling its intended role as a space at the centre of a developed residential neighbourhood. Overlooking from the dwellings will also enhance the perceived safety of receptors in this location.

The cumulative addition of Hollystown Sites 1, 2 & 3 results in a mass of development in the distance which is adjacent and visually cohesive with the proposals.

View 2

This view looks north from a residential area at Mount Garrett Crescent across an adjacent open space. The space is made up of an area of mown grass with overhead high voltage powerlines passing through the view in the foreground and a single pylon visible in the middle distance. Sections of tall hedge and steel bar railing border the space and beyond this elements of Tyrrelstown Park are visible, most notably

some columnar poplars and a collection of various play equipment towards the left of the view. The character of the view is of a relatively featureless open space, on the edge of a residential area, with detractors in the form of the overhead power infrastructure and positive features in the form of the landscape elements in the park.

The proposals are only slightly visible in the distance on the far edge of the park between various screening elements. There would be a minimal increase in visible built form in the view and a small neutral change to the character of the view.

The cumulative addition of Hollystown Sites 2 & 3 would not be evident as it would be screened behind the park boundary hedge.

View 3

This view looks west from a residential street to the south of Bellingsmore, adjacent to the entrance to Le Cheile Secondary School. This is representative of views from the street and the school. The security fencing to the school and retained trees beyond are prominent features in the view. New houses of reasonable architectural character are present on the right side of the street. The street is currently devoid of trees although these formed part of the planning permission for the residential area, it is unknown whether these will be provided in time. The character of the view is of a newly developed residential street with some retained trees but a poorly established streetscape.

The proposals would be partially visible in the distance to the end of the vista created by the residential street and framed by the trees at Le Cheile and houses at Bellingsmore. The increase in built form would result in a minimal but positive change which would aid in consolidating the emerging sub-urban character of the view.

The cumulative addition of Hollystown Sites 2 & 3 would completely screen the proposals and would further consolidate the emerging suburban character of the view.

View 4

This view looks west from a recently developed residential street at Bellingsmore Green, and is broadly representative of views from these residences. In the foreground is a small area of open space of mown grass with young tree planting bounded by a tall gappy hedgerow including mature trees. Beyond these is an area of ongoing development including disturbed ground and soil stockpiling mounds. Views of the proposed development site are partially screened by intervening trees within field boundaries. The character of the view is one of a new residential development bordering on an ongoing development area with some retained valued landscape features in the form of the hedgerow trees.

The proposals would be partially visible filtered through the hedgerow and above elements in the adjacent development area. There would be a minimal change resulting from the increase in visible built form, which would be a positive change which would aid in consolidating the emerging sub-urban character of the view.

The cumulative development of Hollystown Sites 2 & 3 would considerable change the view but this would also be a positive change that would consolidate the intended character of the new residential neighbourhood.

View 5

This view looks west from a residential area at Redwood over the former Hollystown Golf Club. The character of the view is rural with no built form evident.

The proposals would be fully screened by trees within the former golf course, and there would be no change to the view.

View 6

This view looks south-east from a residential area Hollystown Park over a former golf course. This view is intended to be representative of views from the adjacent residential properties. The character of the view is of a naturalistic designed landscape and, with the exception of a small utility building in the foreground, there is no built form evident.

The proposals would be glimpsed in the distance partially screened by trees within the former Hollystown Golf Club. There would be a visible increase in built form, however, this would be integrated into the landscape by the well-treed landscape of the golf-course. The change would be negative but minimal, becoming neutral in the long-term as proposed vegetation matures.

View 7

This view looks south from a residential street known as Hollystown Demesne. The view is composed of rough grassland and groups of mature trees forming part of the adjacent former Hollystown Golf Club. Houses at Hollystown Park can be seen to the right filtered through the canopies of street trees. Overall, the character of the view is one of a designed naturalistic landscape with evidence of modern suburbanisation to the periphery.

The proposals would be fully screened by trees within the former golf course, and there would be no change to the view.

13.7.4 Cumulative Effects

This chapter has been prepared with reference to the list of other developments in the vicinity set out in Chapter 20 (Cumulative Impacts). There are no predicted significant cumulative impacts in relation to landscape and visual, for example, significant negative changes to the overall landscape character or significant negative visual effects on visual receptors as a result of the proposed development in combination with existing / proposed plans or projects.

There will be an in-combination change in the overall character of this urban fringe landscape through continued outward development, however, this is considered part of an ongoing trend that has been occurring within the surrounding area over the long-term, and which is directed and compliant with planning policy that has selected these areas for future development. This change will not result in significant cumulative landscape effects. The site is also visually well contained by existing landscape features, most notably mature trees and vegetation, and therefore significant cumulative visual effects are not expected.

13.8 Interactions

At the proposed development site, the main interactions of importance to landscape and visual relate to Biodiversity (Chapter 8). The mitigation measures for the proposed development have been designed to minimise the potential impact that the construction and operational phases may have on the receiving environment.

The landscape design for the proposed development takes into account the requirements to maximise the benefits to biodiversity, both locally and within the wider landscape. The landscape scheme (Landscape Report and Landscape Masterplan, prepared by Bernard Seymour Landscape Architects and

submitted as part of this application under separate cover) proposes significant ecologically sensitive planting to provide for potentially diverse habitats.

13.9 Reinstatement

13.9.1 Proposed Development

13.9.1.1 Construction Stage

All landscape areas disturbed by the construction works will be reinstated prior to the completion of construction works. Any materials or plants which fail within the twelve-month aftercare period will be replaced.

13.9.1.2 Operational Stage

Any landscape materials, plants or areas which fail during the on-going operational stage will be replaced.

13.10 Difficulties Encountered

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

13.11 References

- British Standards Institution (BSI) (2010). BS 3998:2010 'Tree Work – Recommendations'
- British Standards Institution (BSI) (2012) BS 5837:2012 'Trees in relation to in relation to design, demolition and construction. Recommendations'
- Council of Europe (2000). European Landscape Convention 2000.
- DHPLG (2018). Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment
- EPA (2022). Guidelines on the Information to be contained in Environmental Impact Assessment Reports.
- European Parliament (2014) Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment (the EIA Directive)
- Fingal County Council (2013) Kilmartin Local Area Plan (expired).
- Fingal County Council (2023). Draft Fingal Development Plan 2023 – 2029
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- Landscape Institute and the Institute of Environmental Management and Assessment [IEMA] (2013). Guidelines for Landscape and Visual Impact Assessment 3rd edition.
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- S.I. 600 of 2001 – Planning and Development Regulations (2001).

14 Cultural Heritage, Archaeology & Architectural Heritage

14.1 Introduction

14.1.1 General

IAC Archaeology has prepared this chapter to assess the impact, if any, on the archaeological, architectural, and cultural heritage resource of a proposed development at Hollystown-Kilmartin Site 4, Co. Dublin. The assessment was undertaken by Faith Bailey (MA, BA (Hons), MIAI, MCIfA) of IAC Archaeology and has been informed by a programme of archaeological testing (Licence Ref.: 22E0215), undertaken by Fergal Murtagh of IAC Archaeology.

This study determines, as far as reasonably possible from existing records, the nature of the archaeological, architectural and cultural heritage resource in and within the study area of the proposed development using appropriate methods of study. The study area is defined as an area measuring c. 500m from the proposed development area. Desk-based assessment is defined as a programme of study of the historic environment within a specified area or site that addresses agreed research and/or conservation objectives. It consists of an analysis of existing written, graphic, photographic, and electronic information in order to identify the likely heritage assets, their interests and significance and the character of the study area, including appropriate consideration of the settings of heritage assets.

This leads to the following:

- Determining the presence of known archaeological/architectural heritage assets that may be affected by the proposed development;
- Assessment of the likelihood of finding previously unrecorded archaeological remains during the construction programme;
- Determining the effect upon the setting of known cultural heritage sites in the surrounding area; and
- Suggested mitigation measures based upon the results of the above research.

14.1.2 Definitions

In order to assess, distil and present the findings of this study, the following definitions apply:

‘Cultural Heritage’ where used generically, is an over-arching term applied to describe any combination of archaeological, architectural, and cultural heritage features, where –

- the term ‘archaeological heritage’ is applied to objects, monuments, buildings or landscapes of an (assumed) age typically older than AD 1700 (and recorded as archaeological sites within the Record of Monuments and Places)
- the term ‘architectural heritage’ is applied to structures, buildings, their contents and settings of an (assumed) age typically younger than AD 1700
- the term ‘cultural heritage’, where used specifically, is applied to other (often less tangible) aspects of the landscape such as historical events, folklore memories and cultural associations.

14.1.3 Significance of Effects

Significance of Effects as defined by the Environmental Protection Agency (2022) Guidelines (pg. 50).

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.

14.1.4 Consultations

Following the initial research, a number of statutory and voluntary bodies were consulted to gain further insight into the cultural background of the background environment, receiving environment and study area, as follows:

- Department of Housing, Local Government and Heritage (DoHLGH) – the Heritage Service, National Monuments: Record of Monuments and Places; Sites and Monuments Record; Monuments in State Care Database and Preservation Orders;
- National Museum of Ireland, Irish Antiquities Division: topographical files of Ireland;
- Fingal County Council: Planning Section;
- Trinity College Dublin, Map Library: Historical and Ordnance Survey Maps

14.1.5 Guidance and Legislation

The following legislation, standards and guidelines were consulted as part of the assessment.

- National Monuments Acts, 1930-2014;
- Planning and Development Act, 2000 (as amended);
- Heritage Act, 1995 (as amended);
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EIAR) (EPA 2022). Dublin: Government Publications Office;

- Frameworks and Principles for the Protection of the Archaeological Heritage, 1999, (formerly) Department of Arts, Heritage, Gaeltacht and Islands;
- Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act (1999); and
- Architectural Heritage Protection Guidelines for Planning Authorities (2011).

14.2 Method

A study area defined as 500m from the boundary of the proposed development area has been examined as part of this assessment. Research has been undertaken in three phases. The first phase comprised a paper survey of all available archaeological, architectural, historical and cartographic sources. The second phase involved a field inspection of the proposed development area. The third phase comprised a programme of archaeological testing.

14.2.1 Paper Survey

The following sources were examined and a list of areas of archaeological, architectural and cultural heritage potential was compiled:

- Record of Monuments and Places for County Dublin;
- Sites and Monuments Record for County Dublin;
- National Monuments in State Care Database;
- Preservation Orders List;
- Topographical files of the National Museum of Ireland;
- Cartographic and written sources relating to the study area;
- Fingal Development Plan (2023–2029);
- Aerial photographs;
- Place name analysis;
- Excavations Bulletin (1970–2023); and
- National Inventory of Architectural Heritage.

Record of Monuments and Places (RMP) is a list of archaeological sites known to the National Monuments Section, which are afforded legal protection under Section 12 of the 1994 National Monuments Act and are published as a record.

Sites and Monuments Record (SMR) holds documentary evidence and field inspections of all known archaeological sites and monuments. Some information is also held about archaeological sites and monuments whose precise location is not known e.g. only a site type and townland are recorded. These are known to the National Monuments Section as ‘un-located sites’ and cannot be afforded legal protection due to lack of locational information. As a result, these are omitted from the Record of Monuments and Places. All recorded archaeological sites are also listed on a website maintained by the Department of Housing, Local Government, and Heritage (DoHLGH) – www.archaeology.ie.

National Monuments in State Care Database is a list of all the National Monuments in State guardianship or ownership. Each is assigned a National Monument number whether in guardianship or ownership and has a brief description of the remains of each Monument. The Minister for the DoHLGH may acquire national monuments by agreement or by compulsory order. The state or local authority may assume guardianship of any national monument (other than dwellings). The owners of national monuments (other than dwellings) may also appoint the Minister or the local authority as guardian of

that monument if the state or local authority agrees. Once the site is in ownership or guardianship of the state, it may not be interfered with without the written consent of the Minister.

Preservation Orders List contains information on Preservation Orders and/or Temporary Preservation Orders, which have been assigned to a site or sites. Sites deemed to be in danger of injury or destruction can be allocated Preservation Orders under the 1930 Act. Preservation Orders make any interference with the site illegal. Temporary Preservation Orders can be attached under the 1954 Act. These perform the same function as a Preservation Order but have a time limit of six months, after which the situation must be reviewed. Work may only be undertaken on or in the vicinity of sites under Preservation Orders with the written consent, and at the discretion, of the Minister.

The topographical files of the National Museum of Ireland are the national archive of all known finds recorded by the National Museum. This archive relates primarily to artefacts but also includes references to monuments and unique records of previous excavations. The find spots of artefacts are important sources of information on the discovery of sites of archaeological significance.

Cartographic sources are important in tracing land use development within the development area as well as providing important topographical information on areas of archaeological potential and the development of buildings. Cartographic analysis of all relevant maps has been made to identify any topographical anomalies or structures that no longer remain within the landscape.

Documentary sources were consulted to gain background information on the archaeological, architectural and cultural heritage landscape of the proposed development area.

Aerial photographic coverage is an important source of information regarding the precise location of sites and their extent. It also provides initial information on the terrain and its likely potential for archaeology. A number of sources were consulted including aerial photographs held by the Ordnance Survey, Bing Maps, and Google Earth.

Place Names are an important part in understanding both the archaeology and history of an area. Place names can be used for generations and in some cases have been found to have their root deep in the historical past.

Development Plans contain a catalogue of all the Protected Structures and archaeological sites within the county. The Fingal Development Plan (2023–2029) was consulted to obtain information on cultural heritage sites in and within the immediate vicinity of the proposed development area.

The National Inventory of Architectural Heritage (NIAH) is a government-based organisation tasked with making a nationwide record of locally, regionally, nationally and internationally significant structures, which in turn provides county councils with a guide as to what structures to list within the Record of Protected Structures. The NIAH have also carried out a nationwide desk-based survey of historic gardens, including demesnes that surround large houses.

Excavations Bulletin is a summary publication that has been produced every year since 1970. The hard copy publication summarises every archaeological excavation that has taken place in Ireland during that year up until 2010 and since 1987 has been edited by Isabel Bennett. This information is vital when examining the archaeological content of any area, which may not have been recorded under the SMR and RMP files. The information is also available online and includes years from 2011 to the present (www.excavations.ie).

14.2.2 Field Inspection

Field inspection is necessary to determine the extent and nature of archaeological, architectural, and historical remains and can also lead to the identification of previously unrecorded or suspected sites and portable finds through topographical observation and local information.

The field inspection entailed:

- Inspecting the proposed development area and its immediate environs;
- Noting and recording the terrain type and land usage;
- Noting and recording the presence of features of archaeological, architectural, or cultural heritage significance;
- Verifying the extent and condition of any recorded sites; and
- Visually investigating any suspect landscape anomalies to determine the possibility of their being anthropogenic in origin.

14.2.3 Archaeological Testing

Archaeological testing is defined as ‘a limited programme... of intrusive fieldwork which determines the presence or absence of archaeological features, structures, deposits, artefacts or ecofacts within a specified area or site on land or underwater. If such archaeological remains are present test trenching defines their character and extent and relative quality’ (CIFA 2020a).

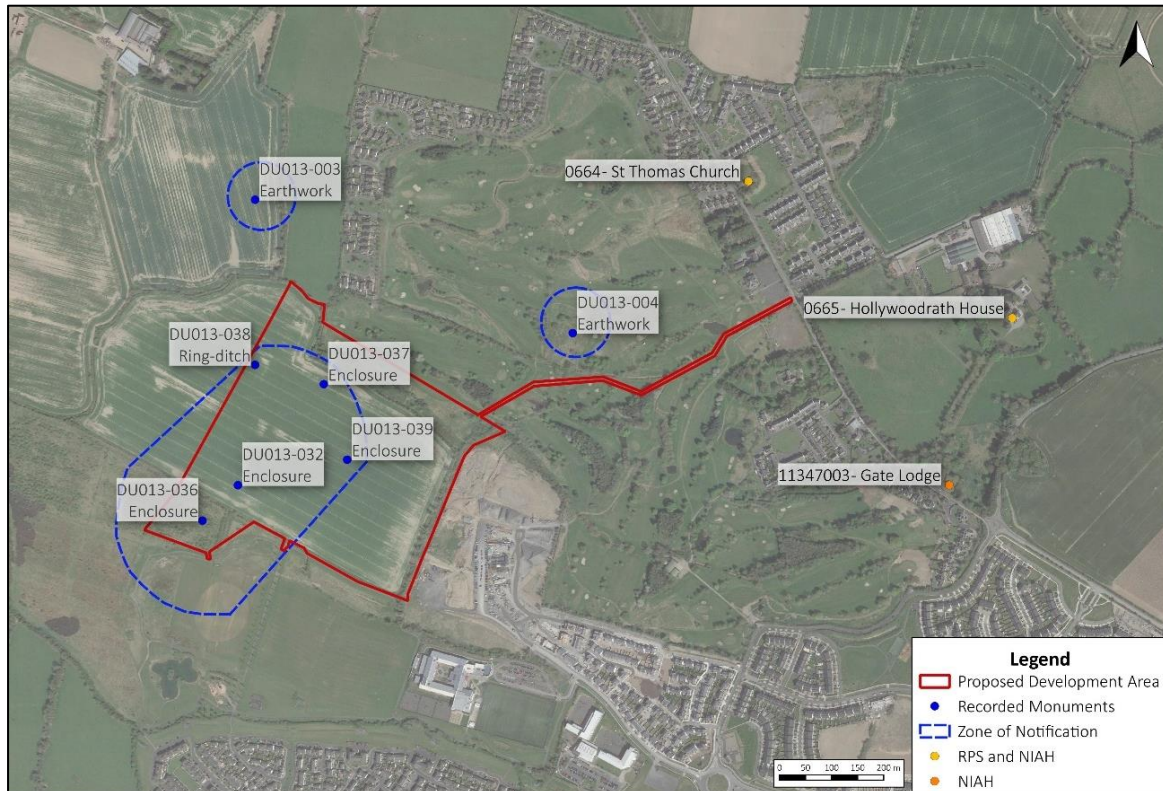
A programme of archaeological testing was carried out across the proposed development area by Fergal Murtagh under licence 22E0215, as issued by the National Monuments Service of the DoHLGH. The results of the assessment are given in this report and the testing report has been included as **Appendix 14.1**.

14.3 Baseline Environment

The proposed development area is located within the townlands of Kilmartin and Hollystown, Parish of Mulhuddart and Barony of Castleknock in County Dublin. There are five recorded archaeological sites located within the proposed development area, and two further sites located within c. 500m (**Figure 14.1**). None of the recorded monuments within the proposed development area are extant as demonstrated by archaeological testing (Murtagh 2022, Licence Ref.: 22E0215, **Appendix 14.1**). Following testing in 2022, two small areas of archaeological significance were revealed, which have been designated as Archaeological Areas (AA) 1 and 2 (**Appendix 14.1**). AA1 revealed a C-shaped kiln or kiln flue and a linear ditch/gully containing some animal bone. AA2 revealed a C-shaped linear slot trench, five pit features and two linear ditches.

There are three structures listed on the NIAH Building survey within the study area of the proposed development area, two of which are also protected structures.

Figure 14.1 Proposed development area showing nearby archaeological and architectural sites



14.3.1.1 Prehistoric Period

Mesolithic Period (c. 8000–4000 BC)

Although recent discoveries may provide evidence of a human presence in the southern half of Ireland from the Upper Palaeolithic (Dowd and Carden 2016), the Mesolithic period is the first time for which there is widespread evidence of human occupation across the island of Ireland. During the Mesolithic, small communities hunted, fished, and foraged. Coastal and riverine resources were of particular importance, with groups migrating to exploit seasonal resources. As a result of settlement evidence dating to the Mesolithic period is rare. Often the only trace of these communities is scatters of flint artefacts or the by-products of their manufacture. Occasionally, shell middens are also uncovered dating to this period; however, there are no sites dating to the Mesolithic in the vicinity of the proposed development area.

Neolithic Period (c. 4000–2500 BC)

During the Neolithic period, communities became less mobile and their economy became based on the rearing of stock and cereal cultivation. This transition was accompanied by major social change. Agriculture demanded an altering of the physical landscape. Forests were cleared and field boundaries were constructed. There was a greater concern for territory, which saw the construction of large communal ritual monuments called megalithic tombs, which are characteristic of the period. There are no recorded sites of Neolithic date within the study area of the proposed development area.

Bronze Age (c. 2500–800 BC)

The Bronze Age in Ireland was marked by the use of metal for the first time. As with the transition from Mesolithic to Neolithic, the transition into the early Bronze Age was accompanied by changes in society.

The tradition of megalithic tombs ended in the early Bronze Age in favour of individual, subterranean cist or pit burials that were either in isolation or in small cemeteries. These burials contained inhumed or cremated remains and were often, but not always, accompanied by a pottery vessel. Different forms of burial barrows were also being constructed during this period, as well as ceremonial monuments such as henges. Unenclosed cemeteries are also known from this period and are termed flat cemeteries.

In general, ring-ditches date to the Bronze Age, with the earlier examples being simpler in form and later examples incorporating entrances and a wider range of burial practices. Ring-ditches appear to have continued to be built and earlier monuments were re-used, during the Iron Age and early medieval period. A ring-ditch (DU013-038) is located in the western extent of the site, but no archaeological remains were identified here during geophysical and archaeological testing surveys.

A cluster of cremation pits were excavated c. 1.6km south-east of the development area in advance of the Tyrrelstown to N2 Cherryhound Interchange link road (DU013-043). Pit 1 held the remains of an older adolescent or adult. Similarly, Pit 2 also contained the remains of an older adolescent or adult. Pit 3 held a cremation placed within a coarse pottery vessel and was subsequently dated to 1010-840 cal. BC (O'Hara 2008a, Reg no. E003917). A further two cremation pits (DU013-044002/045002) and an annular ring-ditch dated to 1370–1110 BC (DU013-045001) were excavated as part of the scheme further to the east (O'Hara 2009b, Reg no. E003918).

Iron Age (c. 800 BC–AD 500)

Compared to the rest of Irish prehistory, there is little evidence in Ireland representing the Iron Age. As in Europe, there are two phases of the Iron Age in Ireland; the Hallstatt and the La Tène. The Hallstatt period generally dates from 700 BC onwards and spread rapidly from Austria, across Europe, and then into Ireland. The later Iron Age or La Tène also originated in Europe during the middle of the 5th century BC. For several centuries the La Tène Celts were the dominant people in Europe until they were finally overcome by the Roman Empire. An oval kiln containing a single mixed deposit including charcoal identified as alder, hazel, ash, cherry/blackthorn, and willow/poplar was excavated and radiocarbon dated to the middle Iron Age, 160 BC–AD 50, c. 1.6km to the south-east (O'Hara 2009b, Reg no. E003918; DU013-044001).

14.3.1.2 Early Medieval Period (AD 500–1100)

Ireland, as depicted in the surviving sources, was entirely rural in the early medieval period. Ireland at this time was a patchwork of larger and smaller kingdoms known as *túath* and *trícha cét* respectively. Byrne (1973) estimates that there were as many as 150 kings in Ireland at the time, each ruling over a basic territorial unit known as the *túath*. If estimates placing the population of Ireland in the early medieval period at a quarter to half a million people are accurate, then each king would have ruled over between 1,700 and 3,300 subjects within his *túath* (Stout 2017). From the 6th century, many of these subjects would have lived in enclosed settlements such as ringforts.

Secular habitation sites in the early medieval period include *crannógs*, *cashels* and ringforts, which are largely defined as circular enclosures surrounded by banks and ditches. In addition to these, there is some evidence for unenclosed settlements which are more difficult to identify in the archaeological record. The ringfort or *ráth* is considered to be the most common indicator of settlement during the early medieval period. Ringforts are strongly associated with agricultural land and, as such, are rarely situated at higher altitudes. Ringforts and potential ringforts are the most common archaeological sites

recorded across the Irish landscape. Sites recorded as enclosures, in many cases, represent damaged or denuded ringforts or similar early medieval sites, though some do date to prehistoric times.

There are four recorded enclosures located within the proposed development area (DU013-037, 039, 032, 036), which were identified in an aerial photograph taken in the 1980s (Dr Gillian Barrett) that shows the features as cropmarks. It is possible that these sites may have originally represented early medieval settlement sites. Whilst some remains that may possibly relate to the enclosure sites were identified during testing in 2012 (Kavanagh 2012; Licence no. 12E0063), no archaeological evidence for the enclosures was identified during testing in 2022 (**Appendix 14.1**). It is possible that intensive ploughing across the proposed development area has led to the removal of the sites. None of the sites are visible within more recent aerial photographic coverage.

14.3.1.3 Medieval Period (AD 1100–1600)

The medieval period began with the arrival of the Anglo-Normans in Ireland in support of the deposed King of Leinster, Diarmait MacMurchadha. By the end of the 12th century, the Normans had succeeded in conquering much of the country (Stout and Stout 1997). Leinster, including Dublin and Meath, was ‘sub-infeudated’, meaning that great swathes of land were parcelled out among the Anglo-Norman elites. The Anglo-Norman tenurial system appropriated the older established land units known as *túaths* in the early medieval period but described the territories as manors (MacCotter 2008).

Fingal formed part of the area known as The Pale, which remained loyal to the English Crown during the 15th and 16th centuries. An interesting architectural feature of many of the churches is the tower at the west end of the nave. While the towers differ in design from one another, they do differ markedly from the towers occurring in other parts of the country and are therefore seen as forming a group characteristic of the Pale. McMahon (1991, 32) suggests that they served the double purpose of priests’ residences and belfries.

The medieval period is represented in the archaeological record by a site that was excavated c. 1.6km south-east of the proposed development area as part of the Tyrrelstown to N2 Cherryhound Interchange link road (DU013-046001; O’Hara 2009c, Reg no. E003919). Here two ditches and a number of pit features were recorded, which contained locally produced medieval pottery dating to the 13th and 14th centuries. There are no medieval sites within the study area of the proposed development area.

14.3.1.4 Post-Medieval Period (AD 1600–1800)

The 17th century witnessed the systematic reduction of all of Ireland to English authority, largely through conflicts and the forced settlements, ‘The Plantations’. As part of the process of achieving colonial dominion a number of surveys and mapping programmes were completed throughout the post-medieval period. Simington’s Civil Survey of 1654–56, was an inquisition that visited each barony (land division) and took depositions from landholders based on parish and townland, with written descriptions of their boundaries to facilitate the transfer of lands. Subsequent to the Civil Survey, a project known as the Down Survey 1656–58, used the collected cadastral information to map all forfeited lands. This survey was overseen by the surgeon-general of the English army, William Petty, and a number of former soldiers. It was not just a project of mapping but of social engineering that was underpinned by a massive transfer in landownership from Irish Catholics to English Protestants. This survey is the first ever detailed land survey on a national scale anywhere in the world and gives great insight into Ireland at this time; however, the townland of Hollystown was not depicted on this mapping.

The townlands of 'Terellstowne' and 'Killmartin' are annotated to the south and west of the site respectively.

The 17th century also saw a dramatic rise in the establishment of large residential houses around the country. The large country house was only a small part of the overall estate of a large landowner and provided a base to manage often large areas of land that could be located nationwide. Lands associated with the large houses were generally turned over to formal gardens, which were much the style of continental Europe. By the mid-18th century, more natural parkland landscapes were in favour although the creation of these required considerable efforts, including moving earth, removal of field boundaries, culverting streams to form lakes and quite often roads were completely diverted to avoid travelling anywhere near the main house or across the estate. The proposed development area extends within the former demesne of Hollywoodrath House, where it extends eastwards, along the proposed access route.

14.3.2 Summary of Previous Archaeological Fieldwork

A review of the Excavations Bulletin (1970–2023) has shown that two previous archaeological investigations have taken place within the proposed development area, which are summarised below.

A geophysical survey was carried out in 2011 across the development area, in order to attempt to locate five monuments identified through aerial photography in the 1980s (Gimson 2011; Licence Ref.: 11R0152). The survey responses were not strong, but possible pits and two linear trends, possibly representing a relict field division in the field to the south, were identified. Additionally, a series of circular and oval trends indicative of enclosures and a ring-ditch (DU013-032/36-39) were identified along with possible pits in an oval formation and two possible ditches.

Subsequent test excavation followed in 2012 (Kavanagh 2012; Licence no. 12E0063) where 25 test trenches were excavated across the site boundary. The test excavations identified a linear feature (1.5m wide, 0.42m deep) at the southern side of the site of enclosure DU013-032 and a curved linear ditch (1.45m wide, 0.45m deep) at the site of enclosure DU013-037. Linear features that were interpreted as mirroring the line of the enclosure DU013-036 were identified during testing but upon investigation provided inconclusive evidence. No other features of archaeological significance were uncovered, despite the results of the geophysical survey. The testing report in 2012 concluded that the lack of remaining evidence for the features is "likely due to the intensive and prolonged ploughing of the area for agricultural purposes since at least the post-medieval period", or that'... the difference between the sub-surface remains and natural clay was negligible' (Kavanagh 2012, p. 23).

The archaeological monitoring of topsoil stripping associated with the construction of a pipeline through the development area (as part of permitted development to the east), has been carried out but no report on the works has been lodged within the Excavations Bulletin.

There have been no other previous excavations carried out within the area surrounding the proposed project footprint (c. 500m).

14.3.3 Cartographic Analysis

William Petty, Down Survey Map of the Barony of Castleknock and the Parish of Mulhuddart, c. 1655

The proposed development area is located within the parish of 'Mallahidert'. The townland of 'Killmartin' is annotated and Tyrrelstown House (DU013-006) is depicted to the north of the proposed development area. No other features of note are depicted within the project area on this map.

John Rocque, Map of County Dublin, 1760

This map shows the approximate location of the proposed development area in several fields with the label 'Yellow Wall' spanning the fields to the west of the site (**Figure 14.2**). Holly Wood House, comprising four structures, is annotated to the south of the proposed development, with a road leading to Kilmartin (north-west) bordering the southern site boundary. A lime kiln is annotated to the south of the site where it extends east along the proposed access route, as well as an area labelled 'The Torch' and an unnamed structure is marked on the eastern side of a five-road junction (east of the site).

Figure 14.2 Extract from Rocque (1760) showing the approximate location of the proposed development area



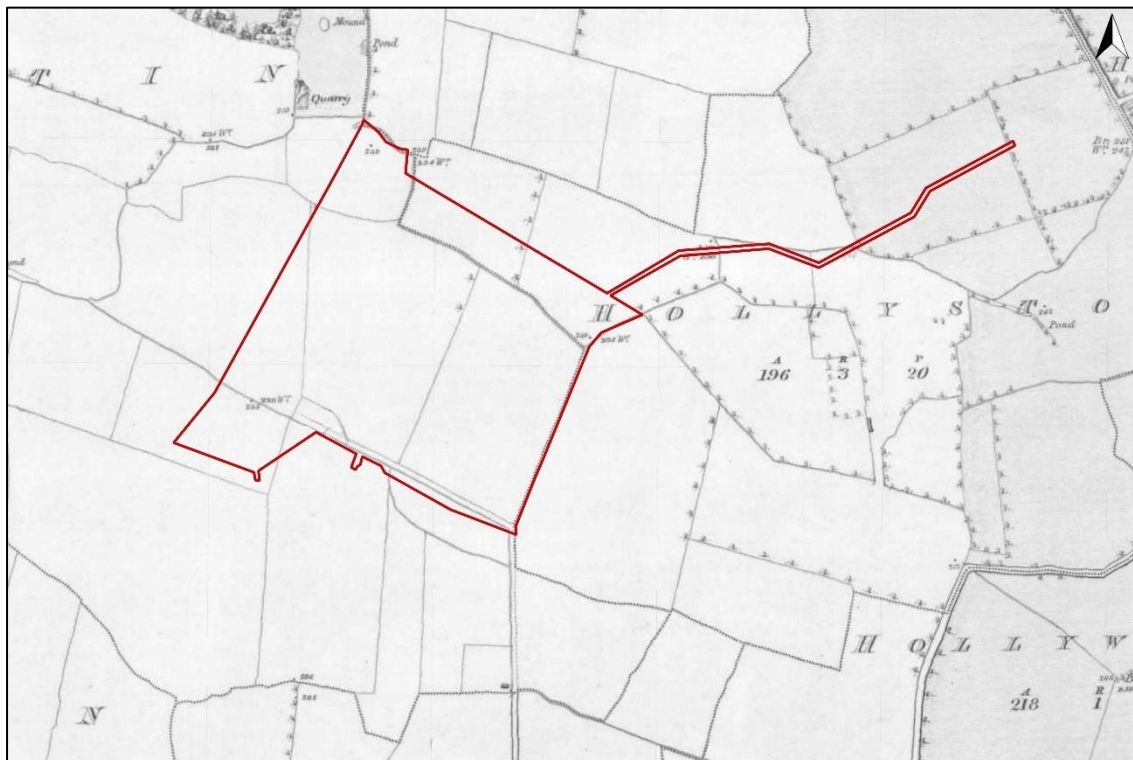
John Taylor's Map of the Environs of Dublin, 1816

The proposed development area is depicted in a rural landscape on this map. A road leading to a cluster of three buildings, labelled 'Hollywood Rath' extends to the buildings from Hollywood Demesne; this may be the Holly Wood House depicted on Rocque's (1760) map. A watercourse representing the Ward River traverses the landscape to the east and south of the proposed development area. There is no indication of the lime kiln shown in the previous mapping. 'Yellow Walls' is now depicted as being further west from the site location, at the intersection of three roads, with a cluster of buildings.

First Edition Ordnance Survey Map, 1843, scale 1:10560

This is the first accurate historic mapping coverage of the area containing the proposed development (Figure 14.3). The townland boundary between Kilmartin and Hollystown traverses the proposed development area. The southern boundary of the proposed development area roughly follows a field boundary, with the south-west corner crossing into two other agricultural fields. Additionally, there is a road running along the southern boundary. A quarry, pond and 'Mound' site (DU013-003) are depicted north of the site, as well as Kilmartin House (c. 500m north) and demesne landscape (to the immediate north-west). No other features of significance are depicted on this map.

Figure 14.3 Extract from the first edition OS map of 1843 showing the approximate location of the proposed development area



Ordnance Survey Map, 1871, scale 1:10560

There are no major changes within the cartography of this map that relate to the proposed development area.

Ordnance Survey Map, 1906–9, scale 1:2,500

There have been minor changes to the field boundaries within the site by the time of this map, but the site remains situated within open agricultural fields. A field boundary now diagonally cuts across the southern point of the development, and a small portion of the southern edge is separately delineated, bordering the road.

14.3.4 County Development Plan

14.3.4.1 Record of Monuments and Places

The Fingal Development Plan (2023–2029) recognises the statutory protection afforded to archaeological sites included within the Record of Monuments and Places and seeks to protect those

monuments, to including their setting, access, views, and prospects. Fingal County Council recognises the value and significance of the county's archaeological heritage, and the importance of fostering a greater public appreciation of this heritage. Through policies contained in this Development Plan, they seek to ensure the effective protection, conservation and enhancement of archaeological sites, monuments, and their settings (**Appendix 14.3**).

There are five recorded archaeological sites located within the proposed development footprint, and two further sites located within 500m. All seven sites are scheduled for inclusion in the next revision of the RMP (**Table 14.1**; **Figure 14.1**; **Appendix 14.2**). None of the recorded monuments within the proposed development area are extant as demonstrated by archaeological testing in 2022 (Murtagh 2022, Licence Ref.: 22E0215, **Appendix 14.1**).

Table 14.1 Recorded Archaeological Sites

RMP No.	Location	Classification	Distance from Site
DU013-032	Kilmartin	Enclosure	0m
DU013-039	Kilmartin	Enclosure	0m
DU013-036	Kilmartin	Enclosure	0m
DU013-037	Kilmartin	Enclosure	0m
DU013-038	Kilmartin	Ring-ditch	0m
DU013-004	Hollystown	Earthwork	c. 84m north
DU013-003	Kilmartin	Earthwork	c. 169m north-west

14.3.4.2 Record of Protected Structures

The Fingal Development Plan (2023–2029) recognises the value of the built heritage and is committed to the protection and enhancement of this heritage by providing measures for the protection of architectural heritage. These include the establishment of a Record of Protected Structures (RPS) and the designation of Architectural Conservation Areas (ACAs).

There are two protected structures located within the 500m study area of the proposed development area, including St Thomas' Church (RPS 0664, NIAH 11346001), which is located c. 241m to the north-east of the proposed development area, and Hollywoodrath House (RPS 0665, NIAH 11347001), which is located c. 414m east. Both of these structures are also listed in the NIAH Building Survey.

There are no Architectural Conservation Areas located within the proposed development area or within 500m.

14.3.5 National Inventory of Architectural Heritage

14.3.5.1 Building Survey

A review of the architectural survey was undertaken as part of this assessment and included buildings within 500m of the proposed development area. There are three structures listed on the NIAH Building survey within the study area of the proposed development area, of which two are also protected structures (**Table 14.2**). Inclusion in the NIAH Building survey does not provide statutory protection,

however, those structures which are also listed as protected structures receive protection under that designation.

Table 14.2 NIAH Structures within the study area

NIAH Ref.	Location	Classification	Distance from Site
11346001*	Hollystown	St. Thomas' Church	c. 241m north-east
11347001*	Hollywood	Hollywoodrath House	c. 414m east
11347003	Hollywood	Gate Lodge	c. 463m south-west

*Note: also recorded on the RPS

14.3.5.2 Garden Survey

The first edition Ordnance Survey map of County Dublin (1843) shows the extent of demesne landscapes as shaded portions of land within the study area. These were established as a naturalised landscaped setting for the large houses of the landed gentry. Not all demesne landscapes are subject to statutory protection. However, where a demesne exists in association with a protected structure (dependant on the preservation of the landscape), this can be considered to be part of the curtilage and as such may fall within the remit of the Planning and Development Act 2000.

There are two demesne landscapes within c. 500m of the proposed development area included within the Garden Survey for County Dublin. These include Hollywoodrath House demesne (NIAH Garden Ref. 2267) into which the proposed development area extends from the west, and Kilmartin House (NIAH Garden Ref.: 2250), to the immediate north-west. Kilmartin demesne is visible on the first, second, and third edition OS maps. Today the demesne has lost a large portion of its designed features and whilst the main house is present, the landscape has been subsumed into an agricultural landscape. Hollywoodrath demesne to the east has been developed as a golf course and lost any of its designed landscape features.

14.3.6 Townlands

The townland is an Irish land unit of considerable longevity as many of the units are likely to represent much earlier land divisions. However, the term townland was not used to denote a unit of land until the Civil Survey of 1654. It bears no relation to the modern word 'town' but like the Irish word *baile* refers to a place. It is possible that the word is derived from the Old English *tun land* and meant 'the land forming an estate or manor' (Culleton 1999, 174). The proposed development area is within two townlands.

Gaelic land ownership required a clear definition of the territories held by each sept and a need for strong, permanent fences around their territories. It is possible that boundaries following ridge tops, streams or bogs are more likely to be older in date than those composed of straight lines (ibid. 179).

The vast majority of townlands are referred to in the 17th century when land documentation records begin. Many of the townlands are mapped within the Down Survey of the 1650s, so called as all measurements were carefully 'laid downe' on paper at a scale of forty perches to one inch. Therefore, most are in the context of pre-17th century landscape organisation (McErlean 1983, 315).

In the 19th century, some demesnes, deer parks or large farms were given townland status during the Ordnance Survey and some imprecise townland boundaries in areas such as bogs or lakes were given more precise definitions (ibid.). Larger tracks of land were divided into a number of townlands, and

named Upper, Middle or Lower, as well as Beg and More (small and large) and north, east, south, and west (Culleton 1999, 179). By the time the first Ordnance Survey had been completed a total of 62,000 townlands were recorded in Ireland.

The proposed development area is located within the townlands Kilmartin and Hollystown within the Parish of Mulhuddart and Barony of Castleknock, County Dublin. The townland boundary between Kilmartin and Hollystown traverses the proposed development area, remains extant as a field boundary and constitutes a cultural heritage feature.

14.3.7 Placename Analysis

Townland and topographic names are an invaluable source of information on topography, land ownership and land use within the landscape. They also provide information on the history; archaeological monuments and folklore of an area. A place name may refer to a long-forgotten site and may indicate the possibility that the remains of certain sites may still survive below the ground surface. The Ordnance Survey surveyors wrote down townland names in the 1830s and 1840s, when the entire country was mapped for the first time. Some of the townland names in the study area are of Irish origin and through time have been anglicised. The main references used for the place name analysis are Irish Local Names Explained by P.W Joyce (1870) and Logainm.ie. A description and a possible explanation of each townland name in the environs of the proposed development are provided in the **Table 14.4** below.

Table 14.4: Townland Name Analysis

Name	Derivation	Possible meaning
Kilmartin	<i>Cill Mhártain</i>	Church of St Martin/life/subsistence
Hollystown	<i>Baile an Alabhóidigh</i>	Town, homestead of Holly
Yellow Walls	<i>Na Ballaí Buí</i>	-
Hollywoodrath	<i>Ráth an Alabhóidigh</i>	Holly's ringfort
Tyrrelstown	<i>Baile an Tirialaigh</i>	Town, homestead of Tyrrel (Anglo-Norman)
Powerstown	<i>Baile an Phaoraigh</i>	Town, homestead of le Poer (Anglo-Norman)
Cruiserath	<i>Ráth an Chrúisigh</i>	Ring-fort of Cruce (ie the merry) (Anglo-Norman)
Mulhuddart	<i>Malahiddert</i>	Brow of an uncertain hilltop
Castleknock	<i>Castelcnoc</i>	Castle on the hill

14.3.8 Cultural Heritage

The term 'cultural heritage' can be used as an over-arching term that can be applied to both archaeology and architecture. However, it also refers to more ephemeral aspects of the environment, which are often recorded in folk law or tradition or possibly date to a more recent period. No individual sites have been identified that could be defined as purely cultural heritage; however, the archaeological and built heritage features discussed within this chapter also constitute cultural heritage features.

14.3.9 Topographical Files

Information on artefact finds from the study area in County Dublin has been recorded by the National Museum of Ireland since the late 18th century. Location information relating to these finds is important in establishing prehistoric and historic activity in the study area.

No stray finds are recorded from within the proposed development area or its immediate environs.

14.3.10 Aerial Photographic Analysis

Inspection of the aerial photographic coverage of the proposed development area held by the Ordnance Survey (1995–2013), Google Earth (2002–2022) and Bing Maps (2022) has been carried out. The analysis shows that the site resides within largely undeveloped agricultural land. Coverage from 2012 (Google Earth 2012, March) shows the position of trenches from previous archaeological testing (Kavanagh 2012; Licence No. 12E0063). Coverage from 2022 (Google Earth 2022, March) shows groundworks associated with a pipeline that runs east-west through the development area, part of the recent development to the immediate east. Recent coverage (2017-2021) also indicates the presence of land drains across the field c. 10m apart. No previously unrecorded features of archaeological significance were identified from the available aerial photography and satellite imagery. None of the recorded monuments were visible as cropmarks within the more recent imagery.

14.3.11 Field Inspection

The field inspection sought to assess the site, its previous and current land use, the topography and any additional information relevant to the report. During the course of the field investigation the proposed development site and its surrounding environs were inspected.

The proposed development area comprises part of a large level agricultural field that is bounded by mature hedgerows to the west, north and east and by a denuded hedgerow and park to the south. The northern part of the site is formed by a small section of heavily landscaped golf course. At the time of the inspection a wayleave for a pipeline was being stripped across the field (see Plates 1-4 in **Appendix 14.1**). No previously unrecorded areas or features of archaeological, architectural or cultural heritage significance were identified during the course of the inspection.

14.3.12 Summary of Archaeological Testing

A programme of archaeological testing was carried out across the proposed development area by Fergal Murtagh under licence 22E0215, as issued by the National Monuments Service of the DoHLGH. The full testing report has been included as **Appendix 14.1**.

None of the recorded monuments within the proposed development area are extant as demonstrated by the archaeological testing. The testing in 2022 identified two small areas of archaeological significance, which have been designated as Archaeological Areas (AA) 1 and 2 (**Figure 14.4**). AA1 comprised a C-shaped kiln or kiln flue and a linear ditch/gully containing some animal bone (**Figure 14.5**). AA2 comprised a C-shaped linear slot trench, five pit features and two linear ditches (**Figure 14.6**). No other archaeological remains were identified.

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Figure 14.4 Results of archaeological testing (Licence No. 22E0215)

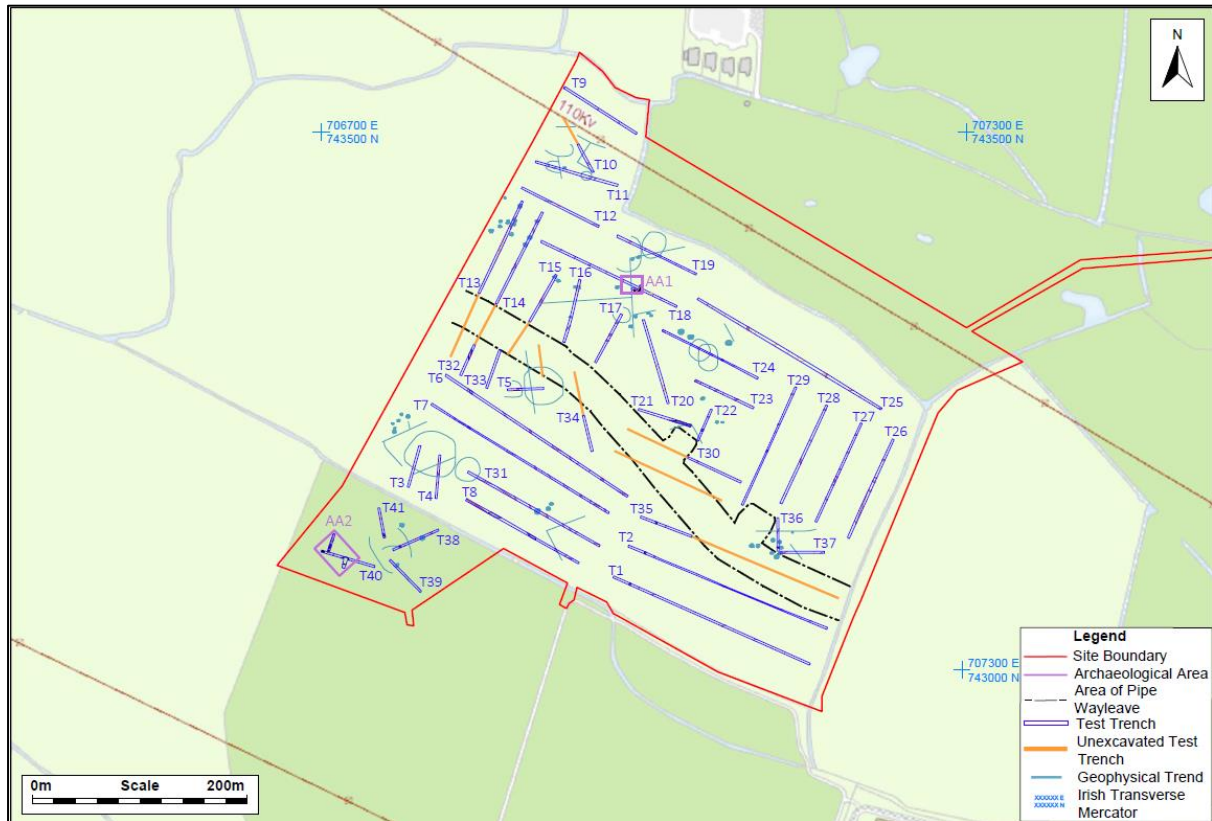


Figure 14.5 Detailed results of Testing (AA1)

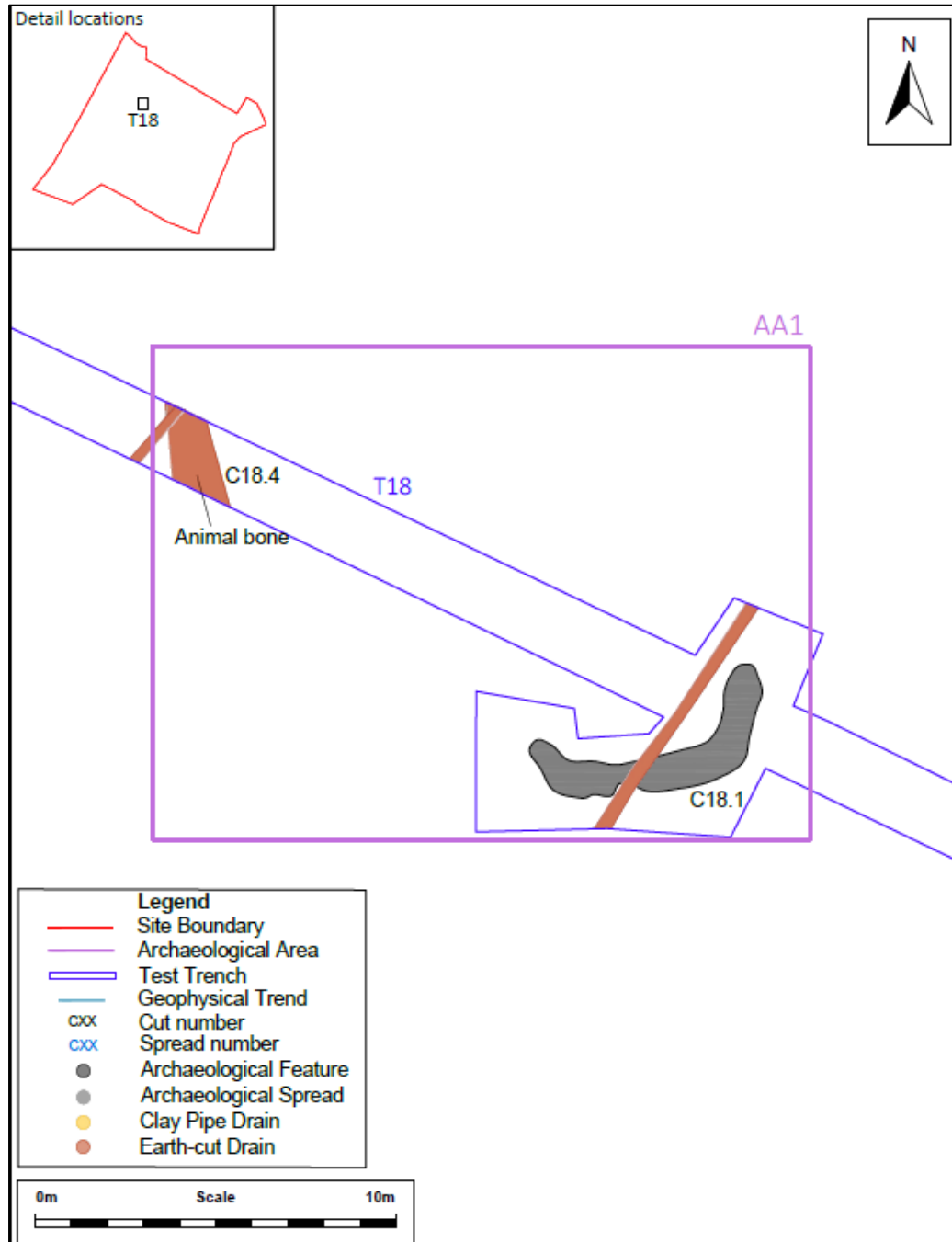
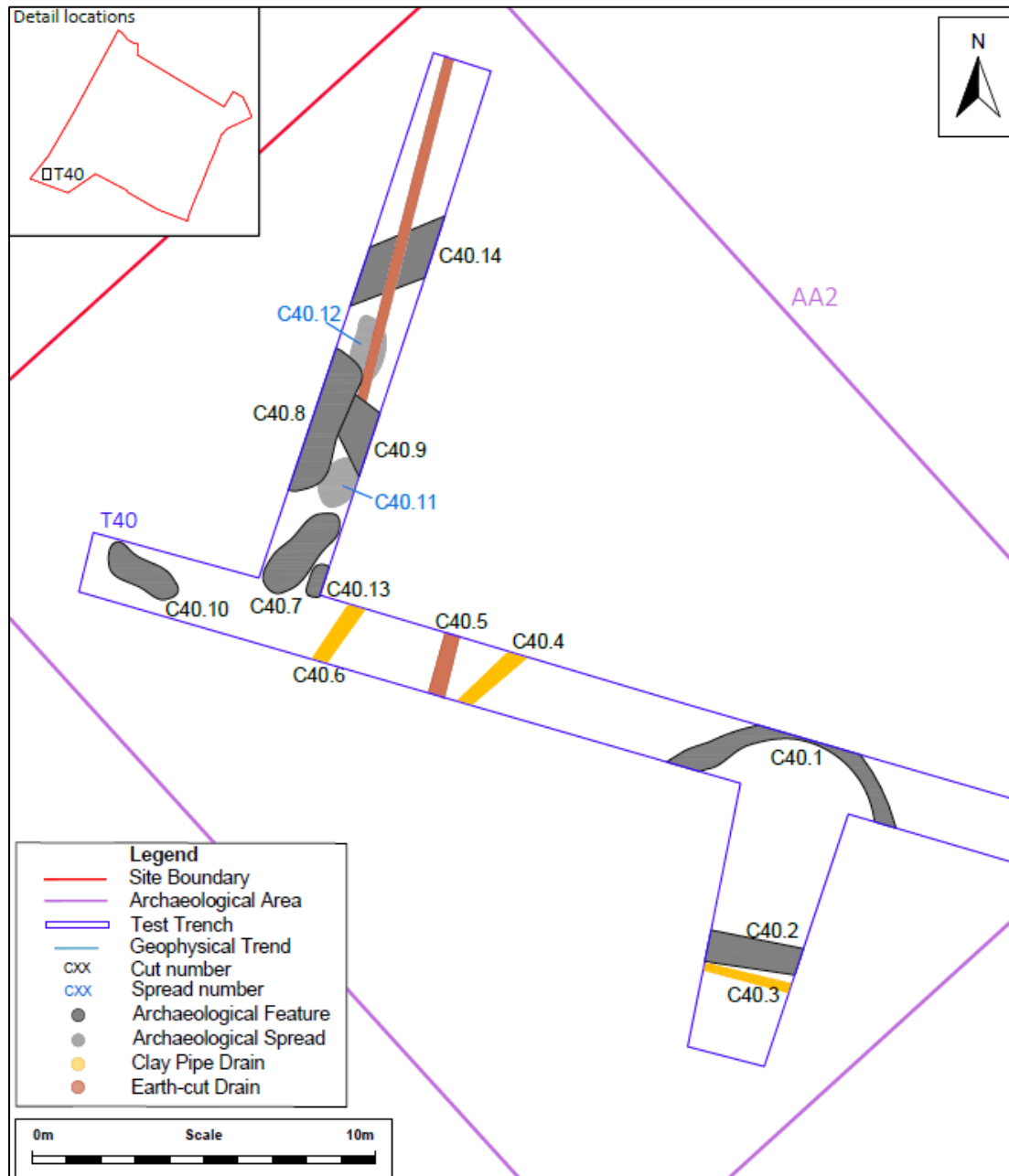


Figure 14.6 Detailed results of Testing (AA2)



14.3.13 Conclusions

There are five recorded archaeological sites located within the proposed development footprint, and two further sites located within the 500m study area. All seven sites are scheduled for inclusion in the next revision of the RMP. None of the recorded monuments within the proposed development have been proven to be extant, as demonstrated by archaeological testing in 2022 (Murtagh 2022, licence 22E0215). There are three structures listed in the NIAH Building survey within the study area of the proposed development area, of which two are protected structures.

The proposed development area extends within the former demesne of Hollywoodrath House (NIAH Garden Ref. 2267); however, the former demesne in this area has been developed as a golf course.

A review of the Excavations Bulletin (1970–2023) has shown that two previous archaeological investigations have taken place within the current project footprint. A geophysical survey was carried

out in 2011, in an attempt to locate five monuments identified through aerial photography in the 1980s. Possible pits and two linear trends, possibly representing a relict field division in the field to the south, were identified. Additionally, a series of circular and oval trends indicative of enclosures and a ring-ditch (DU013-032/36-39) were identified in the field to the west, along with possible pits in an oval formation and two possible ditches.

Subsequent test excavations in 2012 failed to identify any definitive archaeological remains. The lack of remaining evidence for the features was interpreted as being “likely due to the intensive and prolonged ploughing of the area for agricultural purposes since at least the post-medieval period”, or that’... the difference between the sub-surface remains and natural clay was negligible”.

A review of the cartographic sources for the proposed development area has shown that the site was primarily located in an agricultural landscape from the late 18th century onwards. No features of significance are depicted within the proposed development area. A review of aerial photographic coverage for the proposed development area failed to identify any recorded or previously unrecorded archaeological sites. The coverage does show that multiple drains have been inserted across the area.

A field inspection has been carried out as part of this assessment, which confirmed the agricultural nature of the site. Due to the presence of the recorded monuments, additional testing was carried out in 2022, but failed to identify any features relating to these monuments. Two small areas of archaeological potential were recorded, comprising part of a possible kiln (AA1) and a C-shaped linear slot trench, five pit features and two linear ditches (AA2).

Given the results of archaeological testing in 2012 and 2022, it does appear that the monuments recorded at the site have been removed by subsequent intensive agricultural activity.

Refer to **Appendices 14.1, 14.2, 14.3, 14.4, 14.5 and 14.6** included in Volume 3 of the EIAR.

14.4 Predicted Impacts of the Proposed Development

The quality and type of an impact can be classed as one of the following (as per the *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* (EPA 2022):

- **Negative Impact:** A change which reduces the quality of the environment, for example a change that will detract from or permanently remove an archaeological, architectural or cultural heritage site from the landscape;
- **Neutral Impact:** A change which does not affect the quality of the environment; or
- **Positive Impact:** A change which improves the quality of the environment, for example a change that improves or enhances the setting of archaeological, architectural or cultural heritage site.

The below terms are used in relation to the archaeological, architectural and cultural heritage and relate to whether a site will be physically impacted upon or not:

- **Direct Impact:** Where an archaeological/architectural/cultural heritage feature or site is physically located within the footprint of the proposed development and entails the removal of part, or all, of the monument or feature; and
- **Indirect Impact:** Where a feature or site of archaeological, architectural or cultural heritage merit or its setting is located in close proximity to the footprint of a development.

14.4.1 Do-Nothing Impact

If the proposed development were not to proceed, there would be no negative impact on the archaeological, architectural and cultural resources.

14.4.2 Construction Phase

- Four enclosures (RMP DU013-032, 036, 037, 039) and one ring-ditch (RMP DU013-038) are recorded as being located within the proposed development area. These sites were subject to archaeological testing in 2012 and again in 2022. No definitive archaeological remains relating to these monuments were identified during these programmes of investigation and as such it has been concluded that these monuments have been removed by intensive agricultural activity. No impacts are predicted on these monuments as a result of the construction phase of the development going ahead, as they are no longer extant.
- Two small areas of archaeological potential were identified during testing in 2022. These comprise part of a possible kiln (AA1) and a C-shaped linear slot trench, five pit features and two linear ditches (AA2). Prior to the application of any mitigation, ground disturbances associated with the construction of the development will result in a **direct significant negative impact** on these remains.
- It is possible that small scale or isolated archaeological features survive within the proposed development area, outside of the footprint of the excavated test trenches. If present, ground disturbances associated with the construction phase would result in a direct negative impact on same. Impacts may range from **moderate to significant negative**, dependant on the nature, extent and significance of any remains that may be present.
- No impacts upon the architectural heritage resource are predicted as a result of the construction of the proposed development.
- The townland boundary between Kilmartin and Hollystown traverses the site and will be retained as part of the proposed development, but will be crossed by four footpaths and two access roads. Whilst the required interventions will result in a **direct negative impact**, these are considered **moderate**.

14.4.3 Operational Phase

- **No negative impacts** upon the archaeological, architectural or cultural heritage resource are predicted as a result of the operation of the proposed development.
- There will be a **moderate positive impact** on the section of townland boundary incorporated into the development, as the boundary will form part of the green space.

14.5 Mitigation Measures

14.5.1 Construction Phase

- AA1 and AA2, which comprise small areas of archaeological potential, will be preserved by record (archaeological excavation) prior to the commencement of the construction phase. This will be carried out under licence, as issued by the National Monuments Service of the DoHLGH. Full provision will be made available for the required works, both during field work and the post excavation analysis.
- All topsoil stripping and interventions through the townland boundary will be subject to archaeological monitoring, carried out by a suitably qualified archaeologist. If any features of archaeological potential are discovered during the course of monitoring further archaeological

mitigation may be required, such as preservation in situ or by record. Any further mitigation will require approval from the National Monuments Service of the DoHLGH.

14.5.2 Operational Phase

- No mitigation is required as part of the operation of the proposed development.

14.6 Residual Impacts

Upon the completion of the mitigation measures, there will be *no significant negative residual impacts* upon the archaeological, architectural or cultural heritage resource.

14.7 Monitoring

The mitigation measures detailed above would also function as a monitoring system during construction to allow the further assessment of the scale of the predicted impacts and the effectiveness of the mitigation measures.

14.8 Reinstatement

Not applicable.

14.9 Interactions

No interactions have been identified.

14.10 Cumulative Impacts

Proposed and permitted development within the study area, as listed in Chapter 20, have been considered as part of the assessment of potential cumulative impacts. As the archaeological remains identified within the proposed development area will be preserved by record, no cumulative impacts have been identified as a result of the development going ahead in conjunction with any other proposed or permitted development in the study area.

14.11 Difficulties Encountered

No difficulties were encountered during the compilation of this assessment.

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15 Microclimate – Daylight & Sunlight

15.1 Introduction

This chapter describes the impact assessment undertaken in relation to daylight and sunlight for the proposed development. The proposed development is described in Chapter 5 (Description of the Proposed Development). For a more detailed account of the daylight and sunlight analysis, refer to IN2 Engineering's report, 'Hollystown-Kilmartin Site 4 –Sunlight and Daylight Analysis', submitted under separate cover as part of the planning application.

This chapter has been prepared by David Walshe, William O'Donnell and Seulgi Lee of IN2. David Walshe is a Chartered Engineer (CEng) and member of Engineers Ireland. He has over 27 years of experience of low energy design and building simulation and is responsible for overseeing Daylight and Sunlight Analysis on all projects.

William O'Donnell is a Chartered Engineer (CEng) and a member of Engineers Ireland and the Chartered Institute Building Services Engineers (CIBSE). William has 16 years' experience and is responsible for daylight and sunlight analysis for IN2 Engineering.

Seulgi Lee is an environmental engineer and a member of Engineers Ireland. With a master's degree in interior architecture and over 7 years of experience, she now specializes in daylight and sunlight analysis. In her role at IN2 Engineering, Seulgi is tasked with conducting thorough daylight and sunlight analyses.

15.2 Method

15.2.1 Relevant Standards & Guidelines

The following relevant standards and guidance documents have been consulted when compiling the information in this chapter:

- *Sustainable Urban Housing: Design Standards for New Apartments (December 2022) (the "2022 Apartment Guidelines")*. These are guidelines issued under section 28 of the 2000 Planning and Development Act (as amended).
- *The Building Research Establishment's (BRE) Site Layout Planning for Daylight and Sunlight: A guide to good practice (BRE 209) 3rd edition/ 2022 edition, (the "BRE Guide")*.
- *British Standard BS EN 17037:2018 – Daylight in Buildings (the "2018 British EN Standard")*.
- *Irish Standard IS EN 17037:2018 (the "2018 Irish EN Standard")*.

15.2.1.1 The 2022 Apartment Guidelines

The 2022 Apartment Guidelines state that:

"6.5 The provision of acceptable levels of natural light in new apartment developments is an important planning consideration as it contributes to the liveability and amenity enjoyed by apartment residents. In assessing development proposals, planning authorities must however weigh up the overall quality of the design and layout of the scheme and the measures proposed to maximise daylight provision with the location of the site and the need to ensure an appropriate scale of urban residential development."

“6.6 Planning authorities should avail of appropriate expert advice where necessary and have regard to quantitative performance approaches to daylight provision outlined in guides like A New European Standard for Daylighting in Buildings IS EN17037:2018, UK National Annex BS EN17037:2019 and the associated BRE Guide 209 2022 Edition (June 2022), or any relevant future standards or guidance specific to the Irish context, when undertaken by development proposers which offer the capability to satisfy minimum standards of daylight provision.”

(Note that the reference to 'UK National Annex BS EN17037:2019' above refers to 'BS EN17037:2018'. The National Annex was released six months after (January, 2019) the publication of EN17037 and the Apartment Guideline refers to the year of actual publication.)

“6.7 Where an applicant cannot fully meet all of the requirements of the daylight provisions above, this must be clearly identified and a rationale for any alternative, compensatory design solutions must be set out, which planning authorities should apply their discretion in accepting taking account of its assessment of specifics. This may arise due to design constraints associated with the site or location and the balancing of that assessment against the desirability of achieving wider planning objectives. Such objectives might include securing comprehensive urban regeneration and or an effective urban design and streetscape solution.”

The 2022 BRE Guide (and associated EN Standard) introduces two new calculation methodologies, Spatial Daylight Autonomy (SDA) and Median Daylight Factor (MDF), either of which can be applied to demonstrate daylighting compliance. SDA is an accurate and sophisticated methodology utilising advanced computer simulation techniques which accounts for real climatic data for the particular site location, whilst also accounting for window orientation and ensuring daylight uniformity within a space. SDA is therefore a Climate Based Daylight Methodology (CBDM) accounting for recorded annual illumination (light) levels at a particular site. Conversely, MDF is a simplified calculation technique, which utilises a theoretical sky model that does not account for façade orientation or variances of climatic conditions. Therefore, in order to ensure the highest accuracy of daylighting analysis, the SDA/CBDM methodology has been utilised. The BRE Guide describes its purpose as follows:

“This guide gives advice on site layout planning to achieve good sunlighting and daylighting, both within buildings and in the open spaces between them. It is intended to be used in conjunction with the interior daylight recommendations for new buildings in the British Standard Daylight in buildings, BS EN 17037. It contains guidance on site layout to provide good natural lighting within a new development; safeguarding of daylight and sunlight within existing buildings nearby; and the protection of daylighting of adjoining land for future development.”

It also notes that:

“1.6 The guide is intended for building designers and their clients, consultants, and planning officials. The advice given here is not mandatory and the guide should not be seen as an instrument of planning policy; its aim is to help rather than constrain the designer. Although it gives numerical guidelines, these should be interpreted flexibly since natural lighting is only one of many factors in site layout design (see Section 5). In special circumstances the developer or planning authority may wish to use different target values. For example, in a historic city centre, or in an area with modern high-rise buildings, a higher degree of obstruction may be unavoidable if new developments are to match the height and proportions of existing buildings. Alternatively, where natural light is of special importance, less obstruction and hence more sunlight and daylight may be deemed necessary. The calculation methods in Appendices A and

B are entirely flexible in this respect. Appendix F gives advice on how to develop a consistent set of target values for skylight under such circumstances.”

“1.7 The guidance here is intended for use in the United Kingdom and in the Republic of Ireland, though recommendations in the Irish Standard IS EN 17037 may vary from those in BS EN 17037. Many of the principles outlined will apply to other temperate climates. More specific guidance for other locations and climate types is given in BRE Report Environmental site layout planning.”

Therefore, if the situation arises where the targets identified within the Guide are not achieved, these should be highlighted and either justified in the context of the proposed development or where relevant and applicable, compensatory measures will be proposed. However, the Guide does not impose absolute standards that must be achieved under all circumstances. Within the context of daylight and sunlight analysis, there were no instances requiring compensatory measures, as all assessed rooms were found to be in compliance with the recommendations outlined in the BRE Guide.

That the recommendations of the BRE Guide are not suitable for rigid application to all developments in all contexts is of particular importance in the context of national and local policies for the consolidation and densification of urban areas or when assessing applications for highly constrained sites.

15.2.1.2 The 2018 British & Irish Versions of the EN Standards

The EN 17037:2018 standard—which is the basis of both the 2018 British EN Standard and the 2018 Irish EN Standard – considers a metric based on median daylight, in order to ensure both extent and a degree of uniformity of daylight.

“A space is considered to provide adequate daylight if a target illuminance level is achieved across a fraction of the reference plane within a space for at least half of the daylight hours.”

The 2018 British Standard includes a “National Annex”, containing “Further recommendations and data for daylight provision in the UK and Channel Islands”. As there is no equivalent in the 2018 Irish Standard, regard has been had to the 2018 British Standard National Annex, which states:

“NA.1 Introduction: The UK committee supports the recommendations for daylight in buildings given in BS EN 17037:2018; however, it is the opinion of the UK committee that the recommendations for daylight provision in a space (see Clause A.2) may not be achievable for some buildings, particularly dwellings. The UK committee believes this could be the case for dwellings with basement rooms or those with significant external obstructions (for example, dwellings situated in a dense urban area or with tall trees outside), or for existing buildings being refurbished or converted into dwellings. This National Annex therefore provides the UK committee’s guidance on minimum daylight provision in all UK dwellings.”

NA.2 addresses minimum daylight provision in UK dwellings. It contains a table, in which target illuminance, ET (lx), levels are recommended for different room types. These are: bedroom at 100 lx; living room at 150 lx; and kitchen at 200 lx, which may be compared to EN 17037’s recommendation of 300 lux (irrespective of room application). The commentary is as follows:

“Even if a predominantly daylight appearance is not achievable for a room in a UK dwelling, the UK committee recommends that the target illuminance values given in Table NA.1 are exceeded over at least 50% of the points on a reference plane 0.85 m above the floor, for at least half of the daylight hours.”

15.2.2 Overview of Daylight & Sunlight Analysis

The assessment methodology for the various aspects of the daylight and sunlight analysis is summarised in **Table 15.1**, below.

A three-dimensional digital model of the proposed development and existing buildings in the area was constructed by IN2 based on drawings and three-dimensional models supplied by the Design Team, and with reference to satellite and aerial photography. Trees and boundary planting were not included in this model.

Site shading diagrams were prepared to illustrate that the proposed housing development is not predicted to cause any overshadowing on its environs. These were compiled on an hourly basis for the Equinox and Summer / Winter Solstices. From these, the number hours of sunlight availability to the surrounding area on the equinox (21st March) can be determined.

Table 15.1 Overview of daylight and sunlight analysis

	Element	Methodology	Guidelines
Daylight	Proposed development	Spatial Daylight Autonomy	BRE 209 (2022)
	Existing neighbouring buildings	Vertical sky component	BRE 209 (2022)
Sunlight	Proposed development amenity spaces	Sunlight hours	BRE 209 (2022)
	Proposed development	Exposure to Sunlight	BRE 209 (2022)
	Existing neighbouring buildings	Annual probable sunlight hours	BRE 209 (2022)

15.2.3 Glossary

- **Working plane:** The working plane is the notional plane where visual tasks, and on which predicted light levels would normally be undertaken. For a residential assessment, the working plane is defined by BRE 209 at 850 mm above floor level.
- **Climate Based Daylight Modelling:** Climate based daylight modelling, also referred to as CBDM, involves the use of a detailed daylight calculation methods where hourly (or sub-hourly) internal daylight illuminance values for a typical year are computed using hourly (or sub-hourly) sky and sun conditions derived from climate data appropriate to the site. CBDM assessments are therefore orientation dependent: i.e. a south facing window would be expected to receive more daylight than north facing etc. This calculation method determines daylight provision directly from simulated illuminance values on the working plane with results determined in lux (a measure of light). CBDM is utilised for compliance with EN 17037 method 2 Spatial Daylight Autonomy (SDA).
- **Spatial Daylight Autonomy:** This calculation method determines daylight provision directly from simulated illuminance values on the working plane with results determined in lux (a measure of light). SDA is utilised for compliance with EN 17037 (Method 2) which is a type of CBDM as described above.
- **Sunlight Exposure:** Sunlight exposure is assessed on a window of at least one habitable room per dwelling (preferably a living room) for the number of hours of direct sunlight exposure on the 21st March. Probable sunlight hours: Annual probable sunlight hours (APSH) and winter probable sunlight hours (WPSH) are used for the assessment of impact on neighbouring buildings by a proposed development. APSH and WPSH are a measure of probable direct sunlight to a window or surface and, therefore, are only relevant to windows within 90 degrees of south for buildings in the northern hemisphere. Therefore, any window with a northerly aspect (i.e. orientated between North and East and North and West) is, therefore, not assessed within the methodology.

- **Vertical sky component (VSC):** Used for the assessment of impact on neighbouring buildings by a proposed development with respect to daylight availability. VSC is a measure of the percentage of illuminance that a point can receive from the CIE Overcast Sky as a percentage of that received at unobstructed horizontal locations – in simple terms, how much of the sky that can be seen for a given point. VSC assessments do not include reflected light. VSC is calculated for compliance with BRE 209.
- **Amenity sunlight:** Amenity sunlight is a measure of direct daylight received on an area over the duration of 21st March based on the sun's solar position for a geographical location. As the 21st March is the solar equinox, the sun is at its mid-point of travel position through the year, therefore representing an average condition throughout the year of how well sunlit an amenity space will be. It may be noted that in the Northern Hemisphere, the sun rises due east and sets due west. Amenity sunlight is calculated for compliance with BRE 209.

15.2.4 Daylight

15.2.4.1 Proposed Development

Spatial Daylight Autonomy (SDA) is a methodology that utilises historic climate data (Dublin IWECC file 039690 was used for this assessment) for predicting internal illumination due to natural light on an hour-by-hour basis, accounting for not only diffuse skylight but also the direct sunlight element. SDA results will differ for façade orientation, with those elevations with southerly aspect (correctly) being deemed to receive more daylight.

Figure 15.1 Example for internal daylight analysis results

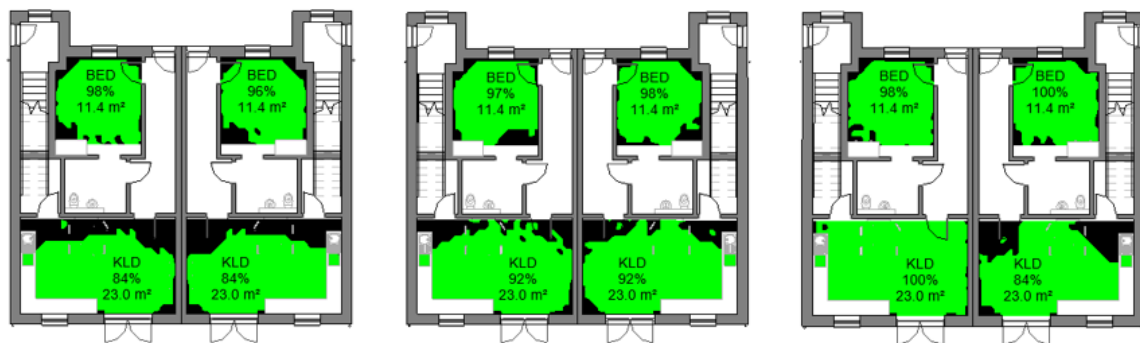


Figure 15.1 provides an example of an internal daylight compliance comparison, with green contours illustrating where daylight was predicted to achieve 100 Lux for bedrooms and 200 Lux for kitchen, living and dining areas (KLDs) – the illuminance recommendations for dwellings included in the BRE Guide, based on BS.EN.17037:2018. Compliance for a room is defined in the BRE Guide as at least 50% of the room achieving this target.

The daylight analysis accounts for all aspects that can potentially restrict natural light availability including any adjacent / opposing buildings, balcony structures, window frames / sills, etc. Daylight factors for each space is then calculated for a working plane height of 0.85 m on a 0.25 x 0.25 m grid basis, and a wall offset of 0.3 m (as defined in the BRE Guide) to enable a detailed calculation within each room, the median of which then determined the space compliance. The rooms have been assessed to the minimum areas as prescribed in the 2022 Apartment Guidelines where applicable.

15.2.4.2 Existing Neighbouring Buildings

The impact on daylight to existing buildings is assessed utilising a quantitative assessment method as detailed in the BRE Guide, which states that:

“If any part of a new building or extension, measured in a vertical section perpendicular to a main window wall of an existing building, from the centre of the lowest window, subtends an angle of more than 25° to the horizontal, then the diffuse daylighting of the existing building may be adversely affected. This will be the case if either:

- *The VSC (Vertical Sky Component) measured at the centre of an existing main window is less than 27%, and less than 0.8 times its former value.”*

The analysis is based on measuring the VSC at the existing main windows. As per the BRE Guide, main windows include living rooms, kitchens, and bedrooms.

Due to the nature of the receiving environment, it was established that the closest neighbouring property (Hollystown Site 3) to the east of the proposed development would not experience a significant impact. The distance between the proposed development and neighbouring properties to the east is greater than 3 times its height differential between its lowest window and the proposed development height. Therefore, as defined in the BRE Guide, the permitted properties are at a sufficient distance from the proposed development that no impact to daylight would be perceptible. As there are no nearby structures that could potentially be influenced in terms of daylight availability, this element has been scoped out of the daylight and sunlight analysis for the proposed development and is discounted from further consideration herein.

15.2.5 Sunlight

15.2.5.1 Proposed Development Amenity Spaces

The BRE Guide provides guidance with regards to sunlighting and shading to external amenity spaces within proposed developments as follows:

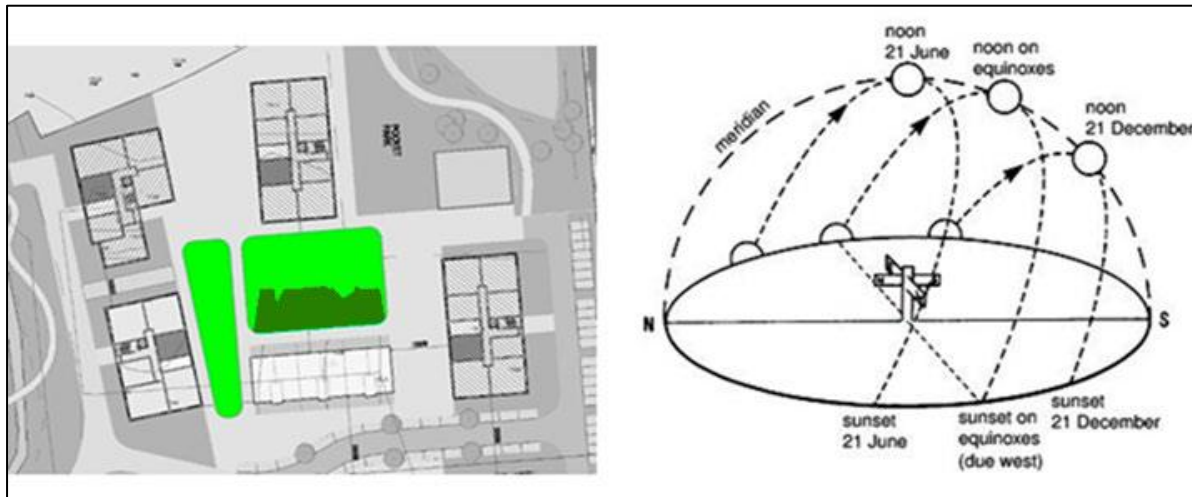
“... that for it to appear adequately sunlit throughout the year, at least half of a garden or amenity area should receive at least two hours of sunlight on 21st March”.

The methodology assesses sunlight performance at the Equinox, as this is the mid solar position throughout the year (as illustrated in **Figure 15.2**), with compliance indicative of spaces that will receive adequate sunlight and appealing useful spaces, including that the following attributes will be achieved:

- Provide attractive sunlit views (all year);
- Make outdoor activities like sitting out and children’s play more pleasant (mainly warmer months);
- Encourage plant growth (mainly spring and summer); and
- Dry out the ground, reducing moss and slime (mainly in colder months).

Analysis was undertaken utilising drawing information as received from Deady Gahan Architect. Lighting simulations were then undertaken by IN2 Engineering, utilising Tas software.

Figure 15.2 Example analysis of amenity spaces



15.2.5.2 Exposure to Sunlight

The BRE Guide outlines that:

“3.1.15 In general a dwelling, or non-domestic building that has a particular requirement for sunlight, will appear reasonably sunlit provided:

- *at least one main window wall faces within 90° of due south and*
- *a habitable room, preferably a main living room, can receive a total of at least 1.5 hours of sunlight on 21 March. This is assessed at the inside centre of the window(s); sunlight received by different windows can be added provided they occur at different times and sunlight hours are not double counted. “*

As with Sunlight Amenity, the BRE methodology therefore utilises the Equinox as being representative of the solar mid-position throughout the year, with the calculation of potential received sunlight during that day enabling a quantitative assessment in addition to idealised configuration of ensuring southerly aspect – preferably for living areas as described below:

“3.1.16 Where groups of dwellings are planned, site layout design should aim to maximise the number of dwellings with a main living room that meets the above recommendations.”

The guide further notes that:

“3.1.10 For interiors, access to sunlight can be quantified. BS EN 17037[1] recommends that a space should receive a minimum of 1.5 hours of direct sunlight on a selected date between 1 February and 21 March with cloudless conditions. It is suggested that 21 March (equinox) be used. The medium level of recommendation is three hours and the high level of recommendation four hours. For dwellings, at least one habitable room, preferably a main living room, should meet at least the minimum criterion.”

As described in the 2022 Apartment Guidelines, *“An apartment, for the purpose of these guidelines, may be defined as “a self-contained residential unit in a multi-unit building with grouped or common access”*”. Hence, only the unit types that include shared access, such as Apartments, Maisonettes, and Duplexes, are required to be assessed for internal daylight and sunlight. The CH units (Courtyard Houses), which feature a unique typology with a distinct layout, were also assessed to illustrate compliance with daylight standards. An analysis was undertaken for aforementioned units of the

proposed development to assess the exposure to sunlight that each unit can receive, assessing initially KLD's and where these were found to be non-compliant, a check was undertaken to determine whether a Bedroom could achieve adequate sunlight in accordance with the methodology.

The analysis determined that 100% of the tested units exceeded the BRE minimum recommendations.

15.2.5.3 Existing Neighbouring Buildings & Amenity Spaces (Gardens)

The impact on sunlight availability to existing buildings can be assessed utilising a quantitative assessment method as detailed in the BRE Guide, which states that:

"If a living room of an existing dwelling has a main window facing within 90° of due south, and any part of a new development subtends an angle of more than 25° to the horizontal measured from the centre of the window in a vertical section perpendicular to the window, then the sunlighting of the existing dwelling may be adversely affected. This will be the case if the centre of the window:

- *Receives less than 25% of annual probable sunlight hours, or less than 5% of annual probable sunlight hours between 21 September and 21 March and*
- *Receives less than 0.8 times its former sunlight hours during either period and*
- *Has a reduction in sunlight received over the whole year greater than 4% of annual probable sunlight hours."*

In relation to the assessment of impacts on sunlight availability to existing neighbouring amenity spaces, the BRE Guide states the following:

"It is recommended that for it to appear adequately sunlit throughout the year, at least half of a garden or amenity area should receive at least two hours of sunlight on 21 March. If as a result of new development an existing garden or amenity area does not meet the above, and the area that can receive two hours of sun on 21 March is less than 0.80 times its former value, then the loss of sunlight is likely to be noticeable. If a detailed calculation cannot be carried out, it is recommended that the centre of the area should receive at least two hours of sunlight on 21 March."

IN2's scoping analysis indicates that neighbouring dwellings are at a sufficient distance from the proposed development so there is no potential impact as defined in the BRE Guide. These elements have, therefore, been scoped out of the daylight and sunlight analysis for the neighbouring and are discounted from further consideration herein.

15.2.6 Assessment of Impacts

This Chapter and assessment have been completed having regard to the guidance outlined in the EPA documents 'Guidelines on information to be contained in Environmental Impact Assessment Reports' (May 2022) (the 'EPA Guidelines'); and to Directive 2011/92/EU (as amended by Directive 2014/52/EU) on the assessment of the likely effects of certain public and private projects on the environment.

Table 15.1 below provides the list of definitions for describing the significance of effects given in Table 3.4 of the EPA Guidelines and comments on what these definitions imply in the case of daylight and sunlight access.

Table 15.1 Definition of effects on Daylight/ Sunlight access

Effect	Definition (EPA, 2022)	Interpretation in terms of daylight and sunlight access
Imperceptible	An effect capable of measurement but without significant consequences	The definition implies that the development would cause a change in the daylight/ sunlight received at a location, capable of measurement, but not noticeable to the casual observer. If the development caused no change in daylight/ sunlight access, there could be no effect.
Not significant	An effect which causes noticeable changes in the character of the environment but without significant consequences	The definition implies that the development would cause a change in the daylight/ sunlight received at a location, which is capable of measurement and capable of being noticed by an observer who is taking an active interest in the extent to which the proposal might affect daylight/ sunlight access.
Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities	For this definition to apply, the amount of daylight/ sunlight received at a location would be changed by the construction of the development to an extent that is both capable of measurement and is noticeable to a minor degree. However, the daylight/ sunlight environment within an existing building should remain largely unchanged.
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends	In this case, a development must bring about a change in the daylight/ sunlight environment within an existing building; and this change must be consistent with a pattern of change that is already occurring, is likely to occur, or is envisaged by policy. A moderate effect would occur where other developments were bringing about changes in daylight/ sunlight access of similar extent in the area.
Significant	An effect which, by its character, magnitude, duration or intensity, alters a sensitive aspect of the environment	The definition implies that the existence of the development would change the extent of daylight/ sunlight access in a manner that is not “ <i>consistent with existing and emerging baseline trends</i> ”. For example, a development resulting in a “ <i>significant</i> ” diminution of daylight/ sunlight access would reduce daylight/ sunlight to the extent that minimum standards for daylight/ sunlighting are not met and artificial lighting is required for part of the day.
Very significant	An effect which, by its character, magnitude, duration or intensity, significantly alters most of a sensitive aspect of the environment	The definition implies that the existence of the development would change the extent of daylight/ sunlight access to a considerable degree and in a manner that is not “ <i>consistent with existing and emerging baseline trends</i> ”. For example, a “ <i>very significant</i> ” effect would occur where a development would result in daylight/ sunlight received in a room falling well below the minimum standards for daylight/ sunlighting and

Effect	Definition (EPA, 2022)	Interpretation in terms of daylight and sunlight access
		where artificial lighting would be required in that room as the principal source of lighting all the time.
Profound	An effect which obliterates sensitive characteristics	Examples of development resulting in a “ <i>profound</i> ” effect on daylight/ sunlight access would include facilitating daylight/ sunlight access to a room in an existing building where the existing room has none (e.g. as a result of the demolition of a building) or by removal of all access to daylight/ sunlight within an existing building.

In relation to sunlight access, it is conceivable that a development could result in positive effects, but this implies that a development would involve a reduction of the size or scale of built form (e.g., such as the demolition of a building, which might result in an increase in sunlight access). Though that is possible, it is usually unlikely as most development involves the construction of new obstructions to sunlight access.

15.3 Baseline Environment

A description of the receiving environment is provided in **Section 1.3.1** in Chapter 1 (Introduction) of this EIAR. Refer also to **Figures 1.1** and **1.2** in Chapter 1.

The statistics of Met Éireann, the Irish Meteorological Service (1981-2010), indicate that the sunniest months in Ireland are May and June. During December, Dublin receives a mean daily duration of 1.7 hours of sunlight out of a potential 7.4 hours sunlight each day (i.e. only 22% of potential sunlight hours). This can be compared with a mean daily duration of 6.4 hours of sunlight out of a potential 16.7 hours each day received by Dublin during June (i.e., 38% of potential sunlight hours).

Therefore, impacts caused by overshadowing are generally most noticeable during the summer months and least noticeable during the winter months. Due to the low angle of the sun in midwinter, the shadow environment in all urban and suburban areas is generally dense throughout winter.

15.4 Predicted Impacts of the Proposed Development

15.4.1 Do-Nothing Impact

In a do-nothing scenario, daylight and sunlight availability in the receiving environment would remain unchanged, as per the baseline conditions.

15.4.2 Construction Phase

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

15.4.3 Operational Phase

15.4.3.1 Daylight

As mentioned in section 15.2.5.2, only the unit types that include shared access, such as Apartments, Maisonettes, and Duplexes, are required to be assessed for internal daylight and sunlight. The CH type units, due to their innovative design, were also assessed to show exemplar performance. The internal daylight analysis has been undertaken for aforementioned units, assessing both KLD and bedroom spaces for SDA. The analysis determined that 100% of rooms assessed were in excess of the BRE Guidelines for Spatial Daylight Autonomy (SDA). Detailed daylight assessments are invoked under the 2022 Apartment Guidelines; therefore, all duplex apartment units have been assessed. By way of further information, daylight assessment of courtyard house typology was also undertaken due to their unique arrangements, and Maisonettes were assessed because they comprise apartments that share common access.

The 2022 Apartment Guidelines advise that *“Where an applicant cannot fully meet all of the requirements of the daylight provisions above [per the BRE Guide], this must be clearly identified and a rationale for any alternative, compensatory design solutions must be set out, which planning authorities should apply their discretion in accepting taking account of its assessment”*. However, the daylight results indicate a 100% compliance rate across the entire scheme, negating the need for any compensatory measures. Therefore, allowing that a full compliance rate for daylighting performance has been demonstrated for the proposed development, in conjunction that there has determined to be no impact to current daylight received with regards to existing neighbouring dwellings, the proposed development during its operational phase has been determined to be neutral, with no effects within normal bounds of variation.

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

15.4.3.2 Sunlight

Proposed Development Amenity Spaces

Annual sunlight availability was analysed for the public and communal open spaces of the proposed development, calculating the extent of each area that can receive at least 2 hours of potential sunlight on 21st March. The proposed public open space was found to receive excellent overall sunlight availability. The results demonstrate each of the amenity open spaces easily achieve compliance with the BRE guidance, with 100% of amenity open space across the site receiving two hours or more of sunlight on 21st March and the shared residential amenity spaces for the Apartment, Duplexes and Later Living Units (Bungalow, H1 & H2 types) were all fully compliant (**Figure 15.3**). As with the determined impact on daylight for operational phase, effect due to sunlight exposure to the proposed development has been demonstrated to be neutral, with no impact to neighbouring dwellings, with excellent sunlight availability being received to amenity areas as illustrated below.

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

Figure 15.3 Amenity area sunlight availability



15.4.3.3 Exposure to Sunlight

As mentioned in section 15.2.5.2, an analysis was undertaken for Apartments, Maisonettes, and Duplexes, and CH type units of the proposed to assess the exposure to sunlight that each unit can receive based on the BRE guidelines. The assessment determined that 100% of the assessed units would exceed the minimum guideline recommendations. **No significant negative impacts** are predicted during the operational phase. The overall impact in this regard is predicted to be **permanent, neutral and imperceptible**.

15.5 Mitigation Measures

No significant negative impacts have been identified in relation to daylight or sunlight. Therefore, beyond that which is already proposed under the scope of the design for the proposed development, no further mitigation measures are proposed in this regard.

15.6 Residual Impacts

The extent of compliance for daylight and sunlight metrics was achieved through undertaking an iterative design process, through to reconfiguring façades and apartment layouts to maximise internal daylight availability. In summary, this report confirms that best practice sunlight and daylight availability have been ensured for the proposed development, with minimal impact on the existing neighbouring environment, requiring no mitigation measures. There would be therefore *no residual impacts* remaining as environmental changes are permanent, neutral and imperceptible.

15.7 Interactions

The key interaction between this chapter and other specialist chapters of the EIAR is with Chapter 7 (Population & Human Health), since impacts in relation to daylight and sunlight availability, e.g. overshadowing of neighbouring buildings, can negatively or positively affect residential amenity in the receiving environment. Following the BRE Guide's recommendations for essential daylight and sunlight, internal daylighting is required to meet more than 50% of the targeted illuminance in lux throughout the year. In terms of sunlight, each unit needs to receive over 1.5 hours of sunlight on March 21st. As detailed above, 100% of rooms assessed were in excess of the BRE Guide recommendation for daylight and also 100% of the assessed units exceeded the minimum guideline recommendation. The results demonstrate each of the amenity open spaces easily achieve compliance with the BRE guidance, with 100% of amenity open space across the site receiving two hours or more of sunlight on 21st March and the shared residential amenity spaces for the Apartment, Duplexes and Later Living Units (Bungalow, H1 & H2 types) were all fully compliant. No impacts to neighbouring residential areas are predicted, and the proposed development itself will provide well-lit homes and amenity areas.

15.8 Cumulative Impacts

In the preparation of this Chapter, regard has been had to the list of developments set out in Chapter 20 (Cumulative Impacts). No cumulative impacts are predicted for daylight and sunlight, due to the separation distance between the proposed development and all surrounding developments and future developments.

15.9 Difficulties Encountered

It was neither possible nor practical for the Design Team to gain unfettered access to every parcel of private property within the study area surrounding the application site in order to carry out measured building survey. Therefore, while IN2 have confidence that the three-dimensional model used in the assessment of the impact of the proposal on sunlight access achieves a high degree of accuracy, it should be noted that some level of assumption was necessary in completing the model.

15.10 References

- Sustainable Urban Housing: Design Standards for New Apartments (December 2022) (the “2022 Apartment Guidelines”). These are guidelines issued under section 28 of the 2000 Planning and Development Act (as amended).
- The Building Research Establishment’s (BRE) Site Layout Planning for Daylight and Sunlight: A guide to good practice (BRE 209) 3rd edition/ 2022 edition, (the “BRE Guide”).
- British Standard BS EN 17037:2018 – Daylight in Buildings (the “2018 British EN Standard”).
- Irish Standard IS EN 17037:2018 (the “2018 Irish EN Standard”).

16 Traffic & Transportation

16.1 Introduction

This chapter assesses and evaluates the likely impact of the proposed development on the existing transportation system in the vicinity of the site, as well as identifying proposed mitigation measures to minimise any identified impacts arising from the proposed LRD residential development at Hollystown-Kilmartin Site 4, Dublin 15. The material assets considered in the traffic and transportation section include pedestrian, bicycle, public transport infrastructure and associated services in addition to the local road network and associated junction nodes.

A formal Traffic and Transport Assessment (TTA) and Mobility Management Plan (MMP) has also been prepared and submitted by DBFL Consulting Engineers as part of the overall application and underpin this chapter of the EIAR. In preparing this chapter, reference has been made to the *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* (Environmental Protection Agency, 2022) ('the EPA guidelines').

This chapter was prepared by Aimee Dunne CEng MEng BEngTech MIEI MIHE and Daniel Gill BEng of DBFL Consulting Engineers. Aimee is a Chartered Transport Engineer with 11 years' post graduate experience in the areas of traffic engineering and transport planning and has worked within transportation consultancies in the UK, New Zealand and Ireland. Aimee graduated from Heriot-Watt University, Edinburgh in 2010 with a MEng in Civil & Environmental Engineering. Aimee's relevant environmental impact assessment project experience includes the Grand Canal Harbour Mixed Use Development in Dublin 8, Castleforbes Mixed Use Development off Sheriff Street in Dublin 1 and Parkside Phase 4 and Parkside 5B at Belmayne.

Daniel Gill is a Transportation Engineer with DBFL Consulting Engineers and has over three years' experience within the industry. Daniel graduated from Technological University Dublin with a Bachelors in Civil Engineering. He has gained considerable knowledge and experience in transport planning and design within DBFL with the majority of his experience to date being focused upon the transport assessments of Strategic Housing Developments.

16.2 Methodology

The purpose of this assessment is to quantify the existing transport environment and to detail the results of assessment work undertaken to identify the potential level of transport impact generated as a result of the proposed development. The scope of the assessment covers transport and sustainability issues including vehicular and pedestrian access, cyclist and public transport connectivity. Recommendations contained within this report are based on existing and proposed road layout plans, numerous site visits, traffic observations and junction vehicle turning count data. Our methodology incorporated a number of key inter-related stages, including;

- **Background Review:** A background review of planning permissions surrounding Hollystown-Kilmartin Site 4 has been undertaken.
- **Site Audit:** A site audit has been undertaken to quantify existing road network issues and identify local infrastructure characteristics, in addition to establishing the level of accessibility to the site in terms of walking, cycling and public transport. An inventory of the local road network was also developed during this stage of the assessment.

- **Development Framework:** A review of Development Frameworks and supporting transport focused studies has been undertaken.
- **Trip Generation:** A trip generation exercise has been carried out to establish the potential level of vehicle trips generated by the proposed development.
- **Trip Distribution:** Based upon both the existing traffic characteristics and the network layout in addition to the spatial/land use configuration and density of the urban structure across the catchments area of the development, a distribution exercise has been undertaken to assign site generated vehicle trips across the local road network.
- **Network Analysis:** Further to quantifying the predicted impact of vehicle movements across the local road network for the adopted site access strategy more detailed computer simulations have been undertaken to assess the operational performance of key junctions in the post development 2025, 2030 and 2040 development scenarios.

DBFL's approach to the study accords with policy and guidance both at a national and local level. Accordingly, the adopted methodology responds to best practices, current and emerging guidance, exemplified by a series of publications, all of which advocate this method of analysis. Key publications consulted include:

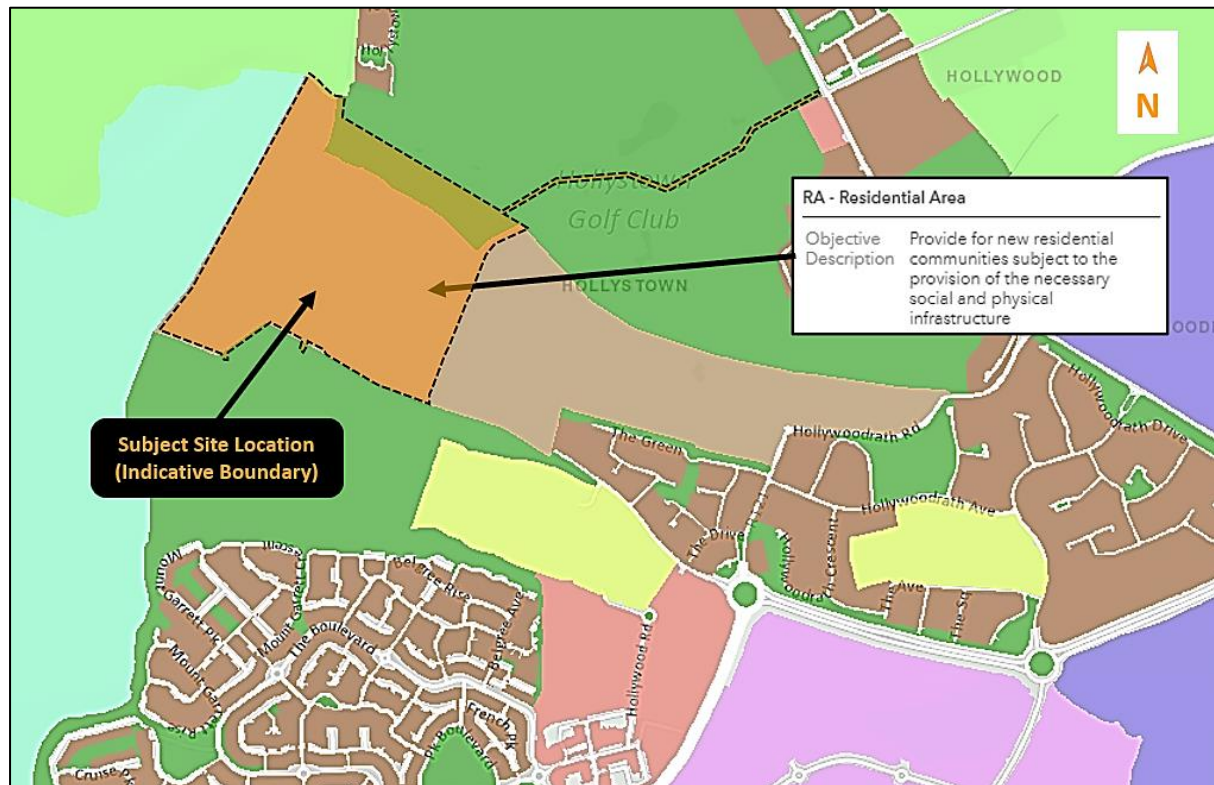
- *'Traffic and Transport Assessment Guidelines'* (May 2014) National Road Authority;
- *'Traffic Management Guidelines'* Dublin Transportation Office & Department of the Environment and Local Government (May 2003);
- *'Guidelines for Traffic Impact Assessments'* The Institution of Highways and Transportation (1994);
- Design Manual for Urban Roads and Streets (DMURS) (May 2019);
- Sustainable Urban Housing: Design Standards for New Apartments (December 2022);
- Greater Dublin Area Transport Strategy 2022-2042 ;
- Kilmartin Local Area Plan 2013 (as extended until 2023 and now expired); and
- *Fingal Development Plan 2023 – 2029.*

16.3 Receiving Environment

16.3.1 Land use

The subject site is located on an undeveloped greenfield site and will have an approximate area of c. 20.6ha. The site which is zoned under 'Zoning Objectives RA – Residential Area' which is described within the Fingal Development Plan 2023 - 2029 as *"Provide for new residential communities subject to the provision of the necessary social and physical infrastructure"* with the northern-most part of the site zoned as 'Open Space', under the overhead power lines, as shown in **Figure 16.1**.

Figure 16.1 Proposed site current zoning objectives (Source: FCC Blanchardstown North Sheet No. 12)



16.3.2 Location

The subject site is located in Hollystown-Kilmartin, north-west of the existing Tyrrelstown Local Centre. It lies between the N2 Motorway (Junction 2) and the N3 Motorway (Junction 3). The site is situated west of Hollystown (approx. 1.2km) and north of Mulhuddart (approx. 3km) and Blanchardstown Centre (approx. 4.3km) respectively.

Connectivity is offered towards the wider Dublin area via the M50 Motorway which is situated approximately 5.5km south-east of the site. The general site location in the context of the wider network is shown in **Figure 16.2**.

The subject lands are bound to the immediate south by Tyrrelstown Park and further south by the established residential areas of Mount Garrett and Bellgree. To the west of the subject site are agricultural lands, whilst to the north are the former Hollystown Golf Course lands and Hollystown Park residential development. To the east, the site is bound by the permitted Hollystown Sites 2 & 3 residential scheme, for which an SHD planning permission (ABP Ref: TA06F.312271) was granted by ABP (with conditions) in March 2023.

Tyrrelstown Educate Together National School, St. Luke's National School and Tyrrelstown Community Centre are all located to the south-east of the subject site. The subject lands will be accessible through the internal road network of the permitted Hollystown Sites 2 & 3 scheme and extension to 'The Avenue', which at present serves the Le Chéile Secondary School and the Bellingsmore residential development. The subject site boundary in the context of the immediate local area is highlighted in **Figure 16.3**.

Hollystown-Kilmartin Site 4

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Figure 16.2 Location of the proposed development (Source: Google Maps)

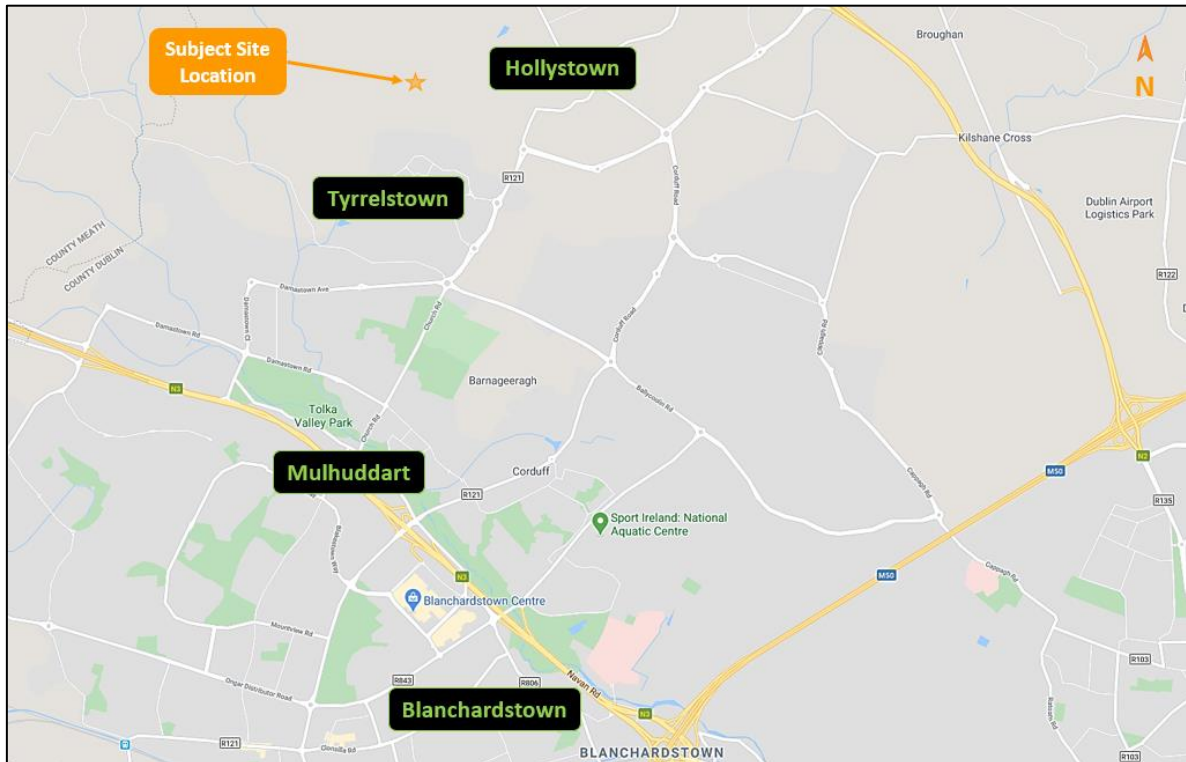
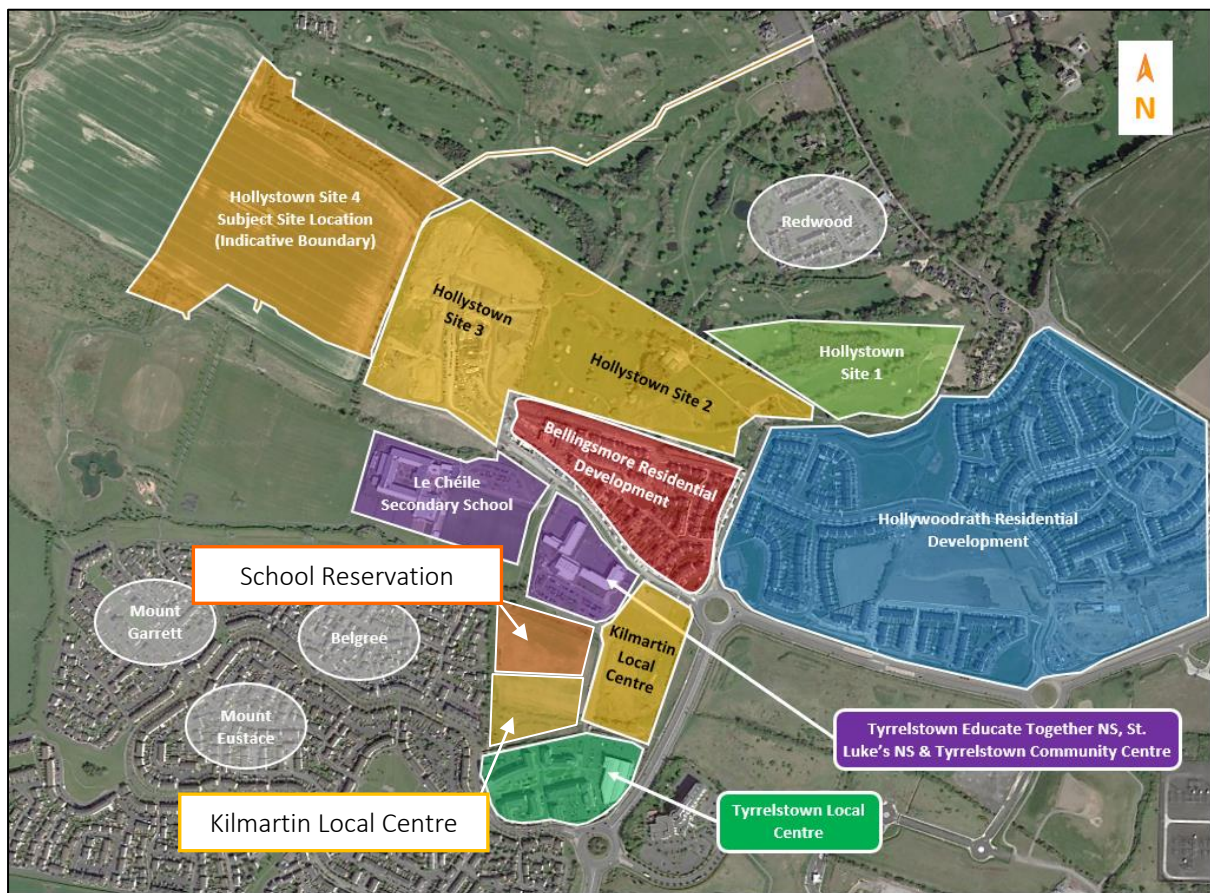


Figure 16.3 Proposed development surrounding vicinity of subject site (Source: Google Earth)



16.3.3 Existing Transport Infrastructure

16.3.3.1 Road Network

The subject site is located west of The Avenue, which is partially constructed for an approximate length of 380m and currently serves as the access route to Le Chéile Secondary School and access into the Bellingsmore residential development. The existing section of this road is a two-way single carriageway which is approximately 6.0m wide.

The R121 / Cherryhound-Tyrrelstown Link Road / The Avenue roundabout is located south-east of the site. The R121 forms both the northern and southern arms of the roundabout providing a link north towards Hollystown. Hollywoodrath Road along the Bellingsmore frontage is a two-way single lane carriageway with a posted speed limit of 50km/h and street lighting provided on the eastern / southern sides. The R121 continues north-eastwards where it connects to a four-arm roundabout known as “The Swing” located approx. 1.8km from the subject site. Several speed humps are in place along the R121 between The Swing roundabout and the R121 / Hollystown Road roundabout.

South of the Cherryhound-Tyrrelstown roundabout, the R121 forms the eastern boundary of Tyrrelstown Local Centre. This section of the R121 is a two-way dual carriageway road, separated by a concrete median barrier. The posted speed limit for this section of the R121 is 60kph and the road offers street lighting on both sides. The Cherryhound-Tyrrelstown Link Road is a two-way dual carriageway, separated by a concrete median barrier which is subject to an 80kph posted speed limit. The Cherryhound-Tyrrelstown Link Road provides a direct connection to the N2 which lies approximately 3.2km north-east of the subject site.

To the south-east of the subject site is Tyrrelstown Local Centre and Hollywood Road which currently serves as the access route to Tyrrelstown Educate Together National School and St. Luke's National School. This two-way single carriageway is approximately 7.0m wide and is subject to an informal posted speed limit of 15kph. Hollywood Road connects to The Avenue via the newly constructed northern section of Hollywood Road.

The four-arm R121 / Boulevard / Cruiserath Drive roundabout is located approximately 1.5km south of the subject site. The southern R121 arm provides connections towards Mulhuddart and Blanchardstown via the N3 as well as links to the M50. The existing road network in the vicinity of the site is shown in **Figure 16.4** below.

Figure 16.4 Existing Road Network (Source: Google Maps)



16.3.3.2 Existing Cycling and Pedestrian Facilities

The development benefits from a number of cycle and pedestrian facilities in the vicinity of the site. Segregated two-way cycle tracks and footways are provided on both sides of 'The Avenue' until the newly constructed link street priority junction. These facilities are separated by grass verges. The segregated cycle tracks from the junction onwards continues along the southern side of The Avenue, a 1.5m wide footpath and segregated 2.5m wide two-way cycle track extends as far as the Le Chéile Secondary School entrance. Segregated footpaths and two-way cycle tracks are also provided on both sides of the R121 (east of the site) as well as on the Cherryhound-Tyrrelstown Link Road. Refer to **Figure 16.5**).

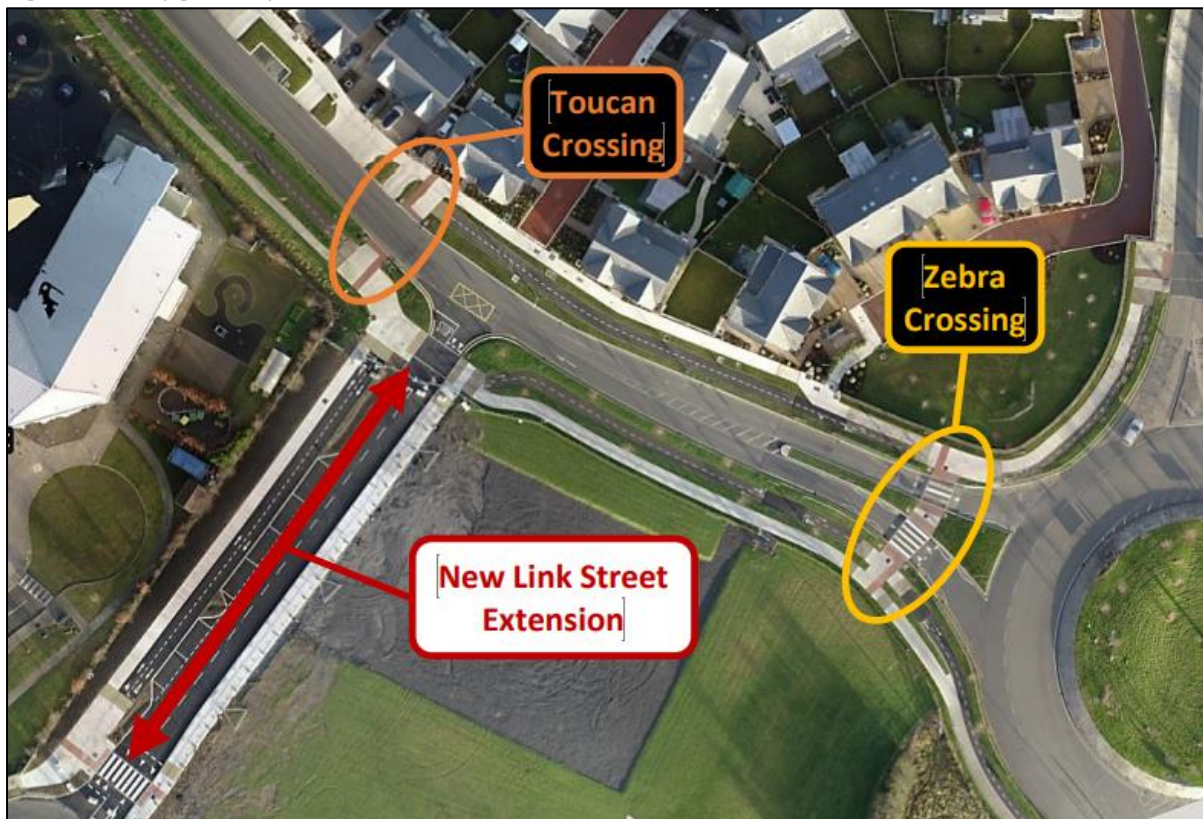
As part of the recently completed northern section of Hollywood Road, pedestrian crossings on 'The Avenue' have been upgraded. The upgrades include a Zebra crossing located on the western arm of the R121 / Cherryhound-Tyrrelstown Link Road / The Avenue roundabout and a new toucan crossing provided on the western arm of the priority junction. Both crossings provide connections between the residential developments to the north and Tyrrelstown Local Centre to the south. Refer to **Figure 16.6**.

A segregated two-way cycle track and footpath is provided on the western side of the new link street extension which extends to the nearby schools while a 3.0m shared path is provided on the eastern side. Zebra crossings are provided on all arms of the Hollywood Road roundabout. Further pedestrian and cyclist connections are provided through to The Avenue via a network of paths through the schools and lands adjacent the secondary school.

Figure 16.5 Pedestrian and cyclist facilities on The Avenue



Figure 16.6 Upgraded pedestrian facilities on The Avenue



The section of the Hollywoodrath Road (R121) which forms the frontage of the Bellingsmore and Hollywoodrath residential developments comprises segregated cycle / pedestrian facilities on the western side and a footpath on the eastern side as shown in (refer to **Figure 16.7**). A Toucan crossing is provided across the northern arm (R121) of the R121 / The Avenue / Cherryhound-Tyrrelstown Link Road roundabout

Figure 16.7 View of Hollywoodrath Road (R121) Looking North



16.3.3.3 Existing Public Transport Network

There are a number of services which currently service Tyrrelstown Local Centre south of the proposed development site. These services offer connectivity towards destinations such as Blanchardstown, Dublin City Centre and Broombridge. Dublin Bus service number 40d currently connects Tyrrelstown with Dublin City Centre and the 40e bus route connects to Broombridge while providing further opportunities for Luas and rail connections.

Furthermore, Go-Ahead 236/a connects Damastown IBM and Blanchardstown via Tyrrelstown. This route provides a total of six services per day and only operates during the morning and evening peak hours. Go-Ahead 238 connects Tyrrelstown with Blanchardstown. Route 238 also serves Carlton Hotel Blanchardstown (Stops No. 7073).

Table 16.1 below summarises the number of aforementioned services which are available within the area and **Figure 16.8** illustrates the bus stops around the subject site.

The closest bus stops to the subject development site would be the stops along the frontage of Bellingsmore and Hollywoodrath (Stop No. 7678 and 7866) which are approx. 800m east of the site and would be accessible via 'The Green' in Bellingsmore and via 'The Avenue'.

Table 16.1 Bus services in the vicinity of the proposed development (frequency in minutes)

Bus Service	Route No.	Route	Frequency (minutes)		
			Mon – Fri	Sat	Sun
Dublin Bus	40d	Tyrrelstown – Parnell Street	15 – 30	30 – 40	50
	40e	Tyrrelstown – Broombridge	30	30 – 40	50
Go-Ahead	236	Damastown IBM – Blanchardstown (via Tyrrelstown)	60	-	-
	236/a	Damastown IBM – Blanchardstown	60	-	-
	238	Tyrrelstown – Blanchardstown (Ladywell)	60	60	60

Figure 16.8 Existing bus stops in vicinity of the proposed development (Source: Dublin Bus)



16.4 Proposed Transport Infrastructure

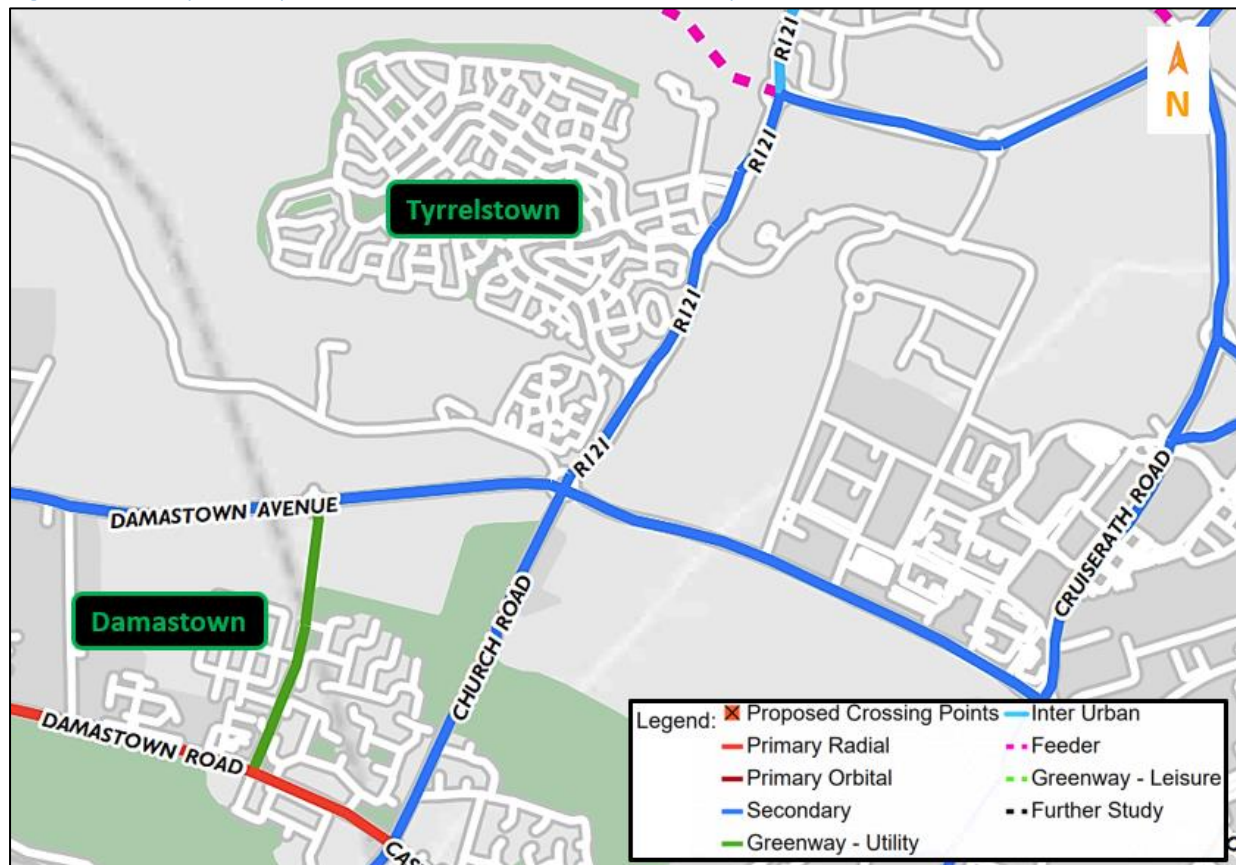
16.4.1 GDA Cycle Network Plan

The subject site lies within the Greater Dublin Area Cycle Network Plan Zone 4 under “Dublin North West” as outlined within the 2013 Greater Dublin Area Cycle Network Plan (superseded by the 2022 GDA Cycle Network Plan). The sector covers “Finglas and Phibsborough in the east, to the Fingal-Meath County boundary to the north and west and to the River Liffey to the south”.

New routes such as the 5E on the R121, segregated cycleways on the Cherryhound-Tyrrelstown Link Road and the feeder routes on 'The Avenue' have been built since the publication of the 2013 GDA Cycle Network Proposals. An updated route within the Tyrrelstown area was published by the National Transport Authority (NTA) within the 2022 GDA Cycle Network Plan and is shown below in **Figure 16.9**.

The **F7b Inter-urban Route** is proposed to run along Hollywoodrath Road (R121) and connects towards Tyrrelstown. This route will connect to the existing 5E Secondary Route, linking Tyrrelstown with Blanchardstown Town Centre and further towards Dublin City Centre via the No. 5 Primary Radial Route. The 2022 Plan also proposes a new greenway that will connect Damastown Road / Ladywell Road and Damastown Avenue.

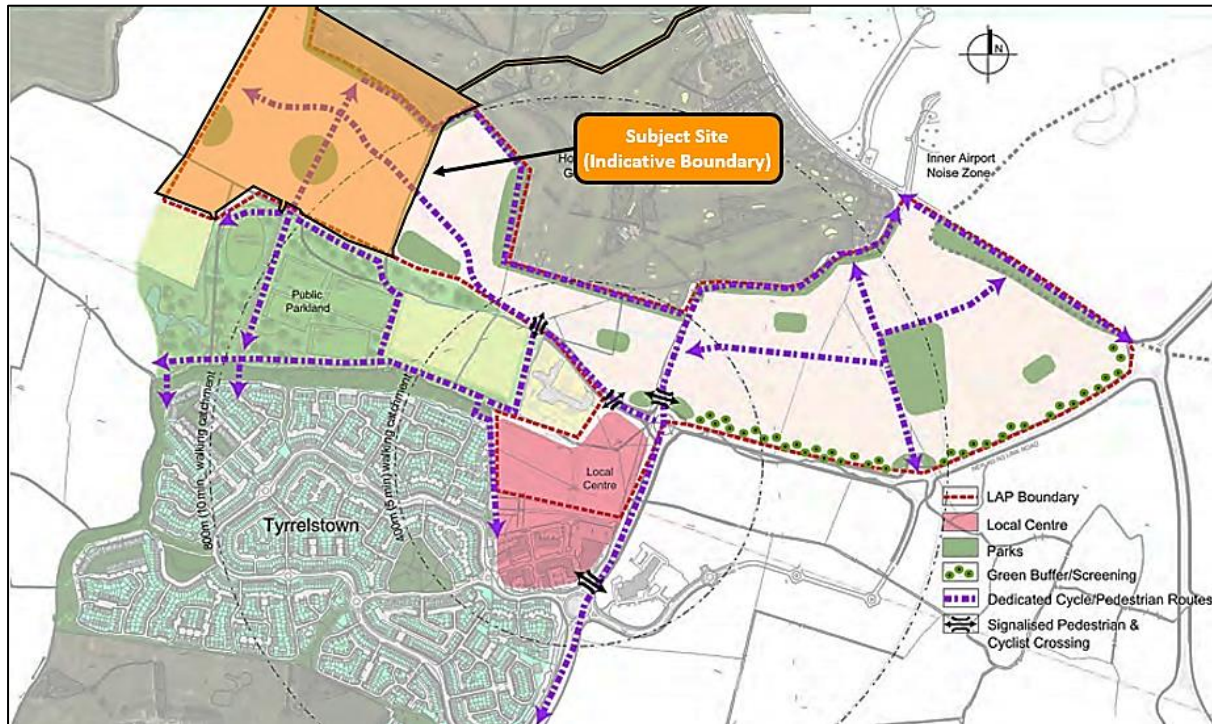
Figure 16.9 Proposed cycle facilities (Source: Sheet N4 GDA Cycle Network Plan 2022)



16.4.2 Kilmartin Local Area Plan – Cycle Network Proposals

As illustrated below in **Figure 16.10**, the Kilmartin Local Area Plan 2013 (extended to 2023 but which recently expired), incorporates a network of pedestrian and cycle routes within the subject site (indicative), which includes connections through the emerging Hollystown Sites 2 and 3 to the east as well as connections through Tyrrelstown Park from the south. These routes are proposed to connect with the existing pedestrian / cycle facilities at St. Luke's and Tyrrelstown Educate Together National Schools, Le Chéile Secondary School and Tyrrelstown Local Centre.

Figure 16.10 Indicative pedestrian / cycle routes (Source: Kilmartin LAP, Map 8)

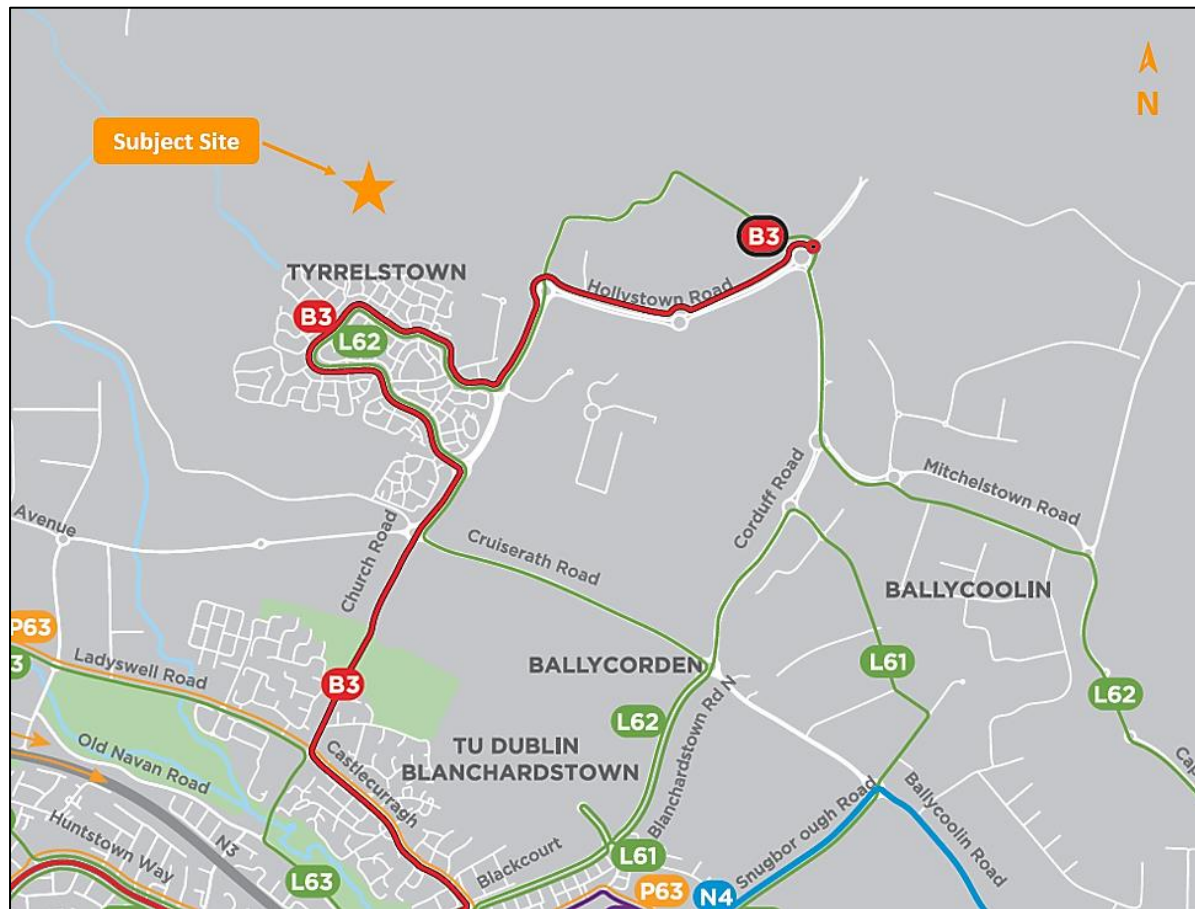


16.4.3 BusConnects

The subject site will benefit from the proposed BusConnects Route **B3** and **L62** which will operate close to the subject site. **Figure 16.11** below illustrates the routes of the proposed bus network:

- **B3:** This route, as part of the B-Spine, provides a connection from Tyrrelstown Town Centre to Dún Laoghaire via Dublin City Centre. This service will travel along Church Road (R121) and have a frequency of 15 minutes on weekdays and 15-20 minutes on weekends;
- **L62:** This route will operate from Blanchardstown to Broombridge via Tyrrelstown. The all-day service has a frequency of 30 minutes (every 15 minutes during peak times) and largely replicates Dublin Bus's existing route 40e.

Figure 16.11 Proposed BusConnects network (Source: BusConnects – Revised Network 2020)



16.4.4 Potential Future Bus Stops

It is noted that two new bus stops are proposed on Hollywood Road as part of the recently granted Hollystown-Kilmartin SHD development which would be approx. 800m south-east of the site. The re-routing of existing/future bus routes has not been confirmed by the NTA, however it is anticipated that future bus routes to and from the Local Centre would operate along the upgraded Hollywood Road once the Hollystown-Kilmartin SHD development is complete. There are no other confirmed new future bus stops, although the design of the primary link street through Sites 2, 3 and 4 has been designed to facilitate future stops if required.

16.4.5 Road Network Proposals

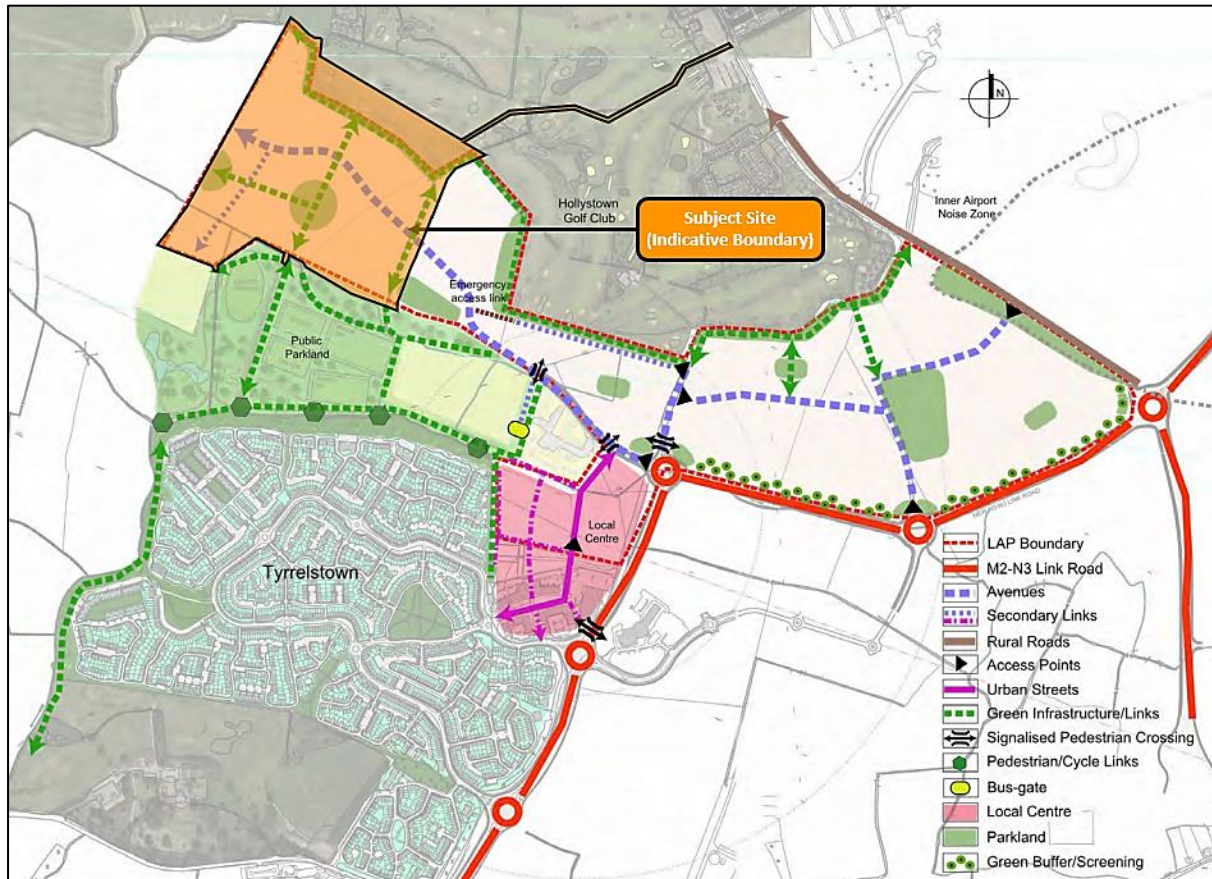
Under Section 4 (Development Strategy: Movement Strategy and Transportation Infrastructure) of the Kilmartin Local Area Plan, the strategy identifies a tiered approach to movement in Kilmartin. An 'urban street' is proposed that extends from the Boulevard roundabout west of Tyrrelstown Local Centre towards the Avenue, east of Tyrrelstown Educate Together National School. The northern section of this street has been constructed and is operational.

'The Avenue' will be extended to serve the subject lands currently connects to the R121 roundabout and provides access to the Le Chéile Secondary School the Bellingsmore residential development. As per the LAP, 'The Avenue' is indicated to extend westwards to serve the subject lands. Two signalised pedestrian crossings are proposed on this street, it is noted that one of these has already been constructed as shown previously on the western arm of the new priority junction, while the second crossing (zebra crossing with Belisha beacons) forms part of the proposals for the Hollystown Sites 2 &

3 residential development. The Kilmartin LAP movement strategy in the context of the subject site is illustrated in **Figure 16.12**.

The LAP's inclusion of 'Avenues' also takes into account the future accessibility of Site 4 located to the west. The segregated cycle tracks and footways that currently exist on 'The Avenue' are indicated to extend westwards.

Figure 16.12 Map 7 – Roads and Access (Source: Kilmartin LAP)



16.5 Characteristics of Proposals

16.5.1 Proposed Development

The proposed development relates to a site of c.20.6ha referred to as Hollystown-Kilmartin 4 located in the townland of Hollystown and Kilmartin, Dublin 15. The site is bound by lands which previously formed part of the former Hollystown Golf Club and the residential area of Hollystown Park to the north, lands forming part of a permitted Strategic Housing Development (SHD) to the east (ABP Reg. Ref. 312271), Tyrrelstown Park to the south, and rural zoned lands to the west.

The proposed development will include for the development of 580 no. residential units, consisting of 112 no. apartments/duplexes and 468 no. houses ranging from 1 – 3 storeys and will also include for car parking, cycle parking, new pedestrian/ cycle links, storage, services and plant areas. Landscaping will include for high quality private open space, communal amenity areas and public open space provision. **Figure 16.13** below illustrates the proposed internal site layout plan.

Figure 16.13 Proposed Development Internal Site Layout (Source: Deady Gahan Architects)



16.5.2 Site Access Arrangements

16.5.2.1 Vehicle Access

The subject lands will be accessible via the internal road network of the permitted Hollystown Sites 2 & 3 residential scheme (ABP Ref: TA06F.312271) and from an extension to 'The Avenue', which at present serves the Le Chéile Secondary School and Bellingsmore residential development. The proposed vehicular access points are shown below in **Figure 16.14**.

Vehicle access will be via two locations through Hollystown Site 3 (Ref. **Figure 16.15**):

- Primary Entrance: from The Avenue extension; and
- Secondary Entrance: to the north which in turn connects to Hollystown Site 2's proposed priority-controlled access junction on the R121.

Additionally, vehicle connectivity is provided between the proposed Hollystown Site 4 and Tyrrelstown Local Centre via the newly constructed priority junction on The Avenue and Link Street extension.

Figure 16.14 Proposed development site entrance locations



Figure 16.15 Proposed Development Access / Egress Locations



The design of the site's new accesses, in addition to the internal streets, have been actively influenced and subsequently comply with DMURS. Within both the FCC Development Plan 2023-2029 and the

Hollystown-Kilmartin Site 4

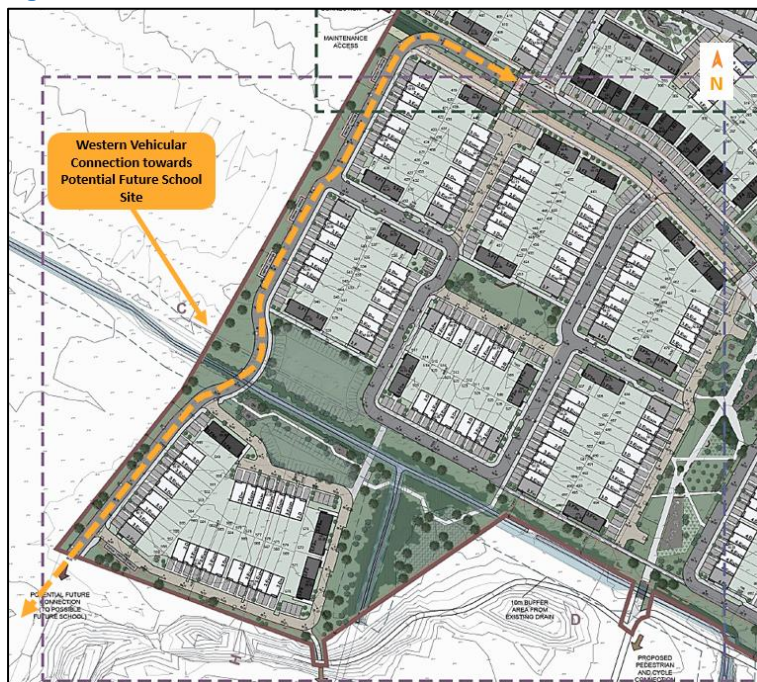
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Kilmartin Local Area Plan (LAP) (recently expired), a primary school site is identified to the south-west of the subject Hollystown - Kilmartin Site 4 development. It is noted however, that the location as identified in the Kilmartin LAP for the primary school is situated almost entirely within the Outer Public Safety Zone of Dublin Airport. Consequently, if a future primary school were to be constructed it would most likely have to shift slightly further south, outside of the Outer Public Safety Zone. This is reflected in the Fingal Development Plan 2023-2029 which has relocated this school objective further south outside of the Outer Public Safety Zone as indicated in **Figure 16.16**.

Figure 16.16 Location of Potential Primary School Site Relative to Hollystown - Kilmartin Site 4



Figure 16.17 Western Vehicular Connection towards Potential Future School Site



As a result, a vehicular connection towards the aforementioned potential school site is proposed via the Primary Link Street which will extend down to the southwestern most boundary, as shown above in **Figure 16.17**.

This street has been widened to 6.0m to facilitate potential access for school buses and extends to the southwestern corner so that the road could be continued southwards in the future to serve the potential school site if / when required. To ensure the street is still compliant with DMURS principles and promotes low vehicle speeds, horizontal deflections have been introduced in the road alignment.

16.5.2.2 Pedestrian and Cyclist Linkages

The proposed site layout has been designed to maximise permeability and connectivity to and through the site by foot and by bicycle. The scheme will incorporate a 2.0m wide pedestrian footpath on the northern side of the Primary Link Street, while the southern side will benefit from a segregated 4.0m wide two-way cycle track and a 2.0m wide footpath. The Secondary Link Streets will comprise 3.0m wide shared paths on both sides. A number of controlled and uncontrolled crossing points will be provided along key desire lines. A 5.0m wide path is proposed along the eastern edge of the scheme, running north-south between Sites 3 and 4, consisting of a 3.0m wide two-way cycle track and 2.0m wide footway.

There is a second north-south pedestrian/cyclist connection which runs through the central green open spaces within Site 4. This will comprise a 3m shared path, providing a connection through to Tyrrelstown Park at the southern edge up to the network of paths within the linear park along the northern site boundary.

High-quality landscaping and public realm will contribute to making the Site 4 an attractive, pleasant environment for pedestrians / cyclists with an inter-connected network of green links connecting to accessible play and recreation areas. Thus, the proposed site layout design aims to support local trips between the subject site, Local Centre, surrounding key services / amenities and schools to be made either on foot or by bike.

Site 4 will benefit from a pedestrian / cyclist connection to and from the permitted Dublin GAA grounds located off Ratoath Road (recently granted planning permission FCC Planning Reg. Ref. FW22A/0098). The connectivity for pedestrians / cyclists travelling between these two sites will be provided via the proposed paths provided as part of the Hollystown Sites 2 & 3 application, as shown in. **Figure 16.18**.

Figure 16.18 Proposed Connection to and from Proposed Dublin GAA Pitches



16.5.3 Car Parking Provision

Table 16.2 below indicates the car parking requirements by the FCC Development Plan 2023-2029 and the Department of Housing, Planning and Local Government (DHPLG) for each unit proposed in the Hollystown-Kilmartin Site 4 development.

As indicated, 940 no. car parking spaces are required under the FCC Development Plan (2023-2029) requirements, comprising 824 no. residential spaces and 116 no. visitor spaces. By comparison, for the apartment/duplex element of the scheme the DHPLG standards states that a reduced quantum of car parking should be considered.

Overall, a total of 892 no. car parking spaces will be provided for the proposed Hollystown Site 4 development, comprising 824 no. resident spaces and the remaining 68 no. spaces will be provided as visitor car parking. In terms of resident car parking, the total car parking provision of 824 no. spaces is in accordance with the FCC Development Plan (2023-2029) requirements for all unit types.

A total of 68 no. visitor car parking spaces are provided across the site at a rate of 1 no. visitor car park space per every 5 units for the following unit types:

- 2-Bed mid-townhouses (Type E5)
- 2-Bed later living units (Type H1 and H2)
- 1-Bed apartments (Type K)
- 1-Bed maisonettes (Type P1 and P2).

This is in recognition of these units being provided with 1 designated car park space, whilst all the other unit types are provided with 2 designated car park spaces. The proposed 68 no. visitor spaces will be dispersed throughout the site, in close proximity to the units they are intended to serve.

The reduced visitor car parking provision (68 no. spaces) compared to FCC's requirement (116 no. spaces) is considered appropriate based on the potential demand and balancing an overarching objective to encourage travel by sustainable modes. It is considered that an overprovision of visitor parking would likely encourage and induce travel to/from the site by private car. Furthermore,

Hollystown-Kilmartin Site 4

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increasing visitor parking would have significant implications on open space and streetscapes as these spaces would have to be accommodated on street throughout the development and would risk dominating the public realm.

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Table 16.2 Development Standard Car Parking Requirements and Scheme Proposals

Unit Type	No. of Bedroom	No. of Units	FCC DP 2023-2029 (Norm + Zone 2)				DHPLG Guidelines (2022)		Hollystown Site 4 Proposals	
			FCC Standard		FCC Requirement		Resident	Visitor	Resident	Visitor
			Resident	Visitor	Resident	Visitor				
House	4 bed	35	2 spaces / unit	1 / 5 units	70	7	-	-	70	-
	3 bed	201	2 spaces / unit	1 / 5 units	402	40	-	-	402	-
	2 bed	232	1 space / unit	1 / 5 units	232	46	-	-	232	47
Duplex	3 bed	8	2 spaces / unit	1 / 5 units	16	2	"...planning authorities must consider a reduced overall car parking standard..."		16	-
Apartment/ Maisonette	1 bed	104	1 space / unit	1 / 5 units	104	21			104	21
Total No. of Units		580	Sub-Total Car Parking		824	116	-	-	824	68
			Total No. of Car Parking		940		-		892	

Electric Vehicle (EV) Charging Infrastructure

There are 261 no. non in-curtilage / visitor spaces. Of these, 67 no. spaces (equating to 26%) will be equipped with electric vehicle (EV) chargers from the outset. All remaining non-in curtilage parking spaces will benefit from having the necessary EV ducting infrastructure which will enable retro-fitting of charging points in the future as and when required. This therefore adheres to and exceeds FCC's standard which states that "*All multi-unit residential developments shall incorporate EV charging points at 20% of the proposed parking spaces*". Also in accordance with the development plan requirements, all spaces (both in-curtilage and non-in curtilage spaces) will be equipped with the necessary infrastructure and ducting to enable the fit out of additional charge points when required in the future.

16.5.4 Bicycle Parking Provision

Table 16.3 provides a summary of the quantum of cycle parking required under the FCC Development Plan 2023 – 2029, the DHPLG requirements and the proposed scheme provision.

Based on the FCC Development Plan requirements, a total of 2,215 no. spaces are required, comprising 2,159 no. resident spaces and 56 no. visitor spaces. Whilst in relation to the apartments / duplexes, the DHPLG requires a total of 184 no. spaces comprising 128 no. resident and 56 no. visitor spaces.

An overall provision of 2,219 no. cycle parking spaces will be provided across the development, comprising 2,159 no. resident spaces and 60 no. visitor spaces. The resident cycle parking is therefore in accordance with the development plan requirements, whilst the visitor cycle parking slightly exceeds the required provision.

16.5.5 Motorcycle Parking Provision

As per FCC's motorcycle parking standard of one motorcycle parking bay per 10 car parking spaces at apartments, the scheme is required to provide two motorcycle parking bays based on the 24 no. car parking spaces provided at the apartment / duplex units. The scheme proposes a total of 14 no. motorcycle parking bays and therefore exceeds FCC's requirements.

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Table 16.3 FCC Development Plan & DHPLG Cycle Parking Requirements

Unit ID	No. of Bedroom	No. of Units	FCC DP 2023-2029 (Minimum)				DHPLG Requirements (2022)				Hollystown Site 4 Proposals	
			FCC Standard		FCC Requirement		DHPLG Standard		DHPLG Requirement			
			Resident	Visitor	Resident	Visitor	Resident	Visitor	Resident	Visitor	Resident	Visitor
House	4 bed	35	2 + 1/bedroom	-	210	-	-	-	-	-	210	-
	3 bed	201	2 + 1/bedroom	-	1,005	-	-	-	-	-	1,005	-
	2 bed	232	1 + 1/bedroom	-	696	-	-	-	-	-	696	-
Duplex	3 bed	8	2 + 1/bedroom	0.5 / unit	40	4	1 / bedroom	1 / 2 units	24	4	40	8
Apartment/ Maisonette	1 bed	104	1 + 1/bedroom	0.5 / unit	208	52	1 / bedroom	1 / 2 units	104	52	208	52
Total No. of Units		580	Sub-Total Cycle Parking		2,159	56	Sub-Total Cycle Parking		128	56	2,159	60
			Total No. of Cycle Parking		2,215		Total No. of Cycle Parking		184		2,219	

16.6 Predicted Impacts of the Proposed Development

16.6.1 Construction Phase

16.6.1.1 Management of Construction Activities

All construction activities on-site will be governed by the traffic management measures outlined in the Construction & Environmental Management Plan (CEMP) prepared by DBFL Consulting Engineers and submitted under a separate cover as part of the planning application. The CEMP seeks to ensure that the impacts of all building activities during the construction of the proposed development upon both the public (off-site) and internal (on-site) workers' environments, are fully considered and proactively managed / programmed. It aims to respect all key stakeholders, thereby ensuring that both the public's and construction workers' safety is maintained at all times, and that disruptions are minimised.

The mitigation measures detailed in the CEMP, submitted as part of the planning application, will be implemented through a Construction Traffic Management Plan (CTMP), the details of which will include haul routes, working times and off-site disposal sites. This plan will be prepared in consultation with Fingal County Council and agreed in full with the Council prior to commencement of construction activities on site, in order to reach full agreement upon the traffic management mitigation measures and monitoring measures to be adopted during the entire programme of construction activities on-site. The impact of the construction period will be *temporary* in nature.

16.6.1.2 Construction Traffic

Construction traffic will only be generated on weekdays (08:00 – 19:00) and Saturdays (08:00 – 14:00) (subject to planning conditions) and will consist of the following two principal categories:

- Private vehicles owned and driven by site construction staff and by full time supervisory staff;
- Excavation plant, dumper trucks involved in site development works and materials delivery vehicles;
- Mobile crane for lifting of prefabricated units.

On-site employees will generally arrive before 08:00, thus avoiding the morning peak hour traffic. These employees will generally depart after 18:00. Deliveries of material to site will be planned to avoid high volume periods to avoid clashing with school activities. There may be occasions where it is necessary to have deliveries within these times.

Based upon the experience of similar developments, a development of this type and scale is anticipated to require an overall average of 160 operatives across the programme with a peak of 320, subsequently generating on average no more than 40 two-way vehicle trips during the peak AM and PM periods over the period of the phased construction works. The peak requirement of 320 operatives on site is expected to occur relatively short period of the programme, potentially generating up to 80 two-way vehicle movements in the peak AM and PM periods.

It is anticipated that the proposed development programme would be rolled out over a period of approximately 42 months post receipt of planning permission. Following the completion of the initial site clearance works, the generation of HGV movements during the build period will be evenly spread throughout the day and, as such, will not impact significantly during the peak traffic periods. For this scale of development, we do not expect HGV vehicle movements to exceed 5 vehicles per hour during the busiest period of construction 'build' works.

Based on a preliminary review of the existing survey data and proposed site levels, DBFL estimate that approximately 55,000m³ of material will require excavation as part of the proposed development proposals in regard to works associated with the swale, road construction and residential buildings. It is intended that the majority of this excavated topsoil and subsoil would be re-used as part of the development's permanent landscaped works. Although an allowance has been made for unsuitable material, with 45,000m³ of infill / re-used material, resulting in 10,000m³ unsuitable material to be exported from the subject site following the excavation works. This equates to approx. 560 truckloads depending upon vehicle characteristics (assumed a tipper capacity of 18m³). Assuming construction takes place over one consecutive period and assuming a maximum of 20 truckloads per day, this equates to approx. 28 days (≈ 5 weeks) of materials exported as part of the adopted worst-case assessment to export the estimated quantum of materials.

All construction HGV traffic for the required works will enter the site via a haul route accessed from Ratoath Road and the former Hollystown Golf Club entrance. Ancillary access for non-HGV construction traffic will also be possible via The Avenue (south of the existing Bellingsmore development and through Sites 2&3). Ratoath Road will be the primary haul route, while The Avenue will be a secondary access route to the construction site. The construction compound will be located within the extents of the subject site. Warning signage will be provided at both haul route locations for pedestrians and other road users on all approaches in accordance with Chapter 8 of the Traffic Signs Manual and the Contractor's Traffic Management Plan.

As noted above, the primary haul route will be via the Ratoath Road. Consequently, the Swing Roundabout, has been included within the assessment of the construction phase impacts as the majority of construction traffic will travel through this junction. To assess the construction traffic impacts on this junction, third-party publicly available traffic count information was obtained from the recently permitted GAA Cluster Facility application (FCC Ref. FW22A/0098 granted planning permission in January 2023). This site is also located on Ratoath Road, just north of the proposed haul route access. Using the TII growth rates, the 2021 base traffic flows for the peak hour at this roundabout were increased to 2024 values. As stated in Section 16.6.1.2, a maximum of 80 no. two-way vehicle movements is anticipated to be generated by the construction activity during the peak hours.

Assuming a worst case scenario of all this traffic travelling through The Swing roundabout results in an impact of approximately 6.8%. With regards to the TII Traffic and Transport Assessment Guidelines (2014) which state that the impact of a proposed development upon the local road network is considered material when the level of traffic it generates surpasses 10% on normal networks. Accordingly, the impact of construction traffic on The Swing roundabout will not have a material impact.

A significant benefit of the development site's characteristics is that all construction traffic vehicle parking demands can be accommodated on-site thereby minimising the impact upon the operational performance and safety levels of the adjacent public road network.

Considering the sites proximity to the strategic road network and following the implementation of an appropriately detailed CTMP, it is concluded that construction traffic will ***not give rise to any significant traffic concerns*** or impede the operational performance of the local road network, including junctions. **Table 16.4** below illustrates the significance of the impacts before the proposed mitigation activities are applied (as described in in Section 16.7.1). The impacts of the construction phase prior to mitigation will have slight changes to the surrounding junctions.

Table 16.4 Impact significance – Construction Phase (Prior to Mitigation)

	Junction	Quality / Scale of Impact	Impact Significance	Duration
1	Hollywood Road / New Link Roundabout	Negative - Low	Slight Effects	Temporary
2	The Avenue / New Link Junction	Negative - Low	Slight Effects	Temporary
3	The Avenue / R121 / Cherryhound Tyrrelstown Link Roundabout	Negative - Low	Slight Effects	Temporary
4	Boulevard / Park Boulevard Roundabout	Negative - Low	Slight Effects	Temporary
5	R121 / Boulevard / Cruiserath Drive Roundabout	Negative - Low	Slight Effects	Temporary
6	The Swing Roundabout: Hollywoodrath Rd / Ratoath Rd / Corduff Rd Junction	Negative - Low	Slight Effects	Temporary

16.6.2 Operational Phase

16.6.2.1 Development's Trip generation

To estimate the potential level of vehicle trips that could be generated by the proposed development, reference has been made to the TRICS database. TRICS provides trip rate information for a variety of different land uses and development types, which can be applied to the proposed development.

A review of trip generation factors contained within the TRICS database was carried out. TRICS data is primarily UK based, although a number of Irish sites have recently been included and this number continues to increase. Nevertheless, we consider that TRICS will provide a reasonable indication of traffic generation from the proposed development.

Table 16.5 below, includes the predicted trip rates for the proposed development during the morning and evening peak hour periods using data from TRICS.

Table 16.5 Proposed development trip rates (TRICS)

TRICS Rate	AM Peak Hour (08:15 - 09:15)			PM Peak Hour (17:00 - 18:00)		
	Arr	Dep	Two-Way	Arr	Dep	Two-Way
Houses	0.19	0.44	0.626	0.4	0.26	0.665
Apartments	0.06	0.2	0.255	0.19	0.07	0.257

Table 16.6 below summarises the predicted AM and PM peak hour traffic generated by the proposed development.

Table 16.6 Potential Vehicle Trip Generation

Vehicle Trips	AM Peak Hour (08:15 - 09:15)			PM Peak Hour (17:00 - 18:00)		
	Arr	Dep	Two-Way	Arr	Dep	Two-Way
Houses	106	246	353	227	148	375
Apartments	1	3	4	3	1	4
Total Vehicle Trips	107	250	357	230	149	379

16.6.2.2 Committed Development's Trip Generation

Following a review of FCC's planning portal, DBFL have established the extent of existing third-party development, as located within the area of influence of the subject site, which currently benefit from a planning permission but have yet to be constructed/occupied. DBFL have subsequently included the

following third-party development proposals as ‘committed developments’ within the network assessment.

Hollystown Site 1 – Residential Development (FW21A/0042)

To the east, approximately 600m from the subject development, is the recently permitted residential development, referred to as Hollystown Site 1 (Planning Reg. Ref. FW21A/0042) comprising 69 no. residential dwellings. DBFL consider that this development will generate an impact on the local road network and have included it as a committed development to ensure a robust assessment. It is noted that the Hollystown Site 1 lands are also in the ownership of Glenveagh.

DBFL have utilised the trip rates and subsequent trip generation figures for the proposed development schedule, as shown in **Table 16.7** below. These vehicle trips were added to the subject developments Traffic Model in order to assess the impact of the potential Hollystown Site 1 residential development on the surrounding road network in addition to the subject developments impact.

Table 16.7 Proposed Hollystown Site 1 residential development potential vehicle trips

Land Use	No. of Units	AM Peak Hour (08:15-09:15)			PM Peak Hour (17:00 - 18:00)		
		Arr	Dep	Two-Way	Arr	Dep	Two-Way
Hollystown Site 1	69	13	32	45	31	19	50

Hollystown Sites 2 and 3 & Kilmartin Local Centre – Residential Development (ABP Ref:TA06F.312271)

As part of Kilmartin LAP lands, lands located west of Hollystown Site 1 and north of Bellingsmore are zoned as residential. The development also includes apartment units in Kilmartin Local Centre, situated to the south-east. This emerging residential scheme (referred to as Hollystown Sites 2 & 3 and Kilmartin Local Centre) comprises 548 no. residential units, a retail/café unit, 2 no. crèches and 1 no. Montessori. It is noted that these lands are also in the ownership of Glenveagh.

A Strategic Housing Development (SHD) planning application (ABP Ref: TA06F.312271) for Hollystown Sites 2 & 3 was submitted to An Bord Pleanála (ABP) on the 17th of December 2021, for which planning was granted by ABP (with conditions) on the 23rd of March 2023. DBFL have utilised the subsequent trip generation figures for the indicative development schedule, as shown in **Table 16.8** below.

Table 16.8 Proposed Hollystown Site 2&3 residential development potential vehicle trips

Development	Unit Type	No. of Units / GFA (per 100 sqm)	AM Peak Hour (08:15 - 09:15)			PM Peak Hour (17:00 - 18:00)		
			Arr	Dep	Two-Way	Arr	Dep	Two-Way
Hollystown Sites 2 & 3	Houses	401 Units	76	175	251	161	105	267
	Apartments	27 Units	2	5	7	5	2	7
Kilmartin L.C.	Apartments	120 Units	5	15	21	23	13	35
	Community Hub	4.3	1	0	1	1	2	3
	Creche	12.7	13	9	22	10	13	23
	Retail	3.1	2	2	3	2	3	5
Total Vehicle Trips			98	207	305	203	137	340

Proposed Commercial Development – Tyrrelstown Local Centre (Ref: FW22A/0169)

The greenfield lands located immediately north of Tyrrelstown Local Centre have been zoned as ‘Zoning Objectives LC – Local Centre’ which is described within the Fingal Development Plan 2023 - 2029 as “Protect, provide for and/or improve local centre facilities”. This permitted development proposes a

1.83ha commercial development, comprising the construction of a double storey retail building comprising a GFA of 5,111.4m². The scheme also includes the junction upgrades on Hollywood Road and segregated cycle tracks and footways on both sides of the street. It is noted that these lands are also in the ownership of Glenveagh. A number of additional ancillary retail/service units are also proposed including 3 no. retail / retail service units, a café unit (335 sqm) and a medical centre (750 sqm).

The development will consist of a primary retail unit with back of house storage, staff facilities, lobby and circulation areas (3,403 sqm), a service yard to the rear and ancillary uses including 3 no. retail / retail service units, a café unit (335 sqm) and a medical centre (750 sqm). The application was recently granted planning permission by FCC in June 2023. An appeal was subsequently lodged on 6th of July 2023 and is now under consideration by An Bord Pleanála. Accordingly the development has been included as a committed development to ensure a robust traffic assessment as DBFL consider that it will generate an impact on the local road network.

Table 16.9 Proposed commercial development potential vehicle trips

Vehicle Trips	GFA (per 100 sq.m)	AM Peak Hour (08:15 - 09:15)			PM Peak Hour (17:00 - 18:00)		
		Arr	Dep	Two-Way	Arr	Dep	Two-Way
Retail	34.276	72	53	125	141	141	282
Medical Centre	7.602	3	2	4	1	2	3
Retail	5.155	12	11	22	13	15	28
Cafe	3.026	8	5	12	10	11	21
Total Trips		94	70	164	165	169	334

Primary School, Hollywoodrath Avenue / Bay Meadows Avenue (FW22A/0263)

FCC recently approved the construction of a new primary school consisting of 24 classrooms, with vehicular access off Hollywoodrath Avenue. The school will have separate entrances for pedestrians and cyclists which will be available off Hollywoodrath Avenue and Bay Meadows Avenue. Initially, this primary school will be part of the Department of Education's School Remediation 'Decant Programme,' which involves temporarily relocating students to alternative facilities while repairs are conducted on their original school buildings. After the remedial work is completed, the students will be moved back to the remediated school.

The school building will serve as a 'Decant Hub' upon its opening, providing transportation for students and staff from two neighbouring primary schools to and from the proposed school. The anticipated trip generation for the primary school was determined by referencing the TTA included in the planning application. It is expected that 11 buses will transport the students, resulting in 22 trips during the morning and afternoon peaks (11 inbound and 11 outbound). Additionally, the school will employ 45 staff members, contributing to 45 inbound trips in the morning and 45 outbound trips in the afternoon (total of 67 inbound arrival trips and 67 outbound departure trips). Considering the high demand during the morning and afternoon network peaks, a conservative approach was taken in assessing the trip numbers.

Upon completion of the 'Decant Programme' the development will remain in-situ and will function as a post-primary school serving the local population, as intended under the Kilmartin LAP. As discussed

in the following section, the potential trip generation associated with the future post primary school in this location has been taken into consideration. The trips associated with the post-primary school assessed are greater than those anticipated as part of the primary school.

The inclusion of the post-primary development trips in the assessment are considered to represent a worst-case scenario in terms of traffic impacts. Therefore, the primary school trips have not been included as the resulting cumulative impacts would be less than that assessed based on the post-primary school trip generation.

Kilmartin LAP – Proposed Secondary School

A new secondary school is also proposed under the Kilmartin LAP, which will be within the temporary primary school building off Hollywoodrath Avenue following the completion of the ‘Decant Programme’ as noted above. Details regarding the exact number of post-primary pupils to be accommodated are not determined at this stage. For the purposes of this assessment, it has been assumed that the secondary school could cater for 600 pupils. It is noted that the Kilmartin LAP refers to a potential student enrolment of 600-800 students within the post-primary school in the Hollywoodrath area.

The assessment assumes that traffic generated by 300 would utilize the existing Hollywoodrath Avenue on the R121 as the main access to and from the future secondary school students (i.e. half accessing from the west and half accessing from the east), refer to **Table 16.10**.

Table 16.10 Potential trip generation for future secondary school

Vehicle Trips	No. of Pupils	AM Peak Hour (07:45-08:45)			PM Peak Hour (17:00 - 18:00)		
		Arr	Dep	Two-Way	Arr	Dep	Two-Way
Proposed Secondary School	300	86	61	147	16	27	43

Kilmartin LAP – Primary School Facilities

As per the objectives set out within the Kilmartin LAP (Section 4: Land Use Mix - Map 9), further educational facilities are proposed in addition to the existing primary schools currently in Tyrrelstown. This includes an additional primary school which is to be located on lands immediately south of the existing St. Luke’s National School and Tyrrelstown Educate Together National School and north of the subject development site (refer **Figure 16.19**). The site is a school reservation site for the Department of Education.

Figure 16.19 Location of existing / future schools



Whilst details regarding the potential size of the future primary school and number of pupils to be accommodated are not determined at this stage, for the purposes of this assessment it has been assumed that the primary school could cater for 565 pupils. This is an average of the current enrolment at the Tyrrelstown Educate Together National School (544 pupils) and St. Luke's (585 pupils). It is assumed that each school has approximately 40 no. staff also.

In order to determine the level of traffic generated by the existing primary schools an automatic traffic count (ATC) was undertaken as part of the wider traffic surveys on 10th of May 2022. The ATC was located on Hollywood Road, as shown in **Table 16.11** below, at a point where only school traffic arriving / departing was captured. As noted previously, the newly constructed northern section of the Link Street (Hollywood Road) was not open at the time the traffic surveys were undertaken and thus all school traffic had to travel in/out on the southern section of Hollywood Road.

Table 16.11 ATC results at Hollywood Road (AM and PM peak hours)

Existing Two Primary Schools	No. Pupils / Staff	AM peak (08:15 – 09:15)			PM Peak (17:00 – 18:00)		
		Arr	Dep	Two-Way	Arr	Dep	Two-Way
	1,129 / 80	357	297	654	43	45	88
Vehicle Trip Rate / Person		0.3	0.25	0.54	0.04	0.04	0.08

The expected trip generation for the future proposed primary school can therefore be derived based on the results of the ATC for the current primary school activity. On that basis, the following AM and PM peak hour trip generation could be expected, refer to **Table 16.12**:

Table 16.12 Potential trip generation for future primary school

Proposed Primary School	No. Persons (Pupils + Teachers)	AM Peak Hour (07:45-08:45)			PM Peak Hour (17:00 - 18:00)		
		Arr	Dep	Two-Way	Arr	Dep	Two-Way
	605	182	151	327	24	24	48

However, the trip generation associated with the existing St. Luke's National School and Tyrrelstown Educate Together National School is considered to be relatively high. There are a number of factors which may contribute to this. At present, parents / caregivers are relatively unimpeded in terms of vehicular access for drop-off/pick-up activity. To the extent that, most of this activity takes place on the existing southern section of Hollywood Road where there is no other activity currently using this section of road. Observations before and after school start/finish times indicate cars parked on both sides of the street / verge to drop-off or pick-up pupils.

As Hollywood Road (northern link extension) is currently operational, the opportunity for additional drop-off / pick-up activity may be severely restricted due to increased usage of the existing drop-off spaces currently in place on the Link Street. If these spaces are at full capacity, drop-off and collection would have to be undertaken within the confines of the existing school set down / car park area, which will be more restrictive and as a result may deter some trips by car during the school run peak hours.

The overly dependent nature of existing school activity on the private car, may also be reflective of the somewhat limited and disjointed pedestrian / cyclist infrastructure in place at the time of ATC being undertaken. Hollywood Road is proposed to be fully upgraded as part of this subject application. This will see the provision of fully segregated pedestrian/cyclist facilities and crossings. Furthermore, any future development of the Kilmartin LAP residential zoned lands, incorporating Hollystown sites 1, 2 and 3 as well as the subject Site 4 will also provide high-quality, segregated infrastructure for active modes. As these future residential areas will form a large part of the school catchment area, they will provide a safe and attractive environment for more vulnerable road users such as school children, enabling a greater uptake in travel to/from school by active modes.

During the network AM peak hour (08:15 – 09:15), a total of 654 vehicle trips (comprising 357 arrivals and 297 departures) were recorded for both schools. Although the school drop-off time is not confined to that hour alone, therefore looking at the period 8:00am-9:30am, a total of 751 two-way trips were recorded. Refer to **Table 16.13**.

Table 16.13 Existing trips during AM period – peak & school drop-off (08:00 – 09:30)

Existing Two Primary Schools	No. Persons	AM peak (8:15 – 9:15)		
		Arr	Dep	Two-Way
	1,129 pupils + 80 staff = 1,209	357	297	654
		55%	45%	100%
		School Drop-Off AM (8:00 – 9:30)		
		415	336	751
		55%	45%	100%

The corresponding modal splits are indicated in **Table 16.14** and **Table 16.15** below. To note both existing primary schools share the same vehicle access and car park / set down area.

Table 16.14 Existing school trips mode share (AM Peak Period)

Mode	Mode Share	
	(AM Peak: 8:15 – 9:15)	
	%	No. Persons
Car	26%	294
Car Pooling*	6%	73
Other (Sustainable Modes)	68%	842

Table 16.15 Existing school trips mode share (Full Drop-Off Period)

Mode	Mode Share	
	(Full Drop-Off Period: 08:00 - 09:30)	
	%	No. Persons
Car	30%	339
Car Pooling*	6%	73
Other (Sustainable Modes)	64%	797

Therefore, the proportion of pupils traveling by car is estimated to be within the region of 32% - 36%. Although it is noted, that on St. Luke's National School website, it states for the year 2020-2021 that 40% of pupils were using a car to travel to/from school. Conversely, the proportion of students travelling by sustainable modes, e.g. walking, cycling, scooting, is estimated to be between 64% - 68%. Evidence from case studies presented in the NTA 'Toolkit for School Travel'³⁰ and schools participating in the Green Schools programme and pursuing the Travel Flag indicate substantial modal shifts from private car to sustainable modes following the implementation of various measures including infrastructural upgrades and educational/awareness programmes regarding sustainable travel. These case studies examined changes in mode shares for a number of schools in their pursuit to obtain the Green Schools Travel Flag and found that single car use for town/suburban based schools was reduced to between 15%- 17%, along with an element of Park n' Stride of 14% - 15% (as discussed later).

Both St. Luke's NS and the Tyrrelstown Educate Together NS are part of the Green Schools programme. It is noted that as well as the existing schools having to work to continue to maintain or achieve the Travel Flag, any further new primary school would be required to develop a robust School Travel Plan to minimise trips to the school by private car.

Therefore, based on the above it is considered reasonable that both the existing and future primary school could similarly achieve a reduction in the number of private car trips currently being generated. Consequently, the trip generation for the existing and future schools has been adjusted based on a modal shift resulting in 16% share for private vehicles which is in line with the results from the NTA Green Schools case studies in town/suburban locations. The resulting mode shares and person trip generation is presented in

Table 16.16 below:

³⁰ Toolkit for School Travel, National Transport Authority, 2011 [<https://www.nationaltransport.ie/wp-content/uploads/2020/08/NTA-Toolkit-for-School-Travel-Final11.pdf>]

Table 16.16 Mode shares & resulting trip generation for existing / future schools

Mode	Mode Share (%)	No. Person Trips (Existing Schools)	No. Person Trips (Future Schools)	Total Person Trips
Car	16%	193	97	290
Car Pooling	6%	73	36	109
Other (Sustainable Modes)	78%	943	472	1415

The corresponding vehicle trips for the AM and PM peak periods are also presented in **Table 16.17**.

Table 16.17 Proposed trip rates for existing / future primary schools

Proposed Trip Rates	No. of Persons	AM peak (08:15 – 09:15)			PM Peak (17:00 – 18:00)		
		Arr	Dep	Two-Way	Arr	Dep	Two-Way
Existing Two Primary Schools	1209	220	183	403	26	28	54
Future Primary School	605	110	92	202	13	14	27
Total		330	275	605	40	42	82

Furthermore, the future development of the wider Kilmartin LAP lands to the north, which comprises a total of approx. 1,130 residential units, will form a large part of the catchment for the existing / proposed primary schools together with the existing wider Tyrrelstown / Hollywoodrath residential area.

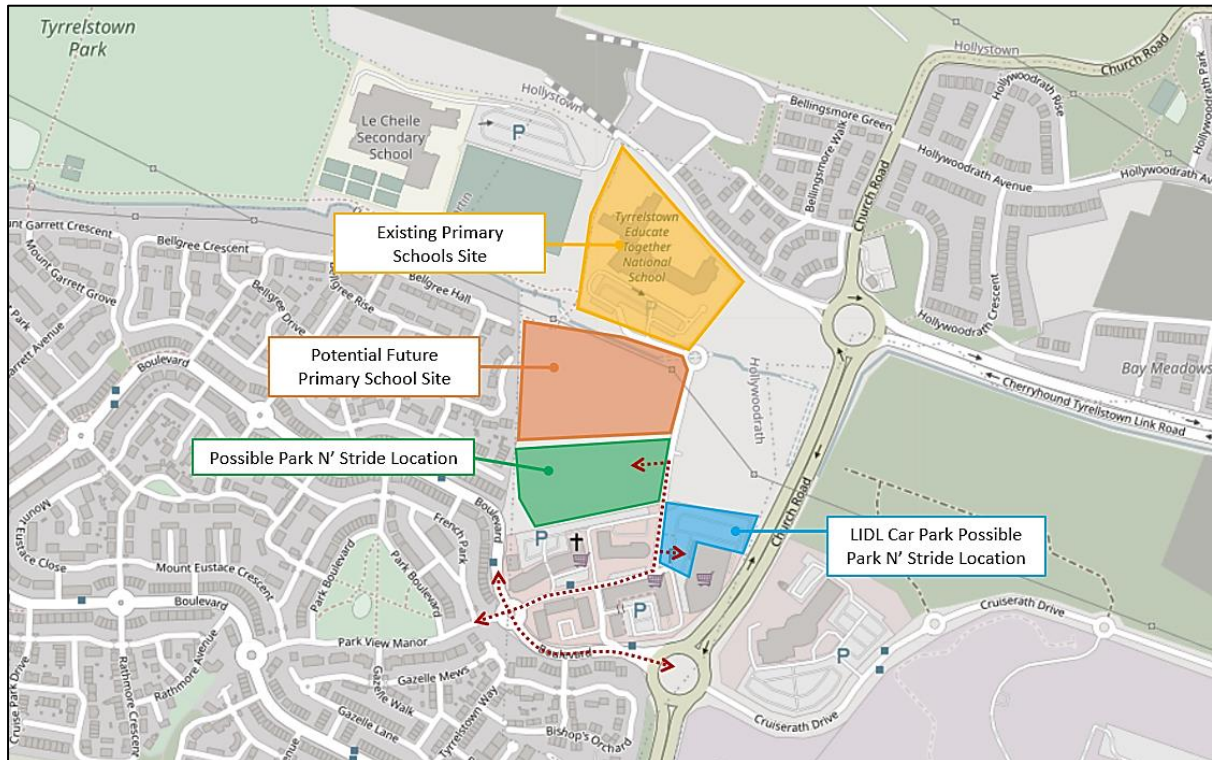
The trip rates and trip generation of proposed new residential developments including Hollystown Sites 1, 2, 3 and 4 have been set out in previous sections. It is noted that a portion of these peak hour trips for the residential activity are likely to be linked to the schools e.g. parents / caregivers dropping students off on their way to / from work. Therefore, the reduction in the school trips as outlined above in **Table 16.17** is considered reasonable to account for this and avoid double counting of trips on the network.

Park N' Stride

Park n' Stride is an increasingly popular mode amongst parents/caregivers and pupils, whereby they park the car about 10 minutes' walk away from the school gate and make the last leg of the journey to school on foot. St. Luke's Primary School's website states that they encourage children to walk from the LIDL car park, which is located 300m south-east of the schools. It is unclear what proportion of pupils from either school currently travel to / from school by Park n' Stride.

An informal Park n' Stride arrangement could be implemented at the proposed commercial development located south of the future primary school given its proximity the existing primary schools. **Figure 16.20** below illustrates the location of possible Park N' Stride locations in relation to the primary schools.

Figure 16.20 Potential Park N' Stride Locations and Routes



Both possible Park N' Stride locations are located south of the schools. Therefore, it is anticipated that any Park N' Stride related trips would come from the south. In other words, it would be unlikely for trips from the north to travel past the schools to the Park N' Stride locations, only to then walk back on the route already travelled. Consequently, the three junctions likely to be impacted by Park N' Stride related activity include:

- Site Access / Link Street Priority Junction
- The Boulevard / Park Boulevard Roundabout
- The R121 / The Boulevard / Cruiserath Drive

The traffic model therefore includes for a further 15% school vehicular trips, in addition to those already outline in **Table 16.17** travelling through these junctions.

The location of the abovementioned committed developments included within the assessment relative to the subject development are shown in **Figure 16.21**.

Hollystown-Kilmartin Site 4

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Figure 16.21 Committed Developments Included Within the Network Analysis



The significance of each of the projected impacts at each of the key links without the mitigations measures in place at operational phase is detailed within the following tables for the worst case (e.g., peak hours) 2040 Future Year scenarios.

Table 16.18 Impact significance (Prior to Mitigation) – 2040 Design Year (AM)

	Junction	Quality / Scale of Impact	Impact Significance	Duration
1	Hollywood Road / New Link Roundabout	Negative - Low	Not Significant	Long term
2	The Avenue / New Link Junction	Negative - Medium	Slight Effects	Long term
3	The Avenue / R121 / Cherryhound Tyrrelstown Link Roundabout	Negative - Medium	Moderate Effects	Long term
4	Boulevard / Park Boulevard Roundabout	Negative - Low	Not Significant	Long term
5	R121 / Boulevard / Cruiserath Drive Roundabout	Negative - Low	Not Significant	Long term

Table 16.19 Impact significance (Prior to Mitigation) – 2040 Design Year (PM)

	Junction	Quality / Scale of Impact	Impact Significance	Duration
1	Hollywood Road / New Link Roundabout	Negative - Low	Not Significant	Long term
2	The Avenue / New Link Junction	Negative - Medium	Slight Effects	Long term
3	The Avenue / R121 / Cherryhound Tyrrelstown Link Roundabout	Negative - Medium	Slight Effects	Long term
4	Boulevard / Park Boulevard Roundabout	Negative - Low	Not Significant	Long term
5	R121 / Boulevard / Cruiserath Drive Roundabout	Negative - Low	Not Significant	Long term

Prior to mitigation during the operational phase, impacts are considered in the range of *slight to moderate* during the AM peak period and *slight to not significant* during the PM peak. Junction impacts are between the negative-low to negative-medium in terms of the quality and the scale during both peak periods.

16.6.2.3 Baseline Traffic Characteristics

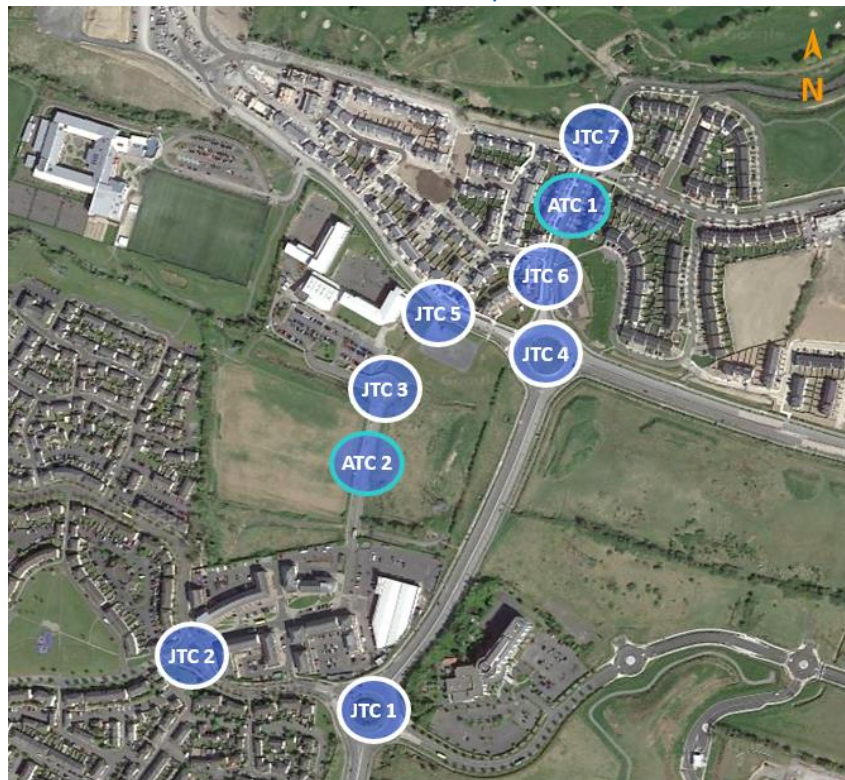
With the objective of establishing the existing up to date local road networks traffic characteristics and subsequently enable the identification of the potential impact by the residential development, traffic surveys were undertaken by the independent specialist survey firm IDASO Ltd.

Seven JTCs (Junction Turning Counts) and two ATCs (Automatic Traffic Counts) were conducted and analysed over a 12-hour period from 07:00 to 19:00 on Tuesday the 10th of May 2022 at the following key junctions (refer **Figure 16.22**);

- JTC 1: R121 / Boulevard / Cruiserath Drive Roundabout
- JTC 2: Boulevard / Park Boulevard Roundabout
- JTC 3: Hollywood Road / New Link Roundabout
- JTC 4: The Avenue / R121 / Hollywoodrath / Cherryhound-Tyrrelstown Link Roundabout
- JTC 5: The Avenue / New Link Junction
- JTC 6: Hollywoodrath Road / Bellingsmore Drive
- JTC 7: Hollywoodrath Road / R121 / The Green
- ATC 1: Hollywoodrath Road
- ATC 2: Hollywood Road

The surveys established that the local network's AM and PM peak hours occurred between 08:15 – 09:15 and 17:00 – 18:00, respectively.

Figure 16.22 Junctions included within the network analysis



16.6.2.4 Traffic Growth

The TTA adopts an Opening Design Year of 2025, Interim Year of 2030 (+5 years) and Future Horizon Year of 2040 (+15 years) as per TII guidelines. Although traffic growth may not increase at the rates once predicted, to ensure a robust analysis of the impact of traffic upon the local road network we have adopted growth rates using the Transport Infrastructure Ireland (TII) “Travel Demand Projections”.

Table 6.1 (Unit 5.3 – Travel Demand Projections) within the TII Project Appraisal Guidelines provides Link-Based Annual Traffic Growth Factors for the different regions within Ireland.

The subject site lies within ‘Dublin Metropolitan Area’. Applying the annual factors (Central Growth) as outlined above for the adopted Opening Year of 2025, Interim Year 2030 (+5 years) and Future Horizon Year of 2040 (+15 years), the following growth rates have been adopted to establish corresponding baseline network flows:

- 2022 to 2025 – 1.0327 (or 3.3%);
- 2022 to 2030 – 1.1191 (or 11.9%); and
- 2022 to 2040 – 1.1775 (or 17.7%).

16.6.2.5 Assessment Scenarios

Two different traffic scenarios have been assessed, namely (a) the ‘Do-Minimum’ (Do-Nothing) traffic characteristics and (b) the ‘Post Development’ (Do-Something) traffic characteristics.

The ‘Base’ traffic scenario takes into account the potential level of traffic that could be generated by the ‘committed developments’ in addition to the existing flows (with TII growth rates applied) travelling across the network. The proposed development traffic flows are then added to the network’s ‘Do Nothing’ (Base + Committed Development) traffic flows to establish the new ‘Post Development’ traffic flows. In summary, the following scenarios have been investigated:

- Do-Nothing (DN)
 - A1 – 2025 Opening Year Base Flows + Committed Developments
 - A2 – 2030 Interim Year Base Flows + Committed Developments
 - A3 – 2040 Future Year Base Flows + Committed Developments
- Do-Something (DS)
 - B1 – 2025 Do-Nothing (A1) + Proposed Development Flows
 - B2 – 2030 Do-Nothing (A2) + Proposed Development Flows
 - B3 – 2040 Do-Nothing (A3) + Proposed Development Flows

The vehicle flows across the local road network for each of the adopted development scenarios are included in Appendix A of the TTA that accompanies this submission.

16.6.2.6 Trip distribution and assignment

The associated vehicle trips have been assigned to the surrounding road network based on the surveyed traffic movements passing the site and also on the following assumptions:

- In the Opening Year (2025): It is assumed that 100 units of the proposed residential development would be built and occupied by the opening year 2025. This includes the new Link Street connection which will connect The Avenue to the existing Tyrrelstown Local Centre and assumes that Hollystown Sites 1, 2 and 3 are complete and occupied;

- In the Interim Year (2030) and Future Year (2040): It is assumed that all units within Hollystown - Kilmartin Site 4 (i.e., 580 units) would be occupied in 2030, plus all other surrounding committed developments including the new primary school in the Local Centre and the secondary school near Hollywoodrath development.

The subject development trips have been distributed to the surrounding road network based on the existing observed traffic movements. The distribution of proposed development traffic as proposed by DBFL is included in Appendix A of the TTA.

16.6.2.7 Impact of the Proposal

The TII Traffic and Transport Assessment Guidelines (2014) state that the impact of a proposed development upon the local road network is considered material when the level of traffic it generates surpasses 10% and 5% on normal and congested networks, respectively.

When such levels of impact are generated, a more detailed assessment should be undertaken to ascertain the specific impact upon the network's operational performance. These same thresholds are reproduced in the NRA/TII document entitled Traffic and Transport Assessment Guidelines (2014). It must be noted the impact assessment within this TTA is in accordance with Fingal County Council's maximum impact threshold; that is any junctions exceeding the 2.5% threshold within the administrative area of Fingal is required to be further analysed.

Table 16.20 below detail the percentage increase of two-way vehicle trips to/from the proposed development site that will travel through the junctions assessed in the Opening Year and Future Year scenarios. The development scenarios considered full construction and occupation of both the proposed and committed developments by 2040 Future Year. Percentage impacts were calculated for the impact of the development in the DN scenarios vs the DS scenarios for the corresponding years.

Table 16.20 Network impact through key off-site junctions

Junction ID	Junction	Design Year	Percentage Impact	
			AM	PM
J1	Hollywood Road / New Link Roundabout	2025	1%	3%
		2030	2%	5%
		2040	2%	5%
J2	The Avenue / New Link Junction	2025	9%	26%
		2030	25%	64%
		2040	24%	63%
J3	The Avenue / R121 / Cherryhound Tyrrelstown Link Roundabout	2025	3%	4%
		2030	9%	13%
		2040	9%	13%
J4	Boulevard / Park Boulevard Roundabout	2025	0%	1%
		2030	1%	1%
		2040	1%	1%
J5	R121 / Boulevard / Cruiserath Drive Roundabout	2025	2%	2%
		2030	6%	6%
		2040	5%	6%

Figure 16.23 Increase in vehicle trips generated at key off-site junctions (2040 Do-Something)



Under the Institution of Highways and Transportation document titled 'Guidelines for Traffic Impact Assessments', Junctions 2 and 3 surpasses 10% for normal networks. When compared to FCC's 2.5% network impact threshold, all junctions (with the exception of Junction 4) exceed the threshold. Therefore, DBFL have conducted further analysis on Junctions 1, 2, 3 and 5.

An operational assessment of the junctions was undertaken using the Junction computer package ARCADY and PICADY. All junctions were analysed to be within capacity during the Opening Year (2025) as well as the Future Design Years (2030 and 2040). Further analysis of this assessment is included in Section 6 and Appendix A of the TTA.

Under the 2040 'Do-Something' Scenarios, the results of the analysis showed that:

- Junction 1: Maximum RFC of 45% (AM) on the northern arm and 16% (PM) on the northern / southern arm of the Hollywood Drive Roundabout;
- Junction 2: Maximum Delay of 36.40 seconds (AM) and 12.86 seconds (PM) at the southern arm of the Link Street junction;
- Junction 3: Maximum RFC of 87% (AM) on the western arm (The Avenue) and 44% (PM) both the northern and southern arms R121 arm;
- Junction 5: Maximum RFC of 72% (AM) on the northern R121 arm and 48% (PM) on the northern arm.

16.7 Mitigation Measures

16.7.1 Construction Phase

All construction activities on-site will be governed by the traffic management measures outlined in the Construction & Environmental Management Plan (CEMP) which seeks to ensure that the impacts of all building activities during the construction of the proposed development upon both the public (off-site) and internal (on-site) workers' environments, are fully considered and proactively managed / programmed. It aims to respect all key stakeholders, thereby ensuring that both the public's and construction workers' safety is maintained at all times, and that disruptions are minimised.

The mitigation measures detailed in the CEMP (submitted under separate cover as part of the planning application) will be implemented through a Construction Traffic Management Plan (CTMP), the details of which will include haul routes, working times and off-site disposal sites. This plan will be prepared in consultation with Fingal County Council and agreed in full with the Council prior to commencement of construction activities on site, in order to reach full agreement upon the traffic management mitigation measures and monitoring measures to be adopted during the entire programme of construction activities on-site. The impact of the construction period will be temporary in nature.

The following initiatives will be implemented to avoid, minimise and/or mitigate against the anticipated construction phase impacts:

- During the pre-construction phase, the site will be securely fenced off from adjacent properties, public footpaths and roads.
- Appropriate on-site parking and compound area will be provided to prevent overflow onto the local network.
- Delivery vehicles to and from the site will be spread across the course of the working day, therefore, the number of HGVs travelling during the peak hours will be relatively low.
- Truck wheel washes will be installed at construction entrances and any specific recommendations with regard to construction traffic management made by Fingal County Council will be adhered to.
- Potential localised traffic disruptions during the construction phase will be mitigated through the implementation of industry standard traffic management measures. These traffic management measures shall be designed and implemented in accordance with the requirements of:
 - Department of Transport's *Traffic Signs Manual* (2010), Chapter 8: Temporary Traffic Measures and Signs for Roadworks;
 - Department of Transport's *Guidance for the Control and Management of Traffic at Roads Works – 2nd Edition* (2010); and
 - Any additional requirements detailed in the Design Manual for Roads and Bridges (DMRB) & Design Manual for Urban Roads & Streets (DMURS).
- A material storage zone will be established in the compound area and will include material recycling areas and facilities.
- Wayfinding signage will be provided to route staff / deliveries into the site and to designated compound / construction areas.
- HGVs will access the construction site from Ratoath Road (primary construction route) while non-HGV construction traffic will also be able to access the site via a secondary route on The Avenue. Haul route details will be agreed with Fingal County Council prior to commencement of activities on-site.

- On completion of the works, all construction materials, debris, temporary hardstands, etc., from the site compound will be removed off-site and the site compound area and haul route area reinstated in full on completion of the works.

16.7.2 Operational Phase

A package of integrated mitigation measures has been identified to offset the additional local demand that the proposed residential development at the subject site could potentially generate as a result of the forecast increase in vehicle movements by residents and other visitors to the proposed development. The identified measures and associated timescale for their implementation are summarised below.

- A **Mobility Management Plan (MMP)** has been compiled by DBFL Consulting Engineers and submitted under separate cover as part of the planning application. The MMP has the aim of guiding the delivery and management of coordinated initiatives by the proposed development management company, to be implemented upon occupation of the site. The MMP will ultimately seek to encourage sustainable travel practices for all journeys to and from the proposed development through mode specific measures including:
 - **Marketing & Promotion Measures:** Providing a 'Welcome Pack' to all new residents when they move in with information on all modes of transport to/from the site, details of safe pedestrian and cycle routes, car share facilities and contact details of mobility manager, develop a dedicated MMP website/app.
 - **Walking/cycling:** Providing high quality walking & cycling infrastructure and connections to the wider network, developing a walking/cycling accessibility sheet for the site, discounted cycle purchase, bike service workshops, encouraging cycle trains to schools.
 - **Public Transport:** Provide information to residents on annual/monthly TaxSaver tickets, develop a public transport accessibility sheet for the site, create a calendar of public transport events and incentives.
- **Car Parking Management Strategy** – A management regime will be implemented by the proposed development's management company to control and actively manage the availability of on-site car parking for residents.
- **Infrastructure** – Measures to reduce reliance of private vehicles are the provision of ample secure cycle parking on site and ensuring a design which promotes permeability for pedestrians and cyclists to, through and from the development. The level of parking provision for the development will also act as a powerful mobility management measure, ensuring against an overprovision of parking and a resultant over reliance on the private vehicle. The development also proposes provision of high-quality dedicated pedestrian footpaths and cycle paths throughout the development site and crossing facilities along desire lines on the road network.

16.8 Residual Impacts

16.8.1 Construction Phase

Implementation of the mitigation measures outlined in Section 16.7 during the construction phase will ensure that the potential impacts of the proposed development on the local transport network and any residual impact on the local receiving environment will be **temporary** in nature and **neutral** in terms of quality and effect.

The significance of each of the projected impacts of construction traffic are detailed in **Table 16.21** below for the following key junctions:

- JTC 1: Hollywood Road / New Link Roundabout
- JTC 2: The Avenue / New Link Junction
- JTC 3: The Avenue / R121 / Cherryhound Tyrrelstown Link Roundabout
- JTC 4: Boulevard / Park Boulevard Roundabout
- JTC 5: R121 / Boulevard / Cruiserath Drive Roundabout
- The Swing Roundabout: Hollywoodrath Road (R121) / Ratoath Road (L3080)

The impacts of construction traffic on the remaining key off-site junctions have also been assessed and are shown in **Table 16.21** below. The significance of the impacts has been determined in accordance with the classifications stipulated within the *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* (EPA, May 2022). The residual impacts outline below are the impacts predicted post mitigation.

Table 16.21 Impact significance – Construction Phase (Post Mitigation)

Junction		Quality / Scale of Impact	Impact Significance	Duration
1	Hollywood Road / New Link Roundabout	Neutral Effects	Not Significant	Temporary
2	The Avenue / New Link Junction	Negative - Low	Not Significant	Temporary
3	The Avenue / R121 / Cherryhound Tyrrelstown Link Roundabout	Negative - Low	Not Significant	Temporary
4	Boulevard / Park Boulevard Roundabout	Neutral Effects	Not Significant	Temporary
5	R121 / Boulevard / Cruiserath Drive Roundabout	Negative - Low	Not Significant	Temporary
6	The Swing Roundabout: Hollywoodrath Rd / Ratoath Rd / Corduff Rd Junction	Negative - Low	Not Significant	Temporary

16.8.2 Operational Phase

The implementation of the mitigation measures set out in Section 16.7, including the implementation of the MMP, will ensure that the potential residual effect on the local receiving environment is both managed and minimised.

In reference to **Table 16.20**, the analysis predicts the scale of residual impact during the 2025, 2030, and 2040 design years, as largely being below 10% on the surrounding junctions, with the exception of the following junctions shown in **Table 16.22**.

Table 16.22 Junctions with impact > 10%

Junction ID	Junction	Design Year	Percentage Impact	
			AM	PM
J1	Hollywood Road / New Link Roundabout	2025	-	-
		2030	-	-
		2040	-	-
J2	The Avenue / New Link Junction	2025	-	26%
		2030	25%	64%
		2040	24%	63%
J3	The Avenue / R121 / Cherryhound Tyrrelstown Link Roundabout	2025	-	-
		2030	-	13%
		2040	-	13%
J4	Boulevard / Park Boulevard Roundabout	2025	-	-

Junction ID	Junction	Design Year	Percentage Impact	
			AM	PM
J5	R121 / Boulevard / Cruiserath Drive Roundabout	2030	-	-
		2040	-	-
		2025	-	-
		2030	-	-
		2040	-	-

With regards to the TII thresholds, the analysis for the surrounding off site key junctions shows that the proposed development will generate an impact greater than 10% on two of the junctions (Junction 2 and Junction 3). However, the results of the analysis found that these junctions continue to operate within capacity with the additional development traffic.

The significance of each of the projected impacts at each of the key links is detailed within the following tables for the worst case (e.g., peak hours) 2040 Future Year scenarios.

Table 16.23 Impact significance – 2040 Design Year (AM) (Post Mitigation)

Junction		Quality / Scale of Impact	Impact Significance	Duration
1	Hollywood Road / New Link Roundabout	Neutral Effects	Imperceptible	Long term
2	The Avenue / New Link Junction	Negative - Low	Not Significant	Long term
3	The Avenue / R121 / Cherryhound Tyrrelstown Link Roundabout	Negative - Low	Slight	Long term
4	Boulevard / Park Boulevard Roundabout	Neutral Effects	Imperceptible	Long term
5	R121 / Boulevard / Cruiserath Drive Roundabout	Neutral Effects	Imperceptible	Long term

Table 16.24 Impact significance – 2040 Design Year (PM) (Post Mitigation)

Junction		Quality / Scale of Impact	Impact Significance	Duration
1	Hollywood Road / New Link Roundabout	Neutral Effects	Imperceptible	Long term
2	The Avenue / New Link Junction	Negative - Low	Not Significant	Long term
3	The Avenue / R121 / Cherryhound Tyrrelstown Link Roundabout	Negative - Low	Not Significant	Long term
4	Boulevard / Park Boulevard Roundabout	Neutral Effects	Imperceptible	Long term
5	R121 / Boulevard / Cruiserath Drive Roundabout	Neutral Effects	Imperceptible	Long term

Predicted impacts post mitigation at the developments operation phase is considered *slight to not significant* during the AM peak while the PM peak is considered to be in the range of *not significant to imperceptible*. Junction impacts are between the *negative-low to neutral* in terms of the quality and the scale during both peak periods.

16.9 Monitoring

16.9.1 Construction Phase

During the construction stage, the following monitoring exercises are proposed:

- If issues with regards to the routing of construction vehicles occurs – then compliance with construction vehicle routing practices will be undertaken;

- If issues with regards the parking of construction vehicles on the surrounding network occurs - then compliance with construction vehicle parking practices will be undertaken;
- If issues with regards the condition of the surrounding road network occur – then internal and external road conditions will be monitored;
- If issues with regards the timing or programming of construction activities occur – then timing of construction activities will be monitored.

The construction works areas and the haul route will be reinstated following completion of development with landscaped areas provided where proposed. The works will be restricted to the footprint of the site for the proposed development. Excavated topsoil and subsoil will be reused in reinstatement and landscaping where appropriate or dealt with in the appropriate manner i.e. sent for soil recovery as appropriate.

16.9.2 Operational Phase

As part of the MMP process, bi-annual post occupancy surveys are to be carried out in order to determine the success of the measures and initiatives as set out in the proposed MMP document. The information obtained from the monitoring surveys will be used to identify ways in which the MMP measures and initiatives should be taken forward in order to maintain and further encourage sustainable travel characteristics.

No reinstatement requirements have been identified in relation to the operational phase of the proposed development.

16.10 Interactions

The key interactions between traffic and transportation and other EIAR topics are as follows:

- Population and human health – impacts on the operation of the local road network, and traffic-related noise and air quality effects have the potential to affect the local population.
- Land, soils, geology and hydrology – impacts on existing flow conditions or effects on surface or ground water quality due to the generation of additional vehicular traffic due to run-off from vehicles usage. Increased vehicular traffic can impact surface and groundwater quality by generating run-off with pollutants. Analysing soils and hydrology helps assess potential effects and develop mitigation strategies.
- Air quality and climate – vehicular emissions contain air pollutants, including greenhouse gases with climate impacts, and gases / particulates with potential human health impacts.
- Noise and vibration – traffic generates noise, with the associated potential for adverse human health impacts
- Material Assets – Waste – waste generated on site and the surplus excavated soil from the site will have to be transported off-site generating traffic on surrounding roads.

All of the above-listed interactions have addressed comprehensively, where appropriate, in the corresponding EIAR chapters, i.e. Chapter 7 (Population & Human Health), Chapter 11 (Air Quality & Climate) and Chapter 12 (Noise & Vibration). Where appropriate, specialist EIAR contributors have collaborated and shared information to ensure that potential impacts arising as a result of such interactions have been addressed. No significant impacts are likely to occur in this respect.

16.11 Cumulative Impacts

16.11.1 Construction Phase

In terms of cumulative impacts during the construction phase, it is noted that the assessment of construction traffic on the surrounding road network and key off site junctions takes into account the committed developments surrounding the site. It is noted that construction activity for the subject Site 4 will commence following the completion of the adjacent permitted Hollystown Sites 2&3.

With regards to the recently permitted GAA Cluster Facility located on Ratoath Road, based on the information contained within the planning application documentation, construction on this facility is expected to be complete prior to construction commencing on Hollystown Kilmartin Site 4. Therefore, there is no anticipated cumulative impacts arising from construction activity on both sites. During the operational phase of the GAA facility, it is also understood that the majority of activity at the facility would occur during the evening and weekend periods outside of the main construction activity of the subject development site. Therefore, the cumulative impacts on the Ratoath Road would be negative low and not significant.

16.11.2 Operational Phase

The analysis detailed above in Section 16.8 (Residual Impacts) represents an appraisal in terms of potential cumulative impacts for a typical weekday, focusing upon the busiest periods of the day (i.e. AM and PM peak hours). During the other 22 hours of the day, traffic flows are predicted to be significantly lower resulting in the network operating with additional reserve capacity to that forecast for the peak hour periods.

A review of the FCC planning map and the projects listed in Chapter 20 Cumulative Impacts of this EIAR was undertaken to determine if there were any committed development schemes in the vicinity of the proposed development which could have an influence on the operation of the local road network. These third-party developments were included as “committed developments” within the network assessment. Furthermore, the utilisation of TII’s growth rates also takes some account of the potential additional traffic that third party sites could generate.

The results of the PICADY and ARCADY analysis on the key off site junctions (Junctions 1-5) detailed in previous sections, indicate that the junctions will still continue to operate within capacity in the peak hours for all assessment scenarios. It is noted that Junction 3 (The Avenue / R121 / Cherryhound Tyrrelstown Link Roundabout) is approaching capacity in the AM peak in the 2040 Future Year only, although even without the development traffic this would also be approaching capacity.

The resulting cumulative impact is therefore expected to have a negative but low impact on the performance of Junction 2 and Junction 3 and a neutral impact on the rest. The impact generated by the development on the remaining off-site junctions did not exceed the 10% thresholds in any of the identified scenarios. Consequently, it is expected that the traffic generated from the proposed development will not have a significant impact on the surrounding road network as the percentage impact is low.

16.12 Difficulties Encountered

There were no material difficulties encountered in compiling and assessing the data for this chapter to prevent modelling of the likely transport effects of the proposed development. The analysis reported

within this chapter is based upon the traffic survey data specifically commissioned for this appraisal and undertaken in May 2022.

16.13 References

- Department of Transport's Traffic Signs Manual "*Chapter 8 Temporary Traffic Measures and Signs for Roadworks*"
- Department of Transport's "*Guidance for the Control and Management of Traffic at Roads Works – 2nd Edition*" (2010)
- Fingal Development Plan 2023-2029
- Design Manual for Urban Roads and Streets (DMURS) (May 2019);
- "*Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities*" The Department of Housing, Planning and Local Government (DHPLG) (2022)
- Environmental Protection Agency *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* (May 2022)
- Greater Dublin Area Transport Strategy 2022-2042
- Greater Dublin Area Cycle Network Plan 2022
- National Road Authority (TII) "*Traffic and Transport Assessment Guidelines*" (2014)
- Kilmartin Local Area Plan 2013 (as extended until 2023 and now expired)
- Ordnance Survey Ireland (www.osi.ie)
- The Institution of Highways and Transportation 'Guidelines for Traffic Impact Assessments' (1994)
- Transport for Ireland (www.transportforireland.ie)
- Transport Infrastructure Ireland (www.tii.ie)

17 Material Assets – Waste

17.1 Introduction

Byrne Environmental Consulting Ltd. have assessed the potential impacts that construction and operational wastes associated with the proposed development may have on the receiving environment, and how wastes generated shall be managed in accordance with the current *Eastern-Midlands Region Waste Management Plan 2015 – 2021* (under review).

The assessment includes a comprehensive description of the types and quantities of wastes that will be generated, the associated impacts, and how waste will be managed. Mitigation and best practice waste management are proposed, where appropriate. Reference to local, national and international guidance and standards are also included, where relevant.

This chapter has been prepared by Ian Byrne, Principal Environmental Consultant at Byrne Environmental Consulting Ltd. Refer to **Table 1.4** in Chapter 1 (Introduction) for qualifications of authors and reviewers.

A site-specific Resource and Waste Management Plan (RWMP) to deal with the waste generated during the site clearance and construction phases of the proposed development has been prepared by Byrne Environmental Consulting Ltd. and submitted under a separate cover as part of the planning application. The RWMP was prepared in accordance with the Environmental Protection Agency's (EPA) document *Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects* (2021).

A separate Operational Waste Management Plan (OWMP) for the operational phase of the proposed development has been prepared by Byrne Environmental Consulting Ltd. and submitted under a separate cover as part of the planning application.

17.2 Method

17.2.1 Construction Waste Assessment Methodology

The construction waste management impact assessment has been prepared with regard to the following relevant legislative instruments, policies and best practice guidelines:

- Waste Management Act 1996-2023;
- The Waste Framework Directive (2018/851)
- Waste Management (Collection Permit) (Amendment) (No.2) Regulations 2023 (SI No. 104 of 2023);
- EPA (2022). *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports*;
- EPA (2020). *A guide to by-products and submitting a notification under Article of the European Communities (Waste Directive) Regulations 2011 (S.I. No 126 of 2011)(Draft)*;
- EPA (2019). *Guidance on Soil and Stone By-products in the context of article 27 of the European Communities (Waste Directive) Regulations 2011*;
- EPA (2021). *Best Practice Guidelines for the preparation of resource and management plans for construction and demolition projects*.

Opportunities for the re-use of construction phase materials on-site have been explored, in accordance with the principles of waste hierarchy and circular economy, which will assist in reducing the amount of new or virgin raw materials required to be imported to the site during the construction phase.

17.2.2 Operational Waste Assessment Methodology

The operational waste management impact assessment has been prepared with regard to the following relevant legislative instruments, policies and best practice guidelines:

- Waste Management Act 1996-2023;
- Waste Management (Collection Permit) (Amendment)(No.2) Regulations 2023 (SI No. 104 of 2023);
- Fingal County Council Segregation, Storage and Presentation of Household and Commercial Waste Bye-Laws 2020;
- *Eastern-Midlands Region Waste Management Plan 2015 – 2021* (under review);
- Department of Housing, Local Government and Heritage (2022). *Sustainable Urban Housing: Design Standards for New Apartments. Guidelines for Planning Authorities*;
- Fingal County Council (2023). *Fingal Development Plan 2023-2029*.

Relevant waste management objectives of the Fingal County Council Development Plan 2023-2029 are:

- *OBJ IU028 Eastern Midlands Region Waste Management Plan - 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.*
- *OBJ IU034 Waste Management in New Developments - Require the provision of appropriate, well designed, accessible space to support the storage, separation and collection of as many waste and recycling streams as possible in all new commercial and residential developments within the County.*
- *OBJ DMSO236 Segregation and Collection of Waste - Ensure all new large-scale residential and mixed-use developments include appropriate facilities for source segregation and collection of waste*
- *OBJ DMSO237 Distance from Front Door to Communal Bin Area - Ensure all new residential schemes include appropriate design measures for refuse storage areas, details of which should be clearly shown at pre planning and planning application stage. Ensure refuse storage areas are not situated immediately adjacent to the front door or ground floor window, unless adequate screened alcoves or other such mitigation measures are provided*
- *OBJ DMSO238 Maximum Distance Communal Bin Area - Ensure the maximum distance between the front door to a communal bin area does not exceed 50 metres*

The predicted volumes of residential and commercial waste that will be produced during the operational phase of the proposed development are established by site-specific waste calculations and modelling. The concept of segregating waste at source is a principal design element of the proposed development which will assist in the efficient management of waste at the proposed development.

17.2.3 Waste Hierarchy

It is Council policy to conform to the waste hierarchy (**Figure 17.1**), whereby waste prevention is the most preferred strategy. Where waste generation is unavoidable, re-use is the most preferred fate, followed by recycling and then energy recovery, with disposal (e.g. to landfill) being the least preferred fate.

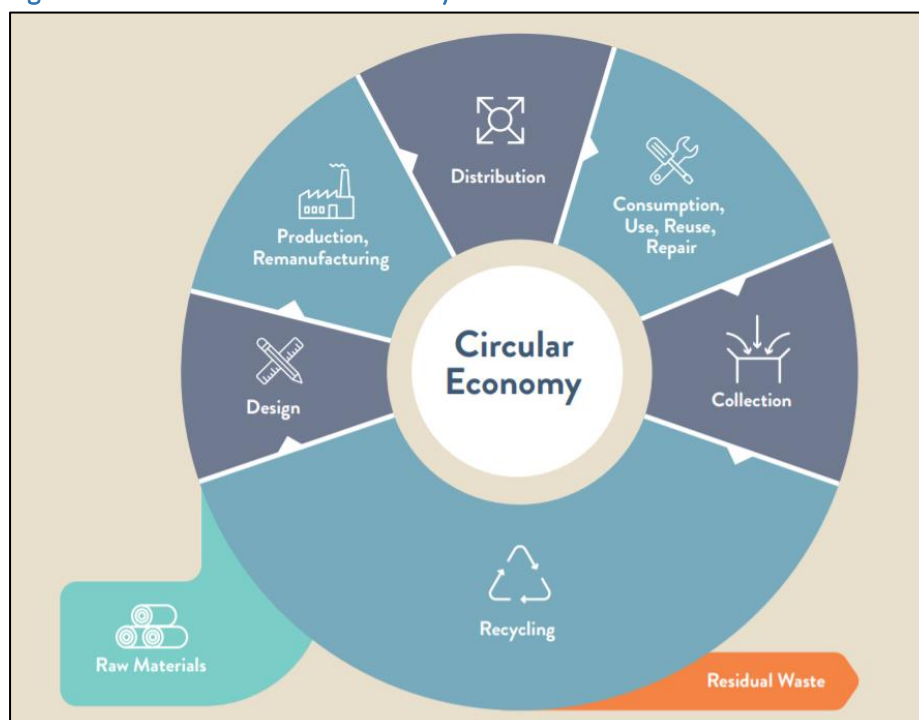
Figure 17.1 The waste hierarchy (Source: European Commission)



17.2.4 Circular Economy

Ireland's national waste policy is *A Waste Action Plan for A Circular Economy – Ireland's National Waste Policy 2020 – 2025*. The policy, published in September 2020, is intended to move Ireland away from the traditional 'cradle-to-grave' model of resource use, towards a more 'circular' model, whereby "waste and resource use are minimised; the value of products and materials is maintained for as long as possible through good design, durability and repair; and when a product has reached the end of its life, its parts are used again and again to create further useful products" (p. 10) (Figure 17.2). By extending the time resources are kept within the economy, environmental, social and economic benefits can be realised.

Figure 17.2 The circular economy



17.3 Description of the Receiving Environment

The construction and operation of the proposed development will introduce new volumes of waste into the local area in terms of the short-term generation of construction waste and the longer-term generation of domestic waste when the proposed development is occupied.

The subject site is comprised of undeveloped agricultural lands.

There is a recycling centre in the local area at Coolmine Industrial Estate, Dublin 15 which accepts WEEE, bulky waste, household hazardous materials including paints and oils and fluorescent lamps, c. 4.5km south of the site which serves the local community. Currently, Oxygen, Thorntons and AES provide domestic and commercial waste collection services in the local area.

17.4 Characteristics of the Proposed Development

The proposed development is described in Chapter 5 (Description of the Proposed Development). The following detail is relevant to the assessment in this Chapter.

The construction phase of the development shall include site enabling works including the stripping of soils off the site. Soils will be re-used on site as infill with the surplus being exported off-site to a suitably permitted/licenced waste facility. Soils to be exported from the site will be classified in accordance with the *EPA (2018) Waste Classification Guidance – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* by utilising the results of laboratory analysis and the *Haz Waste Online Classification Tool*. The construction phase will also generate construction wastes which shall be managed in accordance with the site-specific Resource and Waste Management Plan prepared as part of the application (and submitted under a separate cover as part of the planning application) shall be implemented throughout the construction phase of the proposed development to ensure the following:

- That all site construction activities are effectively managed to minimise the generation of waste and to maximise the opportunities for on-site reuse and recycling of waste materials;
- That all construction waste materials generated by site activities are removed from site by appropriately permitted waste haulage contractors and that all wastes are disposed of at approved waste licensed / permitted facilities in compliance with the Waste Management Act 1996 (as amended) and all associated Waste Management Regulations.

Section 17.5 below presents the predicted construction waste volumes that will be generated during the construction phase.

The operational phase of the development will result in the generation of domestic waste which has been calculated with regard to *British Standard BS 5906:2005 Waste Management in Buildings-Code of Practice* which states that *70 litres of waste are generated per bedroom per week with an allowance of an additional 30 litres per unit per week*.

Section 17.5 below presents the predicted operation waste volumes that will be generated on a weekly basis.

The site-specific Operational Waste Management Plan prepared as part of the application (and submitted under a separate cover as part of the planning application) shall be implemented throughout the operational phase of the proposed development, to ensure the following:

- That sufficient waste management infrastructure is included in the design of the development to assist residents minimise the generation of mixed waste streams;
- That the principle of waste segregation at source is integrated into the development by the provision of separate bin systems, signage and notifications;
- That all waste materials generated by site activities are removed from site by appropriately permitted waste haulage contractors and that all wastes are disposed of at approved waste licensed / permitted facilities in compliance with the Waste Management Act 1996-2023 as amended and all associated Waste Management Regulations.

17.5 Predicted Impacts of the Proposed Development

17.5.1 Construction Phase

Construction wastes if not managed and segregated on-site will have the potential to be difficult to separate into different waste streams to allow for further processing, recovery, re-use or to be recycled in contravention to the principals of the Waste Hierarchy and the Circular Economy.

If the storage, removal and correct disposal off-site of construction wastes are not managed, controlled and documented during the construction phase, this could result in unauthorised fly-tipping and littering which could impact on the receiving environment in terms of groundwaters, surface waters, ecology and human health. Furthermore it would also prevent the implementation of the principals of the Waste Hierarchy and the Circular Economy which looks to re-use and re-purpose materials instead of disposing of them.

Table 17.1 below details the impact of construction waste without mitigation.

Table 17.1 Impact of construction waste without mitigation

	Quality	Significance	Extent	Probability	Duration	Type
Construction Waste	Negative	Significant	Regional	Likely	Short-Term	Worst-Case
Receiving Environment	Negative	Significant	Regional	Likely	Short-Term	Worst-Case

The construction phase of the proposed development has been informed by the principles of waste hierarchy and circular economy as follows:

- Re-use on-site of excavated soils and stones as fill material and as landscaping material;
- The purchase of construction materials using a 'just-in-time' approach, to prevent over supply and potential for damage whilst in storage;
- The segregation of construction waste streams into separate storage containers to maximise the potential for the re-use of the materials;
- The import of Article 27³¹ soils, where possible.

17.5.1.1 Predicted Construction Waste Generation

The calculated construction waste tonnage with the exception of soils and stones has been derived from the Building Research Establishment Environmental Assessment Method (BREEAM) which specifies that 11.1 tonnes of construction waste is generated for every 100m² of development area.

³¹ Of the European Communities (Waste Directive) Regulations 2011, as amended

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Based on the combined building floor area of c.49,373m², it has been calculated that c. 5480 tonnes of construction waste shall be produced

Regarding soils and stones, it is calculated that the cut volume will be c. 55,000m³ (c.88,000 tonnes) of which c. 45,000m³ (c.72,000 tonnes) of the material re-used as infill. Approximately 10,000m³ (c.16,000 tonnes) may be exported of site for disposal at a suitably licenced facility. A conversion figure of 1.6 to convert m³ to tonnes has been applied to determine the tonnage of soils in **Table 17.3** below.

Table 17.2 details the EPA's 2022 % breakdown of construction waste statistics.

Table 17.2 EPA 2022 Construction waste statistics

Waste Type	% Composition ^{Note 1}
Metal	15
Wood Plastic Glass	4
Bituminous Materials	10
Concrete Brick Gypsum	41
Mixed C&D	30

Note 1 The volume of Soils and Stones have volumes have been determined separately for the subject site and are not included in Table 17.2.

Table 17.3 Predicted construction waste

LoW Code	Description	Volume Generated (tonnes)	Prevention (tonnes) Non Waste	Reused (tonnes) Non-Waste	Recycled (tonnes) Waste	Recovered (tonnes) Waste	Disposed (tonnes) Waste
17 01 01	Concrete Brick Tiles and Ceramics	2247	0	1213	921	0	113
17 01 02							
17 01 03							
17 02 01	Wood Glass Plastic	219	0	0	175	44	2
17 02 02							
17 02 03							
17 03 02	Bituminous Material	548	0	236	312	0	0
17 04 07	Mixed Metals	822	0	0	822	0	0
17 05 04	Soil and Stone	88,000	0	72,000	0	0	16,000
17 09 04	Mixed C&D Waste	1644	0	510	608	296	230
20 01 08	Biodegradable Canteen Waste	10	0	0	0	0	10
20 03 01	Mixed Municipal Waste	10	0	0	0	0	10
20 01 01	Paper & Cardboard	1	0	0	1	0	0

17.5.2 Operational Phase

If domestic waste is not segregated at source and sufficient and appropriate waste storage infrastructure is not provided throughout the development, this would result in mixed waste streams

containing unrecyclable, recyclable and organic waste materials which cannot be effectively separated. This would result in waste materials being difficult to re-use, recycle and recover in accordance with the Waste Hierarchy (Ref. **Figure 17.1** above). Furthermore it would prevent the implementation of the principals of the Circular Economy which looks to re-use materials instead of disposing of them. The Operational Waste Management Plan provides the detail on how domestic waste shall be managed at the subject development.

The volume of waste that will be generated during the operational phase of the fully occupied development has been calculated in accordance with *British Standard BS 5906:2005 Waste Management in Buildings - Code of Practice* which states that 70 litres of waste are generated per bedroom per week and an additional volume of 30 litres per week per unit.

Table 17.4 Impact of operational waste without mitigation

	Quality	Significance	Extent	Probability	Duration	Type
Operational Waste	Negative	Slight	Regional	Likely	Long-Term	Worst- Case
Receiving Environment	Negative	Significant	Regional	Likely	Long-Term	Worst-Case

Table 17.5 Calculated operational waste generation

Source	No.		Waste/week (Litres)
Residential Bedrooms	1350	70 litres / week/ bedroom	94500
Residential Units	580	30 litres / week / unit	17,400
Total Weekly Domestic Waste	111,900		

17.6 Mitigation Measures

17.6.1 Construction Phase

The following mitigation measures shall be implemented during the construction phase:

- A dedicated Resource and Waste Manager shall manage and monitor all construction wastes. They shall oversee the implementation of the following measures;
- Construction wastes shall be managed in accordance with the Resource and Waste Management Plan (prepared by Byrne Environmental Consulting Ltd. and submitted under a separate cover as part of the planning application). The Plan is a 'live document' and will be updated by the appointed contractor in agreement with Fingal County Council, prior to commencement of works;
- Excavated rock shall be re-used on-site for pile pads, insofar as practicable;
- A dedicated waste compound will be established for the segregation and secure storage of construction wastes;
- Hazardous waste eg, oils shall be stored in secure bunded containers;
- Where accidental spillages of hydrocarbon liquids occur, they shall be cleaned using on-site spill-kits which shall be subsequently removed off-site by appropriately permitted hazardous waste collection contractors;
- Tool-box talks on waste prevention, re-use, recycling and segregation shall be provided to all site staff and contractors;
- Routine waste management audits shall be conducted;
- Waste collection permits and letters of acceptance from waste acceptance facilities shall be provided to Fingal County Council on the appointment of waste contractors;

- All waste loads leaving the site shall be digitally recorded;
- All vehicles exiting the site carrying waste materials shall display a valid National Waste Collection Permit Office (NWCPO) number and be verified at the site exit gate.

17.6.2 Operational Phase

The following mitigation measures shall be implemented during the operational phase:

- The communal waste storage areas shall be managed by the Facilities Management Company;
- Domestic wastes shall be managed in accordance with the Site-Specific Operational Waste Management Plan (prepared by Byrne Environmental Consulting Ltd. and submitted under a separate cover as part of the planning application). The Plan is a 'live document' and will be updated by the Facilities Management Company prior to commencement of the operational phase and maintained up-to-date throughout the operational phase;
- All residential units shall include a 3-bin waste segregation at source waste bin system, for (1) clean dry recyclables, (2) organic waste and (3) residual waste;
- The communal waste storage areas may include WEEE and waste battery storage units;
- An annual bulky waste collection service may be provided to residents by the Facilities Management Company;
- The closest Civic Amenity Facility (Recycling Centre) that accepts waste batteries, WEEE and Bulky Wastes and hazardous household liquids such as paints and oils is located at Coolmine Industrial Estate, Dublin 15, c. 4.5km south of the site;
- The Facility Management Company shall monitor the communal waste storage areas and the volumes of waste associated with the apartment aspect of the development during the operational phase of the development.

17.7 Residual Impacts

17.7.1 Construction Phase

The management of wastes generated during the construction of the proposed development will be in accordance with the Resource and Waste Management Plan (prepared by Byrne Environmental Consulting Ltd. and submitted under a separate cover as part of the planning application), to be updated by the appointed contractor. With regard to how it has been demonstrated how construction wastes will be managed through design, management and waste reduction and recycling initiatives at the proposed development, it is predicted that the impact of the construction phase of the development will not have a significant adverse impact on the receiving environment, or on local and regional waste management services / objectives.

Table 17.5 below summarises the identified likely residual effects of the proposed development during the construction phase, i.e. post application of mitigation measures.

Table 17.5 Summary of construction phase residual effects

	Quality	Significance	Extent	Probability	Duration	Type
Regional Construction Waste Infrastructure	Negative	Not Significant	Regional	Likely	Short-Term	Residual
Receiving Environment	Neutral	Not Significant	Regional	Unlikely	Short-Term	Residual

17.7.2 Operational Phase

The development shall be designed to provide adequate domestic waste infrastructure and storage areas for all apartments. This will promote the appropriate segregation at source of domestic generated waste from all residential units at the development and thus reduce the potential for the generation of residual domestic waste streams.

Table 17.6 below summarises the identified likely residual effects of the proposed development during the operational phase, i.e. post application of mitigation measures.

Table 17.6 Summary of operational phase residual effects

	Quality	Significance	Extent	Probability	Duration	Type
Regional Domestic Waste Infrastructure	Negative	Not Significant	Regional	Likely	Long Term	Residual
Receiving Environment	Neutral	Not Significant	Regional	Unlikely	Long-Term	Residual

17.8 'Do Nothing' Scenario

Should the proposed development not proceed, there shall be no increased waste generated. However, a vacant site may be subject to fly-tipping. Additionally, considering the zoning and development objectives at the site, it is likely that, in the absence of the proposed development being progressed, a similar residential development would be progressed for these lands in the future, which would be the subject of a separate application.

17.9 Interactions

Provided that the Resource and Construction Waste Management Plan (RWMP) and the Operational Waste Management Plan (OWMP) are implemented during the construction and operational phases respectively, there will be no significant impacts associated with the proposed development and the management of all wastes shall comply with national waste legislation and shall encourage and facilitate the implementation of the priorities of the Waste Hierarchy and the principals of the Circular Economy.

The identified interactions between the management of waste arisings during both the construction and operational stages are as follows;

- Population & Human Health (Chapter 7): The potential impacts on human beings in relation to the generation of waste during the construction and operational phases if wastes are not managed correctly and in accordance with the RWMP or the OWMP this could result in fly-tipping, littering and reduced recycling, and re-use opportunities which could cause a nuisance to the public and attract vermin. The implementation of the RWMP and the OWMP, will ensure appropriate the impact of waste arisings are impacts on the local population and human health are **long-term, imperceptible and neutral**.
- Land, Soils, Geology & Hydrogeology (Chapter 9): It is estimated that c. 55,000m³ (c.88,000 tonnes) of soils and stones shall be excavated to facilitate the development of which c. 45,000m³ (c.72,000 tonnes) of the material re-used as infill. Approximately 10,000m³ c.(16,000 tonnes) may be exported of site for disposal at a suitably licenced facility. This represents a re-use of c. 80% of existing soils and stones on-site. The implementation of the RWMP will ensure that potentially hazardous materials such as hydrocarbon oils are managed during the construction phase to reduce

the potential for ground, surface water or groundwater contamination. Adherence to the RWMP, will ensure the effect is **long-term, imperceptible and neutral**.

- Traffic & Transportation (Chapter 16): The construction phase will see an increase in local traffic movements associated with the export of construction waste materials from the site. The effect will be **short-term, imperceptible and neutral**. The operational phase will see an increase in local traffic movements associated with the export of domestic waste from the site. The effect will be **long-term, imperceptible and neutral**.

17.10 Cumulative Impacts

The local area in which the subject development is located has a number of existing and permitted developments which together with the proposed development will have a cumulative short-term construction impact and a long-term operational impact. The other projects listed under Chapter 20- Cumulative Impacts of the EIAR have been considered in terms of additional potential demand on regional waste management infrastructure should these other developments proceed.

Should other local sites be constructed during the construction phase of the subject site, there will be an increased demand on Regional Waste Management Infrastructure including Waste Recovery and Waste Recycling Facilities to process construction wastes.

If all local permitted developments are constructed and become operation in the future, there will be an increased demand on Regional Waste Management Infrastructure including Waste Recovery, Waste Recycling Facilities and Waste Disposal to process operational wastes.

Table 17.7 Summary of cumulative residual construction and operational waste effects

	Quality	Significance	Extent	Probability	Duration	Type
Construction Waste	Negative	Not Significant	Regional	Likely	Short-Term	Residual
Operational Waste	Negative	Not Significant	Regional	Likely	Long-Term - Permanent	Residual

17.11 References

- Waste Management Act 1996-2023;
- Waste Management (Collection Permit) (Amendment) (No.2) Regulations 2023 (SI No. 104 of 2023);
- EPA (2019). Guidance on Soil and Stone By-Products in the context of Article 27 of the European Communities (Waste Directive) Regulations;
- EPA (2021). Best Practice Guidelines for the preparation of resource management plans for construction and demolition projects;
- Eastern-Midlands Region Waste Management Plan 2015-2021;
- European Communities (Waste Directive) Regulations 2011;
- Fingal Development Plan 2023-2029;
- Sustainable Urban Housing : Design Standards for New Apartments – Guidelines for Planning Authorities, 2018 Department of Housing, Planning and Local Government, Section's 4.8 and 4.9 Refuse Storage;
- British Standard BS 5906:2005 Waste Management in Buildings-Code of Practice which provides guidance on methods of storage, collection, segregation for recycling and recovery for residential building;
- EPA 2022 Construction Waste Statistics.

18 Material Assets – Services

18.1 Introduction

Material assets are resources that are valued and intrinsic to the site of the proposed development and the surrounding area. These may be of either natural or human origin and the value may arise for economic or cultural reasons. This chapter considers and assesses the effects of the proposed development on the material assets, including the existing major utilities within and around the site, during the construction and operational phases.

In relation to material assets, the EPA guidelines state that:

“In Directive 2011/92/EU this factor 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 transport infrastructure. Sealing of agricultural land and effects on mining or quarrying potential come under the factors of land and soils.”

As per the EPA guidelines, ‘built services and infrastructure’ addressed in this chapter include water supply infrastructure, sewerage (surface water drainage and foul water drainage), and utilities (electricity, telecommunications and gas) infrastructure in the receiving environment.

Traffic-related impacts have been addressed under the scope of Chapter 16 (Traffic & Transportation). Water quality, land / soils and other hydrological / hydrogeological impacts of the proposed development have been assessed under the scope of Chapters 9 (Land, Soils, Geology & Hydrogeology) and 10 (Hydrology). Waste management infrastructure has been addressed under Chapter 17 (Material Assets – Waste) and built historic environment is covered under Chapter 14 (Cultural Heritage, Archaeology and Architectural Heritage).

This chapter has been prepared by Namrata Kaile, Ecologist & Environmental Consultant at Brady Shipman Martin, with input from DBFL Consulting Engineers Ltd and IN2 Engineering. A technical review was completed by Thomas Burns, Partner at Brady Shipman Martin. Refer to **Table 1.4** in Chapter 1 (Introduction) for qualifications of authors and reviewers.

18.2 Method

The potential impacts to material assets as a result of the proposed development were assessed through a desktop study of available information. The following principal sources were consulted:

- Uisce Éireann utility plans (for surface water drainage, foul water drainage and water supply);
- ESB Networks utility plans;
- Gas Networks Ireland (GNI) service plans;
- Eir e-maps; and
- Virgin Media maps.

The methodology is consistent with the following relevant guidance:

- EPA (2022). Guidelines on the information to be contained in Environmental Impact Assessment Reports; and
- National Roads Authority (NRA) (2008). Environmental Impact Assessment of National Road Schemes – A Practical Guide.

Effects and impacts have been characterised in accordance with the criteria set out in the EPA guidelines (as reproduced in **Table 1.5** in Chapter 1 (Introduction)).

Surface water run-off, foul drainage discharge and water usage calculations have been carried out in accordance with the following guidelines:

- Greater Dublin Strategic Drainage Strategy (GDSDS);
- Irish Water's Code of Practice for Wastewater Infrastructure 2020;
- Irish Water's Code of Practice for Water Infrastructure 2020;
- The Planning System and Flood Risk Management, Guidelines for Planning Authorities (2009).

18.2.1 Consultation

As part of the design development and planning application processes, consultations have been held with Uisce Éireann and Fingal County Council in relation to utilities infrastructure. A pre-connection enquiry was submitted to Uisce Éireann in relation to the water and wastewater strategy for the proposed development. A confirmation of feasibility letter was received from Uisce Éireann (formerly Irish Water) in June 2023, stating that the proposed connection to the Uisce Éireann network(s) can be facilitated at this moment in time. It was further stated that the water supply connection is feasible without infrastructure upgrade by Uisce Éireann. A statement of design acceptance was received from Uisce Éireann in August 2023, stating that Uisce Éireann has no objection to the proposed connections.

18.3 Baseline Environment

18.3.1 Surface Water Drainage

Existing surface water drainage infrastructure at the proposed development site and in the vicinity is shown in the drainage drawings produced by DBFL Consulting Engineers Ltd., submitted under separate cover as part of the planning application. The site of the proposed development is predominantly greenfield in nature. There are two existing drainage ditches / streams located along the northern and southern boundaries of the proposed development site. These are known as the Hollywood Stream and the Mooretown Stream, respectively.

It is proposed to discharge attenuated surface water to these ditches in the north-west corner and south-west corners of the subject site. The streams enter the Pinkeen River west of the site. The Pinkeen River ultimately discharges to the Tolka River to the south of the proposed development site (c. 3.4km downstream). The proposed surface water drainage system will collect storm-water run-off from the proposed residential development via a traditional pipe-work and manhole system laid within the main access roads. Run-off from roads and driveways will be collected by gullies. Run-off of clean roof water will discharge to a clean stone build-up under block paving to promote infiltration prior to discharging to the main surface water drainage system via individual connections.

Sustainable Drainage Systems (SuDS) will be integrated into the surface water drainage network for the proposed development, with the objective of controlling the quantity of surface water runoff, managing the quality of runoff to prevent pollution, and creating and sustaining local ecosystems.

18.3.2 Foul Water Drainage

Existing foul water drainage infrastructure at the proposed development site and in the vicinity is shown in the drainage drawings produced by DBFL Consulting Engineers Ltd., submitted under separate cover

as part of the planning application. The site of the proposed development is predominantly greenfield in nature, with no existing buildings. Therefore, there is currently no foul water loading from the site.

It is proposed to connect the foul drainage network for the proposed development to the 450mm diameter trunk foul sewer that is currently under construction under Fingal County Council reference FW21A/0042. This trunk sewer traverses through the central primary link street of the subject site from east to west and ultimately discharges to the existing 750mm diameter foul sewer approx. 3km to the south adjacent to Powerstown Road. The foul trunk main has been designed to accommodate foul flows from the proposed development and also from the proposed Hollystown Sites 2 & 3 SHD which has been granted planning permission under ABP Reference 312271. The trunk main also accommodates foul flows from Bellingsmore Residential Development to the east and from Hollystown Site 1 to the north-east of the subject site (permitted under FCC reference FW21A/0042). It is also designed to facilitate a future connection from Hollystown Park Foul Pumping Station which has itself been permitted under FCC Reference FW21A/0042.

The foul outfall sewer has been designed for a peak discharge of 18 l/s.

18.3.3 Water Supply

Existing watermains infrastructure at the proposed development site and in the vicinity is shown in the watermains drawings produced by DBFL Consulting Engineers Ltd., submitted under separate cover as part of the planning application. It is proposed to connect to the 225mm diameter watermain to the east of the subject site which will be constructed as part of the Hollystown – Kilmartin Sites 2&3 SHD under An Bord Pleanála Reference 312271. This watermain connects to the existing 300mm diameter water main on Hollywoodrath Road (R121).

18.3.4 Electricity

Existing electricity supply infrastructure at the site of the proposed development and in the vicinity is shown in the ESB Network plan in **Appendix 18.1**. The site is well located with regards to ESB infrastructure. There is an existing 110kV overhead powerline (Utilities Report, IN2 Engineering (2023) refers this overhead powerline as 38kV or higher in voltage) traversing the northern portion of the proposed site. A further 9no. new ESB unit stations have been proposed within the footprint of the proposed development. The powerline will be retained at the current location and the proposed landscape design provides a 40m exclusion zone from the powerline to the proposed development.

18.3.5 Gas

Existing gas supply infrastructure in the vicinity of the proposed development site is shown in the Gas Networks Ireland plan in **Appendix 18.1**. There are no distribution pipelines which pass through the site, and there is no intention to provide natural gas for the proposed residential development.

18.3.6 Telecommunications

Existing telecommunications infrastructure at the site of the proposed development and in the vicinity is shown in the Eir and Virgin Media plans in **Appendix 18.1**. There are existing in-ground ducts in the vicinity of the development in Hollystown Park. Also, there is Virgin Media network ducting in the vicinity of the development in Hollystown Park. New Eir and Virgin Media ducting network will be provided to the proposed development.

18.4 Predicted Impacts of the Proposed Development

18.4.1 Do-Nothing Impact

In the do-nothing scenario (i.e. assuming the proposed development were not progressed), the built services and infrastructure at the site of the proposed development would likely remain as they are at present (as described above). No likely significant effects would arise in relation to material assets in this scenario.

The land is zoned for residential development and it is likely that in the absence of the proposed development, another development of a similar nature and scale would be progressed on the proposed site to align with the Fingal Development Plan 2023-2029.

18.4.2 Construction Phase

In order to facilitate the proposed development, new built services and infrastructure will need to be put in place at the site, tying in with existing infrastructure in the receiving environment.

On-site utilities works and diversions, if improperly executed, have the potential to result in:

- Damage to material assets;
- Accidental discharge of sediments and harmful substances, due to exposed soils or accidental spills of harmful substances can be flushed into the public wastewater network or the nearby surface water network;
- Damage to the overhead high voltage powerline in the northern section due to works and haul route in the vicinity of the powerline;
- Interruptions to supply / services in neighbouring areas; and / or
- Human health impacts related to accidents (e.g. involving live power cables or gas mains).

However, all utilities works will be carried out in accordance with the relevant standards and codes of the respective service providers and authorities (i.e. Uisce Éireann, ESB, GNI, Eir, Virgin Media, Health and Safety Authority (HSA) and any others of relevance). Such works will be carried out in a strictly controlled manner that is safe, and which avoids or minimises interruptions of service that might affect local residents, businesses and adjacent development.

In the absence of mitigation measures **negative, slight and short-term impacts** are predicted in relation to built services or infrastructure during the construction phase.

18.4.3 Operational Phase

During the operational phase, the site will contain operational surface water drainage, foul water drainage, water supply, electrical, gas and telecommunications systems, serving the proposed residential units. These systems are being designed and specified in accordance with the applicable codes and standards of the respective service providers and authorities (i.e. Uisce Éireann, ESB, GNI and Eir / Virgin Media), and will be sufficient to provide for the operational demands of the proposed development. Demand from the proposed development is not predicted to negatively affect the existing networks in the receiving environment. Maintenance of built services and infrastructure on the site will be carried out on an ongoing basis during the operational phase, as per the relevant requirements of the respective service providers and authorities.

No likely significant impacts are predicted in relation to built services or infrastructure during the operational phase.

18.4.3.1 Surface Water Drainage

It is proposed to discharge all attenuated surface water run-off to the existing drainage ditches to the north-west and south-west corner of the proposed development site. Surface water run-off from the site will be attenuated to greenfield run-off rates in accordance with the Greater Dublin Strategic Drainage Study (GSDS). Surface water storage; sustainable drainage systems (SuDS) features, including swales, permeable paving, bioretention areas, rain gardens, tree pits, detention basins, infiltration blanket, hydrobrakes and petrol interceptors are proposed.

To manage surface water runoff from the proposed development, the site will be divided into four surface water catchment- Catchments A, B, C and D. It is proposed to store runoff for a 1% AEP (Annual Exceedance Probability) storm event plus 20% allowance for climate. Runoff from roads and other hard surfaces such as paths and cycle paths will be directed to swales, tree pits and rain gardens / bio retention areas where possible. All runoff will enter unlined detention basins with hydrobrakes in which attenuated storm volumes are temporarily stored. Restricted baseflow from detention basins through the hydrobrakes will enter petrol interceptors and grease traps before finally discharging into natural drainage lines.

For further detail, refer to the Infrastructure Design Report prepared by DBFL Consulting Engineers Ltd. and submitted under separate cover as part of the planning application.

18.4.3.2 Foul Water Drainage

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

As previously mentioned in Section 18.3.2, it is proposed to connect to the foul drainage network for the proposed development to the 450mm diameter trunk foul sewer that is currently under construction under Fingal County Council reference FW21A/0042. The trunk sewer traverses through the central primary link street of the subject site from east to west and ultimately discharges to the existing 750mm diameter foul sewer approx. 3km to the south adjacent to Powerstown Road. The foul trunk main has been designed to accommodate foul flows from the proposed development and also from the proposed Hollystown Sites 2 & 3 SHD granted planning permission (March 2023) under ABP Reference 312271.

For further detail, refer to the Infrastructure Design Report prepared by DBFL Consulting Engineers and submitted under separate cover as part of the planning application.

18.4.3.3 Water Supply

The proposed water supply network has been designed in accordance with *Irish Water's Code of Practice for Water Infrastructure and Water Infrastructure Standard Details*.

It is proposed to connect to the 225mm diameter watermain to the east of the subject site which will be constructed as part of the Hollystown – Kilmartin Sites 2&3 SHD under An Bord Pleanála Reference 312271. This watermain connects to the existing 300mm diameter watermain on Hollywoodrath Road

(R121). The connection to the public water main will include a bulk meter, sluice valves, water meter, scour valve etc. in accordance with the Uisce Éireann's requirements.

For further detail, refer to the Infrastructure Design Report prepared by DBFL Consulting Engineers and submitted under separate cover as part of the planning application.

18.4.3.4 Electricity

The proposed development will contain underground electricity cables and above-ground substations, which will tie-in with existing infrastructure in the receiving environment, providing power to the proposed development. A new electricity connection application will be submitted to ESB Networks if planning is approved.

18.4.3.5 Gas

As mentioned previously, there are no proposals to provide natural gas for the proposed residential scheme.

18.4.3.6 Telecommunications

Telecommunications ducting for both Eir and Virgin Media will be provided for the proposed development.

18.5 Mitigation Measures

18.5.1 Construction Phase

As stated above, no significant impacts are predicted in relation to material assets (services) as a result of the construction or operation of the proposed development. However, in order to avoid / minimise impacts insofar as practicable, the following mitigation measures shall be implemented during the construction phase:

- The precise locations of all existing on-site services (underground and overhead) will be confirmed prior to the commencement of works;
- The precise routing of electricity, gas and telecommunications infrastructure on the site are to be agreed with ESB, GNI and Eir / Virgin Media, respectively, prior to the commencement of on-site works;
- All reasonable precautions shall be taken to avoid unplanned disruptions to any services / utilities during the proposed works;
- Consultation with the relevant services providers shall be undertaken in advance of works. This will ensure all works are carried out to the relevant standards and ensure safe working practices are implemented;
- There will be an interface established between the contractor and the relevant utilities service providers / authorities during the construction phase of the proposed development. This interface will be managed in order to ensure a smooth construction schedule with no / minimal disruption to the local community;
- All new foul water drainage pipes will be pressure tested and subject to an internal CCTV survey in order to identify any possible defects prior to operation, under the supervision of Fingal County Council;

- DBFL Consulting Engineers Ltd. have prepared a Construction & Environmental Plan (2023) that is submitted separately under planning documentation. It contains best practice measures and protocols to be implemented during the construction phase of the proposed development to avoid / minimise environmental impacts, including in relation to surface water and foul water. These measures and those listed within Ch 10 Hydrology will be implemented in full;
- In planning and executing the proposed works, regard shall be had to the Gas Networks Ireland *Guidelines for Designers and Builders – Industrial and Commercial (Non-Domestic) Sites (2018)*, the Health & Safety Authority (HSA) *Code of Practice for Avoiding Danger from Underground Services (2016)*, and the ESB Networks & Health and Safety Authority *Code of Practice for Avoiding Danger from Overhead Electricity Lines (2019)*;
- Crossing points will be created where the haul route crosses under the live overhead electricity line in the north-east section of the site. Height restricting goalposts made using rigid, non-conducting and clearly visible material will be erected at the crossing point. Suitable rigid barriers will be placed on both sides of the crossing point corridor to prevent deviation from the crossing corridor. Warning signs will also be placed along the barriers;
- Hazard zone and exclusion zone shall be determined by the Contractor prior to undertaking works in the vicinity of the overhead lines. Site-specific risk assessment and work method statement shall be prepared before works are undertaken in the hazard zone.

18.5.2 Operational Phase

As stated above, no significant impacts are predicted in relation to material assets (services) as a result of the operation of the proposed development. However, in order to avoid / minimise impacts insofar as practicable, the following mitigation measures shall be implemented during the operational phase:

- Any necessary maintenance and / or upgrades of on-site utilities infrastructure during the operational phase of the proposed development, will be carried out in accordance with the specifications of the relevant service providers;
- Proposed drainage systems are to be maintained on a regular basis to reduce the risk of blockage and resulting flooding. Floor levels are set a minimum of 500mm above predicted 100-year flood levels.

18.6 Residual Impacts

No likely significant residual impacts in relation to built services and infrastructure are predicted as a result of the construction or operation of the proposed development.

18.7 Monitoring

Monitoring will be provided by each utility company with an overseeing responsibility by the appointed contractor during the construction phase. Any monitoring of the built services required during the operational phase will be as advised by the relevant services provider.

18.8 Interactions

Regard has been had to the following key interactions in the preparation of this chapter:

- **Chapter 7 (Population & Human Health):** In worst-case scenarios (e.g. where works are not carried out safely or in accordance with the applicable codes and standards), accidents during works (e.g. contact with live powerline or gas explosions) or water quality impacts resulting from works to

utilities infrastructure, have the potential to result in human health impacts. Service outages resulting from works can temporarily affect the residential amenity of local residents and / or the operation of local businesses. The mitigation measures that will be put in place at the proposed development will ensure that the impact of the proposed development complies with all the specifications and guidelines of the relevant service providers. Therefore, the predicted impact ***no likely significant impact*** is envisaged with respect to population and human health during construction or operational phase.

No significantly likely impacts are predicted in relation to built services or infrastructure. Likewise, no interactions are predicted to occur in this regard such that significant impacts would arise in relation to other environmental / EIA topics.

18.9 Cumulative Impacts

The list of plans and projects set out in Chapter 20 has been considered in terms of the potential for significant negative cumulative impacts to arise as a result of one or more of these in combination with the proposed development. There are numerous permitted or proposed development in the receiving environment.

Assuming the full and proper implementation of the mitigation measures set out herein; and given that the design, construction and operation of utilities infrastructure are strictly controlled by the respective utility provider and authorities (i.e. Uisce Éireann, ESB, GNI and so on); it is concluded that there are ***no likely significant cumulative impacts*** in this regard.

18.10 Difficulties Encountered

No particular difficulties were encountered in the preparation of this chapter.

18.11 References

- EPA (2022). *Guidelines on the information to be contained in Environmental Impact Assessment Reports*.
- NRA (2008). *Environmental Impact Assessment of National Road Schemes – A Practical Guide*.
- Dublin Drainage Consultancy (2005). *Greater Dublin Strategic Drainage Study*.
- ESB Networks and Health and Safety Authority (2019). *Code of Practice for Avoiding Danger from Overhead Electricity Lines*.
- Irish Water (2020). *Code of Practice for Water Infrastructure (Revision 2)*.
- Gas Networks Ireland (2018). *Guidelines for Designers and Builders – Industrial and Commercial (Non-Domestic) Sites*.
- Health and Safety Authority (2016). *Code of Practice for Avoiding Danger from Underground Services*.

19 Interactions

19.1 Introduction

This chapter provides an overview of the key interactions identified and addressed in the foregoing chapters of the EIAR.

It is a requirement of the EIA Directive that, not only are the impacts in respect of the individual specialist topics (hydrology, biodiversity, air quality and climate, etc.) to be addressed in the EIAR, but so too must the interactions and inter-relationships between these topics be addressed. As stated in Article 3 of the amended Directive:

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

(a) population and human health;

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

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

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

*(e) the **interaction** between the factors referred to in points (a) to (d).”*

The EPA guidelines state that interactions should be addressed, where relevant, in the corresponding specialist EIAR chapters, with an ‘interactions matrix’ and brief text provided by way of summary:

“The interactions between effects on different environmental factors should be addressed as relevant throughout the EIAR. For example, where it is established in the Hydrology section that there will be an increase in suspended solids in discharged surface waters during construction, then the Biodiversity section should assess the effect of that on sensitive aquatic receptors. [...] It is general practice to include a matrix to show where interactions between effects on different factors have been addressed. [...] This is typically accompanied by text describing the interactions.” (Section 3, p. 56).

A brief description of these interactions is presented below, as is an interactions matrix (**Table 19.1**).

Note that this chapter provides an overview of the potential impacts that may arise as a result of interactions between environmental topics, and as a direct or indirect result of the proposed development. It does not repeat the detailed characterisation of these impacts, or reiterate any mitigation measures that have been prescribed in relation to them. These are addressed under the scope of the corresponding EIAR chapters, as referenced below.

Table 19.1 Interactions matrix

RECEPTOR SOURCE	POPULATION & HUMAN HEALTH	BIODIVERSITY	LAND, SOILS, GEOLOGY & HYDROGEOLOGY	HYDROLOGY	AIR QUALITY & CLIMATE	NOISE & VIBRATION	LANDSCAPE & VISUAL	CULTURAL HERITAGE, ARCHAEOLOGY & ARCHITECTURAL HERITAGE	MICROCLIMATE – DAYLIGHT & SUNLIGHT	TRAFFIC & TRANSPORTATION	MATERIAL ASSETS - WASTE	MATERIAL ASSETS - SERVICES
POPULATION & HUMAN HEALTH					✓	✓	✓		✓	✓	✓	✓
BIODIVERSITY			✓	✓	✓		✓					
LAND, SOILS, GEOLOGY & HYDROGEOLOGY		✓		✓	✓					✓	✓	✓
HYDROLOGY		✓	✓		✓					✓	✓	✓
AIR QUALITY & CLIMATE	✓	✓	✓	✓					✓	✓	✓	
NOISE & VIBRATION	✓									✓		
LANDSCAPE & VISUAL		✓										
CULTURAL HERITAGE, ARCHAEOLOGY AND ARCHITECTURAL HERITAGE												
MICROCLIMATE – DAYLIGHT & SUNLIGHT	✓											
TRAFFIC & TRANSPORTATION	✓		✓		✓	✓					✓	
MATERIAL ASSETS – WASTE	✓		✓							✓		
MATERIAL ASSETS - SERVICES	✓											

19.2 Summary of Interactions

Interactions addressed in this EIAR are discussed under the headings of the corresponding receptor topics / media, below. No noteworthy interactions were identified in respect of the following environmental topic:

- Chapter 14: Cultural Heritage, Archaeology and Architectural Heritage.

19.2.1 Population and Human Health

Population and human health is an EIA topic that tends to interact with numerous other topics. Where the potential for impacts on population and human health has been identified as a result of such interactions, these have been addressed comprehensively in Chapter 7 (Population & Human Health). In respect of the proposed development, the noteworthy interactions between population and human health and other topics, in the absence of mitigation, may be summarised as follows:

Air Quality & Climate (Chapter 11)

There is potential for nuisance impacts on the local receptors due to dust-generating activities of proposed development during construction phase. With appropriate mitigation measures in place the interaction will be ***negative, slight and short-term impact***. During operation phase of the proposed development the predicted impact on population and health due to air quality and climate will be ***long-term, imperceptible and neutral***.

Noise & Vibration (Chapter 12)

The interaction between population and human health and noise and vibration during construction phase is due to potential nuisance and disturbance due to noisy construction activities, plant and equipment and construction traffic noise. Appropriate mitigation measures will be implemented in this regard. The predicted impact will be ***negative, slight to moderate and short-term*** at the closest noise sensitive locations.

During the operational phase there is potential for nuisance and disturbance due to the operation of Dublin Airport and potential disturbance due to additional operational phase traffic. With appropriate mitigation measures in place, the predicted impact due to interaction between population and human health and noise and vibration will be ***neutral to negative, not significant and long-term***.

Landscape & Visual (Chapter 13)

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

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

Traffic & Transportation (Chapter 16)

There is potential for impacts on population and human health during the construction phase due to negative impacts on journey characteristics due to additional (construction) traffic on road network and the potential for nuisance and disturbance due to construction traffic noise. With appropriate mitigation measures in place such as warning signage and designated haul route for HGVs the predicted impact will be ***neutral, slight and short-term***.

During the operational phase there is potential for negative impacts on population and human health due to journey characteristics and additional traffic on road network during the operational phase and potential for nuisance and disturbance due to operational traffic noise. With appropriate mitigation measures in place the predicted impact will be ***neutral, imperceptible to slight and long-term***.

Microclimate- Daylight & Sunlight (Chapter 15)

There is potential impacts due to changes to daylight and sunlight availability on the population and human health e.g. overshadowing of neighbouring buildings, can negatively or positively affect residential amenity in the receiving environment. Following the BRE Guide's recommendations for essential daylight and sunlight, internal daylighting is required to meet more than 50% of the targeted illuminance in lux throughout the year. In terms of sunlight, each unit needs to receive over 1.5 hours of sunlight on March 21st. As detailed above, 100% of rooms assessed were in excess of the BRE Guide recommendation for daylight and also 100% of the assessed units exceeded the minimum guideline recommendation. The results demonstrate each of the amenity open spaces easily achieve compliance with the BRE guidance, with 100% of amenity open space across the site receiving two hours or more of sunlight on 21st March and the shared residential amenity spaces for the Apartment, Duplexes and Later Living Units (Bungalow, H1 & H2 types) were all fully compliant. No impacts to neighbouring residential areas are predicted, and the proposed development itself will provide well-lit homes and amenity areas.

Material Assets- Waste (Chapter 17)

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

Material Assets- Services (Chapter 18)

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

19.2.2 Biodiversity

Where the potential for impacts on biodiversity has been identified as a result of interactions with other EIA topics, these have been addressed comprehensively in Chapter 8 (Biodiversity) and / or the corresponding other specialist chapter. In respect of the proposed development, the noteworthy interactions between biodiversity and other topics, in the absence of mitigation, may be summarised as follows:

Land, Soils, Geology & Hydrogeology (Chapter 9)

Effects and impacts in relation to the geological and hydrogeological environment have the potential to negatively affect biodiversity. For example, soil stripping and excavations on the site will result in the loss of existing habitats. There is also the potential for negative impacts on aquatic ecology due to discharge of sediment-laden run-off and / or groundwater pollution during the proposed works. With the mitigation measures in place, the predicted impact during construction phase due to this interaction will be ***negative, imperceptible and short-term***.

There are no potentially significant interactions identified between Land, Soils and Hydrogeology, and Biodiversity during the operational phase.

Hydrology (Chapter 10)

Effects and impacts in relation to surface water have the potential to negatively affect biodiversity. For example, unmitigated water quality impacts may result in negative impacts on aquatic ecology. With the mitigation measures in place, the predicted impact during construction phase due to this interaction will be ***negative, imperceptible and short-term***.

There are no potentially significant interactions identified between Hydrology, and Biodiversity during the operational phase.

Air Quality (Chapter 11)

Dust emissions from construction works have the potential to impact vegetation in the vicinity of the site. Vehicular emissions during construction and operation also have the potential to impact vegetation as a result of NOx emissions leading to nitrogen deposition. With the mitigation measures in place, the predicted impact during construction phase due to this interaction will be ***neutral, imperceptible and short-term***.

There are no potentially significant interactions identified between Hydrology, and Biodiversity during the operational phase.

Landscape & Visual (Chapter 14)

The landscape design for the proposed development takes into account the requirements to maximise the benefits to biodiversity, both locally and within the wider landscape. The landscape scheme (refer to Chapter 13 and the Landscape Strategy and Landscape Masterplan, prepared by Bernard Seymour Landscape Architects (2023) and submitted as part of this application under separate cover) proposes significant ecologically sensitive planting to provide for potentially diverse habitats. With the mitigation measures in place, the predicted impact during construction phase due to this interaction will be ***negative, slight and short-term*** and during operational phase will be ***neutral to positive over time, slight and long term***.

19.2.3 Land, Soils, Geology and Hydrogeology

Hydrology (Chapter 10)

The construction phase of the proposed development has the potential to result in increased sediment runoff which has the potential to interact negatively on surface water quality. The proposed construction phase mitigation, and the lack of a direct pathway means that the proposed development will not result in significant negative impact on surface water quality in the local area.

Taking into account the design and mitigation measures set out in Chapter 9 and 10 of this EIA Report, there is a residual negative interaction between Land, Soil, and Hydrology during the construction phase. The interaction is considered to be ***neutral, not significant, and short term***.

Taking into account the design and mitigation measures set out in Chapter 9 (Land, Soils, Geology and Hydrogeology) and 10 (Hydrology) of this EIA Report there are no potentially significant interactions identified between Land, Soils and Hydrogeology, and Hydrology during the operational phase.

Biodiversity (Chapter 8)

In the absence of mitigation measures to control the construction phase there is potential for silt laden material or pollution to enter the watercourse and impact on local biodiversity and European sites downstream from the works. Furthermore, dust emissions from exposed earthworks have the potential to settle on plants causing impacts to local ecology.

There is no groundwater dewatering proposed / required for this development. Therefore no potential impacts or interactions are identified between biodiversity, the Dublin GWB (which is confined within bedrock and is indirectly connected to with a number of nationally and internationally important habitats) and Land, Soils and Hydrogeology.

Taking into account the design and mitigation measures set out in Chapter 9 (Land, Soils and Hydrogeology), and Chapter 8 (Biodiversity) of this EIA Report, there remains a residual negative interaction between Land, Soil, Geology and Hydrogeology and Biodiversity during the construction phase. The interaction is considered to be ***negative, not significant, and short term***.

There are no potentially significant interactions identified between Land, Soils and Hydrogeology, and Biodiversity during the operational phase.

Air Quality and Climate (Chapter 11)

Construction phase activities such as land clearing, excavations, stockpiling of materials etc. have the potential for interactions between air quality and land and soils and the water environment (hydrology) in the form of dust emissions. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that interactions between air quality and land and soils and hydrology will be ***short-term and imperceptible***.

Climate change has the potential to lead to increased rainfall in future years which may result in flood impacts and interactions between Hydrology and Land, Soils and Geology. A detailed Site Specific Flood Risk Assessment (SSFRA) was carried out for the proposed development which states that 1% AEP flood event (1 in 100 year) does not inundate the site. The development was concluded as having a good level of flood protection up to the 100-year return event. For pluvial floods exceeding the 100-year capacity of the drainage system then proposed flood routing mitigation measures are recommended

(refer to 'Site Specific Flood Risk Assessment' prepared by DBFL Consulting Engineers (2023) and submitted under a separate cover as part of the planning application) for further information.

The new infrastructure is designed to accommodate rainfall runoff/ flows up to 1% AEP event. In addition, the surface water network has been designed to include an additional allowance of 20% in rainfall intensities due to climate change. Therefore it can be determined that there is no significant risk to the proposed development as a result of increased rainfall and climate. No significant interactions between Climate, Hydrology and Land, Soils and Geology is predicted.

Material Assets (Chapter 16, 17, 18)

In the absence of mitigation, surface water run-off during the construction phase may contain increased silt levels or otherwise become polluted from construction activities. Suspended solids in runoff water may result in an increase in suspended sediment load, resulting in increased turbidity, which may damage downstream infrastructure.

During the construction phase, excavated topsoil and subsoil (c. 55,000m³) will be generated from the excavations required to facilitate site levelling, construction of new foundations and installations of site services. It is estimated that c. 10,000m³ of excavated material will need to be removed off-site. Where material has deemed unsuitable to be reused onsite it will be taken off-site, it will be taken for reuse or recovery, where practical, with disposal as a last resort. Adherence to the mitigation measures in Chapter and the requirements of the Resource & Waste Management Plan, will ensure the effect is ***long-term, imperceptible and neutral***.

There are no potentially significant interactions identified between Land, Soils and Hydrogeology, and Material Assets Utilities and Waste (Chapter 17 & 18) and Traffic & Transportation (Chapter 16) during the operational phase of the proposed development.

19.2.4 Hydrology

Where the potential for impacts on hydrology has been identified as a result of interactions with other EIAR topics, these have been addressed comprehensively in this EIAR. In respect of the proposed development, the noteworthy interactions with hydrology and other topics / media, in the absence of mitigation, are summarised as follows:

Land, Soil, Geology and Hydrogeology

The construction phase of the proposed development has the potential to result in increased sediment runoff which has the potential to interact negatively on surface water quality. The proposed construction phase mitigation, and the lack of a direct pathway means that the proposed development will not result in significant negative impact on surface water quality in the local area.

Taking into account the design and mitigation measures set out in Chapter 9 and 10 of this EIA Report, there is a residual negative interaction between Land, Soil, and Hydrology during the construction phase. The interaction is considered to be ***neutral, not significant, and short term***.

Taking into account the design and mitigation measures set out in Chapter 9 (Land, Soils, Geology and Hydrogeology) and 10 (Hydrology) of this EIA Report there are no potentially significant interactions identified between Land, Soils and Hydrogeology, and Hydrology during the operational phase.

Biodiversity

Dust emissions have the potential to settle on plants causing impacts to local ecology. Mitigation measures during the construction phase of the proposed development will ensure that dust generation is minimised and the effect on biodiversity will be ***short term, imperceptible and neutral***.

There is potential for impacts to biodiversity associated with uncontrolled discharges to surface waters. In this instance the surface water system discharges into the ground and the stormwater sewer which ultimately discharges into the Hollywood/Mooretown Stream and Tolka River, and the foul water provision discharges to Ringsend WWTP. There is a hydrological connection or pathway through the Hollywood/Mooretown Stream, Tolka River and Dublin Bay with a number of nationally and internationally important habitats; however, this is considered to be of negligible significance due to the significant distance from the site (c. 20 km). The use of standard construction control measures as provided in the CEMP and the sustainable urban drainage systems, along with the water treatment processes and monitoring of treated effluent at Ringsend will result in no potential for impact on biodiversity downstream of Ringsend WWTP. The impact upon biodiversity from hydrological impacts would be long-term and neutral.

Taking into account the design and mitigation measures set out in Chapter 10 (Hydrology), and Chapter 8 (Biodiversity) of this EIA Report, there remains a residual negative interaction between Hydrology and Biodiversity during the construction phase. The interaction is considered to be ***negative, not significant, and short term***.

There is potential for impacts to biodiversity associated with uncontrolled discharges to surface waters. In this instance the surface water system discharges into the ground and the stormwater sewer which ultimately discharges into the Tolka River, and the foul water provision discharges to Ringsend WWTP. There is a hydrological connection or pathway through the Hollywood/Mooretown Stream, Tolka River and Dublin Bay with a number of nationally and internationally important habitats; however, this is considered to be of negligible significance due to the significant distance from the site (c. 20 km). The design of sustainable urban drainage systems, along with the water treatment processes at Ringsend will result in no potential for impact on biodiversity downstream of Ringsend WWTP. The impact upon biodiversity from hydrological impacts would be ***long-term and neutral***.

Taking into account the design and mitigation measures set out in Chapter 8 of this EIA Report, the interaction between Hydrology, and Biodiversity during the operational phase is considered to be ***neutral, and long term***.

Air Quality and Climate

Construction phase activities such as land clearing, excavations, stockpiling of materials etc. have the potential for interactions between air quality and land and soils in the form of dust emissions that may deposit in surface waters.

Mitigation measures implemented during the construction phase will ensure that the deposition of dust is minimised. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that there will be no significant interactions between air quality and hydrology. The interaction is considered to be ***negative, not significant, and short term***.

There are no potentially significant interactions identified between Hydrology, and Climate during the construction phase.

Climate change has the potential to lead to increased rainfall in future years which may result in flood impacts and interactions between Hydrology and Land, Soils and Geology. A detailed Site Specific Flood Risk Assessment (SSFRA) was carried out for the proposed development which states that 1% AEP flood event (1 in 100 year) does not inundate the site. The development was concluded as having a good level of flood protection up to the 100-year return event. For pluvial floods exceeding the 100-year capacity of the drainage system then proposed flood routing mitigation measures are recommended (refer to 'Site Specific Flood Risk Assessment' prepared by DBFL Consulting Engineers (2023) and submitted under a separate cover as part of the planning application) for further information.

The new infrastructure is designed to accommodate rainfall runoff/ flows up to 1% AEP event. In addition, the surface water network has been designed to include an additional allowance of 20% in rainfall intensities due to climate change.

Therefore it can be determined that there is no significant risk to the proposed development as a result of increased rainfall and climate. No significant interactions between Climate, Hydrology and Land, Soils and Geology is predicted.

Material Assets

There are no potentially significant interactions identified between Hydrology and Material Assets Utilities and Waste (Chapter 17 &18) and Traffic & Transport (Chapter 16) during the construction phase of the proposed development.

The use of SuDS during operations will mean that the development will result in neutral water impacts in the operational phase with regard to runoff rates and flooding risk. As a part of the SuDS features, it is anticipated that small amounts of hydrocarbon sludge waste and debris may be generated in the hydrocarbon interceptors which will treat the surface water run-off.

Hydrocarbon sludge waste and debris will be generated in the hydrocarbon interceptors which will treat the surface water run-off from the proposed development during the operational phase. This waste stream will be managed in accordance with the relevant legislation. The interaction is considered to be ***negative, not significant, and long-term.***

19.2.5 Air Quality and Climate

19.2.5.1 Air Quality

Air quality does not have a significant number of interactions with other topics. The most significant interactions are between population and human health and air quality. An adverse impact due to air quality in either the construction or operational phase has the potential to cause health and dust nuisance issues. The mitigation measures that will be put in place at the proposed development will ensure that the impact of the proposed development complies with all ambient air quality legislative limits. Therefore, the predicted impact is ***short-term, imperceptible*** and ***negative*** with respect to population and human health during construction and ***long-term, imperceptible*** and ***neutral*** during operation phase.

Interactions between air quality and traffic (Chapter 16) can be significant. With increased traffic movements and reduced engine efficiency, i.e. due to congestion, the emissions of vehicles increase. The impacts of the proposed development on air quality are assessed by reviewing the change in annual average daily traffic on roads close to the site. In this assessment, the impact of the interactions between traffic and air quality are considered to be ***long-term, imperceptible*** and ***neutral***.

Construction phase activities such as land clearing, excavations, stockpiling of materials etc. have the potential for interactions between air quality and land and soils in the form of dust emissions. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that there will be no significant interactions between air quality and land and soils.

As set out in Chapter 9 (Land, Soils, Geology and Hydrogeology), dust generation can occur during extended dry weather periods as a result of construction traffic. Dust suppression measures (e.g. dampening down) will be implemented as necessary during dry periods and vehicle wheel washes will be installed, for example. The works involve stripping of topsoil and excavations, which will remove some vegetation such as trees and scrub. It will also generate dust and potentially impact on the air quality in the locality. However, the generation of dust will be temporary during construction phase and is not anticipated to have a significant impact on biodiversity.

The impact of the interactions between land, climate, soils and geology, biodiversity and air quality are considered to be *short-term, imperceptible* and *neutral*.

No other significant interactions with air quality have been identified.

19.2.5.2 Climate

Climate has the potential to interact with a number of other environmental attributes, including Chapter 8 (Biodiversity), Chapter 9 (Land, Soils, Geology and Hydrogeology), Chapter 10 (Hydrology), Chapter 15 (Microclimate (Daylight and Sunlight)) Chapter 16 (Traffic and Transportation) and Chapter 17 (Material Assets -Waste). Interactions occur due to the impact on the chapter from climate change occurring (i.e. biodiversity or hydrology) or due to GHG emissions being generated (i.e. Material Assets – Waste or Traffic and Transportation).

The impact of flood risk has been assessed and the surface water drainage network will be designed to cater for run-off from the building and the surrounding hardscaped areas in accordance with a minimum 1 in 100-year event plus 20% climate change allowance. Waste management measures will be put in place to minimise the amount of waste entering landfill, which has higher associated embodied carbon emissions than other waste management such as recycling. In addition, climate impacts will interact with the proposed developments design both with respect to embodied carbon but also through its vulnerability to future climate change impacts (e.g. wind loading, extreme temperatures). The building detailed design will be finalised with potential future climate hazards in mind. Building design will also take into account energy efficiency measures to reduce construction phase and operational carbon emissions. The impact of the interactions between design considerations (flood mitigation design, landscaping design and building design) and climate are considered to be *long-term and significant*.

19.2.6 Noise and Vibration

Noise and vibration (Chapter 12) interacts with **Traffic and Transportation (Chapter 16)**, in that increased traffic volumes during the construction and operational phases have the potential to increase background noise levels.

This also interacts with the **Population and Human Health (Chapter 7)** as noisy construction activities, plant and equipment and construction traffic has potential to impact on nearby receptors during the construction phase. The predicted residual impact post mitigation during construction phase is expected to be *neutral to negative, imperceptible to moderate* and *short-term* as a result of this

interaction at the closest noise sensitive receptors. There is also potential for nuisance and disturbance due to the operation of Dublin Airport during operational phase. The predicted residual impact post mitigation during operational phase is expected to be **neutral, not significant** and **long-term** as a result of this interaction.

19.2.7 Landscape and Visual

The main interactions of importance to landscape and visual relate to **Biodiversity (Chapter 8)**. The mitigation measures for the proposed development have been designed to minimise the potential impact that the construction and operational phases may have on the receiving environment.

The landscape design for the proposed development takes into account the requirements to maximise the benefits to biodiversity, both locally and within the wider landscape. The landscape scheme (Landscape Report and Landscape Masterplan, prepared by Bernard Seymour Landscape Architects and submitted as part of this application under separate cover) proposes significant ecologically sensitive planting to provide for potentially diverse habitats. With the mitigation measures in place, the predicted impact during construction phase due to this interaction will be **negative, slight and short-term** and during operational phase will be **neutral to positive over time, slight and long term**.

19.2.8 Microclimate- Daylight and Sunlight

The key interaction between this chapter and other specialist chapters of the EIAR is with Chapter 7 (Population & Human Health), since impacts in relation to daylight and sunlight availability, e.g. overshadowing of neighbouring buildings, can negatively or positively affect residential amenity in the receiving environment. Following the BRE Guide's recommendations for essential daylight and sunlight, internal daylighting is required to meet more than 50% of the targeted illuminance in lux throughout the year. In terms of sunlight, each unit needs to receive over 1.5 hours of sunlight on March 21st. As detailed above, 100% of rooms assessed were in excess of the BRE Guide recommendation for daylight and also 100% of the assessed units exceeded the minimum guideline recommendation. The results demonstrate each of the amenity open spaces easily achieve compliance with the BRE guidance, with 100% of amenity open space across the site receiving two hours or more of sunlight on 21st March and the shared residential amenity spaces for the Apartment, Duplexes and Later Living Units (Bungalow, H1 & H2 types) were all fully compliant. **No impacts** to neighbouring residential areas are predicted, and the proposed development itself will provide well-lit homes and amenity areas.

19.2.9 Traffic and Transportation

The key interactions between traffic and transportation and other EIAR topics are as follows:

Population and Human Health (Chapter 7)

Impacts on the operation of the local road network, and traffic-related noise and air quality effects have the potential to affect the local population.

Land, Soils, Geology and Hydrogeology (Chapter 9)

Impacts on existing flow conditions or effects on surface or ground water quality due to the generation of additional vehicular traffic due to run-off from vehicles usage. Increased vehicular traffic can impact surface and groundwater quality by generating run-off with pollutants. Analysing soils and hydrology helps assess potential effects and develop mitigation strategies.

Air Quality and Climate (Chapter 11)

Vehicular emissions contain air pollutants, including greenhouse gases with climate impacts, and gases / particulates with potential human health impacts.

Noise and Vibration (Chapter 12)

Traffic generates noise, with the associated potential for adverse human health impacts.

Material Assets – Waste (Chapter 17)

Waste generated on site will have to be transported off-site generating traffic on surrounding roads.

No significant impacts on traffic and transportation are predicted in relation to any of the above-listed interactions. For further information, refer to Chapter 16 and the above-listed other specialist chapters.

19.2.10 Material Assets- Waste

The identified interactions between the management of waste arisings during both the construction and operational stages are as follows:

Population & Human Health (Chapter 7)

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

Land, Soils, Geology & Hydrogeology (Chapter 9)

It is estimated that c. 55,000m³ (c.88,000 tonnes) of soils and stones shall be excavated to facilitate the development of which c. 45,000m³ (c.72,000 tonnes) of the material re-used as infill. Approximately 10,000m³ (c.16,000 tonnes) may be exported of site for disposal at a suitably licenced facility. This represents a re-use of c. 80% of existing soils and stones on-site. The implementation of the RWMP will ensure that potentially hazardous materials such as hydrocarbon oils are managed during the construction phase to reduce the potential for ground, surface water or groundwater contamination. Adherence to the RWMP, will ensure the effect is *long-term, imperceptible and neutral*.

Traffic & Transportation (Chapter 16)

The construction phase will see an increase in local traffic movements associated with the export of construction waste materials from the site. The effect will be *short-term, imperceptible and neutral*. The operational phase will see an increase in local traffic movements associated with the export of domestic waste from the site. The effect will be *long-term, imperceptible and neutral*.

19.2.11 Material Assets- Services

Material Assets- Services (Chapter 18) interacts mainly with **Chapter 7 (Population & Human Health)**. In worst-case scenarios (e.g. where works are not carried out safely or in accordance with the applicable codes and standards), accidents during works (e.g. contact with live powerline or gas explosions) or water quality impacts resulting from works to utilities infrastructure, have the potential to result in human health impacts. Service outages resulting from works can temporarily affect the residential amenity of local residents and / or the operation of local businesses. The mitigation measures that will be put in place at the proposed development will ensure that the impact of the proposed development

complies with all the specifications and guidelines of the relevant service providers. Therefore, the predicted impact ***no likely significant impact*** is envisaged with respect to population and human health during construction or operational phase.

20 Cumulative Impacts

20.1 Introduction

This chapter discusses the potential for cumulative impacts to arise as a result of the proposed development in combination with other projects.

Annex III (3)(g) of the EIA Directive requires the EIAR to include the potential for significant cumulative effects of projects on the environment and it states to include “*the cumulation of the impact with the impact of other existing and/or approved projects.*” Annex IV (5)(e) of the EIA Directive states that EIAR should include “*the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources.*”

The European Commission *Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions* (1999) define cumulative impacts as “*Impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project*” (p. iii).

Similarly, the EPA guidelines define cumulative effects as “*The addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects*” (Section 3, p. 52). The EPA guidelines further state that:

“While a single activity may itself result in a minor impact, it may, when combined with other impacts (minor or insignificant), result in a cumulative impact that is collectively significant. For example, effects on traffic due to an individual industrial project may be acceptable; however, it may be necessary to assess the cumulative effects taking account of traffic generated by other permitted or planned projects. It can also be prudent to have regard to the likely future environmental loadings arising from the development of zoned lands in the immediate environs of the proposed project.” (Section 3, p. 54)

20.2 Assessment of Cumulative Impacts

Cumulative impacts have been assessed by taking account of the baseline environment and the predicted impacts of the construction and operation of the proposed development in combination with those of any other existing and / or permitted projects in the zone of influence.

Each of the specialist contributors to this EIAR have considered the potential for cumulative impacts to arise, with particular reference to the projects listed in this Chapter.

This EIAR has considered three categories of plans / projects in the vicinity of the proposed development based on the following:

- Existing or commenced projects with a valid planning permission within the vicinity of the proposed development that have the potential for significant cumulative effects with the proposed development;
- Approved projects with a valid planning permission that have not commenced construction within the vicinity of the proposed development that have the potential for significant cumulative effects with the proposed development; and
- Proposed projects that do not have planning permission but have the potential for significant cumulative effects with the proposed development.

20.3 Key Plans & Developments

A search for other developments that may have the potential to result in cumulative impacts with the proposed development was carried out, and a list of key developments for consideration was developed (**Table 20.1**). In identifying these developments, the following principal sources were consulted (as of August 2023):

- Fingal County Council planning portal;
- Fingal County Council weekly lists of applications received;
- An Bord Pleanála (ABP) website;
- Department of Housing, Local Government and Heritage [EIA Portal](#);
- *Fingal Development Plan 2023-2029*;
- *Kilmartin Local Area Plan 2013-2019 as extended* (expired on 11th May 2023).

Table 20.1 provides a list of relevant permitted and proposed developments in the vicinity of the site, which have been given due consideration in the assessment of potential cumulative impacts. **Figure 20.1** maps these developments in relation to the proposed development site.

It is noted that the list of developments in this Chapter is non-exhaustive. There are a wide variety of other applications and permissions in the area. However, minor developments, such as one-off housing, erection of signage and other minor structures and extensions, have been excluded due to the exceedingly low likelihood of significant cumulative impacts. Lapsed and refused permissions have also been excluded.

20.4 Conclusion

For topic-specific assessments of the potential for cumulative impacts, please refer to the foregoing specialist EIAR chapters. Assuming the full and proper implementation of the mitigation measures set out in this EIAR, no significant negative cumulative impacts are likely to arise during the construction or operational phases of the proposed development.

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Table 20.1 Permitted and proposed developments to which regard has been had in the assessment of potential cumulative impacts

Reference	Applicant	Location	Description – overview	Status	Environmental Assessments
Existing Developments					
FW15A/0009 ; FW16A/0191 ; PL06F.248736	Kavcre Tyrrelstown Limited	Lands at Hollywoodrath, Hollywoodstown, Dublin 15 located to the north of the M2/N3 link road	Bay Meadows Permission for residential development on 8.33 ha site at Hollywoodrath, consisting of a total of 175 no. two and a half storey dwelling units and all associated site and infrastructural works; including foul and surface water drainage, surface car parking, public open space, landscaping, boundary treatment, new internal roads, cycle paths and footpaths. FW16A/0191 (PL06F.248736): Permission for amendments and alterations with the effect of increasing total number of units to 185.	Completed	EIAR
FW14A/0108 ; PL06F.244736 ; FW16A/0099 ; FW16A/0148 ; FW17A/0016 ; FW18A/0132 ; FW19A/0058 ; FW14A/0108/E1 ; FW18A/0132/E1 ; FW16A/0148/E1 ; FW16A/0099/E1 ; FW20A/0197	Gembira Ltd.	Lands At Hollywoodrath On The Southern Side Of The Junction Of Church Road And Ratoath Road, Hollystown, Dublin 15	Hollywoodrath Residential Ten-year planning permission for residential development at Hollywoodrath, Hollystown, Dublin 15. The site is located on the southern side of the junction of the Ratoath Road and the R121 (Church Road), and to the north of the M2/N3 link road. The development includes c. 481 no. dwelling units, a crèche, internal road network, and associated ancillary works.	Completed	EIAR; SSFRA
FW18A/0117	Lidl Ireland	Block E, Tyrrelstown Town Centre, Hollywood Road, Mulhuddart, Dublin 15	Lidl Supermarket Demolition of the existing store, and ancillary retail unit and sub-station. The construction of a licensed discount food store with ancillary off-licence sales and two retail units and public realm improvements, the provision of car and cycle parking, a new sub-station building, trolley bay, boundary treatments, hard and soft landscaping, drainage and underground services as required.	Completed	

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Reference	Applicant	Location	Description – overview	Status	Environmental Assessments
FW21A/0042	Glenveagh Homes Limited	Hollywoodrath Road (R121) in Hollystown Dublin 15	Hollywoodrath Residential Development- Hollystown Site 1 Construction of 69 residential units. The development will also include, new foul outfall sewer to connect to the existing foul sewer to the south of Powerstown Road including decommissioning of the existing Pump House south of Hollystown Park. Construction of new vehicular entrance off Hollywoodrath Road (R121), new footpath and cycle path along north and west of R121, provision of 2no. new Toucan crossings on the R121. Development of Class 1 open space and associated works. Development of associated ancillary site development infrastructure.	Under construction Lodged 05 March 2021; Registered 24 June 2021; Decision 20 July 2021; Final Grant 24 August 2021.	AA Screening; EIA Screening; SSFRA.
PARTXI/006/18	Fingal County Council	Wellview, Mulhuddart, Dublin 15	Construction of 20 no. dwellings and all associated site development works, including 4 no. 2-bedroom, 3-person, 2-storey house, 3 no. 2-bedroom, 3-person, 2-storey houses, 7 no. 3-bedroom, 5-person, 2-storey houses, 6 no. 4-bedroom, 7-person, 2-storey houses. All dwellings will be provided with private open space. A total of 44 no. car parking spaces will be provided across the development.	Under construction Lodged 25 February 2019; Decision 08 April 2019	EIA Screening Report; AA Screening Report
PARTXI/010/19	Fingal County Council	Church Fields, Mulhuddart, Dublin 15	Construction of 70 no. dwellings, including 7 x 1-bed units, 19 x 2-bed units, 34 x 3-bed units and 10 x 4-bed units. All associated site development works including access road, footways, site boundaries, open space, drainage, public lighting, utilities and services. All dwellings will be provided with private external open space (gardens), and there will be a mix of 116 in-curtilage and 20 off street parking bays, a total of 136 bays.	Under construction Lodged 09 December 2019; Decision 10 February 2020	EIA Screening Report, AA Screening Report
PARTXI/011/19	Fingal County Council	Church Fields, Mulhuddart, Dublin 15	Construction of a 690m link road (comprising of 380m upgrade of existing Wellview Avenue and 310m new construction) linking Ladyswell Road to the south and Damastown Avenue to the north. Provision of 3m wide vehicle lanes in each direction along the link road with 3m wide tree lined central median to separate lanes. Provision of 3m wide footpath, 2m wide off-road cycle tracks and 1.75m wide tree lined verge on each side of the link road. Provision of junction accesses to existing and	Under construction	EIA Screening Report

Hollystown-Kilmartin Site 4

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Reference	Applicant	Location	Description – overview	Status	Environmental Assessments
			future developments with National Cycle Manual compliant pedestrian and cyclist junction crossings. Provision of pedestrian crossings and toucan crossings at various locations along the proposed link road, Damastown Avenue and on the arms of the existing roundabouts on Damastown Avenue. Provision of a cycle friendly roundabout on the link road. Construction of a 1.5km long 4m wide 2-way off-road cycle track with 3m wide pedestrian footpath along Damastown Avenue linking the proposed new link road to the two schools on the Powerstown road and the proposed parkland adjacent to Church Road. The combined new cycle-track and footway will connect to the existing footpath and cycle infrastructure in the surrounding area. Fencing, earthworks and pavement, utility provisions, drainage, landscaping and accommodation works. All associated site works.		
Permitted developments					
TA06F.312271 SHDW/003/21	Glenveagh Homes Limited	Townlands of Hollystown, Kilmartin, Hollywoodrath, Cruiserath, Yellow Walls, Powerstown & Tyrrelstown, Dublin 15	Hollystown Site 2+3 and Local Centre SHD A 10 year planning permission request for SHD comprising of 548no. residential units (147 apartments, 401 houses), retail/café unit, 2no. creches, 1 no. Montessori, 1 no. community hub, car and bicycle parking, open space, public realm, vehicular access, construction of new foul outfall to the south of Powerstown Road which will include decommissioning of the existing Pump House south of Hollystown Park and ancillary site development infrastructure.	Lodged 17 December 2021; Granted permission on 23 March 2023	AA Screening; EIAR; SSFRA.
FW21A/0003	Montague Ventures Limited	Hollystown, Mulhuddart, Dublin 15	Hollywoodrath House, Hollywood Construction of 52no. residential units (30no. houses and 22 no. apartments), private rear garden/balcony or terrace, refurbishment of an existing former barracks building on site, public open space, 81no. car parking and 65no. bicycle parking, wastewater pumping station, surface water attenuation, landscaping, vehicular access and other ancillary works.	Lodged/Registered 07 January 2021; Refuse Permission 02 March 2021; Appeal Lodged 29 March 2021; Appeal Decision/ Final Grant 26 January 2022	AA screening; EclA.

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Reference	Applicant	Location	Description – overview	Status	Environmental Assessments
FW22A/0263	Department of Education	Hollywoodrath, Hollywoodrath Avenue/Bay Meadows Avenue (also known as The Avenue), and abutting the rear gardens of dwellings fronting, Hollywoodrath Crescent, Hollystown, Dublin 15	The development will consist of a 24 classroom Primary School extending to 2 storeys in height. The proposal primary school will also incorporate a 2 classroom special educational needs unit in addition to all ancillary pupil and teacher facilities including external hard and soft play areas and 2 no. ballcourts. The proposed building will incorporate photovoltaic panels on roofs with a bio mass heating unit also proposed. Vehicular access to the development is provided via a new access off Hollywoodrath Avenue along the northern site boundary. Bicycle parking, car parking and bus set down areas are provided within the site boundaries. A separate pedestrian/cyclist access is also proposed off Hollywoodrath Avenue, with a second pedestrian access proposed along the southern site boundary off Bay Meadows Avenue, also known as The Avenue. A new pedestrian crossing on Bay Meadows Avenue also forms part of the proposed development works. A non-vehicular access to the school, for use by emergency services only, is also provided along the southern site boundary. The proposed development also provides for an ESB sub-station in addition to all associated site development works including alterations to ground levels, on-site external lighting, landscaping and boundary treatment.	Final grant permission on 02 February 2023	AA Screening Report
FW22A/0034	Mrs Noeleen Barry	At lands adjoining 'Duinch' on the Ratoath Road at Hollystown, Hollywoodrath, Dublin 15	Construction of 4no. ground floor shops, a remote work hub, standalone café with outdoor seated dining area and 17no. residential units across 4 individual blocks ranging from one to three storeys.	Lodged 23 February 2022; Registered 17 June 2022; Decision 13 July 2022; Final Grant 16 August 2022.	
FW22A/0142 ; FW21A/0146	Earlsland Corporation Unlimited Company	Site to the north of Northwest Logistics Park, (Formerly known as Northwest Business Park), Ballycoolin, Dublin 15	Northwest Logistics Park Planning permission for the retention and completion of amendments to the development permitted under Reg. Ref. FW21A/0146 (construction of 1no. warehouse/logistics unit, provision of 181np. Car parking spaces, 60 no. cycle spaces, HGV loading bay, access and associated works) on a site to the	Lodged 16 August 2021; Registered 18 November 2021; Final Grant 15 February 2022; Amendment Lodged/Registered 13 July 2022; Decision 05 September 2022;	AA Screening; EIAR.

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Reference	Applicant	Location	Description – overview	Status	Environmental Assessments
			north of Northwest Logistics Park, Ballycoolin, Dublin 15 (formerly known as Northwest Business Park).	Final Grant Permission and Grant Retention 11 October 2022.	
FW22A/0066	Earlsland Corporation Unlimited Company	Site (known as site A), located to the north of Northwest Logistics Park, (NWLP), Ballycoolin, Dublin 15	Site A- Northwest Logistics Park Construction of a high technology manufacturing unit (for the manufacturing of high technology electrical components) and ancillary works.	Lodged/ Registered 07 April 2022; Decision Date 1 June 2022; Final Grant 07 July 2022.	AA Screening; EIAR.
FW22A/0156	Earlsland Corporation Unlimited Company	Mooretown and Northwest Logistics Park, Ballycoolin, Dublin 15	Northwest Logistics Park Construction of 6 no. warehouses/logistics units including ancillary office/administration use and entrance/reception areas over two levels with a combined total floor gross area (GFA) of 50,934 sq.m.	Lodged/Registered 26 July 2022; Decision 15 September 2022; Request for additional information on 15 September 2022; Final grant permission 10 March 2023.	EIAR;
FW20A/0083	Chemco (Ireland) Limited	Damastown Rise, Damastown Industrial Estate, Macetown North, Dublin 15	Damastown Construction of 19,151 sqm of warehousing within 6 No. units for the storage and distribution of materials including chemicals within a proposed secure 33 Acre site with associated ancillary site and civil works.	Lodged 05 June 2020; Registered 22 December 2020; Decision 28 January 2021; Final Grant 11 March 2021.	COMAH land use assessment; EIAR; SSRA.
FW22A/0098	Dublin County Board G.A.A	Townlands of Hollystown and Yellow Walls. On part of the former Hollystown golf course lands, Ratoath Road, Hollystown, Dublin 15	GAA Facility A 10 year planning permission for development of GAA Cluster Facility. This includes 4no. floodlit GAA pitches, renovation and alteration of the former 2 storey clubhouse, development of new two-storey extension, spectator stand to the east of pitch no.1, hurling wall, maintenance and storage building, walking/jogging trail with outdoor exercise equipment, car and cycle parking, and all associated ancillary structures.	Lodged 25 May 2022; Registered 24 October 2022; Notification to Grant permission 17 November 2022.	AA Screening; SSFRA
FW22A/0203	Channor Limited	c. 12.9 ha site located to the northeast of Tyrrelstown townland, Blanchardstown North, Dublin 15.	The diversion of an existing watercourse, (Powerstown Stream) into an existing drainage channel located adjacent to the north, west and east boundaries of the site. The diverted watercourse will incorporate the provision of a riparian zone and a series of swales and ponds. The proposed development will also	Lodged/Registered 13 September 2022; Decision 03 November 2022;	AA screening; EIA Screening; SSFRA

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Reference	Applicant	Location	Description – overview	Status	Environmental Assessments
			comprise the provision of 3 No. pedestrian/cyclist bridges on the north, west and east site boundaries; hard and soft landscaping; boundary treatments; signage; changes in levels; and all associated site development works.	Request for additional information on 03 November 2022; Final grant permission on 28 March 2023.	
FW22A/0300	Alexion Pharma International Operations Ltd.	College Business & Technology Park, Blanchardstown Road North, Blanchardstown, Dublin 15	Expansion of the existing Biopharmaceutical Manufacturing Campus, located at College Business and Technology Park, Blanchardstown, Dublin 15. The proposed expansion will include; a new 5 storey Active Pharmaceutical Ingredient (API) manufacturing building; a new 2 storey chemical materials store; a new 4 storey laboratory building; extensions to the existing warehouse building, including alterations to the previously permitted extension to the warehouse (planning ref. FW21A/0174), a bunded solvent tank storage area including tanker loading and unloading yard, a chemical materials yard including liquid nitrogen storage tank, scrubbers and a thermal oxidiser abatement unit complete with c.46 m high flue stack, a manufacturing building utilities yard including chillers and other miscellaneous plant and equipment, a medium voltage electrical building and solvent area control building, an extension to the existing high level pipe rack connecting all existing and new buildings and yard areas, 2 No. new diesel generators and 2 No. new bunded diesel storage tanks, modifications to site infrastructure, including; addition of 200 new car park spaces on the eastern side of the site, expansion of the site's existing storm water attenuation/fire water retention pond, and alterations and extensions to internal site roads, paving and underground services, enhancements to the site internal and boundary landscaping and provision of a temporary contractor's compound and parking area on lands to the east of the site for the duration of the construction works.	Lodged/Registered 15 March 2023; Decision 13 June 2023.	EIAR; AA Screening Report

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Reference	Applicant	Location	Description – overview	Status	Environmental Assessments
PARTXI/012/21	FCC Architects Department	Churchfields, Mulhuddart, Dublin 15	Churchfields Construction of 300 no. dwellings, 1 no. crèche facility, 1 no. communal facility, 2 no. retail units, Eastern Linear Park and all associated site development works on a 9.47 ha site at Church Fields, Mulhuddart, Dublin 15, and amendments of a section from Damastown Avenue to Wellview Avenue of the previously permitted Church Fields Link Road and Cycleway Networks Project (FCC Planning Ref. No.: PARTXI/011/19).	Lodged/Registered 09 December 2021; Decision 14 March 2022.	
PARTXI/001/22	Fingal County Council	Wellview, Mulhuddart, Dublin 15	Fingal County Council (Architects Department) applied for permission at Wellview Park, Wellview Green and Wellview Terrace comprising of rejuvenation and upgrade Wellview Park and two existing areas of public realm in Wellview Green and Wellview Terrace. Works included pedestrian access points, footpath upgrades, paving and associated drainage works.	Planning permission was granted on 10th October 2022.	EIA Screening Report
Proposed developments (decision pending)					
FW22A/0169	Glenveagh Homes Limited	Local Centre Lands adjacent to the existing Tyrrelstown Local Centre, Hollywoodrath, Dublin 15	Kilmartin Local Centre Construction of local centre facility providing a primary retail unit, storage, staff facilities, service yard, 3no. retail units, café unit and medical centre. The development will also include 157no. car parking spaces and 76no. cycle parking spaces. Road improvement works to the Hollywood Road. Provision of public realm to the south and landscaping throughout and all associated site works.	Lodged 08 August 2022; Request for additional information on 26 September 2022; Grant permission by FCC on 09 June 2023; Appeal to ABP on 06 July 2023-under consideration.	AA Screening; EIA Screening; SSFRA.
FW22A/0204	Kilshane Energy Limited	Kilshane Road, Kilshane, Finglas, Dublin 11	Kilshane Energy Construction of a new Gas Turbine Power Generation Station with an output of up to 293 Megawatts, road improvement works, parking, pumping station, attenuation and associated works.	Lodged/ Registered 13 September 2022; Request for additional information on 07 November 2022; A decision to grant permission by FCC on 23 June 2023;	AA Screening; EIA Screening; SSFRA.

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Reference	Applicant	Location	Description – overview	Status	Environmental Assessments
				Appeal was subsequently lodged on 30 Jun 2023 and is now under consideration by ABP.	
FW22A/0257	CGTD Limited	Townland of Bay, Corduff Road, Ballycoolin, Dublin 15	Warehouse Modification of approved plans Reg Refs FW21A/0077 and FW21A/0222 for the change of use of the revised warehouse/logistics building including 2 storey ancillary office accommodation (529 sq.m) in reg ref FW21A/0222 to an energy centre within the approved building structure containing 12 no generator units with associated flues to power the approved 2 no data storage buildings on this site; external plant at approved loading bays with 2.75m high acoustic louvre screen surround comprising a radiator farm with 12 no radiators and 2 no black start (emergency) diesel generators, 1 no water sprinkler, pump house (11.65 sq.m) and 1 no tank, 1 no gas skid, reduced car parking from 45 to 13 no spaces and ancillary site development works	Lodged/ Registered 02 November 2022; A decision to grant permission by FCC on 14 December 2022; Appeal was subsequently lodged on 19 Jan 2023 and is now under consideration by ABP	EIA Screening; SSFRA.
FW23A/0191	IPUT plc	Northwest of the Cherryhound-Tyrrelstown M2-M3 Link Road and, southeast of the R121 in the townlands of Killamonan, Hollywoodrath and Bay, County Dublin	The development will consist of: the provision of 12 no. logistics/warehouse buildings, each building will include an attached 2 to 3-storey ancillary office building ranging in height; associated yard areas, trailer and truck parking, and car and bicycle parking spaces at surface level; ancillary facilities to include a campus management/community with associated outdoor sports/amenity space, a retail/café unit and 12 no. substations; internal pedestrian, bicycle and vehicular circulation roads, lanes and pathways, with primary access via the existing roundabout at Cherryhound-Tyrrelstown M2-M3 Link Road and secondary emergency access via R121; new pedestrian/bicycle links to adjoining lands, including the provision of a pedestrian crossing and bus shelter at Hollywoodrath Drive, and pedestrian/bicycle links to Hollywoodrath Drive, the R121 and lands to the northeast; associated landscaping, public open space, boundary	Lodged/ Registered 28 June 2023 Request for further information on 21 August 2023; Decision pending	EIAR; AA screening report; SSFRA.

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Reference	Applicant	Location	Description – overview	Status	Environmental Assessments
			treatments, lighting, signage and CCTV; associated drainage, attenuation and service connections; and all associated temporary construction compounds and site works.		
FW23A/0036	MCPS Investments Homes Limited	Hollywoodrath House (A Protected Structure), Lands at Ratoath Road and Gallanstown Road, Hollystown, Dublin 15	Planning Permission for a residential development of lands at Ratoath Road and Gallanstown Road, Hollystown, Dublin 15. The site is within the curtilage of Hollywoodrath House (a protected Structure). The proposed development will consist of the construction of 96 no. dwellings (9 no. 2-bedroom, 2 storey terraced dwellings; 60 no. 3-bedroom, 2- and-2.5 storey, terraced and semi-detached dwellings; 27 no. 4-bedroom, two-storey, semi-detached and detached dwellings) with 192 no. car parking spaces and 62 no. bicycle parking spaces. The proposed development will provide public open space, landscaping, trees, and boundary treatments; public lighting; bin and cycle storage; ESB substation; foul drainage works along Ratoath Road together with all associated site infrastructure and engineering works necessary to facilitate the development. Vehicular and pedestrian access is proposed via Gallanstown Road together with pedestrian access, including 2 no. new pedestrian crossings, at Ratoath Road.	Lodged/ Registered 23 February 2023; Request for further information on 17 April 2023; Decision pending	AA screening report
JA06F.317346	Fingal County Council	Church Fields East	Proposed development of 217 no. residential units, consisting of 121 no. houses and 96 no. apartments, ranging from 2-4 storeys in height, in a mixed tenure development	Lodged/ Registered 07 June 2023 Decision pending	EIAR; AA screening report; SSFRA.
FW22A/0308	Universal Developers LLC	Cruiserath Road, Dublin 15	The proposed development consists of the following: Construction of three data centre buildings (Data Centre E, Data Centre F, and Data Centre G), each over two levels (with Data Centre F and G each including two mezzanine levels). Emergency generators and associated flues will be provided within compounds adjoining each of the three data centre buildings (1 no. for Data Centre E, 19 no. for Data Centre F, and 19 no. for Data Centre G). The development includes one diesel tank and two filling areas to serve the proposed emergency	Grant time extension on 29 June 2023; Request for additional information on 17 February 2023.	EIAR

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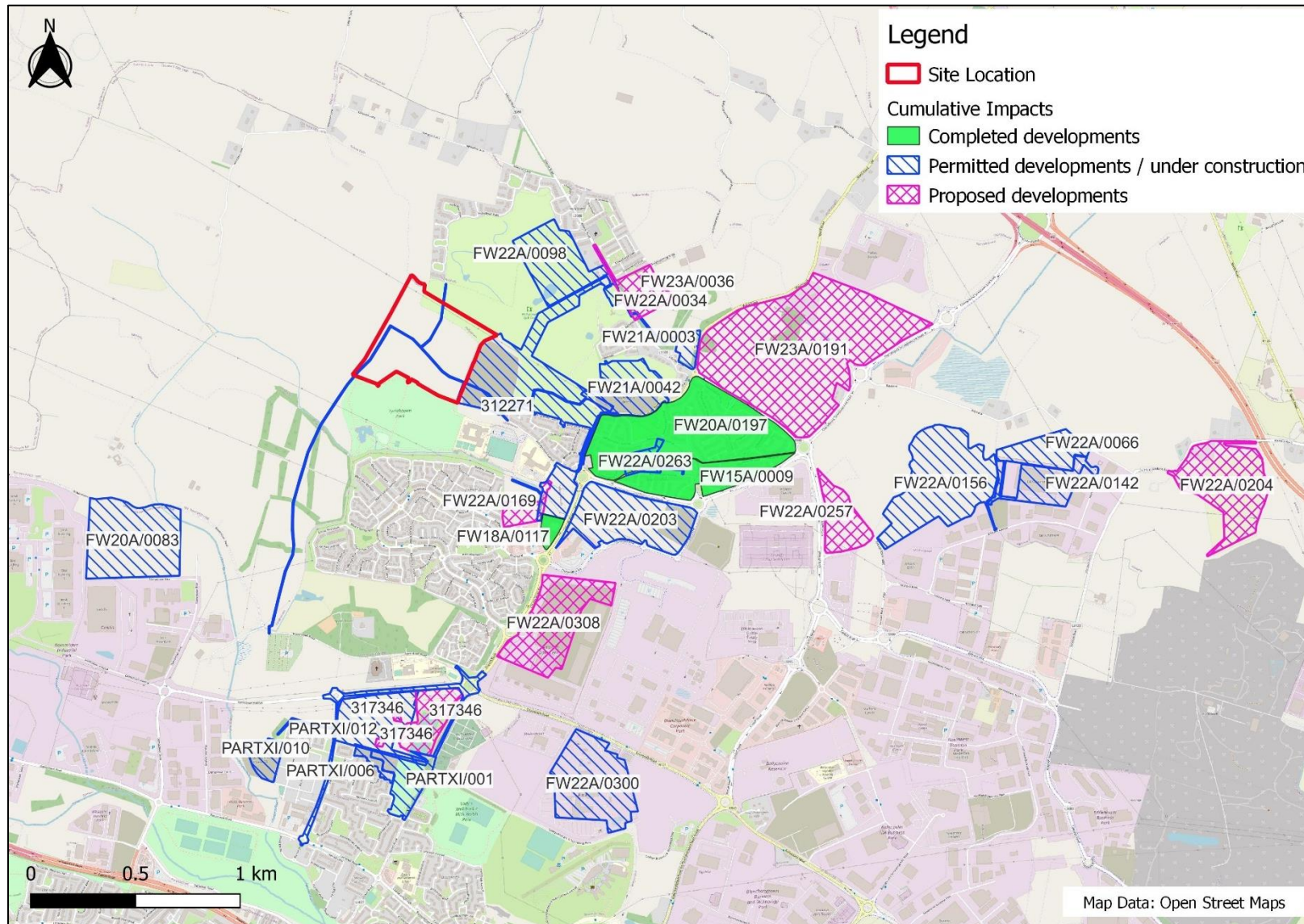
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Reference	Applicant	Location	Description – overview	Status	Environmental Assessments
			generators. Provision of ancillary structures including two MV buildings, water storage tanks and three bin stores. Construction of access arrangements and internal road network and circulation areas, footpaths, provision of car parking (105 no. spaces), motorcycle parking (12 no. spaces) and bicycle parking (56 no. spaces), hard and soft landscaping and planting (including alteration to a landscaped berm to the north of proposed Data Centre E), lighting, boundary treatments, and all associated and ancillary works including underground foul and storm water drainage network, and utility cables.		

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Figure 20.1 Permitted and proposed developments to which regard has been had in the assessment of potential cumulative impacts



21 Mitigation Measures & Monitoring

21.1 Introduction

This chapter collates the mitigation measures and monitoring set out in the preceding chapters of the EIAR. Note that this section does not include ‘mitigation by design’, i.e. features already integrated into the proposed development (as assessed) that mitigate environmental impacts.

The following specialist chapter has not proposed mitigation measures beyond that which is already integrated into the particulars of the proposed development:

- Chapter 15: Microclimate – Daylight & Sunlight.

21.2 General Mitigation Measures

Table 21.1 Mitigation measures - General

Ref.	Mitigation measure
Construction phase	
GE01	In order to minimise the volume of material being exported off-site, excavated material will be reused on-site (e.g. as fill material) where feasible.
GE02	Hydrocarbons, solvents and other such hazardous substances will be stored in secure, bunded hardstanding areas.
GE03	Re-fuelling and servicing of construction plant and machinery will only be permitted at suitably located, designated hardstanding areas.
GE04	Spill kits will be present on-site at all times.
GE05	The proposed construction phase working hours are as follows, subject to conditions of the planning authority: ■ Monday – Friday: 08:00 – 19:00 ■ Saturday: 08:00 – 14:00 ■ Sundays and Bank Holidays: No works Any works proposed outside of these hours, e.g. for water mains / foul drainage connections, will be subject to prior approval by Fingal County Council.
GE06	Construction & Environmental Management Plan A Construction & Environmental Management Plan (CEMP) has been prepared in respect of the proposed development by DBFL Consulting Engineers (2023) (refer to standalone document submitted under separate cover). It contains best practice measures and protocols to be implemented during the construction phase of the proposed development to avoid / minimise environmental impacts. In the preparation of this Environmental Impact Assessment Report, regard has been had to the mitigation measures and protocols proposed in the CEMP. The appointed contractor will be responsible for the implementation of the CEMP. The contractor will appoint a suitably qualified Site Environmental Manager (SEM) with responsibility for overseeing the implementation of the CEMP (and all construction phase environmental commitments). To ensure the CEMP remains fit for purpose, it will be maintained as a live document. The appointed contractor will be responsible for updating the CEMP, as required; e.g. to reflect the publication of relevant new or revised guidelines and / or new statutory requirements. The full schedule of environmental commitments (i.e. all mitigation measures set out in the CEMP and Environmental Impact Assessment Report submitted as part of the planning application, as well as any applicable conditions of development consent) will be included in the CEMP by the appointed contractor.

Ref.	Mitigation measure
GE07	Dust Management Plan A Dust Deposition Monitoring Plan (Chapter 11) has been prepared by AWN Consulting for the construction phase of the proposed development, the implementation of which will provide for the proactive control of fugitive dust. The main contractor will be responsible for the coordination, implementation and ongoing monitoring of the Dust Management Plan.
GE08	Construction Traffic Management Plan Prior to works commencing on-site, a Construction Traffic Management Plan will be prepared by the appointed contractor in accordance with the following guidance documents: ■ Department of Transport's <i>Traffic Signs Manual</i> (2010), Chapter 8: Temporary Traffic Measures and Signs for Roadworks; ■ Department of Transport's <i>Guidance for the Control and Management of Traffic at Roads Works – 2nd Edition</i> (2010); and ■ Any additional requirements detailed in the Design Manual for Roads and Bridges (DMRB) & Design Manual for Urban Roads & Streets (DMURS).
GE9	Resource & Waste Management Plan A project-specific Resource & Waste Management Plan (RWMP) has been prepared by Byrne Environmental Consulting Ltd (2023) in line with the requirements of the EPA '<i>Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects</i>' (2021), and is included as part of the planning documentation. The implementation of the mitigation measures presented in the RWMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the excavation and construction phases of the proposed development. Prior to commencement, the appointed Contractor(s) will be required to refine / update the RWMP in agreement with FCC, detailing specific measures to minimise waste generation and resource consumption, and provide details of the proposed waste contractors and destinations of each waste stream. The Contractor will be required to fully implement the RWMP throughout the duration of the proposed construction phase.
GE10	Arboricultural Method Statement A Tree Survey Report has been prepared in respect of the proposed development by Independent Tree Surveys (2023), and submitted under separate cover as part of the planning application. It contains an Arboricultural Method Statement and general recommendations in relation to tree protection on construction sites. The method statement and recommendations contained in the Tree Survey Report shall be integrated into the final CEMP, and implemented in full during the proposed construction works.
Operational phase	
GE11	Mobility Management Plan A Mobility Management Plan (MMP) has been prepared by DBFL Consulting Engineers (2023) for the operational phase of the proposed development (refer to standalone document submitted under separate cover), to promote sustainable mobility among the residents of the proposed development through a range of measures. The Operator of the site during the operational phase will be responsible for ensuring – allocating personnel and resources, as needed – the ongoing implementation of the MMP. This is intended to be a live document, to be updated by the Applicant / Operator, where appropriate, e.g. to ensure the Plan remains fit for purpose and up-to-date with relevant policy.
GE12	Operational Waste Management Plan

Ref.	Mitigation measure
	An Operational Waste Management Plan (OWMP) has been prepared by Byrne Environmental Consulting Ltd (2023), containing measures to promote operational phase waste management in accordance with the waste hierarchy, i.e. high rates of reuse, recycling and recovery. The Operator / Facilities Management of the site during the operational phase will be responsible for ensuring – allocating personnel and resources, as needed – the ongoing implementation of the OWMP. This is intended to be a live document, to be updated by the Applicant / Operator, where appropriate, e.g. to ensure the Plan remains fit for purpose and up-to-date with relevant policy.

21.3 Specific Mitigation & Monitoring Measures

21.3.1 Population & Human Health

Table 21.2 Mitigation measures - Population and Human Health

Ref.	Mitigation measure
Construction phase	
PHH01	A Construction and Environmental Management Plan (CEMP) has been prepared in respect of the proposed development by DBFL Consulting Engineers (2023) (refer to document submitted under separate cover). The CEMP will remain a 'live document' and will be further updated by the Contractor (subject to planning approval) in advance of the proposed works, in agreement with Fingal County Council. The CEMP will be fully implemented throughout the proposed works. It will set out the measures to be implemented during the proposed works to mitigate potential impacts on the environment and local population, e.g. measures in relation to good housekeeping, site hoarding and security, traffic management, pollution control and safety.
PHH02	A Community Liaison Officer (CLO) will be appointed by the contractor for the duration of the construction phase. They will be responsible for keeping the local community and businesses informed of the timing and duration of potentially disruptive works, and for receiving and addressing concerns of local residents and businesses in relation to the proposed works.
PHH03	Chapter 11 (Air Quality & Climate) includes a suite of mitigation measures to minimise air quality (including dust) impacts during the construction phase. Dust Management Plan included in Appendix 11.1 , shall be finalised by the appointed contractor in agreement with Fingal County Council, and implemented during the proposed works;
PHH04	Chapter 12 (Noise & Vibration) includes a suite of mitigation measures to minimise noise impacts during the construction phase. Mitigation measures are included in relation to selection of quiet plant, noise control at source, screening, adherence to noise limits, community liaison and project programme / phasing.
PHH05	Chapter 13 (Landscape & Visual) includes a number of mitigation measures to minimise the impacts of the proposed works on landscape and visual amenity. These include measures in relation to site screening and tree protection.
PHH06	Chapter 16 (Traffic & Transportation) includes a suite of measures in relation to construction traffic and parking management to minimise the impacts of construction traffic on the local community and the operation of the existing road network in the area. It requires the implementation of a Construction Traffic Management Plan, to be prepared by the appointed contractor during pre-construction phase in agreement with Fingal County Council.

Ref.	Mitigation measure
PHH07	Chapter 17 (Material Assets - Waste) includes a suite of measures in relation to management of construction waste to minimise the impacts of all site construction activities. A Resource and Waste Management Plan prepared as part of the application shall be implemented throughout the construction phase of the proposed development.
PHH08	Chapter 18 (Material Assets – Services) includes a suite of measures in relation to management of services in the vicinity of the works and regard shall be had to the Gas Networks Ireland Guidelines for Designers and Builders – Industrial and Commercial (Non-Domestic) Sites (2018), the Health & Safety Authority (HSA) Code of Practice for Avoiding Danger from Underground Services (2016), and the ESB Networks & Health and Safety Authority Code of Practice for Avoiding Danger from Overhead Electricity Lines (2019).
Operational phase	
PHH09	Chapter 16 (Traffic & Transportation) includes a suite of measures in relation to mobility management and car parking management during the operational phase. It requires the implementation of a Mobility Management Plan, to encourage sustainable travel patterns among residents of the proposed development.
PHH10	Chapter 13 (Landscape & Visual) includes a number of mitigation measures to minimise the impacts of the proposed works on landscape and visual amenity. These include measures in relation to good quality architectural design, provision of open spaces, retention, enhancement and management of existing hedgerows, enhanced and additional tree planting etc.
PHH11	Chapter 17 (Material Assets- Waste) includes a suite of measures in relation to management of operational phase waste to minimise the impacts of the operational phase of the proposed development. An Operational Waste Management Plan prepared as part of the application shall be implemented throughout the operational phase of the proposed development.

Table 21.3 Monitoring - Population and Human Health

Phase	Monitoring measure
Construction	Monitoring and maintenance recommended in Chapters 11 (Air Quality & Climate), 12 (Noise & Vibration), 16 (Traffic & Transportation), 17 (Material Assets - Waste) and 18 (Material Assets – Services) shall be implemented in full during the construction and / or operational phases of the proposed development, as specified in those respective chapters. Beyond that which has been recommended elsewhere in this EIAR, no additional monitoring is considered necessary in respect of population and human health.

21.3.2 Biodiversity

Table 21.4 Mitigation measures - Biodiversity

Ref.	Mitigation measure
Construction phase	
BIO01	The proposed development incorporates a comprehensive landscape design, with biodiversity-focussed planting (refer to Chapter 13 (Landscape & Visual, prepared by Brady Shipman Martin) and the Landscape Strategy and Landscape Masterplan drawings, prepared by Bernard Seymour Landscape Architecture (BSLA) and submitted as part of this application under separate cover). The planting and long-term management proposed in the Landscape Strategy will enhance the biodiversity resource on the proposed development site by enhancing the retained habitats (principally the boundary hedges and ditches) and creating new, pollinator-friendly habitats.
BIO02	No designated conservation areas will be impacted in any way by the proposed development and no mitigation measures are required in this regard. Refer to the AA Screening Report that accompanies the planning application for full details in relation to European designated sites.
BIO03	As set out in the BSLA Landscape Strategy and Landscape Masterplan drawings, a significant amount of new planting has been incorporated into the landscape design, and the planting has been designed with a view to maximising the new biodiversity resource at the proposed development site. The proposed planting / landscaping strategy includes a mix of appropriate species, incorporating species that will attract feeding invertebrates, including moths, butterflies and bees. It takes account of and implements the policies and objectives of the <i>All-Ireland Pollinator Plan (2020 - 2025)</i> ³² . As set out in the Landscape Strategy (BSLA, 2023), small orchard-type tree groups, areas of unmowed grass areas and bulb planting for pollinators, and nest boxes, bat boxes and insect hotels will be incorporated in the development.
BIO04	Apart from the provision of 2.25 Ha of Class 2 open spaces throughout the proposed development, additional open space (2.41 Ha) as linear park areas, drain/hedgerow corridor and ancillary spaces and further additional open space (1.86Ha) as linear park areas will be provided. The additional open space includes riparian zones along the existing drains, ancillary spaces and the buffer area under the ESB powerlines. The northern and southern (existing) hedgerows are to be retained, protected and enhanced (except where new connections are required). The eastern hedgerow / tree line is in very poor ecological and arboricultural condition, and is therefore to be replaced with a dense and diverse new native hedgerow. This work will be undertaken under the supervision of the appointed project arborist and project ecologist.
BIO05	The proposed planting schedule contains no invasive species and none will be introduced, either deliberately or inadvertently, to the proposed development site. Appropriate biosecurity measures will be implemented during the construction phase of the proposed development under the scope of a Biosecurity Plan (refer to Appendix 8.2 – Outline Biosecurity Plan).
BIO06	The clearance of scrub and other vegetation that may be suitable for use by nesting birds will be undertaken outside the bird nesting season (avoiding the period 1 March to 31 August). Should the construction programme require vegetation clearance between March and August, and this is unavoidable, bird nesting surveys will be undertaken by suitably qualified ecologists. If no active nests are recorded, vegetation clearance will take place within 24

³² [NBDC \(2021\)](#)

Ref.	Mitigation measure
	hours. In the event that active nests are observed, an appropriately sized buffer zone (up to 5 m radius around the nest) will be maintained around the nest until such time as all the eggs have hatched and the birds have fledged – a period that may be three weeks from the date of the survey. Once it is confirmed that the birds have fledged and no further nests have been built or occupied, vegetation clearance may take place immediately.
BIO07	There will be no impacts on badgers or other large mammals. Regardless, a pre-construction check for badgers will be undertaken prior to the commencement of construction, to ensure this remains the case.
BIO08	As bats are highly mobile creatures, a bat specialist shall examine the trees for bat roost potential and for the presence of bats before felling commences. The trees shall be assessed by a bat specialist from a height access if due for felling in winter or by a bat detector assessment (or a combination of both) if felling occurs at any other time. The discovery of any bat roosts shall require a derogation from the National Parks and Wildlife service. If a bat survey has been undertaken by a bat specialist and bats have been determined to be absent, felling may proceed under the supervision of a bat specialist. If there is any doubt regarding the presence of bats, height access shall be provided to allow the examination of any trees with roost potential prior to felling.
BIO09	It is proposed to install a significant number of bat and bird boxes both throughout the proposed development site. The reason for the installation of bat boxes is not to provide replacement roosts; rather, it is to augment the overall ecological value of the site. This will contribute to maximising the ecological value of the proposed development. To that end a number of bat and bird boxes will be erected, with advice from the project Ecologist, in appropriate areas (within unlit areas away from traffic and likely disturbance within the site, no less than 3m above the ground in uncluttered areas, facing in a southerly direction). The locations of the bat boxes shall be agreed with a bat specialist. The boxes proposed are as follows (this list is subject to revision based on the availability of suitable boxes in the future): ■ 6 no. Schwegler 2F or similar. These boxes may be attached to buildings, trees, or poles. Alternatively, inbuilt bat boxes may be used in 6 houses. The following are options: Integrated Eco Bat Box and Vivara Pro Build-in WoodStone Bat Box. The locations of bat boxes shall be agreed with a bat specialist; ■ 9 no. assorted wooden or woodcrete bird boxes, suitable for use by robins, blue tits and tree creepers.
BIO10	Bats are sensitive to light at night, and the lighting design will ensure that the proposed development will not result in impacts on bats that do commute / forage in or near the proposed development site. The lighting design for the proposed development includes the following measures: ■ Where human safety permits it, dark corridors and dark areas will be incorporated into the open space and landscape design for the proposed development; ■ All luminaires shall lack UV elements when manufactured and shall be LED; ■ A warm white spectrum shall be adopted to reduce blue light component; and ■ Luminaires shall feature peak wavelengths higher than 550 nm.
BIO11	There will be no surface water related impacts on biodiversity as a result of the proposed development.

Ref.	Mitigation measure
	The surface water mitigation measures proposed in Chapter 10 (Hydrology) and in the CEMP, to be finalised by the appointed contractor in agreement with Fingal County Council, will ensure that no sediment contamination, contaminated run-off or untreated wastewater will enter any on-site surface water ditches and drains and, in particular, the Rivers Tolka and Pinkeen East (downstream of the site) as a result of the construction of the proposed development.
Operational phase	
BIO12	There will be no impacts related to surface water, including on downstream rivers, as a result of the proposed development. The development is designed in accordance with the principles of SuDS as embodied in the recommendations of the GDSDS, which addresses the issue of sustainable water management by requiring designs to comply with a set of drainage criteria which aim to minimize the impact of urbanization, by replicating the run-off characteristics of the greenfield site. The criteria provide a consistent approach to addressing the increase in both rate and volume of run-off, as well as ensuring the environment is protected from any pollution from roads and buildings.

Table 21.5 Monitoring- Biodiversity

Phase	Monitoring measure
Construction	A suitably experienced Project Ecologist will be appointed for the duration of the construction phase and regular monitoring of all related works will take place to ensure the correct and full implementation of all mitigation measures. The Project Ecologist will ensure that all construction works take place in accordance with planning conditions, the project CEMP and the mitigation measures set out in this EIAR.
	Vegetation clearance will only be permitted outside the bird-nesting season. Should vegetation clearance be required during the bird nesting season, and should this work be unavoidable, such clearance will take place only after the Project Ecologist has undertaken a survey to ensure that no active bird nests or recently fledged birds are present. Pre-construction surveys will be required to ensure that any necessary tree felling or works to buildings continue to have no impact on roosting bats.
Operational	The bat and bird boxes installed on the site will be checked annually for a period of two years post-completion of the works, to ensure that they continue to be accessible to these species. If necessary they will be repositioned within the site.
	On completion of construction, the lighting installed will be reviewed by the Project Ecologist and a bat specialist, to ensure that it is operating according to the approved specifications.

21.3.3 Land, Soils, Geology & Hydrogeology

Table 21.6 Mitigation measures - Land, Soils, Geology & Hydrogeology

Ref.	Mitigation measure
Construction phase	
LSG01	A Construction & Environmental Management Plan (CEMP) has been prepared in respect of the proposed development by DBFL Consulting Engineers (refer to standalone document submitted under separate cover). It contains best practice measures and protocols to be

Ref.	Mitigation measure
	implemented during the construction phase of the proposed development to avoid / minimise environmental impacts. The CEMP will be a live document and it will go through a number of iterations before works commence and during the works. The appointed contractor will be responsible for updating the CEMP, as required; e.g. to reflect the publication of relevant new or revised guidelines and / or new statutory requirements. It will set out requirements and standards which must be met during the construction stage and will include the relevant mitigation measures outlined in the EIA Report and any subsequent planning conditions relevant to the proposed development. As a minimum, the CEMP has been formulated in accordance with best international practice including but not limited to: ■ Construction Industry Research and Information Association CIRIA, (2001), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors, (C532); ■ Construction Industry Research and Information Association CIRIA (2005), Environmental Good Practice on Site (C650); ■ BPGCS005, Oil Storage Guidelines; ■ Eastern Regional Fisheries Board, (2006), Fisheries Protection Guidelines: Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites; ■ IFI (2016) Guidelines on Protection of Fisheries during construction works in and adjacent to waters. ■ CIRIA 697, The SUDS Manual, 2007; and ■ UK Pollution Prevention Guidelines (PPG) UK Environment Agency, 2004.
LSG02	There is a potential risk that ground water could become contaminated with lime, a component of cement, which could subsequently pollute the local adjacent watercourses. The measures proposed to be put in place to mitigate any potential damage from the effluent of contaminated ground water would be to create an exclusion zone, as far as reasonably practicable.
LSG03	In order to prevent sedimentation of groundwater and erosion from occurring (due to elevated surface water runoff generated onsite during the construction phase) surface water discharge from the whole site, including the haul road, will be managed and controlled for the duration of the construction works until the permanent surface water drainage system (including attenuation and storage) for the proposed site is complete. A temporary positive drainage system shall be installed prior to the commencement of the construction works to collect and store surface water runoff by the site during construction. A series of geotextile lined cascading, high level outfall, settling basins will be installed upstream of the agreed discharge point. These settlement basins will also provide storage for the groundwater. This temporary surface water management facility will throttle runoff, provide storage for run-off and allow suspended solids to be settled out and removed before being discharged in a controlled manner to the agreed outfall via high level overflows. All inlets to the cascading settling basins will be rippapped to prevent scour and erosion near the inlet.
LSG04	Site preparation, excavations and levelling works required to facilitate construction of foundations, access roads and the installation of services will not require imported material. Topsoil is reused on site and site levels are maintained as close as possible above existing

Ref.	Mitigation measure
	thereby minimising the need for importation and exportation of soil and stone. Suitable soils will be reused on site as backfill in the grassed areas, where possible. Contractors shall be required to submit and adhere to a method statement indicating the extent of areas likely to be affected and demonstrating that this is the minimum disturbance necessary to achieve the required works.
LSG05	Temporary storage of soil will be carefully managed in such a way as to prevent any potential negative impact on the receiving environment and the material will be stored away from any open surface water drains. Movement of material will be minimised in order to reduce degradation of soil structure and generation of dust.
LSG06	Although there is no evidence of historical contamination in the proposed development area, all excavated materials will be visually assessed for signs of possible contamination such as staining or strong odours. Site investigations classified the subsoils as 'inert'. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of possible contaminants in order to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be disposed of by a licensed waste disposal contractor.
LSG07	Stockpiles have the potential to cause negative impacts on air and water quality. The effects of soil stripping and stockpiling will be mitigated against through the implementation of appropriate earthworks handling protocol during construction. It is anticipated that any stockpiles will be formed within the boundary of the site and there will be no direct link or pathway from this area to any surface water body. Overburden material will be protected from exposure to wind by storing the material in sheltered parts of the site, where possible.
LSG08	Only approved storage system for oil / diesel within the site will be permitted, (i.e. all oil / diesel storage to be located within a designated area placed furthest away from adjacent watercourses and contained within constructed bunded areas e.g. placed on 150mm concrete slab with the perimeter constructed with 225mm solid blockwork rendered internally). The bunded area will accommodate the relevant oil / diesel storage capacity in case of accidental spillage. Any accidental spillages will be dealt with immediately on site by containment /removal from site.
LSG09	To minimise any impact on the underlying subsurface strata from material spillages, all oils, solvents and paints used during construction will be stored within a temporary bunded construction hardstand area which is also remote from any surface water features (when not possible to carry out such activities off site). Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be bunded to a volume of 110% of the capacity of the largest tank / container within the bunded area(s) (plus an allowance of 30 mm for rainwater ingress). Drainage from the bunded area(s) shall be diverted for collection and safe disposal.
LSG10	Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area (or where possible off the site) which will be away from surface water gulleys or drains. In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in this area. All relevant personnel will be fully trained in the use of this equipment. Guidelines such as " <i>Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors</i> " (CIRIA 532, 2001) will be complied with.

Ref.	Mitigation measure
LSG11	Where feasible all ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to the underlying subsoil. Wash down and washout of concrete transporting vehicles will take place at an appropriate facility offsite.
LSG11	In the case of drummed fuel or other chemical which may be used during construction, containers should be stored in a dedicated internally bunded chemical storage cabinet and labelled clearly to allow appropriate remedial action in the event of a spillage.
LSG12	Surface water discharge from site will be managed and controlled for the duration of the construction works until the permanent surface water drainage system is complete.
LSG13	Care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts.
LSG14	Should any discharge of construction water be required during the construction phase, discharge will be to foul sewer. Pre-treatment and silt reduction measures on site will include a combination of silt fencing, settlement measures (silt or sediment traps, 20 m buffer zone between machinery and watercourses, refuelling of machinery off site) and hydrocarbon interceptors. All water runoff from designated refuelling areas will be channelled to an oil interceptor or an alternative treatment system prior to discharge.
LSG15	Any minor ingress of groundwater and collected rainfall in the excavation will be pumped out during construction. It is estimated that the inflow rate of groundwater will be low and limited to the north-east, north and centre of the proposed development, due to the overburden thickness at these areas. It is therefore proposed that the water be discharged via the existing stormwater sewer network. Extensive monitoring will be adopted to ensure that the water is of sufficient quality to discharge to the sewer. The use of silt traps and an oil interceptor (if required) will be adopted if the monitoring indicates the requirements for the same with no silt or contaminated water permitted to discharge to the sewer. There may be localised pumping of surface run-off from the excavations during and after heavy rainfall events to ensure that the excavations are kept relatively dry. Due to the very low permeability of the Dublin Boulder Clay and the relative shallow nature for excavations, infiltration to the underlying aquifer is not anticipated.
LSG16	Should any discharge of construction water be required during the construction phase, discharge will be to foul sewer.
Operational phase	
LSG17	A number of design measures will be put in place to minimise the likelihood of any spills entering the groundwater environment to include the design of the car park with hydrocarbon interceptors. In the event of an accidental leakage of oil from the parking areas, this will be intercepted by the drainage infrastructure.

Table 21.7 Monitoring- Land, Soils, Geology & Hydrogeology

Phase	Monitoring measure
Construction	Daily visual inspection will be undertaken by the contractor at the silt trap / settlement tank to ensure adequate internal settlement is occurring. Where the visual assessment highlights

Phase	Monitoring measure
	elevated suspended sediments higher than expected, the water will be re-circulated for further settlement.
	Weekly checks will be carried out to ensure surface water drains are not blocked by silt, or other items, and that all storage is located at least 20 m from surface water receptors. Regular inspection of surface water run-off and any sediment control measures will be carried out during the construction phase.
	Regular auditing of construction / mitigation measures will be undertaken, e.g. concrete pouring, refuelling in designated areas, etc. A log of regular inspections will be maintained, and any significant blockage or spill incidents will be recorded for root cause investigation purposes and updating procedures to ensure incidents do not occur.
	Soil sampling will be undertaken to confirm disposal options for excavated soils in order to avoid contaminated run-off
Operational	During operational phase, maintenance of the surface water drainage system, including interceptors, and foul sewers is recommended to minimise any accidental discharges to soil or groundwater.

21.3.4 Hydrology

Table 21.8 Mitigation measures - Hydrology

Ref.	Mitigation measure
Construction phase	
HYD01	DBFL Consulting Engineers have prepared a Construction & Environmental Plan (2023) that is submitted separately under planning documentation. It contains best practice measures and protocols to be implemented during the construction phase of the proposed development to avoid / minimise environmental impacts, including in relation to surface water. To ensure the CEMP remains fit for purpose, it will be regarded as a live document. The appointed contractor will be responsible for updating the CEMP, as required; e.g., to reflect the publication of relevant new or revised guidelines and / or new statutory requirements. The full schedule of environmental commitments (i.e. all mitigation measures set out in the CEMP and Environmental Impact Assessment Report submitted as part of the planning application, as well as any applicable conditions of development consent) will be included in the CEMP by the appointed contractor. The CEMP was formulated in accordance with best international practice including but not limited to: ■ CIRIA (2001). Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (C532); ■ CIRIA (2002). Control of Water Pollution from Construction Sites: Guidance for Consultants and Contractors (SPI56); ■ CIRIA (2005). Environmental Good Practice on Site (C650); ■ CIRIA (2007). CIRIA 697: The SUDS Manual; ■ Eastern Regional Fisheries Board (2006). Fisheries Protection Guidelines: Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites; ■ IFI (2016) Guidelines on Protection of Fisheries during construction works in and adjacent to waters;

Ref.	Mitigation measure
	■ Enterprise Ireland (n.d.). Best Practice Guide BPGCS005: Oil Storage Guidelines; and ■ UK Pollution Prevention Guidelines (PPG) UK Environment Agency, 2004.
HYD02	Similar to the above, groundwater needs to be protected from sedimentation and erosion due to direct surface water runoff generated onsite during the construction phase. To prevent this from occurring, surface water discharge from the whole site, including the haul road, will be managed and controlled for the duration of the construction works until the permanent surface water drainage system (including attenuation and storage) for the proposed site is complete. A temporary positive drainage system shall be installed prior to the commencement of the construction works to collect and store surface water runoff by the site during construction. A series of geotextile lined cascading, high level outfall, settling basins will be installed upstream of the agreed discharge point. These settlement basins will also provide storage for the groundwater. This temporary surface water management facility will throttle runoff, provide storage for run-off and allow suspended solids to be settled out and removed before being discharged in a controlled manner to the agreed outfall via high level overflows. All inlets to the cascading settling basins will be riprapped to prevent scour and erosion near the inlet. Surface water discharge from site will be managed and controlled for the duration of the construction works until the permanent surface water drainage system is complete.
HYD03	In order to manage the potential impact associated with sediment and sediment runoff the following mitigation measures will be implemented during the construction phase: ■ Riparian corridors of 10m from all existing open drains and watercourses on-site will be established early in the construction phase where no construction works will take place; ■ During earthworks and excavation works care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts; ■ Run-off water containing silt will be contained on site via settlement tanks and treated to ensure adequate silt removal; ■ Silt reduction measures on site will include a combination of silt fencing and settlement measures (silt traps, silt sacks and settlement tanks/ponds); ■ Any hard surface site roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only; ■ A power washing facility or wheel cleaning facility will be installed near to the site compound for use by vehicles exiting the site when appropriate; ■ A stabilised entranceway consisting of an aggregate on a filter cloth base that is located at any entry or exit point of the construction site; ■ Aggregate will be established at the site entrance points from the construction site boundary extending for at least 10 m; ■ The temporary storage of soil will be carefully managed. Stockpiles will be tightly compacted to reduce runoff and graded to aid in runoff collection; ■ Construction materials, including aggregates etc. will be stored a minimum of 20 meter buffer distance from any surface water bodies and surface water drainage points; ■ Aggregate materials such as sands and gravels will be stored in clearly marked receptacles within a secure compound area to prevent contamination; ■ Movement of material will be minimised to reduce the degradation of soil structure and generation of dust; ■ Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise the potential for water ingress into excavations; and

Ref.	Mitigation measure
	Weather conditions will be considered when planning construction activities to minimise the risk of run-off from the site.
HYD04	All excavated materials will be visually assessed by suitably qualified persons for signs of possible contamination such as staining or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of potential contaminants to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be segregated and appropriately disposed of by a suitably permitted / licensed waste disposal contractor.
HYD05	Surface water discharge from the site will be managed and controlled for the duration of the construction works until the permanently attenuated surface water drainage system of the proposed site is complete. A temporary drainage system shall be established prior to the commencement of the initial infrastructure construction works to collect and discharge any treated construction water during construction. Once the initial infrastructure phase of construction works are completed the construction works will proceed on a unit-by-unit basis. The construction contractor for that unit will be required to manage suspended solids within the curtilage of the unit and will be permitted to discharge treated construction water to the established stormwater network.
HYD06	There shall not be discharge of untreated, silty, or contaminated water from the works to any watercourse or stormwater network. Should any discharge of contaminated construction water be required during the construction phase, discharge will be to tankered off site or discharged to foul sewer following agreement with Fingal County Council / Uisce Éireann.
HYD07	The discharge of treated clean construction water from rainfall into excavated areas, or from any localised dewatering may be required during construction. Monitoring will be adopted to ensure that the water is of sufficient quality to discharge to the stormwater network. The use of slit traps and petrol interceptors (if required) will be adopted if the monitoring indicates the requirements for the same with no silt or contaminated water permitted to discharge to the stormwater network.
HYD08	There is a risk that ground water could become contaminated with lime from cement which could subsequently find its way into the local adjacent watercourses. The measures proposed to be put in place to mitigate any potential damage from the effluent of contaminated ground water would be to create an exclusion zone, as far as reasonably practicable.
HYD09	Where feasible all ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to the underlying subsoil.
HYD10	No wash-down or wash-out of ready-mix concrete vehicles during the construction works will be carried out at the site within 10 meters of an existing surface water drainage point. Wash-outs will only be allowed to take place in designated areas with an impervious surface where all wash water is contained and removed from site by road tanker or discharged to foul sewer submit to agreement with Uisce Éireann / FCC.
HYD11	The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the site will be suitably trained in the implementation of the procedures.

Ref.	Mitigation measure
HYD12	The following mitigation measures will be implemented during the construction phase in order to prevent any spillages to ground of fuels and other construction chemicals and prevent any resulting to surface water and groundwater systems: ■ Designation of bunded refuelling areas on the site; ■ Provision of spill kit facilities across the site; ■ Where mobile fuel bowsers are used, the following measures will be taken: □ Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use; □ The pump or valve will be fitted with a lock and will be secured when not in use; □ All bowsers to carry a spill kit and operatives must have spill response training; □ Portable generators or similar fuel containing equipment will be placed on suitable drip trays.
HYD13	In the case of drummed fuel or other potentially polluting substances which may be used during the construction phase, the following measures will be adopted: ■ Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded area; ■ Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be stored within temporary bunded areas, doubled skinned tanks or bunded containers to a volume of 110% of the capacity of the largest tank/container. Drainage from the bunded area(s) shall be diverted for collection and safe disposal. ■ Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage; ■ All drums to be quality approved and manufactured to a recognised standard; ■ If drums are to be moved around the site, they will be secured and on spill pallets; and ■ Drums will be loaded and unloaded by competent and trained personnel using appropriate equipment.
HYD14	Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area or within the construction compound (or where possible off the site) which will be away from surface water gulleys or drains minimum 20 m buffer zone). In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in this area. All relevant personnel will be fully trained in the use of this equipment. Guidelines such as <i>“Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors”</i> (CIRIA 532, 2001) will be complied with.
HYD15	The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the site will be suitably trained in the implementation of the procedures.
HYD16	Foul drainage for the proposed development will be in accordance with the relevant standards for design and construction as detailed ‘Infrastructure Design Report’ (prepared and submitted by DBFL Consulting Engineers (2023) as part of the planning application).
HYD17	Foul wastewater discharge from the site will be managed and controlled for the duration of the construction works. Site welfare facilities will be established to provide sanitary facilities for construction workers on site. The main contractor will ensure that sufficient facilities are available at all times to accommodate the number of employees on site. Foul water from the

Ref.	Mitigation measure
	offices and welfare facilities on the site will discharge into the existing sewer on site (the cabins may initially need to have the foul water collected by a licensed waste sewerage contractor before connection to the sewer line can be made).
HYD18	There shall not be discharge of silty (contaminated) water from the works to any watercourse, should any discharge of contaminated construction water be required during the construction phase, the discharge will be to foul sewer following agreement with Fingal County Council / Uisce Éireann. The construction contractor will implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the site will be suitably trained in the implementation of the procedures.
HYD19	There are no recorded recreational waters, bathing waterbodies, or surface water drinking RPA, located adjacent to and / or downstream of the proposed development site. On a precautionary basis, the mitigation measures set out in the Chapter 10 Hydrology will be implemented during the construction works for the protection of human health and populations.
Operational phase	
HYD20	The proposed development stormwater drainage network design includes sustainable drainage systems (SuDS) these measures by design ensure the stormwater leaving the site is of a suitable quality prior to discharge into the adjacent ditches. SuDS are drainage systems that are environmentally beneficial, causing minimal or no long-term detrimental damage. As set out in 'Infrastructure Design Report' (prepared and submitted by DBFL Consulting Engineers (2023) as part of the planning application), the proposed/existing surface water drainage system for this development has been designed as a sustainable urban drainage system and uses on-line overground detention basins together with a flow control device, grass swales, permeable paving, rainwater harvesting and petrol interceptors to: ■ Treat runoff and remove pollutants to improve quality; ■ Restrict outflow and to control quantity ; ■ Increase amenity value.
HYD21	Strict separation of surface water and wastewater will be implemented within the development. Drains will be laid out to minimise the risk of inadvertent connection of waste pipes etc. to the surface water system.
HYD22	As set out in the DBFL Consulting Engineers Infrastructure Design Report, flow restriction is achieved by means of a hydrobrake, or similar approved, installed at the outfall manhole of each surface water catchment within the development, with the excess storm water stored on site for the duration of the storm periods of up to 1 in 100 years.
HYD23	The surface water network has been designed to provide sufficient capacity to contain and convey all surface water run-off associated with the 1-in-100 year event to the attenuation basins without any overland flooding including an additional allowance of 20% in rainfall intensities due to climate change. Proposed mitigation measures to address residual flood risks include the proposed drainage system to be maintained on a regular basis to reduce the risk of a blockage, in the event of storms exceeding the 100-year design capacity of the drainage system, then possible flood routing for overland flows towards the drainage outfalls to the north should not be blocked and finished floor levels are set a minimum of 500mm above predicted 100 year flood levels.

Ref.	Mitigation measure
HYD24	Any potential impacts in relation to the increase in hardstanding and potential for increase in surface water runoff the designed SuDS measures set out in the Infrastructure Design Report (DBFL, 2023) will be implemented. These measures include swales within the link street grass verges, permeable paving within private curtilage parking, bioretention areas, rain gardens, tree pits, detention basins, hydrobrake flow controls and petrol interceptors. The proposed new storm water drainage arrangements will be designed and carried out in accordance with the: ■ Greater Dublin Strategic Drainage Study Volume 2 (2018); ■ Greater Dublin Regional Code of Practice for Drainage Works (2021); ■ BS EN – 752:2008, Drains & Sewer Systems Outside Buildings; ■ Part H, Building Drainage of the Building Regulations.
HYD25	There are a number of mitigation and SUDs design measures that will be put in place to manage storm water drainage from the site of the proposed development, as follows: ■ Run-off from roads and driveways will be collected by gullies. Run-off of clean roof water will discharge to a clean stone build-up under block paving to promote infiltration prior to discharging to the main surface water drainage system via individual connections; ■ It is proposed to discharge all attenuated surface water run-off to the existing drainage ditches in both the northwest and southwest corner of the subject site; ■ Swales within the link street grass verges: shallow drainage channels covered in grass which can treat, convey and attenuate run-off, at source, and can infiltrate to the ground where the subgrade is suitable. Swales also can promote biodiversity. Swales will be running parallel to road carriageways/footpaths; ■ Bio-retention Areas: Shallow landscaped depressions, which are under drained with engineered soils and enhanced vegetation and planting on the surface which manage and treat run-off, at source, and promote biodiversity development. Located generally at suitable low points along roads in lieu of gullies throughout site; ■ Permeable Paving within private curtilage parking, and Bio-Retention areas/zones; ■ Silt and Hydrocarbon / Petrol interceptors for carpark areas; ■ Rain gardens; ■ Tree Pits; ■ Detention basins; ■ Infiltration blankets; ■ 'Hydrobrake' flow controls; ■ As standard, site inspections of the surface water drainage and air testing of same will also be undertaken to ensure no infiltration to the ground below.
HYD26	All watermain works, Water Conservation Measures, Metering and Pressure Control will be strictly in accordance with Uisce Éireann and Fingal County Council requirements, specifications and standard details. In addition, emerging conservation technologies will be kept under review and adopted if deemed appropriate. During the operational stage of the project, a Water Conservation Plan will be developed by the Management Company which will encourage the residents to adopt water conservation measures in their day to day activities. No further mitigation measures are required.

Table 21.9 Monitoring- Hydrology

Phase	Monitoring measure
Construction	During construction phase the following monitoring measures will be considered: ■ Weekly checks will be carried out to ensure surface water drains are not blocked by silt, or other items, and that all storage is located at least 20 m from surface water receptors; ■ Regular inspection of surface water run-off and any sediment control measures (e.g. silt traps) will be carried out during the construction phase. Inspection and maintenance of the silt fences during construction phase is crucial to ensuring that they work as intended. They will remain in place throughout the entire construction phase; ■ Runoff diversion channels / bunds need regular maintenance to keep functioning throughout their life; ■ Regular auditing of construction / mitigation measures will be undertaken, e.g. concrete pouring, refuelling in designated areas, etc; ■ A log of regular inspections will be maintained, and any significant blockage or spill incidents will be recorded for root cause investigation purposes and updating procedures to ensure incidents do not reoccur; ■ Regular inspection of surface water run-off and sediments controls e.g. silt traps will be carried during the construction phase. ■ Soil sampling to confirm disposal options for excavated soils in order to avoid contaminated run-off; ■ Regular inspection of construction / mitigation measures will be undertaken e.g. concrete pouring, refuelling etc; and ■ Monitoring will be adopted to ensure that the water is of sufficient quality to discharge to the stormwater network.
Operational	No future surface water monitoring is proposed for the proposed development due to the low hazard potential at the site. Oil interceptors will be maintained and cleaned out in accordance with the manufacturer's instructions. Maintenance of the surface water drainage system and foul sewers as per normal urban developments is recommended to minimise any accidental discharges to surface water.

21.3.5 Air Quality & Climate

Table 21.10 Mitigation measures – Air Quality & Climate

Ref.	Mitigation measure
Construction phase	
AQC01	The proactive control of fugitive dust will ensure the prevention of significant emissions, rather than an inefficient attempt to control them once they have been released. The main contractor will be responsible for the coordination, implementation and ongoing monitoring of the Dust Management Plan. The key aspects of controlling dust are listed below. Full details of the Dust Management Plan can be found in Appendix 11.1.
AQC02	The Dust Management Plan notes the following measures in summary: ■ The Principal Contractor or equivalent must monitor the contractors' performance to ensure that the proposed mitigation measures are implemented and that dust impacts and nuisance are minimised; ■ During dry and windy periods, and when there is a likelihood of dust nuisance, watering shall be conducted to ensure moisture content of materials being moved is high enough to increase the stability of the soil and thus suppress dust;

Ref.	Mitigation measure
	Drop heights from conveyors, loading shovels, hoppers and other loading equipment will be minimised, if necessary fine water sprays should be employed.
AQC03	In the event of dust nuisance occurring outside the site boundary, movements of materials likely to raise dust would be curtailed and satisfactory procedures implemented to rectify the problem before the resumption of construction operations.
AQC04	Embodied carbon of materials and construction activities will be the primary source of climate impacts during the construction phase. Measures to reduce the embodied carbon of the construction works include: - Creating a construction program which allows for sufficient time to determine reuse and recycling opportunities for wastes; - Appointing a suitably competent contractor who will undertake waste audits detailing resource recovery best practice and identify materials can be reused/recycled; - Materials will be reused on site within the new build areas where possible; - Prevention of on-site or delivery vehicles from leaving engines idling, even over short periods; - Ensure all plant and machinery are well maintained and inspected regularly; - Minimising waste of materials due to poor timing or over ordering on site will aid to minimise the embodied carbon footprint of the site; and - Sourcing materials locally where possible to reduce transport related CO2 emissions.
Operational phase	
AQC05	A number of measures have been incorporated into the design of the development to mitigate against the impacts of future climate change. For example, adequate attenuation and drainage have been incorporated into the design of the development to avoid potential flooding impacts as a result of increased rainfall events in future years. These measures have been considered when assessing the vulnerability of the proposed development to climate change.
AQC06	The proposed development has been designed to reduce the impact on climate as a result of energy usage during operation. The Energy Analysis Report prepared by IN2 Engineering Partnership (submitted under separate cover with this planning application) and reports in Appendix 11.2 detail a number of design mitigation measures that have been incorporated into the design of the development to reduce the impact on climate wherever possible. Such measures included in the proposed development to reduce the impact to climate from energy usage are: - Achieve air tightness standards of 3 m³/m²/hr; - Heat generation through Air Source Heat Pump; - Ensure thermal bridging details are designed to achieve thermal bridging factors of 0.08W/m²K (0.15 W/m²K required in Part L); - Energy Performance Coefficient (EPC) < 0.30 - Carbon Performance Coefficient (CPC) < 0.35 - Renewable Energy Ratio (RER) > 0.20 - Meet or exceed minimum U-Value standards identified in Part L 2022 Dwellings; - Provide an appropriate combination of technologies to ensure energy consumption is in line with Part L 2022 Dwellings requirements; and

Ref.	Mitigation measure
	All in-curtilage parking spaces will be capable of being fitted with EV charging points. All off-curtilage spaces will be ducted for EV charging, with 20% fitted out from the outset.

Table 21.11 Monitoring- Air Quality & Climate

Phase	Monitoring measure
Construction	Monitoring of construction dust deposition along the site boundary to nearby sensitive receptors during the construction phase of the proposed development is recommended to ensure mitigation measures are working satisfactorily. This can be carried out using the Bergerhoff method in accordance with the requirements of the German Standard VDI 2119. The Bergerhoff Gauge consists of a collecting vessel and a stand with a protecting gauge. The collecting vessel is secured to the stand with the opening of the collecting vessel located approximately 2m above ground level. The TA Luft limit value is 350 mg/m ² /day during the monitoring period of 30 days (+/- 2 days).

21.3.6 Noise & Vibration

Table 21.12 Mitigation measures – Noise & Vibration

Ref.	Mitigation measure
Construction phase	
NV01	Best practice noise and vibration control measures will be employed by the contractor during the construction phase in order to avoid exceedance of the adopted construction noise threshold values at the nearest NSLs. The best practice measures set out in BS 5228 (2009 +A1 2014) Parts 1 and 2 will be complied with. This includes guidance on several aspects of construction site mitigation measures, including, but not limited to: ■ Selection of quiet plant; ■ Noise control at source; ■ Screening, and; ■ Liaison with the public. Noise control measures that will be considered include the selection of quiet plant, enclosures and screens around noise sources, limiting the hours of work and noise monitoring, where required.
NV02	Selection of quiet plant is recommended in relation to static plant such as compressors and generators. It is recommended that these units be supplied with manufacturers' proprietary acoustic enclosures. The potential for any item of plant to generate noise will be assessed prior to the item being brought onto the site.
NV03	The following best practice mitigation measures relate to controlling noise at source: ■ Site compounds will be located away from noise sensitive boundaries within the site constraints. ■ For mobile plant items such as cranes, dump trucks, excavators and loaders, maintaining enclosure panels closed during operation can reduce noise levels over normal operation. Mobile plant will be switched off when not in use and not left idling. ■ For steady continuous noise, such as that generated by diesel engines, it may be possible to reduce the noise emitted by fitting a more effective exhaust silencer system and avoid idling of engines when not in use.

Ref.	Mitigation measure
	■ For percussive tools such as pneumatic breakers, a number of noise control measures include fitting muffler or sound reducing equipment to the breaker tool and ensuring any leaks in the air lines are sealed. ■ Erecting localised screens around breaker or drill bit when in operation in close proximity to noise sensitive boundaries. ■ For all materials handling, ensure that materials are not dropped from excessive heights, lining drops chutes and dump trucks with resilient materials. ■ For compressors, generators and pumps, these can be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation. ■ All items of plant will be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures.
NV04	Screening is an effective method of reducing the noise level at a receiver location and can be used successfully as an additional measure to all other forms of noise control. Standard construction site hoarding (2.4 m in height) with a mass per unit of surface area greater than 7 kg/m ² can provide adequate sound insulation. This is recommended, as a minimum around the north and southern boundaries of the proposed development site.
NV05	A designated Community Liaison Officer (CLO) will be appointed to site during construction works. Any noise complaints will be logged and followed up in a prompt fashion by the CLO. In addition, prior to particularly noisy construction activity (e.g. piling), the CLO will inform the nearest noise sensitive locations of the time and expected duration of the noisy works.
NV06	The phasing programme will be arranged so as to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity. This will be reviewed in relation to other potential cumulative works occurring on adjacent construction site in close proximity to noise sensitive properties which have the potential to lead to significant construction noise impacts.
Operational phase	
NV07	Proprietary noise and vibration control measures will be employed as part of the detailed design in order to ensure that noise emissions from building services plant do not exceed the relevant internal noise criteria for residential dwellings within the proposed development. In addition, noise emissions should be broadband in nature and should not contain any tonal or impulsive elements.
NV08	An initial site noise risk assessment has been carried out in respect of the proposed development. It will be necessary to provide enhanced acoustic glazing and vents to ensure that when windows are closed that the internal noise environment is good.

Table 21.13 Monitoring – Noise & Vibration

Phase	Monitoring measure
Construction	During the construction phase, spot check noise monitoring may be required where the construction noise thresholds have the potential to be exceeded at NSLs. The monitoring shall be carried out by the contractor and used to inform the requirement for any control measures on site to reduce construction noise levels. There are no significant vibration sources associated with the construction phase and no vulnerable structures identified adjacent to the site, hence vibration monitoring is not proposed during this phase.

Phase	Monitoring measure
	Noise monitoring will be conducted in accordance with the International Standard ISO 1996: 2017: Acoustics – Description, measurement and assessment of environmental noise and be located a distance of greater than 3.5m away from any reflective surfaces, e.g. walls, in order to ensure a free-field measurement without any influence from reflected noise sources.

21.3.7 Landscape & Visual

Table 21.14 Mitigation measures – Landscape & Visual

Ref.	Mitigation measure
Construction phase	
LV01	Construction works will be guided by a Construction Environmental Management Plan (CEMP), which shall provide the environmental management framework to be adhered to and monitored during the pre-commencement and construction phases of the proposed development. The CEMP will incorporate all of the mitigating principles required to ensure that the work is carried out in a way that minimises the potential for environmental impacts to occur. Please refer to the CEMP prepared in respect of the proposed development by DBFL Consulting Engineers (2023), and submitted under a separate cover as part of the planning application.
LV02	Construction compounds will not be located within the root protection area of trees or hedgerows to be retained and will be enclosed by solid hoarding. The compound areas will be fully decommissioned and reinstated at the end of the construction phase.
LV03	Trees, hedgerows and vegetation to be retained within and adjoining the works area will be protected in accordance with 'BS 5837:2012 Trees in relation to design, demolition and construction. Recommendations'. Works required within the root protection area (RPA) of trees, hedgerows to be retained will follow a project specific arboricultural methodology for such works, prepared / approved by a professional qualified arborist. Please refer to the Tree Survey Report prepared in respect of the proposed development by Independent Tree Surveys, and submitted under separate cover as part of the planning application. It contains an Arboricultural Method Statement and general recommendations in relation to tree protection on construction sites. These measures will be implemented in full during the proposed construction works.
LV04	Trees and vegetation identified for removal will be removed in accordance with 'BS 3998:2010 Tree Work – Recommendations' and best arboricultural practices as detailed and monitored by a professional qualified arborist.
LV05	The construction site will be fully enclosed and secured. Construction traffic accessing the site will follow agreed routes and public roads will be maintained in a clean and safe manner (See Chapter 16 Traffic and Transportation for detailed mitigation).
LV06	Mitigation of landscape and visual impacts during the construction phase is focused on ensuring protection of elements to be retained (e.g. mature hedgerows) and providing for a degree of visual screening of particular aspects of the works (e.g. the construction compounds).
Operational phase	
LV07	Provision of a good quality of architectural design, character and finish for the proposed buildings and development.

Ref.	Mitigation measure
LV08	Provision of significant areas of new and connected open space and park with play facilities as amenity and recreation for the new communities. The open spaces provide for retention and incorporation of townland boundaries and tree-lined hedgerows.
LV09	Retention, enhancement and management of existing hedgerows.
LV10	Planting of new trees along streetscapes and within open spaces. Species selected will be appropriate to the street environment and to the characteristics of this location.
LV11	Provision of a high-quality of design and finish for landscape areas within the proposed development.
LV12	Landscape areas will be maintained for twelve months during which any defective or dead material will be replaced.

21.3.8 Cultural Heritage, Archaeology & Architectural Heritage

Table 21.15 Mitigation measures - Cultural Heritage, Archaeology & Architectural Heritage

Ref.	Mitigation measure
Construction phase	
CAA01	The testing in 2022 identified two small areas of archaeological significance, which have been designated as Archaeological Areas (AA) 1 and 2. AA1 comprised a C-shaped kiln or kiln flue and a linear ditch / gully containing some animal bone. AA2 comprised a C-shaped linear slot trench, five pit features and two linear ditches. AA1 and AA2, which comprise small areas of archaeological potential, will be preserved by record (archaeological excavation) prior to the commencement of the construction phase. This will be carried out under licence, as issued by the National Monuments Service of the DoHLGH. Full provision will be made available for the required works, both during field work and the post excavation analysis.
CAA02	All topsoil stripping will be subject to archaeological monitoring, carried out by a suitably qualified archaeologist. If any features of archaeological potential are discovered during the course of monitoring further archaeological mitigation may be required, such as preservation in situ or by record. Any further mitigation will require approval from the National Monuments Service of the DoHLGH.
Operational phase	
No mitigation is required as part of the operation of the proposed development.	

21.3.9 Traffic & Transportation

Table 21.16 Mitigation measures – Traffic & Transportation

Ref.	Mitigation measure
Construction phase	
TT01	All construction activities on-site will be governed by the traffic management measures outlined in the Construction & Environmental Management Plan (CEMP) which seeks to ensure that the impacts of all building activities during the construction of the proposed development upon both the public (off-site) and internal (on-site) workers' environments, are fully considered and proactively managed / programmed. It aims to respect all key

Ref.	Mitigation measure
	stakeholders, thereby ensuring that both the public's and construction workers' safety is maintained at all times, and that disruptions are minimised.
TT02	The mitigation measures detailed in the CEMP (submitted under separate cover as part of the planning application) will be implemented through a Construction Traffic Management Plan (CTMP), the details of which will include haul routes, working times and off-site disposal sites. This plan will be prepared in consultation with Fingal County Council and agreed in full with the Council prior to commencement of construction activities on site, in order to reach full agreement upon the traffic management mitigation measures and monitoring measures to be adopted during the entire programme of construction activities on-site. The impact of the construction period will be temporary in nature.
TT03	During the pre-construction phase, the site will be securely fenced off from adjacent properties, public footpaths and roads.
TT04	Appropriate on-site parking and compound area will be provided to prevent overflow onto the local network.
TT05	Delivery vehicles to and from the site will be spread across the course of the working day, therefore, the number of HGVs travelling during the peak hours will be relatively low.
TT06	Truck wheel washes will be installed at construction entrances and any specific recommendations with regard to construction traffic management made by Fingal County Council will be adhered to.
TT07	Potential localised traffic disruptions during the construction phase will be mitigated through the implementation of industry standard traffic management measures. These traffic management measures shall be designed and implemented in accordance with the requirements of: ■ Department of Transport's <i>Traffic Signs Manual</i> (2010), Chapter 8: Temporary Traffic Measures and Signs for Roadworks; ■ Department of Transport's <i>Guidance for the Control and Management of Traffic at Roads Works – 2nd Edition</i> (2010); and ■ Any additional requirements detailed in the Design Manual for Roads and Bridges (DMRB) & Design Manual for Urban Roads & Streets (DMURS).
TT08	A material storage zone will be established in the compound area and will include material recycling areas and facilities.
TT08	Wayfinding signage will be provided to route staff / deliveries into the site and to designated compound / construction areas.
TT10	HGVs will access the construction site from Ratoath Road (primary construction route) while non-HGV construction traffic will also be able to access the site via a secondary route on The Avenue. Haul route details will be agreed with Fingal County Council prior to commencement of activities on-site.
TT11	On completion of the works, all construction materials, debris, temporary hardstands, etc., from the site compound will be removed off-site and the site compound area reinstated in full on completion of the works.
Operational phase	

Ref.	Mitigation measure
TT12	A Mobility Management Plan (MMP) has been compiled by DBFL Consulting Engineers, and submitted under separate cover as part of the planning application. The MMP has the aim of guiding the delivery and management of coordinated initiatives by the proposed development management company, to be implemented upon occupation of the site. The MMP will ultimately seek to encourage sustainable travel practices for all journeys to and from the proposed development through mode specific measures.
TT13	Car Parking Management Strategy – A management regime will be implemented by the proposed development's management company to control and actively manage the availability of on-site car parking for residents.
TT14	Measures to reduce reliance of private vehicles are the provision of ample secure cycle parking on site and ensuring a design which promotes permeability for pedestrians and cyclists to, through and from the development. The level of parking provision for the development will also act as a powerful mobility management measure, ensuring against an overprovision of parking and a resultant over reliance on the private vehicle. The development also proposes provision of high-quality dedicated pedestrian footpaths and cycle paths throughout the development site and crossing facilities along desire lines on the road network.

Table 21.17 Monitoring- Traffic Transportation

Phase	Monitoring measure
Construction	During the construction stage, the following monitoring exercises are proposed: ■ If issues with regards to the routing of construction vehicles occurs – then compliance with construction vehicle routing practices will be undertaken; ■ If issues with regards the parking of construction vehicles on the surrounding network occurs - then compliance with construction vehicle parking practices will be undertaken; ■ If issues with regards the condition of the surrounding road network occur – then internal and external road conditions will be monitored; ■ If issues with regards the timing or programming of construction activities occur – then timing of construction activities will be monitored. The construction works areas will be reinstated following completion of development with landscaped areas provided where proposed. The works will be restricted to the footprint of the site for the proposed development. Excavated topsoil and subsoil will be reused in reinstatement and landscaping where appropriate or dealt with in the appropriate manner i.e. sent for soil recovery as appropriate.
Operation	As part of the MMP process, bi-annual post occupancy surveys are to be carried out in order to determine the success of the measures and initiatives as set out in the proposed MMP document. The information obtained from the monitoring surveys will be used to identify ways in which the MMP measures and initiatives should be taken forward in order to maintain and further encourage sustainable travel characteristics.

21.3.10 Material Assets – Waste

Table 21.18 Mitigation measures - Material Assets – Waste

Ref.	Mitigation measure
Construction phase	

Ref.	Mitigation measure
WA01	A dedicated Resource and Waste Manager shall manage and monitor all construction wastes. They shall oversee the implementation of the following measures.
WA02	Construction wastes shall be managed in accordance with the Resource and Waste Management Plan (prepared by Byrne Environmental Consulting Ltd. and submitted under a separate cover as part of the planning application). The Plan is a 'live document' and will be updated by the appointed contractor in agreement with Fingal County Council, prior to commencement of works.
WA03	Excavated rock shall be re-used on-site for pile pads, insofar as practicable.
WA04	A dedicated waste compound will be established for the segregation and secure storage of construction wastes.
WA04	Hazardous waste eg, oils shall be stored in secure bunded containers.
WA05	Where accidental spillages of hydrocarbon liquids occur, they shall be cleaned using on-site spill-kits which shall be subsequently removed off-site by appropriately permitted hazardous waste collection contractors.
WA06	Tool-box talks on waste prevention, re-use, recycling and segregation shall be provided to all site staff and contractors.
WA07	Routine waste management audits shall be conducted.
WA08	Waste collection permits and letters of acceptance from waste acceptance facilities shall be provided to Fingal County Council on the appointment of waste contractors.
WA09	All waste loads leaving the site shall be digitally recorded.
WA10	All vehicles exiting the site carrying waste materials shall display a valid National Waste Collection Permit Office (NWCPO) number and be verified at the site exit gate.
Operational phase	
WA11	The communal waste storage areas shall be managed by the Facilities Management Company.
WA12	Domestic wastes shall be managed in accordance with the Site-Specific Operational Waste Management Plan (prepared by Byrne Environmental Consulting Ltd. and submitted under a separate cover as part of the planning application). The Plan is a 'live document' and will be updated by the Facilities Management Company prior to commencement of the operational phase and maintained up-to-date throughout the operational phase.
WA13	All residential units shall include a 3-bin waste segregation at source waste bin system, for (1) clean dry recyclables, (2) organic waste and (3) residual waste.
WA14	The communal waste storage areas may include WEEE and waste battery storage units.
WA15	An annual bulky waste collection service may be provided to residents by the Facilities Management Company.
WA16	The closest Civic Amenity Facility (Recycling Centre) that accepts waste batteries, WEEE and Bulky Wastes and hazardous household liquids such as paints and oils is located at Coolmine Industrial Estate, Dublin 15, c. 4.5km south of the site.

Ref.	Mitigation measure
WA17	The Facility Management Company shall monitor the communal waste storage areas and the volumes of waste associated with the apartment aspect of the development during the operational phase of the development.

21.3.11 Material Assets – Services

Table 21.19 Mitigation measures - Material Assets – Services

Ref.	Mitigation measure
Construction phase	
SE01	The precise locations of all existing on-site services (underground and overhead) will be confirmed prior to the commencement of works.
SE02	The precise routing of electricity, gas and telecommunications infrastructure on the site are to be agreed with ESB, GNI and Eir / Virgin Media, respectively, prior to the commencement of on-site works.
SE03	All reasonable precautions shall be taken to avoid unplanned disruptions to any services / utilities during the proposed works.
SE04	Consultation with the relevant services providers shall be undertaken in advance of works. This will ensure all works are carried out to the relevant standards and ensure safe working practices are implemented.
SE05	There will be an interface established between the contractor and the relevant utilities service providers / authorities during the construction phase of the proposed development. This interface will be managed in order to ensure a smooth construction schedule with no / minimal disruption to the local community.
SE06	All new foul water drainage pipes will be pressure tested and subject to an internal CCTV survey in order to identify any possible defects prior to operation, under the supervision of Fingal County Council.
SE07	DBFL Consulting Engineers Ltd. have prepared a Construction & Environmental Plan (2023) that is submitted separately under planning documentation. It contains best practice measures and protocols to be implemented during the construction phase of the proposed development to avoid / minimise environmental impacts, including in relation to surface water and foul water. These measures and those listed within Ch 10 Hydrology will be implemented in full.
SE08	In planning and executing the proposed works, regard shall be had to the Gas Networks Ireland <i>Guidelines for Designers and Builders – Industrial and Commercial (Non-Domestic) Sites (2018)</i> , the Health & Safety Authority (HSA) <i>Code of Practice for Avoiding Danger from Underground Services (2016)</i> , and the ESB Networks & Health and Safety Authority <i>Code of Practice for Avoiding Danger from Overhead Electricity Lines (2019)</i> .
SE09	Crossing points will be created where the haul route crosses under the live overhead electricity line in the north-east section of the site. Height restricting goalposts made using rigid, non-conducting and clearly visible material will be erected at the crossing point. Suitable rigid barriers will be placed on both sides of the crossing point corridor to prevent deviation from the crossing corridor. Warning signs will also be placed along the barriers.

Ref.	Mitigation measure
SE10	Hazard zone and exclusion zone shall be determined by the Contractor prior to undertaking works in the vicinity of the overhead lines. Site-specific risk assessment and work method statement shall be prepared before works are undertaken in the hazard zone.
Operational phase	
SE11	Any necessary maintenance and / or upgrades of on-site utilities infrastructure during the operational phase of the proposed development, will be carried out in accordance with the specifications of the relevant service providers.
SE12	Proposed drainage systems are to be maintained on a regular basis to reduce the risk of blockage and resulting flooding. Floor levels are set a minimum of 500mm above predicted 100-year flood levels.

Table 21.20 Monitoring- Material Assets – Services

Phase	Monitoring measure
Construction	Monitoring will be provided by each utility company with an overseeing responsibility by the appointed contractor during the construction phase.
Operation	Any monitoring of the built services required during the operational phase will be as advised by the relevant services provider.

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