

HOLLYSTOWN SITES 2 & 3 AND KILMARTIN LOCAL CENTRE SHD

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

BSM

Est.
1968

**Brady Shipman
Martin**

**Built.
Environment.**

Environmental Assessment **Built Environment**

Client: **Glenveagh Homes Ltd.**

Date: **14 December 2021**

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1 Introduction

1.1 Introduction

This Environmental Impact Assessment Report (EIAR) provides a statement of the effects that the proposed Strategic Housing Development (SHD) at Hollystown and 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 – 2021 ('PDA 2000'), the Planning and Development Regulations 2001 – 2021 ('PDR 2001') and the relevant guidance documents, as detailed herein.

1.2 The Applicant

The Applicant is Glenveagh Homes Limited.

1.3 The Proposed Development

1.3.1 Site of the Proposed Development

The site of the proposed development is situated in an emerging peri-urban area in the Hollystown / Kilmartin / Tyrrelstown¹ area, in the north-east of the Dublin Metropolitan Area (DMA), Co. Dublin. The nearest major commercial centres are at Mulhuddart and Blanchardstown, c. 3 km and 5 km to the south, respectively. The Kilmartin Local Centre portion of the site (refer to **Figure 1.2**) is situated immediately north of the existing Tyrrelstown Local Centre.

The site of the proposed development has a total area of c. 25.3 ha. It takes in a number of interlinked components (including Sites 2 and 3 and the Kilmartin Local Centre) spread over a wide area at Hollystown, Kilmartin and Tyrrelstown. It is situated predominantly on greenfield lands, including various agricultural fields and land within the former golf course of the Hollystown Golf Club; as well as smaller areas of existing hardstanding (including roads and car parks), and lands (formerly farmland) currently under construction / being used as a construction compound / storage area for the Bellingsmore housing development (planning refs. FW13A/0088(/E1); PL06F.243395).

1.3.2 Overview of the Proposed Development

The proposed development relates to a site of c. 25.3 ha at the townlands of Hollystown, Kilmartin, Hollywoodrath, Cruiserath, Yellow Walls, Powerstown, and Tyrrelstown, Dublin 15, which includes lands in the former Hollystown Golf Course and lands identified under the *Kilmartin Local Area Plan* (2013; as extended). The lands are bound by the R121 and Hollywoodrath residential development to the east, the under construction Bellingsmore residential development to the south and north, the former Hollystown Golf Course to the north, Tyrrelstown Educate Together National School, St. Luke's National School and Tyrrelstown Community Centre to the west and south and the existing Tyrrelstown Local Centre to the south.

¹ Note that the spelling 'Tyrrelston' is used interchangeably and may appear in documents submitted as part of the planning application. 'Tyrellstown', which refers to a different area to the north of Dublin Airport, may also appear in certain instances. The spelling more commonly used by Fingal County Council, 'Tyrrelstown', will be used throughout this report.

The proposed development will provide for the development of 548 no. residential units, consisting of 147 apartments/duplexes and 401 houses, ranging in height from 2 to 5 storeys and including retail/café unit, 2 no. crèches, 1 no. Montessori, 1 no. community hub, car and bicycle parking, open space, public realm and site infrastructure over a site area of c. 25.3 ha.

The site of the proposed development is comprised of two principal elements: the Hollystown Sites 2 & 3 area and the Kilmartin Local Centre area; plus foul sewer outfalls extending from these areas to the west², and a proposed pedestrian and cyclist link extending to the north of the Hollystown Sites 2 & 3 areas (**Figure 1.2**). In the Hollystown Sites 2 & 3 area, the proposed development provides for 428 units consisting of 401 no. 2 and 3 storey houses and 27 no. apartments set out in 9 no. 3-storey blocks. In the Kilmartin Local Centre area, the proposed development provides for 120 no. apartment/duplex units in 4 no. blocks ranging in height from 3 to 5 storeys. The local centre includes 2 no. crèches (including 1 standalone 2 storey crèche), 1 no. Montessori, a retail/café unit, and 1 no. community hub.

² Previously permitted under the scope of the planning application for Hollystown Site 1 (FCC reg. ref. FW21A/0042).

Figure 1.1 Location of the proposed development (© Bing Maps, 2021)



Figure 1.2 Site of the proposed development (© Bing Maps, 2021)



1.4 Environmental Impact Assessment (EIA)

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 2017 *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (Draft)* (p. 72) (‘the EPA guidelines’). The EIAR provides a statement of the effects, if any, which a proposed development, if carried out, would have on the environment.

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

Table 1.1 Overview of the EIA process

Stage	Description	Status
Screening	Is an EIA required?	Completed: Yes
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: <ul style="list-style-type: none"> ■ 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 (An Bord Pleanála) 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 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 Environmental Impact Assessment (EIA) Process
Chapter 3	Planning & Development Context
Chapter 4	Consideration of Alternatives
Chapter 5	Description of the Proposed Development
Chapter 6	Consultation
Chapter 7	Population & Human Health
Chapter 8	Biodiversity
Chapter 9	Land, Soils, Geology & Hydrogeology
Chapter 10	Hydrology

Section	Description
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	

1.5.1 EIAR 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 [EIARs] 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.”

Hollystown Sites 2 & 3 and Kilmartin Local Centre SHD
Environmental Impact Assessment Report (EIAR) Volume 2: Main Text

Table 1.3 EIAR contributors

Name	Company	Role / input	Qualifications
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Sorcha Turnbull	BSM	Planner	BSc Spatial Planning, Dip. EIA Mgmt. <ul style="list-style-type: none"> Senior Planner Corporate Member of the Irish Planning Institute (IPI) & Associate Member of the Royal Town Planning Institute (RTPI) Over 10 years of experience
Thomas Burns	BSM	EIAR technical review	B.Agr.Sc. (Land.) Dip. EIA Mgmt., Adv. Dip. Plan. & Env. Law <ul style="list-style-type: none"> Environmental Planner and Landscape Architect Member of Irish Landscape Institute & Irish Environmental Law Association Over 30 years of experience in EIA and LVIA
Lorraine Guérin	BSM	EIAR Co-ordinator; Background chapters; Population & Human Health; Material Assets – Services	BSc Ecology, MSc Env. Mgmt. & Policy <ul style="list-style-type: none"> Environmental Consultant Over two years of experience
Matthew Hague	BSM	Biodiversity	BSc, MSc, Adv. Dip. Plan. & Env. Law <ul style="list-style-type: none"> Ecologist Chartered Environmentalist – CEnv MCIEEM Over 18 years of experience
Paul Conaghan	AWN	Land, Soils, Geology & Hydrogeology; Hydrology	BSc, MSc <ul style="list-style-type: none"> Environmental Consultant Member of the International Association of Hydrogeologists 9+ years of experience

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Name	Company	Role / input	Qualifications
Marcelo Allende	AWN	Land, Soils, Geology & Hydrogeology; Hydrology	BSc, BEng <ul style="list-style-type: none"> ■ Environmental (Water Resources) Consultant ■ Member of IAH (Irish Group) ■ Member of Engineers Ireland ■ Over 15 years of experience
Ian Byrne	Byrne Environmental	Air Quality & Climate; Material Assets – Waste	BSc, MSc Env. Protection, PgDip Env. & Planning Law <ul style="list-style-type: none"> ■ Principal Environmental Consultant ■ Member of the Institute of Acoustics ■ Over 25 years of experience
Aoife Kelly	AWN	Noise & Vibration	BSc (Hons), PgDip, PhD. <ul style="list-style-type: none"> ■ Senior Acoustic Consultant ■ Member of Institute of Acoustics (MIOA) ■ 8 years of experience
Alex Craven	BSM	Landscape & Visual	BSc, MLA <ul style="list-style-type: none"> ■ Landscape Architect ■ LVIA specialist ■ Nine years of experience
Faith Bailey	IAC	Cultural Heritage, Archaeology & Architectural Heritage	BA, MA <ul style="list-style-type: none"> ■ Associate Director, Senior Archaeologist and Cultural Heritage Consultant ■ MCIFA ■ Over 13 years of experience
David Walshe	IN2	Microclimate – Daylight & Sunlight	BSc (Eng) <ul style="list-style-type: none"> ■ Environmental and Sustainability Director ■ Specialising in building simulation, and daylight and sunlight analysis ■ Chartered Engineer – CEng ■ Member Engineers Ireland ■ 27 years of experience
Aimee Dunne	DBFL	Traffic & Transportation	BEngTech, MEng <ul style="list-style-type: none"> ■ Chartered Engineer – CEng

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Name	Company	Role / input	Qualifications
			<ul style="list-style-type: none">■ Member of Engineers Ireland (MIEI)■ Member of the Institute of Highway Engineers (MIHE)■ Specialist in transport planning and design, and highway engineering■ Over 10 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 1.4**). 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**).

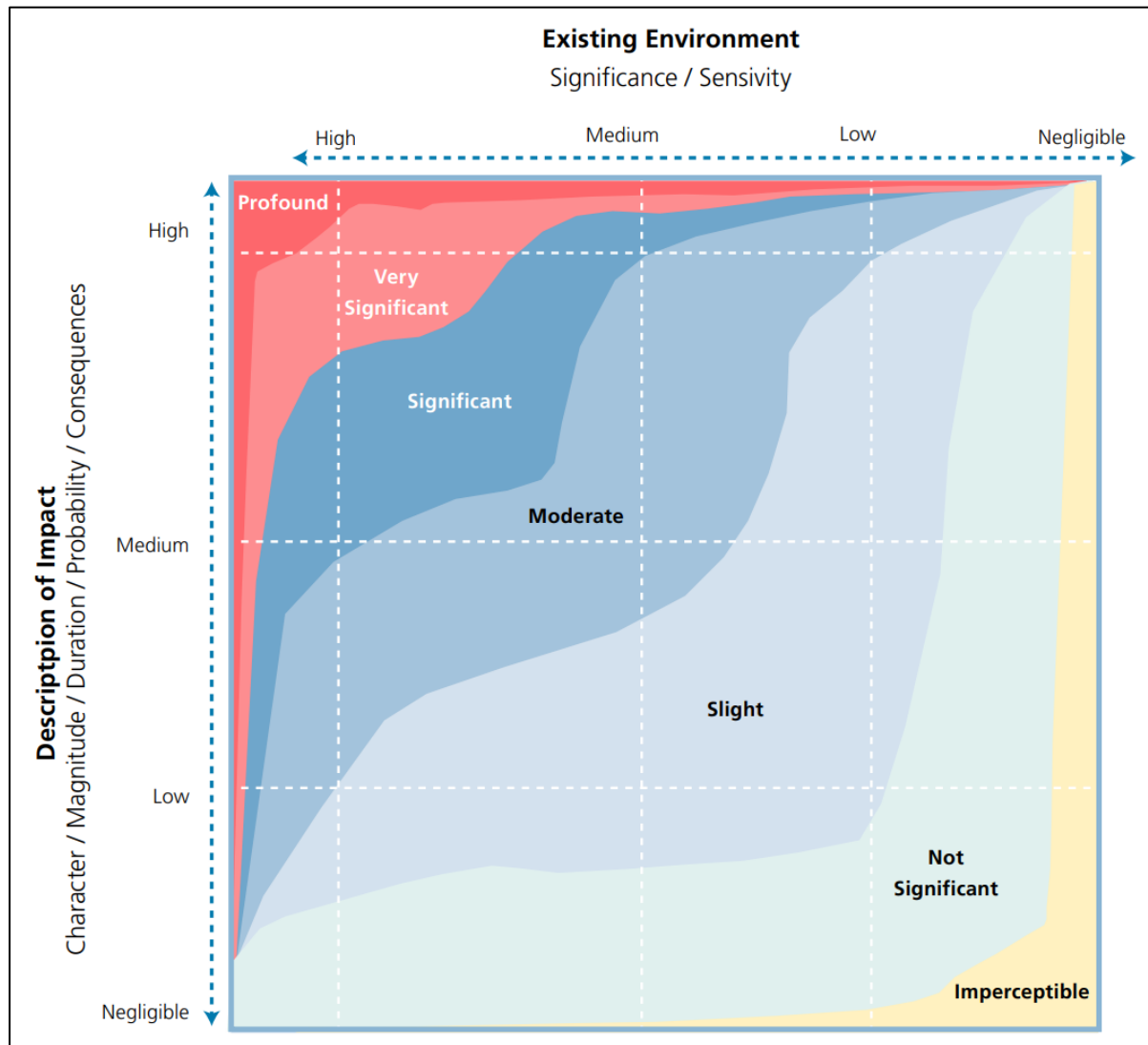
Table 1.4 Criteria for effect / impact characterisation (adapted from EPA, 2017)

Criteria	Definition
Quality	
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	
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 & Context	
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	
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 from seconds to minutes.
Temporary	Effects lasting less than a year.

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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	
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 impact (EPA, 2017)



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:

- 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*.
- EC (2017). *Environmental Impact Assessment of Projects. Guidance on Scoping*.
- EC (2017). *Environmental Impact Assessment of Projects. Guidance on the preparation of Environmental Impact Assessment Report*.
- EPA (2015). *Draft Advice Notes on Current Practice in the Preparation of Environmental Impact Statements*.
- EPA (2017). *Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports*.

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 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. An Bord Pleanála 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/EEC³ and Directive 2009/147/EC⁴;*
- (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)⁵."*

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;*

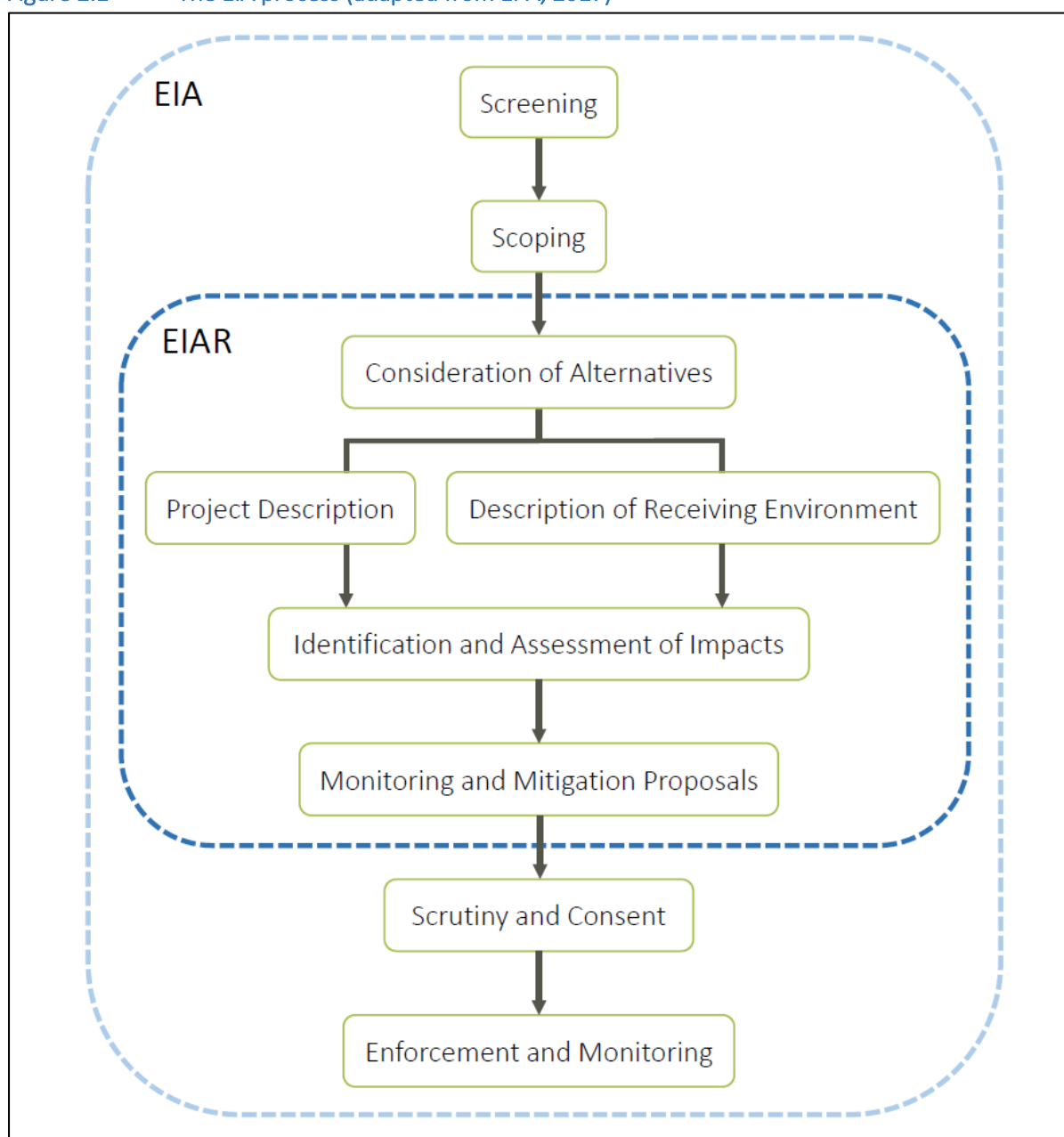
³ Directive 92/43/EEC on the conservation of natural habitats and wild fauna and flora ('the Habitats Directive')

⁴ Directive 2009/147/EC on the conservation of wild birds ('the Birds Directive')

⁵ Refer to Chapter 20 (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, 2017)



Where significant effects (as per the definition provided in **Table 1.4**) 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, describe⁶ and present as 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 (An Bord Pleanála 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

⁶ In accordance with the criteria set out in **Table 1.4** of this EIAR / Table 3.3 of the EPA guidelines

corresponding threshold (e.g. wind farms “with more than 5 turbines or having a total output greater than 5 megawatts”).

The proposed development is not of a class listed in Part 1 and, therefore, EIA is not a statutory requirement under this provision. However, the proposed development does correspond with the classes of development set out under subsections 10(b)(i) and 10(b)(iv) of Part 2 of Schedule 5, and exceeds the associated thresholds, as detailed in **Table 2.1**.

Table 2.1 Statutory requirement for EIA

Provision	Applicability to proposed development
Schedule 5, Part 2, subsection 10(b)(i): <i>“Construction of more than 500 dwelling units”</i>	548 units proposed
Schedule 5, Part 2, subsection 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”</i>	Gross site area of 25.3 hectares

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 EIAR (this report).

2.5 EIA Scoping

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 scoping of this EIAR has been informed by consultations with Fingal County Council and An Bord Pleanála.

The following topics, which include those stipulated in the amended Directive, have been scoped in for this assessment:

- Population and human health;
- Biodiversity (flora and fauna);
- Land, soils, geology and hydrogeology;
- Hydrology;
- Air quality and climate;
- Noise and vibration
- Landscape and visual amenity;
- Cultural heritage, archaeology and architectural heritage;
- 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

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. 12). 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 accident⁷ and / or disaster⁸, 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.

Considering the nature of the proposed development and its receiving environment, it is considered that 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 EIAR. 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); geohazards are addressed in Chapter 9 (Land, Soils, Geology & Hydrogeology); and hazards associated with industrial sites are addressed in Chapter 7 (Population & Human Health).

2.6 EIA Consultation

Decisions are taken by the competent authority through the statutory planning process, which allows for public participation and consultation, while receiving advice from other key statutory authorities with specific environmental responsibilities. Public participation and consultation is an integral part of the SHD process, as detailed in the Planning & Development (Strategic Housing Development) Regulations 2017 and in An Bord Pleanála publication, *Strategic Housing Development Pre-Application Consultation – Guidance for Prospective Applicants* (2017). A detailed account of the consultation process for the proposed development is provided in Chapter 6.

2.7 Other Assessments

2.7.1 Appropriate Assessment

European Sites, also known as the 'Natura 2000' network, 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

⁷ An event "... that threaten[s] immediate or delayed serious environmental effects to human health, welfare and/or the environment and require[s] the use of resources beyond those of the client or its appointed representatives to manage" (IEMA, 2020, p. 4).

⁸ 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.).

(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 – 2015 (the 'Birds and Natural Habitats Regulations') and the PDA 2000.

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

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

The first test is to establish whether, in relation to a particular plan or project, AA is required. Sections 177U of the PDA 2000 and Regulation 42 of the Birds and Natural Habitats Regulations require 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, the European Union (Birds and Natural Habitats) Regulations 2011 – 2015 and the PDA 2000. It has concluded that:

“In view of best scientific knowledge this report concludes that the proposed development at Hollystown Sites 2 and 3 and Kilmartin Local Centre, individually or in combination with another plan or project, will not have a significant effect on any European sites. This assessment was reached without considering or taking into account mitigation measures or measures intended to avoid or reduce any impact on European sites.”

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

2.7.2 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). The assessment has been completed in accordance with the OPW guidelines *The Planning System and Flood Risk Management – Guidelines for Planning Authorities* (2009).

The assessment has reviewed historic and predictive fluvial, pluvial, coastal and groundwater flood data to identify flood risk at the site of the proposed development. This exercise identified a medium risk of pluvial flooding at the site, from potential surcharging and blockage of the new drainage network.

The SSFRA has determined that the site is situated in Flood Zone C, where the probability of flooding is low. In accordance with the OPW guidelines, the proposed development is, therefore, considered 'appropriate' at this location, in the context of flood risk. It was determined that there is a:

- Low risk of tidal flooding;
- Low risk of fluvial flooding;
- Medium risk of pluvial flooding (due to surface water and human / mechanical error);
- Low risk of groundwater flooding; and
- Medium risk of flooding due to mechanical or human error.

In order to mitigate flood risk:

- The proposed drainage system will be maintained on a regular basis to reduce the risk of blockage.
- The proposed drainage network has been designed in accordance with the recommendations of the *Greater Dublin Strategic Drainage Strategy* and will provide attenuated outlets and associated storage up to the 1% annual exceedance probability (AEP) (1 in 100-year return period event). The drainage network has been designed to ensure that it can accommodate the 1% rainfall event in surcharged conditions.
- Overland flow paths will be towards open space areas and away from houses and apartments during extreme events (i.e. exceeding the 1% AEP event).
- At detailed design stage, the location of all dropped kerbs will be fully reviewed to ensure all overland flow paths are not impeded.

The potential impact climate change has been allowed for in the design of the surface water drainage network and storage system, with an allowance for a 20% increase in rainfall intensities.

The assessment has concluded that the proposed flood risk mitigation measures will address residual risk, and that the proposed development meets the requirements of the OPW guidelines.

3 Planning & Development Context

3.1 Introduction

This Chapter set out the policy in relation to proper planning and sustainable development in the context of the proposed development. It has been prepared by Lorraine Guerin, Environmental Consultant at Brady Shipman Martin.

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

International

- *United Nations Sustainable Development Goals (2015)*

National

- *Project Ireland 2040 – National Planning Framework and National Development Plan (2018)*
- *Sustainable Urban Housing: Design Standards for New Apartments (2020)*
- *Urban Development and Building Heights – Guidelines for Planning Authorities (2018)*
- *Design Manual for Urban Roads and Streets (2013)*
- *Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities (2009)*
- *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)*
- *Smarter Travel – A Sustainable Transport Future 2009 – 2020*

Regional

- *Eastern & Midland Regional Assembly Regional Spatial & Economic Strategy 2019 – 2031*
- *Fingal Development Plan 2017 – 2023*

Local

- *Kilmartin Local Area Plan (2013; extended)*

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 The United Nations Sustainable Development Goals



3.3 National Policy Context

3.3.1 Project Ireland 2040

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

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

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

With a view to achieving these NSOs, the NPF identifies a suite of National Policy Objectives (NPOs).

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 order to accommodate this growth and address the ongoing urban housing crisis in a sustainable and economical manner, the NPF establishes a policy of ‘compact growth’:

“A major new policy emphasis on renewing and developing existing settlements will be required, rather than continual expansion and sprawl of cities and towns out into the countryside, at the expense of town centres and smaller villages. The target is for at least 40% of all new housing to be delivered within the existing built-up areas of cities, towns and villages on infill and / or brownfield sites.” (p. 11)

Proximity to services and sustainable mobility options is a key consideration in terms of housing quality. The NPF requires homes to be located in places that can support sustainable development; i.e. places that are accessible to 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.

The need for greater access to childcare is also emphasised:

“Childcare provision in Ireland is reaching capacity and new planning approaches and sustained investment will be required, particularly in areas of disadvantage and population growth, to increase capacity and enable existing services to meet regulatory and quality requirements.” (p. 89)

A target of 50% of future population and employment growth is focused on the existing five cities and suburbs (NPO 2a). A population growth rate of 20 – 25% is targeted for Dublin City and suburbs to 2040. The NPF aims to support *“the future growth and success of Dublin as Ireland’s leading global city of scale, by better managing Dublin’s growth to ensure that more of it can be accommodated within and close to the city”* while *“Enabling significant population and jobs growth in the Dublin metropolitan area, together with better management of the trend towards overspill into surrounding counties”* (p. 22).

A list of ‘national core principles’ for the delivery of future housing in Ireland is set out in the NPF, and includes the following (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.”*

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 an emerging residential area. While the proposed development will be delivered on a greenfield site at the margin of an existing settlement (as opposed to in-fill / brownfield development), it is situated on lands that have been earmarked by the Local Authority (Fingal County Council) for residential development of this nature. It is also noted that the NPF allows for 60% of new housing to be situated in smaller towns, villages and

rural area, 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).

It will provide a mix of units in terms of tenure and housing typology, at a density and massing that are consistent with the existing development pattern at Hollystown, Kilmartin and Tyrrelstown. It will also provide new commercial and community amenities to meet the needs of existing and future residents in the area, including two crèches and Montessori school.

3.3.2 Sustainable Urban Housing: Design Standards for New Apartments (2020)

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 to reflect policy change in relation to co-living development. These Ministerial guidelines update previous guidance from 2015 and note that this is done so *“in the context of greater evidence and knowledge of current and likely future housing demand in Ireland taking account of the Housing Agency National Statement on Housing Demand and Supply, the Government’s action programme on housing and homelessness Rebuilding Ireland and Project Ireland 2040 and the National Planning Framework”* (p. 1).

The guidelines set out specific planning policy requirements (SPPRs), which planning authorities must have regard to; notwithstanding objectives and requirements of development plans, local area plans and Strategic Development Zone (SDZ) planning schemes.

They identify classes of ‘intermediate urban locations’ that are 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 extents; including:

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

The location of the proposed development corresponds with the latter category.

A Housing Quality Assessment has been prepared by Deady Gahan Architects, and submitted under separate cover as part of the planning application. It demonstrates the compliance of the proposed development with the relevant SPPRs as set out in the Guidelines. Please also refer to the Statement of Consistency prepared by BSM and submitted under separate cover.

3.3.3 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 objectives of the NPF, by securing a more compact and sustainable manner of development in urban areas.

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. It promotes building up and consolidating the development of existing urban areas, through a combination of brownfield and infill development and increased building heights. It particular aims to address a trend of Local Authorities setting *"generic maximum height limits across their functional areas"*, which , *"if inflexibly or unreasonably applied, can undermine wider national policy objectives to provide more compact forms of urban development"* (p.1).

The guidelines set out specific planning policy requirements (SPPRs), which planning authorities must have regard to; notwithstanding objectives and requirements of development plans, local area plans and Strategic Development Zone (SDZ) planning schemes.

In relation to residential development outside of city and town centres and inner suburbs, the guidelines note that newer developments:

"... typically now include town-houses (2-3 storeys), duplexes (3-4 storeys) and apartments (4 storeys upwards). Such developments deliver medium densities, in the range of 35-50 dwellings per hectare net. Such developments also address the need for more 1 and 2 bedroom units in line with wider demographic and household formation trends, while at the same time providing for the larger 3, 4 or more bedroom homes across a variety of building typology and tenure options, enabling households to meet changing accommodation requirements over longer periods of time without necessitating relocation. These forms of developments set out above also benefit from using traditional construction methods, which can enhance viability as compared to larger apartment-only type projects." (p. 16)

It is further stated that:

"The forms of development set out above can, where well designed and integrated, also facilitate the development of an attractive street-based traditional town environment with a good sense of enclosure, legible streets, squares and parks and a strong sense of urban neighbourhood, passive surveillance and community as in the case of the award winning Adamstown Strategic Development Zone in South Dublin County Council."

"Development should include an effective mix of 2, 3 and 4-storey development which integrates well into existing and historical neighbourhoods and 4 storeys or more can be accommodated alongside existing larger buildings, trees and parkland, river/sea frontage or along wider streets."

"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." (p. 16)

While the proposed development is situated predominantly on greenfield lands in a peri-urban, emerging residential area, it is situated on lands that have been specifically identified by the Local Authority (Fingal County Council) for residential development. In accordance with these guidelines, the proposed development provides for higher density development compared with traditional housing estate developments, incorporating three to five storey apartment elements at appropriate locations, duplexes and two to three storey houses.

Please refer to the Statement of Consistency prepared by BSM and submitted under separate cover.

3.3.4 Design Manual for Urban Roads and Streets (2013)

The Design Manual for Urban Roads and Streets (DMURS), was adopted by the Department of Transport and the Department of Environment in 2013. It 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 proposed development's internal road / street network has been designed in accordance with the DMURS. A DMURS Compliance Statement has been prepared by DBFL Consulting Engineers and submitted as part of the planning application under separate cover.

3.3.5 Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities (2009)

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 in respect of the proposed development in accordance with these Ministerial guidelines, and has informed the preparation of this EIAR. It has concluded that:

"In view of best scientific knowledge this report concludes that the proposed development at Hollystown Sites 2 and 3 and Kilmartin Local Centre, individually or in combination with another plan or project, will not have a significant effect on any European sites. This assessment was reached without considering or taking into account mitigation measures or measures intended to avoid or reduce any impact on European sites."

For further information, please refer to the AA Screening Report prepared by BSM and submitted under separate cover as part of the application for the proposed development.

3.3.6 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 an *Urban Design Manual*, which is discussed in relation to the proposed development in the following section.

The guidelines reiterate the need for compact urban residential development expressed in the NPF:

“... planning authorities should promote increased residential densities in appropriate locations, including city and larger town centres (defined for the purposes of these guidelines as towns with 5,000 or more people). This recommendation was based on three significant social, economic and environmental considerations, namely:

- *The trend towards smaller average household sizes,*
- *The need to encourage the provision of affordable housing, particularly in the greater Dublin area, and*
- *The need to reduce CO₂ emissions by reducing energy consumption and to support a more efficient use of energy in the residential and transport sectors, in line with Ireland’s commitments under the Kyoto Protocol.”* (p. 40)

It is also stated that *“firm emphasis must be placed by planning authorities on the importance of qualitative standards in relation to design and layout in order to ensure that the highest quality of residential environment is achieved”* (ibid). These qualitative standards are set out in the *Urban Design Manual*, the *Fingal Development Plan 2017 – 2023* and the *Sustainable Urban Housing Design Standards for New Apartments*, which have informed the design approach for the proposed development.

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 500 m of a bus stop, or within 1 km of a light rail stop or rail station.

The proposed development is situated c. 500 m from a bus stop on the R121 (Stop No. 7678), served by Dublin Bus route 40e, and is broadly consistent with these guidelines. For further information, please refer to the Statement of Consistency prepared by BSM and submitted under separate cover.

3.3.7 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 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.

3.3.8 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 2017 – 2023*, it is an objective of the Development Plan (Objective SW07, p. 276) to:

“Implement the Planning System and Flood Risk Management-Guidelines for Planning Authorities (DoEHLG/OPW 2009) or any updated version of these guidelines. A site-specific

Flood Risk Assessment to an appropriate level of detail, addressing all potential sources of flood risk, is required for lands identified in the SFRA, located in the following areas: Courtlough; Ballymadun; Rowlestown; Ballyboghil; Coolatrath; Milverton, Skerries; Channell Road, Rush; Blakescross; Lanestown/Turvey; Lissenhall, Swords; Balheary, Swords; Village/Marina Area, Malahide; Streamstown, Malahide; Balgriffin; Damastown, Macetown and Clonee, Blanchardstown; Mulhuddart, Blanchardstown; Portrane; Sutton; and Howth, demonstrating compliance with the aforementioned Guidelines or any updated version of these guidelines, paying particular attention to residual flood risks and any proposed site specific flood management measures.”

It is also noted that a *Strategic Flood Risk Assessment* (DBFL, 2012) was carried out in respect of the *Kilmartin Local Area Plan* (2013), which concluded that the majority of the LAP lands are within Flood Zone C, while the existing drainage channels and watercourses serving the lands are important features for the conveyance and containment of run-off up to the 1,000-year event. For those areas within Flood Zones A and B, it is recommended that any proposed development applies the justification test at planning stage:

“It is recommended that Site Specific Flood Risk Assessments are undertaken by the future developments within the LAP lands to demonstrate that the principals and recommendations within the Guidelines and this SFRA are complied with. They should utilise more detailed topographic survey information and development proposals to identify exact extents of the flood Zones A and B while also detailing specific residual flood risk and mitigation measures e.g. freeboards to be implemented.” (p. 13)

It is also a specific objective of the LAP (Objective FRM1) that the OPW guidelines be implemented.

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). The assessment has been completed in accordance with the OPW guidelines *The Planning System and Flood Risk Management – Guidelines for Planning Authorities* (2009). **Section 2.7.2** in Chapter 2, above, provides an overview of its findings. For further detail, refer also to Chapter 10 (Hydrology) of this EIAR and / or the SSFRA report, submitted under separate cover.

3.3.9 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, 2020) 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”. (pp. 20 – 21)

The proposed development will feature two crèches and Montessori school. A Schools Demand and Childcare Facilities Assessment has been prepared by BSM and is submitted as part of the planning application under separate cover. It has assessed the provision and need for childcare facilities and schools in the area in light of the proposed development.

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

Housing for All, published in September 2021, 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.

With a view to supporting sustainable communities (*"places where people want to live and work"*), the plan states a commitment *"to continuing the policy of having mixed-tenure communities, including through the mechanism of Part V of the Planning and Development Act 2000, to ensure that social and affordable housing are part of the mix across housing developments"* (p. 122).

It is noted that the plan sets out the Government's intention to replace the SHD process with new planning arrangements for large-scale residential developments (LRD) of 100+ homes (or 200+ student accommodation bed spaces) with a view to maintaining the efficiency of decision-making for developments of this nature, while returning decision-making to the local level and securing associated benefits in terms of public participation. The timeline for these changes, which have not yet come into effect, is identified as Q4 2021 in the plan.

The proposed development is consistent with the Government's new *Housing for All* plan. It will provide approx. 548 new, high-quality homes on lands zoned for residential and Local Centre development, where residential development is permitted in principle. In accordance with Government housing policy, the units will be of a range of tenure and housing types, including social housing (10% Part V provision) distributed throughout the proposed development.

3.3.11 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 objectives of *Rebuilding Ireland* in that it will deliver approx. 548 new homes of which 10% will be social housing.

3.3.12 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 has been designed with due reference to the *National Cycle Manual* and the DMURS.

3.3.13 Smarter Travel – A Sustainable Transport Future (2009 – 2020)

Smarter Travel – A Sustainable Transport Future (2009 – 2020) outlines the Government’s goals to achieve transport sustainability as follows:

1. Reduce overall travel demand;
2. Maximise the efficiency of the transport network;
3. Reduce reliance on fossil fuels;
4. Reduce transport emissions; and
5. Improve accessibility to transport.

The key targets that the Smarter Travel policy sets out in order to achieve these goals are as follows:

- Future population and employment growth will predominantly take place in sustainable compact forms, which reduce the need to travel for employment and services.
- 500,000 more people will take alternative means to commute to work to the extent that the total share of car commuting will drop from 65% to 45%.
- Alternatives such as walking, cycling and public transport will be supported and provided to the extent that these will rise to 55% of total commuter journeys to work.
- The total kilometres travelled by the car fleet in 2020 will not increase significantly from current levels.
- A reduction will be achieved on the 2005 figure for greenhouse gas emissions from the transport sector.

The design of the proposed development seeks to facilitate walking and cycling through various aspects of the design, including the inclusion of cycle lanes and secure bike storage facilities. There are also several public bus routes operating in the vicinity, as detailed in Chapter 16 (Traffic & Transportation).

Additionally, the provision of community and commercial amenities under the scope of the proposed development (i.e. crèches, Montessori school and café unit), will reduce the need for long journeys and promote walking and cycling.

Nevertheless, due to the location of the proposed development in a peri-urban area, there is likely to be 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, these lands have been earmarked for residential development by the Local Authority (Fingal County Council), whose Development Plan and associated land use zoning has been developed with reference to this and other relevant national-level policy documents. The design of the internal street layout is consistent with the DMURS and *National Cycle Manual*.

Please also refer to the Statement of Consistency, prepared by BSM and submitted as part of the planning application under separate cover, for a more detailed discussion of the consistency of the proposed development with the relevant policy documents.

3.4 Regional Policy Context

3.4.1 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. Under national policy, Regional Assemblies are tasked with drafting Regional Spatial and Economic Strategies (RSEs), which effectively set the agenda for implementing the national level development policy – the NPF – at the Regional level. 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 RSE for the Region was published in 2019. It constitutes a strategic plan and investment framework to shape the future development of the Region to 2031 in accordance with the NPF. The RSEs’ overarching vision 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 RSE 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 RSE sets out 16 Regional Strategic Outcomes (RSOs), which are closely aligned with the NPF’s NSOs and the United Nations’ SDGs:

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

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.

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). For the DMA specifically; housing supply, affordability, choice and quality / liveability are all identified as issues which need to be addressed *“to ensure Dublin can sustain its competitiveness, provide good quality of life for residents and continue to attract and retain talent and investment as a global city region”* (p. 100).

A number of ‘growth enablers’ for the Region are identified, which include promoting *“compact urban growth to realise targets of at least 50% of all new homes to be built, to be within or contiguous to the existing built up area of Dublin city and suburbs”* (p. 33). The RSES aims to achieve growth to 1.4 million people in Dublin City and suburbs and 1.65 million people in the Dublin Metropolitan Area (DMA) to 2031.

In accordance with the requirements of the NPF, the RSES contains a Metropolitan Area Strategic Plan (MASP) for the Dublin Metropolitan Area (DMA), which contains the location of the proposed development. The vision statement for the DMA is to *“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).

The MASP identifies a number of guiding principles for the sustainable development of the DMA, including the following (p. 101):

- *“Compact sustainable growth and accelerated housing delivery – To promote sustainable consolidated growth of the Metropolitan Area, including brownfield and infill development, to achieve a target of 50% of all new homes within or contiguous to the built-up area of Dublin City and suburbs, and at least 30% in other settlements. To support a steady supply of sites and to accelerate housing supply, in order to achieve higher densities in urban built up areas, supported by improved services and public transport.”*
- *“Integrated Transport and Land use – To focus growth along existing and proposed high quality public transport corridors and nodes on the expanding public transport network and to support the delivery and integration of ‘BusConnects’, DART expansion and LUAS extension programmes, and Metro Link, while maintaining the capacity and safety of strategic transport networks.”*

With a view to delivering housing in accordance with the above-stated principles, the MASP identifies several ‘strategic development corridors’ – high capacity transport corridors which have the potential to support the development of sustainable communities:

- 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)
- 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).

As well as calling for increased residential density in the DMA, the RSES emphasises the need for healthy placemaking, i.e. *“integration of better urban design, public realm, amenities and heritage to create attractive places to live, work, visit and invest in”* and *“sustainable communities to support active lifestyles including walking and cycling”* (p. 48). The proposed development provides a high-quality urban / suburban design, informed by the aforementioned Ministerial Guidelines. It will also include public amenities, including two crèches, Montessori school and café, to support the existing and proposed residential community in the area. The proposed development includes design features promoting walking and cycling, including a high quality public realm incorporating soft landscaping, cycle lanes and secure bike parking facilities.

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.

The role of the built environment in decarbonisation and climate adaptation is also highlighted in the RSES, which aims to “*Promote sustainable settlement patterns to achieve compact urban development and low energy buildings*” (p. 173).

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 Statement of Consistency, prepared by BSM and submitted as part of the planning application under separate cover.

3.4.2 Fingal Development Plan 2017 – 2023

The Site is located within the administrative area of Fingal County Council and subject to the *Fingal Development Plan 2017 – 2023*, including subsequent variations. In 2020, the Council adopted Variation No. 2, to align the Development Plan with the policies and objectives of the NPF and the RSES.

The Development Plan sets out the Council’s policies and objectives for the development of its administrative area to 2023. It seeks to develop and improve the social, economic, environmental and cultural assets of the area, in a manner that is sustainable and consistent with the national level policies.

The Core Strategy of the Development Plan requires local authorities to identify and reserve an appropriate amount of land in the right locations to meet the housing and population targets set out for the Region. Local Area Plans prepared by the Council must be consistent with the allocations set out in the Core Strategy of its Development Plan.

The Core Strategy identifies the quantum, location and phasing of development for the plan period that is consistent with the regionally defined population targets and settlement hierarchy. It reflects the availability of existing services, planned investment, sequential development and environmental requirements (i.e. an evidence based approach in determining the suitability of lands for zoning purposes) and, therefore, also provides the policy framework for all Local Area Plans.

The emphasis of the Development Plan is to continue to consolidate the existing zoned lands and to maximise the efficient use of existing and proposed infrastructure. In this way the Council can ensure an integrated land use and transport strategy in line with national and regional policy. This is reflected in Objective SS01 to *“Consolidate the vast majority of the County’s future growth into the strong and dynamic urban centres of the Metropolitan Area while directing development in the hinterland to towns and villages, as advocated by national and regional planning guidance”* (p. 40).

Dublin Airport is situated within the administrative area of Fingal County Council, and an approx. 6 km linear distance from the site of the proposed development. The members of the Council resolved to adopt Variation No. 1 of the Development Plan on 9 December 2019. This variation set out revised Noise Zones and policy objectives in relation to aircraft noise from Dublin Airport.

Four noise zones (Zone A to D) are now indicated, representing potential 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 12.10** in Chapter 12 of this EIAR (Noise & Vibration) sets out the objectives to be adhered to by applicants for developments in each zone.

Blanchardstown is c. 5 – 6 km from the site of the proposed development and is the nearest major urban centre. Under the Development Plan, Blanchardstown is defined as a ‘Metropolitan Consolidation Town’ and one of the County’s *“primary locations for growth”* (p. 20). Among the main aims of the Development Plan is the *“Consolidate the growth of the major centres of Blanchardstown and Balbriggan by encouraging infill development and intensification of development within appropriate locations”* (p. 9). The vision for Blanchardstown as a growth centre is reflected in Objective SS12, to *“Promote the Metropolitan Consolidation Towns of Swords and Blanchardstown as Fingal’s primary growth centres for residential development in line with the County’s Settlement Hierarchy”* (p. 44).

Blanchardstown is the largest existing settlement within the local authority administrative area. It is a nationally important residential, employment and educational centre, well served by transport infrastructure and public transport services, and situated in close proximity (c. 7 km) to Dublin City Centre.

It is noted that *“Outside of the centre [of Blanchardstown] there are a number of residential areas which include the distinct urban villages of Clonsilla, Castleknock, Mulhuddart, Ongar and Tyrrelstown”* (p. 101). Objective BLANCHARDSTOWN 18 is to prepare and / or implement a number of Local Area Plans (LAP) and Masterplans for areas in the Blanchardstown area and hinterlands during the lifetime of the Development Plan, including the *Kilmartin Local Area Plan* and *Tyrrelstown Masterplan*, which apply to portions of the site of the proposed development.

Mulhuddart Village is situated immediately north-west of Blanchardstown. It is defined, under the Development Plan, as a ‘Consolidation Area within [the] Gateway’. It is described as *“an important commercial, retail and local services centre for the surrounding community”* that has *“undergone successful regeneration and enhancement in recent years with several opportunities existing for further additional redevelopment and improvement”* (p. 109). A number of development objectives are set out for Mulhuddart, including the following (ibid.):

- **Objective MULHUDDART 1:** *“Provide for appropriate mixed use village-scale development which enhances local services and community facilities, and has a residential content.”*

- **Objective MULHUDDART 2:** *“Improve pedestrian and cycle facilities in Mulhuddart Village and create a network of pedestrian and cycle routes between Mulhuddart, along the Old Navan Road towards the N3 and Damastown, Tyrrelstown, Kilmartin and Hollystown.”*

Tyrrelstown is described as a “significant commercial and residential area located 3.5km to the north of the centre of Blanchardstown, but still within its development boundary” that has “a purpose built centre which was developed to serve the emerging residential population; as well as the wider area including new development at Kilmartin” (p. 110). The stated development strategy for Tyrrelstown is as follows:

“Enhance and improve this centre by encouraging suitable retail, commercial and residential uses alongside new school and associated recreational developments. Future development of this area whether of a local centre, open space or residential land use nature needs to respect existing development within the area and be carried out in a sustainable manner to provide a high quality living environment for the existing and future population.” (ibid.)

The following development objectives are set out for Tyrrelstown (ibid.):

- **Objective TYRRELSTOWN 1:** *“Provide for appropriate mixed use development which enhances local services and community facilities and which has a residential element.”*
- **Objective TYRRELSTOWN 2:** *“Create a network of pedestrian and cycle routes between Tyrrelstown, Kilmartin, Hollystown and Mulhuddart.”*
- **Objective TYRRELSTOWN 3:** *“Ensure the physical and visual integration of the centre with the newly developing residential areas to the north.”*
- **Objective TYRRELSTOWN 4:** *“Secure a safe and convenient road, pedestrian and cycle system and street network to accommodate the growth of Tyrrelstown.”*

Hollystown is described as follows in the Development Plan:

“Hollystown is a residential area located approximately 4km to the north of the centre of Blanchardstown, north of Hollystown Golf Course. It has developed from a small rural settlement, originally centred on the St. Thomas’s Church of Ireland and Hollystown House, a Protected Structure. An area of LC zoning is identified in the centre of the village to provide additional facilities to serve the emerging residential population, including that of Kilmartin. The proximity of rural lands and groups of mature trees contribute to the attractive setting of this area.” (p. 111)

The stated development strategy for Hollystown is as follows:

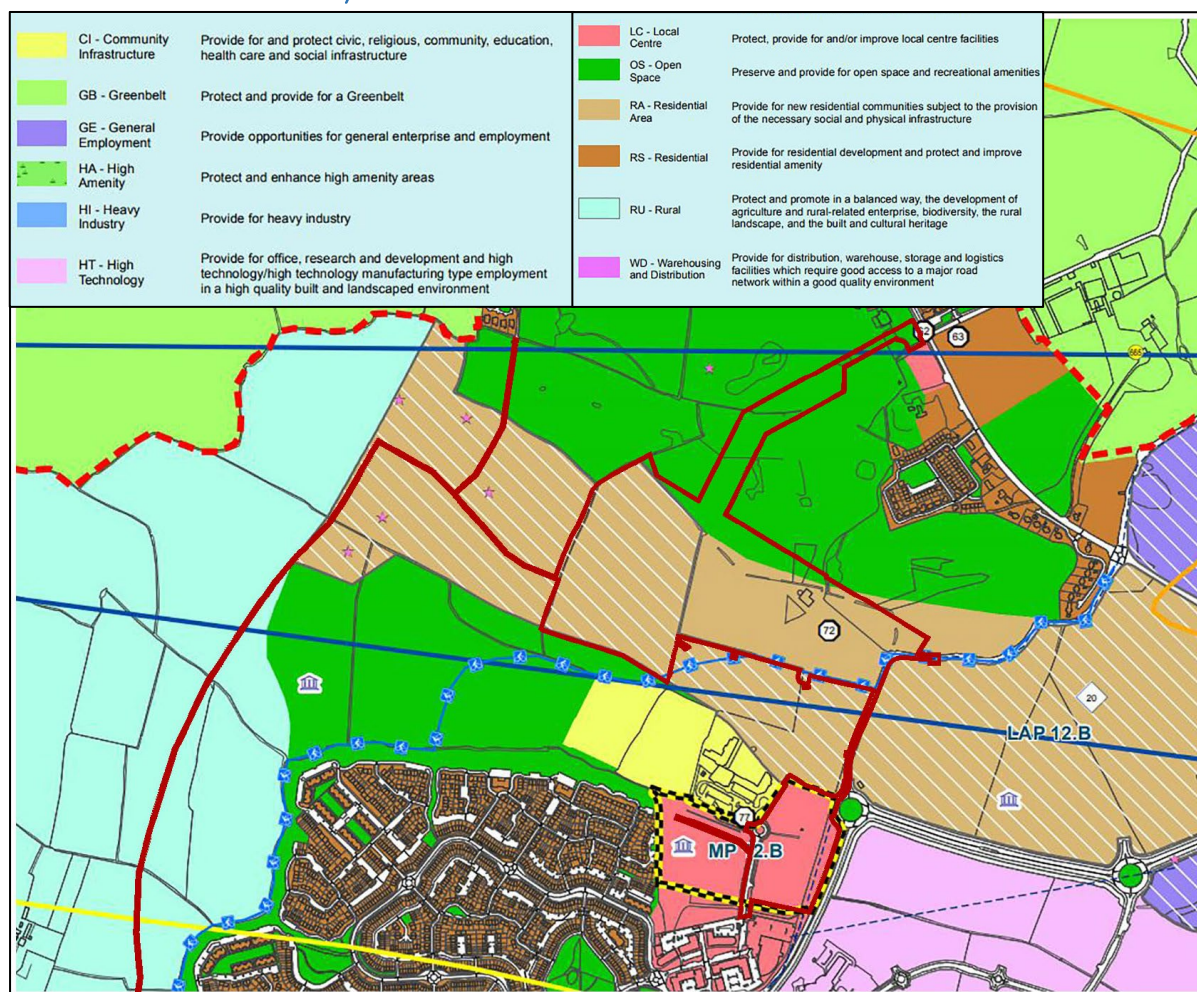
“Ensure the future development of this area respects existing development within the area and is carried out in a sustainable manner to provide a high quality living environment for the existing and future population.” (ibid).

The following development objectives are set out for Hollystown:

- **Objective HOLLYSTOWN 1:** *“Provide for an appropriate level of development to complement existing local services and promote the provision of community facilities at a scale commensurate with the level of existing and future residential development.”*
- **Objective HOLLYSTOWN 2:** *“Ensure the physical and visual integration of the centre with the newly developing residential areas and landscape setting.”*
- **Objective HOLLYSTOWN 3:** *“Create a network of pedestrian and cycle routes between Tyrrelstown and Kilmartin, Mulhuddart and Hollystown.”*

The northern portion of the proposed development site is predominantly zoned as ‘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”. The southern portion of the proposed development site is predominantly zoned as ‘LC – Local Centre’, for which the corresponding objective is to “Protect, provide for and/or improve local centre facilities”. The northern (link) portion of the site also extends into lands zoned ‘OS – Open Space’, for which the corresponding objective is to “Preserve and provide for open space and recreational amenities”. The proposed pipeline portion of the site extends into lands zoned ‘RA – Residential Area’ and ‘RU – Rural’, for which the corresponding objective is to “Protect and promote in a balanced way, the development of agriculture and rural-related enterprise, biodiversity, the rural landscape, and the built and cultural heritage”.

Figure 3.2 Land use zoning at the location of the proposed development (*Fingal Development Plan 2017 – 2023*)



The following zoning map-based objectives are also pertinent to the proposed development site:

- LAP 12.B: Site 3 subject to the *Kilmartin Local Area Plan* (2013; extended)
- MP 12.B: Portion of Local Centre lands subject to the *Tyrrelstown Masterplan*
- Local Objective 72 (Site 2): Provide a recreational facility for the Dublin G.A.A. County Board, through the provision by them of a 2.5ha playing pitch and local recreational community facility including a clubhouse, related ancillary facilities and car and cycle parking

- Local Objective 77 (within Local Centre lands): Facilitate improved parking and drop-off/collection on the approach road to and within Tyrrelstown school campus in conjunction with the Department of Education and Skills
- Indicative cycle / pedestrian route running along southern margin of Site 2

The *Kilmartin Local Area Plan* (LAP) is discussed in relation to the proposed development in **Section 3.5.1**, below.

In relation to Objective MP 12.B, an overall approach to the Local Centre lands is set out in the Architectural Design Statement by O'Mahony Pike Architects, submitted under separate cover as part of the planning application.

In relation to Local Objective 72, the Applicant has engaged with Dublin GAA, and it is proposed to deliver a larger 9.25 ha GAA / community playing fields and facility to the north of the proposed development, at the site of the former Hollystown Golf Club, which will be subject to a separate application on the part of Dublin GAA. This larger landbank will seek to make use of existing car access, parking, and clubhouse facilities at the former Hollystown Golf Club, and connect back to residential areas through the links proposed as part of this application as Class 1 Public Open Space.

This approach will deliver significantly beyond the requirements of Local Objective 72 in terms of land area and the breadth of facility that will be delivered to the Dublin GAA but, importantly, also back to Tyrrelstown GAA and the wider community. The objective will be met at an alternative location but proximate to the residential area in which it is proposed in the Development Plan. The pedestrian and cycle linkages proposed under the scope of the proposed development (which is the subject of this application) will provide convenient access between the planned GAA facilities, existing and proposed residential areas and educational facilities in the area.

In relation to Local Objective 77, the proposed development will provide 9 no. public on-street parking spaces on the new Link Street, which will form part of the areas to be taken in charge by Fingal County Council.

The proposed development responds to the requirements of the Development Plan by providing a high quality cyclist and pedestrian infrastructure network.

The proposed development is consistent with the objectives of the Development Plan. However, there are material contraventions of the Development Plan, in relation to the Local Objective 72 (discussed above) and parking provision. For details of these material contraventions, refer to the Material Contravention Statement, prepared by BSM and submitted under separate cover as part of the planning application.

Refer also to the Statement of Consistency prepared by BSM and submitted under separate cover as part of the planning application, which provides a detailed analysis of the consistency of the proposed development with the relevant policy objectives at national, regional and local levels.

3.5 Local Policy Context

3.5.1 Kilmartin Local Area Plan (2013; extended)

The *Kilmartin Local Area Plan* ('the LAP') was adopted by Fingal County Council in 2013. It provides a development strategy for the 78.51 hectare Kilmartin development lands, as designated in the *Fingal*

Development Plan 2011 – 2017. As stated in the LAP, the development lands in question are “at the north-western development boundary of Blanchardstown” (p. 1).

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

- *“To éeate 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 stated purpose of the LAP is (ibid.):

- *“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 a 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.”*

Figure 3.3 illustrates the LAP boundary, showing that the LAP is applicable to the Site 3 and Local Centre portions of the site of the proposed development.

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 Kilmartin LAP lands in relation to wider area (*Kilmartin Local Area Plan (2013)*)

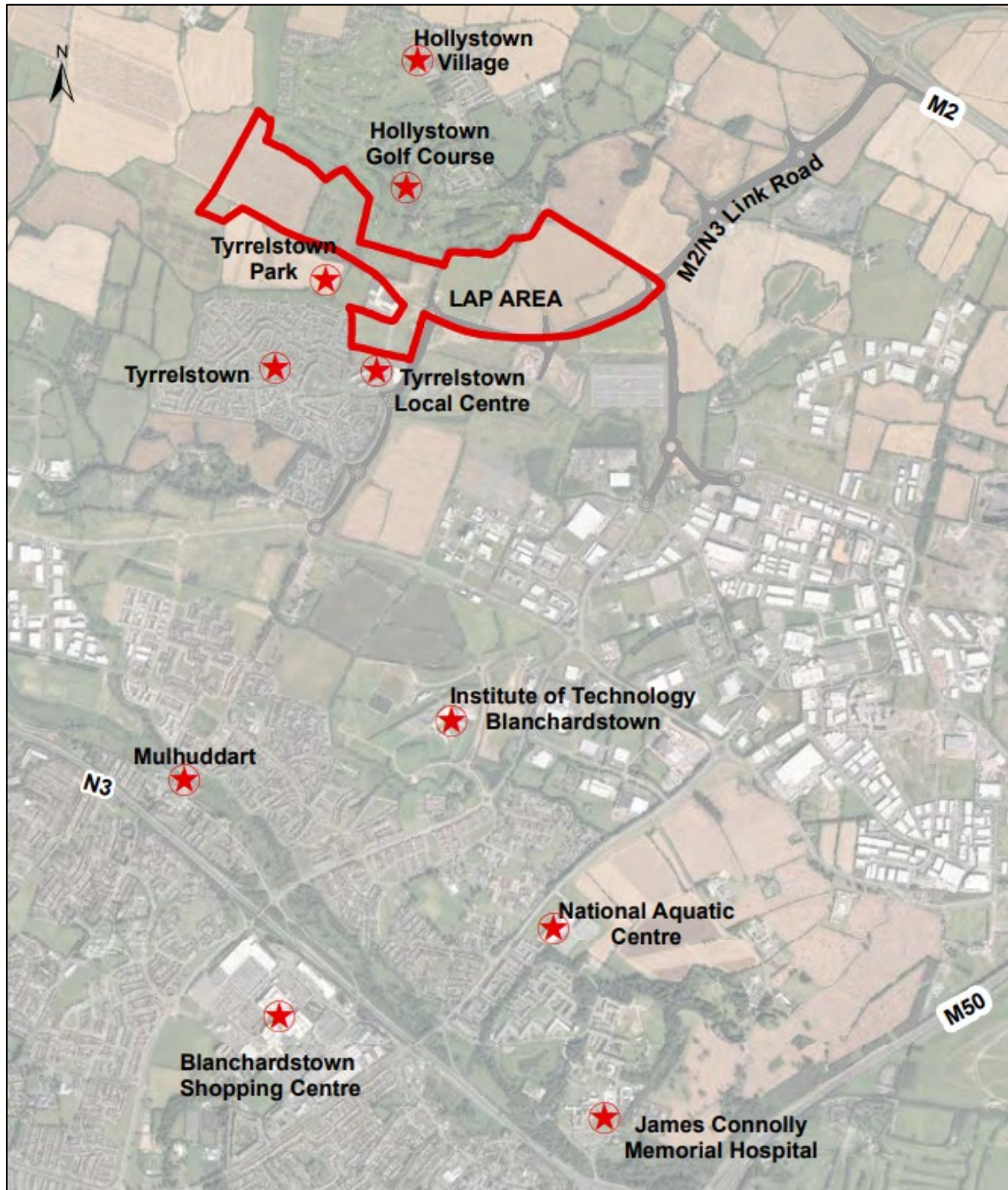
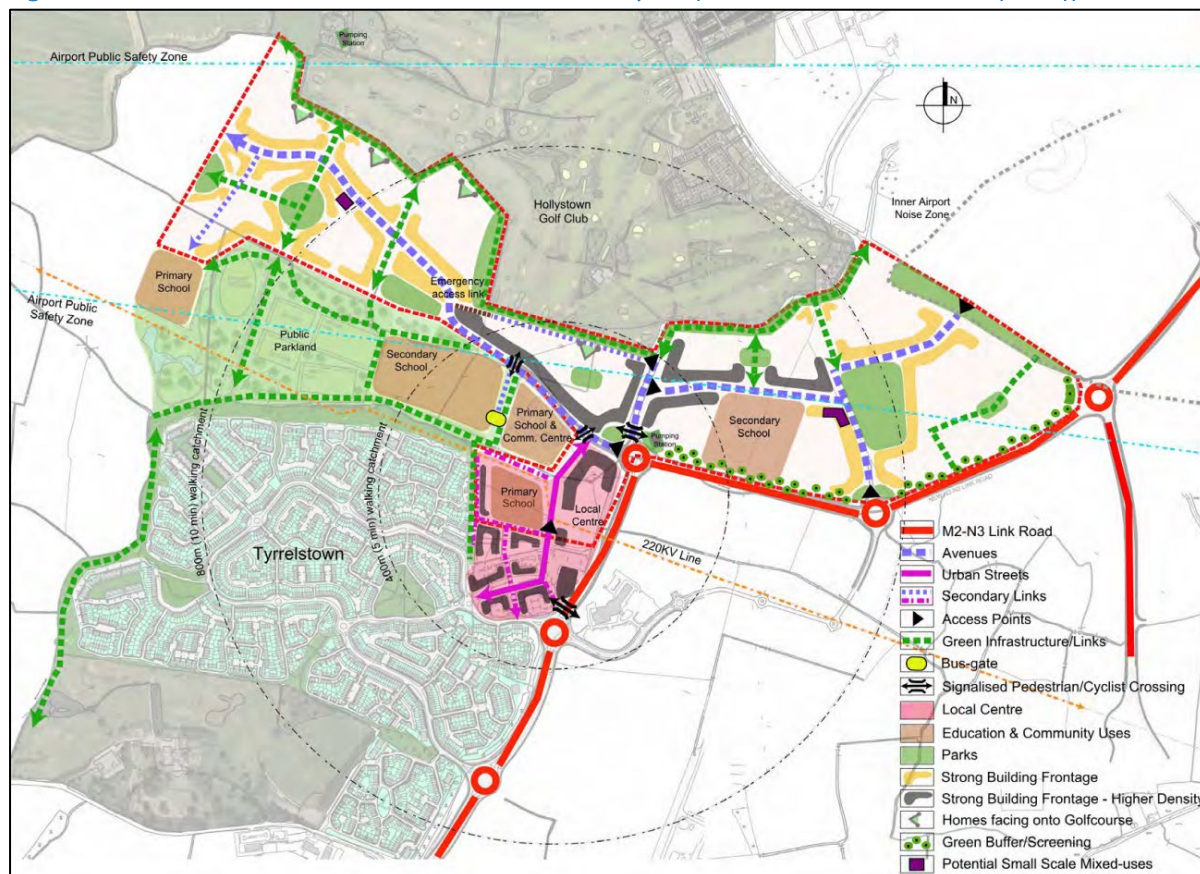


Figure 3.4 Kilmartin LAP lands – urban structure plan (*Kilmartin Local Area Plan (2013)*)



The LAP sets out development objectives for the lands in relation to landscape; archaeological and architectural heritage; biodiversity; parks, open space and recreation; water management and water quality; movement and transportation; density and housing mix; building heights; waste; community infrastructure; airport safety and noise; climate change; and design; among other topics. Objectives in relation to specific environmental topics are addressed, where appropriate, in the corresponding EIAR chapter(s).

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 'RA – Residential Area' zoned lands are expected to accommodate approx. 1,390 residential units, with additional units to be accommodated on the lands zoned 'LC – Local Centre'. The envisaged total future population of the LAP lands is c. 4,000.

It is stated that the residential density of the 'RA' lands to the west of the R121 should be approx. 35 units per hectare, while that for 'RA' lands to the east of the R121 should be approx. 20 units per hectare. Higher residential densities will be accommodated within the Local Centre and at appropriate adjacent locations, while lower densities will be accommodated at the eastern and western parts of the site.

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; while apartments are envisaged in the 'LC' lands.

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, with development of 3 – 5 storeys encouraged at the Local Centre, and 3 – 3.5 storeys fronting onto the park. It is stated that *“Local landmark and feature building elements over the stated building heights are acceptable at important locations, where they contribute to the visual amenity, civic importance and legibility of the area”* (p. 13).

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, and two parks to be provided (one on either side of R121) with passive surveillance from adjacent homes. 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 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 relation to the facilities to be provided at the Local Centre, the LAP states the following (pp. 14 – 15):

“The Local Centre will be designed within an urban village street pattern connecting in a fully permeable manner with the surrounding street network. Residential/ office over retail/commercial units will be supported. Stand-alone, single-storey supermarket buildings are not considered appropriate. Small scale comparison shops which cater for local requirement will be accommodated, such as a shoe shop, clothing boutique, bookshop or similar. Trip intensive commercial developments with requirements for significant car-parking should be concentrated to the east of the main urban street.”

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

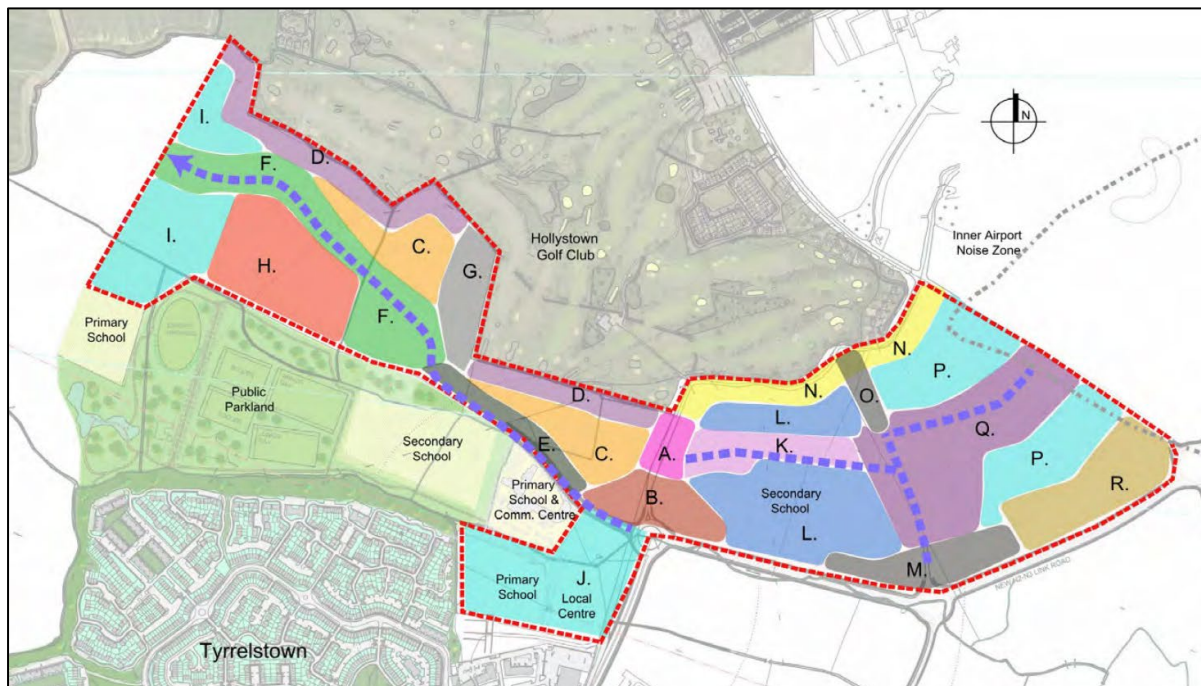
“A significant landscape buffer is to be provided which will include provision of a trimtrack/parcourse. Access to the LAP lands west of the R121 is gained to the south of this

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 1

“A higher density area defined by its location fronting onto the existing primary schools/location of proposed post-primary school and public open space. Dwellings will be south facing with north facing rear gardens. A wide tree lined avenue with a strong street edge will be provided with provision for private parking/public parking, and with space to accommodate buses. Additional car parking will be carefully incorporated into the design of houses. (See section 4.3 for more detail on avenue design).”

Figure 3.5 Envisaged phasing of Kilmartin LAP lands (*Kilmartin Local Area Plan (2013)*)



F. 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).

G. Hollystown Golf Club Boundary / Public Open Space

“A medium density character area type defined by its location fronting onto Hollystown Golf Club. Dwellings will be east facing with west facing rear gardens. A wider area of open space will be provided which will include provision of a trimtrack/parcourse. A north-south connection will be maintained. An emergency vehicular access link will be provided to the south.”

J. Local Centre

“Defined by the permitted land uses within the ‘LC’ zoning, its relationship to the existing neighbourhood centre and its key role in linking the Kilmartin residential lands to the existing

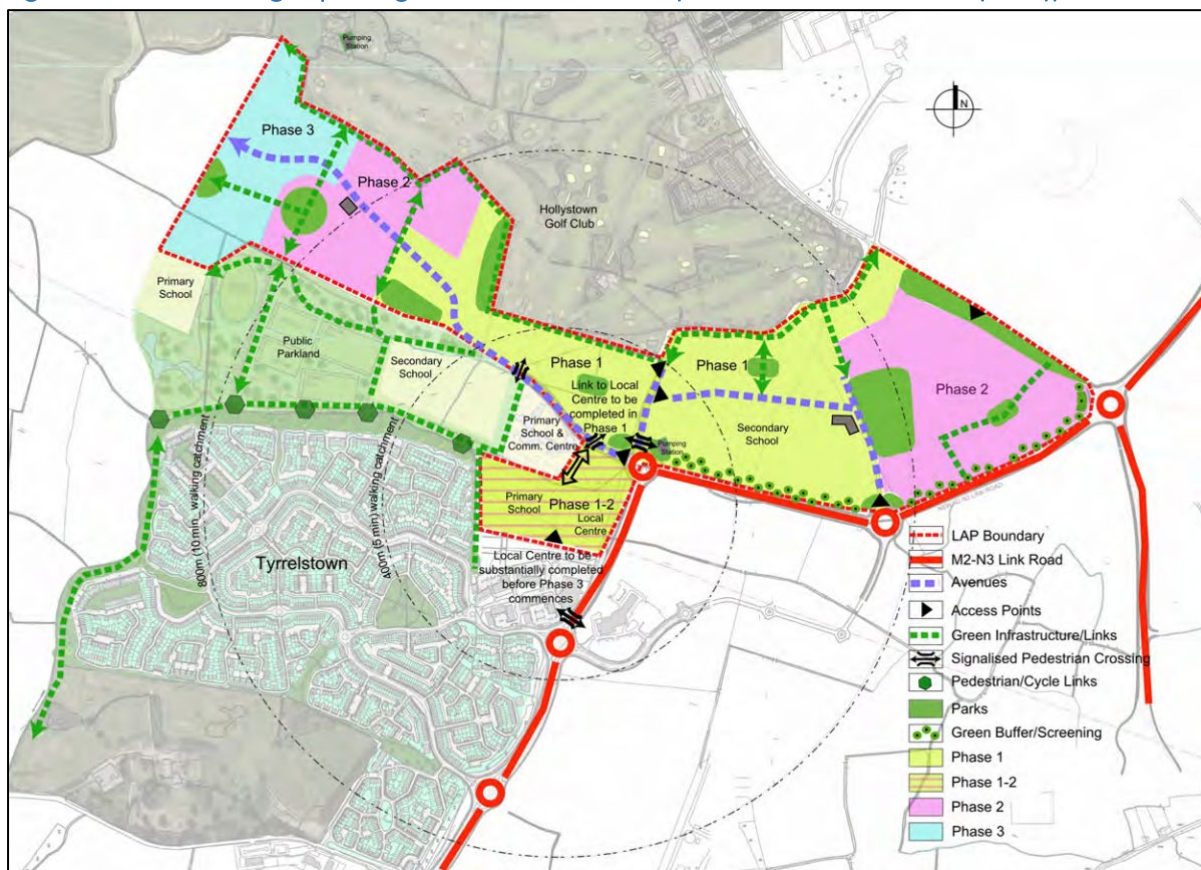
Tyrrelstown Centre. The building heights in this higher density area will range in general from 3/5 storeys, with a mixture of residential/commercial/ cultural/community land uses dominating. Single storey stand alone commercial units will not be permitted. A high level of design is expected with strong north-south permeability to exist. Orientation of buildings will be addressed to reduce prominence of overhead power lines. Provision of a civic amenity open space with strong urban frontages is to be provided."

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 548 (39%) of the 1,400 residential units targeted in the LAP.
- It will deliver a residential density of 35.2 units / hectare across Sites 2 & 3, with higher densities (80 units / hectare) at the Local Centre, in accordance with the targets 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, with taller elements appropriately located at the Local Centre.
- Its internal road network will incorporate high-quality pedestrian and cyclist infrastructure.
- It will provide two crèche facilities and a Montessori school with safe outdoor play areas.
- It will feature SuDS measures, as detailed in the Infrastructure Design Report, submitted under separate cover as part of the planning application.
- 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.

The proposed development is consistent with the objectives of the Local Area Plan. However, there are several material contraventions in relation to building height, residential density and unit mix parameters. For details of these material contraventions, refer to the Material Contravention Statement, prepared by BSM and submitted under separate cover as part of the planning application.

For further information, refer to the *Statement of Consistency* submitted under separate cover as part of the planning application.

3.6 Planning History of the Site

The site of the proposed and immediate vicinity have been subject to a number of planning applications in recent years, as summarised in **Table 3.3**. Refer to Chapter 20 (Cumulative Impacts) for a more comprehensive account of existing, permitted and proposed other developments in the vicinity of the proposed development.

Table 3.3 Pertinent planning applications at the site of the proposed development

Ref.	Applicant	Description	Decisions & Status
FW21A/0042	Glenveagh Homes	<i>Hollystown Site 1</i> Permission for residential development on c. 7.71 ha site at Hollywoodrath Road (R121), Hollystown, Dublin 15; consisting of 69 no. houses; comprising 52 no. two-storey houses, and 17 no. three-storey houses; private open spaces, car and bicycle parking, refuse storage; and all associated roads, services, public open spaces, changes in level, hard and soft landscaping and boundary treatments, where required. It was prepared in tandem with the subject application and considered as part of a wider development strategy for the landholding. It is noted that the foul sewer outfall being proposed under the scope of the proposed development	Granted by FCC on 20 July 2021; Construction not commenced

Hollystown Sites 2 & 3 and Kilmartin Local Centre SHD
Environmental Impact Assessment Report (EIAR) Volume 2: Main Text

Ref.	Applicant	Description	Decisions & Status
		that is the subject of this EIAR, was previously permitted under the scope of this development.	
TA06F.303956	Glenveagh Homes	<i>Hollystown Site 2</i> Glenveagh Homes applied for planning permission for 253 No. dwellings in March 2019, which included the eastern part of the Hollystown Sites 2 & 3 portion of the site of the proposed development. The application was refused by An Bord Pleanála (ABP) citing two reasons for refusal on the 25th June 2019. For further information, refer to the Planning Report submitted under separate cover as part of the planning application.	Refused by ABP on 25 June 2019
FW13A/0088; PL06F.243395; FW13A/0088/E1	Twinlite Services Ltd; Glenveagh Homes	<i>Bellingsmore</i> Permission for development at Church Road, Kilmartin, Tyrrelstown, Dublin 15; consisting of the construction of 177 no. dwellings (13 no. with domestic garages) together with a new link road to the east of Tyrrelstown Educate Together School, to connect with Tyrrelstown Town Centre, and all associated and ancillary site works.	Granted by FCC on 23 April 2014; Appealed on 20 May 2014 Granted by ABP on 20 October 2014 Permission for extension granted by FCC on 13 August 2019 Development under construction
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	<i>Hollywoodrath</i> 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 435 no. dwelling units, a crèche, internal road network, and associated ancillary works. A series of permissions for alterations and extensions have subsequently been granted by FCC.	Granted by FCC on 13 March 2015 Appealed on 9 April 2015 Appeal withdrawn on 5 June 2015 Development under construction
FW15A/0009; FW16A/0191; PL06F.248736	Kavcre Tyrrelstown Limited	<i>Bay Meadows</i> Permission for residential development on 8.33 ha site at Hollywoodrath, Hollystown, Dublin 15; 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.	Granted by FCC on 14 October 2015 Permission for amendments granted by FCC on 25 May 2017 Appealed on 21 June 2017 Granted by ABP on 3 November 2017 Development under construction

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.”

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
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. cultural heritage, biodiversity, traffic and so on) are discussed in the respective chapters of this EIAR. In this case, the Do-Nothing scenario might entail:

- (a) A continuation of the existing status and use of the lands (i.e. predominantly agricultural land, waste ground and former golf course lands); or
- (b) Development (likely very similar to the current proposal) under the scope of a separate proposal and application at some point in the future.

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 548 residential units proposed and the accommodation that these would otherwise provide, as well as the community amenities and economic opportunities provided by the proposed Local Centre.

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 Dublin Metropolitan Area.

4.5 Alternative Locations

Taking into account the Local Authority zoning and development objectives for the development lands, it is considered that the site is suitable for the proposed development, which has been tailored for the achievement of site-specific development objectives. Therefore, it is not considered that the consideration of alternative locations is relevant in this case. As stated in the EPA guidelines:

"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'..."

4.6 Alternative Layouts & Design

The design of the proposed development has been an iterative process which has involved the entire design team. 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 and An Board Pleánála.

The design of the proposed development has undergone rigorous appraisal, which has led to a final layout that responds appropriately to the site characteristics, opportunities and constraints.

This section sets out the intermediate design progressions of the scheme, 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.

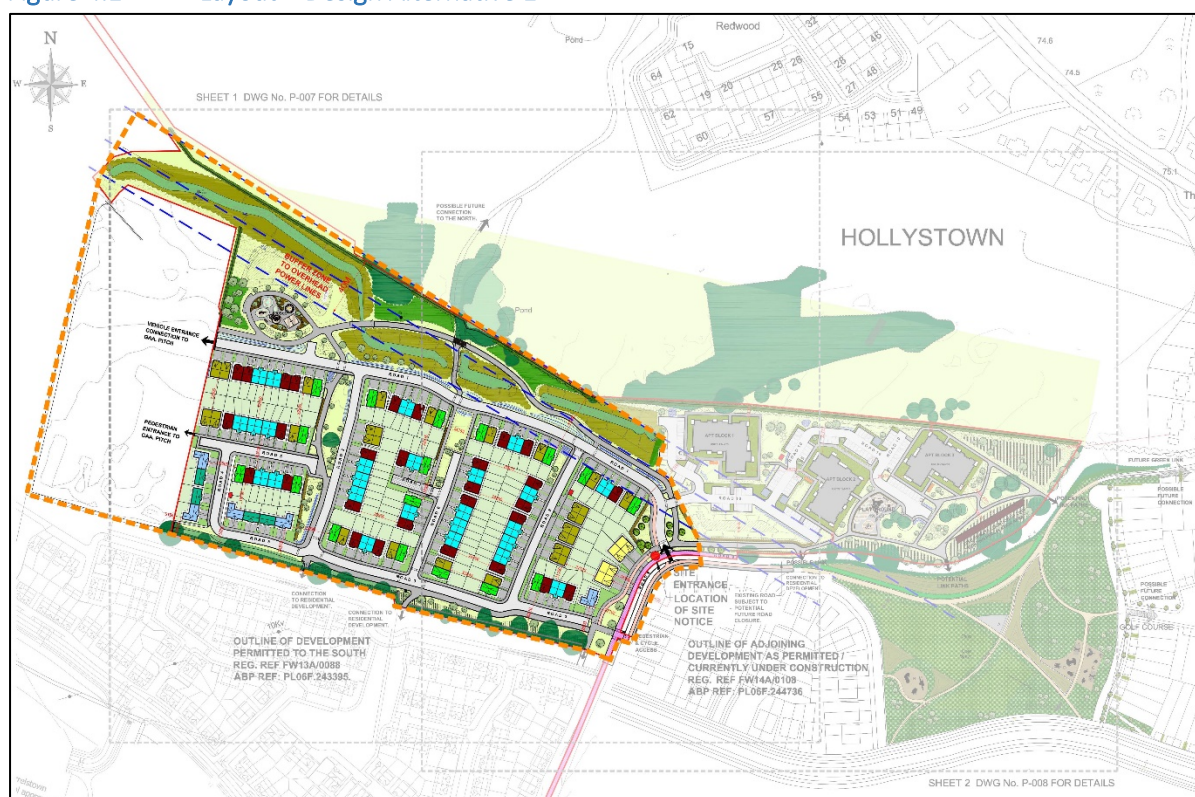
4.6.1 Hollystown Sites 2 & 3

4.6.1.1 Design Alternative 1

A planning application part of this area was submitted to An Bord Pleanála in 2019 and was refused permission (ABP reg. ref. TA06F.303956). The design has progressed from this stage, taking into account positive and the negative characteristics of the previous layout and the opinions expressed by the Board in their refusal. This planning application involved Hollystown Site 1 (now granted under a separated application) (FCC reg. ref. FW21A/0042) and part of Site 2, which forms part of the site of the proposed development that is the subject of this application.

Following the refusal of the aforementioned application, it was decided to develop a Framework Plan for the wider lands under the ownership of the Applicant at Hollystown and Kilmartin (including the site of the proposed development which is the subject of this application). This Framework Plan seeks to inform a holistic and integrated planning and development approach for the lands in question, and has informed the design of the proposed development. Please refer to Framework Plan document, submitted under separate cover as part of the planning application.

Figure 4.1 Layout – Design Alternative 1



Positive Characteristics

- The layout proposes a linear park under the power lines traversing the site, which can be connected to the wider green network proposed in *Kilmartin Local Area Plan* (2013; as extended).

Negative Characteristics

- Poor design concept that fails to provide high quality usable open spaces or establish a sense of place: the layout proposes small open spaces on the side of the houses, the only large public space being the linear park, which is separated from the development by a long straight road.
- The layout is dominated by roads and car parking surface, with very long and straight roads with standard parking arrangements throughout.
- There is no roads hierarchy: all the roads look the same and there are no shared surfaces.
- The layout lacks meaningful pedestrian and cycle facilities: there is no segregated cycle and pedestrian path that connect with the wider context (except for the one under the power lines to the north).
- The design, the buildings and their elevational treatments lack in variety and distinctiveness: there are only 2-storey buildings across the site.

4.6.1.2 Design Alternative 2

The early stage masterplan concerned only Hollystown Site 2. This layout proposed to place a secondary link street, necessary for the future development of the residential lands to the west, under the power lines to the north. The site was divided into two character areas, and three open spaces have been located around the site, surrounded by houses. The layout provides connections with the Bellingsmore residential development (planning refs. FW13A/0088(/E1); PL06F.243395) to the south and with the lands to the west.

Positive Characteristics

- Large open spaces located centrally in the site and surrounded by houses.
- First definition of a hierarchy of roads and introduction of some shared surfaces.
- Interaction and connection with Bellingsmore (planning refs. FW13A/0088(/E1); PL06F.243395) and with the lands to the west, zoned residential.

Negative Characteristics

- Linear park under the power lines reduced because of the introduction of the secondary link street.
- Long roads between the development and the linear parks along the northern and southern boundary.
- Pedestrian and cycle connection to the south not centered with the open space granted in Bellingsmore (planning refs. FW13A/0088(/E1); PL06F.243395).
- Lack of segregated north-south and east-west connections.
- Buffer areas for existing drainage system and hedgerows not taken into account.

Figure 4.2 Layout – Design Alternative 2



4.6.1.3 Design Alternative 3

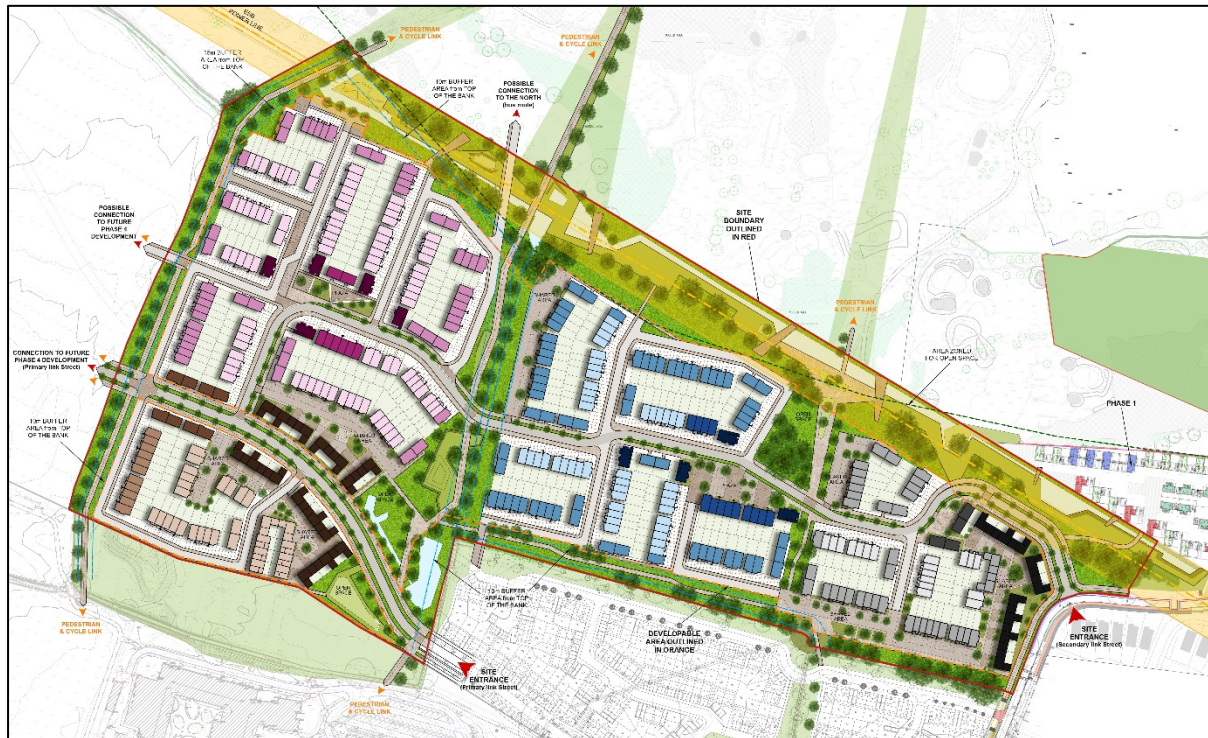
The design evolved from the initial conceptual design, following reviews and consultation with the Applicant and design team. It was decided to develop Site 2 in conjunction with Site 3 (to the west). This would allow better connections between the proposed development and the wider context (as suggested in the *Kilmartin Local Area Plan*) and a more integrated growth for the Hollystown area.

Positive Characteristics

- Several open spaces and plazas located around the site and surrounded by buildings.
- Large green linear park placed under the power lines and connected to the wider green network.
- Linear parks located in the buffer areas to protect the existing hedgerows and the existing open drainage system.
- Green areas and parks crossed by pedestrian and cycle paths that connect to the wider area: connections north-south and east-west.
- The development interacts with the buffer areas, the linear park under the power lines and Bellingsmore (planning refs. FW13A/0088(/E1); PL06F.243395) in a positive manner (sometimes with street-path-parking-building frontage, sometimes with shared surface-parking-building frontage, and sometimes with path-building frontage): this creates variety along the edges of the proposed development.
- Interaction and connection with Bellingsmore (planning refs. FW13A/0088(/E1); PL06F.243395) through a north-south greenway that connects with the granted open space to the south.
- Definition of a hierarchy of roads and introduction of several shared surfaces.

- Creation of the two main gateways (to the east of Site 2 on the secondary link street and along R121, and to the south of Site 3 on the primary link street) with the introduction of a new, 3-storey house typology.
- Creation of two central plazas (one in Site 2 and one in Site 3) defined by higher scale buildings (3-storey corner apartment blocks), which help to establish a sense of place and improve the wayfinding.

Figure 4.3 Layout – Design Alternative 3



Negative Characteristics

- The shared surface and open spaces areas and plazas needed a better definition and more details.
- The green buffer areas and the linear park to the north needed to be well studied from a landscape and ecological point of view.
- The connection to the north to the GAA pitches needed to be examined in depth.
- The two gateways could be improved and strengthened, and the character areas could be better defined.

4.6.1.4 Design Alternative 4 – Final Layout

The final design for the proposed development has been developed through various iterations, and the implementation of changes during the Pre-Application Consultation process, through comments received from Fingal County Council and An Bórd Pleanála.

The positive characteristics of the previous layouts are maintained but some amendments were made to improve the design, resulting in a new, high quality residential development that responds appropriately to the site characteristics, opportunities and constraints.

Figure 4.4 Layout – Design Alternative 4 – Final Layout



Positive Characteristics

- Several open spaces and plazas, in various scales, shapes and materials, located around the site and surrounded by buildings.
- Large green linear park placed under the power lines and connected to the wider green network, carefully considered from a landscape and ecological point of view.
- Linear parks located in the buffer areas to protect the existing hedgerows and open drainage system, carefully considered from a landscape and ecological point of view.
- Green areas and parks crossed by pedestrian and cycle paths that connect to the wider area: connections north-south and east-west.
- Important connection to the north to the GAA pitches, carefully considered from a landscape and ecological point of view.
- The development interacts with the buffer areas, linear park and Bellingsmore (planning refs. FW13A/0088(/E1); PL06F.243395) in different ways (sometimes with street-path-parking-building frontage, sometimes with shared surface-parking-building frontage, and sometimes with path-building frontage): this create variety along the edges of the proposed development.
- Interaction and connection with Bellingsmore (planning refs. FW13A/0088(/E1); PL06F.243395) through a north-south greenway.
- Definition of a hierarchy of roads and introduction of several shared surfaces, which have been well defined and studied in all their aspects.

- Creation of the two main gateways (to the east of Site 2 on the secondary link street and along R121, and to the south of Site 3 on the primary link street) with the introduction of 2-storey and 3-storey housing typologies: these gateways have now been improved and strengthened.
- Creation of two central plazas (one in Site 2 and one in Site 3) defined by higher scale buildings (3-storey corner apartment blocks), which help to establish a sense of place and improve the wayfinding.
- Division into three character areas improved to enhance the proposed development.

4.6.2 Kilmartin Local Centre

4.6.2.1 Design Alternative A

The first design approach / response to the site was informed by the following key considerations (refer to **Figure 4.5**):

1. Key site constraint consisting of 220kv Electricity Pylons;
2. Continuation of Kilmartin Link road to Hollywoodrath Roundabout, including upgrading and enhancement of traffic / pedestrian multi model transport routes;
3. Addressing the R121 regional road from Tyrrelstown to Hollywoodrath Roundabout;
4. Developing pedestrian routes between existing National School and established transport linkages;
5. Providing safe and secure public open space and semi-private amenity spaces; and
6. Public realm interface with Hollywoodrath Avenue and Hollywoodrath Roundabout.

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

- The scheme depended on a high level of surface car parking with large proportion centred under existing power lines in non-developable lands;
- North facing apartments were to be eliminated in favour of increased dual aspect;
- Dual aspect provision was to be increased in excess of 50%;
- Densities were to be increased;
- Public open space provision allotted, excluding non-developable lands under power lines; and
- Site permeability and public desire analysed and developed in the landscaping strategy.

Figure 4.5 Site Layout Configuration – Design Alternative A

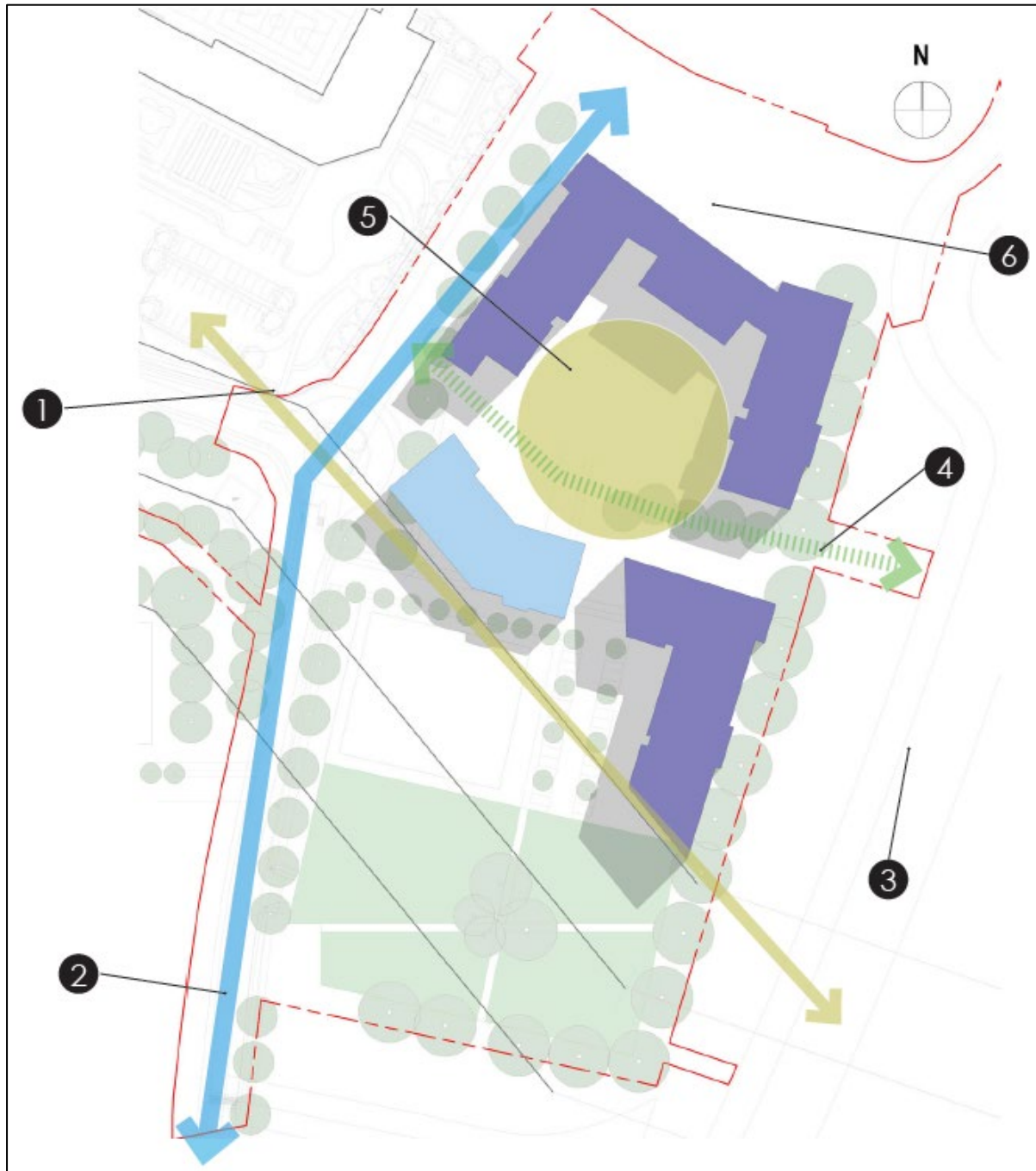
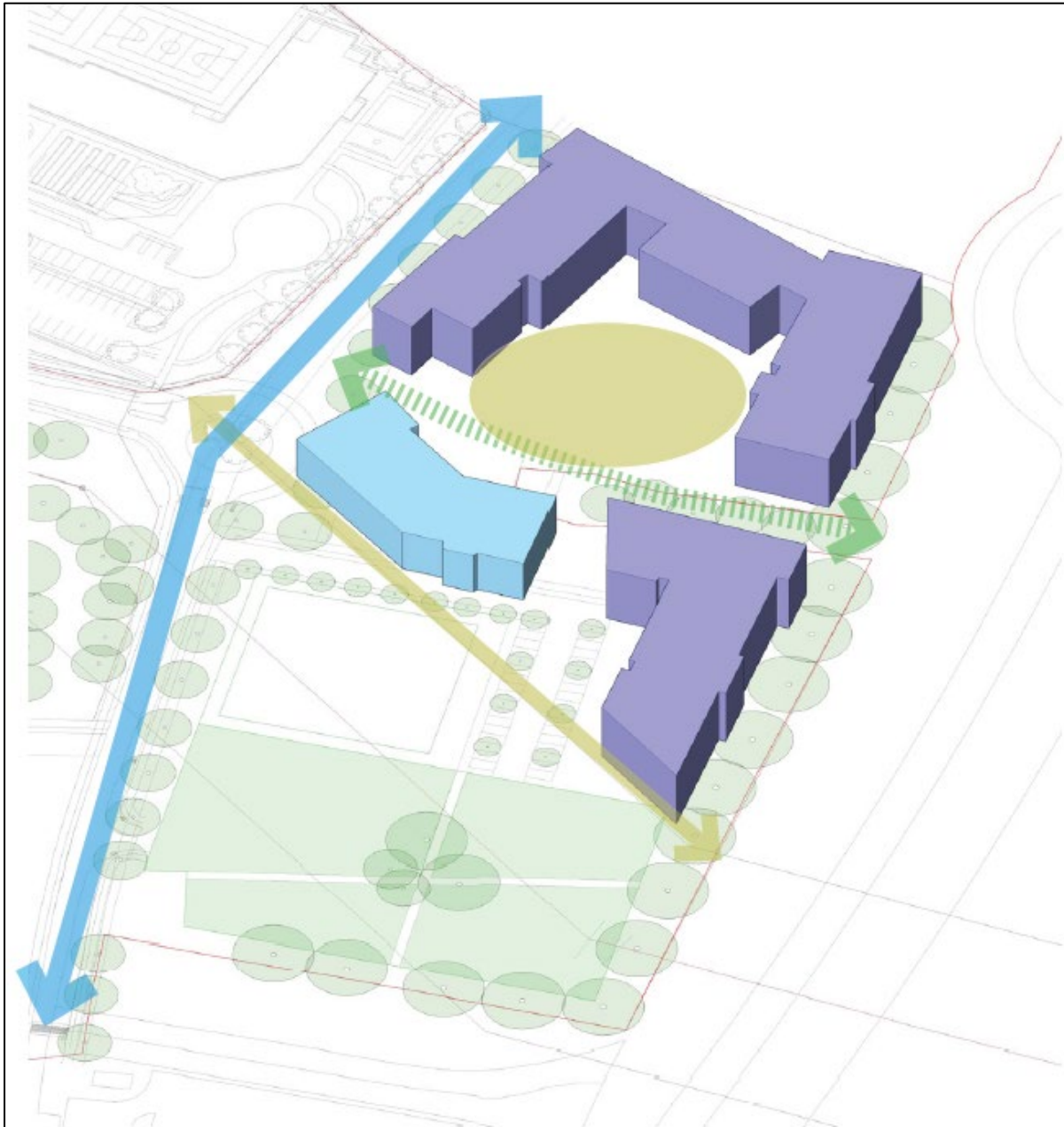


Figure 4.6 Block Diagram – Design Alternative A



4.6.2.2 Design Alternative B

The second design approach included adaptations to respond to the following key elements (refer to **Figure 4.7**):

1. Adaptation of the proposal to a podium scheme with ground floor under podium parking and first floor landscaping and open space;
2. Inclusion of satellite block to enhance dual aspect percentage to over 50%;
3. Amendments to landscaping strategy to better respond to site constraints while delivering a high level of public amenity and attractive recreation spaces;
4. Development of design and alterations of existing drainage constraints in order to deliver public pedestrian linkages and permeability through the site – interconnection of established transport hubs and school linkages facilitated; and
5. Public realm interface with existing site boundary conditions and the regional road R121 developed with defensible spaces and public open space.

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

- Continuing design challenge to eliminate north facing apartments;
- Scale and massing of apartment blocks to better identify and landmark key site entry points and act as visual marker to the scheme from the wider Hollywoodrath lands;
- Permeability through the site to be better developed with connectivity to the greater Hollywoodrath lands enhanced and linkages into the scheme better defined; and
- Residential amenity and crèche facilities for the greater Hollywoodrath lands to be developed and delivered as part of the current planning phase.

Figure 4.7 Site Layout Configuration – Design Alternative B

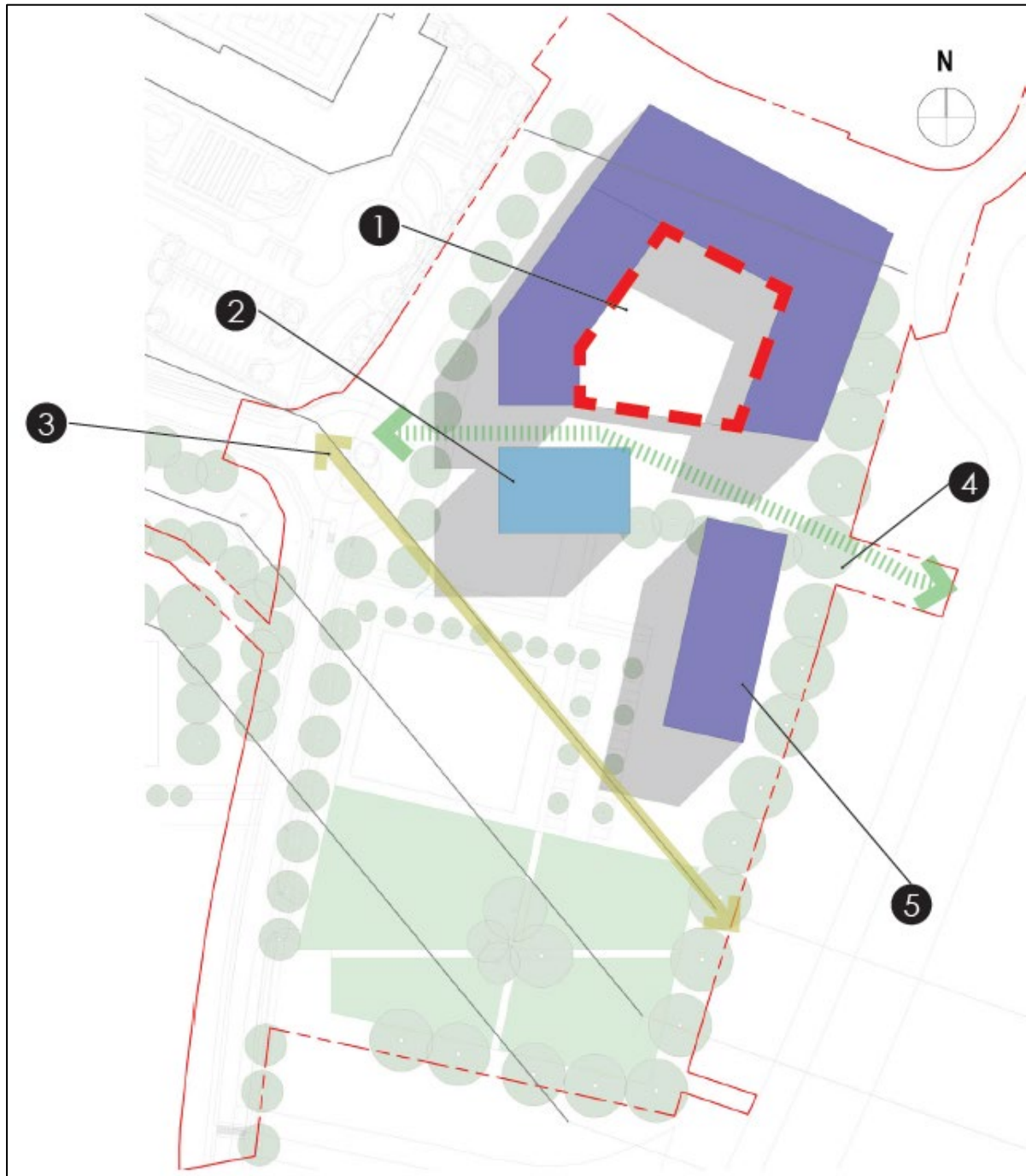
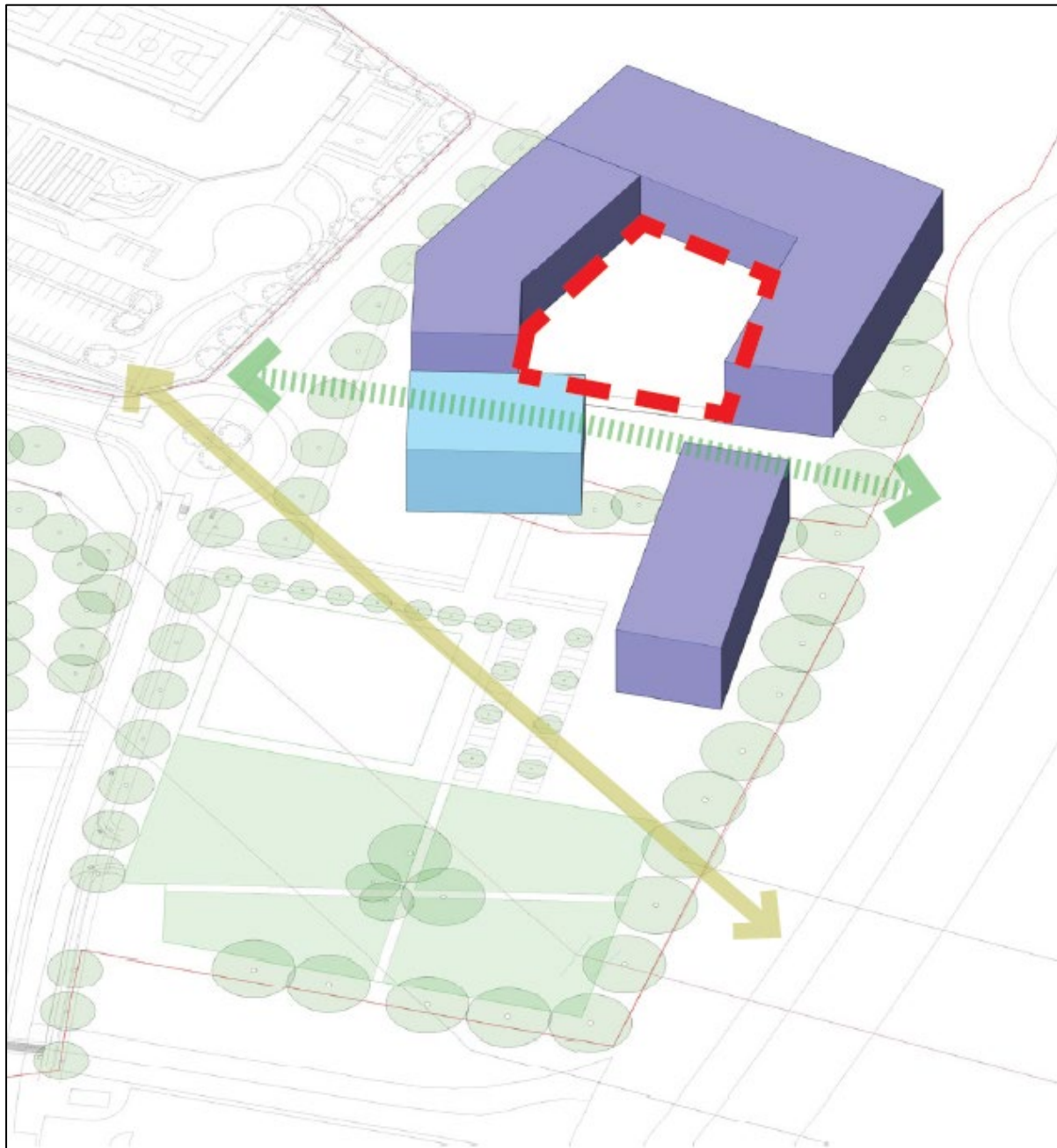


Figure 4.8 Block Diagram – Design Alternative B



4.6.2.3 Design Alternative C

The third design approach consisted of resolution of remaining site considerations by way of the following adaptations (refer to **Figure 4.9**):

1. Reduction in mass and scale of north facing blocks to provide for own door access dual aspect duplexes. This allowed for an articulation of the northern elevation and expansion of the public realm spaces in front of the apartments facing onto Hollywoodrath Avenue.
2. Developing a standalone landmark satellite block enhanced the dual aspect percentage to over 50% while providing passive surveillance of the main pedestrian linkages through the site from the national school to the transport linkages.
3. Development of permeability linkages through the scheme and onto the podium.
4. Development of standalone crèche and Montessori facilities, which address the public open space and park land setting, while providing an architectural linkage to the adjoining local centre site to the west.
5. Increased height on the corner of Hollywoodrath and the Kilmartin Link Road addresses the need for better landmarking and provides a gateway building for the northern sector of Kilmartin Local Centre.

The following considerations were brought forward into the final design:

- Modulation and indentation of the apartment façades to add interest and variety.
- Scale and massing of apartment blocks to better identify and landmark key site entry points and act as visual marker to the scheme from the wider Hollywoodrath lands.
- Permeability through the site to be better developed with connectivity to the greater Hollywoodrath lands enhanced and linkages into the scheme better defined.
- Residential amenity and crèche facilities for the greater Hollywoodrath lands to be developed and delivered as part of the current planning phase.

Figure 4.9 Site Layout Configuration – Design Alternative C

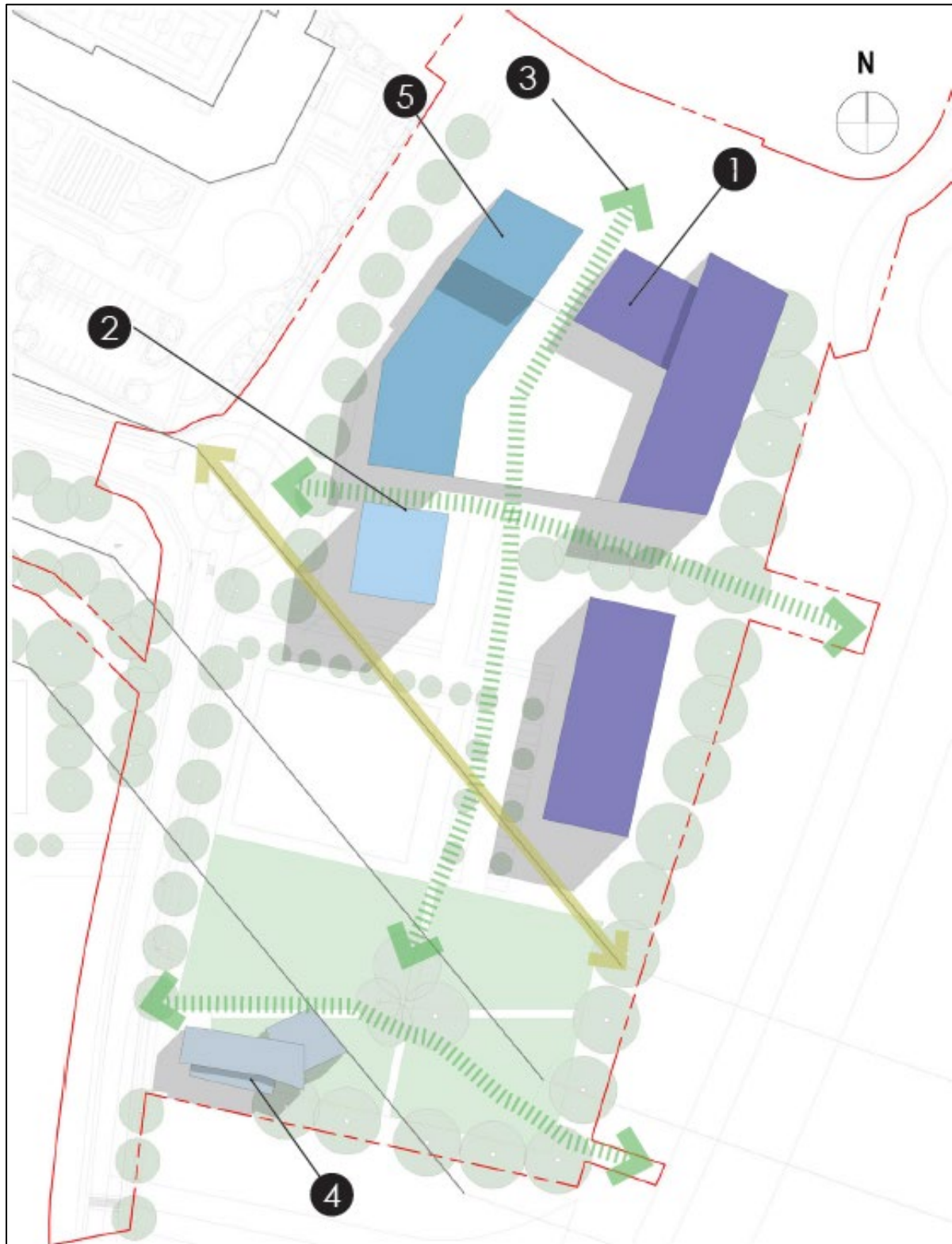


Figure 4.10 Block Diagram – Design Alternative C



4.6.3 GAA Facilities

As stated previously in **Section 3.4.2** in Chapter 3 (Planning & Development Context), it is an objective of the *Fingal Development Plan 2017 – 2023* to “Provide a recreational facility for the Dublin G.A.A. County Board, through the provision by them of a 2.5ha playing pitch and local recreational community facility including a clubhouse, related ancillary facilities and car and cycle parking” (Local Objective 72) in the Hollystown Site 2 area.

Figure 4.11 Location of planned GAA facilities in relation to proposed development



the potential to provide these facilities under the scope of the proposed development was considered by the Applicant and design team, and it was decided that it would be preferable to provide these facilities at an alternative location to the north of the site, connected to it via a pedestrian and cyclist link / linear park (to be delivered under the scope of the proposed development). As discussed previously, the Applicant has engaged with Dublin GAA, and it is planned to deliver a larger (c. 9.25 ha)

GAA / community playing fields facility to the north of the proposed development, which will be subject to a separate application on the part of Dublin GAA.

The main reasons for this decision to relocate the proposed facilities were as follows:

- The planned new location is on a site more appropriately zoned 'OS – Open Space'.
- There are existing (now disused) facilities at this location (a clubhouse and car park) associated with the former golf course, which can be repurposed for the planned GAA use.
- The use of this alternative location facilitates the development of significantly enlarged facilities (c. 9.25 ha) relative to what was proposed under the Development Plan (2.5 ha), which is more in line with the objectives of Dublin GAA for these facilities.

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.

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 Strategic Housing Development (SHD) at [...] ('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 is situated in an emerging peri-urban residential area in the Hollystown / Kilmartin / Tyrrelstown area, in the north-east of the Dublin Metropolitan Area (DMA), Co. Dublin (refer to **Figures 1.1** and **1.2**). The nearest major commercial centres are at Mulhuddart and Blanchardstown, c. 3 km and 5 km to the south, respectively. Dublin City Centre is approx. 11 km to the south-east. Existing development in the area is defined by medium density residential ('housing estate') developments and industrial areas. The site is at the interface of the suburbs and rural hinterlands to the north and west.

The site of the proposed development has a total area of c. 25.3 ha. It is predominantly a greenfield site, with small areas of waste ground and areas currently under construction or in use as a construction compound for the adjacent Bellingsmore residential development (planning refs. FW13A/0088/E1; PL06F.243395). The site is part of wider land bank under the ownership of the Applicant, including the former Hollystown Golf Club and agricultural lands to the west.

The site is subject to the *Fingal Development Plan 2017 – 2023* and (partially) the *Kilmartin Local Area Plan* (2013; as extended). Development objectives and land use zoning at the location of the proposed development are detailed in Chapter 3 (Planning & Development Context).

The site is comprised of two main areas that will be referred to herein as (1) Hollystown Sites 2 & 3 and (2) the Kilmartin Local Centre (refer to **Figure 1.2**). The Local Centre portion of the site is comprised of the eastern portion of the Local Centre area as defined in the *Kilmartin LAP*⁹. Extending westward (and then north and south) from Sites 2 & 3 is also the location of a proposed foul water outfall sewer. Similarly, a proposed foul water outfall sewer extends westward for the Local Centre site. Extending northward from Sites 2 & 3 is a proposed open space corridor / pedestrian and cycle link to planned G.A.A. pitches to the north (the subject of a separate application).

5.3 Need for the Proposed Development

The proposed residential development will contribute to the consolidation of an emerging peri-urban residential area at Tyrrelstown, Kilmartin and Hollystown. It is situated on lands zoned for the corresponding purposes under the *Fingal County Development Plan 2017 – 2023*. The need for the proposed development is set out in the Development Plan and, more specifically, in the *Kilmartin Local*

⁹ It is planned to develop the western portion of the Kilmartin Local Centre site at a later date, under the scope of a separate application.

Area Plan (2013; as extended). It will provide 548 new, high-quality residential units, contributing to the achievement of Fingal County Council's housing targets, and will support population growth as envisaged in local, regional and national policy documents. It will also provide recreational open space and community amenities, including two crèches and Montessori school, to meet the needs of existing and future residents in the area. For a detailed description of the policy context, refer to Chapter 3 (Planning & Development Context).

5.4 Characteristics of the Proposed Development

5.4.1 Overview

The proposed development relates to a site of c. 25.3 ha at the townlands of Hollystown, Kilmartin, Hollywoodrath, Cruiserath, Yellow Walls, Powerstown, and Tyrrelstown, Dublin 15, which includes lands in the former Hollystown Golf Course and lands identified under the Kilmartin Local Area Plan (2013; as extended). The lands are bound by the R121 and Hollywoodrath residential development to the east, the under construction Bellingsmore residential development to the south and north, the former Hollystown Golf Course to the north, Tyrrellstown Educate Together National School, St. Luke's National School and Tyrrelstown Community Centre to the west and south and the existing Tyrrellstown Local Centre to the south.

The proposed development will provide for the development of 548 no. residential units, consisting of 147 apartments/duplexes and 401 houses, ranging in height from 2 to 5 storeys and including retail/café unit, 2 no. crèches, 1 no. Montessori, 1 no. community hub, car and bicycle parking, open space, public realm and site infrastructure over a site area of c. 25.3 ha.

The site of the proposed development is comprised of two principal elements: the Hollystown Sites 2 & 3 area and the Kilmartin Local Centre area; plus foul sewer outfalls extending from these areas to the west¹⁰, and a proposed pedestrian and cyclist link extending to the north of the Hollystown Sites 2 & 3 areas (**Figure 1.2**). In the Hollystown Sites 2 & 3 area, the proposed development provides for 428 units consisting of 401 no. 2 and 3 storey houses and 27 no. apartments set out in 9 no. 3-storey blocks. In the Kilmartin Local Centre area, the proposed development provides for 120 no. apartment/duplex units in 4 no. blocks ranging in height from 3 to 5 storeys. The local centre includes 2 no. crèches (including 1 standalone 2 storey crèche), 1 no. Montessori, a retail/café unit, and 1 no. community hub.

For a detailed description of the proposed development, please refer to the Architectural Design Statements prepared by Deady Gahan Architects and O'Mahony Pike Architects in respect of the Hollystown Sites 2 & 3 and Kilmartin Local Centre areas, respectively. For a detailed description of the proposed landscape design, refer to the Landscape Design Statements and associated drawings by Bernard Seymour Landscape Architects submitted as part of the planning application for the proposed development.

¹⁰ Previously permitted under the scope of the planning application for Hollystown Site 1 (FCC reg. ref. FW21A/0042)

Figure 5.1 Proposed development site layout¹¹



¹¹ Note that proposed foul sewer outfall element is not shown in its entirety. Refer to **Figure 1.2**.

5.4.2 Water Infrastructure

For a detailed description of the proposed water infrastructure, refer to DBFL's Infrastructure Design Report, submitted under separate cover as part of the planning application.

5.4.2.1 Water Supply

To provide water supply to the proposed development, it is proposed to connect to an existing 300 mm diameter watermain on Hollywoodrath Road (R121). A pre-connection enquiry was made to Irish Water and a Confirmation of Feasibility letter has been received.

5.4.2.2 Surface Water Drainage

There is an existing network of open drains on the Hollystown Sites 2 & 3 portion of the proposed development site, ultimately draining to the Pinkeen River (refer to Chapter 10 – Hydrology). It is proposed to maintain and / or re-route this existing network under the scope of the proposed development. Attenuated surface water run-off from Site 2 will discharge to the re-routed golf course drain along the northern boundary of Site 2. Attenuated surface water run-off from Site 3 will discharge to the existing open drain along the northern boundary of Site 3.

Surface water storage requirements will be provided through two interlinked detention basins in the Site 3 area. The detention basin permitted under the scope of the Bellingsmore residential development (planning refs. FW13A/0088(/E1); PL06F.243395), will be removed to facilitate the proposed arrangement, with the existing storage volume accommodated in the proposed basins. A new surface water outfall will be constructed to the same receiving open drain.

There is an existing surface water ditch traversing the site from east to west in the Kilmartin Local Centre portion of the proposed development, which ultimately drains to the Pinkeen River. It is proposed to discharge attenuated surface water run-off from each catchment to this existing surface water ditch.

Sustainable drainage systems (SuDS) measures will be integrated into the proposed surface water drainage network, including:

- Swales within the link street grass verges;
- Permeable paving within private curtilage parking;
- Bio-retention areas;
- Tree pits;
- Detention basins;
- 'Hydrobrake' flow controls; and
- Petrol interceptors.

Surface water run-off from the site of the proposed development will be attenuated to flow rates equal to greenfield run-off (Q_{bar}), with run-off exceeding the allowable outflow to be stored on-site for up to a 1% annual exceedance probability (AEP) event, plus 20% for climate change.

The surface water drainage design for the proposed development is in accordance with the requirements of the Greater Dublin Strategic Drainage Strategy, Fingal County Council and the applicable design standards, including EN752 and BS8301:1985.

5.4.2.3 Foul Water Drainage

It is proposed to construct a new c. 3 km foul outfall sewer from the Hollystown Sites 2 & 3 portion of the site of the proposed development, connecting to an existing 750 mm diameter foul sewer to the south of the Powerstown Road. This was previously permitted under the scope of the planning application for Hollystown Site 1 (FCC reg. ref. FW21A/0042), and has been designed to accommodate the foul flows from the proposed development, the future development of residential zoned lands to the west, the Bellingsmore residential development (planning refs. FW13A/0088(/E1); PL06F.243395), and Hollystown Site 1. It also features a future connection from the Hollystown Park Foul Pumping Station.

The proposed foul drainage system for the Kilmartin Local Centre portion of the site will connect to an existing 225 mm diameter foul sewer to the west of the site. Apartments will connect to a network of 150 mm and 225 mm diameter foul drains via individual connections.

The proposed foul water drainage design is in accordance with the requirements of the Building Regulations, Greater Dublin Strategic Drainage Strategy, Irish Water's *Code of Practice for Wastewater Connections*, Department of Environment and Local Government's *Recommendations for Site Development Works for Housing Areas*; and applicable design standards, including IS EN752 (2008), BS8301: 1985, IS EN12056: Part 2 (2000).

A pre-connection enquiry was made to Irish Water and a Confirmation of Feasibility letter has been received.

5.4.3 Internal Road Network & Parking

Once the proposed development is completed, its internal road network will tie-in with the existing road network at three primary vehicular access points, as follows (refer to **Figure 16.20** in Chapter 16 – Traffic & Transportation):

1. Access to Site 2 will be via the R121 in the form of a priority junction.
2. Access to Site 3 will be via an extension to the existing primary link street (Hollystown Road), which is itself accessed via the R121.
3. Access the Kilmartin Local Centre will be via a priority controlled access road via the Hollystown Road.

These primary vehicular access points will be supported by a network of off-road and on-road pedestrian and cycle routes, as illustrated in **Figure 16.19** in Chapter 16 (Traffic & Transportation). As part of this network, it is proposed to provide a pedestrian and cycle link extending from Hollystown Sites 2 & 3 northwards through the former golf course, to tie-in with the existing Ratoath Road, providing enhanced north-south permeability and a future link between the proposed development and planned future GAA facilities (refer to **Section 3.4.2** in Chapter 3 – Planning & Development Context).

The proposed extension to the Hollystown Road has been designed to allow for future onward connections to the westernmost *Kilmartin Local Area Plan* (2013; as extended) lands, also under the ownership of the Applicant.

The internal road and street network of the proposed development has been designed in accordance with the Government's *Design Manual for Urban Road and Streets* (DMURS) (2013). Refer to the DMURS Compliance Statement submitted under separate cover as part of the planning application.

Car and bicycle parking for residents, staff and visitors are proposed across the proposed development, as detailed in Chapter 16 (Traffic & Transportation).

5.5 Construction Phase

5.5.1 Indicative Construction Methodology

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

- Site enabling works
- Sub-structure and superstructure works
- Infrastructure works

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 erection of fencing and hoarding, as required;
- Identification of on-site services and service terminations;
- Provision of temporary power, lighting and water services;
- Establishment of site accommodations and welfare facilities;
- Vegetation clearance and demolition works; and
- Implementation of any pre-construction surveys and mitigation (e.g. tree protection) required at this stage.

There is an existing structure associated with the former golf course in the Hollystown Site 2 portion of the site of the proposed development, comprised of two adjoining sheds and a silo, which will need to be demolished at this stage (**Figure 5.2**).

5.5.1.2 Sub-structure & 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;
- Construction / placement of services / utilities infrastructure, as required at this stage;
- Construction of floor slabs;
- Construction of superstructures and roofs;
- Fit out of buildings; and
- Landscaping and re-instatement.

Figure 5.2 Existing structure to be demolished



5.5.1.3 Infrastructure Works

Site infrastructure works will include the completion of all permanent infrastructure, including services / utilities (surface water drainage, foul drainage, electricity, etc.) and road and street network.

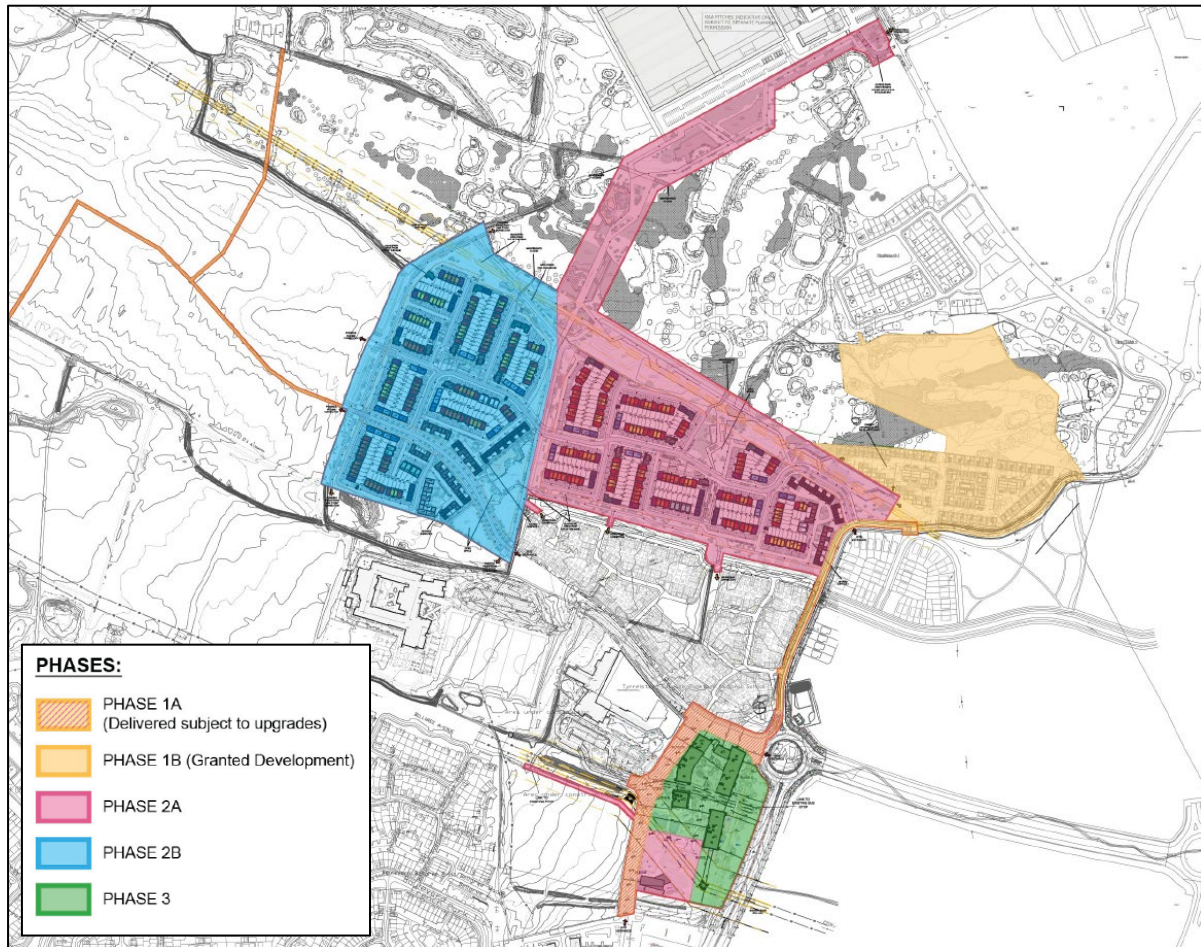
5.5.2 Programme & Phasing

The phasing of the proposed works are outlined in **Figure 5.3**¹². The envisaged duration of the construction phase is 39 months (or 3.25 years)¹³.

¹² This includes for the construction of the previously permitted Hollystown Site 1 residential development to the northeast of the site (FCC reg. ref. FW21A/0042), also under the ownership of the Applicant, which includes the proposed foul water outfall to the west (Phase 1B).

¹³ This does not include for Phase 1B, the construction of the previously permitted Hollystown Site 1 residential development.

Figure 5.3 Construction phasing plan¹²



5.5.3 Construction Traffic

Construction traffic entering and exiting the site will include private vehicles of construction personnel, excavation plant, dumper trucks, materials delivery vehicles and mobile cranes.

It is envisaged that construction traffic will enter and exit Sites 2 and 3 at the southern boundary of the site, via the extended primary link street (Hollystown Road) connecting to the R121 through the Bellingsmore residential development (planning refs. FW13A/0088/(E1); PL06F.243395). Access to the Local Centre will be via the existing primary link street (Hollystown Road).

Deliveries and working hours will be scheduled in order to minimise disruption to the operation of the surrounding road network. Construction traffic will not be permitted to park outside of the site.

5.5.4 Construction Compounds, Accommodations & Facilities

A construction compound will be provided by the contractor in the lands made available (LMA), including the following facilities:

- Materials drop-off and storage areas for construction materials and waste
- Set down area for trucks
- Dedicated staff and visitor parking
- Staff facilities, including toilets
- Offices

It is envisaged that the main construction compound will be located within Site 3. This area is currently in use as a construction compound for the construction of the Bellingsmore residential development (planning refs. FW13A/0088(/E1); PL06F.243395), which is expected to be completed in advance of the commencement of the proposed development, allowing the area to be repurposed for use as a construction compound for the proposed development.

An additional construction compound will be provided in the Local Centre site.

5.5.5 Working Hours

Envisaged working hours are as follows:

Monday – Friday: 07:00 – 19:00
Weekends / Bank Hols.: No works

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

5.5.6 Construction Phase Plans

The following plans, of pertinence to the EIA, will be implemented during the proposed works.

5.5.6.1 Construction & Environmental Management Plan

A Preliminary Construction & Environmental Management Plan (pCEMP) has been prepared in respect of the proposed development by DBFL Consulting Engineers (refer to document submitted under separate cover). A CEMP will be finalised by the successful contractor in advance of the proposed works, in agreement with Fingal County Council. The CEMP will be fully implemented throughout the proposed works.

The finalised CEMP will set out the measures to be implemented during the proposed works to mitigate potential impacts on the environment and local population. It will include the following:

- The measures recommended in the pCEMP (submitted under separate cover);
- All construction phase mitigation set out in this EIAR; and
- Any relevant conditions attached to a decision to grant planning permission.

The CEMP will not provide a lesser level of protection than that provided by the above-listed measures.

5.5.6.2 Traffic Management Plan

A Traffic Management Plan will be implemented during the construction phase. It will be finalised in advance of the commencement of works, in accordance with the following:

- Department of Transport, Tourism and Sport (2019). Chapter 8: Temporary Traffic Measures and Signs for Roadworks, in *Traffic Signs Manual*
- National Roads Authority (NRA), Department of Transport, Health and Safety Authority (HSA) & Local Government Management Services Board (2010). *Guidance for the Control and Management of Traffic at Road Works* (2nd Edition)
- Department of Transport, Tourism and Sport & Department of Environment, Community and Local Government (2013). *Design Manual for Urban Roads and Streets*
- *Design Manual for Roads and Bridges*

5.5.6.3 Arboricultural Method Statement

A Tree Survey Report has been 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. 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.

5.5.6.4 Construction Air Quality Management & Monitoring Plan

A Construction Air Quality Management & Monitoring Plan (**Appendix 11.1**) shall be implemented during the construction phase in order to avoid / minimise and monitor the air quality effects of the construction phase, particularly in relation to dust generation and deposition. For further information, refer to Chapter 11 (Air Quality & Climate) and / or **Appendix 11.1**.

5.5.6.5 Resource & Construction Waste Management Plan

A Resource & Construction Waste Management Plan will be implemented during the construction phase. An outline version of this plan has been prepared in respect of the proposed development, and is appended to this EIAR (**Appendix 17.1**). 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

The operation of the proposed development will be typical of a housing estate, and local community centre (including crèche, Montessori school and café) of the proposed nature and scale. It will involve the daily activities of residents of the community, their movements to and from and within the development, and the operation of associated supporting infrastructure, services and amenities. It will also involve the operation of the Local Centre, and the activities of their employees, customers, students and patrons. There will be a new public realm, including a network of roads and streets, featuring a variety of road users, including pedestrians, cyclists and drivers. The specifics of the operational phase will be discussed, where relevant, in the various specialist chapters of this EIAR.

6 Consultation

6.1 Introduction

The amended Directive places emphasis on effective public participation in the decision-making process for EIA cases. Early involvement of the public and other stakeholders ensures that the views of groups and individuals are taken into consideration throughout the preparation of the EIAR.

The structure and presentation of the EIAR and its Non-technical Summary (Volume 1), as well as public access to the documents, facilitate the dissemination of the information contained in the EIAR to the local community and other stakeholders. Direct and formal public participation in the EIA process will be through the statutory SHD planning application process.

Section 4(1) of the PDA 2000 provides that an application for permission for a SHD shall be made directly to An Bord Pleanála (ABP) and not to a local authority, as was the case previously. The SHD process comprises three mandatory stages, as outlined in **Table 6.1**.

Table 6.1: SHD consultation stages

	Description
Stage 1	Consultation with the Planning Authority (under Section 247 of the PDA 2000)
Stage 2	Pre-Application Consultation with ABP (under Section 6 of the Planning & Development (Housing) and Residential Tenancies Act, 2016)
Stage 3	Planning Application submitted directly to ABP

6.2 Stage 1 – Consultation

Both the context and approach to the development and the emerging design rationale for the proposed development, have been subject to considerable consultation with the Planning Department of Fingal County Council under Section 247 of the PDA 2000. Meetings have been held with the Council's Planning, Transport, Parks and Water Departments as formal pre-application discussions on the substance of the two principal elements of the proposed development – Hollystown Sites 2 & 3 and the Kilmartin Local Centre. The attendees and dates of these meetings are listed in **Table 6.2**.

Table 6.2: Details of Stage 1 consultation meetings with Fingal County Council representatives

Date	Attendees
<i>Hollystown Sites 2 & 3</i>	
1 February 2021	<ul style="list-style-type: none"> ■ Colm McCoy (FCC Snr Planner) ■ Deirdre Fallon (Planning) ■ Jennifer Casserly (Planning) ■ Phillip Grobler (Water Services) ■ Annie Meagher (Parks) ■ Niamh O Connor (Transport)
<i>Kilmartin Local Centre</i>	
20 February 2020	<ul style="list-style-type: none"> ■ Patricia Cadogan (Planning) ■ Deirdre Fallon (Planning) ■ Annie Meagher (Parks)

Date	Attendees
	<ul style="list-style-type: none"> Philip Grobler (Water) Linda Lally (Transport)
3 June 2020	<ul style="list-style-type: none"> Patricia Cadogan (Planning) Colm McCoy (Planning) Daragh Sheedy (Drainage) Gemma Carr / Annie Meagher (Parks) Niamh O Connor / Linda Lally (Transport)
25 January 2021	<ul style="list-style-type: none"> Annie Meagher (Parks) Colm McCoy (FCC Snr Planner) Deirdre Fallon (Planning) Jennifer Casserly (Planning) Phillip Grobler (Water Services)
Hollystown Sites 2 & 3 and Kilmartin Local Centre	
19 December 2019	<ul style="list-style-type: none"> Patricia Cadogan (Planning) Colm McCoy (Planning)

6.3 Stage 2 – Pre-application Consultation

The Pre-Application process requires a number of key steps to be completed which are:

- Request for a Pre-Application Consultation meeting by the Applicant to An Bord Pleanála
- Planning Authority submits their opinion and Section 247 records to An Bord Pleanála, following request for a Pre-Application Consultation
- Pre-Application Consultation meeting will be held with An Bord Pleanála, the Planning Authority and the Applicant
- Record of the Pre-Application Consultation
- Forming and Issuing of Opinion by An Bord Pleanála

Separate pre-application requests were lodged in respect of the Hollystown Sites 2 & 3 and Kilmartin Local Centre elements of the proposed development.

In respect of the Kilmartin Local Centre element, a tripartite pre-application consultation meeting was held with An Bord Pleanála, representatives of Fingal County Council and the Applicant on 30 August 2021. Following the meeting, an Opinion was issued by An Bord Pleanála on 3 September 2021, which stated that:

“An Bord Pleanála has considered the issues raised in the pre-application consultation process and, having regard to the consultation meeting and the submission of the planning authority, is of the opinion that the documents submitted with the request to enter into consultations constitute a reasonable basis for an application for strategic housing development.”

The Opinion also provided a list of specific information to be submitted with the planning application (which been referred to in the preparation of the application), and named the Prescribed Bodies to be notified of the application, as follows:

- Irish Water
- National Transport Authority (NTA)
- Transport Infrastructure Ireland (TII)

- Irish Aviation Authority (IAA)
- Dublin Aviation Authority (DAA)
- Department of Culture, Heritage and the Gaeltacht
- An Taisce
- Heritage Council
- An Chomhairle Ealaíonn
- Fáilte Ireland
- Fingal County Childcare Committee

In respect of Hollystown Sites 2 & 3, a tripartite pre-application consultation meeting was held with An Bord Pleanála, representatives of Fingal County Council and the Applicant on 1 September 2021. Following the meeting, an Opinion was issued by An Bord Pleanála on 6 September 2021, which stated that:

“An Bord Pleanála has considered the issues raised in the pre-application consultation process and, having regard to the consultation meeting and the submission of the planning authority, is of the opinion that the documents submitted with the request to enter into consultations require further consideration and amendment to constitute a reasonable basis for an application for strategic housing development.”

The Opinion provided a list of issues to be addressed that could result in the proposal constituting a reasonable basis for strategic housing development, which have been considered in design of the proposed development. It also named the Prescribed Bodies to be notified of the application, which are the same as those listed above in relation to the Kilmartin Local Centre Opinion.

6.4 Stage 3 – Planning Application

The planning application will then be submitted to ABP (with copies also submitted to the above-listed Prescribed Bodies and FCC), and this stage allows for further consultation, including public consultation. The application and all accompanying documents will be available on public display for review by the public and interested parties. Submissions on any aspect of the proposed development may be made to ABP and such submissions will be taken into account in the determination of the application by the Board.

Before lodging the planning application, information in relation to the EIAR was uploaded to the Department of Housing, Planning and Local Government (DHPLG) *EIA Portal*, an online map-based website that provides users with access to applications for development consent containing an EIAR.

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.

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 effects in relation to traffic and transportation, air quality and climate, noise and vibration, landscape and visual amenity, material assets, and flood risk, among others. These interactions are addressed in this chapter and, where appropriate, in the relevant other specialist chapters.

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 Lorraine Guerin, Environmental Consultant at Brady Shipman Martin. A technical review was completed by Thomas Burns, Partner at Brady Shipman Martin. Refer to **Table 1.3** in Chapter 1 (Introduction) for qualifications of authors and reviewers.

7.2 Background

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. 29)

7.2.1 SEVESO Sites

‘SEVESO sites’ refers to major industrial establishments that, because of the presence of certain dangerous substances in sufficient quantities, are regulated under Directive 2012/18/EU on the control of major-accident hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EC (the ‘SEVESO III Directive’), which 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 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. As stated in section 24 of Part 7 (Land Use Planning) of the Chemicals Act (Control of Major Accident Hazards Involving Dangerous Substances) Regulations 2015:

“(2) The Central Competent Authority shall provide technical advice in response to a notice sent by a planning authority under Part 11 of the Planning and Development Regulations 2001 (S.I. No. 600 of 2001), requesting technical advice on the effects of a proposed development on the risk or consequences of a major accident in relation to the following types of developments within the consultation distance notified in paragraph (1)—

- (a) the siting and development of new establishments;*
- (b) modifications to establishments of the type described in Regulation 12(1);*
- (c) new developments including transport routes, locations of public use and residential areas in the vicinity of establishments, where the siting, modifications or developments may be the source of, or increase the risk or consequences of, a major accident.*

(3) The technical advice provided by the Central Competent Authority to a planning authority pursuant to paragraph (2) may be generic or case specific in nature and shall be so formulated that it will assist the planning authority to take into account the need, in the long term—

- (a) to maintain appropriate safety distances between establishments covered by these Regulations and residential areas, buildings and areas of public use, recreational areas, and, as far as possible, major transport routes;*
- (b) to protect areas of particular natural sensitivity or interest in the vicinity of establishments, where appropriate through appropriate safety distances or other relevant measures; and*
- (c) for the operator to take additional technical measures, in the case of existing establishments, in accordance with Regulation 7, so as not to increase the risks to human health and the environment.”*

7.3 Method

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

- EPA (2017). *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (Draft)*.
- IEMA (2017). *Health in Environmental Impact Assessment: A Primer for a Proportionate Approach*.

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 and 2016;
- CSO (2020). *Quarterly Labour Force Survey – Quarter 2 2021*;

- Department of Housing, Planning & Local Government (DHPLG) (2020). *My Plan Map Viewer*;
- Eastern & Midlands Regional Assembly (2019). *Regional Spatial and Economic Strategy 2019 – 2031*;
- Fingal County Council (2013). *Kilmartin Local Area Plan*;
- Fingal County Council (2017). *Fingal Development Plan 2017 – 2023*; and
- Health & Safety Authority (HSA) information in relation to SEVESO sites.

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

7.4 Baseline Environment

The site of the proposed development is situated in an emerging peri-urban area in the Hollystown / Kilmartin / Tyrrelstown area, in the north-east of the Dublin Metropolitan Area (DMA), Co. Dublin. The nearest major commercial centres are at Mulhuddart and Blanchardstown, c. 3 km and 5 km to the south, respectively. Development objectives applicable to the location of the proposed development are discussed in Chapter 3 (Planning & Development Context).

7.4.1 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 most recent census by the CSO was undertaken in 2016. A new Census was due to take place in April 2021, but this has been deferred until April 2022 due to the ongoing Covid-19 pandemic and associated public health restrictions.

The CSO data illustrates that the population of the Irish State increased between 2011 and 2016 by 3.7%, bringing the total population of the Irish State to 4,761,865 (see **Table 7.1**, below). The rate of growth slowed from 8.1% in the previous census, attributable to the slower economic activity in the early part of the census period resulting in a reduced level of immigration, albeit offset to a degree by strong natural increase. The economy has recovered in recent years with consequent population growth predominantly attributed to natural increase, greater economic activity, increased job opportunities and continued immigration.

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

Area	Number of Persons		
	2011	2016	Change
Ireland – State	4,588,252	4,757,976	+3.7%
Fingal County Council Administrative Area	273,991	296,020	+8.0%
Mulhuddart LEA	55,422	59,747	+7.8%
The Ward ED	8,241	9,602	+16.5%

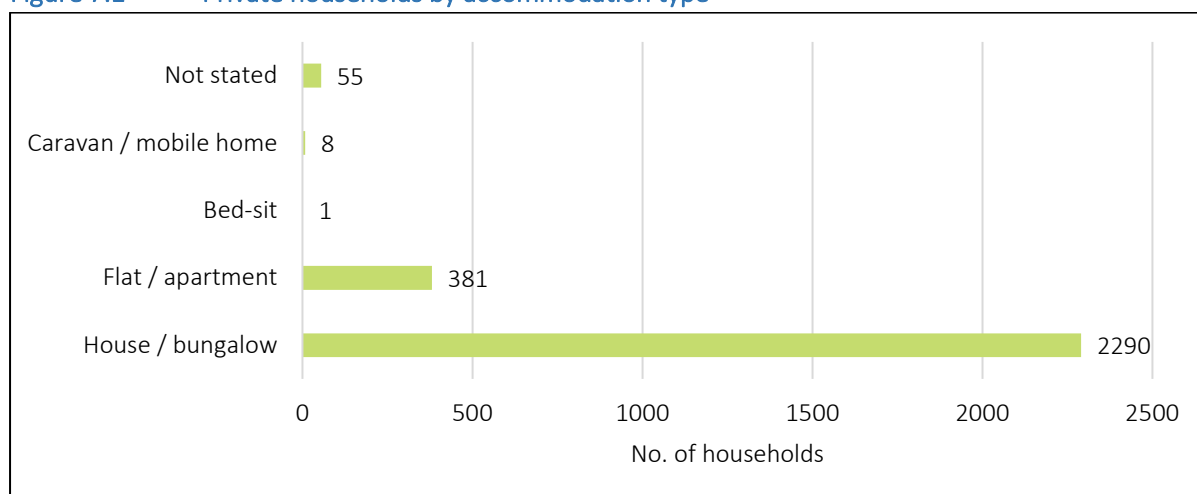
In the same period, the population in the administrative area of Fingal County Council (FCC) increased by +8.0%. The site of the proposed development is located in the LEA of Mulhuddart and the ED of 'The Ward'. The population statistics indicate that growth at the level of the ED has been approximately

double that 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.

7.4.2 Land Use and Settlement Patterns

The proposed development is situated in an emerging, peri-urban residential and industrial area at Hollystown, Tyrrelstown and Mulhuddart. The area is at the interface of the suburbs of Dublin City and the rural hinterland to the north. 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. Development in this area is surrounded by pre-existing arable and pastoral agricultural land.

Figure 7.1 Private households by accommodation type



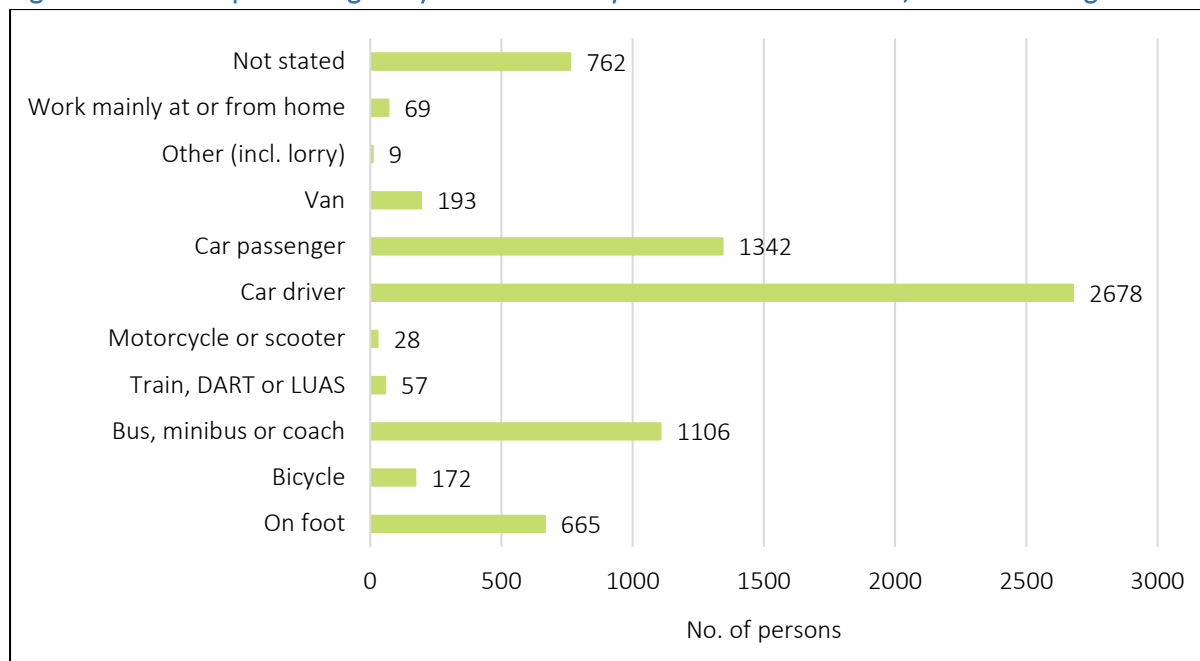
There is a concentration of industrial activity in this area, with industrial estates in neighbouring areas at Damastown and Tyrrelstown, including a number of SEVESO III sites, as detailed below. There is a hub of commercial and community amenities (including large grocery stores, medical clinic, pharmacy, restaurants, church, bank and crèche) immediately south of the proposed development at Tyrrelstown Local Centre, situated immediately south of the location of the proposed Kilmartin Local Centre.

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. In terms of public transportation, there are limited public bus services in the vicinity, providing access to-and-from Blanchardstown, Dublin City Centre and Broombridge (Dublin Bus routes 40d and 40e; Go-Ahead routes 236/a and 238). A search on Google Maps (© 2021) 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).

The site of the proposed development has a total area of c. 25.3 ha. It takes in a number of interlinked components (including Sites 2 and 3 and the Kilmartin Local Centre) spread over a wide area at Hollystown, Kilmartin and Tyrrelstown. It is situated predominantly on greenfield lands, including various agricultural fields and land within the former golf course of the Hollystown Golf Club; as well as smaller areas of existing hardstanding (including roads and car parks), and lands (formerly farmland)

currently being used as a construction compound / storage area for the Bellingsmore housing development (planning refs. FW13A/0088(/E1); PL06F.243395).

Figure 7.2 Population aged 5 years and over by means of travel to work, school or college



7.4.3 Economic Activity & Employment

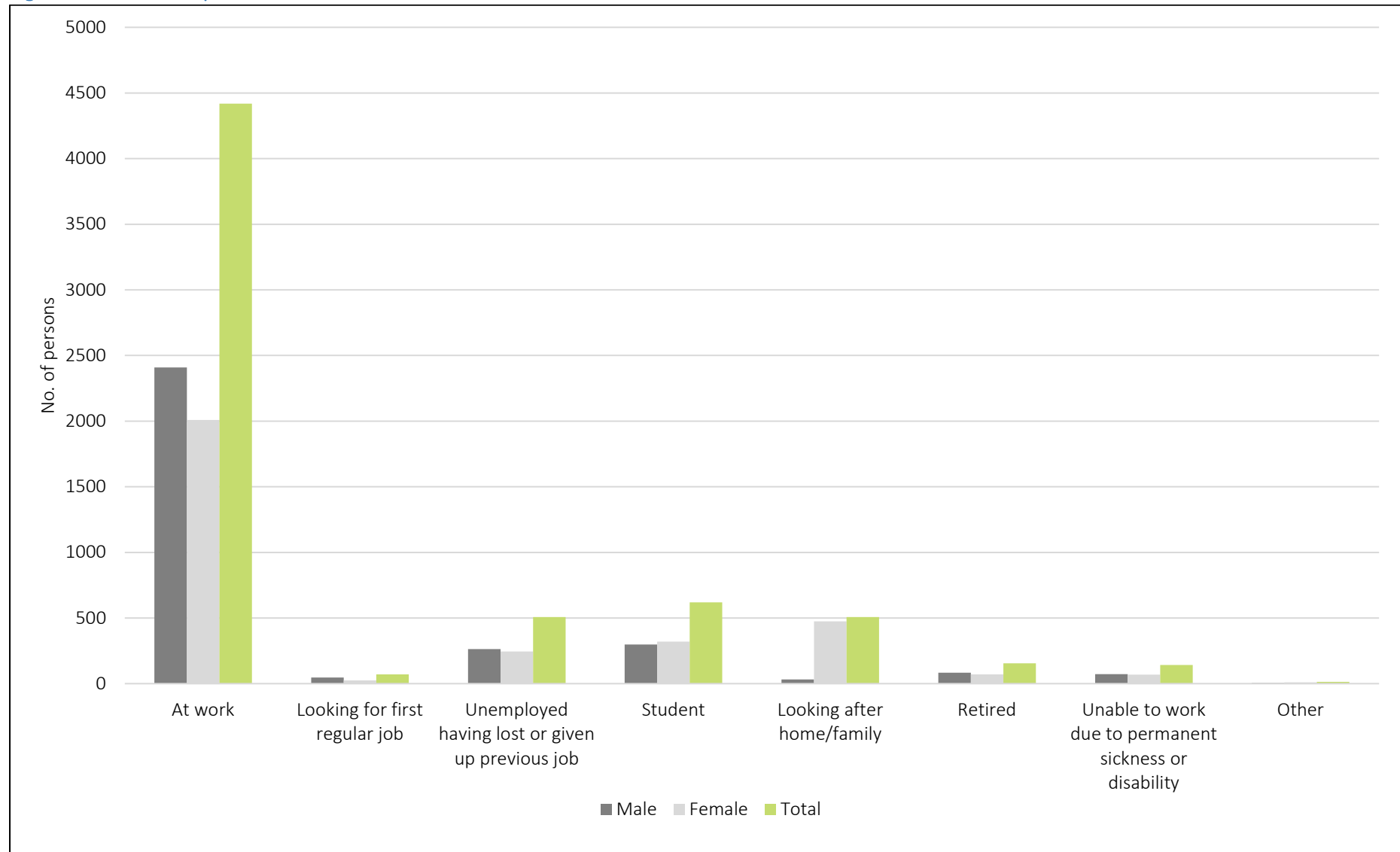
As stated above, the nearest major commercial centres are at Mulhuddart and Blanchardstown, c. 3 km and 5 km to the south, respectively. These are centres of employment, as is Dublin City, c. 15 km south-east – a c. 30 minute drive (traffic depending) or approximately one hour by bike or public transport.

As stated previously, there is a concentration of industry in the local area, with a number of industrial estates / business parks; including Ballycoolin, Millennium, Hollywood, Rosemount, Northwest and Westpoint Business Parks, College Business and Damastown Technology Parks, and Damastown, Coolmine and Blanchardstown Industrial Parks. As stated in the Final Development Plan 2017 – 2023:

“The Dublin 15 Enterprise Zone is a Council initiative comprising lands in Blanchardstown, Mulhuddart, Damastown, Ballycoolin and Cherryhound that contain some twenty Business Parks and the [Institute of Technology, Blanchardstown]. The Dublin Enterprise Zone includes a mix of High Technology HT and General Employment GE zoned lands. Fingal County Council is committed to continued investment in, and management and promotion of the Dublin 15 Enterprise Zone.” (p. 241)

It is noted in the Development Plan that “areas of markedly high unemployment were recorded in [...] Tyrrelstown” (p. 193). However, the CSO census data for 2016 indicate a rate of employment in the ED that is within a normal range (Figure 7.3).

Figure 7.3 Principal economic status



7.4.4 Tourism & Amenity

There is a hotel in the vicinity, the Carlton Hotel Blanchardstown, which is c. 100 m south-west of the site of the proposed development (where the Local Centre is proposed). 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.

7.4.5 Human Health

The Department of Health's 2019 report, *Health in Ireland – Key Trends 2019*, provides summary statistics on health and health care in Ireland over the past ten years. The report highlights the following key trends:

- The numbers and proportion of the population in the older age groups continues to grow, with the number of people over the age of 65 continuing to increase by over 20,000 a year.
- Life expectancy continues to improve in Ireland, while the gap between the life expectancy of men and women also continues to narrow.
- Mortality rates have declined 10.5% since 2009. Age-standardised death rates for major causes of death such as cancers and circulatory system diseases have declined by 10% and 25%, respectively, over the past ten years.
- Lifestyle factors such as smoking, drinking, levels of physical activity and obesity continue to be issues which have the potential to jeopardise many of the health gains achieved in recent years.

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 82.9% of people rating their health as either 'good' or 'very good'. The number of people reporting a chronic illness or health problem is also better than the EU average, at around 27.7% of the population. However, health status reflects income inequality, with fewer low income earners reporting good health both in Ireland and across the EU. Infant mortality, measured as deaths per 1,000 live births, has also decreased by 5.2% since 2009 and remains below the EU average.

Ireland is currently below the EU average for suicide rates for both men and women. After a rise in the male suicide rate from 2008 to 2012, the three-year moving average has decreased, and in 2015 the rate fell below the EU average for the first time since 2010. 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 2000, 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) and Chapter 9 (Land, Soils, Geology & Hydrogeology), 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. 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.

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



There is a concentration of industrial activity in the area. A review of the relevant Local Authority Development Plans and information on the HSA website indicates that there are a number of SEVESO sites in the vicinity of the proposed development (**Table 7.2; Figure 7.5**).

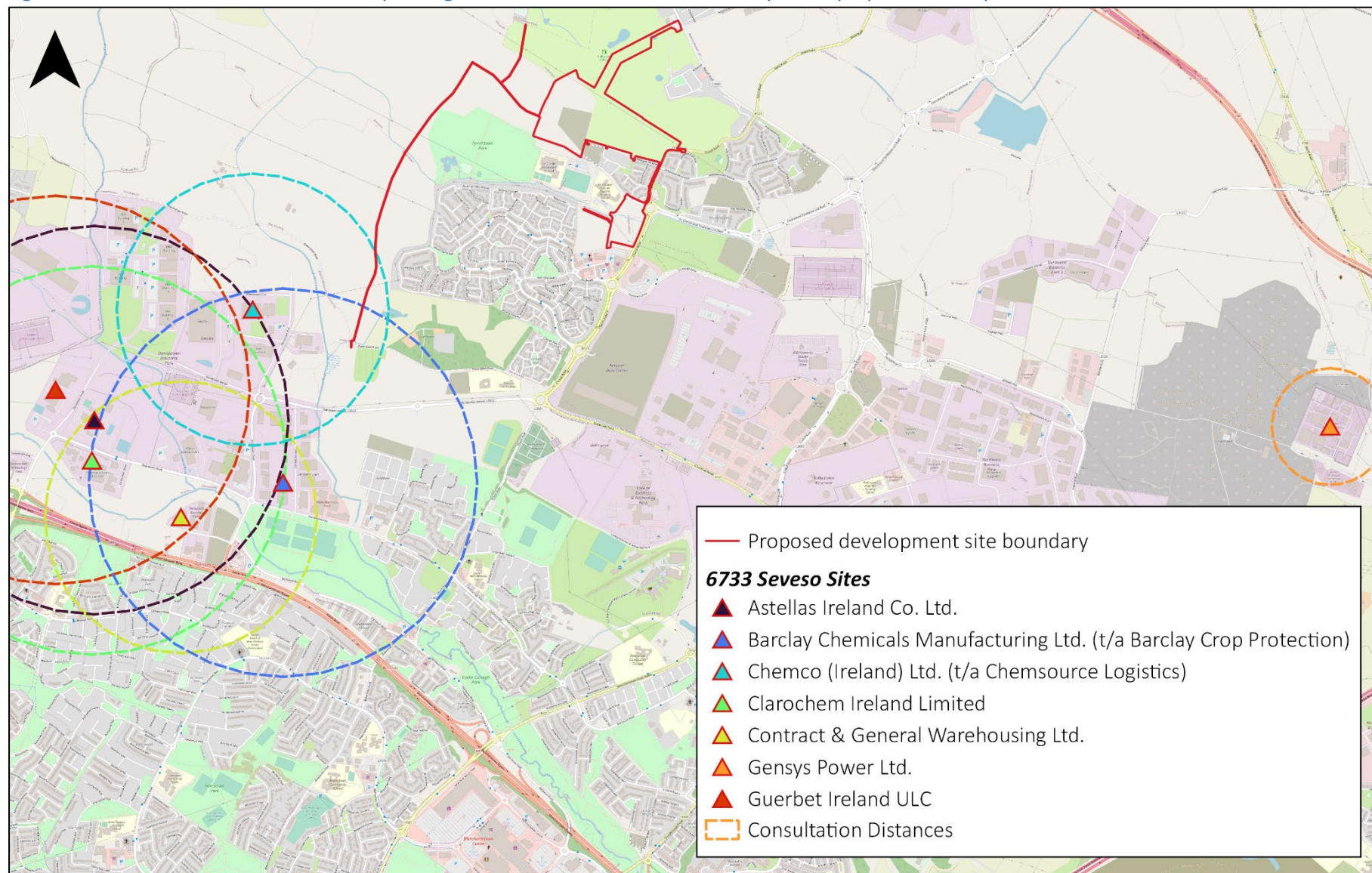
Table 7.2 SEVESO III sites in the vicinity of the proposed development

Tier	Establishment ¹⁴	Address	Activity	Consultation distance	Distance from proposed development ¹⁵
Upper	Barclay Chemicals Manufacturing Ltd. (t/a Barclay Crop Protection)	Damastown Industrial Park, Mulhuddart, Dublin 15	Production and storage of pesticides, biocides and fungicides	1,000 m	790 m
Upper	Chemco (Ireland) Ltd. (t/a Chemsources Logistics)	Damastown Industrial Park, Mulhuddart, Dublin 15	Chemical storage and transport	700 m	530 m
Upper	Contract & General Warehousing Ltd.	Westpoint Business Park, Navan Road, Mulhuddart, Dublin 15	Chemical storage and transport	700 m	1,240 m
Upper	Guerbet Ireland ULC	Damastown, Mulhuddart, Dublin 15	Production of pharmaceuticals	1,000 m	1,540 m
Lower	Astellas Ireland Co. Ltd.	Damastown, Mulhuddart, Dublin 15	Production of pharmaceuticals	1,000 m	1,380 m
Lower	Clarochem Ireland Limited	Damastown, Mulhuddart, Dublin 15	Production of pharmaceuticals	1,000 m	1,460 m
Lower	Gensys Power Ltd.	Huntstown Power Station, Huntstown Quarry, Dublin 11	Power generation, supply and distribution	300 m	3,624 m

¹⁴ Sites in bold are within consultation distance of the site of the proposed development. Refer also to **Figure 7.5**.

¹⁵ Approx. linear distance from perimeter of SEVESO site to nearest point of proposed development site

Figure 7.5 SEVESO III sites and corresponding consultation distances in the vicinity of the proposed development



Two (2 no.) of these establishments – Chemco (Ireland) Ltd. and Barclay Chemicals Manufacturing Ltd. – are within consultation distance of the site of the proposed foul water outfall sewer component of the proposed development (which, it is noted, was permitted previously under the scope of a separate application: FCC reg. ref. FW21A/0042). The actual locations of the proposed residential / community amenity / commercial elements of the proposed development are >1 km beyond the limit of the consultation distance for the nearest SEVESO III site, and no homes or buildings proposed will fall within the consultation radius of any SEVESO III site (refer to **Figure 7.5**).

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.

As highlighted previously in Chapter 3 (Planning & Development Context), Dublin Airport is a c. 6 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).

Variation No. 1 of the *Fingal Development Plan 2017 – 2023* 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 12.10** in Chapter 12 of this EIAR (Noise & Vibration) sets out the objectives to be adhered to by applicants for developments in each zone.

The Hollystown Sites 2 & 3 portion of the site of the proposed development 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*”; while the Kilmartin Local Centre area falls wholly within Noise Zone C, for which the objective is to “*manage noise sensitive development in areas where aircraft noise may give rise to annoyance and sleep disturbance, and to ensure, where appropriate, noise insulation is incorporated within the development*”.

For further information in this regard, refer to Chapter 12 (Noise & Vibration).

7.5 Predicted Impacts of the Proposed Development

7.5.1 Do-Nothing Impact

As discussed in Chapter 4 (Consideration of Alternatives), the Do-Nothing scenario in this case might entail:

- (a) A continuation of the existing status and use of the lands (i.e. predominantly agricultural land, waste ground and former golf course lands); or
- (b) Development (likely very similar to the current proposal) under the scope of a separate proposal and application at some point in the future.

In the context of the ongoing housing crisis in the DMA, 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 548 residential units proposed and the accommodation that these would otherwise provide, as well as the community amenities and economic opportunities provided by the proposed Local Centre.

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. It is not possible to assess the likely impacts of scenario (b), as the nature and scale of any potential future proposals for the lands (in the absence of the proposed development) are not known.

7.5.2 Construction Phase

The duration of the construction phase is anticipated to be in the region of 39 months (or 3.25 years). 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.

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

- Potential nuisance due to dust generating activities;
- Potential nuisance and disturbance due to noisy activities;
- Potential negative impacts on journey characteristics / 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.);
- Positive economic impacts due to construction employment and increased demand for goods and services; and
- Potential negative human health impacts on site personnel associated with potential presence of asbestos in structure to be demolished.

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

7.5.2.1 Dust

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.

Construction dust may be deposited within 350 m of a site, but the majority of deposition tends to occur within a 50 m radius. 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 local population to dust soiling and particulate matter (PM₁₀ and PM_{2.5}) exposure as 'high', because of the relatively large amount of soil stripping and excavation proposed.

In the absence of mitigation, it has predicted a *short-term, slight, negative impact* on population and human health, resulting from the air quality effects of the construction phase. These impacts are expected to constitute minor nuisance, and no significant human health impacts are likely to occur in this regard, even in the absence of mitigation.

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

7.5.2.2 Noise & 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.

Sensitive Receptors

Sensitive receptors in the receiving environment have been identified as follows (as mapped in Figure 12.11 in Chapter 12):

- **N1:** Future residential development approx. 10 m to the north of the Site 2/3 site boundary;
- **N2:** Hollywoodrath residential development approx. 25 m to the east of the Site 2/3 site boundary;
- **N3:** Bellingsmore residential development approx. 20 m to the south of the Site 2/3 site boundary;
- **N4:** Le Chéile secondary school approx. 85 m to the southwest of the Site 2/3 western site boundary;
- **N5:** Redwood residential development approx. 200 m to the north of the Site 2/3 site boundary;
- **N6:** Bellingsmore residential development approx. 20 m to the north of the Kilmartin Local Centre site boundary;
- **N7:** Tyrrelstown Educate Together national school approx. 20 m to the northwest of the Kilmartin Local Centre site boundary;
- **N8:** Hotel rooms located in Carlton Hotel Blanchardstown, located approx. 115 m to the east of the Kilmartin Local Centre site boundary;
- **N9:** Commercial developments approx. 50 m to the north of the Kilmartin Local Centre site boundary;
- **N10:** Residential apartments above commercial spaces approx. 75 m to the south of the Kilmartin Local Centre site boundary;
- **N11:** Tyrrelstown Montessori approx. 180 m to the southwest of the Kilmartin Local Centre site boundary; and
- **N12:** Bellgree residential development approx. 175 m to the west of the Kilmartin Local Centre site boundary.

For the purposes of the noise impact assessment, the following thresholds have been adopted:

- Residential receptors: 65 dB(A); and
- Commercial buildings: 70 dB $L_{Aeq,1hr}$.

Vibration

In relation to construction vibration, the assessment has determined that the likely range of vibration levels emanating from the site will be below a level that would cause any disturbance to occupants of nearby sensitive receptors, and well below a level that would pose a risk of cosmetic or structural damage. Accordingly, the predicted vibration impact during the construction phase is *short-term, neutral* and *imperceptible*.

Construction Activities, Plant & Equipment

In relation to construction activities / equipment, the findings of the worst-case scenario noise impact assessment may be summarised as follows^{16,17}:

- Construction noise levels at the nearest commercial properties (50 m) would not be expected to exceed the significance threshold of 70 dB $L_{Aeq,1hr}$.
- When residential receptors are within 40 m of the construction works, the construction noise levels would be expected to exceed the significance threshold of 65 dB $L_{Aeq,1hr}$.
- For those residential receptors within 25 m of Hollystown Sites 2 & 3 portion of the site, the predicted construction noise impact is ***negative, significant to very significant*** and ***temporary*** when works are carried out along the site boundary. For all other sensitive receptors in the vicinity of Sites 2 & 3, the predicted noise impact is ***negative, not significant to moderate*** and ***temporary***.
- For those sensitive receptors immediately within 20 m of the northern and north western site boundaries of the Kilmartin Local Centre portion of the site, the predicted construction noise impact is ***negative, significant to very significant*** and ***temporary*** when works are carried out along the site boundary. For all other sensitive receptors in the vicinity of the Local Centre site, the predicted noise impact is ***negative, not significant to moderate*** and ***temporary***.

Construction Traffic

In relation to construction traffic, the findings of the worst-case scenario noise impact assessment may be summarised as follows:

- A review of the traffic data for the proposed development indicates a worst-case scenario of 20 truck and 70 car movements per hour.
- The predicted noise level at the nearest residential receptor will be approx. 57 $L_{Aeq,1hr}$, which is below the significance threshold.
- The traffic increase associated with the construction phase will be <25%, meaning the overall noise levels will not be increased by ≥ 1 dB relative to the baseline during the construction phase.
- The increase in traffic-related noise during the construction phase will be ***not significant***.

In short, the only significant negative impacts predicted in relation to noise and vibration during the construction phase will be ***significant to very significant*** and ***temporary*** noise impacts affecting residential receptors within 25 m of Sites 2 & 3 and within 20 m of the Local Centre site, resulting from construction activities along the site boundary, e.g. the operation of noisy plant and equipment. These effects will not result in any significant human health impacts, but rather will constitute nuisance and disturbance during working hours, typical of construction sites of this nature and scale. Corresponding mitigation measures have been set out in Chapter 12, and are discussed further below.

7.5.2.3 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. amenity, duration and / or length) for local residents, workers and road users.

¹⁶ The assessment has assumed that a standard 2.4 m site hoarding will be employed, and that construction equipment will be in operation 66% of the working time.

¹⁷ Working hours will be 07:00 – 19:00 hrs Monday to Friday. No works will be carried out on weekends or Bank Holidays without the prior consent of Fingal County Council.

All construction traffic, including HGVs, will be using the existing partially constructed link street, 'The Avenue' / Hollystown Road, to access and egress the development site. During Phase 2a and the construction of Hollystown Site 2, construction traffic may also use the proposed new vehicle access on the R121.

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 construction traffic *will not give rise to any significant impacts* or impede the operation of the local road network or parking availability.

7.5.2.4 Landscape & Visual Amenity

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 be *significant, negative* and *short-term* in duration. Corresponding mitigation measures have been set out, and are discussed below.

7.5.2.5 Economic Impacts

It is estimated that there will be a need for somewhere in the region of 450 – 600 site personnel 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.

7.5.2.6 Asbestos

As stated in Chapter 5 (Description of the Proposed Development), there is an existing structure (two adjoining sheds and a silo) on the former golf course within the site of the proposed development, which will need to be demolished under the scope of the construction phase. It is not known whether there are asbestos containing materials (ACMs) present in the structure. ACMs were used widely as building materials from the 1940s up until 1999. Assuming a worst-case scenario, i.e. assuming that there are ACMs present, there would be the potential for *significant, indirect, negative human health impacts* on site personnel due to potential exposure to asbestos, a Category 1 carcinogen.

7.5.3 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 nuisance and disturbance due to noise generated by airplanes, traffic (including deliveries / collections), building services plant, the operation of community amenities / café 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 / local centre development.
- Potential socioeconomic impacts due to employment opportunities and increased 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.

7.5.3.1 Noise

Chapter 12 (Noise & Vibration) has assessed the potential outward noise impacts of the proposed development during the operational phase in relation to:

- Traffic;
- Building services plant;
- Deliveries;
- Car parking;
- Crèche playground;
- Café area;
- Entertainment noise; and
- The cumulative impact of the foregoing.

It has also considered the potential inward noise impact of the receiving environment on the operation of the proposed development (particularly with regard to aircraft noise from Dublin Airport) through the preparation of an Acoustic Design Statement (ADS), in accordance with the *Professional Practice Guidance on Planning & Noise* ('ProPG') for new residential development (ANC, IOA & CIEH, 2017).

No significant impacts were predicted in relation to operational traffic, car parking or the operation of the crèches, café or community amenity space. In relation to building services plant, it was determined that, assuming the design noise criteria of 40 dB $L_{Aeq,15min}$ during daytime periods and 35 dB $L_{Aeq,15min}$ at night-time are achieved within the proposed development, **no significant impact** will arise in this regard. Regarding deliveries, it was determined that there is a possibility for localised exceedance of the noise threshold of 55 dB $L_{Aeq,1 hr}$ during daytime deliveries. Assuming the enhanced façade specification provided for in the ADS is implemented, **no significant impact** is predicted to occur in this regard.

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 Hollystown Sites 2 & 3 portion of the site of the proposed development is entirely situated within Noise Zone B for Dublin Airport; while the Kilmartin Local Centre site is situated entirely within Noise Zone C. It was determined on this basis that Sites 2 & 3 have a ‘medium’ noise risk, while the Local Centre has a ‘low’ to ‘medium’ noise risk. The ProPG states the following regarding these risk levels:

- **Low Risk:** “At low noise levels, the site is likely to be acceptable from a noise perspective provided that 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 in the finished development.”
- **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.”

Accordingly, the ADS has assessed the proposed development against the ProPG’s checklist for ‘good acoustic design’ (GAD), and has deemed the proposed development to be appropriate in the context of noise risk, considering the proposed design.

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 $L_{Aeq,16hr}$ provide in the ProPG.

For residential units where it will not be possible to achieve a desirable internal acoustic environment with windows open in Zones B and C, 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. Impacts on the local community will constitute nuisance and disturbance, particularly while outdoors, and will be of a similar nature to impacts experienced by existing residents in the area. Taking into consideration the subjective nature of noise

nuisance impacts, the predicted impact of inward noise during the operational phase is *negative, not significant to moderate* and *long-term to permanent*.

7.5.3.2 Traffic & Access

Additional traffic generated by a residential 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 Bellingsmore residential development (FCC reg. ref. FW13A/0088), Hollywoodrath residential development (FCC reg. ref. FW14A/0108) and the Hollystown Site 1 residential development (FCC reg. ref. FW21A/0042); as well as educational facilities planned under the scope of the *Kilmartin Local Area Plan* (2013; as extended).

The results of the traffic analysis for the operational phase indicate that all junctions would operate within capacity in the opening year (2023), with the majority of junctions operating within capacity during the future design year (2038), with the exception of Junction 5 (the Avenue (Hollystown Road) / R121 / Hollywoodrath / Cherryhound Tyrrelstown Link Roundabout Junction), whose capacity would be exceeded during the AM peak. Additionally, Junction 7 (R121 / Boulevard / Cruiserath Drive Roundabout Junction) would near capacity during the AM peak, but still provide a level of service (LOS) of A. *Significant negative impacts* on population and human health *are not predicted* in this regard.

Once the proposed development is completed, its internal road network will tie-in with the existing road network at three primary vehicular access points, as follows (refer to **Figure 16.20** in Chapter 16 – Traffic & Transportation):

4. Access to Site 2 will be via the R121 in the form of a priority junction.
5. Access to Site 3 will be via an extension to the existing primary link street (Hollystown Road), which is itself accessed via the R121.
6. Access the Kilmartin Local Centre will be via a priority controlled access road via the Hollystown Road.

These primary vehicular access points will be supported by a network of off-road and on-road pedestrian and cycle routes, as illustrated in **Figure 16.19** in Chapter 16 (Traffic & Transportation). As part of this network, it is proposed to provide a pedestrian and cycle link extending from Sites 2 & 3 northwards through the former golf course, to tie-in with the existing Ratoath Road, providing enhanced north-south permeability and a future link between the proposed development and planned future GAA facilities (refer to **Section 3.4.2** in Chapter 3 – Planning & Development Context).

The proposed extension to the Hollystown Road has been designed to allow for future onward connections to the westernmost *Kilmartin Local Area Plan* (2013; as extended) lands, also under the ownership of the Applicant.

The internal road and street network of the proposed development has been designed in accordance with the Government's *Design Manual for Urban Road and Streets* (DMURS) (2013). Refer to the DMURS Compliance Statement submitted under separate cover as part of the planning application.

During the operational phase, the proposed development is expected to improve permeability across the site and wider area, particularly providing enhanced north-south permeability for pedestrians and cyclists. A *moderate, positive, localised, long-term to permanent* impact is predicted in terms of access during the operational phase.

7.5.3.3 Landscape & Visual Amenity

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 and local centre development, with associated residential community and patrons.

Chapter 13 (Landscape & Visual) has assessed the impacts of the proposed development in this regard. It has concluded that, in the absence of mitigation measures, the worst-case landscape and visual impact is predicted to be *moderate to significant, negative* and *long-term* in duration. Corresponding mitigation measures have been set out, and are discussed below.

7.5.3.4 Socioeconomic Impacts

While an estimate of on-site staff numbers is not available at this early stage, there will be a number of workers employed on-site (e.g. crèche, Montessori school and café employees) and partly on-site (e.g. occasional maintenance staff) during the operational phase. This job creation will result in a *positive, moderate and long-term* socioeconomic impact.

Additionally, the proposed development is expected to increase the local population by the order c. 1,470 persons¹⁸, 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.

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, the following assessments have been carried out by BSM and are submitted under separate cover as part of this application:

- A Community and Social Infrastructure Audit; and
- A Schools Demand and Childcare Facilities Assessment.

Please refer to the above-listed documents, submitted under separate cover as part of the planning application. It is noted that the proposed development will also provide new community amenities to serve existing and future residents, including two crèches, Montessori school, café and community hub. *Significant negative impacts are not predicted* in this regard.

7.6 Mitigation Measures

Mitigation measures have 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.

¹⁸ 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.

7.6.1 Construction Phase

- A Preliminary Construction & Environmental Management Plan (pCEMP) has been prepared in respect of the proposed development by DBFL Consulting Engineers (refer to document submitted under separate cover). Using the pCEMP as a starting point, a CEMP will be finalised by the successful contractor 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.
- The appointed contractor will be responsible for ensuring that an asbestos survey of the existing structures to be demolished has been carried out prior to the commencement of any demolition works. The locations of ACMs, if any, will be identified. ACMs present, if any, will be removed at an appropriate stage (e.g. prior to other deconstruction / demolition works, where there is a risk of disturbance of ACMs) by competent and suitably qualified contractors, under strictly controlled conditions, in accordance with the Health and Safety Authority (HSA) guidelines, [*Asbestos-containing Materials \(ACMs\) in Workplaces: Practical Guidelines on ACM Management and Abatement*](#) (2013). ACMs must be disposed of in accordance with relevant waste legislation.
- Chapter 11 (Air Quality & Climate) includes a suite of mitigation measures to minimise air quality (including dust) impacts during the construction phase. Mitigation measures are included in relation to dust suppression, good housekeeping, heavy goods vehicles (HGV) and proper storage and handling of materials. An Outline Construction Air Quality Management & Monitoring Plan has been appended (**Appendix 11.1**), which 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, tree protection and construction traffic.
- 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 finalised by the appointed contractor in agreement with Fingal County Council.

7.6.2 Operational Phase

- Chapter 12 (Noise & Vibration) includes a suite of mitigation measures to minimise noise impacts during the operational phase of the proposed development. These include measures in relation to selection of quiet building services plant, noise control at source, and adherence to design noise criteria.
- 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.

7.7 Residual Impacts

Assuming the proper and full implementation of the mitigation measures in this EIAR (summarised above in relation to population and human health), the following *significant negative residual* impacts are expected to occur:

- 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 *short-term, significant, negative, residual impacts* to arise at residential receptors within 25 m of the proposed development site during the construction phase, as a result of noisy construction activities. As stated previously, these impacts will constitute nuisance / disturbance during daytime hours only, and will not result in *significant negative* human health impacts.

7.8 Monitoring

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

7.9 Interactions

Population and human health is an EIA topic which tends to interact with numerous other environmental topics / media 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 / media 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)

- Potential for nuisance impacts due to dust-generating activities of proposed works.

Noise & Vibration (Chapter 12)

- Potential for nuisance and disturbance due to noisy construction activities, plant and equipment;
- Potential for nuisance and disturbance due to construction traffic noise;
- Potential for nuisance and disturbance due to noisy building services plant, deliveries, operation of community amenity and commercial premises (i.e. crèches, café, Montessori, etc.) and operation of Dublin Airport during operational phase; and
- Potential for nuisance and disturbance due to additional traffic during operational phase.

Landscape & Visual (Chapter 13)

- 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.);
- Visual impacts due to completion of proposed development, establishing substantial new residential / local centre development.

Traffic & Transportation (Chapter 16)

- Potential for negative impacts on journey characteristics due to additional (construction) traffic on road network during proposed works;
- Potential for nuisance and disturbance due to construction traffic noise;
- Potential for negative impacts on journey characteristics due to additional traffic on road network during the operational phase; and
- Potential for nuisance and disturbance due to operational traffic noise.

7.10 Cumulative Impacts

The potential for cumulative impacts to arise as a result of the proposed development in combination with other existing / proposed plans and projects, as listed in **Table 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) 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).

7.11 References

- DAA (2016). *DAA Consultation on Flight Paths and Change to Permitted Operations*.
- Dublin City Council (2016). *Dublin City Development Plan 2016 – 2022*.
- Fingal County Council (2017). *Fingal Development Plan 2017 – 2023*.
- HSA (2021). *Lower Tier Establishments – 19 April 2021*.
- HSA (2020). *Upper Tier Establishments – 22 December 2020*.

8 Biodiversity

8.1 Introduction

This Chapter of the EIAR comprises an assessment of the likely effects on Biodiversity (Flora & Fauna) of the proposed development at Hollystown and Kilmartin, Dublin 15. The proposed development will comprise 428 residential units and associated infrastructure at Hollystown Sites 2 & 3, and 120 residential units at the Kilmartin Local Centre. As part of the proposed development a new foul outfall sewer will be constructed to the west of the site, approximately 3km in length, to connect to the existing foul sewer to the south of Powerstown Road. 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 Screening Report) that accompanies this application under separate cover.

This chapter has been prepared by Matthew Hague, Senior Ecologist at Brady Shipman Martin. A technical review was completed by Thomas Burns, Partner at Brady Shipman Martin. Refer to **Table 1.3** in Chapter 1 (Introduction) for qualifications of authors and reviewers.

8.2 Methodology

A comprehensive desk-based assessment has been undertaken, and numerous site visits have been carried out by the author and other specialist ecologists, between December 2019 and November 2021, as detailed in the following sections.

8.2.1 Desk Study

This Ecological Impact Assessment (EclA) and EIAR chapter has been prepared in accordance with the following **publications**:

- *EPA Guidelines on the Information to be Contained in Environmental Impact Statements* (EPA, 2002) (and revised and draft guidelines 2017);
- *EPA Advice Notes of Current Practice (in the Preparation of Environmental Impact Statements)* (EPA, 2003) (and revised advice notes 2015);
- *Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment* (European Commission, 2013);
- *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment* (Department of Housing, Local Government and Heritage, 2018);
- *Guidelines for Assessment of Ecological Impacts of National Road Schemes* (Transport Infrastructure Ireland (formerly the National Roads Authority), 2009) ('the NRA Guidelines'); and
- *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).

The report has regard to the following **legislative instruments**:

- The Planning and Development Act 2000 (as amended);

- The Wildlife Act 1976 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 (“Birds Directive”);
- European Communities (Birds and Natural Habitats) Regulations 2011-2015;
- Flora (Protection) Order 2015;
- Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment;
- Directive 2014/52/EU of the European Parliament and of the Council of 16th April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment; and
- 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**:

- *National Biodiversity Action Plan 2017 – 2021* (Department of Culture, Heritage and the Gaeltacht, 2017);
- *Planning for Watercourses in the Urban Environment* (Inland Fisheries Ireland, 2020);
- *Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters* (Inland Fisheries Ireland, 2016);
- *All-Ireland Pollinator Plan 2021 – 2025* (National Biodiversity Data Centre, 2021);
- *Fingal Development Plan 2017 – 2023*, including the accompanying Appropriate Assessment documentation (Natura Impact Report); and
- *Kilmartin Local Area Plan 2013* (as extended).

Information was collated from the **sources** listed below:

- 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 (npws.ie);
 - The National Biodiversity Data Centre (NBDC) (biodiversityireland.ie);
 - Birdwatch Ireland (birdwatchireland.ie); and
 - Bat Conservation Ireland (batconservationireland.org);
- Recent aerial photography and photographs taken at the site;
- Recent and historic ordnance survey (OSi) mapping (geohive.ie);
- Information on protected areas, as well as watercourses, catchments and water quality in the area available from the EPA (gis.epa.ie/EPAMaps/);
- Information on soils, geology and hydrogeology in the area available from the Geological Survey of Ireland (GSI) (gsi.ie);
- The NPWS Article 17 Reports:
 - The Status of EU Protected Habitats and Species in Ireland – Volume 1 (NPWS, 2019a);
 - The Status of EU Protected Habitats and Species in Ireland – Volume 2 (Habitat Assessments) (NPWS, 2019b);

- The Status of EU Protected Habitats and Species in Ireland – Volume 3 (Species Assessments) (NPWS, 2019c); and
- Information on land-use zoning from the online mapping of the Department of the Environment, Community and Local Government (myplan.ie/en/index.html).

8.2.2 Field Surveys – Overview

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

In order to provide a comprehensive baseline on the local ecological environment, ecological surveys were first undertaken at the site, including habitat, invasive species, mammal and day-time bat surveys, by the author on 6 December 2019. These surveys were repeated on 11 March, 8 June, 16 June and 2 July 2020 as well as 16 February, 8 July, 24 September and 15 October 2021.

Bat surveys (dawn and dusk detector surveys) were also undertaken, on 5 October 2020 and 16/17 June and 16/17 August 2021 by specialist bat ecologist Mr Brian Keeley.

A final site walkover was undertaken by the author on 30 November 2021. The ecological surveys undertaken covered the entire site, both within the Local Centre and Sites 2 & 3 areas, as well as along the line of the proposed sewer outfall.

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 surveys and assessment of bat roosts;
- Large mammal surveys (badger, otter);
- Suitability for breeding and wintering birds;
- Amphibian and common lizard surveys.

8.2.2.1 Habitats & 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*¹⁹ and were classified using *A Guide to Habitats in Ireland*²⁰ with due regard to the *Interpretation Manual of European Habitats*²¹. Vascular plant nomenclature follows that of the *New Flora of the British Isles 3rd Edition*²².

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.

¹⁹ Smith G. F., O'Donoghue P., O'Hara K. and Delaney E. (2010)

²⁰ Fossitt J. (2000)

²¹ https://ec.europa.eu/environment/nature/legislation/habitatsdirective/docs/Int_Manual_EU28.pdf

²² Stace, C. (2010)

8.2.2.3 Watercourses

There are no significant watercourses within the proposed development site, however it is located within the Tolka (SC-010) sub-catchment of the Liffey and Dublin Bay catchment. Drainage ditches on the golf course eventually discharge to the Pinkeen East River²³ (also known as the Powerstown Stream), which in turn joins the River Tolka at Mulhuddart. A partly culverted stream/ditch (the Mooretown Stream) passes through the Local Centre site from east to west. This also discharges to the Pinkeen East River.

The Tolka is a very significant habitat corridor in Dublin City. It flows into Dublin Bay, approximately 12.6km to the east.

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 Hollystown/Kilmartin site).

A review of the proposed site drainage and potential links to the Tolka (and other watercourses) was undertaken in conjunction with the project engineers²⁴.

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 Draft EPA EIAR Guidelines (2017) and the NRA Guidelines. This methodology is in turn consistent with the CIEEM Guidelines. The methodology allows the baseline to be comprehensively evaluated. This then makes it possible to assess the potential impacts (including cumulative impacts) of the proposed development, to set out appropriate mitigation measures and to assess the residual impacts of the proposed development.

In accordance with the NRA Guidelines²⁵, impact assessment is undertaken of sensitive ecological receptors ('Key Ecological Receptors') within the Zone of Influence of a proposed development. According to the NRA Guidelines, the Zone of Influence is the 'effect area' over which change resulting from the proposed development is likely to occur, and the Key Ecological Receptors are defined as features of sufficient value as to be material in the decision-making process for which potential impacts are likely. In the context of the proposed development, a Key Ecological Receptor is defined as any feature valued as follows:

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

²³ <https://gis.epa.ie/EPAMaps/>

²⁴ Refer to the Infrastructure Design Report prepared by DBFL Consulting Engineers (November 2021) and submitted as part of this application under separate cover.

²⁵ The NRA Guidelines, while originally developed for roads projects, provide clear, comprehensive and logical methods for evaluating the potential impacts of significant projects of all kinds in Ireland. The methodologies presented in the Guidelines are reproducible and reliable and are thus appropriate to the proposed development.

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

8.3 Baseline Environment

8.3.1 General Description

The proposed development site (refer to **Figures 1.1 and 1.2**) comprises the south western part of the former Hollystown Golf Club (Site 2), as well as a former agricultural field (Site 3 – in use as a construction compound for development including the permitted ‘Bellingsmore’ residential development (planning refs. FW13A/0088(E1); PL06F.243395), which is currently under construction to the south).

The area proposed for the Local Centre development is located to the south of Sites 2 & 3. Tyrrelstown Local Centre and two National Schools are located to the north west of the Local Centre site, which is bounded to the north by the Hollystown Road and to the east by the R121. Tyrrelstown Local Centre, comprising a mix of retail/commercial and residential units, is located to the south, with residential development to the west and further south. More residential development, both established and under construction/in planning, is present to the north and north east of the site.

The overall area of Sites 2 & 3 is bounded to the south and west by mature treelines/hedgerows, and another tree line separates the proposed site into two parts – with Site 2 to the east and Site 3 to the west. The former golf club itself now primarily comprises unmanaged grassland (former amenity grassland now occasionally mown) and groups of trees.

The Local Centre site comprises amenity grassland to the west of an internal access road, with an unmanaged field to the east. A hedgerow runs through the eastern part of the site, from north to south. There are shorter sections of tree lines/hedgerows, in the south eastern corner and along the western boundary. Scrub is developing in the eastern field.

The line of the proposed foul outfall sewer, which will cross through agricultural fields, is also shown in **Figure 1.2**. This element of the proposed development has been granted planning permission by Fingal County Council, as part of the permitted development of Hollystown Site 1 (FW21A/0042).

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.

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.

8.3.2.1 Relevant European Sites

There are five European sites located within a 15km radius of the proposed development site (see **Figure 8.1**). These are (distances measured from the approximate centre of the proposed development site):

■ *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. 12.6 km to the north east; and
- Rogerstown Estuary SAC (site code 000208), c. 15.0 km to the north east.

■ *Special Protection Areas (SPA)*

- South Dublin Bay and River Tolka Estuary SPA (site code 004024), c. 12.6 km to the south east; and
- Broadmeadow/Swords Estuary (Malahide Estuary) SPA (site code 004025), c. 12.7 km to the north east.

Beyond the 15km zone, there are a number of additional European sites:

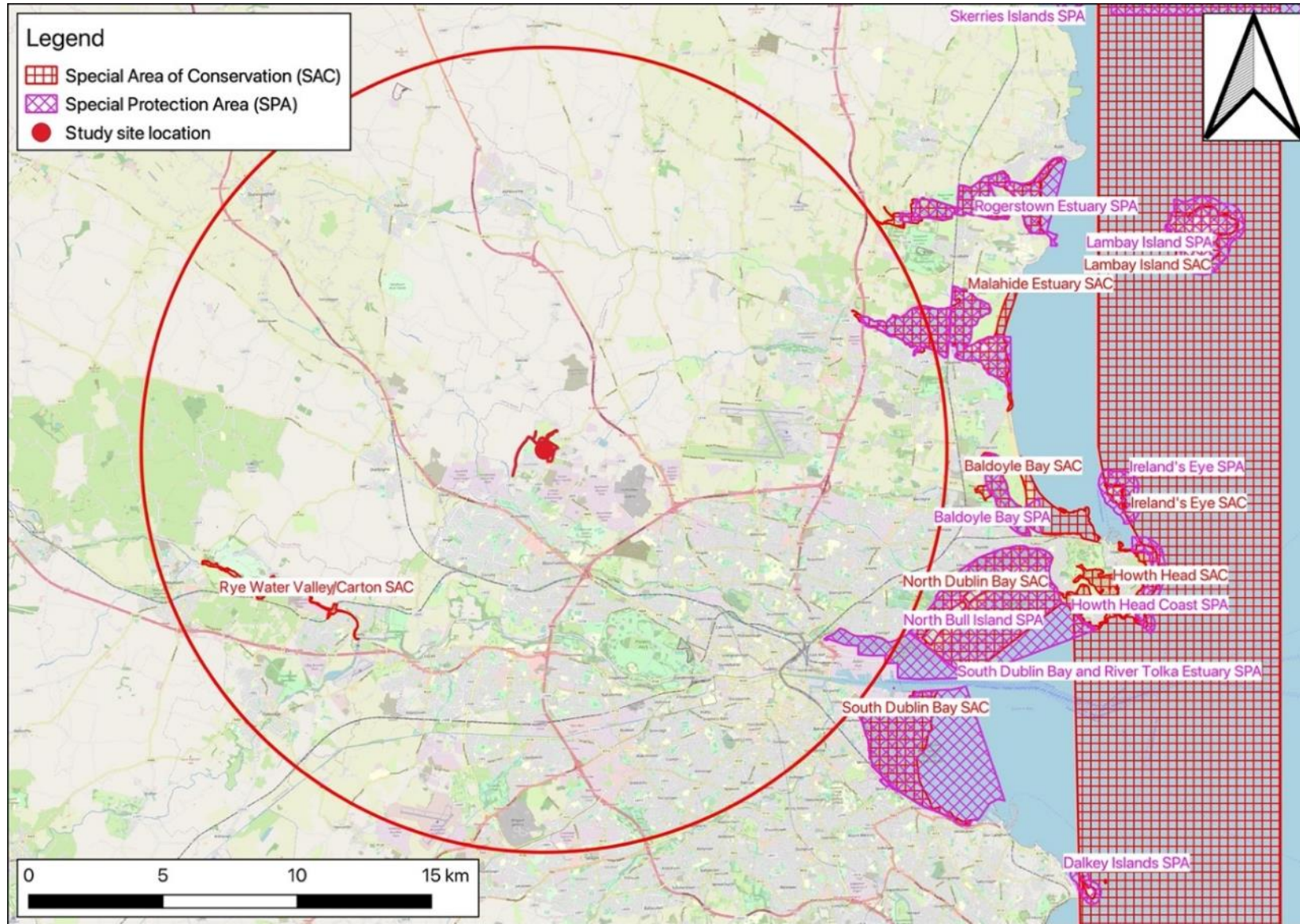
- South Dublin Bay SAC (site code 000210), c. 15.1 km to the south east;
- North Dublin Bay SAC (site code 000206), c. 15.2 km to the south east;
- Baldoyle Bay SAC (site code 000199), c. 16.0 km to the east;
- Glenasmole Valley SAC (site code 001209), c. 18.5 km to the south;
- Howth Head SAC (site code 000202), c. 19.9 km to the east;
- Rockabill to Dalkey Island SAC (site code 003000), c. 20.6 km to the east;
- Wicklow Mountains SAC (site code 002122), c. 21.0 km to the south;
- Ireland's Eye SAC (site code 002193), c. 21.0 km to the east;
- Lambay Island SAC (site code 000204), c. 24.0 km to the north east;
- North Bull Island SPA (site code 004006), c. 15.2 km to the south east;
- Rogerstown Estuary SPA (site codes 004015), c. 15.8 km to the north east;
- Baldoyle Bay SPA (site code 004016), c. 16.0 km to the east;
- Ireland's Eye SPA (site code 004117), c. 20.7 km to the east;
- Wicklow Mountains SPA (site code 004040), c. 21.5 km to the south;
- Howth Head Coast SPA (site code 004113), c. 22.1 km to the east;
- Lambay Island SPA (site code 004069), c. 24.2 km to the north east.

Full details of these and all other 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

The nearest site designated for nature conservation, not otherwise designated as a European site, is the Royal Canal proposed Natural Heritage Area (pNHA) (site code 002103), approximately 5km to the south, and c.4.0km south of the nearest point of the sewer connection. Liffey Valley pNHA (site code 000128) is approximately 6.3km to the south, and Santry Demesne pNHA (site code 000178) is approximately 8km to the east. The proximate pNHAs are shown in **Figure 8.2**, below.

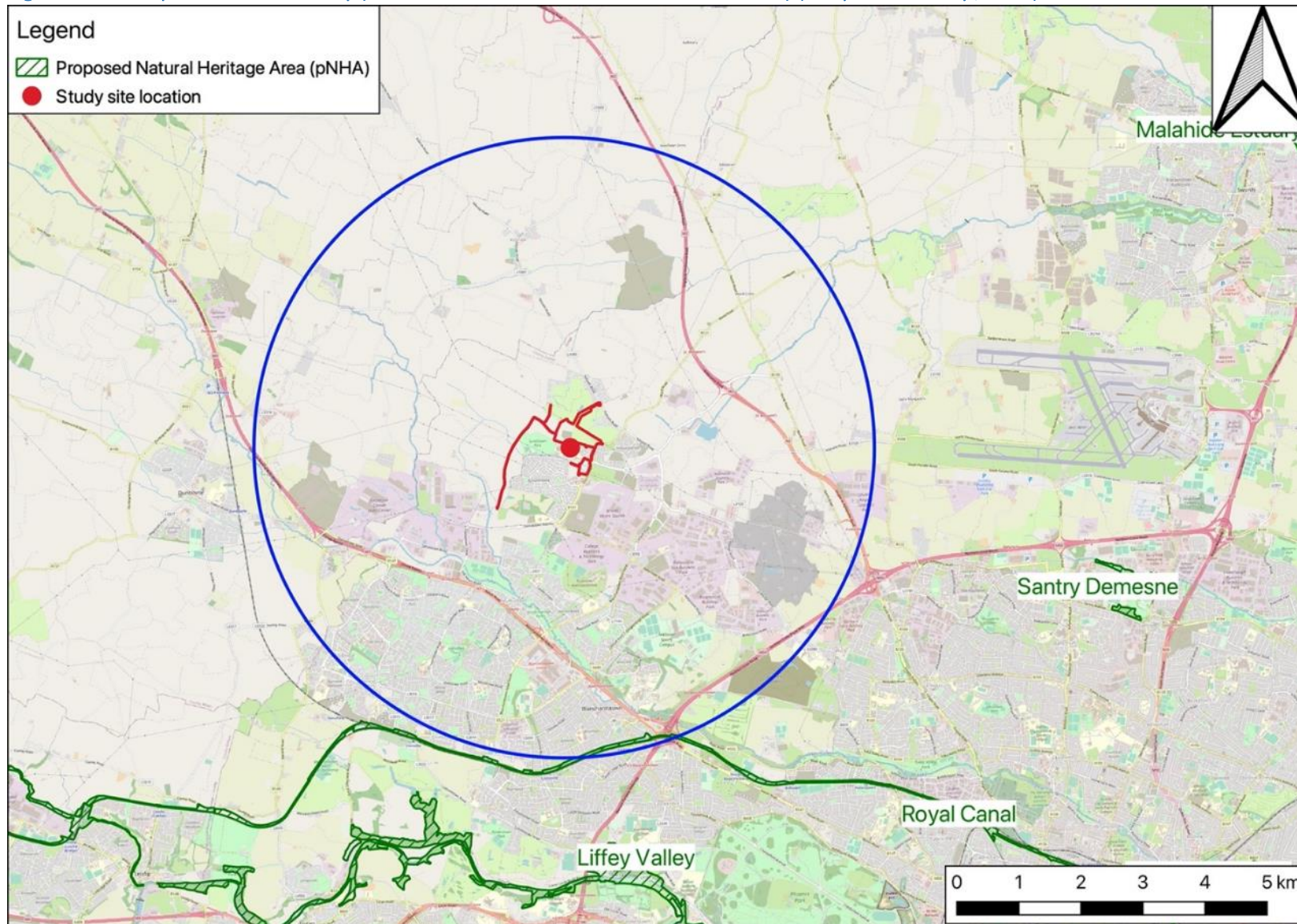
Figure 8.1 Relevant European Sites (circle denotes 15 km radius from centre of site) (© OpenStreetMap, 2021)



Hollystown Sites 2 & 3 and Kilmartin Local Centre SHD

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

Figure 8.2 pNHAs in the Vicinity (circle denotes 5 km radius from centre of site) (© OpenStreetMap, 2021)



8.3.3 Rare & Protected Plant Species

The NPWS and NBDC databases were consulted with regard to rare species²⁶ and species protected under the *Flora Protection Order* (2015). 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 squares (O04R and O04W) that cover the site, and none were recorded during any of the site visits undertaken.

8.3.4 Invasive Alien Plant Species

No species listed on the Third Schedule of the Birds and Habitats Regulations 2011 – 2015, such as Japanese knotweed (*Fallopia japonica*), giant hogweed (*Heracleum mantegazzianum*), Himalayan 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.

8.3.5 Habitats

The habitats present on the proposed development site are shown in **Figures 8.3 – 8.18**, below. The proposed development site comprises three distinct sections; Hollystown Sites 2 & 3, Kilmartin Local Centre and the proposed outfall sewer.

8.3.5.1 Hollystown Sites 2 & 3

The main habitat present within the part of the site located in the former golf club land (**Figure 8.3**) is former amenity grassland (**GA2**). As the golf course is no longer under active management, the grassland is now developing into a more diverse habitat (**GS2** – dry meadows and grassy verges). Species present, and increasing in distribution in these areas, 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 (*Geranium robertianum*), nettle (*Urtica dioica*), ivy (*Hedera helix*), creeping buttercup (*Ranunculus repens*) and hogweed (*Heracleum sphondylium*).

The immature woodland plantation (**WS2**) within the centre of this area comprises a mix of broadleaved and coniferous trees that have been subject to only minimal management since they were planted. Species include oak (*Quercus robur*), ash (*Fraxinus excelsior*), beech (*Fagus sylvatica*), larch (*Larix* spp.) Scot's pine (*Pinus sylvestris*) and Douglas fir (*Pseudotsuga menziesii*). There is a dense understorey of ivy, elder (*Sambucus nigra*), nettle and bramble (*Rubus fruticosus* agg.). However, several fern species have begun to develop, as the woodland begins to mature.

A number of open tree lines (**WL2**) are present throughout this part of the site. These features contain a range of planted trees including ash, Norway maple (*Acer platanooides*), whitebeam (*Sorbus aria*), flowering cherry (*Prunus* spp.), horse chestnut (*Aesculus hippocastanum*), alder (*Alnus glutinosa*) and silver birch (*Betula pendula*).

The drainage ditches (**FW4**) within the area contain only small volumes of water, and very little vegetation, having been heavily modified and extensively managed over many years. Species that are present include nettle, fool's watercress (*Apium nodiflorum*), hairy willowherb (*Epilobium hirsutum*) and occasional angelica (*Angelica sylvestris*). A small artificial pond (**FL8**), part of the golf course landscaping,

²⁶ Curtis & McGough (1988)

is located within the red line of the proposed development, within the proposed pedestrian and cycle connection to the separately planned GAA grounds to the north (a proposed linear park).

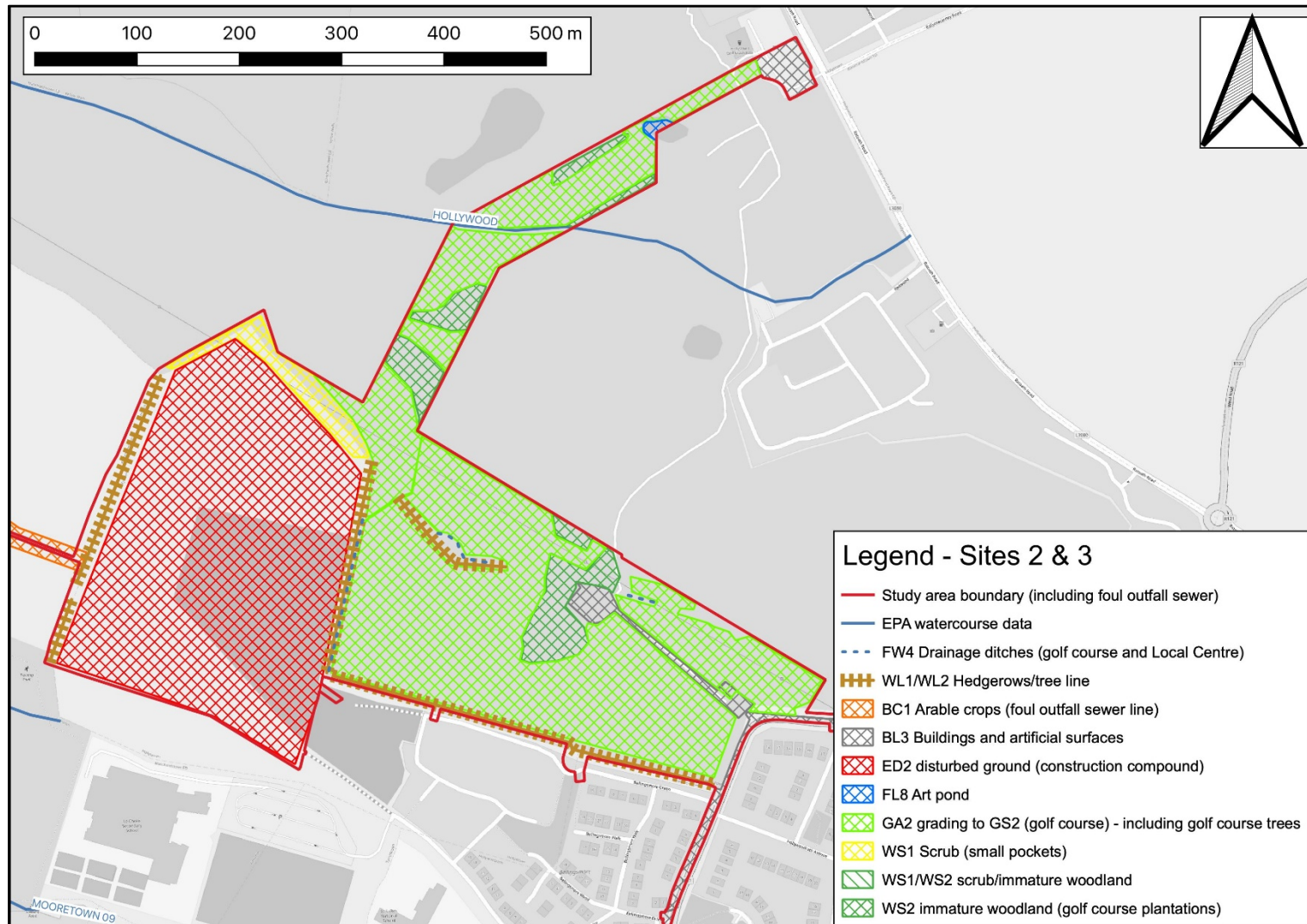
There is a small group of farmyard buildings (**BL3**) to the east of the woodland plantation within the centre of the golf course.

- The complex of habitats within the former golf club area, and including the proposed pedestrian and cycle connection to the separately planned GAA grounds to the north (a proposed linear park), are of Local Importance (Higher Value).

To the west of the golf course is a former agricultural field, which is now in use as a construction site compound. This former field is classified as disturbed ground (**ED2**), but includes temporary/pre-fabricated buildings, car parking and materials storage. This field is separated from the golf course lands by a deep artificial drainage ditch (**FW4**) and a hedgerow (**WL1**). The western site boundary comprises a very gappy tree line (**WL2**), in poor condition. The majority of the trees in this field boundary are ash, and they have all been heavily affected by ash dieback disease. The recommendation in the Tree Survey Report (prepared by Independent Tree Surveys and submitted under separate cover) is that the trees should be felled – the report states that these trees (and trees in other hedges on the site) *“are now in serious decline and would be unsuited for retention within a new layout”*. The report further states that *“the hedgerow understoreys are also suffering from disease and decline and require significant re-enforcement planting with new hedging plants and active management if they are to survive as landscape features”*. This finding concurs with the ecological valuation as presented in this EIAR.

- This heavily disturbed part of the site of no ecological value.

Figure 8.3 Habitat Map (Sites 2 & 3)²⁷ (© OpenStreetMap, 2021)



²⁷ Site boundary red line is indicative only, for full details refer to the accompanying documentation.

Figure 8.4 Golf course grassland and drainage ditch within Site 2



Figure 8.5 Southern golf course boundary, with Bellingsmore on the opposite side



Figure 8.6 Rough grassland on the western golf course boundary



Figure 8.7 Construction compound within Site 3



8.3.5.2 Kilmartin Local Centre

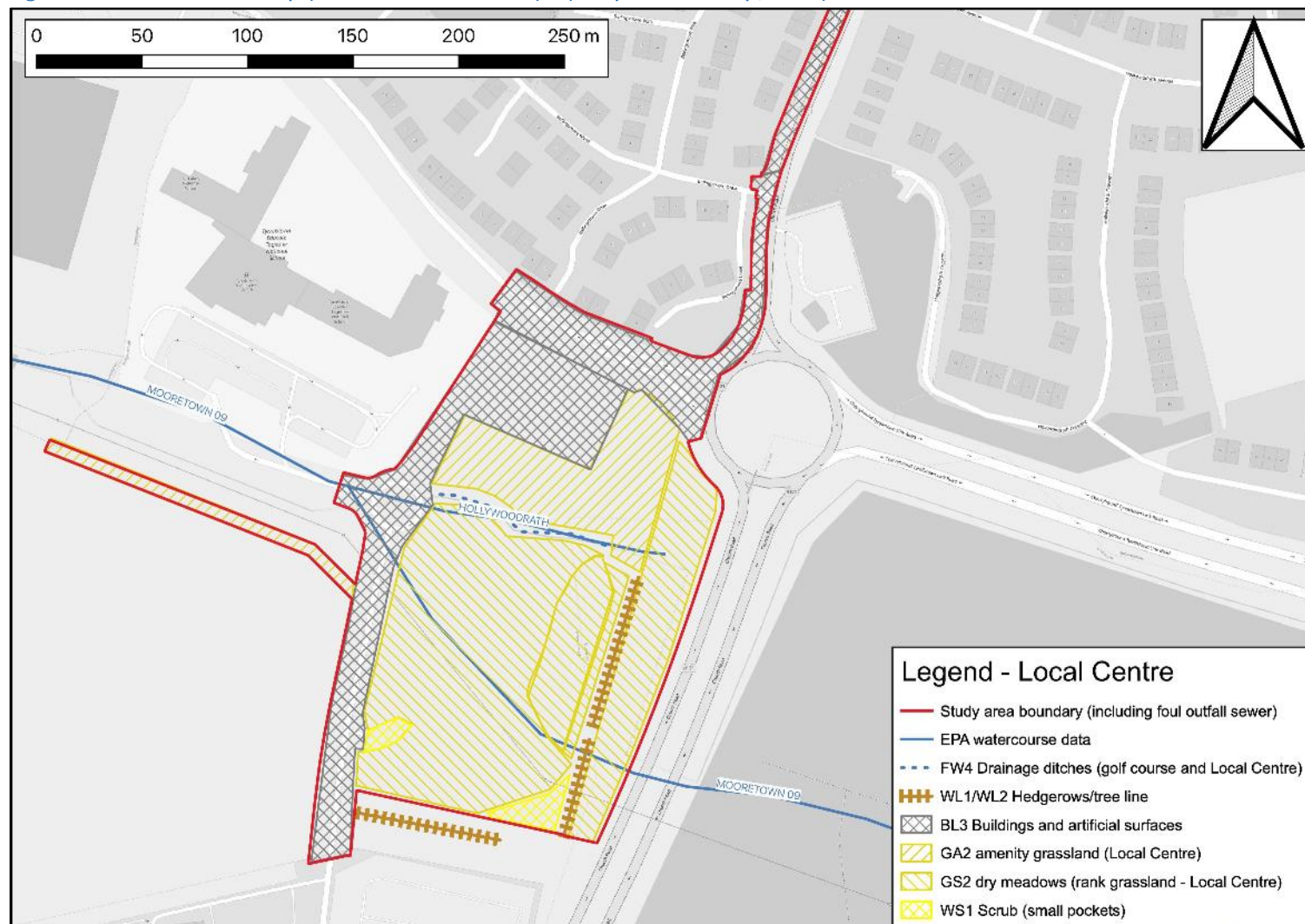
The site proposed for the development of the Kilmartin Local Centre (**Figure 8.8**) in general comprises artificial or heavily disturbed habitats. The northern part of the site contains regularly mown grassland (**GA2**) and a car park (**BL3**) with a gravel/stone substrate. A new road is currently under construction on the northern part of the western boundary. To the west of the site is an area currently occupied by playing pitches. A heavily modified drainage ditch (**FW4**), known variously as the Hollywoodrath or Mooretown Stream and a tributary to the Pinkeen East River, passes through the site from east to west. Although heavily overgrown with bulrush (*Typha latifolia*) and generally in poor condition there is some flowing water visible in this ditch. There is also another stream, culverted, that flows through the site.

The remainder of the proposed development site is dominated by species-poor rank grassland (**GS2**), with small pockets of Buddleja (*Buddleja davidii*) and bramble scrub. A fragment of an ash and hawthorn (*Crataegus monogyna*) hedgerow (**WL1**), with occasional elder (*Sambus nigra*), is located on the eastern side of the site.

To the south of the proposed Local Centre (outside the boundary) is a mature tree line (**WL2**), dominated by ash, in poor condition.

- These habitats, including the section of hedgerow and the drainage ditch within the site are of Local Importance (lower Value).

Figure 8.8 Habitat Map (Kilmartin Local Centre)²⁸ (© OpenStreetMap, 2021)



²⁸ Site boundary red line is indicative only, for full details refer to the accompanying documentation.

Figure 8.9 Amenity grassland and parking area at the northern part of the Local Centre site



Figure 8.10 Fenced-off drainage ditch within the Local Centre site



Figure 8.11 Rank grassland in the southern part of the Local Centre site



Figure 8.12 Hawthorn-dominated hedgerow and rank grassland on the eastern side of the Local Centre site

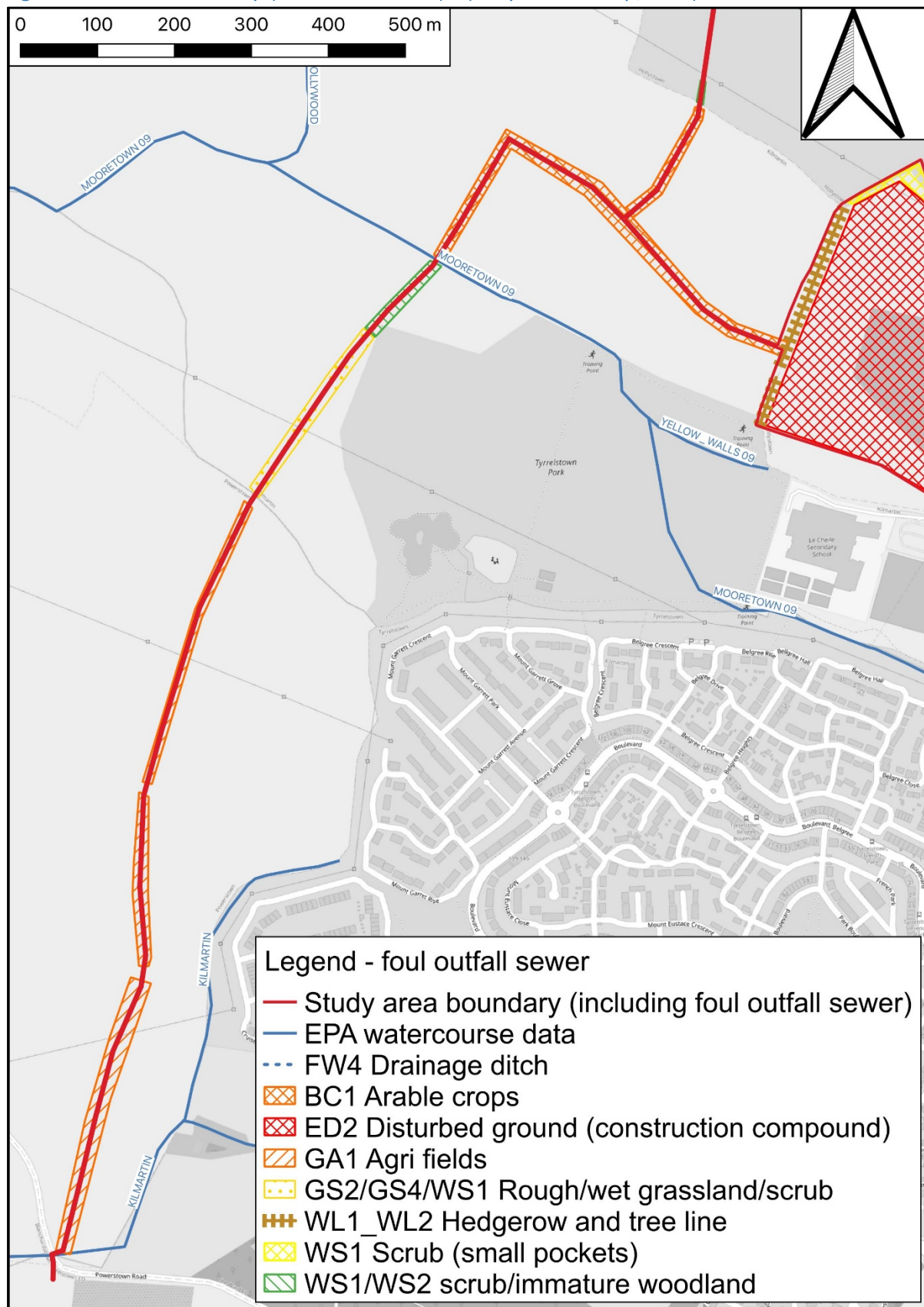


8.3.5.3 Proposed Foul Outfall Sewer

West of the proposed development site itself the line of the proposed outfall sewer (**Figure 8.13**) crosses the western-boundary tree line and passes through a field, currently in arable (**BC1**) use, before turning south. At this point the route crosses a small stream (the Mooretown Stream, a tributary to the Pinkeen River). To the south of this crossing is an unmanaged field of rough grassland (**GS2**), grading into wet grassland (**GS4**) in places. In the northern half of this field is a plantation of willow, now unmanaged. Further south again, the route of the proposed foul outfall sewer crosses three agricultural grassland fields (**GA1**), each divided by mature ash-dominated tree lines, and associated ditches.

- These habitats are of Local Importance (Higher Value).

Figure 8.13 Habitat Map (Foul Outfall Sewer)²⁹ (© OpenStreetMap, 2021)



²⁹ Site boundary red line is indicative only, for full details refer to the accompanying documentation.

Figure 8.14 Agricultural grassland along the route of the proposed foul outfall sewer



Figure 8.15 Rough/wet grassland at the northern part of the route of the proposed foul outfall sewer



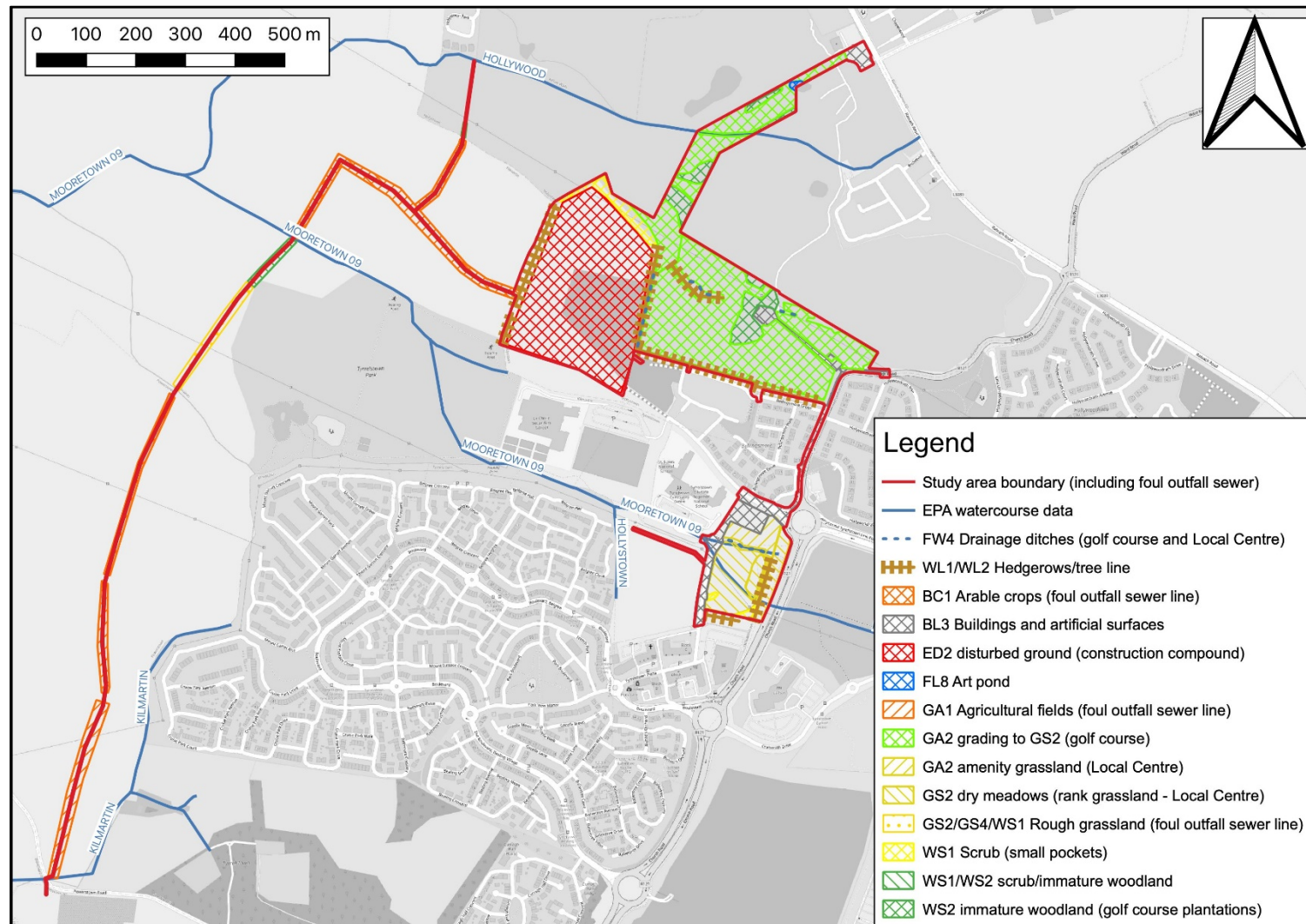
Figure 8.16 Scrub at the northern part of the route of the proposed foul outfall sewer



Figure 8.17 Gap in the hedgerow through which the proposed foul outfall sewer will pass



Figure 8.18 Habitat Map (Overall)³⁰ (© OpenStreetMap, 2021)



³⁰ Site boundary red line is indicative only, for full details refer to the accompanying documentation.

8.3.6 Fauna

8.3.6.1 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 2020 and 2021 included blackbird, blue tit, long-tailed 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)³¹, indicating that they are not currently species of conservation concern. Small numbers of starling and swallow, both of which species are amber-listed, were recorded on the site.

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.

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

8.3.6.2 Bats

During one of the bat surveys (16 August 2021) undertaken to inform this report, a Leisler's bat (*Nyctalus leisleri*) was noted to perch and call from a mature ash tree to the west of the block of woodland on the western side of the farm buildings within the centre of the site. As noted in the bat survey report included at **Appendix 8.1** of this EIAR, this is a "mating perch" for this bat species. The bat was noted to call from this perch repeatedly on August 16, and was also noted calling in flight over the former golf course area.

Bats are afforded strict protection under Annex IV of the Habitats Directive, and as such, comprehensive mitigation measures are required, should the removal of a feature such as the mating perch be unavoidable.

No other bat roosts were identified during the surveys undertaken in 2020 and 2021, within either the Hollystown Sites 2 & 3 or the Kilmartin Local Centre site. As stated in the bat survey report, there are a number of potential roost sites throughout the proposed development site; however, these were not occupied by bats on any of the survey dates and there were no obvious signs of bat usage. However, this does not rule out the occasional use of features such as mature trees or buildings on the site by roosting bats (refer to **Appendix 8.1**).

Four species of bat – common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*), brown long-eared bat (*Plecotus auritus*) and Leisler's bat – were recorded feeding within Hollystown Sites 2 & 3 during the surveys undertaken. As noted in the bat survey report:

"Over most of the site, bat activity was primarily common and soprano pipistrelle and was noted in several areas, including feeding in and around the storage / farm building and around tree cover. Bat activity was high on the western perimeter of the northern section of the site at trees along the edge of the existing construction site. Soprano pipistrelle activity was noted in a wider section of the site than common pipistrelle. There were periods of sustained soprano pipistrelle

³¹ <https://birdwatchireland.ie/app/uploads/2021/04/BOCCI-2020-2026.pdf>

feeding in August 2021 at the main pond and a smaller pond to the north³² and in tree clusters where up to 4 bats were present at any one time.

Leisler's bat activity was more limited and noted along the western edge of the site but also from one mature tree and from the southern section of the site.

Common pipistrelle activity was noted along the perimeter of the site, at the northern end of the site and occasionally within the site (including at the Leisler's bat ash tree perch).

A brown long-eared bat(s) was noted by a static monitor close to the storage building from 22.12 hours on 16th August and on a high number of occasions up to 05.02 hours (almost 60 recordings) on 17th August 2021. Surprisingly, no signals of this species were recorded from the site in October 2020 or June 2021 in the same area. The absence of the bat in June 2021 suggests that the bat is not breeding within the site but is commuting and feeding and potentially roosting within the site."

On the Kilmartin Local Centre site, the bat survey reports that:

"[...] there was bat activity along the various treelines with much less activity on exposed areas. The trees along the western edge were the key feeding area with soprano pipistrelle activity along the trees in the south-eastern corner (in June 2021) and common and soprano pipistrelle in the western area and Leisler's bats closer to the schools.

In August 2021, the majority of bat activity was along the western trees with Leisler's bats more spread across the entire site."

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, 2011-2015*.

8.3.6.3 Large Mammals

Previous surveys, undertaken prior to 2019, recorded evidence of badger activity within the proposed development site, on the western side of the golf course boundary (in the north – south hedgerow/tree line that separates Sites 2 & 3). However, no evidence of badger activity was recorded during the surveys carried out as part of the current planning application since 2019, either within the proposed development area or along the route of the proposed foul outfall sewer. 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, 2011-2015.

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

8.3.6.4 Other Species

Overall, the proposed development site is dry, however the drainage ditches (and the ponds in the wider golf course lands) offer 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

³² These areas are within the former golf course lands but outside the proposed development site.

adult frog was found in grassland in the centre of the Site 2 section of the proposed development 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. However, it is possible that lizards may occur within the site, although 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 and 2021. 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.

8.3.7 Overall Evaluation of the Proposed Development Site

The proposed development site (that is, the site of the proposed development itself as well as the proposed foul outfall sewer) 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*, 2015 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. Although there are a number of trees within the proposed development site, including gappy tree lines, these trees do not form significant areas of habitat, nor do they provide significant habitat corridors, either within the golf course lands or the proposed Local Centre site, or to the wider area. The tree lines and hedgerows to the west and south west of Hollystown Sites 2 & 3, through which area it is proposed to construct the foul outfall sewer, form part of the wider network of ecological corridors and habitat linkages.

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. One bat roost (in fact a mating perch) has been recorded. The site is not utilised by any wintering bird species, including those species listed as SCI species in any European sites.

As noted in **Section 8.3.6.3**, previous surveys, undertaken prior to 2019, recorded evidence of badger activity within the proposed development site. However, no evidence of badger activity was recorded during the surveys carried out as part of the current planning application since 2019, either within the proposed development area or along the route of the proposed foul outfall sewer. 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 centre of the Site 2 section in September 2021, no evidence of amphibians or reptiles has been recorded within the proposed development site.

The unmanaged grassland and the blocks of plantation woodland both within the wider golf course and within the eastern part of Hollystown Sites 2 & 3, as well as the hedgerows and tree lines through which the proposed foul outfall sewer will be located, are of Local (Higher Value) importance. The remainder of the proposed development site (including the Kilmartin Local Centre site and the western half of

Hollystown Sites 2 & 3 (that is, the disturbed field to the west of the former golf course)) contains no features of any ecological significance, and is of Local (Lower Value) importance as defined by the ecological resource valuations presented in the NRA Guidelines.

8.4 Predicted Impacts of the Proposed Development

8.4.1 Construction Phase

8.4.1.1 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 (Appropriate Assessment 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 Sites 2 & 3 and Kilmartin Local Centre, individually or in combination with another plan or project, will not have a significant effect on any European sites. This assessment 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 the Competent Authority (An Bord Pleanála) 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.”

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. Specifically, there is no possibility of any impacts on the Royal Canal pNHA.

8.4.1.2 Habitat Loss & Disturbance

In developing the design and layout of the proposed development, major consideration has been given to incorporating landscape and ecological features into the final design, 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) 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 development for housing of the remainder of the site will result in the removal of existing golf course trees, hedges and grassland habitats. The construction compound to the west of the former golf course will continue to be used as a compound until no longer required, at which point it will be removed, and replaced with the new residential development and significant areas of open space.

The proposed Kilmartin Local Centre has been designed with biodiversity as a priority. Much of the area is within the 60m-wide restricted corridor of overhead power lines and although a proportion of the habitats at the site will be removed, in addition to the proposed development it is proposed to incorporate very significant amounts of landscape planting, including within the public and private open space.

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

- In the absence of mitigation, the loss of grassland, trees and hedgerow species within the parts of the proposed development site within the former golf course (and to a lesser extent within the proposed Local Centre site) is considered to be a ***permanent, minor to moderate impact at the site level***. The extensive landscaping and planting proposed will, over time, reduce this impact to ***neutral*** or ***slight positive***.

As discussed throughout this EIAR, a new foul outfall sewer will be constructed to the west of Hollystown Sites 2 & 3. This will be approximately 3km in length and will connect to the existing 750mm diameter foul sewer to the south of Powerstown Road.

The line of the foul outfall sewer (previously permitted under FCC reg. ref. FW21A/0042) was selected by the design team, with collaboration between the project engineers and ecologist, in order to minimise any potential for impacts on tree lines, hedgerows and watercourses. Where possible, the route will cross the field boundaries via existing field gates, and the width of the working wayleave will be kept to a minimum at all times.

- In the absence of mitigation, there may be a ***short-term, slight to moderate impact*** on the tree lines as a result of the proposed pipeline crossings. The reinstatement of any removed trees and shrubs will, over time, reduce this impact to ***neutral***.

8.4.1.3 Disturbance to or Loss of Habitat for Fauna

The loss of a proportion of the hedgerows and tree lines on the site will result in 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 Design Report, prepared by Bernard Seymour Landscape Architecture and submitted as part of this application under separate cover) will provide 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 result in the loss of a single mating perch for Leisler's bat, located within a mature tree just to the west of the block of plantation woodland on the western side of the farm maintenance sheds. According to the Tree Survey Report prepared for the proposed development and submitted under separate cover (Independent Tree Surveys) this tree (Tag 2716) is a mature ash, in bad condition. The Tree Survey Report classifies the tree as Category U (indicating trees that are in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years.). It has suffered decay of structural roots and there are numerous decay cavities on branches in the crown and at 12m on the main leader.

These same features give the tree value for roosting bats, however the tree survey has recommended significant crown reduction and pruning if the tree were to be retained. Given the location of the tree in relation to the proposed housing, and given the overall condition of the tree (bad), it is not possible to retain the tree or the associated mating perch. Therefore, significant mitigation measures are required in order to maintain the strict protection of bats, as required under Annex IV of the Habitats

Directive. As set out in **Section 8.5.1**, a derogation licence under Regulation 54 of the Habitats Regulations has been sought from NPWS to fell this tree, and this licence was received by the bat specialist on 2 December 2021. It is contained within the Bat Survey Report (**Appendix 8.1**).

- Bats are highly mobile animals and, as on any site with mature trees, bats may use trees on a short-term basis for roosting in small numbers. As noted in the bat survey report, without the implementation of mitigation, this is a *long-term, moderate, negative impact*. As set out in **Section 8.5**, this mitigation will include the installation of significant numbers of bat boxes prior to the commencement of development, as well as pre-felling checks of all buildings and trees to be removed.
- There will be a limited loss of scrub, but a loss of several mature trees that provide good shelter, especially around the storage building. This will reduce insect abundance and feeding and commuting corridors. This is a *long-term to permanent, moderate, negative impact* without the implementation of mitigation.
- At present, Hollystown Sites 2 & 3 is mainly unlit. 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* without the implementation of mitigation.

Badgers and their setts will not be directly affected by the proposed development. As noted in **Section 8.3.6.3**, previous surveys (undertaken prior to December 2019 when the current survey work commenced) noted badger activity on the western boundary of the golf course lands. Since then 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.

8.4.1.4 Discharges to Surface and/or Groundwater

Both the construction and operational phases of the proposed development at Hollystown and Kilmartin could have impacts on water quality, via contaminated run-off and sedimentation. However, all construction works will proceed in line with the measures provided in the preliminary Construction & Environmental Management Plan (pCEMP) for the proposed development (prepared by DBFL Consulting Engineers and submitted under separate cover). See also Chapters 9 (Land, Soils, Geology & Hydrogeology) and 10 (Hydrology), prepared by AWN Consulting, for further information and specific

mitigation. Localised contamination of water from 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 watercourses are expected***, either during the construction or operation of the proposed development.

8.4.2 Operational Phase

8.4.2.1 Impacts of Lighting from the Proposed Development

As noted in **Section 8.4.1.2** 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).

8.4.2.2 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 Site 2 will discharge to the re-routed golf course drain along the northern boundary of Site 2, and attenuated surface water run-off from Site 3 will discharge to the existing open drain along the northern boundary of Site 3. Attenuated surface water run-off from Local Centre will discharge to the existing surface water ditch traversing the site from east to west.

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***.

8.4.2.3 Discharges to Foul Sewer from the Proposed Development

As per the Infrastructure Design Report prepared by DBFL, a new foul network will be constructed. An Irish Water Confirmation of Feasibility, indicating that a Wastewater connection can be facilitated, has been received by the engineers and is included as an appendix to the Infrastructure Design Report.

It is proposed to construct a new foul outfall sewer to the west of the site, approximately 3km in length to connect to the existing 750mm diameter foul sewer to the south of Powerstown Road, as indicated in **Figure 8.4**. This foul outfall is designed to accommodate foul flows from the proposed development, the future development the zoned lands to the west of the site (also within the ownership of the Applicant), from the neighbouring Bellingsmore residential development to the south (planning refs. FW13A/0088/(E1); PL06F.243395), and from the permitted Hollystown Site 1 development to the north east of the site (FCC reg. ref. FW21A/0042). It is also designed to facilitate a future connection from Hollystown Park Foul Pumping Station. As noted elsewhere, this element of the proposed development has in fact been permitted under FW21A/0042.

Foul water discharge from the site will connect to the public sewer network. It will be directed to the Irish Water Wastewater Treatment Plant (WwTP) at Ringsend prior to 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” and there is no evidence that the over-capacity issues at Ringsend are affecting the conservation objectives of the European sites in Dublin Bay.

- 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 Design Report, prepared by Bernard Seymour Landscape Architecture and submitted as part of this application under separate cover). The planting and long-term management proposed in the Landscape Design Report will enhance the biodiversity resource on the proposed development site by enhancing the retained habitats 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. There will be no significant impacts on Key Ecological Receptors, as a result of either the proposed Kilmartin Local Centre development or the development in the western part of Hollystown Sites 2 & 3 (the Site 3 element, located where the site compound is situated, to the west of the former golf course). The delivery of the part of the proposed development located within the former golf course lands (the Site 2 element) will result in minor to moderate impacts at the site level as stated in **Section 8.4.1.2**.

Regardless, as set out in the Landscape Design Report, prepared by Bernard Seymour Landscape Architecture and submitted as part of this application under separate cover, 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)*³³. Low-maintenance orchards, fruit trees and wildflower meadows are being provided, as are nest boxes and insect hotels and areas of bare ground (for solitary bees) for example. The area under the powerlines to the north of Hollystown Sites 2 & 3, and the 60m wide powerline reserve in the southern part of the Kilmartin Local Centre are both being developed as biodiversity zones.

As set out in some detail in the accompanying Landscape Design Report for Hollystown Sites 2 & 3, and as noted in this EIAR chapter, the existing hedgerows that are to be retained or incorporated into the development, that is, the western boundary and the hedge that divides Sites 2 & 3 (the former golf course boundary), as well as the boundary that divides Sites 2 & 3 from the Bellingsmore development are damaged and diseased, and are currently not as ecologically diverse as such features should be. In addition to the required creation of paths, cycleways and other development and open space infrastructure as part of the proposed development these boundaries will be enhanced through significant new planting. Where necessary the hedges may be cleared of dead or dying trees (as noted there is significant ash dieback disease at this location). 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

³³ [NBDC \(2021\)](#)

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 a single bat roost (a Leisler's bat mating perch) was recorded in an ash tree that is to be removed, the specialist bat ecologist (Mr Brian Keeley) applied to the NPWS for a derogation licence under Regulation 54 of the *European Communities (Birds and Natural Habitats) Regulations 2011-2015*. This licence was granted on 2 December 2021 and is subject to no unusual conditions. Works can only proceed in accordance with the licence terms and only following the implementation of the required pre-construction mitigation (installation of bat boxes) being in place. As noted in **Section 8.4.1.3**, a copy of the derogation licence is included as an appendix to the Bat Survey Report (**Appendix 8.1**).

As noted in the Bat Survey Report, any bats remaining within the site prior to the commencement of tree felling shall be excluded by means approved by NPWS including by hand capture, bat net or one-way valve by a licensed bat specialist named on the licence issued for that purpose.

NPWS must be informed of all stages of implementation of the derogation. No exclusion shall take place between May and the start of August unless it is unambiguous that the bats present are not breeding females or their young. Exclusion shall preferably occur in September or October to avoid impacts upon nesting birds.

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.

Notwithstanding the acquisition of a derogation licence, as bats are highly mobile creatures, all mature trees shall be checked for bats by a bat specialist to identify trees and buildings with the highest potential prior to felling or major surgery. From this, trees with the highest roost potential as determined by the bat specialist shall be subjected to a higher level of examination that shall include thorough checking of all suitable crevices, cavities, ivy cover or loose bark. This will require access via a hoist to reach all suitable cavities and crevices. Should bats be noted during this evaluation, an additional derogation shall be required from NPWS.

It is proposed to install a significant number of bat and bird boxes both within the proposed development site itself and within the retained woodland blocks. The reason for the installation of additional bat boxes is not to provide replacement roosts (other than to provide alternatives to the mating perch); 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):

- Specifically to replace the mating perch: it is proposed to install one bat box, such as the Eco Rocket Bat Box or similar, on a steel pole. If feasible it is also proposed to cut the mating perch branches from the ash tree and securely attach them to a pole within the retained woodland plantation;
- 12 no. Schwegler 2F with double front panel or similar;
- 9 no. Eco bat boxes (wooden); and
- 15 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 8.4.2.1**) 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.

8.5.1.6 Proposed Foul Outfall Sewer

In accordance with the application documents associated with reg. ref.: FW21A/0042, where the foul outfall sewer crosses existing streams and ditches, all works will be carried out in accordance with Irish Water Standard Details (IW STD-WW-21)³⁴ as well as the Inland Fisheries Ireland *Guidelines on the Protection of Fisheries During Construction Works in and Adjacent to Watercourses*³⁵. Works will be undertaken in consultation with Inland Fisheries Ireland, and if necessary and appropriate, construction of crossings of fisheries waters will be by way of trenchless crossings.

Once the construction of the foul outfall sewer has been completed, the development area will be reinstated to grassland, and any sections of the field boundary Hedgerows/tree lines removed to facilitate the pipeline construction will be replaced, with a new hawthorn planting.

³⁴ <https://www.water.ie/connections/developer-services/faqs/Wastewater-Standard-Details.pdf>

³⁵ <https://www.fisheriesireland.ie/documents/fisheries-management-1/624-guidelines-on-protection-of-fisheries-during-construction-works-in-and-adjacent-to-waters.html>

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, 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

Overall, although the proposed development may have temporary negative impacts on biodiversity at the site level, these impacts will be fully mitigated over time to be rendered *negligible*.

There will be no negative impacts on bat species 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, other than as permitted in relation to the removal of the Leisler's bat mating roost.

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 the high 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) and Land, Soils, Geology & Hydrogeology (Chapter 9). The mitigation measures for the proposed development have been designed to minimise the potential impact that the construction, demolition 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 (refer to Chapter 13 and the Landscape Design Report, 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.

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 ‘Do-Nothing’ Impact

As noted in this EIAR, the proposed development site, particularly the former golf course land, is of local ecological importance, comprising as it does a mix of parkland habitats. 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.

8.12 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.

8.13 Conclusion

There will be *no 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.

8.14 References

- Bat Conservation Ireland (2010). *Bats and Lighting – Guidance Notes for Planners, Engineers, Architects and Developers*.
- CIEEM (2019). *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 (V1.1)
- Council Directive 79/409/EEC on the Conservation of Wild Birds. (The EU Birds Directive)
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- NPWS (2019b). *The Status of EU Protected Habitats and Species in Ireland – Volume 2 (Habitat Assessments)*. NPWS, Department of Culture, Heritage and the Gaeltacht.
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- Stace, C. (2010). *New Flora of the British Isles*, 3rd Edition. Cambridge University Press
- Webb D.A., Parnell J. & Doogue D. (1996). *An Irish Flora*. Dundalgan Press

9 Land, Soils, Geology & Hydrogeology

9.1 Introduction

This chapter of the EIAR presents an assessment of the existing environment (baseline) and the likely impacts on land, soil, geological and hydrogeological aspects, associated with the proposed residential development at Hollystown and Kilmartin, Dublin 15.

In assessing likely potential and predicted impacts, account is taken of both the importance of the attributes and the predicted scale and duration of the likely impacts. Where an impact is identified, planned mitigation measures are identified and assessed.

A full description of the proposed development can be found in Chapter 5 (Description of the Proposed Development). The characteristics of the proposed development that are relevant in terms of Land, Soils, Geology & Hydrogeology are summarised below.

This chapter has been prepared by Paul Conaghan, Environmental Consultant at AWN Consulting Ltd. and Marcelo Allende, Environmental (Water Resources) Consultant at AWN Consulting Ltd. Technical reviews have been completed by Lorraine Guerin, Environmental Consultant at Brady Shipman Martin; and Thomas Burns, Partner at Brady Shipman Martin. Refer to **Table 1.3** in Chapter 1 (Introduction) for qualifications of authors and reviewers.

9.2 Methodology

The assessment has been carried out generally in accordance with the following guidelines:

- Construction Industry Research and Information Association (CIRIA) (2001). *Control of Water Pollution from Construction Sites*;
- CIRIA (2000). *Environmental Handbook for Building and Civil Engineering Projects*;
- Environmental Protection Agency (EPA) (2017). *Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports*;
- EPA (2015). *Draft Advice Notes on Current Practice in the Preparation of Environmental Impact Statements*;
- Institute of Geologists of Ireland (IGI) (2013). *Guidelines for the preparation of Soils Geology and Hydrogeology Chapters of Environmental Impact Statements*; and
- National Roads Authority (NRA) (2009). *Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes*.

In the assessment, consideration is given to both the importance of an attribute and the magnitude of the potential environmental impacts of the proposed activities on that attribute. **Appendix 9.1** in Volume 3 of the EIAR presents the impact assessment criteria provided in the Institute of Geologists of Ireland (IGI) publication, which have been adopted herein.

The principal attributes (and impacts) to be assessed include the following:

- Geological heritage sites in the vicinity of the perimeter of the site of the proposed development;
- Landfills, industrial sites in the vicinity of the site and the potential risk of encountering contaminated ground;
- The quality, drainage characteristics and range of agricultural uses of soil around the site;

- Quarries or mines in the vicinity, the potential implications (if any) for existing activities and extractable reserves;
- The extent of topsoil and subsoil cover and the potential use of this material on-site as well or requirement to remove it off-site as waste for disposal or recovery;
- High-yielding water supply springs / wells in the vicinity of the site to within a 2 km radius and the potential for increased risk presented by the proposed development;
- Classification (regionally important, locally important, etc.) and extent of aquifers underlying the site perimeter area, and increased risks presented to them by the proposed development (e.g. 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 temporarily.

9.2.1 Sources of Information

Desk-based geological information on the substrata (both quaternary deposits and bedrock geology) underlying the extent of the site was obtained through accessing national databases and site archives. The collection of baseline regional data was undertaken by reviewing the following sources:

- Geological Survey of Ireland (GSI) online 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 (OSi) aerial photographs and historical mapping;
- EPA mapping and database information; and
- National Parks and Wildlife Services (NPWS) Protected Site Register.
- Site-specific data was derived from the following sources:
 - Ground Investigations Ireland (GII) (2018). *Development at Hollystown Golf Club, Ground Investigation Report August 2018 Project No. 929-07-18*;
 - GII (2019). *Kilmartin Town Centre, Ground Investigation Report. August 2018 Project No. 929-07-18*; and
 - DBFL Consulting Engineers (2021). *Residential Development at Hollystown – Site 2, 3 & Local Centre: Infrastructure Design Report*³⁶.

Figure 9.1 presents the location of the site of the proposed development.

9.3 Baseline Environment

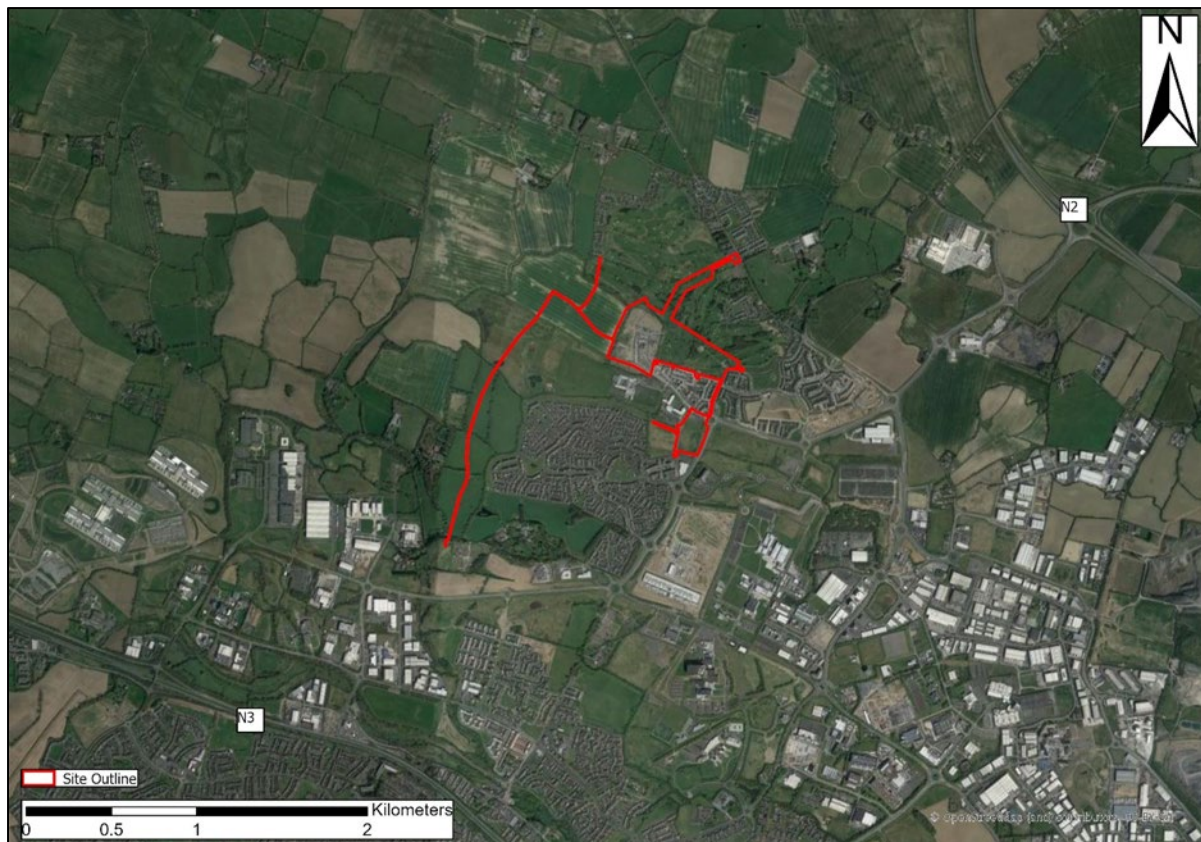
9.3.1 Site Description

Part of the subject site is within the grounds of the former Hollystown Golf Club, in the Tyrrelstown area of northwest Dublin. The site is circa 5.5 km north-west of the M50, and circa 3 km west of the N2, and is located to the north of the existing Tyrrelstown Local Centre. It is bounded to the north by the former Golf Club lands, to the east by Hollywoodrath Road, the R121, to the south by the Bellingsmore

³⁶ Submitted under separate cover as part of planning application.

residential development, also constructed by the Applicant (planning refs. FW13A/0088/(E1); PL06F.243395), and to the west by undeveloped lands.

Figure 9.1 Site location



The proposed development will comprise of 548 no. residential units and associated infrastructure including a community hub, café / retail, standalone crèche, Montessori school, streets, footpaths, cycle paths and water services infrastructure (watermain and below and above ground infrastructure).

The proposed development is within the administrative area of Fingal County Council, and is therefore subject to the *Fingal Development Plan 2017 – 2023*. It is predominantly zoned ‘RA – Residential Area’, to “Provide for new residential communities subject to the provision of the necessary social and physical infrastructure”, and ‘LC – Local Centre’, to “Protect, provide for and/or improve local centre facilities” (for further detail refer to **Section 3.4.2** in Chapter 3 – Planning & Development Context). Part of the site is also subject to the *Kilmartin Local Area Plan* (2013; as extended).

9.3.2 Topography & Setting

The Hollystown Sites 2 & 3 portion of the site (‘Sites 2 & 3’ hereafter) slopes generally in a north-westerly direction. The majority of Site 2 is located within the former golf course lands, which has natural undulations and landscaping features typical of a golf course, including an internal network of open drains that are culverted locally to provide crossing points. The Kilmartin Local Centre portion of the site (‘Local Centre site’ hereafter) slopes upwards west to east between 74 metres above ordinance datum (mAOD) and 77mAOD.

9.3.3 Area of Geological & Historical Land Use

The GSI (2021) online mapping was reviewed to identify sites of geological heritage at the site and surrounding area. There are no recorded sites within the site of the proposed development, or which could be considered suitable for protection under this programme, or recorded in the *Fingal Development Plan 2017 – 2023*.

The nearest recorded Geological Heritage Site is Huntstown Quarry (Site DF002), which is located c. 2.6 km to the east of the site. Due to the distance from the proposed development, there is a negligible risk to this heritage site.

Details of the site history and previous land use are included in Chapter 14 (Cultural Heritage, Archaeology & Architectural Heritage). Historical maps from the OSi show that there were no historical activities at the proposed development site that would impact on the quality of the underlying soil or bedrock aquifer. The site has historically been in agricultural use with residential development in the area being relatively new (i.e. post-2012) (OSi, 2021).

According to the EPA (2021), there are no licensed Integrated Pollution Prevention & Control (IPPC) or Industrial Emissions Directive (IED) facilities in the vicinity of the site. The closest is Swords Laboratories (trading as Bristol Myers Squibb Cruiserath) (Licence No. P0552), which is 860 m to the southeast (downgradient) of the proposed development site. There is no record of any landfills or licenced waste facilities in the vicinity of the site.

9.3.4 Soils

The Teagasc soil mapping indicates that the soils comprise primarily made ground to the north (signifying the man-made nature of the golf course) with deep well-drained mineral soil derived from limestones (BminDW) to the west, and poorly drained mostly basic soils to the south (BminPD) of the site. Alluvium (AlluvMIN) is also recorded to the west along the route of the proposed drainage services routes to the south. The EPA have categorised this area of Dublin City via its CORINE landcover data series as a mixture of agricultural lands and artificial surfaces. The soil mapping for the site is presented below as **Figure 9.2**.

9.3.5 Soils (Quaternary)

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 mapping of the subsoils in the area of the site indicates one principal soil type, as shown in **Figure 9.3**. The subsoil type present across the site is:

- **Limestone till Carboniferous (TLs)**. The site is composed of limestone till. This till is made up of glacial clays that are less permeable than alluvium subsoils.

GII carried out two environmental site investigations at the site of the proposed development in July 2018 (at Sites 2 & 3) and in January 2019 (at the Local Centre site). The scope of works included trial pitting, borehole drilling, subsoil sampling and interpretation of chemical data. The sequence of subsoils deposits recorded during the site investigations are shown in **Table 9.1**. Site investigation locations are shown in **Figure 9.4**, with trial pit and borehole logs for these locations included as **Appendix 9.2** in Volume 3.

Hollystown Sites 2 & 3 and Kilmartin Local Centre SHD

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Bedrock depth from on-site investigation confirms the GSI vulnerability categorisation as 'Low' at Sites 2 & 3, and 'Medium to High' at the Local Centre site (refer to **Section 9.3.7**).

Figure 9.2 Regional Teagasc soils map (Teagasc / GSI, 2021)

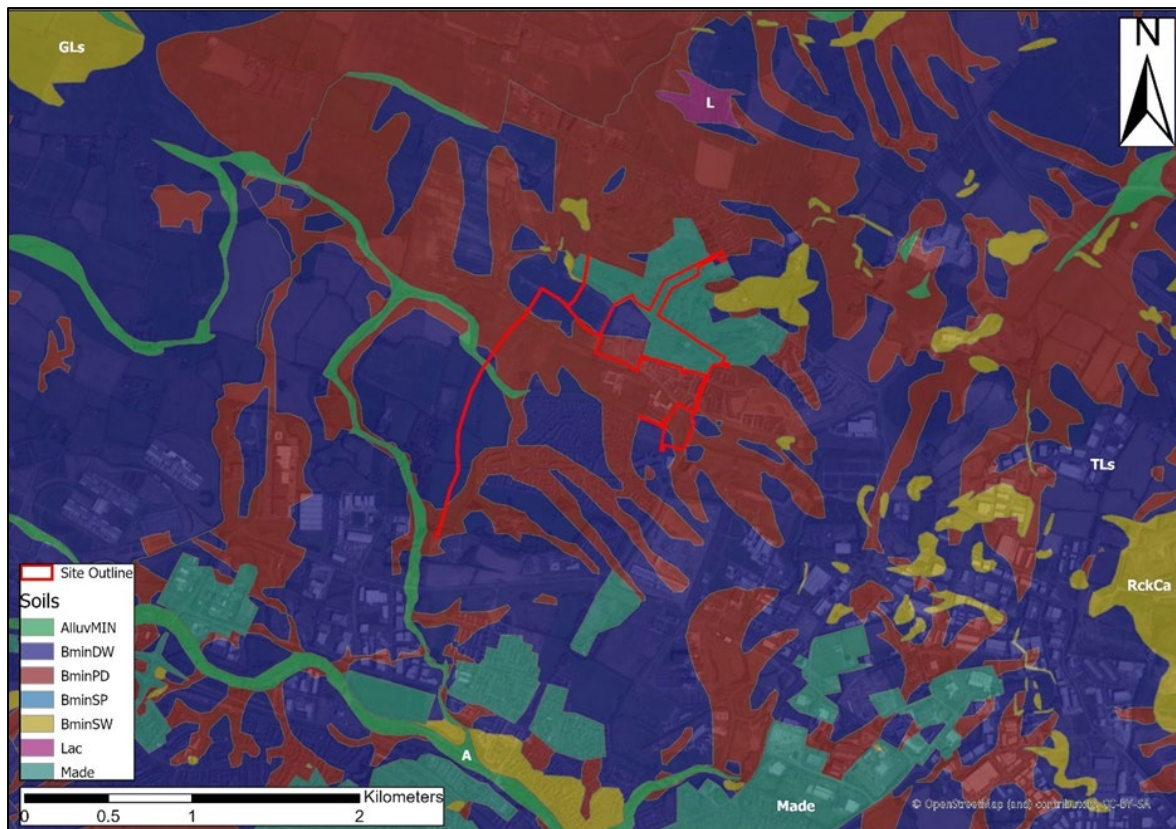


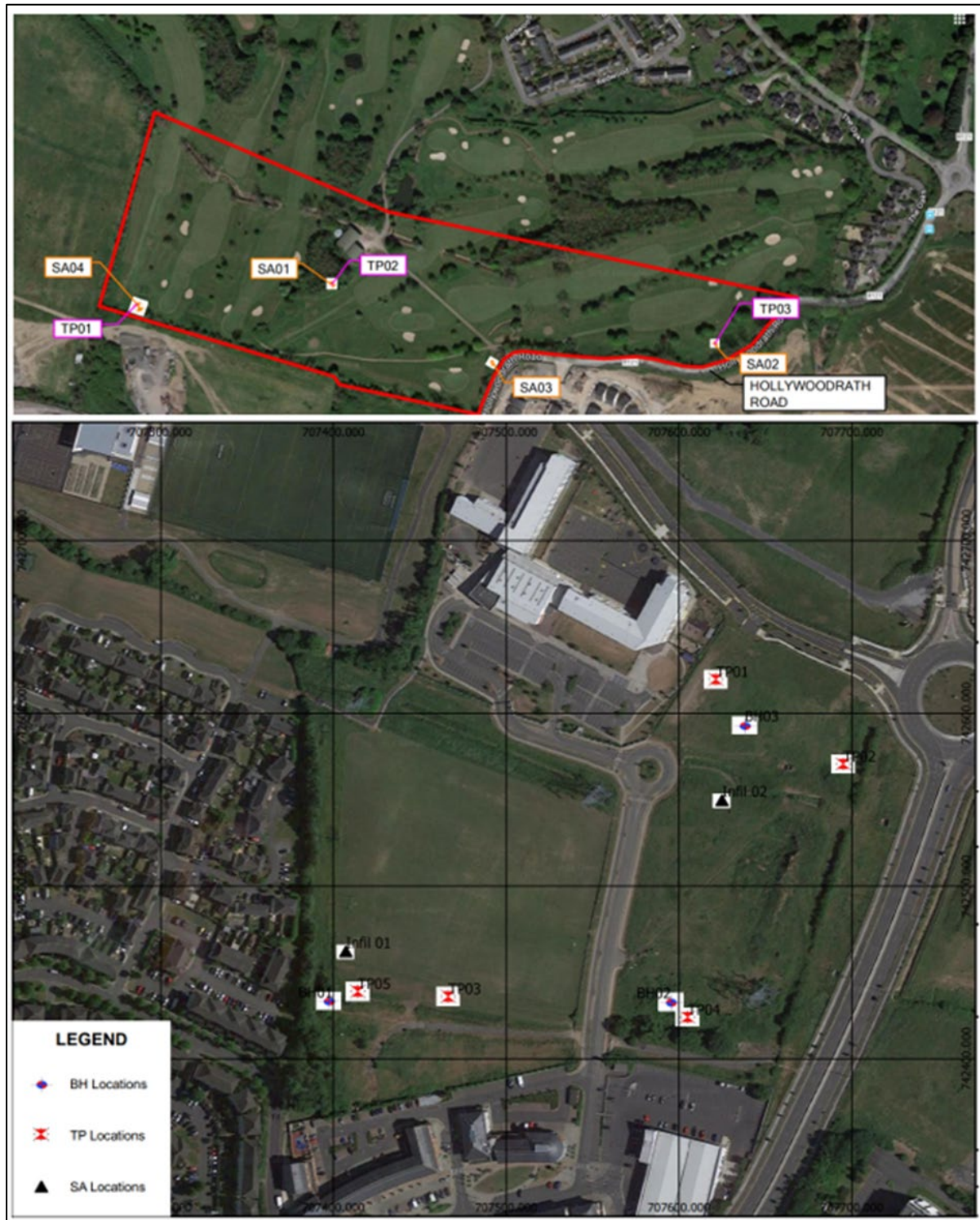
Figure 9.3 Regional subsoil (Quaternary) map (GSI, 2021)



Table 9.1: Strata noted from on-site investigation

Stratum	Depths / notes
Topsoil	Topsoil was encountered in all the exploratory holes and was present to a maximum depth of 0.3 metres below ground level (mbgl) at the Local Centre Site and 0.15 mbgl at Sites 2&3
Made Ground	Made Ground deposits were encountered beneath the Topsoil in the majority of the exploratory holes and was present to a relatively consistent depth of between 0.30 m and 0.70 mbgl. These deposits were described generally as brown sandy slightly gravelly CLAY with frequent cobbles and boulders and contained occasional fragments of wood, plastic and metal at the Local Area site. Made Ground deposits were encountered in SA03 beneath the Topsoil to the south of the golf course and was present to a depth of 0.30 mbgl. These deposits were described generally as brown slightly sandy slightly gravelly Clay with occasional cobbles and contained occasional fragments of plastic.
Cohesive Deposits	Made Ground deposits were encountered beneath the Topsoil in the majority of the exploratory holes and was present to a relatively consistent depth of between 0.30 m and 0.70 mbgl. These deposits were described generally as brown sandy slightly gravelly CLAY with frequent cobbles and boulders and contained occasional fragments of wood, plastic and metal at the Local Area site. Made Ground deposits were encountered in SA03 beneath the Topsoil to the south of the golf course and was present to a depth of 0.30 mbgl. These deposits were described generally as brown slightly sandy slightly gravelly Clay with occasional cobbles and contained occasional fragments of plastic..
Bedrock	In the majority of exploratory holes at the Local Centre site weathered rock was encountered which was digable with the large excavator to a depth of up to 0.50 m below the top of the stratum. The trial pits were terminated upon encountering the more competent bedrock, in which further excavation became more difficult. This material was recovered typically as angular gravel and cobbles of Limestone/Mudstone Some clay and sand were also present with the rock mass either from weathering or as infilling to fractures which were opened upon excavation. Borehole logs show possible probable bedrock depth varying between 1.8 mbgl at BH02 and 2.4 mbgl .

Figure 9.4 Site investigation locations^{37,38}



³⁷ GII (2018; 2019)

³⁸ Note that red line shown indicates study area for site investigation, not proposed development boundary

9.3.5.1 Soil Quality

During the 2019 (Local Centre site) site investigations, samples were recovered from the on-site trial pits and sent for analysis. A selection of samples collected were analysed for a suite of parameters that allow for the assessment of the soils in terms of total pollutant content, for classification of materials as hazardous or non-hazardous (referred to as the 'RILTA Suite'). The parameter list for the RILTA suite includes analysis of the solid samples for arsenic, barium, cadmium, chromium, copper, cyanide, lead, nickel, mercury, zinc, speciated aliphatic and aromatic petroleum hydrocarbons, pH, sulphate, sulphide, moisture content, soil organic matter and an asbestos screen. The total pollutant content analysis also provides analytical data that can be used to assess the quality of the subsoils underlying the site and allow an assessment of their suitability for a range of proposed uses against generic assessment criteria. Two samples were collected from TP01 and TP03.

The RILTA Suite also includes those parameters specified in the EU Council Decision Establishing Criteria for the Acceptance of Waste at Landfills (Council Decision 2003/33/EC), referred to as Waste Acceptance Criteria (WAC), which for the solid samples are pH; total organic carbon (TOC); speciated aliphatic and aromatic petroleum hydrocarbons; benzene, toluene, ethylbenzene and xylene (BTEX); phenol; polychlorinated biphenyls (PCB); and polycyclic aromatic hydrocarbons (PAH).

In line with the requirements of Council Decision 2003/33/EC, leachate was generated from the solid samples, which were in turn analysed for antimony, arsenic, barium, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium, zinc, chloride, fluoride, soluble sulphate, sulphide, phenols, dissolved organic carbon (DOC) and total dissolved solids (TDS). The suite was selected due to the unknown origin of the material underlying the site and no evidence of specific contaminants of concern highlighted in the site history. The laboratory testing was completed by Element Materials Technology (EMT) in the UK, a UKAS accredited laboratory. The full laboratory reports are included in **Appendix 9.3** in Volume 3. The site investigation locations are shown in **Figure 9.4**. The laboratory analysis did not identify any asbestos containing materials (ACMs).

Both samples collected at the site (area outlined in blue in **Figure 9.4**) can be categorised as inert (as per Council Decision annex 2003/33/EC). Classification of the samples was also carried out using an EPA approved proprietary web-based software waste classification tool called HazWasteOnline™. The software follows the latest Environment Agency (UK) guidance and EU Regulations, and is approved by the Irish EPA. HazWasteOnline™ allows users to code and classify waste as defined in the European List of Waste; based on EC Regulation 1272/2008 on the classification, labelling and packaging of substances and mixtures (CLP) and latest Environment Agency (UK) guidance (WM3 v.1.1). It should be noted that the HazWasteOnline™ tool only gives a categorisation of material as Hazardous or Non-Hazardous.

Both samples, in this case, were classified as Inert. Please see Chapter 18 (Material Assets – Waste) for further discussion on waste categorisation and removal.

9.3.6 Geology

Reference to the GSI Bedrock Geology mapping indicates that the site is underlain by Carboniferous (Late Chadian to Asbian) dark limestones and shale ('calp') which is referred to as the Lucan Formation (Rock Unit code: LU). This geological formation comprises dark grey to black, fine-grained, occasionally cherty, micritic limestones that weather paler, usually to pale grey. It is also characterised by its compact nature and discreet fracturing. The bedrock geology is shown in **Figure 9.5**.

Figure 9.5 Regional bedrock geology map³⁹



9.3.7 Hydrogeology

The GSI classifies the principal aquifer types as:

Bedrock Aquifer

- Lk – locally important aquifer – karstified;
- LI – locally important aquifer – bedrock which is moderately productive only in local zones;
- Lm – locally important aquifer – bedrock which is generally moderately productive;
- Pl – poor aquifer – bedrock which is generally unproductive except for local zones;
- Pu – poor aquifer – bedrock which is generally unproductive; and
- Rkd – regionally important aquifer – karstified diffuse.

Gravel Aquifer

- Lg – Locally Important Aquifer – Sand & Gravel; and
- Rg – Regionally Important Aquifer – Sand & Gravel.

Reference to the GSI National Draft Bedrock Aquifer Map for the site (refer to **Figure 9.6**) indicates that the site is underlain by a Locally Important Bedrock Aquifer (LI), which is described by the GSI as bedrock that is 'moderately productive only in local zones.'

³⁹ GSI (2021).

Figure 9.6 Regional aquifer map⁴⁰



9.3.7.1 Aquifer Vulnerability

‘Aquifer vulnerability’ (or ‘groundwater vulnerability’) is a term used to represent the intrinsic geological and hydrogeological characteristics that determine the ease with which groundwater may be contaminated generally by human activities. Due to the nature of the flow of groundwater through bedrock in Ireland, which is almost completely through fissures / fractures, the main feature that protects groundwater from contamination, and therefore the most important feature in the protection of groundwater, is the subsoil (which can consist of peat, sand, gravel, glacial till, clays or silts; or mixtures thereof).

The GSI⁴¹ presently classifies the aquifer vulnerability in the region of the site as combination as follows:

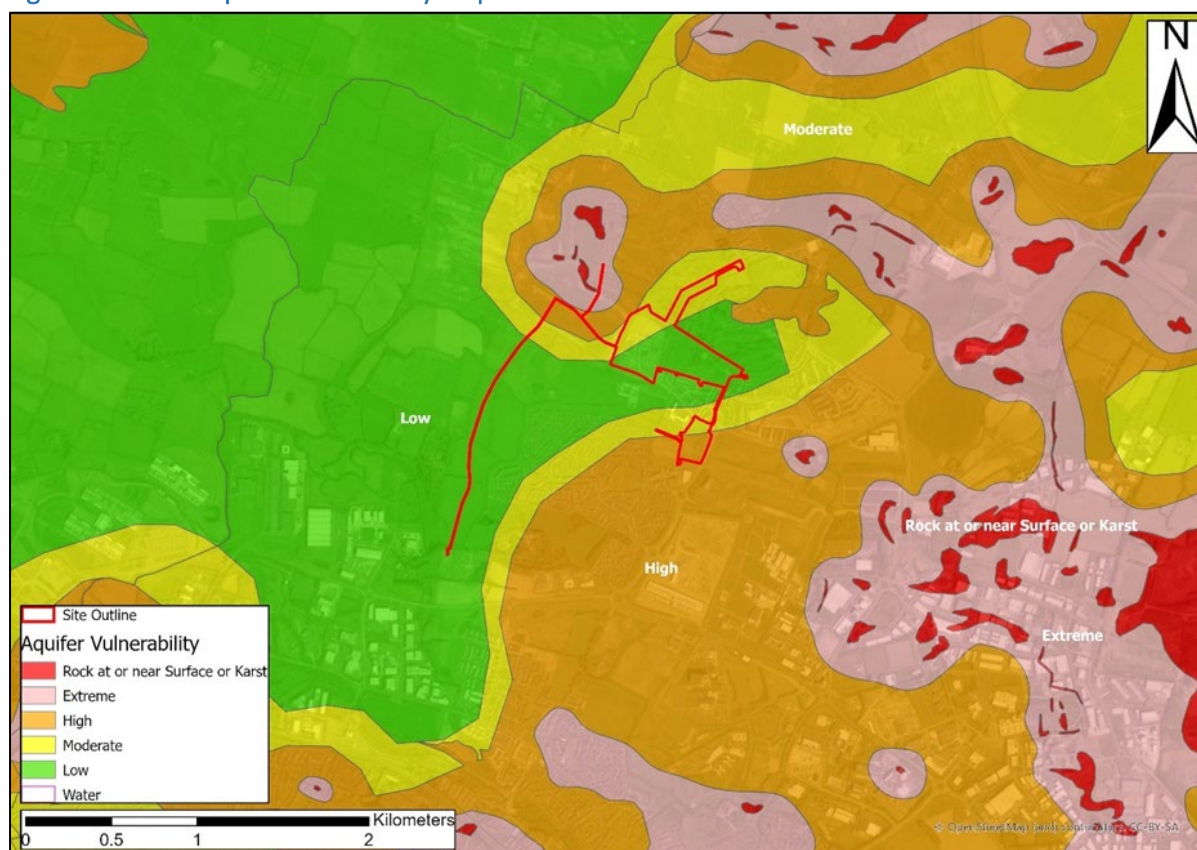
- ‘Low’, which indicates an overburden depth of c. 10 m of low permeability soil, is present to the centre and west of the site; and
- ‘Moderate’ to ‘High’ to the north and southeast, indicating a shallower depth to the underlying bedrock (circa 3.0 mbgl) and deeper bedrock at Sites 2 & 3 (circa 5.0 – 10.0 m).

This was confirmed in the 2019 investigations undertaken by GII.

⁴⁰ GSI (2021)

⁴¹ GSI (2021)

Figure 9.7 Aquifer vulnerability map⁴²



9.3.7.2 Description of Groundwater Body

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 waterbodies 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 coordinates the activities of the Eastern River Basin Districts (ERBDs), Local Authorities and State agencies in implementing the Directive, and operates a groundwater quality monitoring programme undertaking surveys and studies across the country.

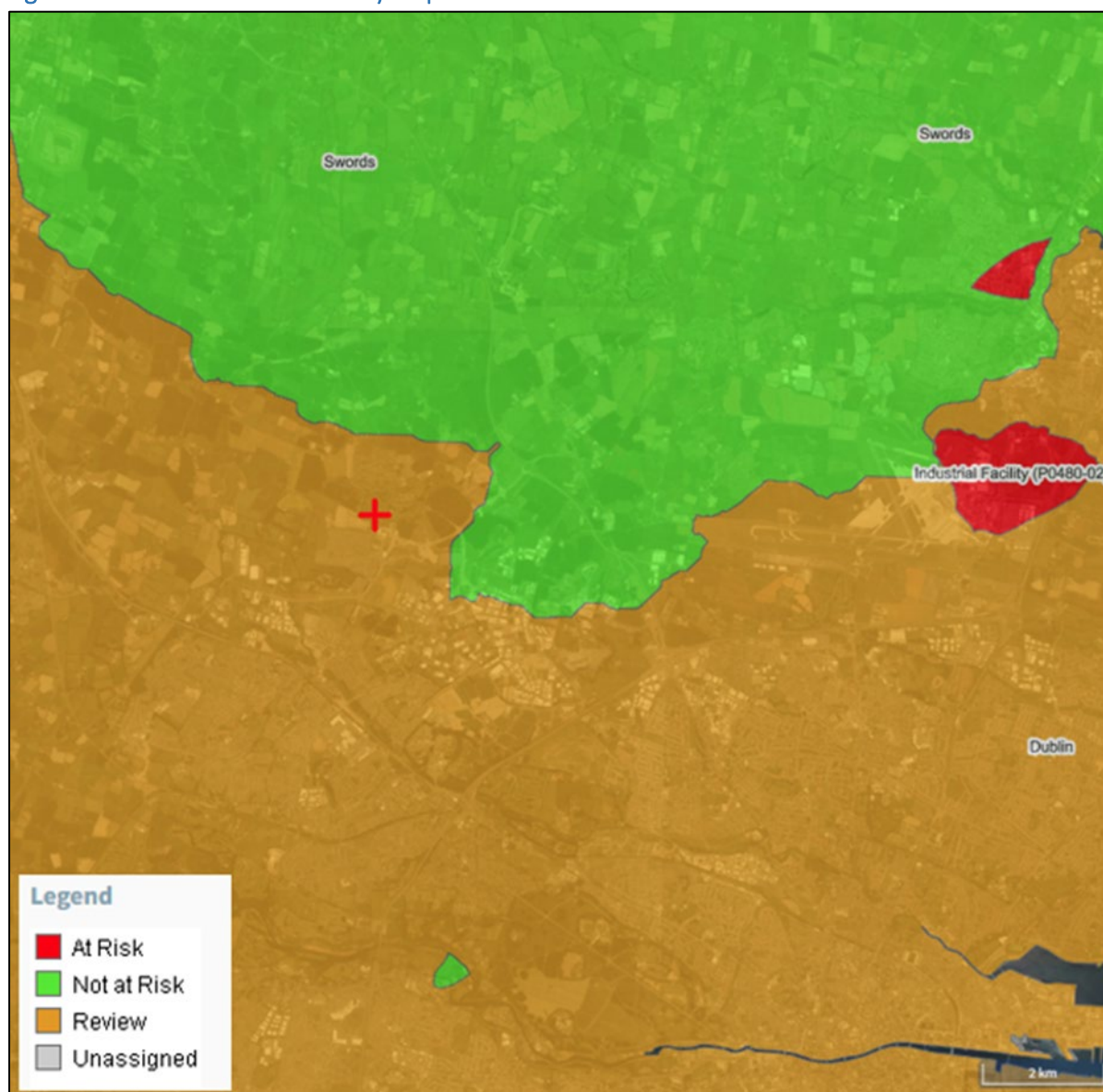
Presently, the groundwater body in the region of the site (Dublin GWB) is classified being 'under review' as per the WFD Risk Score system⁴³. The Dublin GWB achieved 'Good Status' in the 2013 – 2018 WFD cycle.

There were no groundwater samples collected during the 2018 and 2019 site investigations undertaken by GII. However, it can be inferred, based on the relatively clean nature of the overlying strata and the lack of historical industrial / commercial activities, that groundwater has not been impacted at or in the vicinity of the site.

⁴² GSI (2021).

⁴³ EPA (2021).

Figure 9.8 Groundwater body map^{44,45}



9.3.7.3 Groundwater Wells and Flow Direction

There is no licencing system for wells in Ireland at present and, as such, no complete dataset. The GSI Well Card Index is a record of wells drilled in Ireland. It is noted that this record is not comprehensive as licensing of wells is not currently a requirement in Ireland. This current index, however, indicates there are no groundwater wells, boreholes or dug wells within the site boundary.

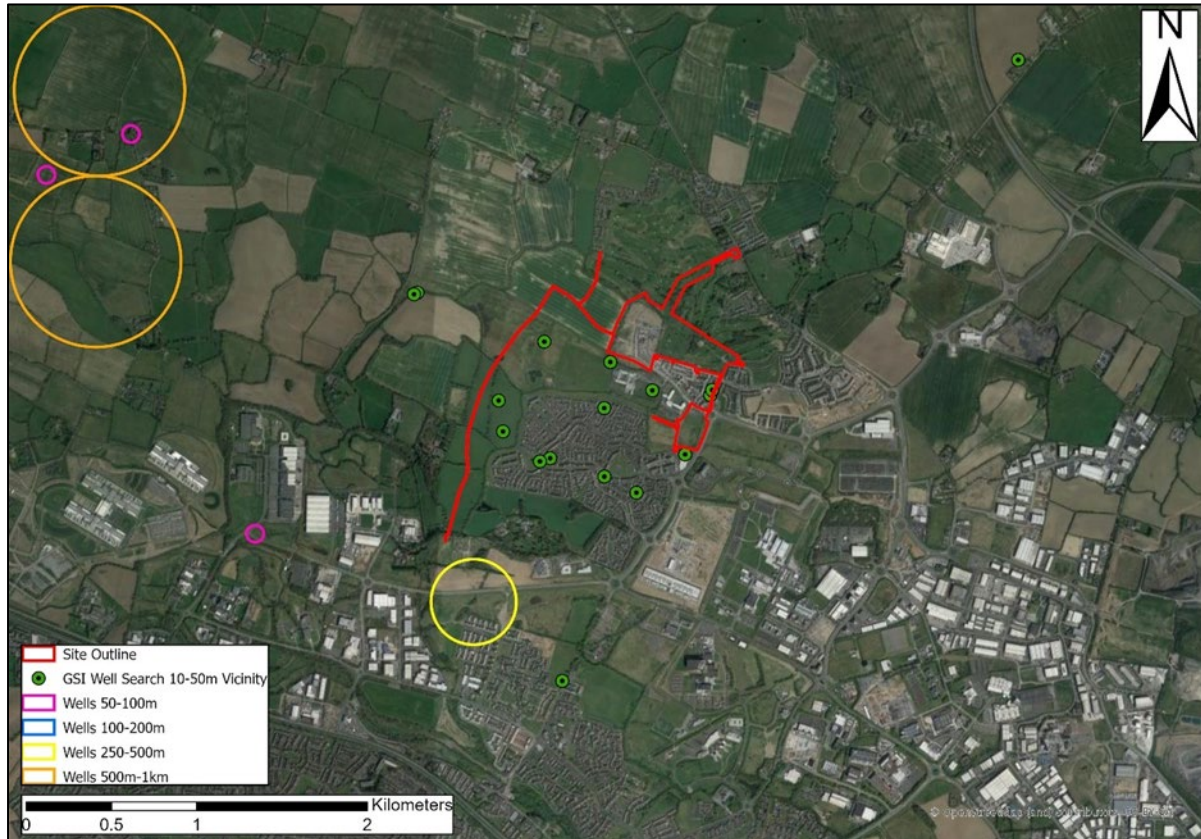
The flow direction in the overburden generally follows no fixed pattern or trend. Flows of this nature are typical of low permeability clay strata with discontinuous gravel lenses, where often the water level measures represent pore water seepages into the overburden monitoring well (as opposed to bedrock wells) or perched groundwater conditions (not bedrock aquifer water). The depth to rock varies from 1.8 mbgl in BH01 to a maximum of 2.4 mbgl in BH03. There were no monitoring wells installed as part of the 2018 or 2019 site investigations; however, the regional groundwater gradient is most likely north

⁴⁴ EPA (2021)

⁴⁵ Red cross (+) indicates location of proposed development

to south towards the Tolka. Borehole locations shown at the site in **Figure 9.9** are associated with an old site investigation undertaken in the area in 1994 and not domestic or commercial wells currently used. Groundwater was noted in some but not all of the trial pit and borehole locations, showing the perched groundwater table is discontinuous.

Figure 9.9 Groundwater body map⁴⁶



The nearest drinking water protection area is located c. 6 km west of the site in Co. Meath at the Dunboyne public water supply.

9.3.7.4 Hydrogeological Features

There is no evidence of karstification at the vicinity of the site according to the GSI karst and well database.

9.3.7.5 Areas of Conservation

The nearest designated national and European sites (i.e. within 10 km of the site are as follows):

- Royal Canal proposed Natural Heritage Area (pNHA) (site code 002103), c. 5 km south;
- Liffey Valley pNHA (000128), c. 6.3 km south;
- Rye Water Valley / Carton pNHA (001398), c. 9.4 km southwest;
- Santry Demesne pNHA (000178), c. 8 km east;
- Rye Water Valley / Carton Special Area of Conservation (SAC) (001398), c. 9.4 km southwest; and
- Grand Canal pNHA (002104), c. 9.6 km south

⁴⁶ GSI (2021).

Other sites > 10 km from the site of note include:

- Baldoyle Bay SAC (site code 000199), c. 16 km east;
- North Dublin Bay and River Tolka Estuary SPA (004024), c. 15.2 km east; and
- South Dublin Bay SAC (000210), c. 15.1 km southeast.

The Appropriate Assessment (AA) Screening Report provides a detailed account of all European sites (SAC and Special Protection Areas (SPA)) 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.

9.3.7.6 Conceptual Site Model

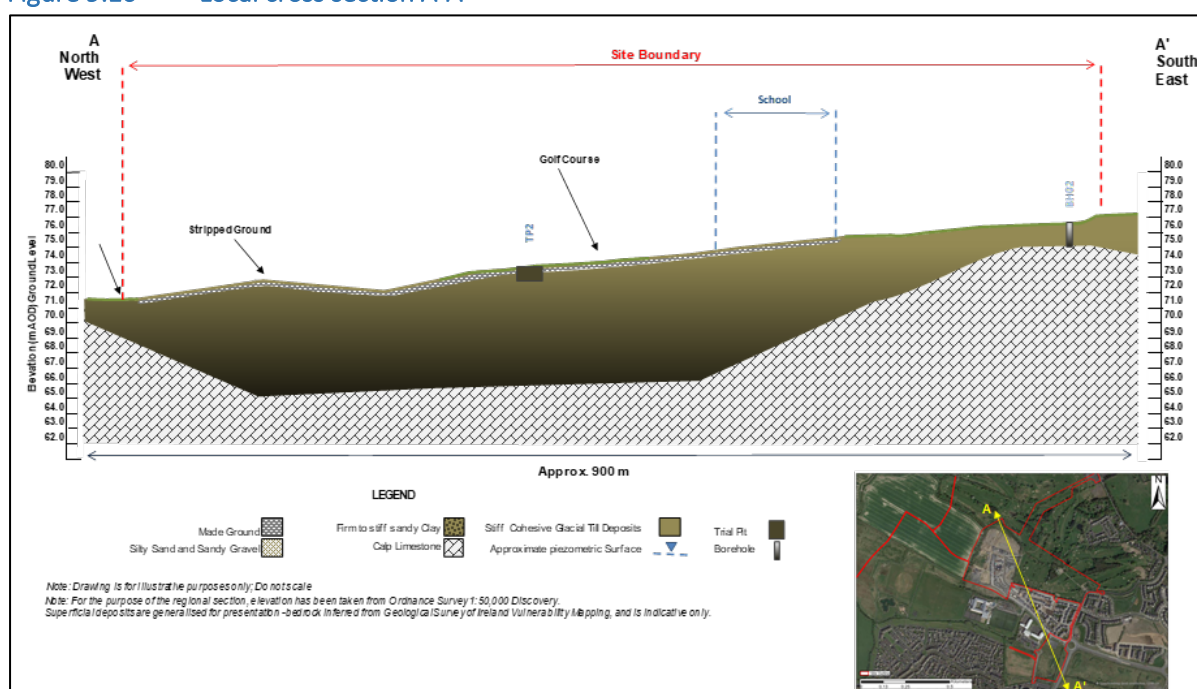
Local cross sections for the site are presented below as **Figure 9.10** (A-A' north-west to south-east). This cross section and the description below present the Conceptual Site Model (CSM), which was developed in order to identify any likely source-pathway-receptor linkages relating to the site and the proposed development:

- The Sites 2 & 3 portion to the north slopes generally in a north-westerly direction. The majority of Site 2 is located within the former golf course lands, which has natural undulations and landscaping features typical of a golf course, including an internal network of open drains that are culverted locally to provide crossing points. The Local Centre site slopes upwards west to east between 74 mAOD and 77 mAOD. The regional gradient falls from north to south towards the River Tolka.
- From on-site investigations undertaken in 2018 and 2019, the depth to rock varies from 1.8 mbgl in BH02 to a maximum of 2.4 mbgl in BH03 (2019 investigations at Local Centre site). The bedrock consists of dark limestones and shale ('calp') which is referred to as the Lucan Formation (Rock Unit code: LU) as per GSI mapping. The limestone is classified by the GSI as a Locally Important Bedrock Aquifer (LI), which is described as being 'moderately productive only in local zones'.
- The majority of the bedrock aquifer underlying Sites 2 & 3 is well protected by low permeability clay and characterised by the GSI as a 'Low' vulnerability area. Areas to the northeast and at the Local Centre site range from 'Moderate' to 'High' vulnerability, which was confirmed by on-site investigations.
- Regional groundwater flow within the bedrock unit is most likely north to south towards the Tolka. There is no continuous perched groundwater table on-site.
- The groundwater body in the region of the site (Dublin GWB) is classified under the WFD Risk Score system⁴⁷ as currently 'Under Review'. Previously (2013 – 2018 WFD cycle) the Dublin GWB was rated as having 'Good Status'.
- The site drainage comprises a mixture of artificial drainage features at the current golf course site, which discharge to the Pinkeen East to the west, and ultimately to the Tolka River, located south of the site, which then discharges into the South Dublin Bay and River Tolka Estuary SPA, c. 12.6 km from the site. There is an existing ditch that meanders from east to west through the Local Centre site, which appears to take road drainage from the R121. The ditch is currently culverted before entering the site from the east and is also culverted under the existing school access roundabout. The ditch flows to the west of the site and connects to field drainage that discharges to the Pinkeen River to the west of the site.
- Site soil analysis indicates that the soil underlying the site is of relatively good quality.

⁴⁷ EPA (2021).

- The proposed development is outside of any delineated drinking water protection area..
- There are no groundwater dependent terrestrial ecosystems that have the potential to be impacted by the proposed development. The limestone aquifer is characterised by discontinuous fracturing and, as such, there is no source pathway linkage to the North Dublin Bay SAC or South Dublin Bay and River Tolka Estuary SPA via groundwater. There is hydraulic connection to the North Dublin Bay SAC and South Dublin Bay and River Tolka Estuary SPA via stormwater drainage to the Tolka. However, due to the distance to these receptors, there will be negligible impact. These are examined further in Chapter 10 (Hydrology) and Chapter 8 (Biodiversity), as well as in the AA Screening Report (submitted under separate cover as part of the planning application).

Figure 9.10 Local cross section A-A'



9.3.7.7 Rating of Site Importance of the Geological and Hydrogeological Features

Based on the NRA methodology⁴⁸ criteria for rating site importance of geological features (refer to **Appendix 9.4** in Volume 3), the importance of the bedrock and soil features at this site may be rated as 'medium' importance, with medium significance or value on a local scale, due to the presence of moderately drained and or / moderate fertility soils.

Based on the NRA / IGI criteria for rating the importance of hydrogeological features (refer to **Appendix 9.4**), the importance of the hydrogeological features at this site may be rated as 'medium'. This is based on the assessment that the low to high vulnerability aquifer beneath the site is a Locally Important (LI) bedrock aquifer that is moderately productive.

9.3.8 Economic Geology

The EPA Extractive Industry Register and the GSI mineral database were consulted to determine whether there were / are any mineral sites close to the site. The Huntstown Quarry is 4.9 km to the south east of the site of the proposed development.

⁴⁸ NRA (2009).

9.3.9 Radon

According to the EPA (now incorporating the Radiological Protection Institute of Ireland), the site location is a 10 km grid square where less than 1% of the homes are estimated to be above reference level for radon gas. This is the lowest categorisation on the scale.

9.3.10 Geohazards

Much of the Earth's surface is covered by unconsolidated sediments that can be especially prone to instability. Water often plays a key role in lubricating slope failures. Instability is often significantly increased by human 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, landslides and falls lead 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 there are no recorded landslides in the vicinity of the proposed development. Due to the local topography and the underlying strata, there is a negligible risk of a landslide event occurring at the site.

In Ireland, seismic activity is recorded by the Irish National Seismic Network. 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. However, currently, there are five permanent broadband seismic recording stations in Ireland and operated by DIAS. The seismic data from the stations come into DIAS in real-time and are studied for local and regional events. Records since 1980 show that the nearest seismic activity to the site of the proposed development was in the Irish Sea (1.0 – 2.0 Ml magnitude) and c. 20 km to the south in the Wicklow Mountains. There is a very low risk of seismic activity at the location of the proposed development.

There are no active volcanoes in Ireland so there is no risk from volcanic activity.

9.3.11 Summary & Type of Geological / Hydrological Environment

Based on the regional and site-specific information available, the type of Geological / Hydrogeological Environment as per the IGI Guidelines is:

- Type A – Passive Geological / Hydrogeological Environment:
 - Historically, the site of the proposed development was mostly greenfield. There is no evidence of any historical waste disposal or source of contamination.
 - The site is underlain by a locally Important aquifer.
 - The site is underlain by the Lucan Formation (calp limestone and shales).

9.4 Predicted Impacts of the Proposed Development

The activities associated with the proposed development that are relevant to the land, soils, geology and hydrogeological environment are detailed in **Table 9.2**.

Table 9.2: Characteristics of the proposed development of relevance to land, soils, geological and hydrogeological environment

	Activity	Description
Construction	Earthworks: excavation of superficial deposits	Earthworks (cut and fill) will be required to facilitate the construction of the proposed development. The maximum depth of excavation required to facilitate installation of basement, services and foundations, as specified by Project Engineers is c. 0.5 – 2.2 mbgl. There will be no excavation of bedrock required; and, therefore, no dewatering of the underlying aquifer required. Subsoil excavation and localised stockpiling of soil will be required during construction. It is estimated that approximately 55,000 m ³ of soils will be excavated to facilitate construction of the proposed development. It is anticipated that all of this will be reused on-site. Correct classification and segregation of the excavated material will be required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers, or water or soil environments, both on and off-site.
	Presence of hazardous materials	Bunded fuel storage and wet concrete will be present on-site during the construction phase. Good housekeeping and proper handling, storage and disposal of any potentially polluting substances will prevent soil and/or water contamination. Designated and bunded storage areas will be maintained.
	Import / export of materials	Suitable excavated material will be reused for site levelling, roads, car parking areas, berms and other landscaping purposes. All material excavated is to be reused on-site. The removal of waste from the site will be carried out in accordance with the relevant legislative provisions, the <i>Eastern-Midlands Region Waste Management Plan 2015 – 2021</i> (and any subsequent iterations) and the principles of waste hierarchy and circular economy. Refer to Chapter 17 (Material Assets – Waste) for further detail. It is estimated that 30,000 m ³ of imported, clean, engineered fill material will be required to facilitate construction.
Operation	Increase in hardstanding	Alteration of local recharge (percolation to ground) due to increase in hardstanding area of circa 11 ha.
	Presence of hazardous materials	Potential oil and fuel leaks from parked cars, service vehicles, heavy goods vehicles (HGV) deliveries, etc.

9.4.1 Construction Phase

As outlined in **Table 9.2**, the activities required for the construction phase of the proposed development represents the greatest risk of potential impact on the geological environment. These activities primarily pertain to the site preparation, excavation, levelling and infilling activities required to facilitate the construction of proposed development. The presence of low permeability material minimises the potential for any likely impact to the underlying aquifer.

The potential geological and hydrogeological impacts during the construction and operations are presented below. Remediation and mitigation measures to address these potential impacts are presented in **Section 9.5**.

The following potential effects to land, soil and groundwater (hydrogeology) have been considered:

- Excavated and stripped soil can be disturbed and eroded by site vehicles during construction. Rainfall and wind can also impact non-vegetated / uncovered areas within the excavation or where soil is stockpiled. This can lead to run-off with high suspended solid content, which can impact water quality. The potential risk from this indirect impact to waterbodies and / or habitats from contaminated water would depend on the magnitude and duration of any water quality impact.

- Following the findings of the on-site investigations, it may be concluded that the risk of a large amount of contaminated soil being present on-site is low. Nonetheless, material that is exported from the site, if not correctly managed or handled, could impact negatively on human beings (on-site and off-site) as well as water and soil environments.
- 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 that arises from construction sites can pose a significant short-term risk to groundwater quality for the duration of the construction if contaminated water is allowed to percolate to the aquifer. The potential main contaminants include:
 - Suspended solids (muddy water with increase turbidity) arising from excavation and ground disturbance;
 - Cement / concrete (which increase turbidity and pH) arising from construction materials;
 - Hydrocarbons (ecotoxic) from accidental spillages from construction plant or on-site storage; and
 - Wastewater (nutrient and microbial rich) arising from poor on-site toilets and washrooms.

There will be no emissions to the ground as part of the proposed development. Excavations will be required for the installation of foundations and site services. Site investigations and GSI vulnerability mapping have shown between 1.8 m and c. 10.0 m of low permeability tills underlying the site. Due to this natural protection, there will be no likely impact to the underlying low to high vulnerability locally important aquifer.

There will be a local loss of agricultural soil. However, this will be relatively small in relation to the overall lands utilised for agricultural purposes in the area. There will be no impact to mineral resources in the area as a result of the proposed development.

These potential impacts are not anticipated to occur following the implementation of mitigation measures outlined in **Section 9.5.1**.

9.4.2 Operational Phase

The following risks have been considered in relation to the operational phase of the proposed development:

- There is a potential for leaks and spillages from vehicles along roads and in parking areas. Any accidental emissions of oil, petrol or diesel could cause soil / groundwater contamination if the emissions are unmitigated.
- A proportion of the development area will be covered in hardstanding (c. 11 ha). This provides protection to the underlying aquifer but also reduces local recharge in this area of the aquifer. As the area of the aquifer is large and surface water management will be designed with the appropriate sustainable drainage systems (SuDS) measures, this reduction in local recharge will have a not significant change on the natural hydrogeological regime.

Groundwater abstraction does not form part of the proposed development. There will be no impact on local or regional groundwater resources (abstraction) as a result of the proposed development.

These potential impacts are not anticipated to occur following the implementation of mitigation measures outlined in **Section 9.5.2**.

9.5 Mitigation Measures

This section describes a range of mitigation measures designed to avoid or reduce any potential adverse geological and hydrogeological impacts identified.

9.5.1 Construction Phase

In order to reduce impacts on the soils and geology environment, a number of mitigation measures will be adopted as part of the construction works on-site. The measures will address the main activities of potential impact, which include:

- Control of soil excavation and export from site;
- Sources of fill and aggregates for the proposed development;
- Fuel and chemical handling, transport and storage; and
- Control of water during the construction phase.

9.5.1.1 Construction & Environmental Management Plan (CEMP)

A preliminary Construction & Environmental Management Plan (pCEMP) has been prepared for the proposed development and is included with this planning application (under separate cover). It is proposed that the CEMP will be finalised in advance of works and maintained by the appointed Contractor during the construction phase of the proposed development to minimise the impact of all aspects of the construction works on the local environment. The final CEMP will include emergency response procedures in the event of a spill, leak, fire or other environmental incident related to construction.

9.5.1.2 Control of Soil Excavation

- Subsoil will be excavated to facilitate the construction of foundations, access roads, car parking areas, expansion of drainage connections and other ancillary works. The proposed development will incorporate the 'reduce, reuse and recycle' approach in terms of soil excavations on-site. The construction will be carefully planned to ensure only material required to be excavated will be, with as much material left *in situ* as possible. Excavation arisings will be reused on-site where possible.
- It is unlikely any contaminated material will be encountered during the construction phase of the proposed development (see **Section 9.3.5.1**). Nonetheless, any excavation works will be carefully monitored by a suitably qualified person to ensure any potentially contaminated soil is identified and segregated from clean / inert soil. In the unlikely event that any potentially contaminated soils are encountered, they should be tested and classified as hazardous or non-hazardous in accordance with the EPA Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous publication, HazWasteOnline™ tool or similar approved method. The material will then need to be classified as inert, non-hazardous, stable non-reactive hazardous or hazardous in accordance with EC Decision 2003/33/EC. It should then be removed from site by a suitably permitted waste contractor to an authorised waste facility.
- Stockpiles have the potential to cause negative impacts on air and water quality. The effects of soil stripping and stockpiling will be mitigated through the implementation of an appropriate earthworks handling protocol during the construction phase. It is anticipated that any stockpiles will be formed within the boundary of the site and should be kept 10 m away from any open watercourses and there will be no direct link or pathway from this area to any surface waterbody (e.g. Pinkeen or River Tolka).

- Inland Fisheries Ireland documents such as *Guidelines on Protection of Fisheries During Construction Works and Adjacent to Waters* (IFI, 2016) should be consulted in the finalisation of the CEMP prior to works and implemented in full.
- Dust suppression measures (e.g. damping down during dry periods), vehicle wheel washes, road sweeping, and general housekeeping will ensure that the surrounding environment are free of nuisance dust and dirt on roads.

9.5.1.3 Export of Material from Site

- It is envisioned that 55,000 m³ of excavated soil / stones arising on the site will be re-used. It is anticipated that no excavated material will be removed off-site. If material does need to be removed, it will be sent for recovery or disposal at an appropriately authorised facility. Refer to Chapter 17 (Material Assets – Waste) for further detail.
- Soil required for removal from the site should be classified by an experienced and qualified environmental professional to ensure that the waste soil is correctly classed for transportation and recovery / disposal off-site. Refer to Chapter 17 (Material Assets – Waste) for further detail.

9.5.1.4 Sources of Fill and Aggregates

All fill and aggregate for the proposed development will be sourced from reputable suppliers. All suppliers will be vetted for:

- Aggregate compliance certificates / declarations of conformity for the classes of material specified for the proposed development;
- Environmental Management status; and
- Regulatory and legal compliance status.

It is anticipated that approximately 30,000 m³ of clean, engineered fill will be required to facilitate construction. There will be no impact to mineral resources in the area as a result of the proposed development.

9.5.1.5 Fuel and Chemical Handling

The following mitigation measures will be implemented during the construction phase in order to prevent any spillages to ground of fuels and prevent any resulting soil and / or groundwater quality impacts:

- Designation of a 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;
 - Operatives must have spill response training; and
 - Drip trays used on any required mobile fuel units.

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;
- 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 to be loaded and unloaded by competent and trained personnel using appropriate equipment.

The aforementioned list of measures is non-exhaustive and will be included in the final CEMP.

9.5.1.6 Control of Water during Construction

- Run-off from excavations / earthworks cannot be prevented entirely and is largely a function of prevailing weather conditions. Earthwork operations will be carried out such that surfaces, as they are being raised, shall be designed with adequate drainage, falls and profile to control run-off and prevent ponding and flowing. Correct management will ensure that there will be minimal inflow of shallow / perched groundwater into any excavation. Due to the thickness and low permeability of the overburden and the relative shallow nature for services and foundation excavations, impact to the underlying aquifer is not anticipated.
- 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 will limit the potential for any off-site impacts. All run-off will be prevented from directly entering into any watercourses / drainage ditches.
- Should any discharge of construction water be required during the construction phase, discharge will be to foul sewer. Pre-treatment and silt reduction measures on-site will include a combination of silt fencing, settlement measures (silt traps, silt sacks and settlement tanks / ponds) and hydrocarbon interceptors. Active treatment systems such as siltbusters or similar may be required depending on turbidity levels and discharge limits.

9.5.2 Operational Phase

During the operational phase of the proposed development, there is limited potential for site activities to impact on the geological and hydrogeological environment of the area. There will be no impact on local or regional groundwater resources (abstraction) as a result of the proposed development.

Sustainable drainage systems (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 run-off, managing the quality of run-off 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. Petrol interceptors will also be included in the design (see Chapter 10 (Hydrology) for more information).

9.6 Residual Impacts

This section describes the residual impact of the proposed development following the implementation of the mitigation measures.

9.6.1 Construction Phase

The implementation of mitigation measures outlined in **Section 9.5.1** 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-neutral*. Following the NRA criteria 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

During the operational phase of the proposed development, there is limited potential for site activities to impact on the geological and hydrogeological environment of the area. There will be no impact on local or regional groundwater resources (abstraction) as a result of the proposed development. The predicted residual impact will be *long-term-imperceptible-neutral*. Following the NRA criteria 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

Regular inspection of surface water run-off and any sediment control measures (e.g. silt traps) 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.

No future soil or groundwater monitoring is proposed as part of the proposed development. Petrol interceptor(s) will be maintained and cleaned out in accordance with the manufacturer's instructions. Maintenance of the surface water drainage system and foul sewers as standard is recommended to minimise any accidental discharges to the ground.

9.8 Reinstatement

Any reinstatement from the construction activities on-site (excavations associated with ancillary / preparation works) will adhere to the design and architectural specifications presented in this application. All fill material to be used will be graded to Project Engineers' specifications.

9.9 Interactions

The following key interactions have been addressed herein and, where relevant, in the corresponding specialist EIAR chapter.

9.9.1 Hydrology

There is an inter-relationship between hydrology and soils, geology and hydrogeology. The underlying aquifer is a locally important source in the surrounding catchment areas. There will be no potential cumulative impacts on the bedrock as the aquifer vulnerability is 'Low' and the aquifer is locally important with little importance regionally.

Surface water run-off may have the limited potential to enter soil and groundwater. Implementation of appropriate mitigation measures as outlined in Chapter 10 (Hydrology) will eliminate the potential for the influx of surface contaminants into the underlying geology and hydrogeology.

9.9.2 Material Assets – Waste

It has been identified during project-specific ground investigations that the soil at the proposed development site is of good quality with no evidence of historical activities that could cause contamination. All other material excavated as part of the proposed development works is expected to be reused on-site. In the event that there is a need for off-site disposal of excavated material, this will be managed in accordance with the relevant legislative provisions, the *Eastern-Midlands Region Waste Management Plan 2015 – 2021* (and any subsequent iterations) and the principles of waste hierarchy and circular economy. Refer to Chapter 17 (Material Assets – Waste) for further detail.

9.10 Cumulative Impacts

The anticipated cumulative effects of the proposed development and other known developments as outlined in Chapter 20 (Cumulative Impacts) are addressed below. In relation to the potential cumulative impact on the geological or hydrogeological environment during the construction phases, those key engineering works which would have additional impacts above are:

- Run-off containing large amounts of silt could cause damage to surface water systems and receiving watercourses. Run-off from the proposed development will therefore need to be managed using the methods described for in Chapter 10 (Hydrology).
- Contamination of soils and groundwater underlying the site from accidental spillage and leakage from construction traffic and construction materials may occur unless project-specific CEMPs are put in place and complied with. As stated previously, a project-specific CEMP will be put in place for the proposed development.
- Accidental releases from fuel storage / unloading could contaminate groundwater or soil environments unless mitigated adequately *i.e.*, bunded tanks and delivery areas.

In relation to the potential cumulative impacts from the operational phase, the following would apply:

- There will be an increase in hardstanding as the site. Capping of significant areas of the sites by hardstand / buildings following construction and installation of drainage will minimise the potential for contamination of groundwater relative to the baseline. Cumulatively, this proposed development and others in the area will result in localised reduced recharge to ground and increase in surface run-off. The aquifer underlying the site is a locally important aquifer (Li). Based on site-specific and regional geological investigations there is c. 1.8 – 10 m of overburden overlying the bedrock aquifer, classifying it as “Low to High” vulnerability (GSI classification). As such, the predicted impact is considered to be *imperceptible*. The reduction in recharge rate to ground will be mitigated somewhat by the release of water (following treatment) from the SuDS / attenuation pond.
- Localised accidental discharge of hydrocarbons could occur in car parking areas and along roads unless diverted to a surface water drainage system with petrol interceptors. However, all developments are required to ensure they do not have an impact on the receiving water environment in accordance with the relevant legislation (primarily the Water Framework Directive 2000/60/EC), such that they would be required to manage run-off and fuel leakages.
- There will be a small loss of greenfield area locally as part of the proposed development.

The residual cumulative effect on land, soils, geology and hydrogeology for the construction and operational phases are anticipated to be *long-term, neutral* in terms of quality and of *imperceptible* significance once the appropriate mitigation measures are put in place for each development.

9.11 ‘Do-Nothing’ Impact

The ‘do-nothing’ scenario refers to the environment as it would be in the future should the proposed development not be carried out. Should the proposed development not proceed there would be no change to the current use as a golf course / greenfield site. It is also possible, given the land use zoning and development objectives for the site – and significant demand for housing in the Dublin Metropolitan Area – that the lands would ultimately be subject to an application for a similar residential development.

9.12 References

- Construction Industry Research and Information Association (CIRIA) (2011). *Environmental Good Practice on site; Construction Industry Research and Information Association Publication C692 (3rd Edition - an update of C650 (2005))* (I. Audus, P. Charles and S. Evans).
- CIRIA (2012). *Environmental Good Practice on site – pocketbook; Construction Industry Research and Information Association publication C715* (P. Charles, and G. Wadams).
- Chartered Institute of Environmental Health (CIEH) (2015). *The LQM/CIEH S4UIs for Human Health Risk Assessment*.
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- EPA (2017). *Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports*.
- EPA (2002). *EPA Guidelines on the information to be contained in Environmental Impact Statements*.
- EPA (2007). *Code of Practice – Environmental Risk Assessment for Unregulated Waste Disposal Sites*.
- EPA (2021). *EPA Online Mapping tool* Available on-line at: <https://gis.epa.ie/EPAMaps/> [accessed on 16 October 2021].
- Ground Investigations Ireland (GII) (2018). *Development at Hollystown Golf Club, Ground Investigation Report August 2018 Project No. 929-07-18*
- GII (2019). *Kilmartin Town Centre, Ground Investigation Report. August 2018 Project No. 929-07-18*.
- Geological Survey of Ireland (GSI) (2021). *Online shapefile content*, Available on-line at: <https://data.gov.ie/organization/geological-survey-of-ireland> [accessed 16 October 2021].
- Inland Fisheries Ireland (IFI) (2016) *Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters*.
- Institute of Geologists of Ireland (IGI) (2002). *Geology in Environmental Impact Statements, a Guide*.
- IGI (2013). *Guidelines for the preparation of Soils Geology and Hydrogeology Chapters of Environmental Impact Statements*.
- National Roads Authority (NRA) (2009). *Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes*.

10 Hydrology

10.1 Introduction

This chapter of the EIAR presents an assessment of the existing environment (baseline) and the likely impacts on the hydrological aspects, associated with the proposed residential development at Hollystown and Kilmartin, Dublin 15.

In assessing likely potential and predicted impacts, account is taken of both the importance of the attributes and the predicted scale and duration of the likely impacts. Where an impact is identified, planned mitigation measures are identified and assessed.

A full description of the proposed development can be found in Chapter 5 (Description of the Proposed Development). The characteristics of the proposed development that are relevant in terms of Hydrology are summarised below.

This chapter has been prepared by Paul Conaghan, Environmental Consultant at AWN Consulting Ltd. and Marcelo Allende, Environmental (Water Resources) Consultant at AWN Consulting Ltd. Technical reviews have been completed by Lorraine Guerin, Environmental Consultant at Brady Shipman Martin; and Thomas Burns, Partner at Brady Shipman Martin. Refer to **Table 1.3** in Chapter 1 (Introduction) for qualifications of authors and reviewers.

10.2 Methodology

The methodology used in this assessment follows current European and Irish guidance as outlined in:

- Environmental Protection Agency (EPA) (2017). *Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports*.
- EPA (2015). *Draft Advice Notes on Current Practice in the Preparation of Environmental Impact Statements*.
- National Roads Authority (NRA) (2009). *Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes*.

The rating of potential environmental impacts on the hydrological environment is based on the quality, significance, duration and type of impact characteristic identified. Consideration is given to both the importance of an attribute and the magnitude of the potential environmental impacts of the proposed activities on that cited attribute. The EPA Draft EIAR Guidelines (2017) criteria are presented in **Appendix 10.1**. The NRA criteria for rating the magnitude and significance of impacts at on the geological related attributes are also relevant in determining impact assessment and are presented in **Appendix 10.1**.

10.2.1 Sources of Information

This assessment was considered in the context of the available baseline information, potential impacts, consultations with statutory bodies and other parties, and other available relevant information. In collating this information, the following sources of information and references were consulted:

- Construction Industry Research and Information Association (CIRIA) (2001). *Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (C532)*;

- Department of the Environment, Heritage and Local Government (DoEHLG) & the Office of Public Works (OPW) (2009). The Planning System and Flood Risk Management – Guidelines for Planning Authorities;
- Department of Housing, Planning and Local Government (DoHPLG) (2018). River Basin Management Plan for Ireland 2018 – 2021;
- Dublin City Council (2005). Greater Dublin Strategic Drainage Study (GSDSDS): Technical Documents of Regional Drainage Policies;
- Eastern Catchment Flood Risk Assessment and Management (CFRAM) Flood Reports;
- Eastern Regional Fisheries Board (n.d.). Requirements for the Protection of Fisheries Habitat During Construction and Development Works at River Sites;
- EPA Maps & Envision water quality monitoring data for watercourses in the area;
- Office of Public Works (OPW). Flood mapping data, accessed at www.floodmaps.ie;
- Wicklow County Council, South Dublin County Council, Meath County Council, Kildare County Council, Fingal County Council, Dún Laoghaire- Rathdown County Council & Dublin City Council (2005). Greater Dublin Regional Code of Practice for Drainage Works: Version Draft 6.0.

Other relevant documentation consulted as part of this assessment included DBFL Consulting Engineers' Infrastructure Design Report, Preliminary Construction & Environmental Management Plan (pCEMP) and Site-Specific Flood Risk Assessment Report (SSFRA); all of which have been submitted under separate cover as part of the planning application.

10.3 Baseline Environment

The proposed development is located within the previously defined Eastern River Basin District (ERBD), now the Ireland River Basin District, in Hydrometric Area No. 09 of the Irish River Network. It is within the River Liffey and Dublin Bay catchment (Catchment ID 09) and Tolka Sub-catchment (Tolka_SC_020). The River Liffey catchment encompasses an area of approximately 1,369 km². It extends from the mountains of Kippure and Tonduff in County Wicklow to the sea at Dublin Bay. The main channel covers a distance of c. 120 km west to east. The River Tolka (Tolka) rises east of Dunshaughlin, County Meath, and bypasses Dunboyne, from where it receives the Castle Stream tributary. From Clonee, where it is joined by the Clonee Stream at the eastern end of the village, it flows into County Dublin. The river continues through Damastown and Mulhuddart, Blanchardstown, and Ashtown (southwest of Finglas), and the southern edges of Finglas itself, and then the north Dublin suburban districts of Glasnevin and Drumcondra, where it comes closest to the Royal Canal near Binn's Bridge. At the southern side of Tolka Park, it forms the border between Ballybough and Fairview, before entering Dublin Bay between East Wall and Clontarf. The Mooretown and Hollywood Streams (EPA designations) which are partially culverted flow east to west to the Pinkeen East (EPA Designation – Powerstown) before flowing north to south to the Tolka.

The nearest designated national and European sites (i.e. within 10 km of the site are as follows):

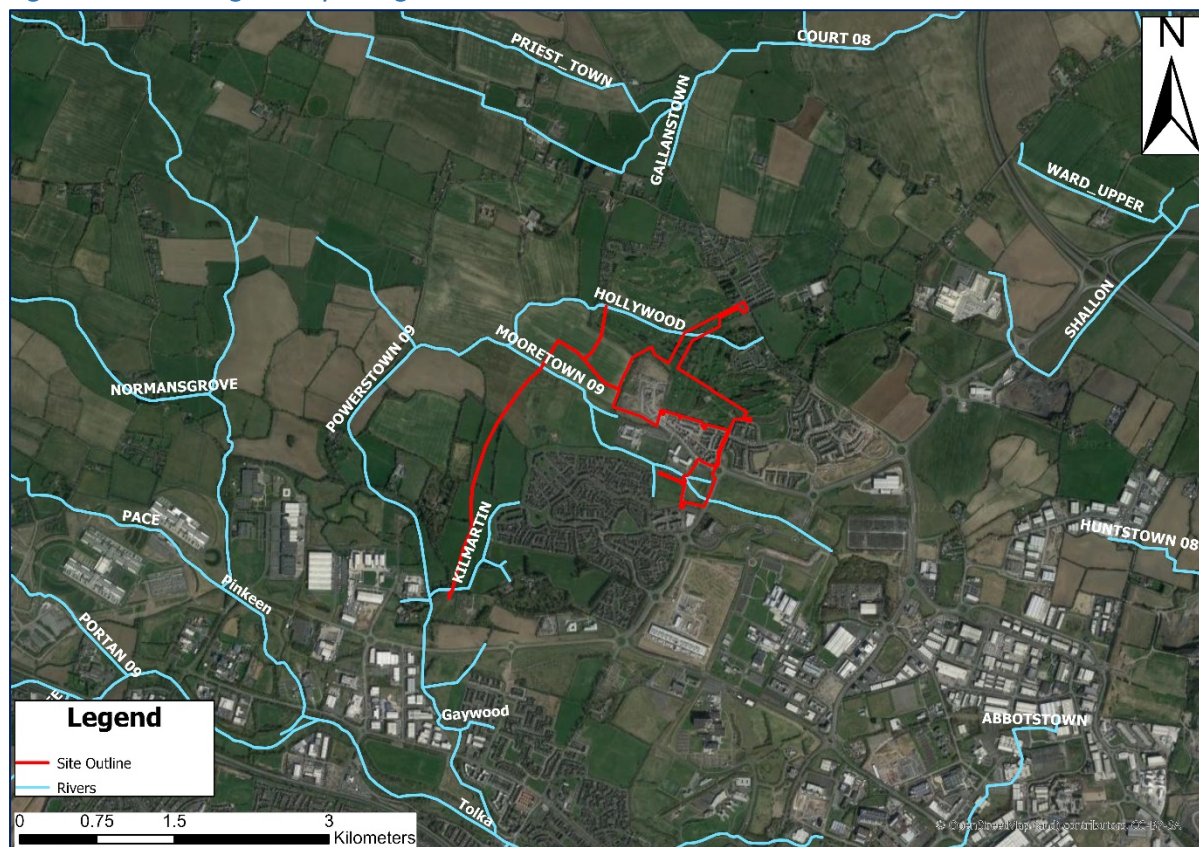
- Royal Canal proposed Natural Heritage Area (pNHA) (site code 002103), c. 5 km south;
- Liffey Valley pNHA (000128), c. 6.3 km south;
- Rye Water Valley / Carton pNHA (001398), c. 9.4 km southwest;
- Santry Demesne pNHA (000178), c. 8 km east;
- Rye Water Valley / Carton Special Area of Conservation (SAC) (001398), c. 9.4 km southwest; and
- Grand Canal pNHA (002104), c. 9.6 km south

Other sites > 10 km from the site of note include:

- Baldoyle Bay SAC (site code 000199), c. 16 km east;
- North Dublin Bay and River Tolka Estuary SPA (004024), c. 15.2 km east; and
- South Dublin Bay SAC (000210), c. 15.1 km southeast.

The Appropriate Assessment (AA) Screening Report provides a detailed account of all European sites (SAC and Special Protection Areas (SPA)) 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.

Figure 10.1 Regional hydrological environment



10.3.1 Surface Water Quality

The European Communities Directive 2000/60/EC, establishing a framework for community action in the field of water policy, is commonly known as ‘the Water Framework Directive’ (WFD).

The WFD requires ‘Good Water Status’ for all European waters by 2015 or, at the latest, 2027, to be achieved through a system of river basin management planning and extensive monitoring. ‘Good status’ means both ‘Good Ecological Status’ and ‘Good Chemical Status’. The second cycle River Basin Management Plan was published in April 2018, which replaced the first cycle river management plans (2009 – 2015).

The impacts of a range of pressures were assessed including diffuse and point pollution, water abstraction and morphological pressures (e.g. water regulation structures). The purpose of this exercise was to identify waterbodies at risk of failing to meet the objectives of the WFD and include a programme of measures to address and alleviate these pressures.

The strategies and objectives of the WFD in Ireland have influenced a range of national legislation and regulations. These include the following:

- European Communities (Water Policy) Regulations, 2003 (S.I. No. 722 of 2003).
- European Communities (Drinking Water) Regulations 2014 (S.I. 122 of 2014).
- European Communities Environmental Objectives (Surface Waters); Regulations, 2009 (S.I. No. 272 of 2009 as amended by S.I. No. 77 of 2019).
- European Communities Environmental Objectives (Groundwater) Regulations, 2010 (S.I. No. 9 of 2010 as amended by S.I. No. 366 of 2016).
- European Communities (Good Agricultural Practice for Protection of Waters) Regulations, 2010 (S.I. No. 610 of 2010).
- European Communities (Technical Specifications for the Chemical Analysis and Monitoring of Water Status) Regulations, 2011 (S.I. No. 489 of 2011).

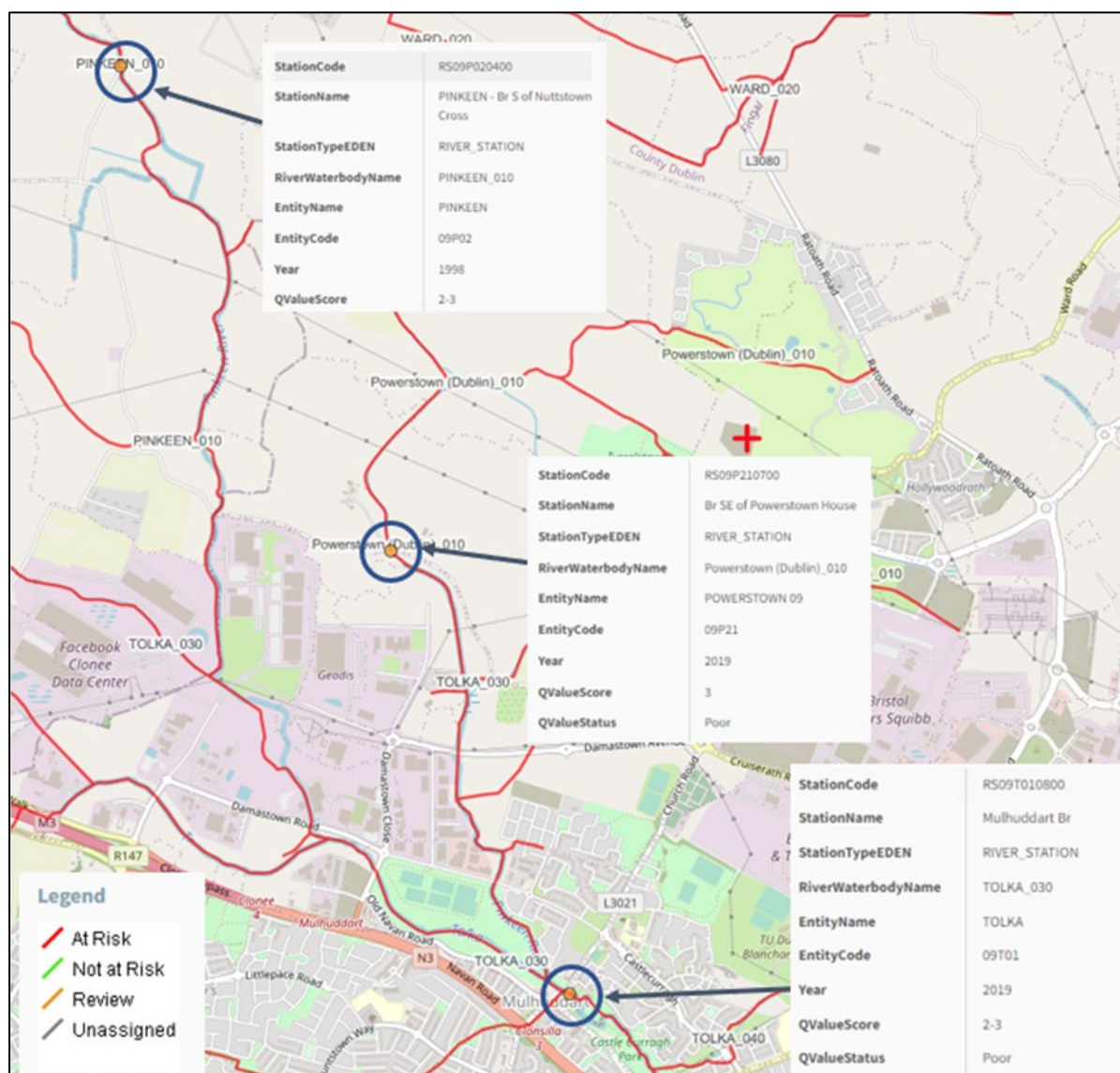
Figure 10.2 presents the EPA surface water quality monitoring points in the context of the site and other regional drainage setting, as well as the waterbodies WFD risk category. Surface water quality is monitored periodically by the EPA at various regional locations along principal and other smaller watercourses. With reference to the site of the proposed development, the nearest EPA monitoring stations are situated upstream on the Pinkeen West (Br S of Nuttstown Cross Station Code RS09P020400) to the north west of the site, on the Pinkeen (East Br SE of Powerstown House (Station Code RS09P021700) and on the Tolka River downstream of the site (Mulhuddart Br Station Code RS09T010800).

The EPA assesses the water quality of rivers and streams across Ireland using a biological assessment method, which is regarded as a representative indicator of the status of such waters and reflects the overall trend in conditions of the watercourse. The biological indicators range from Q5 – Q1. Level Q5 denotes a watercourse with good water quality and high community diversity, whereas Level Q1 denotes very low community diversity and bad water quality. The surface water quality data for the nearest monitoring stations both upstream and downstream of the site show Q ratings of Q2 – 3, denoting a poor (moderately polluted status) as shown in **Figure 10.2**.

In accordance with the WFD, each river catchment within the former ERBD was assessed by the EPA, and a Water Management Plan detailing the programme of measures was put in place for each. Currently, the EPA classifies the WFD risk score for the Pinkeen West, Pinkeen East and Tolka River as 1a, 'At risk of not achieving good status'. The WFD Status for the Tolka waterbody was previously denoted as 'Unassigned' (second WFD cycle status 2013-2018). The transitional waterbody of the Tolka Estuary is currently listed as 'At Risk'. The Liffey Estuary Lower and North Bull Island WFD status is currently 'under review'⁴⁹. The Liffey Estuary Lower was listed as having a 'Good Status', The Tolka Estuary as 'Moderate' and North Bull Island was 'Unassigned' in the previous cycle (2013 – 2015 WFD cycle). The Dublin Bay Coastal Waterbody to the east of the site previously had a 'Good Status' and is listed as 'Not at Risk' by the EPA.

⁴⁹ Meaning more information is required to assign a status

Figure 10.2 Local hydrological environment and current WFD risk including locations of river stations⁵⁰



10.3.2 Local Drainage

The majority of the Hollystown Site 2 portion of the site is located within the former golf course lands, which has natural undulations and landscaping features typical of a golf course, including an internal network of open drains that are culverted locally to provide crossing points. An open drain forms the boundary between Hollystown Sites 2 and 3, and continues in a northerly direction where it connects to an open drain along the northeastern boundary of Hollystown Site 3. This open drain continues westwards before connecting to the Pinkeen East Stream c. 1,200 m to the west.

Within Site 2, the existing golf course open drain collects surface water run-off from the site and from a section of Hollywoodrath Road (via road gullies at the existing gated maintenance entrance to the former golf club). This drain also accommodates attenuated surface water run-off (maximum attenuated flow rate of 83 L/s) from the existing Hollywoodrath Estate to the east (planning refs. FW14A/0108/(E1); PL06F.244736; FW16A/0099/(E1); FW16A/0148/(E1); FW17A/0016;

⁵⁰ Site location indicated with red cross (+)

FW18A/0132(/E1); FW19A/0058; FW20A/0197). The existing detention basin for the neighbouring Bellingsmore residential development is located in the Site 3 portion of the site of the proposed development, to be completed under the scope of that permitted development (under construction and almost completed) (planning refs. FW13A/0088(/E1); PL06F.243395).

At the Kilmartin Local Centre portion of the site, there is an existing ditch that meanders from east to west through the proposed Local Centre site, which appears to take road drainage from the R121. The ditch is currently culverted before entering the site from the east and is also culverted under the existing school access roundabout. The ditch flows to the west of the site and connects to field drainage that discharges to the Pinkeen River to the west of the site. It is proposed to culvert an additional section of the ditch which is expected to provide a suitable surface water discharge point for this portion of proposed development.

Surface water run-off from the existing road connecting Tyrrelstown Local Centre and Tyrrelstown Educate Together school is collected via road gullies into the existing 225 mm diameter pipe running under the road. The planning documents for the school and the road submitted under planning ref. FW10A/0137, show the run-off from the road being attenuated within the school area and connecting to the existing surface network to the northwest of the proposed development site. There is an existing 600 mm diameter surface water sewer running along the western boundary of the site, which outfalls to the northwest.

10.3.3 Surface Water Flooding / Flood Risk Assessment

A Site-Specific Flood Risk Assessment (SSFRA) has been carried out in respect of the proposed development by DBFL Consulting Engineers (refer to report submitted under separate cover as part of the planning application).

The Eastern Catchment Flood Risk Assessment and Management (ECFRAM) study is the most comprehensive flood mapping undertaken in the Dublin region. It commenced in June 2011 with final flood maps issued in 2016. The study involved detailed hydraulic modelling of rivers and their tributaries. The ECFRAM study supersedes the fluvial flood extent mapping identified in the OPW Preliminary Flood Risk Assessment (PRFA) study. The ECFRAM final mapping does not extend to the residential area of the site and the final ECFRAM mapping in the vicinity of the site is currently under review. Flood mapping from both the Strategic Flood Risk Assessment for the *Fingal Development Plan 2017 – 2023* and the *Kilmartin Local Area Plan* (2013; as extended) show that the site is in Flood Zone C (which has a low risk of flooding). There have been no recorded previous flood events at the site.

On completion of Stage 2 – Initial Flood Risk Assessment, the site is considered to be located in Flood Zone C as defined by the requirements of *The Planning System and Flood Risk Management – Guidelines for Planning Authorities* and its technical appendices (OPW, 2009). The proposed development is, therefore, considered ‘appropriate’ in the context of flood risk, as per the criteria in the OPW guidelines.

10.3.4 Areas of Conservation

The nearest designated national and European sites (i.e. within 10 km of the site are as follows):

- Royal Canal proposed Natural Heritage Area (pNHA) (site code 002103), c. 5 km south;
- Liffey Valley pNHA (000128), c. 6.3 km south;
- Rye Water Valley / Carton pNHA (001398), c. 9.4 km southwest;
- Santry Demesne pNHA (000178), c. 8 km east;

- Rye Water Valley / Carton Special Area of Conservation (SAC) (001398), c. 9.4 km southwest; and
- Grand Canal pNHA (002104), c. 9.6 km south

Other sites > 10 km from the site of note include:

- Baldoyle Bay SAC (site code 000199), c. 16 km east;
- North Dublin Bay and River Tolka Estuary SPA (004024), c. 15.2 km east; and
- South Dublin Bay SAC (000210), c. 15.1 km southeast.

The Appropriate Assessment (AA) Screening Report provides a detailed account of all European sites (SAC and Special Protection Areas (SPA)) 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.

The site is hydraulically lined to the Tolka River via the drainage and the Mooretown 09 (EPA designation) stream to the Pinkeen East (see **Figure 10.1**). Mitigation measures in relation to the Tolka are included in **Section 10.5**.

10.3.5 Rating of Site Importance of Hydrological Features

The site is hydraulically lined to the Tolka River (2.8 km to the south) via the drainage network and the Mooretown 09 (EPA designation) stream to the Pinkeen East (refer to **Figure 10.1**). Currently, both Sites 2 & 3 and the Local Centre site are hydraulically connected to the River Tolka. However, based on the distance to the nearest protected site (South Dublin Bay and River Tolka Estuary SPA) which is c. 15.1 km to the east there would be no likely impact to the SPA. Based on the NRA methodology criteria for rating the importance of hydrological features (refer to **Appendix 10.1**), the features at this site are rated as 'medium' importance. This is due to a poor biotic index (Q2 – 3) and its lack of use as a potable water source.

10.4 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 (10 – Water) of the EIAR.

10.4.1 Construction Phase

10.4.1.1 Increased Run-off & Sediment Loading

Surface water run-off during the construction phase may contain increased silt levels or become polluted from construction activities. Currently, overland flow, drainage ditches and the Mooretown Stream are hydraulically connected to the Tolka River via the Pinkeen East and there is potential for a direct water quality impact. However, based on the distance to the nearest protected site (South Dublin Bay and River Tolka Estuary SPA) which is c. 15.1 km to the east there would be no likely impact to the SPA. There is also potential for blocking of stormwater drainage if run-off is not managed adequately.

During the construction phase, there is potential for run-off due to the introduction of impermeable surfaces and the compaction of soils. This 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 and the Tolka River (2.8 km to the south).

10.4.1.2 Contaminated Surface Water Drainage

During the construction phase, 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
- The use of wet concrete and cement.

Machinery on-site during the construction phase may result in contamination of surface water, primarily the existing surface water drainage systems, flowing to the Pinkeen East and then the Tolka to the south. The potential impacts could derive from accidental spillage of fuels, oils, paints and solvents, which could impact surface water and groundwater quality if allowed to infiltrate to run-off to surface water systems and / or receiving watercourses.

Concrete operations carried out near surface watercourses and drains during construction activities could lead to a discharge of wastewaters 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.

10.4.2 Operational Phase

During the operational phase of the proposed development, the potential impacts in relation to water have been assessed below.

10.4.2.1 Surface Water

If not managed correctly, surface water run-off can become a source of contamination of the Pinkeen East and subsequently the Tolka River to the south and increase the risk of flooding in the local area. Project Engineers DBFL have developed an Infrastructure Design Report (IDR; submitted under separate cover as part of the planning application), which should be read in conjunction with this chapter. The IDR lists a number of design features (i.e. 'mitigation by design') to manage the quantity and quality of surface water from the proposed development.

It is proposed to re-route the existing open channel golf course drain to the north within the ESB sterilisation zone. Sections of this re-routed drain will be piped and culverted to facilitate crossing points. Refer to Section 3.2.2 of the IDR for further details. The existing open drain, which forms the boundary between Site 2 & 3, will be maintained, with a buffer of c. 10 m maintained on both sides.

The existing open drain along the northeastern and northwestern boundaries of Site 3 will also be maintained, with a 10 m buffer maintained on the development side. It is proposed to incorporate the surface water storage requirements for the neighbouring Bellingsmore residential development (planning refs. FW13A/0088(/E1); PL06F.243395) into the scheme design for Site 3, in the form of two interlinked detention basins adjacent to the southeast boundary of Site 3. The existing detention basin for Bellingsmore will be removed to facilitate this arrangement with the existing storage volume of c. 821 m³ for a 1% annual exceedance probability (AEP) event accommodated in the relocated basins. A

new surface water outfall will be constructed to the same receiving water (the open drain which forms the north-eastern boundary of Site 3).

At the Local Centre site, the existing ditch, existing road and new road divide the site into three surface water catchments for the purposes of surface water management. It is proposed to discharge attenuated surface water run-off from each catchment to the surface water ditch traversing the site from east to west. The existing golf course drain within Site 2 will be intercepted and piped and re-routed to the north to maximise development potential of the site.

Attenuated surface water run-off from Site 2 will discharge to the re-routed golf course drain along the northern boundary of Site 2. Attenuated surface water run-off from Site 3 will discharge to the existing open drain along the northern boundary of Site 3. Attenuated surface water run-off from the Local Centre will discharge to the existing surface water ditch traversing the site from east to west.

To manage surface water run-off from Site 2, the site will be split into two surface water catchments, Catchment 1 and Catchment 2. Similarly, to manage surface water run-off from Site 3, the site will be split into five surface water catchments, Catchments 1 to 5. Surface water run-off from Sites 2 & 3 will be attenuated to Qbar 'Greenfield Runoff' as required in the Greater Dublin Strategic Drainage Strategy (GDSDS), with run-off exceeding the allowable outflow stored on site for up to a 1% AEP 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.

To manage surface water run-off from the Local Centre, the site will be split into three surface water catchments, Catchments 1 to 3. Surface water run-off from Sites 2 & 3 will be attenuated to Qbar 'Greenfield Runoff' as required in the GDSDS, with run-off exceeding the allowable outflow stored on site for up to a 1% AEP event, plus 20% for climate change.

For further detail, refer to DBFL's Infrastructure Design Report, submitted under separate cover as part of the planning application.

10.4.2.2 Wastewater

It is proposed to construct a new foul outfall sewer to the west of the site, approximately 3 km in length to connect to the existing 750 mm diameter foul sewer to the south of Powerstown Road. This foul outfall is designed to accommodate foul flows from the proposed development site, the future development of the zoned lands to the west of the site (also within the ownership of the Applicant), from the neighbouring Bellingsmore residential development to the south, and from the permitted Hollystown Site 1 residential development to the northeast of the site (FCC reg. ref. FW21A/0042). It is also designed to facilitate a future connection from the Hollystown Park Foul Pumping Station. A breakdown of the hydraulic loadings contributing to the foul sewer are included in Table 6 of the Infrastructure Design Report, submitted under separate cover as part of the planning application.

The proposed foul drainage system for the Local Centre site will connect to the existing 225 mm foul sewer, at the west of the site. Apartments will connect to a network of 150 mm and 225 mm diameter foul drains via individual connections, as per *Irish Water Code of Practice for Wastewater Infrastructure*.

A Pre-connection Enquiry application was submitted to Irish Water to confirm the capacity in the receiving network and confirmation of feasibility was obtained (refer to Appendix 6 of the Infrastructure Design Report, submitted under separate cover as part of the planning application).

10.4.2.3 Water Supply

It is proposed to connect to the existing 300 mm 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*. Irish Water have confirmed connection to its water network can be facilitated subject to a connection agreement.

10.4.2.4 Fuel and Other Accidental Spills

There is a potential for leaks and spillages from vehicles along access roads and in parking areas during the operational phase. Any accidental emissions of hydrocarbons could cause contamination if the emissions enter the water environment unmitigated.

10.5 Mitigation Measures

The design of the proposed development has taken account of the potential impacts of the development and the risks to the water environment specific to the areas where construction is taking place. Some of these design measures have also been discussed in **Section 10.4** above.

These measures seek to avoid or minimise potential effects in the main through the implementation of best practice construction methods and adherence to all relevant legislation.

10.5.1 Construction Phase

10.5.1.1 Construction & Environmental Management Plan (CEMP)

A preliminary Construction & Environmental Management Plan (pCEMP) accompanies this planning application under separate cover. A final CEMP will be prepared in advance of works and maintained by the appointed Contractor during the construction phase of the proposed development. The CEMP will cover all potentially polluting activities and include an emergency response procedure. All personnel working on the site will be trained in the implementation of the CEMP. At a minimum, the CEMP will be formulated in consideration of the standard best international practice, including, but not limited to:

- BPGCS005, *Oil Storage Guidelines*;
- 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 (SP156)*;
- CIRIA (2005). *Environmental Good Practice on Site (C650)*;
- CIRIA (2007). *The SUDS Manual (697)*;
- UK Environment Agency (2004). *UK Pollution Prevention Guidelines (PPG)*.

10.5.1.2 Surface Water Run-Off

- 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 (e.g. silt traps, silt sacks and settlement tanks / ponds). Full protection

measures for the Mooretown Stream and Pinkeen East to the east of the site highlighted in the CEMP will be strictly adhered to.

- The temporary storage of soil will be carefully managed. Stockpiles will be tightly compacted to reduce run-off and graded to aid in run-off collection. This will prevent any potential negative impact on the stormwater drainage.
- Excavated material will be stored away from any surface water drains / existing surface water features, allowing a minimum set-back of 10 m.
- The movement of material will be minimised to reduce the degradation of soil structure and generation of dust.
- Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise the potential for water ingress into excavations.
- Weather conditions will be considered when planning construction activities to minimise the risk of run-off from the site.
- All contractors will be made aware of the CEMP and all management/ mitigation measures within this area to be strictly adhered to.
- Documents such as Inland Fisheries Ireland's 2016 *Guidelines on Protection of Fisheries During Construction Works and Adjacent to Waters* will be consulted in the finalisation of the CEMP.

10.5.1.3 Fuel and Chemical Handling

The following mitigation measures will be implemented during the construction phase in order to prevent any spillages to ground of fuels and prevent any resulting to surface water systems:

- Designation of a 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; and
 - 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 that 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;
- 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 to be loaded and unloaded by competent and trained personnel using appropriate equipment.

The aforementioned list of measures is non-exhaustive and will be included in the final CEMP. All appointed Contractors will be required to implement the CEMP.

All ready-mixed concrete will be brought to the 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 stormwater to the underlying subsoil. Wash-down and washout of concrete transporting vehicles will take place at an appropriate facility off-site.

10.5.1.4 Accidental Releases

Emergency response procedures will be outlined in the CEMP. All personnel working on the site will be suitably trained in the implementation of these procedures.

10.5.1.5 Soil Removal and Compaction

- Excavated material will be reused on-site where possible for site levelling, roads, car parking areas and other landscaping purposes. The Project Engineers have estimated that all excavated material will be re-used on-site. The temporary storage of soil will be carefully managed in such a way as to prevent any potential negative impact on the receiving environment. The material will be stored away from any surface water drains (see Surface Water Run-off section above) and at least 10 metres away from any surface water features such as the Mooretown Stream. The movement of material will be minimised to reduce the degradation of soil structure and generation of dust.
- All excavated materials will be visually assessed for signs of possible contamination such as staining or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of 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.

10.5.2 Operational Phase

10.5.2.1 Surface Water

The proposed new storm water drainage arrangements will be designed and carried out in accordance with the:

- *Greater Dublin Strategic Drainage Study Volume 2.*
- *Greater Dublin Regional Code of Practice for Drainage Works.*
- *BS EN – 752:2008, Drains & Sewer Systems Outside Buildings.*
- *Part H, Building Drainage of the Building Regulations.*

Sustainable drainage systems (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 run-off, managing the quality of run-off 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.

SuDS features can take many forms both above and below ground and can include planting and proprietary / manufactured products. SuDS features deliver high quality drainage while supporting urban areas to cope better with severe rainfall now and in the future. They also counteract some of the impacts on our water cycle caused by increased urbanisation, such as reduced infiltration, which can result in diminished groundwater supplies. They are used in conjunction with traditional drainage systems, and the use of SuDS features are a requirement of the GDSDS. The SuDS features proposed for the development include the following:

- Swales within link street verges;

- Permeable paving within private curtilage parking;
- Bioretention area;
- Tree pits;
- Detention basins;
- Hydrobrake flow controls; and
- Petrol interceptors.

See Project Engineer, DBFL's Infrastructure Design Report, submitted under separate cover as part of the planning application, for more detail in relation to these mitigation measures.

10.5.2.2 Maintenance

- Petrol interceptor(s) will be maintained and cleaned out in accordance with the manufacturer's instructions.
- Maintenance of the surface water drainage system and foul sewers as standard is recommended to minimise any accidental discharges to ground.

10.6 Residual Impacts

The proposed development will have *no significant impact* on the natural surface water regime, either qualitatively or quantitatively.

10.6.1 Construction Phase

Following the implementation of mitigation measures detailed in **Section 10.5**, the predicted impact on the surface water environment during the construction phase is considered to be *likely, neutral, imperceptible* and *short-term*. This is due to the control measures highlighted in **Section 10.5.1** above.

10.6.2 Operational Phase

The predicted impact on the surface water environment once the development is constructed and operational is considered to be *likely, neutral, imperceptible* and *long-term*. There will be *no significant impact* to the quality of local watercourse and the downstream designated ecological sites. Overall, the attenuation proposed for the proposed development and installation of hydrocarbon interceptors will aid in flood management and water quality.

10.7 Monitoring

10.7.1 Construction Phase

Regular inspection of surface water run-off and any sediment control measures (e.g. silt traps) 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.

10.7.2 Operational Phase

No future surface water monitoring is proposed as part of the proposed development due to the low hazard potential associated with the proposed development.

10.8 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.

10.9 Interactions

10.9.1 Land, Soils, Geology & Hydrogeology

There is an inter-relationship between hydrology and land, soils, geology and hydrogeology. There will be no significant impacts on the bedrock in relation to this interaction, as the aquifer vulnerability is rated 'Low – High' and the aquifer is locally important with little importance regionally.

Surface water run-off may have the potential to enter soil and groundwater. Implementation of appropriate mitigation measures as outlined in Chapters 9 (Land, Soils, Geology and Hydrogeology) and herein (Chapter 10 – Water) will eliminate the potential for the influx of surface contaminants into the underlying geology and hydrogeology.

10.10 Cumulative Impacts

The anticipated cumulative effects of the proposed development and the other known surrounding developments listed in Chapter 20 (Cumulative Impacts) are summarised below. In relation to the potential cumulative impact on hydrology during the construction phases, the construction works which would have potential cumulative impacts include:

- 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, namely the River Tolka, bounding the site to the north. Stockpiled material will be stored on hardstanding away from surface water drains and gullies, which will be protected during works to ensure there is no discharge of silt-laden water into the surrounding surface water drainage system.
- There is the potential for contamination of local water sources from accidental spillage and leakage from construction traffic and construction materials unless project-specific CEMPs (and / or Surface Water Management Plans or equivalent mitigation measures) are put in place for each development and complied with. A CEMP and the above-listed mitigation measures (**Section 10.5**) will be implemented in respect of the proposed development.

Potential cumulative impacts included in the operational phase include:

- Increased hardstanding 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 releases from fuel storage / delivery unless mitigated adequately, i.e. bunded tank.
- Increased risk of accidental discharge of hydrocarbons from car parking areas and along roads unless diverted to surface water system with petrol interceptor.
- Any additional foul discharges should be treated where appropriate and / or diverted to the foul sewer system and not directly to ground.

Similar mitigation measures to those described in **Section 10.5** will need to be implemented in respect of future proposed developments in the surrounding area to protect water quality.

Increase in wastewater loading and water supply requirement is an impact of all development: Each development will require approval from the Irish Water confirming available capacity in the water and wastewater infrastructure. In respect of the proposed development, Irish Water have confirmed connection to its water and foul network can be facilitated subject to a connection agreement.

Development will result in an increase in hardstanding which will result in localised reduced recharge to ground and increase in run-off rate. Each permitted development is required by the Local Authority and Irish Water to comply with the Local Authority and Irish Water requirements by providing suitable attenuation on-site to ensure greenfield run-off rates and ensure that there is no increase in off-site flooding as a result of the proposed development.

There is a potential for contamination of watercourses during construction and operation. Mitigation measures are required to manage sediment run-off and fuel leakages during construction and operation. All developments are required to ensure they do not have a significant impact on the receiving water environment in accordance with the relevant legislation (WFD and associated legislation) such that they would be required to manage run-off and fuel leakages.

The residual cumulative impact on water and hydrology for the construction and operational phases is anticipated to be *long-term, neutral* in terms of quality and of *imperceptible* significance, once appropriate mitigation measures to manage water quality run-off in compliance with legislative requirement are put in place for each development.

10.11 ‘Do-Nothing’ Impact

The ‘do-nothing’ scenario refers to the environment as it would be in the future should the proposed development not be carried out. Should the proposed development not proceed there would be no change to the current use as a golf course / greenfield site. It is also possible, given the land use zoning and development objectives for the site – and significant demand for housing in the Dublin Metropolitan Area – that the lands would ultimately be subject to an application for a similar residential development.

10.12 References

- Environmental Protection Agency (EPA) (2017). *Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports*.
- Environmental Protection Agency (EPA) (2015). *Draft Advice Notes on Current Practice in the Preparation of Environmental Impact Statements*.
- National Roads Authority (NRA) (2009). *Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes*.
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11 Air Quality & Climate

11.1 Introduction

This chapter of the EIAR has been prepared to identify and assess the potential air quality and climate impacts associated with the proposed development during both the construction and operational phases.

The assessment includes a comprehensive description of the existing air quality in the vicinity of the subject site; a description and assessment of how construction activities and the operation of the proposed development may impact existing air quality and climate; the mitigation measures that will be implemented to control and minimise the impact that the development may have on local ambient air quality; and finally, to demonstrate how the proposed development shall be constructed and operated in an environmentally sustainable manner.

This chapter has been prepared by Ian Byrne, Principal Environmental Consultant at Byrne Environmental Consulting Ltd. Technical reviews have been completed by Lorraine Guerin, Environmental Consultant at Brady Shipman Martin; and Thomas Burns, Partner at Brady Shipman Martin. Refer to **Table 1.3** in Chapter 1 (Introduction) for qualifications of authors and reviewers.

11.2 Method

The general methodology for the assessment of the potential impact of the proposed development on air quality and climate has been conducted in accordance with:

11.2.1 Legislation and Guidance

- *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment* (DoHPLG, August 2018);
- *Draft Guidelines on information to be contained in Environmental Impact Assessment Reports* (EPA, 2017);
- *Guidelines on Information to be Contained in an Environmental Impact Statement* (EPA, 2002);
- *Advice Notes on Current Practice (in preparation of Environmental Impact Statements)* (EPA, 2003);
- *Revised Guidelines on the Information to be Contained in Environmental Impact Statements* (EPA, 2015);
- Planning and Development Regulations 2001, as amended, in particular by the European Union (Planning & Development)(Environmental Impact Assessment) Regulations 2018 (SI No. 296 of 2018);
- *Environmental Impact Assessment of Projects – Guidance on the preparation of the EIAR* (European Commission, 2017); and
- Climate Action and Low Carbon Development Act 2015.

11.2.2 Baseline Air Quality Assessment Methodology

Existing ambient air quality in the vicinity of the site has been characterised using information obtained from site-specific baseline air quality surveys for nitrogen dioxide (NO₂) and sulphur dioxide (SO₂), and by reviewing the EPA's 2019 Annual Report, *Air Quality in Ireland*. This EPA report provides detailed monitoring data collected from a number of monitoring locations throughout Ireland on an annual basis

to assess national compliance with national Air Quality Standards Regulations 2011. Given the location of the site, it is characterised as a Zone A area within the Dublin Conurbation, as defined by the EPA.

11.2.3 Air Quality Assessment Methodology

Air quality standards and guidelines are available from a number of sources. The guidelines and standards referenced in this report include those from Ireland and the European Union.

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 values, as defined in **Table 11.1**.

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 national Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011), which implement European Commission Directive 2008/50/EC (the 'Clean Air for Europe (CAFÉ) Directive'), which has set limit values for the pollutants SO₂, NO₂, particulate matter of diameter ≤ 10 microns (µm) (PM₁₀), benzene and carbon monoxide (CO). Council Directive 2008/50/EC replaces the previous Air Quality Framework Directive (96/62/EC) and its subsequent daughter Directives (including Directive 1999/30/EC and Directive 2000/69/EC). Provisions are also made for the inclusion of new ambient limit values relating to particulate matter of diameter ≤ 2.5 µm (PM_{2.5}). The Air Quality Standards Regulations 2011 replace the Air Quality Standards Regulations 2002 (S.I. No. 271 of 2002); the Ozone in Ambient Air Regulations 2004 (S.I. No. 53 of 2004); and the Environmental Protection Agency Act, 1992 (Ambient Air Quality Assessment and Management) Regulations, 1999 (S.I. No. 33 of 1999).

EU legislation on air quality requires that Member States divide their territory into zones for the assessment and management of air quality. The zones in place in Ireland are as follows:

- Zone A is the Dublin conurbation;
- Zone B is the Cork conurbation;
- Zone C comprises the 23 large towns in Ireland with a population >15,000; and
- Zone D is the remaining area of Ireland.

The air quality in each zone is assessed and classified with respect to upper and lower assessment thresholds, based on measurements over the previous five years. Upper and lower assessment thresholds are prescribed in the legislation for each pollutant. The number of monitoring locations required is dependent on population size and whether ambient air quality concentrations (i) exceed the upper assessment threshold, (ii) are between the upper and lower assessment thresholds, or (iii) are below the lower assessment threshold. A summary of the findings of the EPA's *Air Quality in Ireland 2019* report are detailed below in **Table 11.2**.

Table 11.1 Air quality standards

Pollutant	Regulation	Limit Criteria	Tolerance	Limit Value
Nitrogen dioxide	2008/50/EC	Hourly limit for the protection of human health – not to be exceeded more than 18 times/year	40% until 2003, reducing linearly to 0% by 2010	200 µg/m ³
		Annual limit for the protection of human health	40% until 2003 reducing linearly to 0% by 2010	40 µg/m ³
		Annual limit for the protection of vegetation	None	400 µg/m ³ NO & NO ₂
Lead	2008/50/EC	Annual limit for the protection of human health	100%	0.5 µg/m ³
Sulphur dioxide	2008/50/EC	Hourly limit for protection of human health – not to be exceeded more than 24 times/year	150 µg/m ³	350 µg/m ³
		Daily limit for protection of human health – not to be exceeded more than 3 times/year	None	125 µg/m ³
		Annual and Winter limit for the protection of ecosystems	None	20 µg/m ³
Particulate matter, PM ₁₀	2008/50/EC	24-hour limit for protection of human health – not to be exceeded more than 35 times/year	50%	50 µg/m ³
		Annual limit for the protection of human health	20%	40 µg/m ³
Particulate matter, PM _{2.5} (Stage 1)	2008/50/EC	Annual limit for the protection of human health	20% from June 2008. Decreasing linearly to 0% by 2015	25 µg/m ³
Particulate matter, PM _{2.5} (Stage 2)	2008/50/EC	Annual limit for the protection of human health	None	20 µg/m ³
Benzene	2008/50/EC	Annual limit for the protection of human health	20% until 2006. Decreasing linearly to 0% by 2010	5 µg/m ³
Carbon monoxide	2008/50/EC	8-hour limit (on a rolling basis) for protection of human health	60%	10 mg/m ³
Dust deposition	German TA Luft Air Quality Standard Note 1	30-day average	None	350 mg/m ² /day

Table 11.2 EPA 2019 assessment zone classification

Pollutant	Zone	EPA 2019 assessment classification
Nitrogen dioxide (NO ₂)	Zone A & B	Above lower assessment threshold
	Zone C & D	Below lower assessment threshold
Sulphur dioxide (SO ₂)	Zone A & B	Below lower assessment threshold
	Zone C & D	Below lower assessment threshold
Carbon monoxide (CO)	Zone A & B	Below lower assessment threshold
	Zone C & D	Below lower assessment threshold
Ozone (O ₃)	Zone A & B	Below long term objective
	Zone C & D	Above long term objective
Particulate matter, PM ₁₀	Zone A & B & C	Above lower assessment threshold
	Zone D	Below lower assessment threshold
Particulate matter, PM _{2.5}	Zone A & B	Below lower assessment threshold
	Zone C & D	Above lower assessment threshold
Benzene (C ₆ H ₆)	Zone A & B	Below lower assessment threshold
	Zone C & D	Below lower assessment threshold
Heavy metals (As, Ni, Cd, Pb)	Zone A & B	Below lower assessment threshold
	Zone C & D	Below lower assessment threshold
Polycyclic aromatic hydrocarbons (PAH)	Zone A & C & D	Above lower assessment threshold
	Zone B	Above upper assessment threshold

11.2.4 Climate Assessment Methodology

Climate has implications for many aspects of the environment, from soils to biodiversity and land use practices. The proposed development may impact on the climate at both the macro and micro levels. The ‘macroclimate’ refers to the climate of a large geographic area, such as Ireland. The ‘microclimate’ refers to the climate in the immediate area.

With respect to microclimate, green areas are considered to be sensitive to development. Development of any green area is generally associated with a reduction in the abundance of vegetation, including trees, and a reduction in the amount of open, undeveloped space. The removal of vegetation or the development of artificial structures in these areas can intensify the temperature gradient.

To assess the significance of the impacts of converting vegetative surfaces to hardstanding with residential buildings, the amount of vegetative surfaces associated with the proposed development that will be converted to residential buildings and hardstanding has been considered.

The impact of the proposed development upon the macroclimate is assessed through the consideration of the change in CO₂ emissions that will occur due to the changes in traffic flow that result from the proposed development.

The Conference of the Parties to the Convention (COP26) occurred in November 2021 with the following outcomes:

- **Emissions:** One of the key aims of COP26 was to create a timetable for agreeing to more ambitious National Determined Contributions (NDCs), as the current NDCs are inadequate to limit temperature rises to 1.5°C and, prior to COP26, nations were only required to set new NDCs every five years. While only one major emitter – India – produced a new NDC at COP26, the aim of the summit was not for numerous countries to produce new NDCs, but to agree to the faster roadmap.

The Glasgow Climate Pact ensures that the question of revising NDCs will be discussed at COP27 in Egypt in 2022 and again for the following COP in 2023, providing a lever for more ambitious countries to ensure slower countries make the step up.

- **Fossil fuels:** The use of coal provided the most contentious moment of the negotiations, as India and China insisted on changing the wording of the final text from a commitment to “phase out” coal power to “phase down” coal power, which the EU and US both accepted, angering the UK and smaller island nations. However, it is notable that this is the first COP agreement that has made a direct reference to phasing down fossil fuels, including a statement that inefficient subsidies for all fossil fuels should be removed and an acknowledgement of the need for a “just transition” to a clean energy system. Nations are also “invited” to reduce methane emissions this decade, again the first time methane has been mentioned in a COP final agreement.
- **Climate finance and adaption:** In 2009, it was agreed that developing nations would receive at least \$100bn a year from public and private sources to help them cut emissions and cope with the impacts of the climate crisis. However, in 2019, it was found that only \$80bn had been made available, and the Glasgow Climate Pact urges developed countries to “fully deliver” the \$100bn goal through to 2025. The Glasgow Climate Pact also agrees to double the proportion of climate finance going towards adaptation following pressure from developing nations who argue that too much of climate finance is spent on funding emissions-cutting projects in middle-income countries that don’t need the funding.
- **Loss and damage:** The EU and the US reportedly managed to veto the expansion of the loss and damage finance facility from the final agreement. The facility originated at the Paris Agreement and was designed to provide financial assistance for developing countries to deal with environmental damage incurred as a result of climate change. Going into the negotiations, nations including China and the G77, which represents 134 developing and emerging economies, expressed frustration that no further financial commitments to combatting loss and damage had been made. Despite this lack of progress, the Pact does confirm that a “technical assistance facility” will be introduced to support loss and damage in relation to climate change in developing countries and will fall under the Santiago Network from the UNFCCC.
- **Carbon markets:** The Glasgow Climate Pact also resolves some key issues in Article 6 of the Paris Agreement, the section pertaining to carbon markets and how emissions reductions under NDCs can and should be accounted for. The final text states that carbon offsetting should rely on “real, verified and additional” emissions removal taking place from 2021 onward and there is a requirement for co-benefits in terms of adaptation and the economy, and for nations to put at least 5% of the proceeds into adaptation. Plans for a potential two-tier system, and to transfer existing forest credits into Article 6, were deleted from drafts, in a move most green groups have praised.
- **Reaffirming the Paris Agreement:** Prior to the summit, some nations opposed to stronger action had criticised the focus at COP26 on 1.5°C as “reopening the Paris agreement”, the main goal of which is to hold temperature rises “well below” 2°C above pre-industrial levels while “pursuing efforts” to limit rises to 1.5°C.

On the 23/24th of October 2014, the European Commission agreed the 2030 *Climate and Energy Policy Framework* (EC, 2014). The European Council endorsed a binding EU target of at least a 40% domestic reduction in greenhouse gas emissions by 2030 compared to 1990. The target will be delivered collectively by the EU in the most cost-effective manner possible, with the reductions in the EU Emissions Trading Scheme (ETS) and non-ETS sectors amounting to 43% and 30% by 2030 compared to

2005, respectively. Secondly, it was agreed that all Member States will participate in this effort, balancing considerations of fairness and solidarity. The policy also outlines an EU binding target of at least 27% for the share of renewable energy consumed in the EU in 2030.

European Commission Directive 2001/81/EC, the National Emissions Ceiling Directive (NECD), prescribes the same emission limits as the 1999 Gothenburg Protocol. It provides for national ceilings for emissions of sulphur dioxide (SO₂), nitrogen oxides (NO_x), volatile organic compounds (VOCs) and ammonia (NH₃). A national programme for the progressive reduction of emissions of these four transboundary pollutants has been in place since April 2005 (DEHLG, 2007a; 2004). Data available from the EU in 2010 indicated that Ireland complied with the emissions ceilings for SO₂, VOCs and NH₃, but failed to comply with the ceiling for NO_x (EEA, 2012).

Directive (EU) 2016/2284 on the reduction of national emissions of certain atmospheric pollutants and amending Directive 2003/35/EC and repealing Directive 2001/81/EC was published in December 2016. The Directive will apply the 2010 NECD limits until 2020 and establish new national emission reduction commitments, which will be applicable from 2020 and 2030, for SO₂, NO_x, non-methane VOCs, NH₃, PM_{2.5} and methane (CH₄). In relation to Ireland, 2020 – 2029 emission targets are for SO₂ (65% below 2005 levels), NO_x (49% reduction), VOCs (25% reduction), NH₃ (1% reduction) and PM_{2.5} (18% reduction). In relation to 2030, Ireland's emission targets are for SO₂ (85% below 2005 levels), NO_x (69% reduction), VOCs (32% reduction), NH₃ (5% reduction) and PM_{2.5} (41% reduction).

The following guidelines and legislative provisions relating to climate change aspects in EIA have been applied to this assessment:

- *Draft Guidelines on Information to be Contained in Environmental Impact Assessment Reports* (EPA, 2017);
- European Union (Planning & Development)(Environmental Impact Assessment) Regulations 2018 (SI No. 296 of 2018);
- Directive 2014/52/EU amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment;
- Building Regulations Technical Guidance Document L: Conservation of Fuel and Energy – Dwellings (Government of Ireland, 2021); and
- *National Energy and Climate Plan 2021 – 2030* (Department of Communications, Climate Action & Environment, 2021).

11.2.5 Construction Air Quality Assessment Methodology

The Institute of Air Quality Management (IAQM) *Guidance on the Assessment of Dust from Demolition and Construction* (2014) classifies demolition and construction sites according to the risk of impacts and to recommends the identification of mitigation measures that are appropriate to the risk. The main air quality impacts that may arise are:

- Dust deposition resulting in the soiling of surfaces;
- Visible dust plumes, which are evidence of dust emissions;
- Elevated PM₁₀ concentrations as a result of dust generating activities on site; and
- Increase in airborne particles and NO₂ from diesel fuelled site vehicles and plant.

The risk assessment considers the following site activities and their associated potential impacts:

- Demolition activities;

- Earthworks;
- Construction works; and
- Trackout (vehicle movements).

The risk assessment considers the following dust related impacts:

- Annoyance due to dust soiling;
- The risk to health from exposure to PM₁₀; and
- Harm to ecological receptors due to dust deposition.

The magnitude of the potential dust emission requires the scale of the works to be classified as small, medium or large, which are defined as follows:

Earthworks

- *Large*: site area >10,000 m²; potentially dusty soil prone to suspension (e.g. clays); >10 earth-moving vehicles operating simultaneously.
- *Medium*: site area 2,500 m² – 10,000m²; moderately dusty soil (e.g. silts); 5 – 10 earth-moving vehicles operating simultaneously.
- *Small*: site area <2,500m²; large grain size (e.g. sands); <5 earth-moving vehicles operating simultaneously.

The subject site is classified as a large area at >10,000 m².

Table 11.3 Risk of dust impacts during earthworks

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Low Risk

Construction Works

- Large: total building volume >100,000m³
- Medium: total building volume 25,000m³ – 100,000m³
- Small: total building volume <25,000m³

The subject site is classified as having a medium building volume: 25,000 – 100,000 m³.

Table 11.4 Risk of dust impacts during construction

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Low Risk

Trackout

- Large: >50 heavy goods vehicle (HGV) outward movements per day of potentially dusty clays on unsealed road >100m
- Medium: 10 – 50 HGV outward movements per day of potentially dusty clays on unsealed road 50 – 100 m
- Small: <10 HGV outward movements per day of potentially dusty clays on unsealed road >50 m

The subject site is classified as having a large volume of HGV: >50 per day.

Table 11.5 Risk of dust impacts due to trackout

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Low Risk

The dust risk assessment for soiling, health and ecology completed for each of the four aspects of dust emissions has been determined from the characteristics of the proposed development as detailed above. **Table 11.5** presents the dust risk for each aspect.

Table 11.6 Dust risk assessment to define site-specific mitigation measures

Sensitivity of Area High	Dust Emission Magnitude			
	Demolition	Earthworks	Construction	Trackout
Soiling	Low Risk	High Risk	High Risk	High Risk
Human health	Low Risk	High Risk	High Risk	High Risk
Ecology	Low Risk	Medium Risk	Medium Risk	Medium Risk

In order to reduce the risk that generated dusts and particulate matter as PM₁₀ may have on the receiving environment, an appropriately high degree of mitigation measures will be required for the duration of the construction phase.

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. This limit value can also be implemented with regard to potential dust impacts from the construction of the proposed development.

In relation to construction related traffic, air quality significance criteria are assessed on the basis of compliance with the appropriate standards air limit values, as per the Air Quality Standards Regulations 2011.

11.2.6 Ecological Assessment

For roads that pass within 2 km of a designated area of conservation (either Irish or European designation), Transport Infrastructure Ireland (TII) requires consultation with an Ecologist (TII, 2011). However, the TII guidance (2011) states that, in practice, the potential for impacts to an ecological site is highest within 200 m of the proposed road and when significant changes in annual average daily traffic (AADT) (i.e. >5%) occur.

TII's *Guidelines for Assessment of Ecological Impacts of National Road Schemes* (2009) and *Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities* (DEHLG, 2010) provide details regarding the legal protection of designated conservation areas.

If both of the following assessment criteria are met, an assessment of the potential for impacts on designated conservation areas due to nitrogen deposition shall be conducted:

- A European Site is located within 200 m of the proposed development; and
- A significant change in AADT flows (>5%) will occur.

There are no designated areas of conservation within 200 m of the proposed development site; therefore, an assessment of the impact of the proposed development on NO_x concentrations and nitrogen deposition is not required.

11.2.7 Operational Air Quality Assessment Methodology

Once operational, the proposed residential development may impact on air quality as a result of the requirements of new buildings to be heated and traffic movements associated with the development. Air quality significance criteria are assessed on the basis of compliance with the national air quality limit values, as per the Air Quality Standards Regulations 2011.

11.3 Description of the Receiving Environment

The existing site is predominantly comprised of undeveloped greenfield lands, with smaller areas of hardstanding and areas under construction / in use as a construction compound and storage area associated with the adjacent Bellingsmore residential development (planning refs. FW13A/0088(/E1); PL06F.243395), at Hollystown, Co, Dublin. The surrounding area includes various housing developments, retail and educational facilities. The site is located within c. 2 km of the greater Ballycoolin Industrial Area, which includes industry, logistics and commercial business parks.

11.3.1 Existing Air Quality

A site-specific short-term monitoring study was conducted at the site for nitrogen dioxide (NO₂), sulphur dioxide (SO₂) and benzene during August 2021. NO₂ and SO₂ were measured at the eastern and western site boundaries (A1 & A2) using a passive diffusion tube over a two-week period. **Figure 11.1** identifies the monitoring locations.

The monitoring locations were chosen in order to obtain short-term sample concentrations for the identified parameters from the principal sources of local pollution, i.e. vehicle exhaust emissions and building heating fossil fuel emissions.

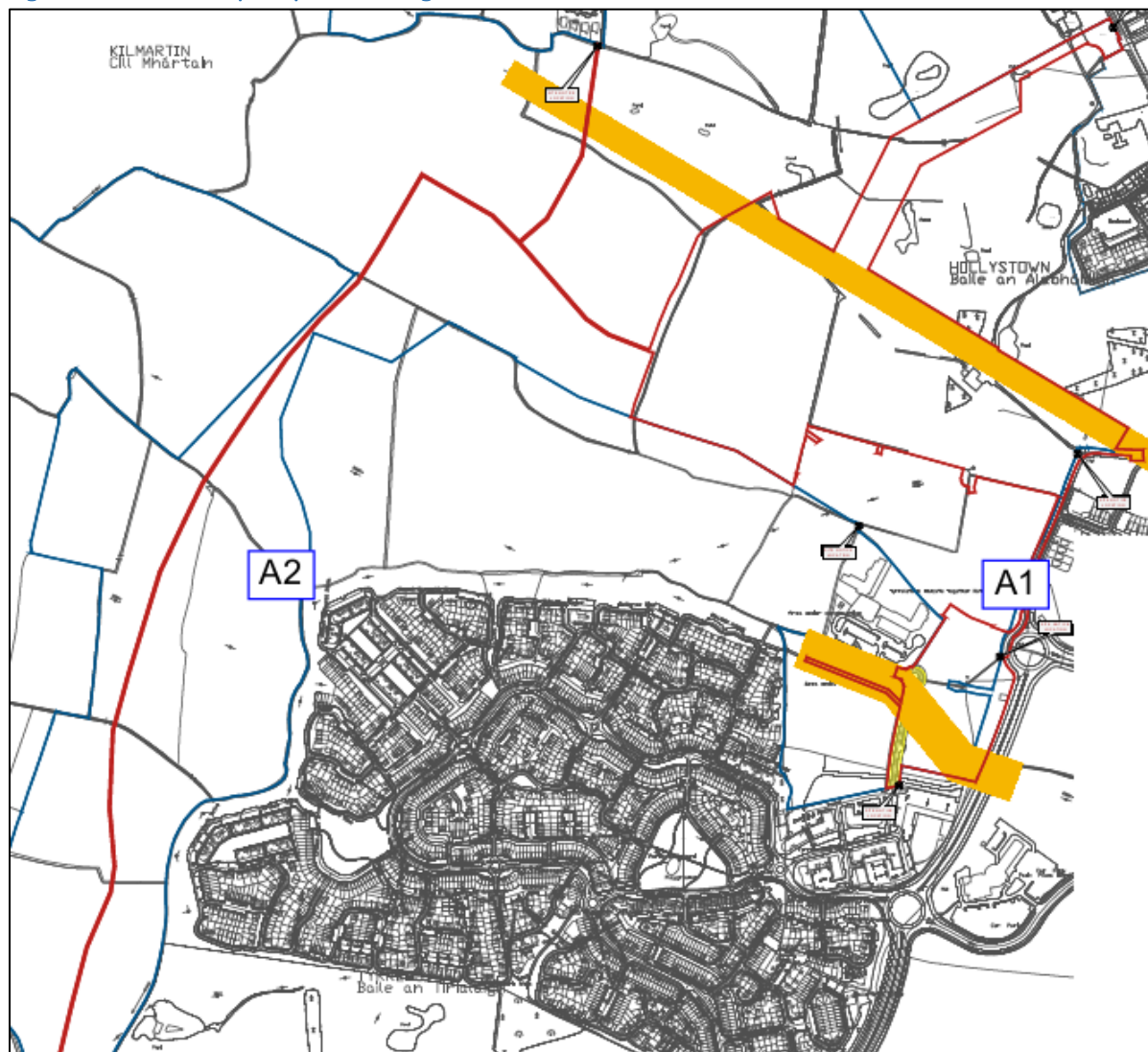
The survey was indicative only and results obtained cannot be used to demonstrate compliance with short-term or annual limit values detailed in **Table 11.1**, above. The survey does, however, aid in identifying the influence of sources in the vicinity of the proposed development site. The results from the baseline air quality surveys are presented in **Table 11.7**.

The concentrations of SO₂, NO₂ and benzene, toluene, ethylbenzene and xylene (BTEX) measured during the short-term measurement survey were significantly below their respective annual limit values and comparable with levels reported by the EPA. The air quality samples were analysed by Gradko International Ltd UK.

Table 11.7 Results of site air quality monitoring at the development site

Pollutant	Location A1: Western site boundary	Location A2: Eastern site boundary	Assessment criteria
Sulphur dioxide	<1.56 µg/m ³	<1.56 µg/m ³	125 µg/m ³ (as annual average)
Nitrogen dioxide	11.54 µg/m ³	12.62 µg/m ³	40 µg/m ³ (as annual average)
Benzene	1.78 µg/m ³	N/A	5 µg/m ³ (as annual average)

Figure 11.1 Air quality monitoring locations A1 & A2



Annual air quality monitoring programs have been undertaken in recent years by the EPA and Local Authorities. The most recent annual report on air quality, *Air Quality in Ireland 2019* (EPA, 2020), details the range and scope of monitoring undertaken throughout Ireland. This publication includes a number of Zone A monitoring locations, which would be comparable to the expected air quality at the subject site. The various Zone A air quality monitoring stations within Dublin provide a comprehensive range of air quality monitoring data sets, which have been selected as part of this assessment to describe the existing ambient air quality at the subject site.

11.3.1.1 Nitrogen Dioxide

Long term NO₂ monitoring was carried out at ten Zone A locations in 2019 (EPA, 2020). The NO₂ annual mean in 2019 for these sites ranged from 15 - 43 µg/m³ compared against the annual average limit of 40 µg/m³. The monitoring of NO₂ at St John Road in Dublin reported an exceedance (43µg/m³) of the EU Air Quality Annual Limit of 40µg/m³. The EPA report states that heavy road traffic along St John Road was the cause of the elevated concentrations of NO₂. The subject area in Hollystown is not equivalent to St Johns Road in terms of road traffic and thus NO₂ levels in the Hollystown Area would not be as high as those reported St Johns Road.

11.3.1.2 Sulphur Dioxide

The Air Quality Standards Regulations 2011 specify a daily limit value of 125 µg/m³ for SO₂ for the protection of human health. Long-term SO₂ monitoring was carried out at four Zone A locations in 2019 (EPA, 2020). The daily SO₂ means in 2019 for these sites ranged from 0.8 – 2.5 µg/m³. Therefore, 5-year long term averages were below the daily limit of 125 µg/m³. The annual mean SO₂ concentrations in Ireland have been declining since 2003. This trend is reflective in the shift in fuel choice across Ireland in both residential heating and the energy production sector.

11.3.1.3 Carbon Monoxide

The Air Quality Standards Regulations 2011 specify an 8-hour limit value (on a rolling basis) for the protection of human health of 10,000 µg/m³ for carbon monoxide (CO). Long-term CO monitoring was carried out at one Zone A location in 2019 (EPA, 2020). The 8-hour CO concentrations were 0.2 – 0.3 mg/m³, which is below the 8-hour limit value (on a rolling basis) of 10 mg/m³.

11.3.1.4 Particulate Matter PM₁₀

The Air Quality Standards Regulations 2011 specify a PM₁₀ limit value of 40 µg/m³ over a calendar year. Long-term PM₁₀ monitoring was carried out at thirteen Zone A locations in 2019 (EPA, 2020). The PM₁₀ annual mean in 2019 for these sites ranged from 11 – 19 µg/m³. Therefore, long term averages were below the annual average limit of 40 µg/m³.

11.3.1.5 Particulate Matter PM_{2.5}

The Air Quality Standards Regulations 2011 specify a PM_{2.5} limit value of 25 µg/m³ over a calendar year. Long-term PM_{2.5} monitoring was carried out at ten Zone A locations in 2019 (EPA, 2020). The PM_{2.5} average in 2019 for these sites ranged from 8 – 11 µg/m³. Therefore, long-term averages were below the target value 25 µg/m³.

Table 11.8 Summary of the 2019 air quality data obtained from Zone A area (EPA, 2020)

Pollutant	Regulation	Limit type	Limit value	EPA 2019 monitoring data
Nitrogen dioxide	2008/50/EC	Annual limit for protection of human health	40 µg/m ³	15 – 43* µg/m ³
Sulphur dioxide	2008/50/EC	Daily limit for protection of human health (not to be exceeded more than 3 times per year)	125 µg/m ³	0.8 – 2.5 µg/m ³
Carbon monoxide	2008/50/EC	8-hour limit (on a rolling basis) for protection of human health (Zone C)	10,000 µg/m ³	300 µg/m ³
Particulate matter (as PM ₁₀)	2008/50/EC	Annual limit for protection of human health	40 µg/m ³	11 – 19 µg/m ³
Particulate matter (as PM _{2.5})	2008/50/EC	Annual limit for protection of human health	25 µg/m ³	8 – 11 µg/m ³
Benzene	2008/50/EC	Annual limit for protection of human health	5 µg/m ³	< 0.21 µg/m ³

11.3.2 Description of Existing Climate

The EU's Effort Sharing Decision (ESD) 406/2009/EC1 addresses Ireland's GHG emissions, of which one of the biggest contributors is transport.

Long-term projected decrease in GHG emissions as a result of inclusion of new climate mitigation policies and measures that formed part of the National Development Plan (NDP). Implementation of these are classed as a “With Additional Measures scenario” for future scenarios. A change from generating electricity using coal and peat to wind power, and diesel vehicle engines to electric vehicle engines, are envisaged under this scenario.

Ireland is projected to cumulatively exceed its 2020 compliance obligations under the ESD by approximately 10 Mt CO₂eq under the “With Existing Measures” scenario and 9 Mt CO₂eq under the “With Additional Measures” scenario (EPA, 2019c).

The nearest synoptic meteorological station to the subject site is at Dublin Airport, which is located approximately 6 km east of the proposed development site and as such, long-term measurements of wind speed/direction and air temperature for this location are representative of prevailing conditions experienced at the subject site. Recent meteorological data sets for Dublin Airport were obtained from Met Éireann for the purposes of this assessment study.

11.3.2.1 Rainfall

Precipitation data from the Dublin Airport meteorological station for the period 2011 – 2020 indicate a mean annual total of about 762 mm. This is within the expected range for most of the eastern half of the Ireland, which has between 750 and 1000 mm of rainfall in the year.

11.3.2.2 Temperature

The annual mean temperature at Dublin Airport (2011 – 2020) is 9.5°C with a mean maximum of 15.3°C and a mean minimum of 4.0°C. Given the relatively close proximity of this meteorological station to the proposed development site, similar conditions would be observed. **Table 11.9** sets out meteorological data for Dublin Airport from 2011 – 2020.

11.3.2.3 Wind

Wind is of key importance for both the generation and dispersal of air pollutants. Meteorological data for Dublin Airport indicates that the prevailing wind direction in the Dublin area is from the west and southwest and blows northeast across the proposed development site. The mean annual wind speed in the Dublin area over the period 2011 – 2020 is 5.7 m/s.

Table 11.9 Meteorological data for Dublin Airport 2011 – 2020

Year	Period	Rainfall (mm)	Max. mean temperature (°C)	Min. mean temperature (°C)	Mean temperature (°C)
2011	Annual Mean	672	16.7	3.1	9.4
2012	Annual Mean	850	15.3	5.4	9.3
2013	Annual Mean	764	14.0	3.6	9.9
2014	Annual Mean	870	15.8	5.4	10.6
2015	Annual Mean	766	14.0	4.0	9.0
2016	Annual Mean	725	15.7	4.4	10.1
2017	Annual Mean	661	15.0	5.3	9.9
2018	Annual Mean	709	14.8	4.8	9.7
2019	Annual Mean	886	15.9	5.1	9.6
2020	Annual Mean	749	15.7	5.0	9.6
<i>Mean</i>		767	15.3	4.0	9.5

11.4 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 has the potential to generate short-term fugitive dust emissions and engine exhaust emissions associated with construction vehicles and plant. However, these emissions will be controlled by appropriate mitigation techniques and through the implementation of a Construction Air Quality Management and Monitoring Plan (**Appendix 11.1**) throughout the duration of the construction phase.

The construction phase will involve the removal of green space and trees from its current greenfield status to facilitate the development of a residential development. The development will include the replanting of trees appropriate to the local area.

The operational phase of the proposed development will see the functioning of modern, well insulated thermally efficient buildings. The proposed development has been designed to minimise the impact on climate, where possible, in line with Part L of the Building Regulations, and in reference to measures within the *National Mitigation Plan* (Department of Environment, Climate and Communications, 2017). The design of the residential units will ensure their operation will have a minimum impact on the receiving climate and that their design will withstand future potential extreme weather events associated with climate change.

The use of private vehicles associated with the development will increase exhaust emissions in the area, however with the increasing popularity of electric and hybrid vehicles together with the provision of EV Charging points throughout the development the impact on air quality and climate will be minimised.

The inclusion of climate friendly design and the promotion of more sustainable modes of transport such as public transport, cycling and walking will benefit climate in the long term.

11.5 Predicted Impacts of the Proposed Development

11.5.1 Construction Phase

Various elements of the construction phase of the proposed development have the potential to impact on the receiving environment, local ambient air quality and on human health. The likely potential impacts associated with the construction of the proposed development, prior to mitigation, are described in this section. The mitigation and monitoring measures are described in **Section 11.6**, and the residual impacts detailed in **Section 11.7**.

11.5.1.1 Air Quality

The construction phase will include the following aspects:

- Site enabling works
- Foundation construction
- Construction of buildings
- Mechanical & electrical installation
- Cladding and building fit-out
- Services installation and connections
- Landscaping, roads and footpaths

- Assessment of Compliance with Building Regulations (BCAR) and project handover

Enabling Works – Site Clearance

Works activities associated with the site set-up will be undertaken prior to construction works commencing in each sub-phase. The setting up of the site shall involve the construction of site security hoarding and site compounds, site offices, materials and waste storage areas and staff welfare facilities. These temporary activities will have a minimal potential to generate fugitive dust emissions or combustion gas emissions.

Site clearance, including structure demolition and ground excavation works, have the potential to generate fugitive wind-blown dust emissions during dry and windy weather, arising from the operation of mechanical plant, including excavators and trucks and the movement of these vehicles on exposed surfaces at the site.

With regard to the volume of demolition waste material generated during site clearance, there will be a requirement for HGV trucks to remove the material from the site. Trucks shall be loaded with material on-site by mechanical excavators and loading shovels, 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 shall also generate wind-blown dust emissions. Where dusty material is loaded onto exposed open trucks, fine dusts may be released as the truck travels along public roads.

Infrastructure and Building Works

During the construction phase, there will be extensive site works, involving construction machinery and construction activities on site, which have the potential to generate fugitive wind-blown dust emissions.

It is proposed that excavated rock shall be crushed on-site so that it can be re-used on site for construction purposes.

Construction equipment including generators and compressors will also give rise to diesel and petrol engine exhaust emissions.

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, site activities during the construction phase have the potential to impact local air quality, population and human health, and the local ecological environment, resulting in a ***short-term, negative, slight impact***.

11.5.1.2 Climate

During the construction phase, NO₂ and CO₂ will be released into the atmosphere as a result of the movement of construction vehicles and the use of construction plant, vehicles and generators.

The CO₂ emissions associated with the production of concrete are referred to as embodied carbon and together with the loss of an undeveloped greenfield site, the construction and operational phases will result in a net increase in CO₂ emissions over the baseline scenario of the undeveloped site. The development will however negate the presence of CO₂ and Methane emissions generated by livestock

herds and the use of industrially produced agricultural fertilisers on agricultural lands and on the former golf course.

The IAQM document *Guidance on the Assessment of Dust from Demolition and Construction* (2014) states that site traffic and plant is unlikely to make a significant impact on climate.

11.5.1.3 Human Health

With regard to the IAQM document *Guidance on the Assessment of Dust from Demolition and Construction* (2014), the sensitivities of local population to dust soiling and PM₁₀ and PM_{2.5} exposure in the local area may be classified as a High with regard to the volume of soils to be stripped to facilitate the development.

11.5.2 Operational Phase

11.5.2.1 Air Quality

The operation of the proposed buildings has the potential to have a ***neutral impact*** on local air quality as a result of the sustainable requirements for new buildings.

Traffic movements associated with the proposed development have been evaluated and assessed as part of the Transport Assessment prepared by DBFL, and submitted under separate cover as part of the planning application.

The results of the NO₂ impact have been determined using the UK DEFRA methodology, and a road NO₂ value of 1.91 µg/m³ has been determined, giving a total NO₂ value of 9.61 µg/m³. These values are below the Air Quality Standards Regulations 2011 40 µg/m³ limit value for the protection of human health and the 30 µg/m³ for the protection of vegetation. The impact will be ***long-term, localised, negative and imperceptible***.

11.5.2.2 Climate

The overall site area of the proposed development is c. 25.3 hectares, and will include open space, and landscaped areas. The proposed development includes the construction of buildings and roadways / hardstanding, which may have the potential effect of marginally raising localised air temperatures, especially in summer.

Motor vehicles are a major source of atmospheric emissions, which contribute to anthropogenic climate change. According to the Government's 2021 *Climate Action Plan*, climate change is predicted to contribute to the following negative trends:

- Rising sea-levels threatening land and particularly coastal infrastructure;
- Extreme weather, including more intense storms and rainfall affecting our land, coastline and seas;
- Further pressure on our water resources and food production systems, with associated impacts on river and coastal ecosystems;
- Increased likelihood and scale of river and coastal flooding;
- Greater political and security instability;
- Displacement of populations with increased numbers of climate refugees;
- Heightened risk of the arrival of new pests and diseases;
- Poorer water quality; and
- Changes in the timing of lifecycle events for plants and animals on land and in the oceans.

Therefore, the climate impact will be *long-term, negative and imperceptible*.

11.5.2.3 Human Health

It has been predicted that there will be an imperceptible impact on local air quality as a result of traffic movements associated with the proposed development. National and European Air Quality Standard limit criteria designed for the protection of human health will not be exceeded. Therefore, there will *no likely significant effects* on human health in relation to air quality during the operational phase.

11.6 Mitigation Measures

11.6.1 Construction Phase

The construction contractor will be responsible for ensuring that the Construction Air Quality Management and Monitoring Plan (**Appendix 11.1**) is implemented. The specific control and mitigation measures are as follows:

- Avoidance of unnecessary vehicle movements and manoeuvring, and limit speeds on site so as to minimise the generation of airborne dust.
- During dry periods, dust emissions from heavily trafficked locations (on and off-site) will be controlled by spraying surfaces with water.
- Hard surface roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads will be restricted to essential site traffic only.
- Re-suspension in the air of spillages material from trucks entering or leaving the site will be prevented by limiting the speed of vehicles within the site to 10 kmph and by use of a mechanical road sweeper.
- The overloading of tipper trucks exiting the site shall not be permitted.
- Road sweeping will be conducted to clean public road surfaces, as required.
- Where the likelihood of wind-blown fugitive dust emissions is high and during dry weather conditions, dusty site surfaces will be sprayed by a mobile tanker bowser.
- Exhaust emissions from vehicles operating within the construction site, including trucks, excavators, diesel generators or other plant equipment, will be controlled by the contractor by ensuring that emissions from vehicles are minimised by routine servicing of vehicles and plant, rather than just following breakdowns; the positioning of exhausts at a height to ensure adequate local dispersal of emissions, the avoidance of engines running unnecessarily and the use of low emission fuels.
- All plant not in operation shall be turned off and idling engines shall not be permitted for excessive periods.
- Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water sprays will be used as required if particularly dusty activities are necessary during dry or windy periods.
- Where drilling or pavement cutting, grinding or similar types of stone finishing operations are taking place, measures to control dust emissions will be used to prevent unnecessary dust emissions by the erection of wind breaks or barriers. All concrete cutting equipment shall be fitted with a water dampening systems, if required.

11.6.2 Operational Phase

The following mitigation measures shall apply to the operational phase:

- All residential units shall be designed and constructed in accordance with the Government publication, *Building Regulations: Technical Guidance Document L 2021: Conservation of Fuel and Energy – Dwellings* (2021).
- U-values for floor and roof will exceed the building regulation backstops.

11.7 Residual Impacts

11.7.1 Construction Phase

Various elements associated with the construction phase of the proposed development have the potential to impact local ambient air quality, human health and climate. However, the potential construction phase impacts shall be mitigated and monitored to ensure there is no significant adverse impact on ambient air quality for the duration of all construction phase works. It is predicted that the construction phase of the development will not generate air emissions that would have a significant adverse impact on local ambient air quality or on local human health or on the local micro-climate or the wider macro-climate.

Table 11.10, below, summarises the identified likely residual effects of the proposed development during the construction phase, i.e. post- application of mitigation measures.

Table 11.10 Summary of construction phase residual effects

	Quality	Significance	Extent	Probability	Duration	Type
Air quality	Negative	Slight	Local	Likely	Short-Term	Residual
Climate	Negative	Imperceptible	Global	Likely	Short-Term	Residual

11.7.2 Operational Phase

Sustainable design features that are incorporated into the design of all residential units will ensure that the operational phase of the proposed development will not have a significant adverse impact on human health (in relation to air quality and climate), local air quality or on local or global climate patterns. The residential units will be designed to ensure that they can withstand the potential changes in climate, which may generate more extreme and prolonged meteorological events in the future.

Fossil fuel combustion gas emissions including carbon dioxide, sulphur dioxide, nitrogen oxides, carbon monoxide and hydrocarbon particulate emissions, will be slight and will not have a significant adverse impact on the existing ambient air quality in the vicinity of the proposed development site.

Motor vehicles are a major source of atmospheric emissions which contribute to climate change; however, vehicle exhaust emissions generated from vehicles associated with the proposed development will have a slight impact on the macroclimate, given the scale of the proposed development, predicted traffic volumes, and modern technological developments in cleaner and more efficient vehicle engines and electric vehicles.

To promote more sustainable mobility, and thereby reduce the climate impact of the operational phase of the proposed development, electric vehicle charging infrastructure shall be installed in curtilage parking spaces (meaning they are ready to be adapted as EV charging points) and secure cycle parking shall be provided.

The development has been designed to provide thermally efficient buildings, which will reduce the consumption of fossil fuels and overall energy demand within each individual dwelling. This will reduce the impact the operational phase of the development will have on the micro- and macroclimate.

Thermally rated window sets will reduce the potential future impacts that the external climate will have in terms of wind and changing temperatures on the internal environment within the residential units. This will ensure the units are thermally efficient thus reducing the use of fossil fuels leading to a reduction of the impact on the micro and macro climate.

Table 11.15 Summary of operational phase residual effects

	Quality	Significance	Extent	Probability	Duration	Type
Air quality	Negative	Imperceptible	Local	Likely	Long-Term	Residual
Climate	Negative	Imperceptible	Global	Likely	Long-Term	Residual

11.8 ‘Do-Nothing’ Scenario

Should the subject development not proceed, it is likely that another residential development would be applied for in the future as the subject site is zoned for residential development. Should the site remain as is, livestock, when present, will continue to emit CO₂ and methane.

11.9 Interactions

The principal interactions between Air Quality and Climate; Population & Human Health (Chapter 7); Biodiversity (Chapter 8); Land, Soils, Geology & Hydrogeology (Chapter 9) and Traffic & Transportation (Chapter 16); have been addressed comprehensively in this chapter and, where relevant, in the corresponding specialist EIAR chapters as listed.

11.10 Cumulative Impacts

The local area in which the subject development is located has a number of existing and permitted developments which may have a potential cumulative short-term construction impact and a long-term operational impact.

Should other local sites be constructed during the construction phase of the subject site, there will be an increase in fugitive dust emissions and construction plant and equipment engine emissions of hydrocarbons, combustion gases (NO_x, CO, CO₂) and particulates in the local area.

If all permitted developments are constructed and become operational in the future, there will be an increase in emissions to atmosphere from associated vehicle movements.

The predicted residual, cumulative effects on air quality and climate are summarised in **Table 11.16**, below.

Table 11.16 Summary of cumulative residual air quality and climate effects

	Quality	Significance	Extent	Probability	Duration	Type
Air quality	Negative	Not significant	Local	Likely	Long-term	Cumulative
Climate	Negative	Not significant	Global	Likely	Long-term	Cumulative

11.11 References

- Air Quality Regulations 2011, SI 180 of 2011
- European Union Directive (2008/50/EC).
- German Federal Government Technical Instructions on Air Quality Control - TA Luft 2002
- German Standard Method for determination of dust deposition rate, VDI 2129.
- Greater London Authority – The Control of dust emissions from construction and demolition Best Practice Guidelines, Nov 2006.

- Transport Infrastructure Ireland (TII) 2011 Guidelines for the Treatment of Air Quality during the Planning and Construction of National Road Schemes Revision 1.
- The Irish Building Regulations Technical Guidance Document L – Conservation of Fuel & Energy – Dwellings
- EPA Air Quality in Ireland
- WHO Air Quality Guidelines, 2006
- UK Highways Agency Design Manual for Roads and Bridges, 2007
- Institute of Air Quality Management – Guidance on the assessment of dust from demolition and construction 2016

12 Noise & Vibration

12.1 Introduction

The following chapter presents an assessment of the impacts of the proposed mix use development at Hollystown, 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.

Noise and vibration will be considered in terms of two aspects. The first is the outward effect of the development (i.e. the potential effect of the buildings and commercial activities on existing sensitive receptors in the study area), and the second is the inward effect of the existing noise and vibration sources on the development itself. A full development description is included in Chapter 5 of this Environmental Impact Assessment Report (EIAR).

This chapter has been prepared by Dr. Aoife Kelly, Senior Acoustic Consultant at AWN Consulting Ltd. Technical reviews have been completed by Lorraine Guerin, Environmental Consultant at Brady Shipman Martin; and Thomas Burns, Partner at Brady Shipman Martin. Refer to **Table 1.3** in Chapter 1 (Introduction) for qualifications of authors and reviewers.

12.2 Methodology

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 expected baseline noise environment has been carried out based on available noise mapping, and historical noise monitoring 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 the most NSLs surrounding the development site;
- An assessment has been completed of potential cumulative impacts that may arise as a result of the proposed development and other existing or proposed plans and projects;
- 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 exiting ambient noise levels in the absence of construction noise. This then sets a threshold noise value that, if exceeded at this location, indicates a potential significant noise impact is associated with the construction activities.

This document sets out guidance on permissible noise levels relative to the existing noise environment.

Table 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})	Threshold value, in decibels (dB)		
	Category A ⁵¹	Category B ⁵²	Category C ⁵³
Night-time (23:00 to 07:00hrs)	45	50	55
Evenings and weekends ⁵⁴	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.

Fixed Limits

BS 5228-1:2009+A1:2014 gives several examples of acceptable limits for construction or demolition noise, the most simplistic being based upon the exceedance of fixed noise limits. For example, paragraph E.2 states: -

“Noise from construction and demolition sites should not exceed the level at which conversation in the nearest building would be difficult with the windows shut.”

Paragraph E.2 goes on to state: -

⁵¹ Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are less than these values.

⁵² Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are the same as category A values.

⁵³ Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than category A values.

⁵⁴ 19:00 – 23:00 weekdays, 13:00 – 23:00 Saturdays and 07:00 – 23:00 Sundays.

“Noise levels, between say 07.00 and 19.00 hours, outside the nearest window of the occupied room closest to the site boundary should not exceed: -

70 decibels (dBA) in rural, suburban areas away from main road traffic and industrial noise;

75 decibels (dBA) in urban areas near main roads in heavy industrial areas”.

Proposed Threshold Levels for Noise

Taking into account the proposed documents outlined above and making reference to the baseline noise environment monitored around the development site (see **Section 12.3.4**), BS 5228-1:2009+A1:2014 has been used to inform the assessment approach for construction noise, in line with the ABC method.

Interpretation of the Construction Noise Levels (CNL)

In order to assist with interpretation of CNL, **Table 12.2** includes guidance as to the likely magnitude of impact associated with construction activities, relative to the threshold value. This guidance is taken from Table 3.16 of *DMRB: Noise and Vibration* (UKHA 2020) and adapted to include the EPA 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 CNL	Slight to Moderate	
Moderate	Above CNL and below or equal to CNL +5 dB	Moderate to Significant	
Major	Above CNL +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 Table 3.17 of *DMRB: Noise and Vibration* (UKHA 2020).

Table 12.3 Likely effect associated with change in traffic noise level – construction noise (DMRB 2020)

Increase in Traffic Noise Level (dB)	Magnitude of Impact	Duration
<1.0	Negligible	>10 days/nights over 15 consecutive day/nights & >40 days over 6 consecutive months
1.0 – 2.9	Minor	
3 – 4.9	Moderate	
<5.0	Major	

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.

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 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.

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. At higher frequencies, the limit values for transient vibration within Table B.2 of BS5228-2:2009+A1:2014 will apply, with similar reductions applied for continuous vibration and those for protected structures

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
Unreinforced or light framed structures. Residential or light commercial-type buildings	15 mm/s	7.5 mm/s
Protected and Historic Buildings ⁵⁵	6 – 15 mm/s	3 – 7.5 mm/s
Identified Potentially Vulnerable Structures and Buildings with Low Vibration Threshold	3 mm/s	

As per BS5228-2:2009+A1:2014, below a frequency of 4 Hz where a high displacement is associated with a relatively low component PPV, a maximum displacement of 0.6 mm (zero to peak) should be used.

⁵⁵ The relevant threshold value to be determined on a case by case basis. Where sufficient structural information is unavailable at the time of assessment, the lower value within the range will be used.

Human Perception

People are sensitive to vibration stimuli at levels orders of magnitude below those which have the potential to cause any cosmetic damage to buildings. There are no current standards that provide guidance on typical ranges of human response to vibration in terms of PPV for continuous or intermittent vibration sources.

BS5228-2:2009+A1:2014 provides a useful guide relating to the assessment of human response to vibration in terms of PPV. Whilst the guide values are used to compare typical human response to construction works, they tend to relate closely to general levels of vibration perception from other general sources.

Table 12.5 below summarises the range of vibration values and the associated potential effects on humans.

Table 12.5 Guidance on effects of human response to PPV magnitudes

Vibration level, PPV	Effect
0.140 mm/s	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies. At lower frequencies people are less sensitive to vibration.
0.3 mm/s	Vibration might be just perceptible in residential environments.
1 mm/s	It is likely that a vibration level of this magnitude in residential environments will cause complaint.
0.140 mm/s	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies. At lower frequencies people are less sensitive to vibration.

Vibration typically becomes perceptible at around 0.15 to 0.3 mm/s and may become disturbing or annoying at higher magnitudes. However, higher levels of vibration are typically tolerated for single events or events of short-term duration, particularly during construction projects and when the origin and or the duration of vibration is known. For example, piling can typically be tolerated at vibration levels up to 2.5 mm/s if adequate public relations are in place, or up to 12 mm/s during blasting, when advance warning is given and timeframes are known. These values refer to the day-time periods only. During surface construction works (piling and ground breaking, etc.) the vibration limits set within **Table 12.5** would be perceptible to building occupants and have the potential to cause subjective effects. The level of effect is, however, greatly reduced when the origin and time frame of the works are known and limit values relating to structural integrity are adequately communicated. In this regard, the use of clear communication and information circulars relating to planned works, their duration and vibration monitoring can significantly reduce vibration effects to the neighbouring properties.

Interpretation of the Human Response to Vibration

In order to assist with interpretation of vibration thresholds, **Table 12.6** presents the significance table relating to potential impacts to building occupants during construction, based on guidance from BS5228-2:2009+A1:2014.

Table 12.6 Guidance on effects of human response to PPV magnitudes

Criteria	Impact Magnitude	Significance Rating
≥10 mm/s PPV	Very High	Very Significant
≥1 mm/s PPV	High	Moderate to Significant

Criteria	Impact Magnitude	Significance Rating
≥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 Noise Impacts

The main potential source of outward noise from the proposed development will relate to traffic flows to and from the development site onto the public roads and activities from vehicular movements on site, including car park, etc. There will also be a variety of electrical and mechanical plant required to service the development. The relevant guidance documents used to assess potential operational noise and vibration impacts are summarised in the following sections.

Change in Traffic Noise Levels

In the absence of any Irish guidelines or standards describing the effects associated with changes in road traffic noise levels, reference has been made to the *DMRB Noise and Vibration* (UKHA 2020). This document provides magnitude rating tables relating to changes in road traffic noise. The document suggests that, during the year of opening, the magnitude of impacts between the Do Minimum and the Do Something scenarios are likely to be greater compared to the longer term period (fifteen years post-opening), when people become more habituated to the noise level change. It shows that small changes in noise levels are not normally noticeable, whereas an increase of 10 dB would be described as a doubling of loudness. In summary, the assessment looks at the impact with and without development at the nearest noise sensitive locations.

Table 12.7 Likely impact associated with short-term change in traffic noise level (DMRB 2020)

Change in Noise Level (dB L _{A10})	Short to medium-term magnitude	EPA criteria magnitude of impact
<1.0	Negligible	Imperceptible
1.0 to 2.9	Minor	Not Significant
3 – 4.9	Moderate	Significant
>5.0	Major	Significant

Table 12.8 Likely impact associated with long-term change in traffic noise level (DMRB 2020)

Change in Noise Level (dB L _{A10})	Subjective Reaction	Long-Term Term Magnitude	EPA Classification Magnitude of Impact
< 3.0	Barely Perceptible	Negligible	Not Significant
3 – 4.9	Perceptible	Minor	Slight
5 – 9.9	Up to a doubling of loudness	Moderate	Moderate
10+	More than a doubling of loudness	Major	Significant - Profound

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.

Plant Noise

Once a development of this nature becomes fully operational, a variety of electrical and mechanical plant will be required to service the development. Most of this plant will be capable of generating noise to some degree. Some of this plant may operate 24 hours a day, and hence would be most noticeable during quiet periods (i.e. overnight). Noisy plant with a direct line-of-sight to noise sensitive properties would potentially have the greatest effect. Plant contained within plant rooms has the least potential for impact, once consideration is given to appropriate design of the space.

The following wording would be considered typically suitable for a planning condition related to operational noise (plant) associated with a development of this nature: -

“Noise levels from the Proposed Development should not be so loud, so continuous, so repeated, of such duration or pitch or occurring at such times as to give reasonable cause for annoyance to a person in any premises in the neighbourhood or to a person lawfully using any public space. In particular the rated noise levels from the Proposed Development shall not constitute reasonable grounds for complaint as provided for in B.S. 4142. Method for rating industrial noise affecting mixed residential and industrial area.

Reason: In order to ensure a satisfactory standard of development, in the interests of residential amenity.”

The typical planning condition outlined above related to noise emissions from mechanical plant items makes reference to the British Standard BS 4142: 2014+A1:2019: *Methods for Rating and Assessing Industrial and Commercial Sound*. This document is the industry standard method for analysing building services plant noise emissions to residential NSLs and is the document used by Fingal County Council in their standard planning conditions and also in complaint investigations.

BS 4142 describes methods for rating and assessing sound of an industrial and/or commercial nature. The methods described in this British Standard use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident.

For an appropriate BS 4142 assessment, it is necessary to compare the measured external background noise level (i.e. the $L_{A90,T}$ level measured in the absence of plant items) to the rating level ($L_{Ar,T}$) of the various plant items, when operational. Where noise emissions are found to be tonal, impulsive in nature or irregular enough to attract attention, BS 4142 also advises that a penalty be applied to the specific level to arrive at the rating level.

The subjective method for applying a penalty for tonal noise characteristics outlined in BS 4142 recommends the application of a 2 dB penalty for a tone which is just perceptible at the NSL, 4 dB where it is clearly perceptible, and 6 dB where it is highly perceptible.

The following definitions, as discussed in BS 4142, are summarised below: -

“ambient noise level, $L_{Aeq,T}$ ” is the noise level produced by all sources including the sources of concern, i.e. the residual noise level plus the specific noise of mechanical plant, in terms of the equivalent continuous A-weighted sound pressure level over the reference time interval [T].

“residual noise level, $L_{Aeq,T}$ ”	is the noise level produced by all sources excluding the sources of concern, in terms of the equivalent continuous A-weighted sound pressure level over the reference time interval [T].
“specific noise level, $L_{Aeq,T}$ ”	is the sound level associated with the sources of concern, i.e. noise emissions solely from the mechanical plant, in terms of the equivalent continuous A-weighted sound pressure level over the reference time interval [T].
“rating level, $L_{Ar,T}$ ”	is the specific sound level plus any adjustments for the characteristic features of the sound (e.g. tonal, impulsive or irregular components);
“background noise level, $L_{A90,T}$ ”	is the sound pressure level of the residual noise that is exceeded for 90% of the time period T.

If the rated plant noise level is +10 dB or more above the pre-existing background noise level, then this indicates that complaints are likely to occur and that there will be a significant adverse effect. A difference of around +5 dB is likely to be an indication of an adverse effect, depending on the context.

The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse effect or a significant adverse effect. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low effect.

It is important to note that cumulative plant noise levels from the proposed development site must be designed so as to meet the relevant noise criteria set at a given sensitive receptor location.

Internal Noise at Receivers within the Development

To ensure there is no adverse impact on the future inhabitants of the proposed development itself, it is appropriate to refer to internal noise targets derived from BS 8233: 2014: *Guidance on Sound Insulation and Noise Reduction for Buildings*. The recommended indoor ambient noise levels are set out in **Table 12.9** and are based on annual average data; that is to say, they omit occasional events where higher intermittent noisy events may occur.

Table 12.9 Professional practice guidance on planning and noise (ProPG) internal noise levels (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 $L_{Amax,T}$ ⁵⁶

For the purposes of this study, it is appropriate to derive external assessment criteria based on the internal criteria noted in the Table above. This is done by factoring in the degree of noise reduction afforded by a partially open window. This is nominally deemed to be 15 dB.

⁵⁶ The document comments that the internal $L_{Amax,T}$ noise level may be exceeded no more than 10 times per night without a significant impact occurring.

Based on the guidance outlined the BS8233 standard, the following external noise levels would be considered reasonable in order to achieve suitable internal noise levels within the nearest residential properties:

- Daytime (07:00 to 23:00 hrs): 55 dB $L_{Aeq,15mins}$
- Night-time (23:00 to 07:00 hrs): 45 dB $L_{Aeq,15mins}$

Entertainment Noise Breakout

There is no Irish Standard or legislative guidance regarding the assessment of noise nuisance from entertainment source, e.g. music. However, it is typical for the local authority to apply a planning condition which would specify a noise criterion relative to the existing noise levels and ensure that the proposed development would have no significant impact on the nearest sensitive locations.

In the case of the proposed development, potential sources of entertainment noise include communal amenity spaces (residential) and food & beverage units.

The UK Institute of Acoustics (IOA) document *Good Practice Guide on the Control of Noise from Pubs and Clubs* (March 2003) contains recommendations for acoustic design criteria. This document, however, does not contain any objective assessment methods for music noise but defines what is considered to be inaudible music breakout as follows: -

“Noise is considered to be inaudible when it is at low enough level such that it is not recognisable as emanating from the source in question and it does not alter the perception of the ambient noise environment that would prevail in the absence of the source in question.”

Whilst a subjective assessment of audibility will identify the likelihood of a noise nuisance, it is considered prudent to assess any noise complaint on an objective basis with respect to noise. In order to apply an objective criterion to allow for a structured analysis, we propose that the following criterion is adopted for the assessment of the entertainment noise from the proposed development: -

“The $L_{Aeq,5min}$ level measured at the nearest noise sensitive location, with entertainment taking place, shall show no increase when compared with the representative $L_{Aeq,5min}$ level measured from the same position, under the same conditions and during a comparable period with no entertainment taking place; and

The $L_{eq,5min}$ level in the 63 Hz and 125 Hz octave bands at the nearest noise sensitive location, with entertainment taking place, should show no increase when compared with the representative $L_{eq,5min}$ level in the 63 Hz and 125 Hz octave bands measured from the same position, under the same conditions and during a comparable period with no entertainment taking place.”

This criterion is based on the guidance contained within the *Draft IOA Code of Practice Guide on the Control of Noise from Pubs and Clubs* (November 1999). This is considered to be an appropriate guidance document for the control of music noise breakout.

Fingal Development Plan Policy on Aircraft Noise

The members of Fingal County Council resolved to adopt Variation No. 1 of the *Fingal Development Plan 2017 – 2023* at a Council meeting on 9 December 2019. Variation No. 1 outlines revised noise zones and policy objectives in relation to aircraft noise from Dublin Airport.

Four noise zones (Zones A to D) are now indicated, representing potential site exposure to aircraft exposure. The Council will actively resist residential development within Zone A, and resist in Zone 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 12.10** outlines the objectives to be adhered to by applicants for developments in each zone.

Table 12.10 Dublin Airport Noise Zones

Zone	PNE ⁵⁷	Objective
D	<p>≥ 50 dB and < 54 dB L_{Aeq, 16hr} and ≥ 40 dB and < 48 dB L_{night}</p>	<p>To identify noise sensitive developments which could potentially be affected by aircraft noise and to identify any larger residential developments in the vicinity of the flight paths serving the Airport in order to promote appropriate land use and to identify encroachment.</p> <p><i>All noise sensitive development within this zone is likely to be acceptable from a noise perspective. An associated application would not normally be refused on noise grounds, however where the development is residential-led and comprises non-residential noise sensitive uses, or comprises 50 residential units or more, it may be necessary for the applicant to demonstrate that a good acoustic design⁵⁸ has been followed. Applicants are advised to seek expert advice.</i></p>
C	<p>≥ 54 dB and < 63 dB L_{Aeq, 16hr} and ≥ 48 dB and < 55 dB L_{night}</p>	<p>To manage noise sensitive development in areas where aircraft noise may give rise to annoyance and sleep disturbance, and to ensure, where appropriate, noise insulation is incorporated within the development.</p> <p><i>Noise sensitive development in this zone is less suitable from a noise perspective than in Zone D. A noise assessment must be undertaken in order to demonstrate good acoustic design has been followed. The noise assessment must demonstrate that relevant internal noise guidelines will be met. This may require noise insulation measures⁵⁹. An external amenity area noise assessment must be undertaken where external amenity space is intrinsic to the development's 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 are strongly advised to seek expert advice.</i></p>
B	<p>≥ 54 dB and < 63 dB L_{Aeq, 16hr} and ≥ 55 dB L_{night}</p>	<p>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.</p> <p><i>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 development's 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.</i></p>

⁵⁷ Indication of potential noise exposure during airport operations.

⁵⁸ 'Good Acoustic Design' means following the principles of assessment and design as described in *ProPG: Planning & Noise – New Residential Development*, May 2017

⁵⁹ Internal and External Amenity and the design of noise insulation measures should follow the guidance provided in British Standard BS8233:2014 'Guidance on sound insulation and noise reduction for buildings'

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Zone	PNE ⁵⁷	Objective
A	≥ 63 dB L _{Aeq, 16hr} and/or ≥ 55 dB L _{night}	To resist new provision for residential development and other noise sensitive uses. <i>All noise sensitive developments within this zone may potentially be exposed to high levels of aircraft noise, which may be harmful to health or otherwise unacceptable. The provision of new noise sensitive developments will be resisted.</i>

Noise Action Plan for Dublin Airport 2019 – 2023

The *Noise Action Plan for Dublin Airport* (2019 – 2023) was published by Fingal County Council on 19 December 2019. The plan outlines the following objective in relation to aircraft noise:

“to avoid, prevent and reduce, where necessary, on a prioritised basis the effects due to long term exposure to aircraft noise, including health and quality of life through implementation of the International Civil Aviation Organisation’s ‘Balanced Approach’ to the management of aircraft noise as set out under EU Regulation 598/2014”

Whilst the plan outlines a range of measures to achieve this objective, the document is focussed primarily on the outward impact of the airport and aircraft noise and considers planning only in the context of outward impact such as the encroachment of airport activities on existing uses.

Discussion on the consideration of the inward noise impacts on residential amenity is considered in more detail in the *Dublin Agglomeration Noise Action Plan 2019 – 2023*.

Dublin Agglomeration Noise Action Plan 2019 – 2023

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.”*

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.

Residential Inward Noise Impact Assessment

The *Professional Practice Guidance on Planning & Noise* (ProPG) document was published in May 2017. The document was prepared by a working group comprising members of the Association of Noise Consultants (ANC), the Institute of Acoustics (IOA) and the Chartered Institute of Environmental Health (CIEH). Although not a government document, since adopted it has been generally considered as a best practice guidance and has been widely adopted in the absence of equivalent Irish guidance.

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: *Guidance on Sound Insulation and Noise Reduction for Buildings*. The recommended indoor ambient noise levels are set out in **Table 12.9** above and are based on annual average data; that is to say, they omit occasional events where higher intermittent noisy events may occur.

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: -

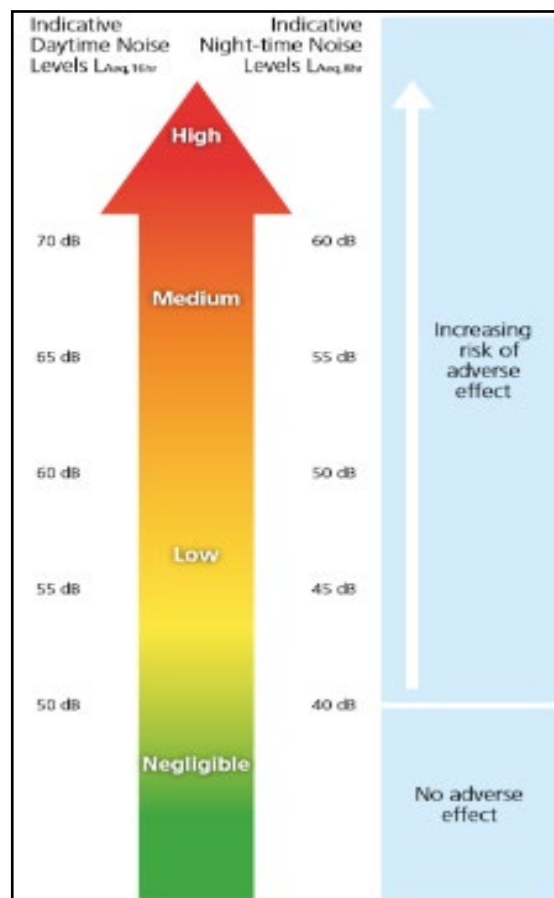
“The acoustic environment of external amenity areas that are an intrinsic part of the overall design should always be assessed and noise levels should ideally not be above the range 50 – 55 dB $L_{Aeq,16hr}$.”

World Health Organisation Environmental Noise Guidelines for Europe

The World Health Organisation (WHO) have published in October 2018 *Environmental Noise Guidelines for the European Region*. The objective of these guidelines is to provide recommendations for protecting human health from exposure to environmental noise from transportation, wind farm and leisure sources of noise. The guidelines present recommendations for each noise source type in terms of L_{den} and L_{night} levels above which there is risk of adverse health risks.

However, it should be noted that the WHO guideline values referred to here are recommended to serve as the basis for a policy-making process to allow evidence-based public health orientated recommendations. They are not intended to be noise limits and the WHO document states the following regarding the implementation of the guidelines:

Figure 12.1 ProPG Stage 1 - Initial Noise Risk Assessment



“The WHO guideline values are evidence-based public health-oriented recommendations. As such, they are recommended to serve as the basis for a policy-making process in which policy options are considered. In the policy decisions on reference values, such as noise limits for a possible standard or legislation, additional considerations – such as feasibility, costs, preferences and so on – feature in and can influence the ultimate value chosen as a noise limit. WHO acknowledges that implementing the guideline recommendations will require coordinated effort from ministries, public and private sectors and nongovernmental organizations, as well as possible input from international development and finance organizations. WHO will work with Member States and support the implementation process through its regional and country offices.”

It is, therefore, not intended to refer to the WHO guidelines in an absolute sense as part of this assessment and it will be a decision for national and local policy makers to adopt the WHO guidelines and propose noise limits for use.

12.2.2.2 Criteria for Assessing Operational Vibration Impacts

There are no noteworthy sources of vibration associated with the operational stage, therefore vibration criteria have not been specified.

12.3 Baseline Environment

12.3.1 Site Area Description

The proposed development comprises of 25.3 ha in a predominantly greenfield site. A full description of the development is provided in Chapter 5: Description of the Proposed Development. The site is located east of the R121 and the north of the existing Tyrrelstown Local Centre.

12.3.2 Receptors

The Site 2/3 section of the site is bounded to the north by open space on the former Hollystown Golf Course, to the east by Hollywoodrath residential estate, to the south by the Bellingsmore residential estate and a secondary school, and by open space to the west and southwest. The Kilmartin Local Centre section of the site is bound to the north by the Bellingsmore residential estate, to the east by the R121, to the south by Tyrrelstown Local Centre, which comprises a mix of retail and commercial units with office and residential above, and to the west by primary schools and residential developments.

The existing noise and vibration environment across the development site and in the vicinity of the nearest existing NSLs is dominated by air traffic as it lies beneath a Dublin Airport flight path and is also influenced by R121 road traffic.

At Site 2/3, the nearest existing residential NSLs are those located at Bellingsmore residential estate to the south, Hollywoodrath residential estate to the east and Redwood residential estate to the north. The nearest school NSLs to Site 2/3 are those located at the Le Chéile secondary school to the south.

At Site 2/3, the nearest permitted / proposed residential NSLs are those located in a permitted residential estate to the northeast of the site boundary at the Hollywoodrath Road (R121) (FW21A/0042).

At Kilmartin Local Centre, the nearest existing residential NSLs are those located at Bellingsmore residential estate to the north, Bellgree residential estate to the west and residential apartments

located above Tyrrelstown Local Centre to the south. The nearest childcare / school NSLs to the Kilmartin Local Centre are located at Tyrrelstown Educate Together national school to the northwest and Tyrrelstown Montessori to the southwest. The closest religious building is Blanchardstown Methodist Church to the southwest.

At Kilmartin Local Centre, commercial NSLs include Carlton Hotel Blanchardstown and Lidl, which are located beyond the northeast and south site boundaries, respectively.

12.3.3 Desk-based Study of Published Data

12.3.3.1 EPA Noise Maps

The following noise maps have been referred to when assessing the baseline noise environment:

- Round 3 Noise Maps for Roads – Dublin Agglomeration, and;
- Round 3 Noise Maps for Airports – Dublin Airport.

The above noise maps are provided for the overall day / evening / night period in terms of L_{den} , and for the night-time period in terms of L_{night} . All data has been taken from the [EPA Maps](#) resource.

Figures 12.2 to 12.5 present the predicted noise levels across the development site for road and air traffic in terms of L_{den} and L_{night} .

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Figure 12.2 L_{den} road traffic noise levels⁶⁰



⁶⁰ Navy dashed line indicative of main development areas, not proposed development boundary

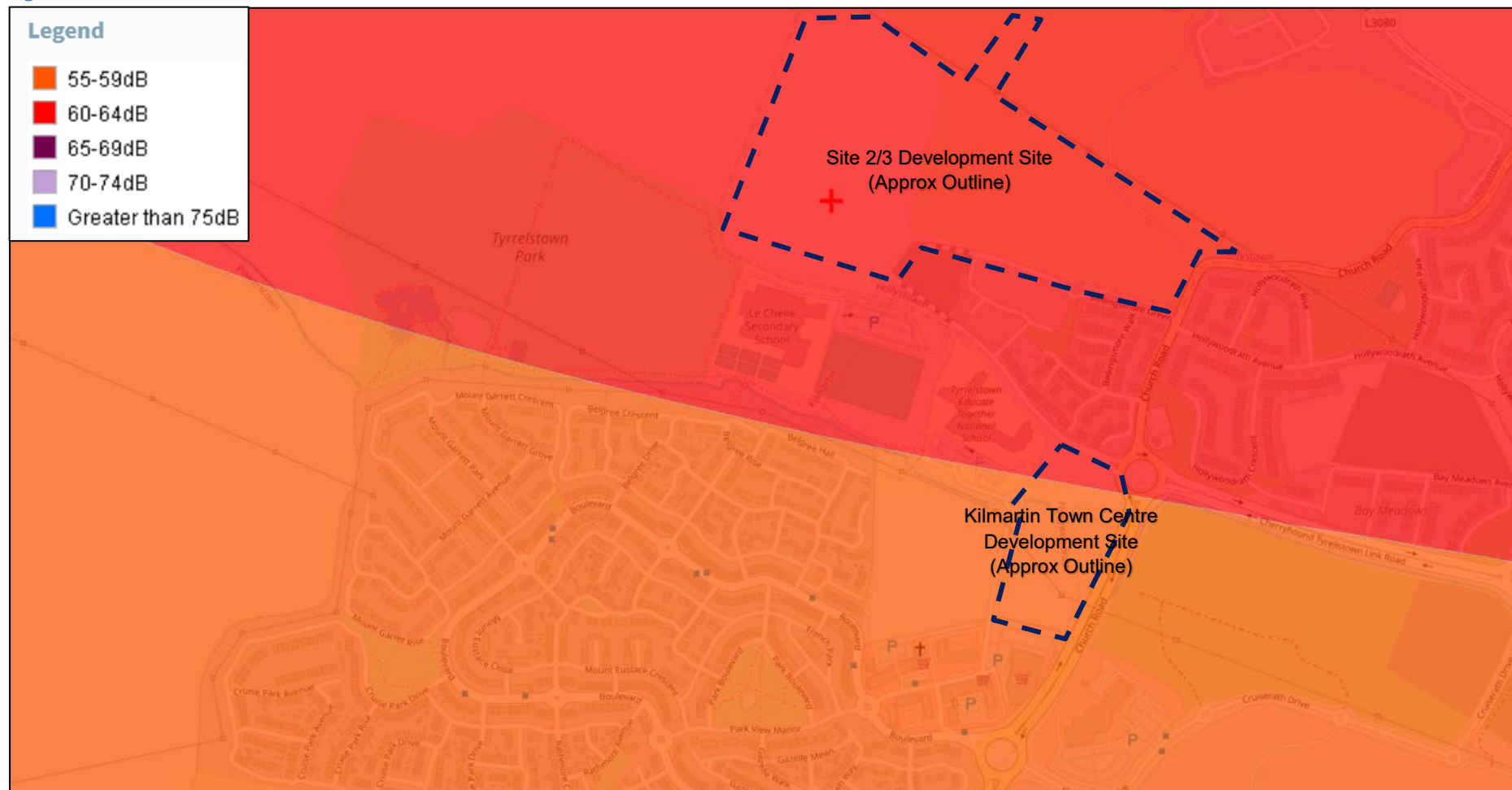
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Figure 12.3 L_{night} road traffic noise levels⁶⁰



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Figure 12.4 L_{den} aircraft noise levels⁶⁰



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Figure 12.5 L_{night} aircraft noise levels⁶⁰

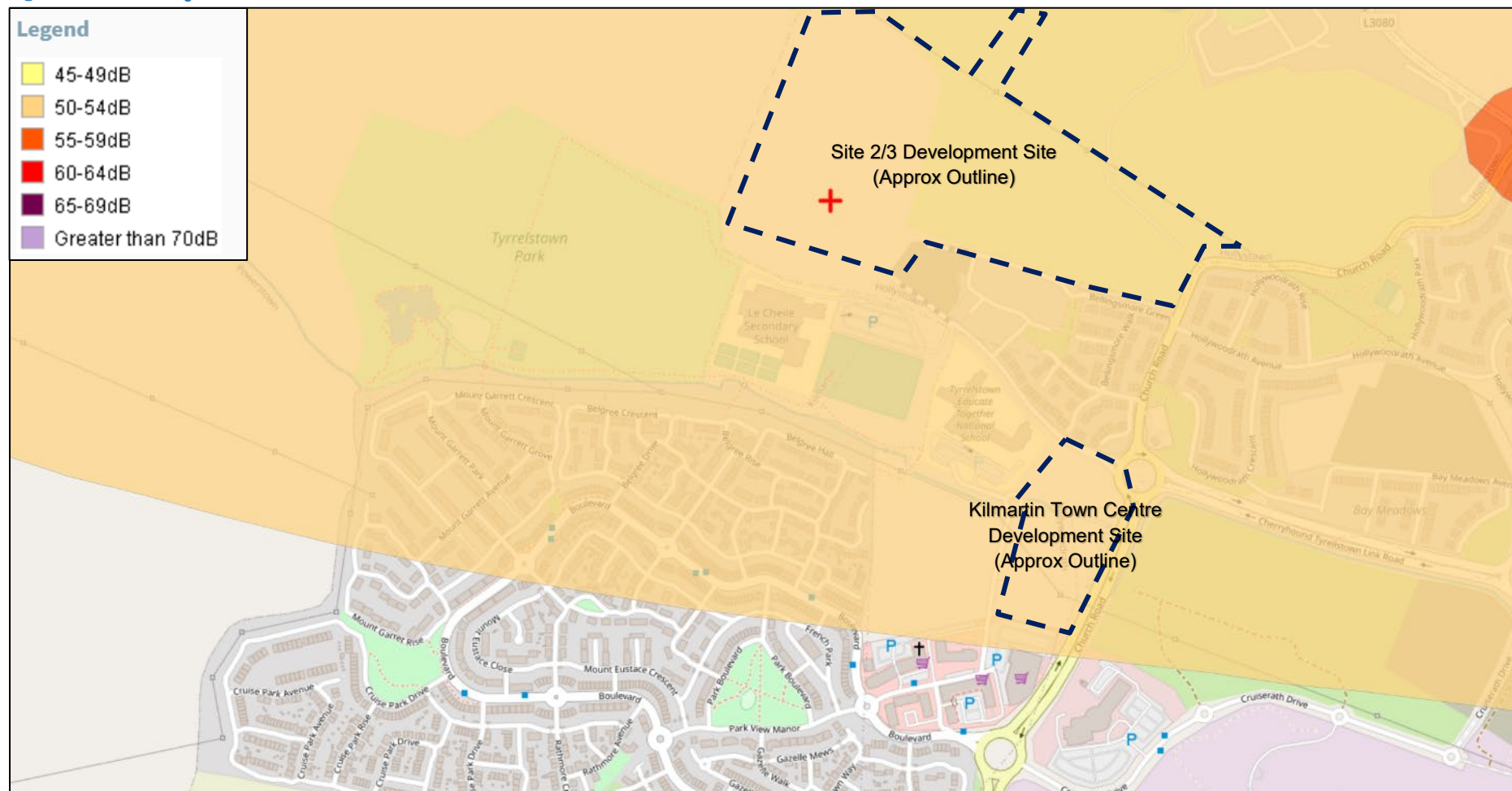


Table 12.11 Noise levels at Site 2/3 section of proposed development site

Noise Source	L _{den} , dB	L _{night} , dB	L _{day} , dB ⁶¹
Road Traffic	<55 - 64	<50 - 59	54 - 62
Air Traffic	60 - 64	50 - 54	60 - 64
Total	61 – 67	52 – 60	61 - 66

Table 12.12 Noise levels at Kilmartin Town Centre section of proposed development site

Noise Source	L _{den} , dB	L _{night} , dB	L _{day} , dB ⁶¹
Road Traffic	55 - 69	<50 - 59	56 - 67
Air Traffic	55 - 64	50 - 54	53 - 64
Total	58 – 70	52 – 60	58 - 69

12.3.3.2 Future Noise Environment

The major change to the local infrastructure that is likely to alter the noise environment is the development 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 severely constrained. Fingal County Council has produced noise zone maps for the area surrounding the airport. 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 12.6 presents the proposed development site in the context of these zones. Note that road traffic noise is not expected to change significantly into the future.

⁶¹ L_{day} has been estimated by assuming day and evening noise levels are equal.

Figure 12.6 Future daytime and night-time Airport Noise Zones (Fingal County Council)⁶²



⁶² Navy dashed line indicative of main development areas, not proposed development boundary

Table 12.13 Worst case noise levels at Site 2/3 section of proposed development site

Noise Source	L _{day} , dB	L _{night} , dB
Road Traffic	54 - 62	<50 - 59
Air Traffic	<63	55
Total	62 - 65	56 - 61

Table 12.14 Worst case noise levels at Kilmartin Local Centre section of proposed development site

Noise Source	L _{day} , dB	L _{night} , dB
Road Traffic	56 - 67	<50 - 59
Air Traffic	<63	<55
Total	62 - 68	54 - 60

12.3.4 Environmental Noise Survey

In March 2021, AWN was commissioned to undertake baseline noise monitoring at the site of the proposed development. The baseline noise monitoring was undertaken during Covid-19 pandemic restrictions where non-essential travel was still somewhat restricted. To quantify any potential reductions in baseline noise levels due to the pandemic, a review of historical noise monitoring data from the site in July 2018 was also carried out.

Combined, the 2018 and 2021 noise surveys, along with the desk based study of published data, quantify the existing and future varying noise environment across the proposed development site, namely: -

- The future noise environment giving consideration to future airport noise levels across the site for the inward noise assessment, i.e. worst case scenario as noise levels will be higher than those measured in the noise surveys; and
- The measured noise surveys to identify the noise environment at the nearest NSLs for the outward noise assessment, i.e. worst case scenario as the noise levels will be lower than those influenced by the future development of the airport, e.g. lower construction noise thresholds set for NSLs.

All surveys were conducted in general accordance with ISO 1996-2: 2017: *Acoustics – Description and measurement and assessment of environmental noise. Part 2 – Determination of sound pressure levels*. The specific details will be set out in the following sections.

12.3.4.1 Measurement Parameters

The noise survey results are presented in terms of the following parameters:

L _{Aeq}	is the equivalent continuous sound level. It is a type of average and is used to describe a fluctuating noise in terms of a single noise level over the sample period.
L _{AFmax}	is the instantaneous maximum sound level measured during the sample period using the 'F' time weighting.
L _{A90}	is the sound level that is exceeded for 90% of the sample period. It is typically used as a descriptor for background noise.

The 'A' suffix denotes the fact that the sound levels have been 'A-weighted' in order to account for the non-linear nature of human hearing. All sound levels in this report are expressed in terms of decibels (dB) relative to 2×10^{-5} Pa.

12.3.4.2 Historical Unattended Environmental Noise Survey (July 2018)

The location of the proposed development site is such that the noise climate is dominated by air traffic as it lies beneath a Dublin Airport flight path. One unattended noise survey was undertaken in order to obtain long term measurements.

Survey Locations

The measurement location was selected on the proposed site as shown in **Figure 12.7**.

Location U1 is located centrally on site to capture the noise from overhead aircraft movements.

Figure 12.8 shows installation photographs for location U1.

Figure 12.7 Indicating July 2018 unattended noise survey locations (© Google Earth)



Figure 12.8 Photograph showing installed meter at location U1 (July 2018)



Personnel and Monitoring Equipment

Alistair MacLaurin (AWN) performed the measurements during the survey period. Measurements were performed using a Rion NL-52 Sound Level Meter.

Table 12.15 Instrumentation details

Location	Manufacturer	Model	Serial Number	Calibration Data
U1	Rion	NL-52	575785	28 July 2017

Survey Periods

Unattended noise measurements were conducted between 11:00 hrs on 12th July 2018 and 16:00 hrs on 17th July 2018.

Results

The weather during the survey period was generally dry and calm and was not considered to have had a detrimental effect on the noise measurements. **Table 12.16** presents a summary the unattended noise levels for both day and night periods measured at location U1.

Table 12.16 Summary of unattended noise measurements at U1

Start Time	Period	Octave Band Centre Frequency (Hz)						Overall L _{Aeq, T} dB
		125	250	500	1k	2k	4k	
12/07/2018 11:40:00	Day*	64	62	60	56	52	42	61
12/07/2018 23:00:00	Night	58	57	55	51	48	41	56
13/07/2018 07:00:00	Day	64	62	60	56	51	39	61
13/07/2018 23:00:00	Night	57	55	54	50	45	36	55
14/07/2018 07:00:00	Day	63	61	59	55	50	39	60
14/07/2018 23:00:00	Night	56	55	53	49	45	36	54
15/07/2018 07:00:00	Day	64	62	60	56	52	42	61
15/07/2018 23:00:00	Night	58	56	54	50	45	35	55
16/07/2018 07:00:00	Day	64	62	60	56	51	40	61
16/07/2018 23:00:00	Night	57	55	53	49	45	33	55
17/07/2018 07:00:00	Day ^{63*}	65	62	61	57	52	39	62
Worst Case Day		64	62	60	56	52	42	61
Worst Case Night		58	57	55	51	48	41	56

The L_{AFmax} values were measured at 10 minute intervals over the duration of the unattended monitoring survey. **Figure 12.9** presents the distribution of the magnitude of L_{AFmax} events during the night period.

⁶³ The noise measurements for the day periods of 12th and 17th July have been excluded from assessment as only partial days were captured.

Figure 12.9 Number of L_{AFmax} events at each decibel level measured during the night period at location U1

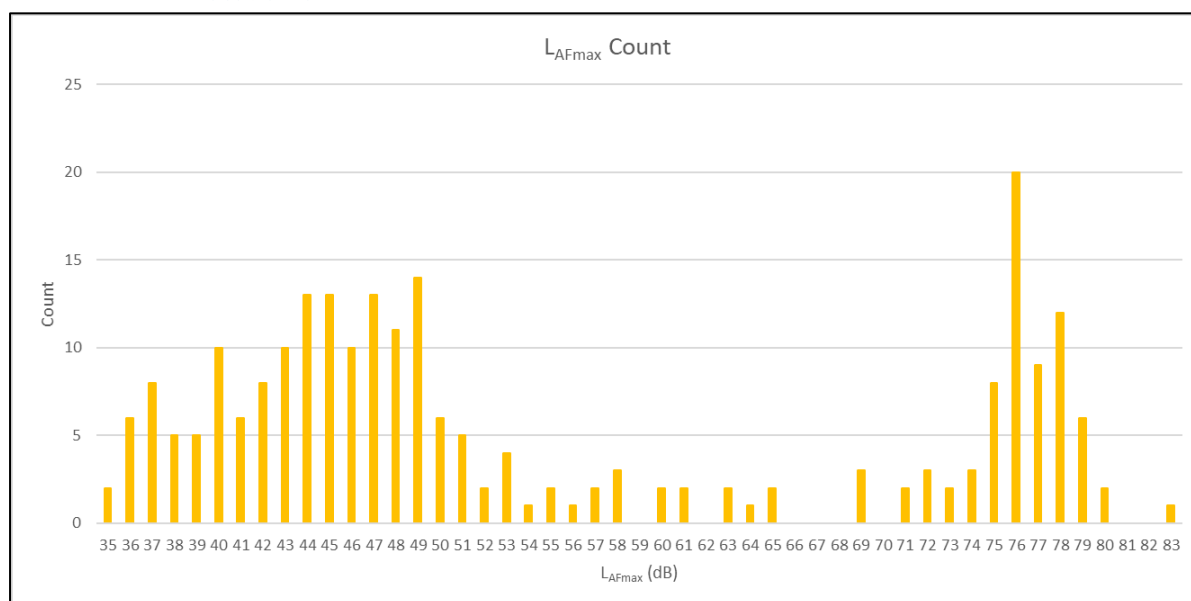


Table 12.17 presents the L_{AFmax} noise level assumed for the purpose of this assessment. Spectral data has been derived from an arithmetic averaging of the frequency content measured at the most frequent magnitude of 76 dB L_{AFmax} the averaged spectral data has then been re-adjusted to the assessment value of 77 dB L_{AFmax} .

Table 12.17 Night-time L_{AFmax} noise level

Overall dB L_{AFmax}	Octave Band Centre Frequency (Hz)					
	125	250	500	1k	2k	4k
77	78	77	76	71	69	58

12.3.4.3 Attended Environmental Noise Survey (March 2021)

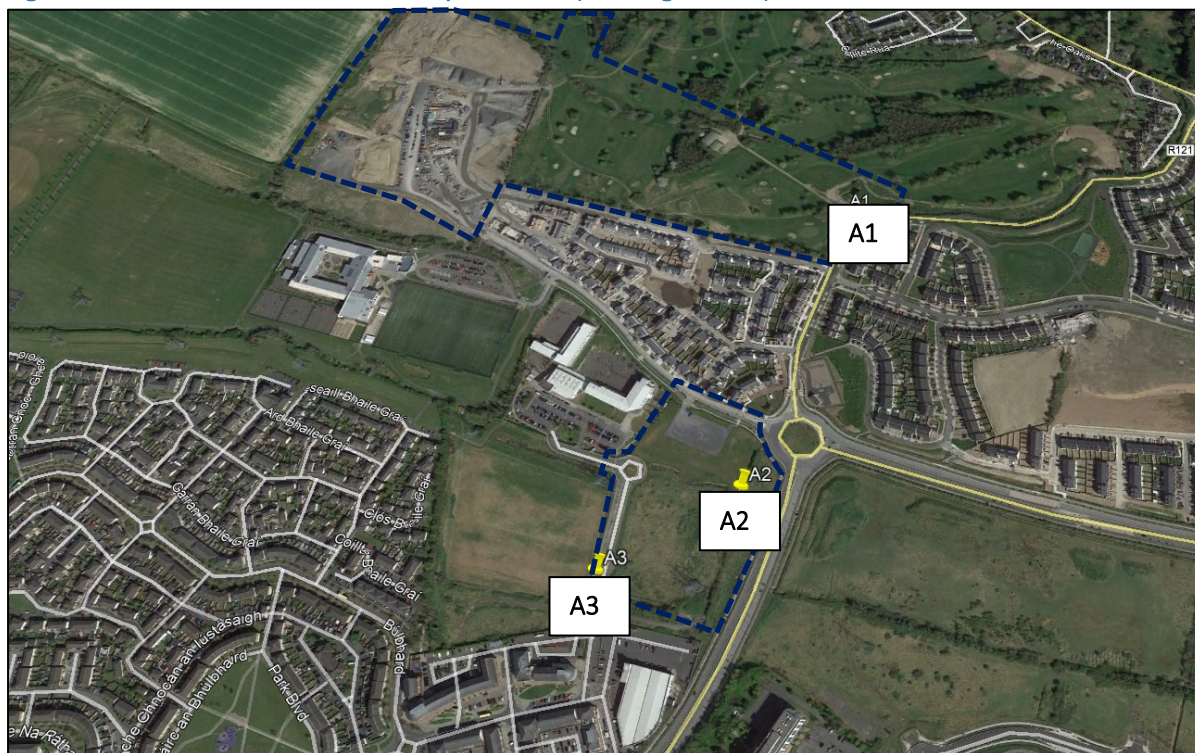
In March 2021, three attended monitoring locations (A1 to A3) were undertaken in the close vicinity of the proposed development site, representative of the existing noise environment at the closest NSLs.

Survey Locations

Measurement locations were selected on the proposed site as shown in Figure 12.10.

Location A1	Attended monitoring approximately 25 m northeast of the eastern boundary of the Site 2/3 section of the site. In line with residential façades of nearest existing NSLs in Hollywoodrath estate.
Location A2	Attended monitoring approximately 35 m northwest of the eastern boundary of the Kilmartin section of the site, with direct line of sight to R121.
Location A3	Attended monitoring approximately 20 m southwest of the western boundary of the site.

Figure 12.10 Attended noise survey locations (© Google Earth)⁶⁴



Personnel and Monitoring Equipment

Donogh Casey (AWN) performed the measurements during the survey period. Measurements were performed using a Bruel and Kjaer Type 2250 Sound Level Meter.

Table 12.18 Instrumentation details

Location	Manufacturer	Model	Serial Number	Calibration Data
A1-A3	Bruel and Kjaer	Type 2250	2818080	10 December 2019

Sample periods were 15 minutes. Before and after the survey, the measurement instruments were checked and calibrated using a Brüel & Kjaer 4231 Sound Level Calibrator.

Survey Periods

Attended daytime noise measurements were conducted between 11:00 to 16:46 hrs on 2nd March 2021 and night-time noise measurements were conducted between 23:00 hrs on 23rd to 01:14 hrs on 24th March 2021.

Results

The weather during the survey periods were generally dry and calm and was not considered to have had a detrimental effect on the noise measurements.

Survey Position A1

The survey results for Location A1 are presented in **Table 12.19**. During the day time period, road traffic noise from R121 Hollywoodrath Road and the surrounding roads were the dominant noise source at

⁶⁴ Navy dashed line indicative of main development areas, not proposed development boundary

this location, with intermittent aircraft flyovers. At night-time, road traffic noise continued as the dominant noise source, with intermittent local road traffic pass-by and dogs barking in the distance.

Table 12.19 Measured noise levels at Location A1

Date	Period	Measurement Period	Measured Noise Levels, dB re 2x10 ⁻⁵ Pa		
			L _{Aeq}	L _{AFMax}	L _{AF90}
2 March 2021	Day	11:00 - 11:15	54	70	43
		14:11 - 14:26	60	79	42
		16:41 - 16:56	55	71	42
23 March 2021	Night	23:00 - 23:15	50	71	36
24 March 2021		00:19 - 00:34	51	68	36

Daytime noise levels were in the range of 54 to 60 dB L_{Aeq,15min} and in the range of 42 to 43 dB L_{A90,15min} during the measurement periods. Night-time noise levels were in the range of 50 to 51 dB L_{Aeq,15min} and in the order of 36 dB L_{A90,15min} during the measurement periods.

No significant level of vibration was noted at this location during site attendance.

Survey Position A2

The survey results for Location A2 are presented in **Table 12.20**. During the day time period, road traffic noise from R121 was the dominant noise source at this location, with intermittent aircraft flyovers and local road traffic. At night-time, road traffic noise continued as the dominant noise source, with intermittent local road traffic pass-by.

Table 12.20 Measured noise levels at Location A2

Date	Period	Measurement Period	Measured Noise Levels, dB re 2x10 ⁻⁵ Pa		
			L _{Aeq}	L _{AFMax}	L _{AF90}
2 March 2021	Day	12:02 - 12:17	52	61	47
		13:48 - 14:03	57	73	51
		15:50 - 16:05	53	67	49
23 March 2021	Night	23:40 - 23:55	44	67	39
24 March 2021		00:59 - 00:14	42	56	38

Daytime noise levels were in the range of 52 to 57 dB L_{Aeq,15min} and in the range of 47 to 51 dB L_{A90,15min} during the measurement periods. Night-time noise levels were in the range of 42 to 44 dB L_{Aeq,15min} and in the range of 38 to 39 dB L_{A90,15min} during the measurement periods.

No significant level of vibration was noted at this location during site attendance.

Survey Position A3

The survey results for Location A3 are presented in **Table 12.21**. During the day time period, road traffic noise from local roads leading to the Tyrrelstown retail area was the dominant noise source at this location, with intermittent aircraft flyovers and distant road traffic noise from the R121. At night-time, plant noise from the commercial units and an ESB pylon to the south were the dominant noise sources, with distant road traffic also audible during the measurement periods.

Table 12.21 Measured noise levels at Location A3

Date	Period	Measurement Period	Measured Noise Levels, dB re 2x10 ⁻⁵ Pa		
			L _{Aeq}	L _{AFMax}	L _{AF90}
2 March 2021	Day	11:21 - 11:36	50	66	47
		13:27 - 13:42	62	81	48

Date	Period	Measurement Period	Measured Noise Levels, dB re 2x10 ⁻⁵ Pa		
			L _{Aeq}	L _{AFMax}	L _{AF90}
		16:10 – 16:25	56	68	51
23 March 2021	Night	23:21 – 23:36	42	53	40
24 March 2021		00:40 – 00:55	40	50	38

Daytime noise levels were in the range of 52 to 62 dB L_{Aeq,15min} and in the range of 47 to 51 dB L_{A90,15min} during the measurement periods. Night-time noise levels were in the range of 40 to 42 dB L_{Aeq,15min} and in the range of 38 to 40 dB L_{A90,15min} during the measurement periods.

No significant level of vibration was noted at this location during site attendance.

Summary of 2021 Baseline Noise Monitoring Results for the Outward Noise Assessment

As a worst case assessment, the attended noise monitoring results from March 2021 will be used to inform the outward impact assessment. At those NSLs external to the Site 2/3 section of the site boundary, the results presented from Location A1 will be used to identify the suitable construction noise thresholds. At those NSLs to the north and east of the Kilmartin Local Centre section of the site boundary, the results presented from Location A2 will be used to identify the suitable construction noise thresholds. At those NSLs to the south and west of the Kilmartin Local Centre section of the site boundary, the results presented from Location A3 will be used to identify the suitable construction noise thresholds.

The night-time L_{A90} values presented for Locations A1 to A3 will be used to inform the plant noise assessment at the closest residential NSLs to the proposed development site boundary.

Summary of 2018 Baseline Noise Monitoring Results and Desk Based Study of Future Noise Levels for the Inward Noise Assessment

From the measurements and calculations undertaken in 2018 at U1, and giving consideration to the future aircraft noise zones in the area; it is concluded that, for the proposed development Site 2/3 section of the site, the noise climate will be between 62 to 65 dB L_{Aeq,16hr}, daytime and 56 to 61 dB L_{Aeq,8hr} night-time. At the Kilmartin Local Centre, the noise climate will be between 62 to 68 dB L_{Aeq,16hr}, daytime and 54 to 60 dB L_{Aeq,8hr} night-time. L_{AFmax} noise levels have been assessed as typically 77 dB L_{AFmax}. The noise levels applicable to the assessment of inward noise impact for this site are defined in **Table 12.22** and **Table 12.23**.

Table 12.22 Noise levels applicable to Site 2/3 section of the proposed development site

Period	Overall dB L _{AFmax}	Octave Band Centre Frequency (Hz)					
		125	250	500	1k	2k	4k
Day	62 dB L _{Aeq, 16 hr}	65	63	61	57	53	43
	65 dB L _{Aeq, 16 hr}	68	66	64	60	56	46
Night	56 dB L _{Aeq, 8 hr}	57	56	54	50	47	40
	61 dB L _{Aeq, 8 hr}	62	61	59	55	52	45
	77 dB L _{AFmax}	78	77	76	71	69	58

Table 12.23 Noise levels applicable to Kilmartin Local Centre section of the proposed development site

Period	Overall dB L _{AFmax}	Octave Band Centre Frequency (Hz)					
		125	250	500	1k	2k	4k
Day	62 dB L _{Aeq, 16 hr}	65	63	61	57	53	43
	65 dB L _{Aeq, 16 hr}	68	66	64	60	56	46
	68 dB L _{Aeq, 16 hr}	71	69	67	63	59	49

Period	Overall dB LA _{Fmax}	Octave Band Centre Frequency (Hz)					
		125	250	500	1k	2k	4k
Night	54 dB LA _{eq} , 8 hr	55	54	52	48	45	38
	57 dB LA _{eq} , 8 hr	58	57	55	51	48	41
	60 dB LA _{eq} , 8 hr	61	60	58	54	51	44
	77 dB LA _{Fmax}	78	77	76	71	69	58

12.4 Predicted Impacts of the Proposed Development

A variety of items of plant will be in use for the purposes site clearance and construction. The type and number of equipment will vary between the varying construction phases, and depending on the phasing of the works. There will be vehicular movements to and from the site that will make use of existing roads. Due to the nature of these activities, there is potential for the generation of elevated levels of noise.

During the operational phase, the potential sources of noise are those associated with additional vehicular traffic on public roads, operational plant and building services, and vehicular movements and car parking on-site.

Noise and vibration emissions from the proposed development will vary both in terms of duration and magnitude. The following sections analyse the expected construction and operational phase noise and vibration impacts, both in terms of the proposed assessment criteria and the expected impacts in terms of the significance of effects.

12.4.1 Construction Phase

A variety of items of plant will be in use for the purpose of site clearance and construction works. There will also be vehicular movements to and from the site that will make use of existing roads. Due to the nature of these activities, there is potential for the generation of elevated levels of noise in the vicinity of existing noise sensitive properties.

The proposed general construction hours are 07:00 to 19:00 hrs, Monday to Friday.

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.

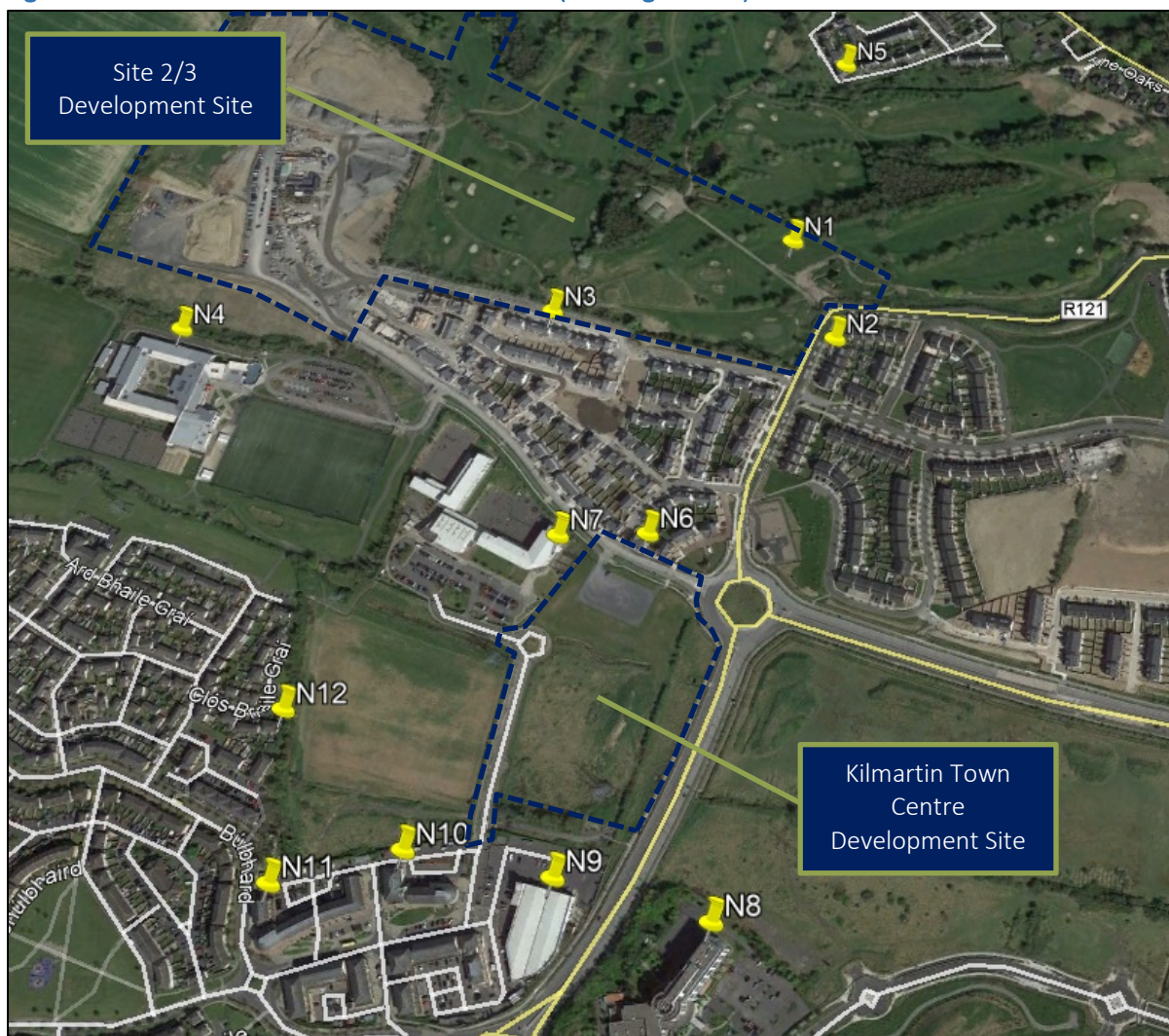
12.4.1.1 Sensitive Receptors

Noise and vibration impacts will be assessed to the nearest sensitive locations to the Site 2/3 and Kilmartin Local Centre site boundaries, i.e. a worst case assessment of the closest sensitive locations during any of the construction stages at either site. These closest locations are identified in **Figure 12.11**.

- **N1:** Future residential development approx. 10 m to the north of the Site 2/3 site boundary.
- **N2:** Hollywoodrath residential development approx. 25 m to the east of the Site 2/3 site boundary.
- **N3:** Bellingsmore residential development approx. 20 m to the south of the Site 2/3 site boundary.
- **N4:** Le Chéile secondary school approx. 85 m to the southwest of the Site 2/3 western site boundary.
- **N5:** Redwood residential development approx. 200 m to the north of the Site 2/3 site boundary.
- **N6:** Bellingsmore residential development approx. 20 m to the north of the Kilmartin Local Centre site boundary.

- **N7:** Tyrrelstown Educate Together national school approx. 20 m to the northwest of the Kilmartin Local Centre site boundary.
- **N8:** Hotel rooms located in Carlton Hotel Blanchardstown, located approx. 115 m to the east of the Kilmartin Local Centre site boundary.
- **N9:** Commercial developments approx. 50 m to the north of the Kilmartin Local Centre site boundary.
- **N10:** Residential apartments above commercial spaces approx. 75 m to the south of the Kilmartin Local Centre site boundary.
- **N11:** Tyrrelstown Montessori approx. 180 m to the southwest of the Kilmartin Local Centre site boundary.
- **N12:** Bellgree residential development approx. 175 m to the west of the Kilmartin Local Centre site boundary.

Figure 12.11 Closest noise sensitive locations (© Google Earth)⁶⁵



The following construction noise threshold levels are proposed for the construction stage of this development: -

⁶⁵ Navy dashed line indicative of main development areas, not proposed development boundary

- For residential NSLs external to Site 2/3 and Kilmartin Local Centre site boundary, it is considered appropriate to adopt the 65 dB(A) threshold level, given the baseline monitoring carried out, which would indicate that Category A values are appropriate, using the ABC method.
- An appropriate construction noise limit at the nearest commercial buildings is considered to be 70 dB $L_{Aeq,1hr}$.

12.4.1.2 Construction Plant

Due to the fact that the construction programme has been established in outline form only, it is difficult to calculate the actual magnitude of noise emissions to the local environment. 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 *Code of Practice for Noise and Vibration Control on Construction and Open Sites – Noise*. This standard sets out sound power / 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 (including demolition of existing sheds in Hollystown Sites 2 & 3 area), building construction works and landscaping works (excavators, loaders, dozers, concreting works, mobile cranes and 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 the purposes of this assessment, a combined sound power value of 115 dB L_{WA} has been used for construction noise calculations. 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.

Given that the type and number of construction equipment will vary over the course of the construction phase, noise levels have been calculated at the closest noise sensitive locations, assuming the construction noise levels and distances noted above. For the purpose of the assessment, a standard site hoarding of 2.4 m high has been included in the calculations for noise sensitive boundaries. The calculations also assume that the equipment will operate for 66% of the working time. **Table 12.24** summarises the result of this assessment.

Table 12.24 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 $L_{Aeq,1hr}$						
		10m	20m	25m	30m	40m	50m	100m
Site Clearance, General Construction, Landscaping, Road Works	115	77	71	70	68	65	63	57

The worst case predictions detailed in **Table 12.24** above indicate that, during the construction works, construction noise levels at the nearest commercial properties (50 m) would not be expected to exceed the significance threshold of 70 dB $L_{Aeq,1hr}$. When residential NSLs are within 40 m of the construction works, the construction noise levels would be expected to exceed the significance threshold of 65 dB $L_{Aeq,1hr}$.

At Site 2/3, for those residential NSLs immediately within 10 m to 25 m of the site boundary, the associated construction noise impact will be *negative, significant to very significant and temporary* when

works are carried out along the site boundary. At all other sensitive receptors, the noise impact will be *negative, not significant to moderate and temporary*.

At the Kilmartin Local Centre, for those sensitive receptors immediately within 20 m of the northern and north western site boundaries, the associated construction noise impact will be *negative, significant to very significant and temporary* when works are carried out along the site boundary. At all other sensitive receptors, the noise impact will be *negative, not significant to moderate and temporary*.

12.4.1.3 Construction Vibration

Potential for vibration impacts during the construction phase programme are likely to be limited given the ground breaking, piling and excavations required. There is potential for piling to be used for building and basement foundations for apartment buildings. For the purposes of this assessment, the expected vibration levels during piling, assuming augured or bored piles, have been determined through reference to published empirical data. The British Standard BS 5228 – *Part 2: Vibration*, publishes the measured magnitude of vibration of rotary bored piling using a 600 mm pile diameter for bored piling into soft ground over rock:

- 0.54 mm/s at a distance of 5 m, for auguring;
- 0.22 mm/s at a distance of 5 m, for twisting in casing;
- 0.42 mm/s at a distance of 5 m, for spinning off; and
- 0.43 mm/s at a distance of 5 m, for boring with rock auger.

Considering the low vibration levels at very close distances to the piling rigs, vibration levels at the nearest buildings are not expected to pose any significance in terms of cosmetic or structural damage. In addition, the range of vibration levels is typically below a level which would cause any disturbance to occupants of nearby buildings.

In this instance, taking account of the distance to the nearest sensitive off-site buildings, vibration levels at the closest neighbouring buildings are expected to be orders of magnitude below the limits set out in **Table 12.4** to avoid any cosmetic damage to buildings. Vibration levels are also expected to be below a level that would cause disturbance to building occupants, as set out in **Table 12.5**. The predicted vibration impact during the construction phase is *short-term, neutral and imperceptible*.

12.4.1.4 Construction Traffic

Based on the information provided by DBFL Consulting Engineers it is anticipated approx. 30,000m³ of clean material will be required to be imported to the subject site following the excavation works. It is estimated this equates to approximately 3,571 truckloads depending upon vehicle characteristics (assuming a dumper truck with a volume of 8.4m³). Assuming this takes place over one consecutive period and at a rate of 75 loads arriving per day this equates to approximately 48 days (≈ 10 weeks) of arriving materials as part of the adopted worst-case assessment. Assuming that all of the HGVs with enter the site via R121 and Hollystown Road and exit via the southern boundary of Site 3 via the Primary Link Street connecting to the R121 through the Bellingsmore Development this equates to approx. 75 HGV movements (one way).

The proposed scale and rate of development would at a maximum necessitate approx. 200 staff on site at any one time, subsequently generating no more than 35 two-way vehicle trips during the peak AM and PM periods over the period of the phased construction works. Assuming that the staff vehicles follow the same exit as the HGV movements this equates to approx. 70 car movements (one way).

An increase of 25% in traffic is required to increase overall traffic noise levels by 1 dB, which is insignificant in the overall context of the noise environment along the R121 and wider road network in the vicinity of the proposed development. Therefore, the short-term noise environment assumed for this development is expected to be within at least 1 dB of the baseline scenario, which would give a magnitude of increase in traffic noise that is *not significant*.

Based on the scenario of HGV and staff vehicle figures identified above, it is assumed that as a worst-case scenario no more than 20 truck and 70 car movements (out of the site) will occur in a one hour period. The Bellingsmore Development NSLs are closest to the route at 10m distance.

The noise level associated with an event of short duration, such as a passing vehicle movement, may be expressed in terms of its Sound Exposure Level (L_{AX}). The mean value of Sound Exposure Level for a truck at low to moderate speeds (i.e. 15 to 45km/hr) is of the order of 85 dB L_{AX} and for a car is in the order of 72 dB L_{AX} at a distance of 5 metres from the vehicle. This figure is based on a series of measurements conducted under controlled conditions. 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.

The appropriate formula is given below.

$$L_{Aeq,T} = L_{AX} + 10\log_{10}(N) - 10\log_{10}(T) + 20\log_{10}\left(\frac{r_1}{r_2}\right) dB$$

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).

N is the number of events over the course of time period T.

r_1 is the distance at which L_{AX} is expressed.

r_2 is the distance to the assessment location.

Using the equation detailed above, the predicted noise level at the nearest residential NSLs is in the order of 57 $L_{Aeq,1hr}$. Levels of this order would not be expected to exceed the significance threshold of 70dB $L_{Aeq,1hr}$ at the closest residential NSLs.

Reference to the baseline noise levels made at AN1 along the road edge in the vicinity of the site indicates that the calculated noise levels are within 3 dB of the existing baseline, a change in noise level which would be barely perceptible. It should be noted that, in order to assess a worst-case scenario, a large proportion of the daily vehicle numbers have been assumed to depart over an hour long period. Therefore, it is expected in the absence of specific mitigation measures that there will be a *negative, not significant and short-term* impact at the closest receptors.

No further mitigation measures would therefore be required.

12.4.2 Operational Phase

Once the proposed development is operational, the potential noise impacts to the surrounding environment are predicted to be minimal. The residential aspect of the development is not expected to generate any significant noise sources over and above those which form part of the existing environment at neighbouring residential areas (road traffic noise, estate vehicle movements, children playing, etc.) and, hence, *no significant impact* are predicted in this regard.

The main potential noise impact associated with the proposed development is considered, therefore, to relate to the generation of additional traffic to and from the site as a result of the new residential and commercial buildings. Potential noise impacts also relate to operational plant serving the

commercial and apartment buildings, where relevant. Once operational, there are no noteworthy sources of vibration associated with the development site.

Due consideration must be given to the nature of the primary noise sources when setting criteria. Potential noise impacts during the operational phase include the following:

- Additional vehicular traffic on surrounding roads;
- Building services plant;
- Deliveries;
- Car parking on-site;
- Crèche playground area;
- Patron noise from café area; and
- Entertainment noise breakout.

12.4.2.1 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 12.12** presents the road links A-F. The results of this assessment have been reviewed to predict any impact of the proposed development on traffic flows in the area. The calculated change in noise levels during Opening Year (2023) and Future Design Year (2038) are summarised in **Table 12.25** and **Table 12.26**.

Table 12.25 Summary of change in noise level (Opening Year 2023)

Location	AADT do nothing	AADT do something	Change in noise level (all vehicles)
	Opening year		
A	7,912	8,232	0.2
B	2,724	3,268	0.8
C	18,482	18,952	0.1
D	7,719	8,102	0.2
E	6,809	7,192	0.2
F	3,277	3,660	0.5

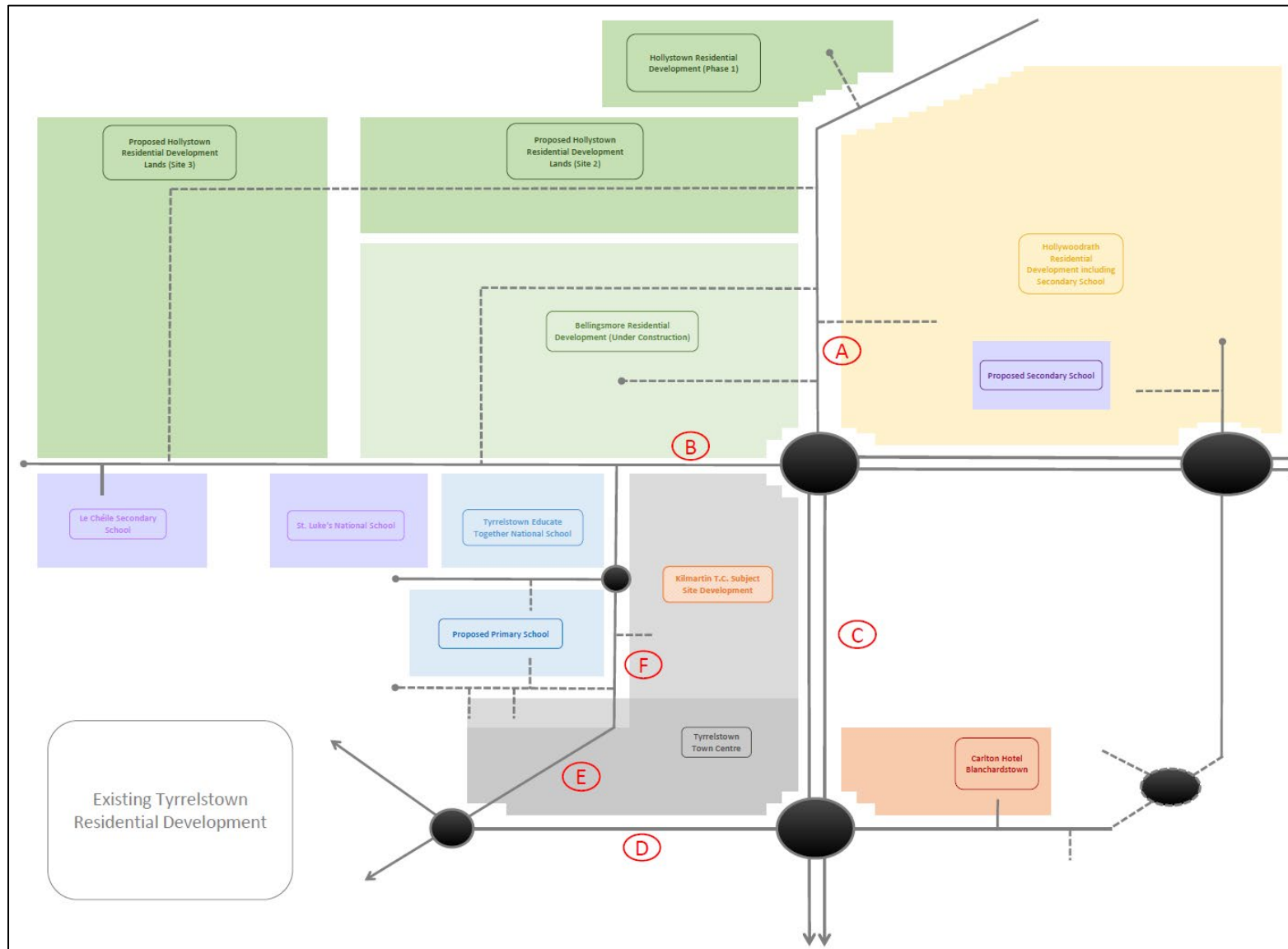
Table 12.26 Summary of change in noise level (Future Design Year 2038)

Location	AADT do nothing	AADT do something	Change in noise level (all vehicles)
	Future design year		
A	9,988	11,195	0.5
B	3,682	5,020	1.3
C	21975	23565	0.3
D	9,296	9,968	0.3
E	8,722	9,394	0.3
F	4,511	5184	0.6

The predicted increase in AADT traffic levels associated with the development are between 0.0 – 0.8 dB(A) in the vicinity of the roads assessed for the Opening Year and between 0.3 – 1.3 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.

Figure 12.12 Road links for traffic assessment (Source: DBFL Consulting Engineers)



Reference to **Table 12.25** confirms that the increase in the Opening Year is *neutral, imperceptible and long-term*. Reference to **Table 12.26** confirms that the increases in the Future Design Year are *neutral, not significant and long-term*.

In summary, the predicted increase in noise levels associated with vehicles at road junctions in the vicinity of the proposed development during the operational phase constitutes a *long-term, not significant impact*.

12.4.2.2 Building Services and Plant

Once operational, there will be building services plant items required to serve the commercial and residential aspects of the proposed development. The specific requirements for mechanical and electrical plant items for each element of the commercial, residential buildings or crèche / community buildings has not yet been progressed at this stage of the design. Most of this plant will be capable of generating noise to some degree and may operate 24 hours a day. It would, therefore, be most noticeable during quiet periods (i.e. overnight). Noisy plant with a direct line-of-sight to noise sensitive properties as well as louder plant areas on roofs would potentially have the greatest impact.

The location or type of building services plant has not yet been established. Therefore, it is not possible to calculate noise levels to the surrounding environment. In this instance, is it best practice to set appropriate noise limits that will inform the detailed design during the selection and layout of building services for the proposed development. Plant items will be selected, designed and located so that there is no negative impact on sensitive receivers within the development itself. The cumulative operational noise level from building services plant at the nearest noise sensitive location within the proposed development (e.g. apartments, etc.) will be designed/attenuated to meet the relevant BS 4142 noise criteria for day and night-time periods as set out in this assessment. Based on the baseline noise data collected for this assessment it is considered an appropriate design criterion is the order of **40 dB $L_{Aeq,15min}$** during daytime periods and **35 dB $L_{Aeq,15min}$** at night at the nearest sensitive receptors. This limit is set in order to achieve acceptable internal noise levels within residential spaces based on prevailing noise levels in the area.

Taking into account that sensitive receivers within the proposed development are much closer than off-site sensitive receivers, once the relevant noise criteria are achieved within the proposed development, it is expected that there will be *no significant negative impact* at sensitive receivers off site.

12.4.2.3 Deliveries

We understand that deliveries to the proposed commercial / retail component of the Kilmartin Local Centre will be conducted during the daytime period and will involve no more than 4 two-way movements, during the peak hours. Deliveries are likely to be unloaded in the parking spaces to the east of the café in Block A.

The nearest off-site NSLs (N10) to the southwest of the site are at more than 150m distance. Within the development the nearest on-site residence, Block A apartments, are some 15m to the west of the café delivery area.

As a worst-case assessment it has been assumed that all 4 deliveries would take place in a one hour period.

The noise level at a distance of 10m from a typical service yard for a delivery truck is of the order of 66 dB $L_{Aeq,1hr}$ during daytime. This includes the effects of reflections from building façades and contributions from all sources of noise, i.e. vehicles manoeuvring, air brakes, trolleys etc. This is based on a series of controlled measurements conducted by AWN.

Taking account of attenuation due to distance and the predicted noise impact of activity during a delivery is presented in **Table 12.27**.

Table 12.27 Predicted delivery event noise emission levels

Location	Delivery location	Nearest distance (m)	Delivery noise level ($L_{Aeq,1hr}$)
N10	Café Block A	150	42
Apartments Block A	Café Block A	15	62

The predicted noise emission level of delivery activity 42 dB $L_{Aeq,1hr}$ during daytime delivery events at the nearest off-site NSL (N10). Levels of this order would be within the adopted daytime criterion of 55 dB $L_{Aeq,1hr}$ at all adjacent noise sensitive locations during the daytime period.

Within the development at the closest NSLs (Block A), the predicted delivery activity is 62 dB $L_{Aeq,1hr}$ during daytime delivery events, which is in excess of the adopted daytime criterion of 55 dB $L_{Aeq,1hr}$ and more than 5 dB above the existing baseline noise levels in the area. Due to the inward noise impacts enhanced façade specification will be further outlined in **Section 12.8.2.2** of this chapter.

Deliveries will not be made during the night-time period. No further mitigation measures would therefore be required.

12.4.2.4 Proposed Car Parking

Within the Kilmartin Local Centre the closest car parking space is approximately 80m from the closest off-site NSL (N10). Within the development the closest car parking space is approximately 5m from the nearest on-site NSL, Block D apartments.

Typical noise levels 10m beyond the boundary of a busy car park during peak periods are of the order of 48 dB $L_{Aeq,T}$. Allowing for distance and estimated frequency of usage, the noise levels due to car parking activity would be of the order of 30 dB $L_{Aeq,1hr}$ for the residences located closest to the car park at N10 and 54 dB $L_{Aeq,1hr}$ and 44 dB $L_{Aeq,1hr}$ at the Block D and Block A apartments respectively. These levels are within the daytime criterion of 55 dB $L_{Aeq,1hr}$ and lower than the measured ambient noise levels at these locations.

It is envisaged that activity levels in the car park spaces immediately located beside the Block D apartments during the night-time period would be significantly less. Assuming that there are ten times less car park movements during the night time period as during the daytime period, the noise levels due to car parking activity would be less than 45 dB $L_{Aeq,1hr}$ at the closest car park spaces at the Block D apartments. These levels are within the night time criterion of 45 dB $L_{Aeq,15min}$ and comparable to the measured ambient noise levels at this location (AN2).

In summary, the likely noise impact of car park activities on the local environment is *negative, not significant and long-term* for NSLs.

12.4.2.5 Crèche Playground Noise Breakout

There is one standalone crèche building to the south west and a crèche and Montessori located within Block D to the east of the Kilmartin Local Centre site.

Measurement of noise levels generated by children playing outdoors at several crèches and kindergartens indicate typical noise levels in the order of 56 dB $L_{Aeq,1hr}$ at distance of 5 metres. The closest off-site NSL (N10) is more than 120m from the standalone crèche play area. Considering the distance activities from the crèche are calculated to be below 30 dB $L_{Aeq,1hr}$. Therefore, it is expected in the absence of specific mitigation measures that there will be a *neutral, imperceptible and long-term* impact at the closest off-site receptors.

The nearest on-site residential NSL apartments are BD.103 and BD.0104 overlooking the Block D crèche play area to the south and BD.108 overlooking the Montessori play area to the northeast of Block D. Considering the closest Block D receptors are located at the first floor the calculated noise level is approximately less than the recommended daytime criterion of 55 dB $L_{Aeq,1hr}$. Reference to the baseline noise levels made at AN2 indicates that the calculated noise levels are within 3 dB of the existing baseline, a change in noise level which would be barely perceptible. Therefore, it is expected in the absence of specific mitigation measures that there will be a *negative, not significant and long-term* impact at the closest on-site Block D receptors.

No further mitigation measures would therefore be required.

12.4.2.6 Patron Noise from Café Area

It is necessary to determine the potential noise impact of patrons occupying the external seating area as proposed as part of the café area as part of the Kilmartin Local Centre development. The proposed external seating area will be positioned to the south of Block A, with the nearest residences to the external area within the development itself (Block A apartments to the south – BA.0101 and BA.0102) on the first floor. The external seating area will have a maximum occupancy for 10 patrons.

It is possible using standardised noise source data for a typical human voice, to predict the noise level due to typical conversation levels in an area such as that proposed. **Table 12.28** details the standardised sound pressure levels of a raised and normal human voice at a distance of 1m from the speaker's mouth. This level is taken from the American National Standards Institute document ANSI 3.5:1997 – *Methods for calculation of the speech intelligibility index*. This sound pressure level is an average of male and female voices.

Table 12.28 Speech spectra in terms of the sound pressure level at 1m distance

Voice Effort	Speech spectra SPL at 1m in front of the speaker's mouth in the free-field SPL (dB)							dB (A)
	Octave band frequency (Hz)							
	125	250	500	1k	2k	4k	8k	
Normal	46.9	57.2	59.8	53.5	48.8	43.8	38.6	59.5

For the purposes of the assessment, the following worst case has been assumed:

- A maximum of 10 no. patrons in the external seating area at any one time;
- Half of the patrons (5 no.) are speaking at any one point in time, and
- The nearest noise sensitive receptors are at a 5m distance (Block A BA.0101 and BA.0102 apartments).

Based on the assumptions above, the noise levels associated with patrons' voices in the external seating area are taken to be equivalent 48 dB(A) at the nearest on-site noise sensitive receptors (Block A BA.0101 and BA.0102 Apartments). The calculated noise level is less than the recommended daytime criterion of 55dB $L_{Aeq,1hr}$. Reference to the baseline noise levels made at AN3 indicates that the calculated noise levels are below the existing baseline. Therefore, it is expected in the absence of specific mitigation measures that there will be a *neutral, imperceptible* and *long-term* impact at the closest on-site receptors.

No further mitigation measures would therefore be required.

12.4.2.7 Entertainment Noise Breakout

The development contains a communal amenity hub space and café located in Block A. At this stage it is not possible to predict the level of noise break-out from potential sources within the development. However, it is recommended that a comprehensive review of this issue should be undertaken prior to the development becoming operational. During this review the sound shall be so controlled that its level at any adjacent noise sensitive location shall not cause the ambient (measured in the absence of said sound) to increase, when assessed over 5 minute back to back periods. Similar criteria shall apply to the 63Hz & 125Hz octave band levels.

In relation to break-out noise from activity in the Block A, the potential criteria discussed in **Section 12.2.2.1** is considered appropriate here. Break-out noise will need be controlled to a level some 10 dB below prevailing ambient noise levels.

Table 12.29 outlines the noise criteria that would apply to the nearest off-site noise sensitive location based on the measured ambient noise levels presented in **Table 12.21** of this report.

Table 12.29 Noise criteria for entertainment break-out noise in block A community hub and café

Location	L_{eq} (dB) per 1/3 Octave Band Centre Freq (Hz)						dB L_{Aeq}
	50	63	80	100	125	160	
A3	50	47	43	40	37	34	38

12.4.2.8 Cumulative Impact

In order to present the worst case assessment, the cumulative impact at the nearest NSLs has been assessed, which assumes that all noise sources associated with the proposed development are in operation simultaneously. It should be noted that this is a very conservative assessment as it is highly unlikely that the peak hour deliveries would coincide with a busy period in the crèche playground.

Table 12.30 summarises the individual noise level at each noise sensitive location considered for the sources associated with the development and also presents the resulting cumulative noise level.

Table 12.30 Cumulative noise impact

Source	Predicted noise level, dB $L_{Aeq, 1hr}$					
	Daytime			Night-time		
	N10	Block A	Block B	N10	Block A	Block B
Building services plant	40	40	40	35	35	35
Deliveries	42	62	62	--	--	--
Car parking	30	44	54	--	40	45
Crèche playground	30	--	54	--	--	--
Patron noise from café area	40	48	--	--	--	--

Source	Predicted noise level, dB L _{Aeq, 1hr}					
	Daytime			Night-time		
	N10	Block A	Block B	N10	Block A	Block B
Cumulative	46	62	63	35	41	45

The worst-case cumulative noise impact is within the daytime and night-time criteria at the closest off-site NSLs assessed.

The worst-case cumulative noise impact exceeds the daytime criterion at the closest on-site NSLs, particularly due to the worst case assessment of the delivery to the café in Block A. As there are no night-time deliveries, the worst-case cumulative noise impact is within the night-time criteria at the closest on-site NSLs assessed. As previously outlined the inward noise impacts enhanced façade specification will be further outlined in **Section 12.8.2.2** of this report.

For an assessment of potential cumulative impacts resulting from the proposed development in combination with other, existing, permitted or proposed plans and projects in the vicinity, refer to **Section 12.11**.

12.5 Mitigation Measures

12.5.1 Construction Phase

As previously outlined in **Section 12.4.1** the following construction noise threshold levels are proposed for the construction stage of the proposed development: -

- For residential NSLs external to Site 2/3 and Kilmartin Local Centre site boundary, it is considered appropriate to adopt the 65 dB(A) threshold level, given the baseline monitoring carried out, which would indicate that Category A values are appropriate, using the ABC method.
- An appropriate construction noise limit at the nearest commercial buildings is considered to be 70 dB L_{Aeq,1hr}.

As previously outlined in **Section 12.2.1.2** vibration threshold levels are proposed for the construction stage of the proposed development, **Table 12.4** is replicated below (as **Table 12.31**) for ease of reference.

Table 12.31 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
Unreinforced or light framed structures. Residential or light commercial-type buildings	15 mm/s	7.5 mm/s
Protected and Historic Buildings ⁶⁶	6 – 15 mm/s	3 – 7.5 mm/s
Identified Potentially Vulnerable Structures and Buildings with Low Vibration Threshold	3 mm/s	

The assessment detailed in **Section 12.4.1** has found that predicted construction noise levels do exceed the threshold during the worst case assessment at NSLs within 40 m of the site boundary. Vibration

⁶⁶ The relevant threshold value to be determined on a case by case basis. Where sufficient structural information is unavailable at the time of assessment, the lower value within the range will be used.

levels at the closest neighbouring buildings are expected to be orders of magnitude below the limits set out in **Table 12.31** to avoid any cosmetic damage to buildings.

Best practice noise and vibration control measures will be employed by the contractor during the construction phase in order to avoid significant impacts at the nearest sensitive buildings. The best practice measures set out in BS 5228 (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. The least noisy item will be selected wherever possible. Should a particular item of plant already on the site be found to generate high noise levels, the first action will be to identify whether said item can be replaced with a quieter alternative.

12.5.1.2 Noise Control at Source

If replacing a noisy item of plant is not a viable or practical option, consideration will be given to noise control at source. This refers to the modification of an item of plant or the application of improved sound reduction methods in consultation with the supplier. For example, resonance effects in panel work or cover plates can be reduced through stiffening or application of damping compounds; rattling and grinding noises can often be controlled by fixing resilient materials in between the surfaces in contact.

The following best practice migration measures will be considered:

- Site compounds will be located away from noise sensitive boundaries within the site constraints.
- The use / lifting of bulky items, dropping and loading of materials within these areas will be restricted to normal working hours.
- For mobile plant items such as cranes, dump trucks, excavators and loaders, maintaining enclosure panels closed during operation can reduce noise levels over normal operation. Mobile plant will be switched off when not in use and not left idling.
- For steady continuous noise, such as that generated by diesel engines, it may be possible to reduce the noise emitted by fitting a more effective exhaust silencer system.
- For percussive tools such as pneumatic breakers, a number of noise control measures include fitting muffler or sound reducing equipment to the breaker tool and ensuring any leaks in the air lines are sealed.
- Erecting localised screens around breaker or drill bit when in operation in close proximity to noise sensitive boundaries.

- For concrete mixers, control measures will be employed during cleaning to ensure no impulsive hammering is undertaken at the mixer drum.
- For all materials handling, ensure that materials are not dropped from excessive heights, lining drops chutes and dump trucks with resilient materials.
- For compressors, generators and pumps, these can be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation.
- All items of plant will be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures.

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, east and south of Site 2/3 perimeters and north and northwest of Kilmartin Local Centre perimeters.

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 Programme & Phasing

The phasing programme will be arranged so as to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity. If piling works are in progress on another site at the same time as other works of construction that themselves may generate significant noise and vibration, the working programme will be phased so as to ensure noise limits are not exceeded due to cumulative activities. This will be reviewed in relation to other potential cumulative works occurring on adjacent construction site in close proximity to noise sensitive properties which have the potential to lead to significant construction noise impacts.

12.5.2 Operational Phase

12.5.2.1 General Operational Phase Site Activity

The assessment outlined previously has specified noise limits at the nearest noise sensitive properties that must be achieved in order to ensure the impact is acceptable, summarised in **Section 12.2.2.1**.

To achieve these noise limits, consideration will be given, at the detailed design stage, to a variety of mitigation measures and forms of noise control techniques. Some examples of these measures are as follows:

- Duct-mounted attenuators on the atmosphere side of air moving plant;
- Splitter attenuators or acoustic louvres providing free ventilation to internal plant areas;
- Solid barriers screening external plant; and
- Anti-vibration mounts on reciprocating plant.

In addition to the above, the following measures will be adopted to minimise potential noise disturbance for neighbours:

- All mechanical plant items (e.g. motors, pumps etc.) shall be regularly maintained to ensure that excessive noise generated by any worn or rattling components is minimised;
- Any new or replacement mechanical plant items, including plant located inside new or existing buildings, shall be designed so that all noise emissions from site do not exceed the noise limits outlined in this document; and
- Plant items will be selected such that site noise emissions do not contain tonal or impulsive characteristics at nearby noise sensitive locations.

12.5.2.2 Building Services and Plant

Taking into account that sensitive receivers within the development are much closer than off-site sensitive receivers, once the relevant noise criteria included in **Section 12.5.6** (i.e. design criterion is the order of **40dB L_{Aeq,15min}** during daytime periods and **35dB L_{Aeq,15min}** at night at the façades of the nearest noise sensitive locations). It is expected that there will be no negative impact at sensitive receivers on or off site, and therefore no further mitigation required.

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 *negative, moderate to significant and temporary* at distances within 25m of the closest NSLs. It should be noted that the assessment can be considered worst case and it is unlikely that all items of plant assessed will be in operational simultaneously. Additionally, the predictions only indicate a potential significant effect (based on a worst-case scenario) when working at the closest location to the NSLs, with lesser impacts predicted at all other locations across site.

At distances greater than 25m from the construction works the residual noise impact will be *negative, not significant to moderate and temporary*.

Vibration impacts during the construction phase will be *neutral, not significant 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

Proprietary noise and vibration control measures will be employed as part of the detailed design in order to ensure that noise emissions from building services plant do not exceed the adopted criterion at any nearby NSLs. In addition, noise emissions should be broadband in nature and should not contain any tonal or impulsive elements. The impact from building services and plant is predicted to be *negative, not significant and long term*.

12.6.2.3 Deliveries Car Parking

Any change in noise levels associated with car parking on site are expected to be *negative, not significant and long term*.

12.6.2.4 Crèche Playground Noise Breakout

Any change in noise levels associated with the crèche playgrounds on site are expected to be *negative, not significant and long term*.

12.6.2.5 Patron Noise from Café Area

Any change in noise levels associated with the patron noise from the café area on site are expected to be *neutral, not significant and long term*.

12.7 Monitoring

12.7.1 Construction Phase

During the construction phase, noise monitoring will be undertaken at the nearest sensitive locations to ensure construction noise limits outlined in **Table 12.4** are not exceeded. Noise monitoring will be conducted in accordance with the International Standard ISO 1996: *Acoustics – Description, measurement and assessment of environmental noise Part 1* (2016) and *Part 2* (2017). The selection of monitoring locations will be based on the nearest sensitive buildings to the working areas.

It is recommended that noise control audits are conducted at regular intervals throughout the construction programme in conjunction with noise monitoring. The purpose of the audits will be to ensure that all appropriate steps are being taken to control construction noise emissions and to identify opportunities for improvement, where required.

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

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 12.4**.

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.

It should be noted that a site should not be considered a negligible risk if more than 10 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.

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 12.3.3** and **Table 12.22** and **Table 12.23**, earlier.

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, the existing sheds in the Hollystown Sites 2 & 3 area will be demolished and have not been included in the initial risk assessment. In addition, 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 12.3.3** and **Table 12.22** and **Table 12.23** earlier, the initial site noise risk assessment has concluded that the level of noise risk across the site is ‘low’ to ‘medium’. ProPG states the following with respect to these levels of risk:

- **Low Risk:** *“At low noise levels, the site is likely to be acceptable from a noise perspective provided that 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 in the finished development.”*
- **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, it can be concluded that the proposed development site may be categorised as ‘low’ to ‘medium’ risk and, as such, an Acoustic Design Strategy will be 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;
- Examine the effects of noise control measures on ventilation, fire regulation, health and safety, cost, construction, design and management, etc.;
- 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 Site 2/3 section of the site lies completely within Noise Zone B of the airport, while the Kilmartin Local Centre section of the site lies completely within Noise Zone C of the airport. Therefore, it would not have been possible to reduce noise levels by designing a site with an alternative layout. The assessment in this chapter in relation to Site 2/3 has found it to be appropriate for Noise Zone B. The assessment in this chapter in relation to the Kilmartin Local Centre has found it to be appropriate for Noise Zone C.

Select Construction Types for meeting Building Regulations

Masonry constructions will be used in the external walls of the proposed development. This construction type 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 roads or 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 correct and 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.

Impact of Noise Control Measures on Fire, Health and Safety

The good acoustic design measures that have been proposed on site do not have any significant impact on other issues.

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 Site 2/3 section of the site, 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. Notwithstanding this, efforts have been made to provide private external space to each dwelling to the rear of the houses and a large external amenity area is located serving the proposed units.

For the Kilmartin Local Centre section of the site, it is not possible to reduce the noise level across external spaces (i.e. balconies), due to aircraft noise, incident from above, 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 in **Table 12.32** and are based on annual average data; that is to say, they omit occasional events where higher intermittent noisy events may occur, such as New Year's Eve.

Table 12.32 ProPG internal noise levels (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} ^{67*Note A}

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

In the first instance, it is important to note 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 12.32** 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 12.33**.

Table 12.33 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}

In this instance, the external noise levels are such that it will not be possible to achieve the desired good internal noise levels with windows open, for properties located within Zone B and Zone C 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.

⁶⁷ 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.

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, 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 12.34**.

Table 12.34 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	35	46	49	48	38

The acoustic specification listed in **Table 12.34** 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 or concrete) 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 adjustable hit-and-miss acoustic ventilators or trickle vents built into the façade or window frames, respectively.

For the Site 2/3 section of the site, it is recommended that any through wall vents are specified to achieve a sound insulation performance of 41 dB $D_{n,e,w}$.

For the Kilmartin Local Centre section of the site, it is recommended that the wall vents are specified to achieve a sound insulation performance of 46 dB $D_{n,e,w}$ ⁶⁸. This specification can be achieved by a range of proprietary vents in either through frame trickle vent or through wall vents.

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 Site 2/3 section of the site 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.

For the Kilmartin Local Centre section of the site, the roof construction is 100 mm structural screed on 200 mm deep reinforced concrete slab with 150mm insulation, which has been assumed to offer a sound reduction index no greater than 60 dB R_w .

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.

Overheating

Another issue arising is the impact of intrusive noise when the windows are temporarily opened during periods of overheating. Section 2.36 of ProPG provides the following guidance in respect of overheating:

"In addition to providing purge ventilation, open windows can also be used to mitigate overheating. Therefore, should the LPA accept a scheme is to be assessed with windows closed, but this scheme is reliant on open windows to mitigate overheating, it is also necessary to consider the potential noise impact during the overheating condition. In this case a more detailed assessment of the potential impact on occupants should be provided in the ADS. It should be noted that overheating issues will vary across the country and any specific design solutions will need to be developed alongside advice from energy consultants."

⁶⁸ It has been assumed that 1 no. vent would be required per room.

As is the case in the vast majority of residential dwellings, overheating will be controlled by opening windows as required. ProPG does not specify any internal noise targets to be achieved during the overheating scenario and neither do other guidance documents. In the absence of guidance, the Association of Noise Consultants (ANC) in the UK have produced a draft document entitled *Acoustics Ventilation and Overheating Residential Design Guide – February 2018*. While this is a draft document, it is considered appropriate for use in the absence of other guidance.

A two-level assessment procedure is recommended by the ANC guide, depending on the risk of potential impact. **Table 12.35** presents the Risk Categories presented within the ANC guide for the overheating conditions.

Table 12.35 Façade noise levels on worst-affected façades

External free-field noise level ⁶⁹		Risk Category ⁷⁰
Daytime, dB L _{Aeq,T} ⁷¹	Night-time, dB L _{Aeq,8hr} ⁷²	
≤52 dB	≤47 dB	Low
>52 dB and ≤62 dB	>47 dB and ≤55 dB	Medium
>62 dB	>55 dB	High

Figure 12.13 presents a flow chart of the process to assess the adverse effect of noise during the overheating condition. In this instance the façade levels previously presented in **Section 12.3.3** and **Table 12.22** and **Table 12.23** have been used to categorise the risk level across the façades of the proposed development.

Given the external noise levels, all façades are categorised as low to medium risk. In all instances, the overheating condition will be controlled by opening windows. This is the only practical option and will be required during the hottest days of the year. Given that the façade levels range from 58 dB L_{Aeq,8hr} at night to 63 dB L_{Aeq,16hr} during the day, and an open window offers a noise reduction of up to 15 dB, the expected internal noise level at the worst-affected façades during the overheating condition is in the range of 43 dB L_{Aeq,8hr} at night and 48 dB L_{Aeq,16hr} during the day.

Following the ANC guide, these internal noise levels would be considered to represent a medium risk of an adverse impact on speech communication during the daytime and a low risk of sleep disturbance at night. Noise levels of this level are likely to be considered suitable if they occur for limited periods.

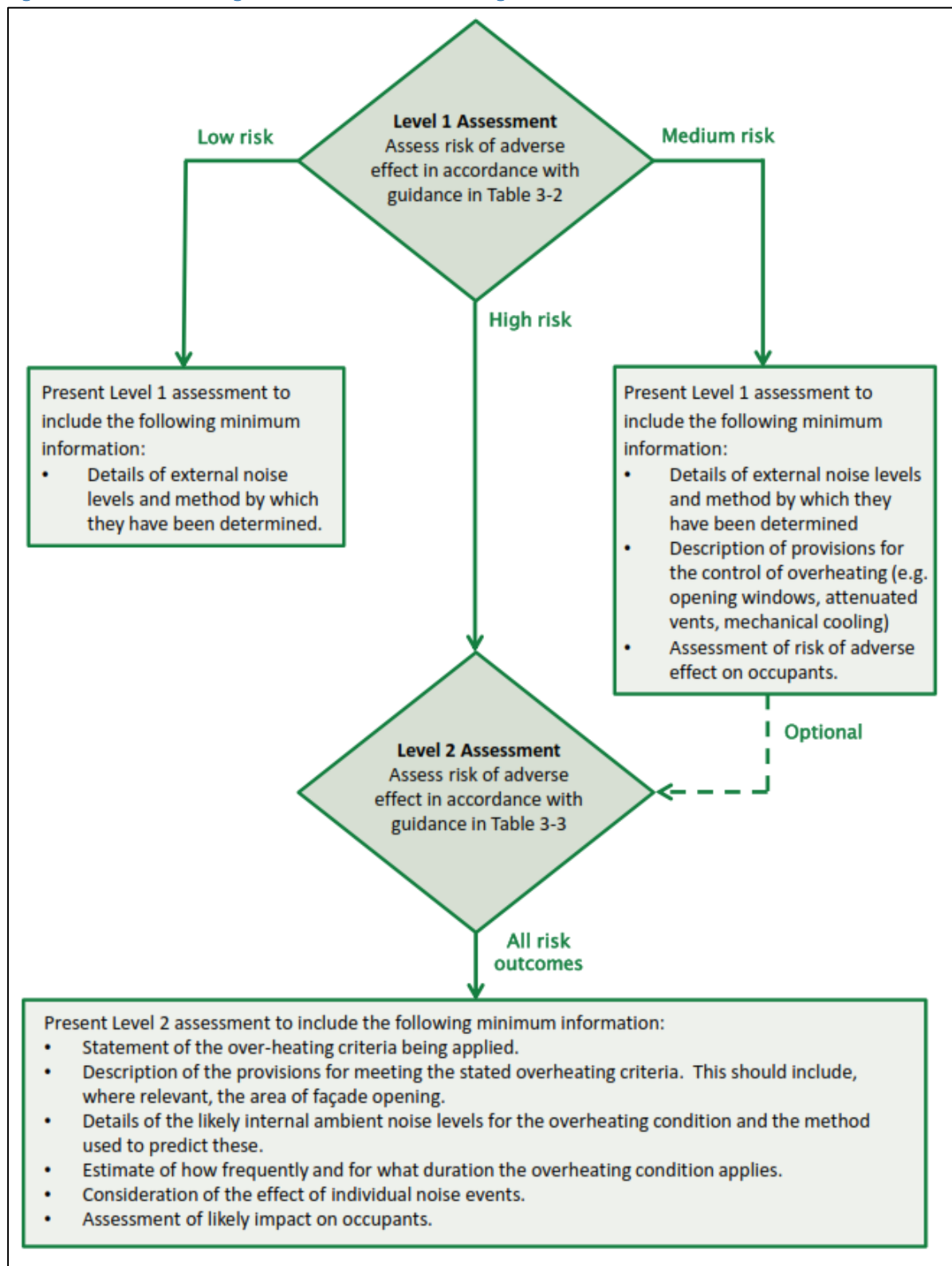
⁶⁹ The values presented in this table should not be regarded as fixed thresholds and reference can also be made to relevant dose-response relationships, such as those described in a DEFRA 2014 study.

⁷⁰ The risk of an adverse effect occurring will also depend on how frequently and for what duration the mitigation of overheating is likely to result in increased internal noise levels.

⁷¹ A decision must be made regarding the appropriate averaging period to use. The averaging period should reflect the nature of the noise source, the occupancy profile and times at which overheating might be likely to occur. Further guidance can be found within the 2014 IEMA Guidelines.

⁷² Regular individual noise events should also be considered. Refer to Appendix A of ProPG for further guidance.

Figure 12.13 Two-stage assessment of overheating



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. Nonetheless, where possible, the location of private gardens in Site 2/3 and public spaces in the Kilmartin Local Centre sections of the site have building layouts designed to provide screening from the R121 road traffic noise sources in the vicinity of the site.

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 Adopted Variation No 1 to the *Fingal Development Plan 2017 – 2023* contains Objective DA07 relating to development within the Airport Noise Zones:

“Strictly control inappropriate development and require noise insulation where appropriate in accordance with table 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 a second runway are not unreasonable to minimize 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; and

- An assessment of the potential for adverse noise impacts during the overheating condition has also been included and it has concluded that there is a medium to high risk of an adverse impact which is considered acceptable if the overheating condition occurs for a limited period.

Based on the preceding, it is concluded that the proposed development is in full 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 Proposed Variation No 1 to the *Fingal Development Plan 2017 – 2023*, the proposed development site is within Zone B for Site 2/3 section of the site and Zone C for the Kilmartin Local Centre section of the site. 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. **Figure 12.6** illustrates the relative positions of the proposed dwellings and the airport noise zones. Furthermore, this chapter has demonstrated the noise insulation measures required to ensure that the proposed dwelling units achieve a good internal noise environment.

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 2/3 section of the site as having ‘medium’ noise risk and the Kilmartin Local Centre section of the site as having a ‘low’ to ‘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.

12.9 Reinstatement

During reinstatement the construction phase noise and vibration impacts outlined in **Section 12.4.1** 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.

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 Sites 2 and 3 and Kilmartin Local Centre site should all sites progress construction simultaneously. In this scenario elevated construction noise emissions due to cumulative noise are potentially likely to occur at receptor locations as well as a potential increase in the length of time that the receptor will be exposed to construction noise. Hence, cumulative construction impacts 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, significant* 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 ‘Do-Nothing’ Impact

The Do Nothing scenario includes this predominantly greenfield site remaining unchanged. The noise and vibration levels measured/noted during the desktop assessment and 2018 and 2021 baseline studies are considered representative of the Do-Nothing scenario. The Do-Nothing scenario is, therefore, considered to have a neutral impact.

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 4142: 2014+A1:2019: *Methods for Rating and Assessing Industrial and Commercial Sound*.
- British Standard BS 5228: 2009 +A1:2014: *Code of Practice for Control of Noise and Vibration on Construction and Open Sites Part 1: Noise & Part 2: Vibration*.
- British Standard BS 7385: 1993: *Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration*.
- Department of Transport Welsh Office, HMSO (1988). *Calculation of Road Traffic Noise*.
- Dublin City Council, DLR County Council, Fingal County Council & South Dublin County Council (2018). *Dublin Agglomeration Environmental Noise Action Plan 2018 – 2023*.
- EPA (2017). *Guidelines on the Information to be contained in Environmental Impact Assessment Reports (Draft)*.
- EPA (2015). *Advice Notes for Preparing Environmental Impact Statements (Draft)*.

- EPA (2012). *Guidance Note for Noise – Licence Applications, Surveys and Assessments in Relation to Scheduled Activities NG4*.
- EPA (2003). *Advice Notes on Current Practice (in the preparation of Environmental Impact Statements)*.
- EPA (2002). *Guidelines on the Information to be contained in Environmental Impact Statements*.
- Fingal County Council (2019). *Noise Action Plan for Dublin Airport 2019 – 2023*.
- Fingal County Council (2017). *Fingal Development Plan 2017 – 2023*.
- 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*.
- WHO (2018). *Environmental Noise Guidelines for the European Region*.

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 on the landscape and visual aspects of the environment.

The landscape and visual impact assessment has been prepared with reference to a series of photomontages of the proposed development prepared from the surrounding areas, which are provided to illustrate the expected visual impacts on the baseline environment. The photomontages have been submitted as part of the planning application under separate cover and should be reviewed in conjunction with this chapter.

This chapter has been prepared by Alex Craven, Senior Landscape Architect at Brady Shipman Martin. Technical reviews have been completed by Lorraine Guerin, Environmental Consultant at Brady Shipman Martin; and Thomas Burns, Partner at Brady Shipman Martin. Refer to **Table 1.3** in Chapter 1 (Introduction) for qualifications of authors and reviewers.

13.2 Assessment Methodology

13.2.1 Study Area

The study area includes the proposed development site and the surrounding landscape context.

13.2.2 Relevant Legislation, Policy & Guidelines

The assessment has been carried out with reference to the legalisation, policy and guidelines listed in the following sections.

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; and
- European Landscape Convention 2000.

13.2.2.2 Policy

- *Fingal Development Plan 2017 – 2023*; and
- *Kilmartin Local Area Plan* (2013; as extended) ('Kilmartin LAP' hereafter).

13.2.2.3 Guidelines

- *Draft Guidelines on the Information to be contained in Environmental Impact Assessment Reports* (hereafter the 'EPA Guidelines') (EPA 2017);
- *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); and
- *Landscape Institute Technical Guidance Note 06/2019 on Visual Representation of Development Proposals* (hereafter the 'VRDP') (Landscape Institute 2019).

While the EPA Guidelines (EPA 2017) 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 2017) 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* (LVIA) is a tool used to identify and assess the significance of and the effects of change resulting from development on both the landscape as an environmental resource in its own right, and on people's views and visual amenity (Landscape Institute and IEMA 2013).
- *Landscape Impact vs. Landscape Effect*: In the context of LVIA, '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 & Collation

Data collection and collation is based on initial desk studies, supported by full site walkovers and augmented by further specific site reviews, within the study area, together with the selection and preparation of verified photomontages of the proposed development.

Desk studies, which allow for identification of designated and potential significant / sensitive areas, involved a review of: -

- *Fingal Development Plan 2017 – 2023*;
- Kilmartin LAP;
- Historical and current mapping and aerial photography (e.g. ordnance survey Ireland (OSi), Google Earth, Google Maps);
- Mapping of the proposed development; and
- 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; and
- Selection of locations for verified photomontages of the proposed development.

13.2.5 Assessment of Impacts

Assessment of potential effects involves: -

- Classifying the sensitivity of the receiving landscape and visual environment; and
- 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.

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 the relevant policy framework. Four categories are used to classify sensitivity, as set out in **Table 13.1**.

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 does not detract from landscape value / visual amenity, or which enhances them.	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.
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	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

Description of Baseline Sensitivity	Rating	Description of Magnitude of change arising from proposed development
landscapes / views the principle management objective is to facilitate change that does not detract from landscape value / visual amenity or enhances them		the context. Such development results in minor change to the landscape/view.

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 Draft Guidelines and presented in Figure 3.5 of the Guidelines, as illustrated 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.

Consideration of the quality, duration and frequency of effects, is as described in Table 3.3 of the EPA Guidelines (EPA 2017), as listed in **Table 1.4** in Chapter 1 (Introduction) of this EIAR.

13.2.6 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: -

1. Photography;
2. Survey;
3. 3D modelling and camera matching;
4. Rendering and finishing of photomontages; and
5. Presentation.

Photomontages are presented as 'as existing' and 'as proposed' versions on A3 pages in landscape format. The photomontages have been submitted as part of the planning application under separate cover and should be reviewed in conjunction with this chapter.

13.3 Receiving Environment

The site is located partially within the area of the residential/local centre zoned lands covered by the Kilmartin LAP. The Kilmartin LAP lands are situated along the north-western development boundary of Blanchardstown and comprise approx. 78.51 hectares. Dublin City Centre is a distance of c. 12km away and Blanchardstown Local centre 3.8km. 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 site is composed of two spatially distinct areas of land, referred to as 'Hollystown Sites 2 & 3' and the 'Kilmartin Local Centre'. The southern area of land (Kilmartin Local Centre, approximately 3ha) is located to the north of Tyrrelstown Local Centre, and is bounded by an unnamed local road to the west, The Avenue / Hollystown Road to the north, and by the R121 to the east.

The northern area (Hollystown Sites 2 & 3, approximately 20ha) is located within the former Hollystown Golf Course lands, to the north of Le Chéile Secondary School and the recently constructed Bellingsmore residential development (planning refs. FW13A/0088/(E1); PL06F.243395). This northern area is bounded by the former golf course lands to the north, by rural land to the west (designated for future residential development) and by the R121 to the east. The site boundary extends with a linear pedestrian / cycle link through the former golf course lands to adjoin with Ratoath Road, a country road running from Hollystown and beyond to northern Blanchardstown.

The northern portion of the site (Hollystown Sites 2 & 3) is mostly level and comprises a former agricultural field, and former golf course lands, with some mature trees, hedgerows, stands of early mature trees and younger screen belts. Several ditches run through the site along the former field boundaries. There has been substantial disturbance of the former agricultural land through provision of construction compound and stockpiling areas for the purposes of the adjacent Bellingsmore residential development.

The southern portion of the site (Kilmartin Local Centre) is formed from an area of former agricultural land which has been partially modified with the construction of surrounding areas, including the construction of a gravelled hardstanding, and overhead powerlines cross the site diagonally with a transmission pylon situated towards the south-eastern corner.

A number of schools and community facilities are located on lands near to the site, 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 the west of Le Chéile Secondary School.

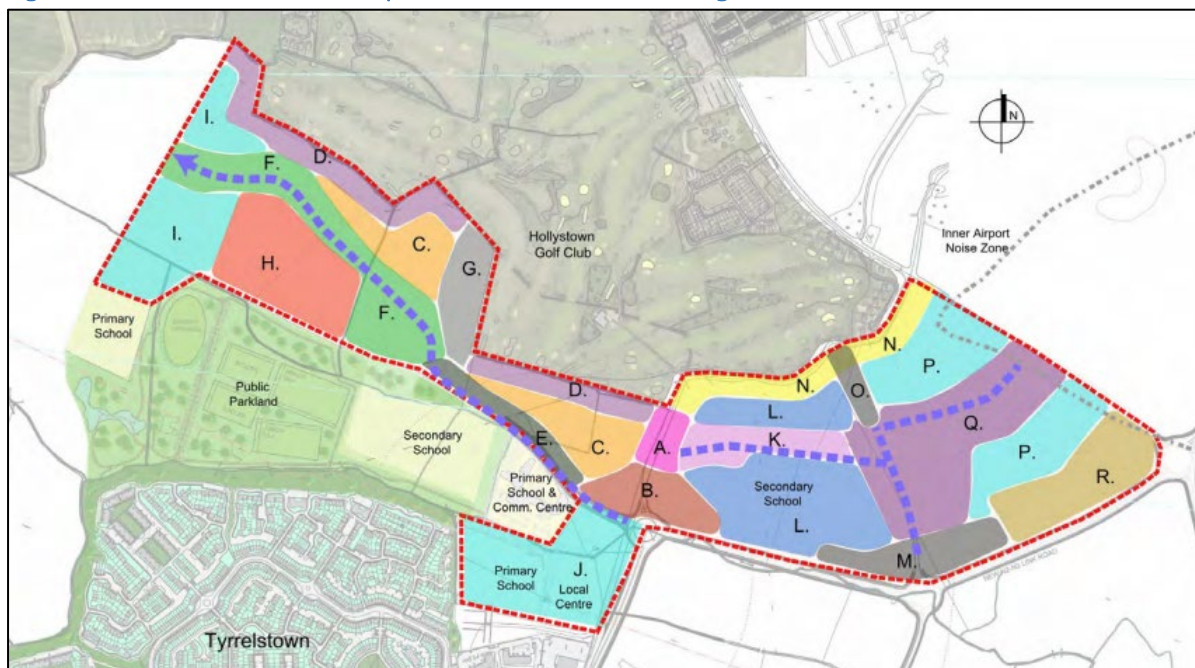
While the wider area includes some more established residential developments, including The Redwood and The Oaks around the former golf course lands, and more notably at Tyrrelstown, emerging / new residential development is also a prominent feature at Hollywoodrath to the east of the site and at Bellingsmore between the northern and southern portions of the site.

The Fingal Development Plan 2017-2023 provides a Landscape Character Assessment of the Local Authority administrative area. The Development Plan classifies the area into six '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.

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 other large scale commercial and industrial development. 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 landscape is influenced by the presence of Dublin Airport to the east, as its westward flight paths cross 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.

Figure 13.1 Extract from Map 10 of Kilmartin LAP showing character areas A – R



13.4 Characteristics of the Proposed Development

13.4.1 Overview

The proposed development relates to a site of c. 25.3 ha at the townlands of Hollystown, Kilmartin, Hollywoodrath, Cruiserath, Yellow Walls, Powerstown, and Tyrrelstown, Dublin 15, which includes lands in the former Hollystown Golf Course and lands identified under the Kilmartin LAP. The lands are bound by the R121 and Hollywoodrath residential development to the east, the under construction Bellingsmore residential development to the south and north, the former Hollystown Golf Course to the north, Tyrrelstown Educate Together National School, St. Luke's National School and Tyrrelstown Community Centre to the west and south and the existing Tyrrelstown Local Centre to the south.

The proposed development will consist of the development of 548 no. residential units, consisting of 147 apartments/duplexes and 401 houses, ranging in height from 2 to 5 storeys and including retail/café unit, 2 no. crèches, 1 no. Montessori, 1 no. community hub, car and bicycle parking, open space, public realm and site infrastructure over a site area of c. 25.3 ha. On lands to the north of the application site (referred to as Hollystown Sites 2 & 3) the proposed development includes for 428 units consisting of 401 no. 2 and 3 storey houses and 27 no. apartments set out in 9 no. 3-storey blocks. On lands to the south of the application site and north of the Tyrrelstown Local Centre (referred to as Kilmartin Local Centre) the proposed development includes 120 no. apartment/duplex units in 4 no. blocks ranging in height from 3 to 5 storeys. The local centre includes 2 no. crèches (including 1 standalone 2 storey crèche), 1 no. Montessori, a retail/café unit, and 1 no. community hub.

13.4.2 Construction Phase

The construction phase 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;

- Demolition works, topsoil stripping and temporary storage of soil 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.

13.4.3 Operational Phase

The operational phase of the proposed development will see delivery of a second phase of residential development and an expansion of the emerging residential community at Kilmartin in accordance with the principals of the Kilmartin LAP.

In effect, the operational phase of Hollystown Sites 2 & 3 will represent the further westward expansion of development in accordance with planning policy. There will be delivery of the key open spaces for existing and future residential areas in the form of extended linear parks, riparian buffer zones and central open spaces. The Kilmartin Local Centre portion of the proposed development will further reinforce the character of the emerging Local Centre and will provide amenities including crèches, a Montessori school, café, community hub and public open space. The central open space includes a public park, which provides a key element of the green infrastructure, open space and amenity and recreational network for the wider lands.

The operational phase of the proposed development will involve: -

- Establishment of an extended residential development, with extended roads, roadside lighting and emerging community; and
- Access to public open space and community amenities, and to an expanded open network of spaces including the proposed pedestrian and cycle link to the planned GAA pitches.

13.5 Predicted Impacts of the Proposed Development

13.5.1 Construction Phase

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.

In a scenario where mitigation measures were not implemented or failed, the worst-case landscape and visual impact of the construction phase is assessed as being ***significant, negative and short-term***.

13.5.2 Operational Phase

Potential landscape and visual impacts from the operational phase are associated with: -

- The design, character and quality of the proposed buildings;
- The design, amenity and quality of the proposed open spaces and community amenities; and
- The overall quality of finish and management of the proposed development.

In a scenario where mitigation measures were not implemented or failed, the worst-case landscape and visual impact of the operational phase is assessed as being ***moderate to significant, negative and long-term***.

13.5.3 'Do-Nothing' Impact

The lands on which the proposed development are situated are zoned for residential and associated open space development in the Kilmartin LAP and Fingal Development Plan 2017 – 2023. Therefore, should this proposed development not proceed (i.e. the do-nothing scenario), it is envisaged that some residential / open space development of a broadly similar nature would proceed on these lands at some stage, which would likely result in similar effects to the proposed development.

13.6 Mitigation Measures

13.6.1 Construction Phase

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 with best practice, the 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 be finalised by the appointed contractor in advance of the commencement of works, in agreement with Fingal County Council. It 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 Preliminary Construction & Environmental Management Plan (pCEMP) prepared in respect of the proposed development by DBFL Consulting Engineers, and submitted under 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 the 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. 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.
- 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.

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 Phase

The operational phase 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 (i.e. 'mitigation by design') 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 Impacts

13.7.1 Construction Phase

13.7.1.1 Landscape Impacts

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 phase, when site disturbance associated with the stripping of soils and movement of machinery may be unfamiliar and draws particular visual attention to the site.

Parts of the site fabric have already been disturbed through previous or ongoing construction works associated with the surrounding areas. There is also a strong influence on the character of the area by these construction works and the presence of adjacent development, much of which has been completed relatively recently. Nevertheless, there are elements of landscape value remaining, most notably in the vegetation and planting of the former golf course and the boundaries and ditches of the former agricultural field. The Kilmartin Local Centre area of the site is also substantially degraded by the presence of the overhead power lines and pylon. The sensitivity of the receiving landscape environment is assessed as being *low / medium*. The sensitivity of the receiving visual environment is considered *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 community amenity provision. There will be the permanent loss of some valued features such as tree planting associated with the golf course, 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 landscape effects resulting from the construction phase would be *slight to moderate, negative and short-term*.

13.7.1.2 Visual Impacts

The site is moderately well enclosed and screened by mature field boundaries, and tree planting within the former golf course lands. Open views are limited to those from areas around the Kilmartin Local Centre, which are less sensitive due to their more developed nature and presence of substantial infrastructure. The sensitivity of the receiving landscape environment is assessed as being *medium*. The magnitude of change on the receiving visual environment would be *medium*. The visual effects resulting from the construction phase would be *moderate, negative and short-term*.

13.7.2 Operational Phase

On completion of the construction phase, 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 Impacts

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 and Local Centre 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 requirements of the Kilmartin LAP and the emerging character and finishes established in Phase 1 of the development of the LAP lands.

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, as well as under the overhead electricity cables that bound the site to the north. 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, although these are generally in poor condition. These will be further preserved and enhanced through the use of buffers strips and, where feasible, integration into the proposed open space network.

The change in land use will inevitably result in the removal of a substantial 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. The planting patterns and layout of the treescape across the old golf course are not suitable for integration with the type of layout required for efficient residential housing design, and as a consequence, many of the young landscape trees will need to be removed to make way for the new layout.

The western part of the Hollystown Sites 2 & 3 portion of the site is located on former agricultural lands that have been heavily degraded following the cessation of farming activity and use as a construction compound and storage area. The old field boundary hedges are in mostly poor condition, with many of the emergent stems being Ash (*Fraxinus excelsior*) in serious decline as a result of ash dieback. The development will require that a considerable number of trees are removed in the enabling and site

clearance phases of the proposed development, however, the vast bulk of these trees are of comparatively low value as individuals and their removal will be largely mitigated by new planting within the new landscape plan. Additionally, the context that these trees were intended to exist in has been lost, through the disuse of the golf course, and 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 phase of the proposed development will make a continued positive contribution to the emerging residential community of the wider area, as well as reinforcing the emerging character and amenity of the Local Centre. The sensitivity of the receiving landscape environment is assessed as being *low / medium*. The magnitude of change would be *medium*. The landscape impact of the operational phase is assessed as being *slight to moderate, neutral and short-term*, becoming *positive in the long-term* as the landscape matures.

13.7.2.2 Visual Impacts

A portion of the site (Site 2) is situated immediately west of the permitted Hollystown Site 1 residential development (FCC reg. ref. FW21A/0042) and immediately north of the recently constructed Bellingsmore residential development. A visual impact will occur where there will be loss of mature trees and introduction of houses on Church Lane, however, these will help enclose and define the residential nature of the views along this streetscape.

The sensitivity of the receiving visual environment at this location is assessed as being *medium* and the magnitude of change would be *high*. The visual impact of the operation phase on views in this area is assessed as being of *moderate, negative and long-term*, becoming *neutral in the long-term* as the context of the views becomes more residential and the proposed landscaping matures.

Hollystown Sites 2 & 3 are also located near to the Le Chéile Secondary School and residential areas bordering the former golf course to the west and north, however, these are well screened by mature hedgerows, trees and planting within the remaining undeveloped section of the golf course lands outside of the site area. This screening will be further reinforced with new planting in the perimeter open spaces.

The construction of the apartment buildings on the southern portion of the site (Kilmartin Local Centre) has potential for some of the most significant visual effects, due to the height and massing of the buildings. However, the proposals will be consistent with the objectives of the Kilmartin LAP and will be visually appropriate for the Local Centre location. The character of views from surrounding areas are also highly influenced by the presence of other local centre development, large road infrastructure and presence of high voltage overhead powerlines.

It is considered that the operational phase of the proposed development will make a positive contribution to the emerging residential community of the wider area, as well as reinforcing the emerging character and amenity of the Local Centre. The sensitivity of the receiving visual environment is assessed as being *medium*. The magnitude of change would be *medium*. The visual impact of the operational phase is assessed as being of *moderate, neutral and short-term*, becoming *positive in the long-term* as the landscape matures.

Photomontages

Photomontages of the proposed development have been prepared and submitted under separate cover as part of the planning application. Each view is presented as an 'as existing' and 'as proposed' version. Photomontage viewpoints are shown on **Figure 13.2**. The views have been selected on the basis that they represent the highest potential for visual impact within the existing landscape.

Figure 13.2 Locations of photomontage viewpoints



View 1

This view looks north from the Tyrrelstown Local Centre. The streetscape is of mixed quality with street trees in planters in poor condition, extensive car parking and overhead powerlines and pylons being visually prominent. An adjacent local centre building, which is of good architectural quality, frames the view to the left. However, the streetscape is generally open and poorly defined. Some mature trees are visible in the middle distance, which provide the main features of landscape value in the view.

The Kilmartin Local Centre proposals are barely visible in the middle distance beyond the trees. The proposed view is in keeping with the character of existing and emerging nature of development in the area. The proposed development would result in a minor improvement to the character of the view with the consolidation of the local centre character and there would be no impact on features of value in the view.

The sensitivity of the receiving visual environment is assessed as being *low / medium*. The magnitude of change would be *low*. The landscape impact of the operational phase is assessed as being of *slight, positive and long-term*.

View 2

This view looks north along Church Road towards the new residential areas of Kilmartin. The rear elevation of Lidl and boundary planting is visible on the left of the view. Overhead powerlines and high-

voltage pylon are prominent in the centre of the view. Trees within the site boundary are visible, and these help screen the pylon and enclose the streetscape. The character of the view is of a dual carriageway with substantial commercial and infrastructural development.

The Kilmartin Local Centre proposals would be visible beyond trees within the site boundary. The proposed view is in keeping with the character of existing and emerging nature of development in the area. The proposed development would result in a minor improvement to the character of the view with the consolidation of the local centre character and there would be no impact on features of value in the view.

The sensitivity of the receiving visual environment is assessed as being *low*. The magnitude of change would be *low*. The landscape impact of the operational phase is assessed as being of *slight, positive and long-term*.

View 3

This view looks east along the Avenue / Hollystown Road. The streetscape is defined by recently constructed residential properties to the left and by the Tyrrelstown Educate Together National School to the right. The site and high-voltage pylons are visible in the middle distance. The character of the view is of an emerging new suburban/urban area with prominent infrastructure and some architecture of moderate quality.

The Kilmartin Local Centre proposals would be visible in the middle distance. There would be an improvement in the view with the increased sense of enclosure of the streetscape, and screening of the pylons. The proposed view is in keeping with the character of existing and emerging nature of development in the area. There would be minor improvement to the character of the view with the consolidation of the local centre character and there would be no impact on features of value in the view.

The sensitivity of the receiving visual environment is assessed as being *medium*. The magnitude of change would be *medium*. The landscape impact of the operational phase is assessed as being of *moderate, positive and long-term*.

View 4

This view looks southwest from Hollywoodrath Crescent towards the newly developed residential area at Bellingsmore, which is prominent in the view. A small open space is visible in the foreground with some young tree planting and a small substation beyond. High-voltage pylons are partially visible in the middle distance.

The Kilmartin Local Centre proposals would be visible in the middle distance. There would be an improvement in the view with the increased sense of enclosure of the streetscape, and partial screening of a pylon. The proposed view is in keeping with the character of existing and emerging nature of development in the area. There would be minor improvement to the character of the view with the consolidation of the local centre character and there would be no impact on features of value in the view. The sensitivity of the receiving visual environment is assessed as being *medium*. The magnitude of change would be *low*. The landscape impact of the operational phase is assessed as being of *slight, positive and long-term*.

View 5

This view looks southeast from the residential area of Hollystown Park, on the northwestern margin of the former golf course. The character of the view is rural with no built form evident.

The proposed development would be fully screened by trees within the former Hollystown Golf Course, and there would be no change to the view.

The sensitivity of the receiving visual environment is assessed as being *medium*. The magnitude of change would be *negligible*. The landscape impact of the operational phase is assessed as being of *imperceptible, neutral and long-term*.

View 6

This view looks west from the residential area of Redwood to the north of the proposed development site, on the former Hollystown Golf Course. The character of the view is rural with no built form evident.

The proposed development would be fully screened by trees within the former golf course, and there would be no change to the view.

The sensitivity of the receiving visual environment is assessed as being *medium*. The magnitude of change would be *negligible*. The landscape impact of the operational phase is assessed as being of *imperceptible, neutral and long-term*.

View 7

This view looks west along Hollywood Rise and past new residential development at Bellingsmore. Trees at the former Hollystown Golf Course provide a backdrop to the view, including mature trees which are substantial positive features of landscape value in the view. The character of the view is of an emerging residential area with adjacent rural and former amenity land.

The Hollystown Site 2 portion of the proposed development would be visible beyond the existing residential development. There would be a change in the view with the removal of mature trees and an increase in built form. There would be a *negative impact* on features of landscape value, and a reduction in visual amenity through the loss of trees. However, the proposed view is in keeping with the character of existing and emerging nature of development in the area. The *negative effects* will be reduced over time by the maturation of proposed vegetation.

The sensitivity of the receiving visual environment is assessed as being *medium*. The magnitude of change would be *medium*. The landscape impact of the operational phase is assessed as being of *moderate, negative and long-term* becoming *neutral* in the long-term as the proposed landscaping matures.

View 8

This view looks northwest from Hollywoodrath Road towards the boundary of the site, which is defined by a tall hedgerow with mature trees. In the foreground is a paved area and front gardens associated with the Bellingsmore residential development. The character of the view is of a recently constructed residential area with adjacent rural amenity land with prominent trees.

The Hollystown Site 2 portion of the proposed development would be visible beyond the existing residential development. There would be a change in the view with the removal of mature trees and an increase in built form. There would be a *negative impact* on features of landscape value, and a reduction in visual amenity through the loss of trees. However, the proposed view is in keeping with the character of existing and emerging nature of development in the area, and the most prominent line of trees will be retained. The *negative effects* will be reduced over time by the maturation of proposed vegetation.

The sensitivity of the receiving visual environment is assessed as being *medium*. The magnitude of change would be *medium*. The landscape impact of the operational phase is assessed as being of *moderate, negative and long-term* becoming *neutral* in the long-term as the proposed landscaping matures.

View 9

This view looks northeast 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 a row of three pylons carrying overhead high voltage powerlines through the view to the northeast. A tall hedge borders the space and, beyond this, Le Chéile Secondary School is visible. The character of the view is of a featureless open space, on the edge of a residential area, which is visually dominated by the pylons.

The Kilmartin Local Centre and Hollystown Site 2 & 3 elements of the proposed development are only slightly visible above various screening elements and will result in a barely perceivable change to the view.

The sensitivity of the receiving visual environment is assessed as being *medium*. The magnitude of change would be *negligible*. The landscape impact of the operational phase is assessed as being of *imperceptible, neutral and long-term*.

13.8 Cumulative Impacts

The local area in which the proposed 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 with the potential for cumulative impacts are listed in **Table 20.1**.

13.8.1 Construction Phase

Potential cumulative landscape and visual impacts from the construction phase are associated with: -

- Wider site-based landscape disturbance, earthworks, stockpiling of soils and materials on the subject site and other sites in the vicinity;
- Removal of trees / hedgerows on other sites in cumulation with the subject site;
- More intensive construction activity and traffic from a number of sites / sources; and
- Wider inconvenience and / or visual effects from dust, dirt and noise.

13.8.2 Operational Phase

Potential cumulative landscape and visual impacts from the operational phase are associated with: -

- The design, character, quality and quantities of development;
- The design, amenity and quality of open spaces and community amenities within and around the site; and
- The overall quality of finish and management of the subject site and surrounding developments.

13.8.3 Conclusion

This chapter has been prepared with reference to the list of other developments in the vicinity set out in Chapter 20 (Cumulative Impacts). Assuming the implementation of the above-listed mitigation measures, neither the development proposed nor any other developments will give rise to any significant landscape and visual effects during the construction phase. There are *no predicted significant*

cumulative impacts in relation to landscape and visual, for example, significant adverse changes to the overall landscape character or significant adverse 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*.

13.9 Reinstatement

13.9.1 Construction Phase

All landscaped 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.

13.9.2 Operational Phase

Any landscape materials, plants or areas which fail during the ongoing operational phase will be replaced.

13.10 Interactions

The principal interaction between landscape and visual (Chapter 13) and other EIA topics – wherein landscape and visual amenity is the receptor rather than the source – is with population and human health (Chapter 7), since the introduction of a new residential community to the site (i.e. the residents of the proposed development during the operational phase) will have a significant positive effect, enlivening the landscape setting of the proposed development.

14 Cultural Heritage, Archaeology & Architectural Heritage

14.1 Introduction

This chapter details an archaeological, architectural and cultural heritage assessment undertaken in relation to the proposed Strategic Housing Development (SHD) at Hollystown, County Dublin (ITM 707993,743032, refer to **Figures 1.1** and **1.2**). This assessment has been carried out to ascertain the potential impact of the proposed development on the archaeological and historical resource that may exist within the area.

The assessment involved a detailed study of the archaeological and historical background of the proposed development site and the surrounding area. This included information from the Record of Monuments and Places of County Dublin, the topographical files within the National Museum and all available cartographic and documentary sources for the area. A field inspection has also been carried out with the aim of identifying any previously unrecorded features of archaeological or historical interest.

An impact assessment and a mitigation strategy have been prepared. The impact assessment is undertaken to outline potential adverse impacts that the proposed development may have on the cultural heritage resource, while the mitigation strategy is designed to avoid, reduce, or offset such adverse impacts.

The proposed development is detailed in Chapter 5 (Description of the Proposed Development).

This chapter has been prepared by Faith Bailey, Associate Director and Senior Archaeologist and Cultural Heritage Consultant at IAC Archaeology. Technical reviews have been completed by Lorraine Guerin, Environmental Consultant at Brady Shipman Martin; and Thomas Burns, Partner at Brady Shipman Martin. Refer to **Table 1.3** in Chapter 1 (Introduction) for qualifications of authors and reviewers.

14.2 Methodology

Research for this report was undertaken in two phases. The first phase comprised a paper survey of all available archaeological, historical and cartographic sources. The second phase involved a field inspection of the site.

14.2.1 Paper Survey

- Record of Monuments and Places for County Dublin;
- Sites and Monuments Record for County Dublin;
- National Monuments in State Care Database;
- Preservation Orders List;
- Register of Historic Monuments;
- Topographical files of the National Museum of Ireland;
- Cartographic and written sources relating to the study area;
- Fingal County Development Plan, 2017-2023;
- Aerial photographs;
- Excavations Bulletin (1970-2020); and
- National Inventory of Architectural Heritage.

The ***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.

The ***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. SMR sites are also listed on a website maintained by the Department of Housing, Local Government and Heritage (DoHLGH) – archaeology.ie.

The ***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.

The ***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.

Development Plans contain a catalogue of all the Protected Structures and archaeological sites within the county. The *Fingal Development Plan 2017–2023* was consulted to obtain information on cultural heritage sites in and within the immediate vicinity 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 and Google Earth.

The *Excavations Bulletin* is a summary publication that has been produced every year since 1970. This 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. This information is also available online (www.excavations.ie) from 1970-2020.

The *National Inventory of Architectural Heritage* (NIAH) is a state initiative established under the provisions of the Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act 1999 tasked with making a nationwide record of significant local, regional, national and international 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.

14.2.2 Field Inspection

Field inspection is necessary to determine the extent and nature of archaeological 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 inspections were carried out over several visits in August and October 2020.

The archaeological and architectural field inspection entailed:

- Walking the proposed development and its immediate environs;
- Noting and recording the terrain type and land usage;
- Noting and recording the presence of features of archaeological or historical 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.

14.3 Baseline Analysis

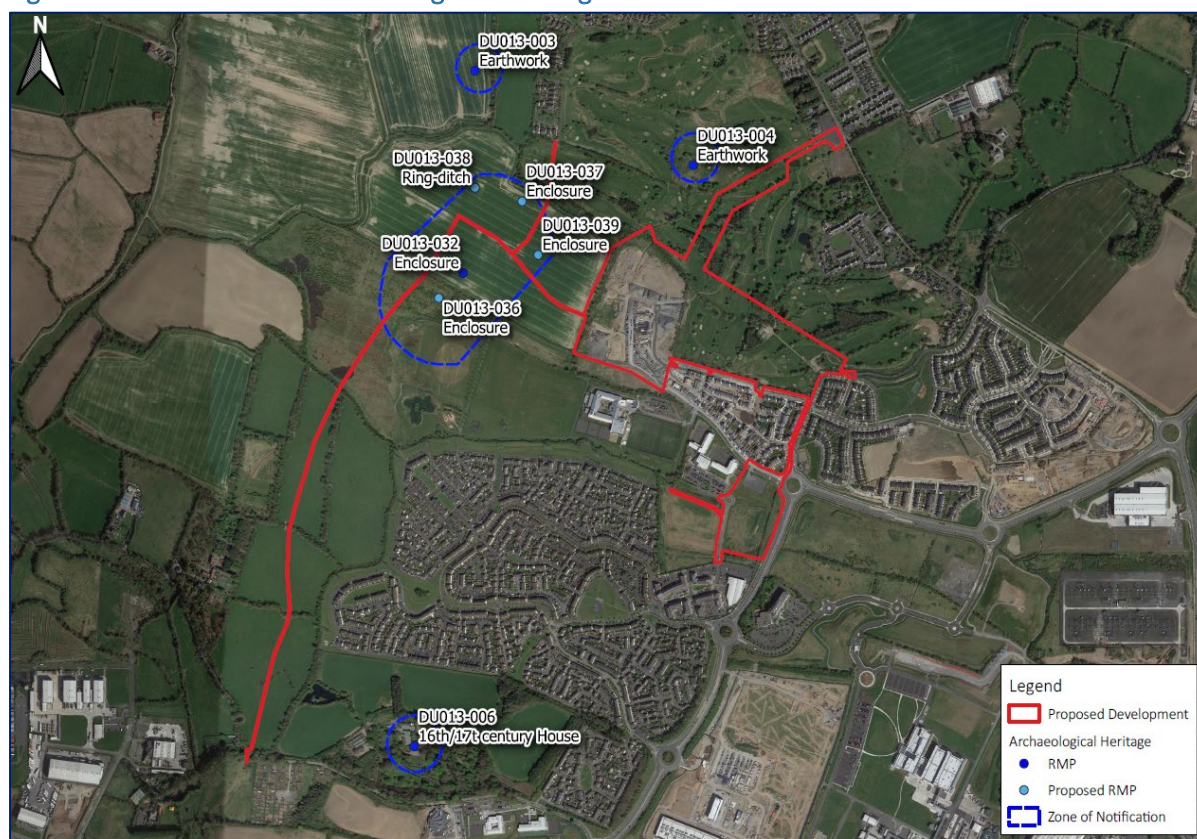
14.3.1 Archaeological and Historical Background

The proposed development area is located in the townlands of Hollystown, Hollywoodrath and Cruiserath, with a proposed service pipeline extending through the townlands of Kilmartin and Powerstown, Parish of Mulhuddart and Barony of Castleknock.

There are eight archaeological sites within 500 m of the proposed development area, four of which are recorded monuments and four of which are scheduled for inclusion in the next revision of the RMP. The proposed development area is partially within the zone of notification for DU013-032, an enclosure, where the pipeline extends through the townland of Kilmartin (**Figure 14.1**).

The closest protected structure is St Thomas' Church (RPS 0664), which is located c. 217 m to the north of the proposed development area, fronting onto an existing road. This is also the closest structure included within the NIAH survey.

Figure 14.1 Site location showing surrounding recorded monuments



14.3.1.1 Prehistoric Period

Mesolithic Period (6000–4000 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, settlement evidence dating to the Mesolithic period is rare. Often the only trace of these communities are 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 dated to the Mesolithic in the vicinity of the proposed development site.

Neolithic Period (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 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 immediate vicinity of the proposed development site.

Bronze Age (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 re-used, during the Iron Age and early medieval period. A ring-ditch (DU013-038) is situated c. 121 m north of the proposed pipeline, within the zone of notification associated with DU013-032.

A cluster of cremation pits were excavated c. 611 m southeast 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 (Licence 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 (Licence E003918).

Bronze Age activity is often clearly identifiable in the landscape by the presence of *fulachtaí fia* or burnt mounds. Thousands of *fulachtaí fia* have been recorded in Ireland making them the most common prehistoric monument in the country. These sites were used to heat water using hot stones. They have been interpreted as places where cooking, dyeing, brewing, or bathing took place (O' Kelly 1954, Quinn and Moore 2009). The closest to the proposed development is DU011-092, which is found at Upper Ward, c. 2.3 km to the northeast during excavations (Licence no. 03E1356 ext) prior to the N2 Finglas-Ashbourne Road scheme.

During the same road scheme, excavations revealed a random grouping of features including an industrial site (DU011-093), a small burnt pit, a linear feature and a small pit or cremation (Licence no. 03E1358). Which produced 280 pieces of prehistoric pottery of late Bronze Age date (DU011-091), located c. 1.8 km to the east of the development area.

Iron Age (800 BC–AD 500)

Compared to the rest of Irish prehistory, there is little evidence in Ireland, as a whole, 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 700BC 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. 675 m to the east (Licence 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 cé*t, 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 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. A number of enclosures (DU013-036/37/39) are located within the study area of the proposed development area all within the zone of notification of DU013-032, through which the proposed pipeline of the development passes. A corn-drying kiln (DU013-042) was excavated c. 531 m southeast of the development site as part of the Tyrrelstown to N2 Cherryhound Interchange link road (Licence E003920). The kiln was dated to AD 1020–1180, placing it within the early medieval period and is evidence of agricultural activity in the wider environs of the site.

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 more or less 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, in 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. 950 m east of the proposed development area as part of the Tyrrelstown to N2 Cherryhound Interchange link Road (DU013-046001; Licence 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.

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 land ownership 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 in Ireland at this time; however, the townland of Hollystown was not depicted on this mapping.

A historic graveyard site is found at St. Thomas's in Hollystown (FHG 26), c. 87 m to the northeast of the proposed development. Although usually containing medieval funerary features such as simple uninscribed stones, ornate effigial tombs, headstones and mausoleums, this site only contains 19th or 20th century features.

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 effort, 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 northern portion of the proposed development area is located within the shaded demesne of Hollywoodrath House on the first edition OS map. This section of the demesne has since been affected by residential developments and the construction of a golf course.

14.3.2 Summary of Previous Archaeological Fieldwork

A review of the Excavations Bulletin (1970–2020) has revealed that a number of previous archaeological investigations has been carried out within the proposed development area and its environs.

Within the proposed development area, a geophysical survey in advance of the Tyrrelstown to N2 Cherryhound Interchange link road identified an area of burnt fired response indicative of burnt mound remains and a strong magnetic response possibly representing a palaeo-channel (Nicholls 2008, Licence 08R0017). No other strong responses of archaeological activity were returned within the study area; however, a possible enclosure system and linear and pit responses were identified outside the study area to the east. A programme of testing followed on from the geophysical survey and determined that the burnt mound and palaeo-channel responses were non-archaeological, and no features of archaeological potential were identified within the study area (Licence 07E1147, Bennett 2008:369).

Within the proposed development area at Hollywoodrath, a geophysical survey in 2020 identified a possible curvilinear feature running from the north-western corner of the area towards the southern boundary and possible pits. This may represent a former trackway or former field division. There was no clear archaeological pattern and this trend was not considered to be of archaeological interest (Licence 20R0131) (**Figure 14.4**; inset B).

A geophysical survey was carried out in two fields to the south and west of the proposed development area (Gimson 2011; Licence 11R0152), which is traversed by the proposed pipeline. This identified possible pits and two linear trends possibly representing a relict field division in the field to the south. 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. The proposed pipeline will pass through the area surveyed as 'Field 4', where a number of potential archaeological features were identified (**Figure 14.2**; inset A). Subsequent testing identified a linear feature at the southern side of the enclosure (DU013-032) and a curved linear ditch at the enclosure (DU013-037). No other features of archaeological significance were uncovered, despite the results of the geophysical survey (Kavanagh 2012, Licence 12E0063).

A programme of archaeological test trenching was carried out c. 275 m to the east, for a proposed housing development in 2018 (Licence 18E0662, Bennett 2018:212). A total of seven trenches were excavated and revealed a single charcoal production pit. The pit was subsequently excavated and topsoil removal from the site was monitored. No additional archaeological features or deposits were uncovered (Coughlan 2019). The eastern and western halves of a residential development immediately east of the development area were subject to a programme of archaeological testing prior to construction (Licence 15E0142 and ext., Bennett 2015:261/2017:620). Nothing of archaeological significance was identified during these works.

Archaeological monitoring was carried out during the construction of a residential development c.120 m north of the proposed development area in 2019 (Purcell 2020); however, no archaeological features were identified during the course of the works.

Figure 14.2 Results of geophysical survey (12E0063 and 20R0131)



14.3.3 Cartographic Analysis

14.3.3.1 William Petty, Down Survey Map of the Barony of Castlenock and the Parish of Mulhuddart, c. 1655

The proposed development area is located within the parish of 'Mallahidert' on this map; however, the townland of Hollystown is not depicted and no features are indicated in its approximate location. The

townlands of 'Terellstowne' and 'Killmartin' are annotated to the south and west of the site, respectively. Tyrrelstown House (DU013-006) is depicted to the east of the proposed development area.

14.3.3.2 John Roque, Map of County Dublin, 1760

This map (**Figure 14.3**) shows the approximate location of the proposed development area in several fields to the west-southwest of a junction of five roads. Holly Wood House, comprising four structures, is annotated to the north of the proposed pipeline and to the west of the main body of the proposed development area. A road borders the site to the east and a winding road leading to Kilmartin is depicted to the southwest. A lime kiln is annotated to the northwest of the site and an unnamed structure is marked on the eastern side of the road junction. A winding road leading to Kilmartin is depicted to the southwest, while Tyrrelstown House (DU013-006) is shown to the southwest.

Figure 14.3 John Rocque, Map of County Dublin, 1760



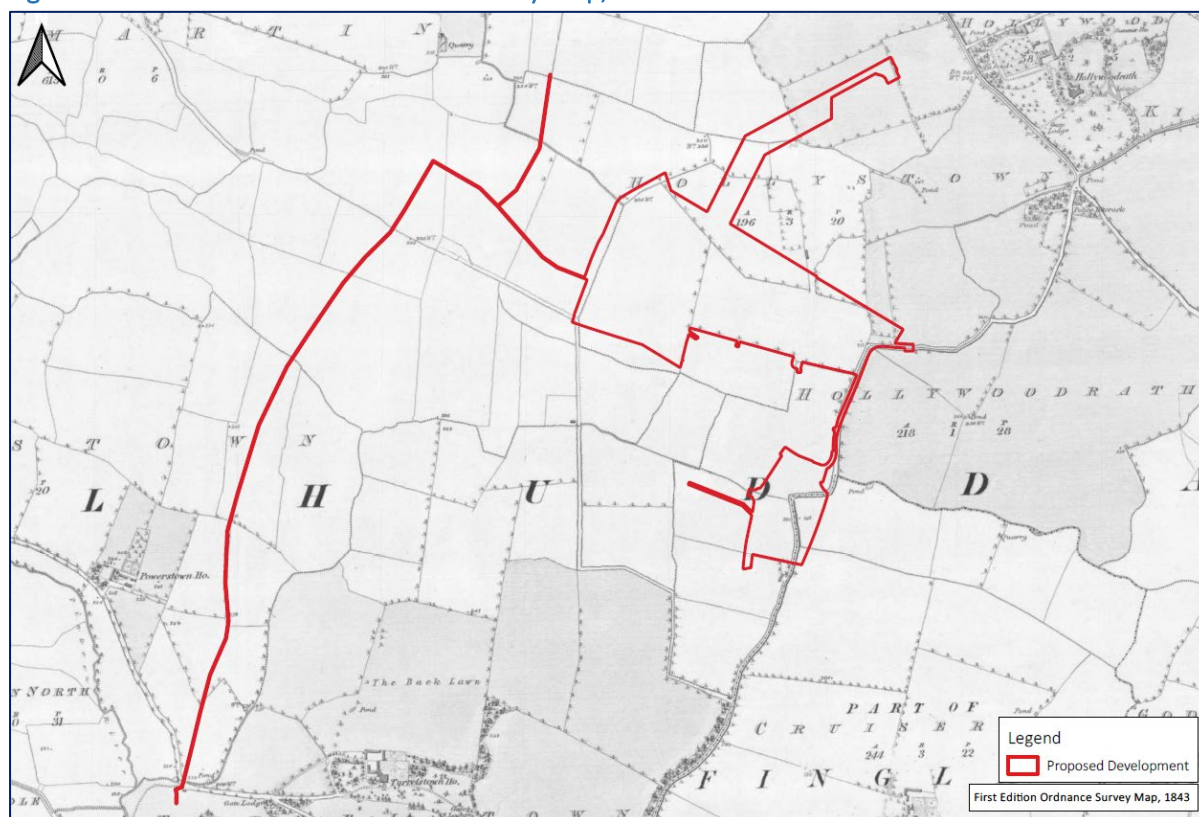
14.3.3.2.1 John Taylor's Map of the Environs of Dublin, 1816

The proposed development area is depicted in an undeveloped location on this map. A watercourse representing the Ward River traverses the landscape to the west and south of the proposed development area, with the proposed pipeline crossing this watercourse. Holly Wood House is now annotated as Hollywood Rath to the north. There is no indication of the lime kiln shown on the previous mapping. Hollywood House and demesne are depicted to the north at the location of the unnamed structure from Rocque's map. An area to the south of the proposed development area at a Y-junction is named 'the Murdering Hole'.

14.3.3.3 First Edition Ordnance Survey Map, 1843 (Scale 1:10,560)

This is the first accurate historic mapping coverage of the area containing the proposed development (Figure 14.4). The area is partially contained within Hollywoodrath demesne, known as the Hollywood Demesne on Taylor's map. The road along the southern and eastern limit of the site forms the townland boundary between Hollystown, Hollywoodrath and Cruiserath, which passes through the development area. The watercourse is no longer marked. The structures of Hollywood Rath to the north and 'the Murdering Hole' to the south, both visible on Taylor's map, are no longer depicted, though the structures formerly known as Hollywood are now labelled Hollywoodrath.

Figure 14.4 First Edition Ordnance Survey Map, 1843



14.3.3.4 Second Edition Ordnance Survey Map, 1871 – 5 (Scale 1:10,560)

There are minor changes to the field boundaries within the proposed development area on this map, and the proposed road from Taylor's map has been constructed c. 118 m to the north. There are no structures or demesne features located within the proposed development area.

14.3.3.5 Ordnance Survey Map, 1906 – 9 (Scale 1:2,500)

There have been further minor changes to the field boundaries within the site by the time of this map.

14.3.3.6 Ordnance Survey Map, 1935 (Scale 1:10,056)

There are no significant changes to the proposed development area by the time of this map.

14.3.4 County Development Plan

14.3.4.1 Record of Monuments and Places

The *Fingal Development Plan 2017 – 2023* recognises the statutory protection afforded to archaeological sites included within the RMP and seeks to protect those monuments, 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 eight archaeological sites within a 500 m radius of the proposed development area, four of which are recorded monuments and four of which are scheduled for inclusion in the next revision of the RMP (**Table 14.1**; **Figure 14.1**; **Appendix 14.1**). The proposed development area is partially within the zone of notification for DU013-032, an enclosure, where the pipeline extends through the townland of Kilmartin.

There are no National Monuments in State Care or sites under Preservation Orders within the study area of the proposed development.

Table 14.1 Recorded archaeological sites

RMP No.	Location	Classification	Distance To Scheme
DU013-032	Kilmartin	Enclosure	Pipeline runs through Zone of Notification
DU013-039	Kilmartin	Enclosure	c. 18m east
DU013-036	Kilmartin	Enclosure	c. 28m east
DU013-037	Kilmartin	Enclosure	c. 77m west
DU013-038	Kilmartin	Ring-ditch	c. 121m north
DU013-003	Kilmartin	Earthwork	c. 330m northwest
DU013-004	Hollystown	Earthwork	c. 381m north
DU013-006	Tyrrelstown	House - 16th/17th century	c. 390m east

14.3.4.2 Record of Protected Structures

The *Fingal Development Plan 2017 – 2023* 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), which are detailed in **Appendix 14.4**.

There are three structures included on the RPS within a 500 m radius of the proposed development, situated within the townlands of Hollystown, Hollywood and Tyrrelstown (**Table 14.2**; **Appendix 14.2**). The nearest of these is St. Thomas Church (RPS 0664), located c. 217 m to the north. All three structures are listed on both the RMP and the NIAH Survey.

Table 14.2 Protected structures

RPS No.	Name	Distance From Development	Designation
0664	St. Thomas Church	c. 217m north	RPS/NIAH
0665	Hollywoodrath House	c. 416m east	RPS/NIAH
0673	Tyrrelstown House	c. 442m east	RPS/NIAH

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 500 m of the study area. There are four structures listed on the NIAH building survey, within the townlands of Hollystown, Hollywood and Tyrrelstown (**Table 14.3, Appendix 14.2**), three of which are also protected structures.

Table 14.3: NIAH structures

NIAH No.	Classification	Distance From Development	Designation
11346001	Saint Thomas's Church/Chapel	c. 217m north	RPS/NIAH
11347003	Hollywoodrath Gate Lodge	c. 355 northeast	NIAH
11347001	Hollywoodrath House	c. 416m east	RPS/NIAH
11346002	Tyrrelstown House	c. 442m east	RPS/NIAH

14.3.5.2 Architectural Conservation Areas (ACAs)

An ACA is defined as “A place, area, group of structures or townscape, taking account of building lines and heights, that is of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest or that contributes to the appreciation of a protected structure, and whose character it is an objective of a development plan to preserve” (Architectural Heritage Protection Guidelines 2011, 40). Chapter II of Part IV of the Planning and Development Act 2000 states that all Development Plans must now include objectives for preserving the character of ACAs. ACAs are subject to statutory protection and are a key architectural heritage constraint. There are no ACAs within the development area or the surrounding study area.

14.3.5.3 Garden Survey

The first edition Ordnance Survey map of County Dublin 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 could be considered to be part of the curtilage and as such may fall within the remit of the Planning and Development Act 2000.

There is one demesne landscape within the study area included within the Garden Survey for County Dublin, belonging to Hollywoodrath (NIAH Garden 2267), c. 416 m to the east. The demesne is visible on the first, second and third edition OS maps. The footprint of the main demesne and its principal buildings are still extant today. The section of the demesne that is located within the proposed

development area has been subject to modern residential development and the construction of a golf course, which has removed any designed character that may have once existed (Figure 14.5).

14.3.6 Cultural Heritage

The term ‘cultural heritage’ can be used as an overarching term that can be applied to both archaeology and architectural heritage. 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 included in this assessment also constitute cultural heritage features.

14.3.6.1 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).

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 bog 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 definition (ibid.). Larger tracts 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 of Hollystown, Hollywoodrath, Kilmartin, Powerstown and Cruiserath. These four townlands are located within the parish of Mulhuddart and Barony of Castleknock, County Dublin. The proposed development area extends through the boundaries of all these townlands, which constitute cultural heritage features (Figure 14.7).

14.3.6.2 Place Name 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 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 possible explanation of each townland name in the environs of the proposed development are provided in **Table 14.4**.

Figure 14.5 Cultural heritage features

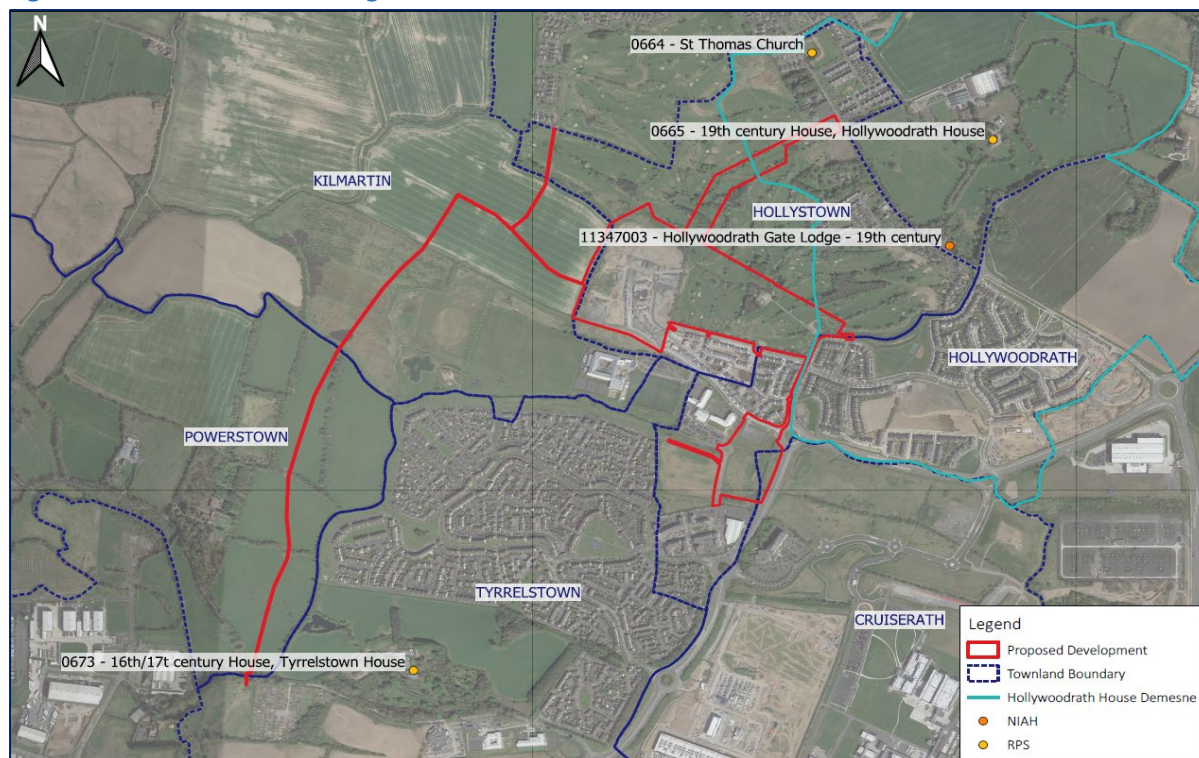


Table 14.4: Townland name analysis

Name	Derivation	Possible meaning
Hollystown	<i>Baile an Alabhóidigh</i>	Town / homestead of Holly
Hollywoodrath	<i>Ráth an Alabhóidigh</i>	Holly's ring-fort
Kilmartin	<i>Cill Mhártain</i>	Church of St Martin / life / subsistence
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 (i.e. 'the merry') (Anglo-Norman)
Mulhuddart	<i>Malahiddert</i>	Brow of an uncertain hilltop
Castleknock	<i>Castelcnoc</i>	Castle on the hill

14.3.7 Topographical Files

Information on artefact finds in County Dublin has been recorded by the National Museum of Ireland since the late 18th century. Locational 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.

14.3.8 Aerial Photographic Analysis

Inspection of the aerial photographic coverage of the proposed development area held by the Ordnance Survey (1995–2013), Google Earth (2002–2020), and Bing Maps (2020) revealed that the

majority of the northern portion of the proposed development area has been in use as a golf course since at least 1995 (OSI). The proposed pipeline extends west and then south, across greenfield lands and crosses a number of field boundaries, including the townland boundaries for Hollystown and Kilmartin, and Kilmartin and Powerstown. To the south, the proposed development was situated within three fields between 1995 and 2003. The 2003 Google Earth coverage shows that the southernmost field was subject to disturbance by the construction of the road in the southern portion of the site. The 2005 OS coverage revealed that the southern area was used as a temporary car park for developments to the immediate south of the site. The Hollywood Road is first visible on the 2012 Google Earth coverage. The 2013 OS and Google Earth imagery indicate that several areas within the proposed development were disturbed. The 2021 coverage (**Figure 14.6**) shows that the western portion of the Sites 2 & 3 section of the proposed development site was in use as a construction compound / storage area, with the remainder shown as being under a golf course. The only undisturbed portions of the development area comprise the fields that the pipeline will cross.

No previously unrecorded features of archaeological significance were identified from the available aerial photography and satellite imagery.

Figure 14.6 Satellite imagery of the proposed development area (April 2021)



14.3.9 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 assessment. During the course of the field investigation, the proposed development site and its surrounding environs were inspected.

The western section of the Sites 2 & 3 portion of the proposed development area has been stripped of topsoil and this area is currently in use as a construction compound and storage area for the Bellingsmore residential development (FCC reg. ref. FW13A/0088) (**Figure 14.7**). The eastern and north-

eastern parts of the site are under the former golf course, which has resulted in significant disturbance and landscaping across this area (Figures 14.8 – 14.9).

Figure 14.7 Western section of Sites 2 & 3 development area, facing north



Figure 14.8 Eastern section of Sites 2 & 3 development area (golf course), facing north



Figure 14.9 Eastern section of Sites 2 & 3 development area (golf course), facing west-southwest



Figure 14.10 Northern portion of Kilmartin Local Centre development area, facing south



The southern section of the proposed development area (Kilmartin Local Centre) has been subject to some disturbance with topsoil stripped in the northern part of the site and spoil dumped in the southern portion (Figures 14.10 – 14.11). The townland boundary between Hollywoodrath and Cruiserath extends through the eastern part of this area; however, no visible surface signs of the boundary remain, which was once formed by a small road.

The proposed pipeline crosses five fields currently under agricultural use to the west of the main area of proposed development. The fields are currently under pasture and slope very gently in a southerly direction.

No previously unrecorded areas of archaeological potential, or structures of architectural merit, were identified during the course of the field inspection.

Figure 14.11 Southern portion of Kilmartin Local Centre development area, facing south



14.3.10 Summary of Baseline Environment

There are eight archaeological sites within 500 m of the proposed development area, four of which are recorded monuments and four of which are scheduled for inclusion in the next revision of the RMP. The proposed development area is partially within the zone of notification for DU013-032, an enclosure, where the proposed pipeline extends through the townland of Kilmartin.

There are three structures included on the RPS within a 500 m radius of the proposed development. The nearest of these is St. Thomas Church (RPS 0664, 11346001), located c. 217 m to the north. All three structures are listed on both the RPS and the NIAH Survey and one structure, Hollywoodrath Gate Lodge, is listed solely on the NIAH (NIAH 11347003), located c. 355 m to the northeast.

There is one demesne landscape within the study area included within the Garden Survey for County Dublin, belonging to Hollywoodrath (NIAH Garden 2267). The demesne is visible on the first, second,

and third edition OS maps, and part of the proposed development area is located in the western extents of the former demesne. This area has since been subject to residential development and the construction of a golf course.

A review of the Excavations Bulletin (1970–2020) has revealed that a number of previous archaeological investigations have been carried out within the proposed development area and environs. Within the proposed development area, a geophysical survey identified a possible burnt mound and palaeo-channel. However, programme of testing determined that the burnt mound and palaeo-channel responses were non-archaeological. At Hollywoodrath, a geophysical survey in 2020 identified a possible curvilinear feature and possible pits, representing a former trackway or former field division but was not considered to be of archaeological interest. A geophysical survey was carried out in two fields that will be traversed by the proposed pipeline. This identified possible pits and two linear trends possibly representing a relict field division and a ring-ditch, along with two possible ditches. Subsequent testing identified a linear feature at the southern side of the enclosure (DU013-032) and a curved linear ditch at the enclosure (DU013-037). No other features of archaeological significance were uncovered, despite the results of the geophysical survey. Archaeological test trenching was carried out to the east of the development area, which revealed a single charcoal production pit.

A review of the cartographic sources for the proposed development area has shown that the site was primarily located in an agricultural landscape prior to the late 18th century. The proposed development area is shown on the first edition OS map of 1843 as forming part of the demesne of Hollywoodrath, although no structures or demesne features are depicted within the site, which remained as undisturbed fields until 2003. The proposed development is shown as partially disturbed on the 2005, 2012, and 2013 satellite imagery coverage. Today the western portion of the Sites 2 & 3 development area is currently under construction / in use as a construction compound, with the remainder under the former golf course.

A field inspection has been carried out as part of this assessment. This confirmed the disturbed nature of the existing construction compound area and the landscaping resulting from the construction of the golf course. The southernmost section of the site (Kilmartin Local Centre development area) has also been subject to disturbance and the dumping of spoil. The only areas that remain undisturbed are the fields crossed by the proposed pipeline associated with the development. No previously unrecorded areas of archaeological potential, or structures of architectural heritage merit, were noted during the inspections.

14.4 Predicted Impacts of the Proposed Development

14.4.1 Construction Phase

The western portion of the Sites 2 & 3 section of the proposed development area is already under construction / in use as a substantial construction compound and storage area and, as such, no direct impacts are predicted upon the archaeological, architectural or cultural heritage resource at this location. The remaining portions of the proposed development site have been subject to previous disturbance, mainly from the construction of the golf course (with the exception of the proposed pipeline route). It remains unclear how this previous disturbance may have affected the archaeological resource. As such, it is possible that ground disturbances associated with the proposed development may have a direct negative impact on any such remains. The significance of impacts may range from

moderate to very significant negative, dependant on the nature, extent and significance of any archaeological remains that may be present.

The route of the proposed pipeline passes through a predominantly greenfield landscape along with an area that has previously been subject to geophysical survey and subsequent archaeological testing (Gimson 2011, Kavanagh 2012). No specific archaeological features were identified within the footprint of the pipeline. It remains possible that small-scale archaeological features survive beneath the existing ground level along the path of the proposed pipeline, which would be directly and negatively affected by ground disturbances associated with same. The significance of impacts may range from *moderate to very significant negative*, dependant on the nature, extent and significance of any archaeological remains that may be present.

No construction impacts are predicted upon the remaining architectural and cultural heritage resource.

14.4.2 Operational Phase

No likely significant impacts on the cultural heritage, archaeological or architectural heritage resource are predicted during the operational phase.

14.5 Mitigation Measures

14.5.1 Construction Phase

- No archaeological mitigation is required for the western portion of the Sites 2 & 3 development area (under construction / in use as construction compound). Topsoil stripping in all other areas will be subject to archaeological monitoring. 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 and / or archaeological monitoring. Any further mitigation will require approval from the National Monuments Service of the DoHLGH.
- All ground disturbances associated with the construction of the proposed pipeline will be monitored by a suitably qualified archaeologist. If any features of archaeological potential are discovered during the course of the works, 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.
- It is the Applicant's responsibility to ensure full provision is made available for the resolution of any archaeological remains, both on-site and during the post-excavation process, should that be deemed the appropriate manner in which to proceed.

Please note that all recommendations are subject to approval by the National Monuments Service of the Heritage and Planning Division, Department of Housing, Local Government and Heritage.

14.5.2 Operational Phase

Since no significant impacts are predicted during this phase, no mitigation measures are required.

14.6 Residual Impacts

Assuming the implementation of the above-stated mitigation measures, *no significant residual impacts* are predicted in relation to the cultural heritage, archaeological or architectural heritage resource.

14.7 Interactions

No noteworthy interactions have been identified during the course of this assessment.

14.8 Cumulative Impacts

The plans and projects listed in Chapter 20 (Cumulative Impacts) have been referred to, in consideration of the potential for cumulative impacts to arise as a result of the proposed development in combination with one or more of same. Considering that mitigation measures have been prescribed to ensure that any archaeological remains encountered on site will be preserved *in situ* or by record; and since the effects of the proposed development (insofar as they relate to cultural heritage, archaeology and architectural heritage) will be geographically limited to the site of the proposed development; no cumulative impacts are predicted in this respect.

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- www.libraryireland.com – Irish Local Names Explained by P.W Joyce.
- www.bingmaps.com – Satellite imagery of the proposed development area.
- www.osiemaps.ie – Ordnance Survey aerial photographs (1995-2013) and 6-inch/25-inch OS maps.
- www.logainm.ie – Placenames Database of Ireland launched by Fiontar agus Scoil na Gaelige and the DoHLGH.

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 Daylight & Sunlight Report, submitted under separate cover as part of the planning application.

This chapter has been prepared by David Walshe, Environmental and Sustainability Director at IN2 Engineering. Technical reviews have been completed by Lorraine Guerin, Environmental Consultant at Brady Shipman Martin; and Thomas Burns, Partner at Brady Shipman Martin. Refer to **Table 1.3** in Chapter 1 (Introduction) for qualifications of authors and reviewers.

15.2 Methodology

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* (Department of Housing, Local Government and Heritage, 2020) (the "2020 Apartment Guidelines");
- *Fingal County Council Development Plan 2017 – 2023* (the "Development Plan");
- *Site Layout Planning for Daylight and Sunlight: A guide to good practice* (BRE 209) (2nd edition) (Building Research Establishment, 2011) (the "BRE Guide");
- British Standard BS 8206-2:2008 – "Lighting for Buildings – Part 2: Code of Practice for Daylighting" (the "2008 British Standard").
- British Standard BS EN 17037:2018 – Daylight in Buildings (the "2018 British EN Standard") and its National Annex.
- Irish Standard IS EN 17037:2018 (the "2018 Irish EN Standard").

It should be noted at the outset that the 2008 British Standard has been superseded by the 2018 British Standard. This is the UK implementation of EN 17037:2018, which was approved by the CEN on 29 July 2018. In Ireland, EN 17037:2018 has been implemented by the 2018 Irish Standard. The texts of the 2018 British Standard and the 2018 Irish Standard are the same, with one exception. The exception is that the 2018 British Standard contains an additional 'National Annex', which specifically sets out alternative daylight targets within dwellings (recognising that residential buildings require lower light levels), which ensures also some continuity to the superseded 2008 British Standard.

The 2020 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 have regard to quantitative performance approaches to daylight provision outlined in guides like the BRE guide ‘Site Layout Planning for Daylight and Sunlight’ (2nd edition) or BS 8206-2:2008 – ‘Lighting for Buildings – Part 2: Code of Practice for Daylighting’ when undertaken by development proposers which offer the capability to satisfy minimum standards of daylight provision.

[6.7] Where an applicant cannot fully meet all of the requirements of the daylight provisions above, this must be clearly identified and a rationale for any alternative, compensatory design solutions must be set out, which planning authorities should apply their discretion in accepting taking account of its assessment of specific. This may arise due to a design constraints associated with the site or location and the balancing of that assessment against the desirability of achieving wider planning objectives. Such objectives might include securing comprehensive urban regeneration and or an effective urban design and streetscape solution.”

It can be noted from this section that the 2020 Apartment Guidelines continue to refer to the BRE Guide (published in 2011) and to the 2008 British Standard. They do not take into account the 2018 British Standard and/or the 2018 Irish Standard and as the BRE Guide (2nd Edition) is still current and applicable, the 2011 edition and associated 2008 British Standard has therefore been utilised to provide the basis for the assessments detailed within this chapter.

15.2.2 Overview

The specific assessment methodology for each topic is set out in **Table 15.1**.

Table 15.1 Assessment methodologies for daylight and sunlight analysis

Metric	Subject	Assessment methodology	Compliance guidelines	Applicable?
Sunlight	Proposed development	Compliance with dual aspect requirements	2020 Apartment Guidelines	Yes. Refer to Architectural documentation ⁷³ .
	Existing neighbouring buildings	Annual Probable Sunlight Hours (APSH)	BRE 209	No. No neighbouring buildings to (greenfield) site.
	Proposed development (amenity spaces)	Sunlight Hours	BRE 209	Refer to Section 15.4 .
	Existing neighbouring buildings (amenity spaces)	Sunlight Hours	BER 209	No. No neighbouring buildings to (greenfield) site.
Daylight	Proposed development	Average Daylight Factors (ADF)	BRE 209	Refer to Section 15.3 .
	Existing neighbouring buildings	Vertical Sky Component (VSC)	BRE 209	No. No neighbouring buildings to (greenfield) site.

⁷³ Refer to Housing Quality Assessment prepared by Deady Gahan Architects (submitted under separate cover as part of the planning application).

15.2.3 Daylight

In relation to daylight, the BRE Guide suggest that:

“Daylight provision in new rooms may be checked using the average daylight factor (ADF). The ADF is a measure of the overall amount of daylight in a space... [The 2008 British Standard] recommends an ADF of 5% for a well daylit space and 2% for a partly daylit space. Below 2% the room will look dull and electric lighting is likely to be turned on. In housing [the 2008 British Standard] also gives minimum values of ADF of 2% for kitchens, 1.5% for living rooms and 1% for bedrooms.”

The 2008 British Standard further clarifies the targets by stipulating:

“Where one room serves more than one purpose, the minimum average daylight factor should be that for the room type with the highest value. For example, in a space which combines a living room and a kitchen the minimum average daylight factor should be 2%.”

With regards to the above, the minimum values targeted for relevant spaces are:

- 2.0%+ for Kitchen/Living/ Dining Areas (KLD)
- 1.0%+ for Bedrooms

Notwithstanding the above, it may be noted that these are minimum targets, and that the vast majority of spaces were determined to comfortably exceed the values, as summarised in the results section below.

A daylight assessment was carried out for the proposed development utilising BRE guideline, *Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice*, (‘BRE 209’; 2nd Edition), as per the Daylight & Sunlight Report, submitted under separate cover.

An initial Vertical Sky Component⁷⁴ (VSC) analysis was carried out, which informed the massing design to ensure good daylight availability would be provided across the proposed development. Following this, the Average Daylight Factor⁷⁵ (ADF) was calculated for internal spaces, and relevant design development was carried out to ensure good daylight could be achieved for the vast majority of the proposed development.

Daylight analysis is required, both as measure of the quality for the proposed buildings and to determine the potential impact to neighbouring buildings resulting from the proposed buildings. BRE 209 states that where the “distance of new development (is) more than three times its height above lowest window (of nearest adjacent existing building)” then “Daylighting is unlikely to be significantly affected”. In the case of the proposed development, there are no neighbouring buildings within this zone of potential impact, so only internal daylight has been assessed herein.

15.2.4 Sunlight

BRE 209 provides guidance with regards to sunlighting and shading to external amenity spaces within proposed developments. The guidance recommends for both new developments and existing respectively:

⁷⁴ The ratio of direct sky illuminance falling on the outside of a window to the simultaneous horizontal illuminance under an unobstructed sky.

⁷⁵ An indicator of the overall amount of daylight in a space, defined as the ratio of average illuminance on the working plane in a room to illuminance on the unobstructed horizontal surface outdoors.

“... 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”.

“If as a result of new development an existing garden or amenity area does not meet the above, and the area which can receive two hours of sun on 21 March is less than 0.8 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.”

The methodology assesses sunlight performance at the Equinox (March 21st), as this is the mid-solar position throughout the year where the sun rises and sets directly in the east and west. Compliance to this criterion ensures external amenity areas will receive adequate sunlight and be appealing useful spaces, including that the following attributes will be achieved as identified in BRE 209:

- 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).

A sunlight assessment was carried out for the proposed development utilising BRE 209, as per the Daylight & Sunlight Report, submitted under separate cover. Sunlight availability to the amenity spaces was assessed against the BRE 209 criterion of achieving at least 2 hours potential sunlight on March 21st to the majority of the area.

Sunlight analysis is required, both as measure of the quality for the proposed amenity spaces and to determine potential impact to neighbouring buildings because of the proposed buildings. In the case of the proposed development, there are no neighbouring buildings adjacent to the site where existing sunlight availability may be affected. The risk of existing dwellings being adversely affected in terms of sunlight availability is defined in BRE 209 as only occurring where *“any part of a new development subtends an angle of more than 25° to the horizontal measured from the centre of the (existing) window”*. Therefore, the proposed development does not give rise to any impact with regards to existing sunlight availability in neighbouring areas.

15.3 Daylight

15.3.1 Predicted Impacts of the Proposed Development

Internal daylight analysis has been undertaken for all KLD rooms and bedrooms within apartments (Kilmartin Local Centre) and triplex units (Hollystown Sites 2 & 3) within the proposed development.

The analysis determined that 338 out of a total of 349 (97%) of rooms were in excess of the BRE criteria for ADF. Assessments were undertaken for compliance to full room area based on ADF = 2.0%+ and 1.0%+ to KLDs and bedrooms, respectively.

In addition to 97% of spaces achieving minimum compliance, the daylighting provision throughout the proposed development was determined to be very good, with the median ADF determined for KLDs being 2.6% (i.e. 50% of apartments were calculated to have daylighting performance at least 30% above minimum compliance levels).

For the Hollystown Sites 2 & 3 portion of the proposed development, the triplex unit typology has been assessed and full ADF compliance determined.

A large proportion of the development (in excess of 50%) has been designed as dual aspect units, providing good overall access to daylight, irrespective of individual rooms where ADF targets were lower than recommended guidelines.

15.3.2 Mitigation Measures

15.3.2.1 Mitigation by Design / Compensatory Measures

In the small number of rooms (3% or 11 no.) where minimum ADF compliance could not be demonstrated, compensatory measures (larger apartment unit size / dual-lit apartment, etc.) to offset reduction in daylighting have been provided for relevant apartments.

In addition, where KLDs were found to be non-compliant (i.e. ADF below 2.0%), daylighting improvement measures were ensured in each case to at least attain a minimum level of ADF = 1.5%+. All 12 no. units which do not achieve the 2.0% ADF for KLD are larger than the minimum floor area standard required. Some units are designed to exceed the minimum floor area standard by up to 40%.

Some units where KLD targets are not achieved are located at ground (or podium) level, where natural light availability is lower than upper storeys. However, for these apartment units, all have been provided with access to external private amenity spaces. In addition to their private amenity space, these ground floor units are provided with own door access, as opposed to from shared circulation space. Similarly, apartments at lower storeys where KLDs are below target are generally of duplex arrangement.

One apartment unit where the KLD is below target ADF has been provided with a large balcony with dual aspect, open also to southerly direction to maximise sunlight availability.

15.3.2.2 Mitigation Measures

The design of the proposed development is such that *no negative impacts* are expected in relation to the daylight levels experienced by future inhabitants of the proposed development or by existing inhabitants of the adjoining sites. Therefore, no further mitigation measures are required in relation to daylight.

15.3.3 Residual Impacts

No negative residual impacts are predicted in relation to daylight during the operational phase of the proposed development.

15.4 Sunlight

15.4.1 Predicted Impacts of the Proposed Development

The amenity sunlight assessment determined that all spaces will be comfortably in excess of the BRE guidelines target of 50%, with spaces achieved 99 – 100% daylight availability.

The podium space between Kilmartin Local Centre Blocks B and C was analysed with potential sunlight / shadowing being determined for each hour of the Equinox Day, for a 0.5 m grid spacing.

The open southerly aspect of the Kilmartin podium amenity space maximises sunlight availability. Potential sunlight was found to be highest (6 – 8 hours of the day) in the centre of the podium space, reducing slightly (4 – 6 hours) adjacent to the building Blocks B and C due to shadowing in afternoon / morning, respectively.

However, in order to be deemed well sunlit in accordance with the BRE methodology, areas are deemed well sunlit where sunlight can be received for at least 2 hours of the simulated day. The podium amenity space was found to be fully compliant with the guidelines with 99% of the amenity area receiving at least 2 hours of direct sunlight on 21st March – comfortably exceeding the minimum 50% area, as defined within the BRE Guide. The ground level area was also fully compliant with 96% of amenity area compliant with the guidelines, ensuring communal residential amenity areas and crèche play areas are fully compliant and receive excellent sunlight throughout the day.

Amenity sunlight analysis was also undertaken for the communal spaces in the Hollystown Sites 2 & 3 portion of the site, with all public realm areas assessed to determine whether they can receive at least 2 hours of potential sunlight through an Equinox Day, in accordance with BRE requirements. It was determined that at least 2 hours of sunlight could be received throughout the entire public realm, ensuring full compliance with the BRE methodology.

15.4.2 Mitigation Measures

The design of the proposed development is such that *no negative impacts* are expected in relation to the sunlight levels experienced by future inhabitants of the proposed development or by existing inhabitants of the adjoining sites. Therefore, no further mitigation measures are required in relation to daylight.

15.4.3 Residual Impacts

No negative residual impacts are predicted in relation to sunlight during the operational phase of the proposed development.

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 SHD residential development at Hollystown, Dublin 15. The material assets considered in the traffic 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. Furthermore, in preparing this chapter, reference has been made to the *Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* (Environment Protection Agency, 2017) ('the EPA guidelines').

This chapter has been prepared by Aimee Dunne, Chartered Engineer at DBFL Consulting Engineers Ltd. Technical reviews have been completed by Lorraine Guerin, Environmental Consultant at Brady Shipman Martin; and Thomas Burns, Partner at Brady Shipman Martin. Refer to **Table 1.3** in Chapter 1 (Introduction) for qualifications of authors and reviewers.

16.2 Method

The purpose of this assessment is to quantify the existing transport environment and to detail the results of assessment work undertaken to identify the potential level of transport impact generated as a result of the proposed development. The scope of the assessment covers transport and 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;

- **Site Audit:** A site audit was undertaken to quantify existing road network characteristics and identify local infrastructure management arrangements, 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 as this stage of the assessment.
- **Pre-planning Meeting:** A pre-planning meeting was undertaken with officers of Fingal County Council including representatives of the Transport Planning Department.
- **Traffic Counts:** Junction turning counts were undertaken and analysed with the objective of establishing local traffic characteristics in the immediate area of the proposed development.
- **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 existing traffic characteristics and anticipated travel patterns of the proposed development, a trip distribution exercise has been undertaken to assign site generated trips across the local network.
- **Network Impact & Assessment:** Considering the receiving environments characteristics, the proposed mitigation strategy and the additional scale of demand predicted to be generated by the

scheme proposals it has been possible to undertake an assessment of the potential scale of impact significance across the local road networks key junctions.

The assessment of effects of the proposed development on material assets are assessed in terms of quality (positive, neutral or negative effects), significance (imperceptible, not significant, slight, moderate, significant, very significant or profound effects), extent, context, probability (likely, unlikely effects) and duration (temporary, short term, long term or permanent effects) in line with the criteria set out in Table 3.3 of the EPA guidelines.

16.3 Receiving Environment

16.3.1 Land Use

The proposed development site is located on an undeveloped greenfield site with limited hardstanding areas and has an approximate site area of 25.3 hectares. The site, which is located within the administrative area of Fingal County Council, is zoned 'RA – Residential Area' under the *Fingal Development Plan 2017 – 2023*, and for which the corresponding objective is to "Provide for new residential communities subject to the provision of the necessary social and physical infrastructure". The Kilmartin Local Centre is zoned 'LC – Local Centre', with the objective to "Protect, provide for and/or improve local centre facilities" (refer to **Figure 3.2** in Chapter 3 – Planning & Development Context).

To the north and south-west of the site are lands zoned as 'OS – Open Space', and to the south are 'CI – Community Infrastructure' lands. The lands to the west and east are also zoned 'RA – Residential Area' and form part of the wider *Kilmartin Local Area Plan*. Further south of the proposed Kilmartin Local Centre lands is the existing Tyrrelstown Local Centre, zoned 'LC – Local Centre'. To the south-east are lands zoned 'HT – High technology' to provide for office, research and development and high technology.

16.3.2 Location

The R121 regional road forms the eastern boundary of the proposed development site and provides links to the wider strategic road network, including the M50, N2 and N3. The proposed development site is located to the north of the existing Tyrrelstown Local Centre and lies between the N2 Motorway (Junction 2) and the N3 Motorway (Junction 3). The site is situated approximately 750 m south of Hollystown, 3.0 km north of Mulhuddart and 4.3 km north of Blanchardstown Centre, respectively.

Connectivity is offered towards the wider Dublin area via the M50 Motorway, which is situated approximately 7.0 km south-east of the site. The general site location in the context of the wider network is shown in **Figure 16.1**.

Figure 16.1 Location of the proposed development (Source: Google Maps)

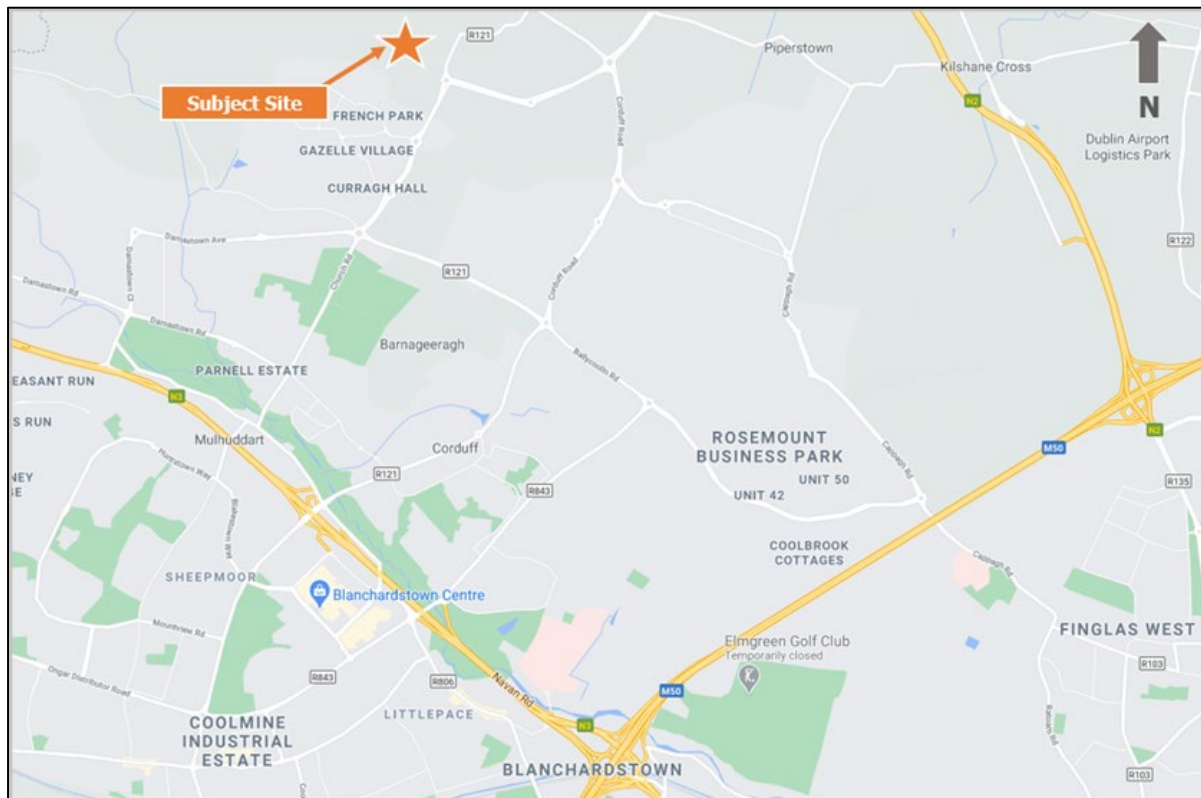


Figure 16.2 Indicative site boundary (Source: ArcGIS)



The subject lands for Sites 2 & 3 are bound by the R121 to the east, open space on the former Hollystown Golf Course lands to the north, open space to the west/south-west, and the Bellingsmore Residential Development, currently under construction, to the south of Sites 2 & 3.

The Le Chéile Secondary School, Tyrrelstown Educate Together National School, St. Luke's National School and Tyrrelstown Community Centre are all located south of Sites 2 & 3. The subject lands can currently be accessed from the partially constructed street, Hollystown Road, which at present solely serves the Le Chéile Secondary School. Sites 2 & 3 can also be accessed from its frontage along the R121.

Similarly, the subject Kilmartin Local Centre lands are bound to the east by the R121. To the south is the existing Tyrrelstown local centre, and to the south-west is the existing established Tyrrelstown residential area. The subject site boundary in the context of the immediate local area is highlighted in **Figure 16.2**. Please note that the site boundary illustrated herein is indicative only.

16.3.3 Existing Transport Infrastructure

16.3.3.1 Road Network

The proposed development site is located to the west of Hollywoodrath Road (R121) regional road. This road forms the eastern boundary of the subject site, providing links towards the M50, N2 and N3. Access to the N2 (Junction 2) is possible by travelling from the site in a north-east bound direction along the R121 and the Cherryhound-Tyrrelstown Link Road. Travelling south-west on Church Road (R121) provides connections to 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 16.3**, below.

Currently, the subject site can be access via either the R121 at the sites' north-easternmost boundary, or via the partially constructed link street (Hollystown Road), which currently provides access to the Le Chéile Secondary School; or via the partially constructed link street which serves the national schools.

The layout of the partially constructed link street, Hollystown Road, is shown in **Figure 16.5** and when complete will comprise a 6.0 m wide two-way carriageway with 1.7 – 2.0 m wide footpaths on both sides and a 2.5 m wide two-way cycle track on the southern side.

At its eastern end, Hollystown Road connects with the R121 and Cherryhound-Tyrrelstown Link Road via a four-arm roundabout, as shown in **Figure 16.6**. Hollystown Road forms the western arm of the roundabout, whilst the R121 forms the northern and southern arms and the Cherryhound-Tyrrelstown Link Road forms the eastern arm.

The R121 in the immediate vicinity of the site 2's eastern boundary is a two-way single lane carriageway as shown in **Figure 16.6**, below. The posted speed limit for the corridor along this section is 50km/h and the road offers street lighting on the eastern / southern sides. The R121 extends north towards Hollystown, where it connects to a four-arm roundabout known as "The Swing" located approximately 530m from the proposed subject site R121 access.

There are several speed humps implemented along the R121 between the Swing roundabout and the R121/Hollystown Road roundabout, as shown in **Figure 16.7**.

South of the R121/Hollystown Road roundabout, and east of the Kilmartin Local Centre Site, the R121 becomes a dual carriageway with two lanes in both north and southbound directions. The posted speed limit on this section of the R121 is 60 km/h.

Hollystown Sites 2 & 3 and Kilmartin Local Centre SHD

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The Cherryhound-Tyrrelstown Link Road further east of the proposed development site is a two-way dual carriageway, with a concrete median barrier and subject to an 80 kph posted speed limit. The Cherryhound-Tyrrelstown Link Road provides a direct connection to the N2, which lies approximately 2.6 km north-east of the subject site.

Figure 16.3 Existing road network (Source: Google Maps)

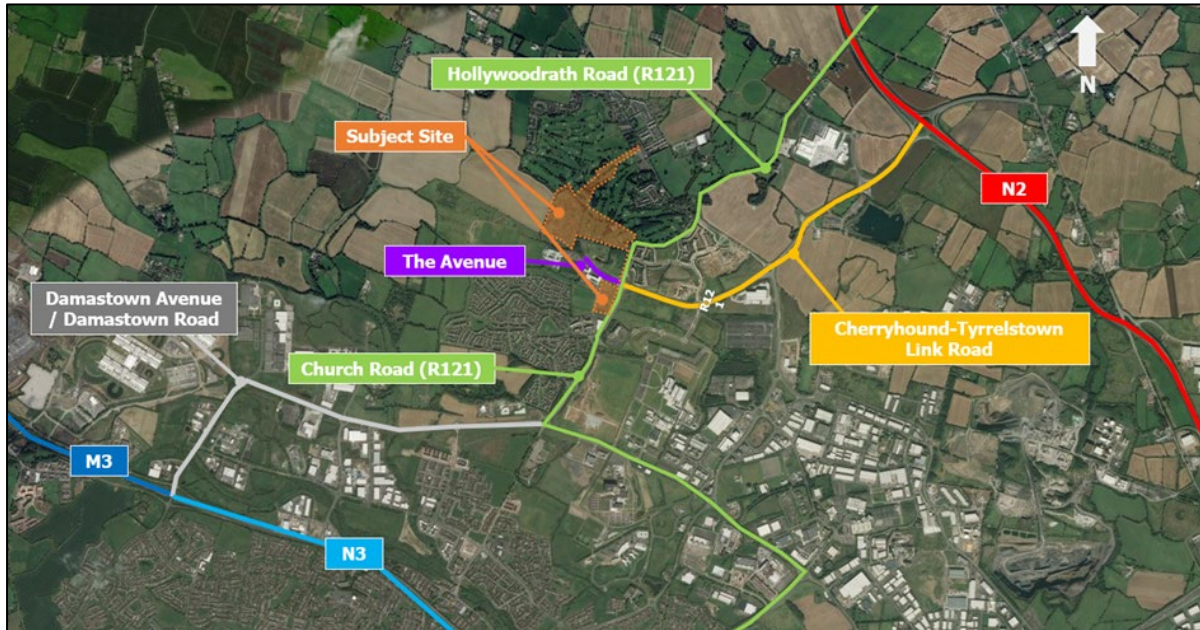


Figure 16.4 View looking west on Hollystown Road towards the proposed development site



Figure 16.5 View looking east on Hollystown Road towards R121 Roundabout



Figure 16.6 View looking west on R121 towards proposed site access



Figure 16.7 View looking west on R121 towards proposed site access



16.3.3.2 Cycling & Pedestrian Facilities

In terms of existing active travel infrastructure, the proposed development site benefits from a number of cycle and pedestrian facilities that are provided in the immediate vicinity. The partially constructed link street from the existing Tyrrelstown Local Centre that currently serves the schools benefits from footways on both sides, whilst a cycle track is located on the western side of the street. The roundabout at this link street also benefits from zebra crossings on the southern and western arm.

Footpaths have been provided on both sides of the Avenue along the frontage of the Bellingsmore development. A segregated two-way cycle track is provided on the southern side of the Avenue. A two-way cycle track also continues for a short section on the northern side of the Avenue on approach to the R121 roundabout. At present, there are also two uncontrolled crossings on this approach to the roundabout, as indicated in **Figure 16.8**.

At present, on the southern side of the R121 in the vicinity of the proposed site access, segregated footpaths and cycle tracks are provided along the Hollywoodrath development frontage. Along the section of the R121 that forms the frontage of the Bellingsmore residential development, a new footpath has been constructed, as shown in **Figure 16.9**.

These facilities provide a direct connection to the existing Toucan crossing on the R121 northern arm of the R121 / The Avenue / Cherryhound-Tyrrelstown Link Road roundabout (**Figure 16.10**). Further south on the R121, segregated footpaths and two-way cycle tracks are provided on both sides of the road, providing links to the existing Tyrrelstown local centre.

Figure 16.8 Existing crossings on Hollystown Road



Figure 16.9 Existing pedestrian and cyclist facilities on the R121



Figure 16.10 Existing toucan crossing on the R121



16.3.3.3 Public Transport – Bus

There are a number of public bus services that currently service Tyrrelstown local centre and its environs. 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, whilst Go-Ahead number 238 connects Tyrrelstown with Blanchardstown (Lady's Well Road). **Table 16.1** below summarises the number of aforementioned services that are available within the area, and **Figure 16.11** illustrates the bus stops around the subject site.

Table 16.1: Bus services in the vicinity of the proposed development

Bus Service	Route No.	Destination	Frequency (mins)		
			Mon - Fri	Sat	Sun
Dublin Bus	40d	Tyrrelstown – Parnell Street	15	30	50
	40e	Tyrrelstown – Broombridge	30	30 - 40	50
Go-Ahead	236/a	Damastown IBM – Blanchardstown	60	-	-
	238	Tyrrelstown – Blanchardstown (Ladywell)	60	60	60

The closest existing bus stop to the subject development site is located at on the R121 (Stop No. 7678) approximately 500 m south of the site, and is served by route 40e. The aforementioned routes also serve the Bishop's Orchard Boulevard (Stop No. 1546) and Carlton Hotel Blanchardstown (Stop No. 7072 and 7073).

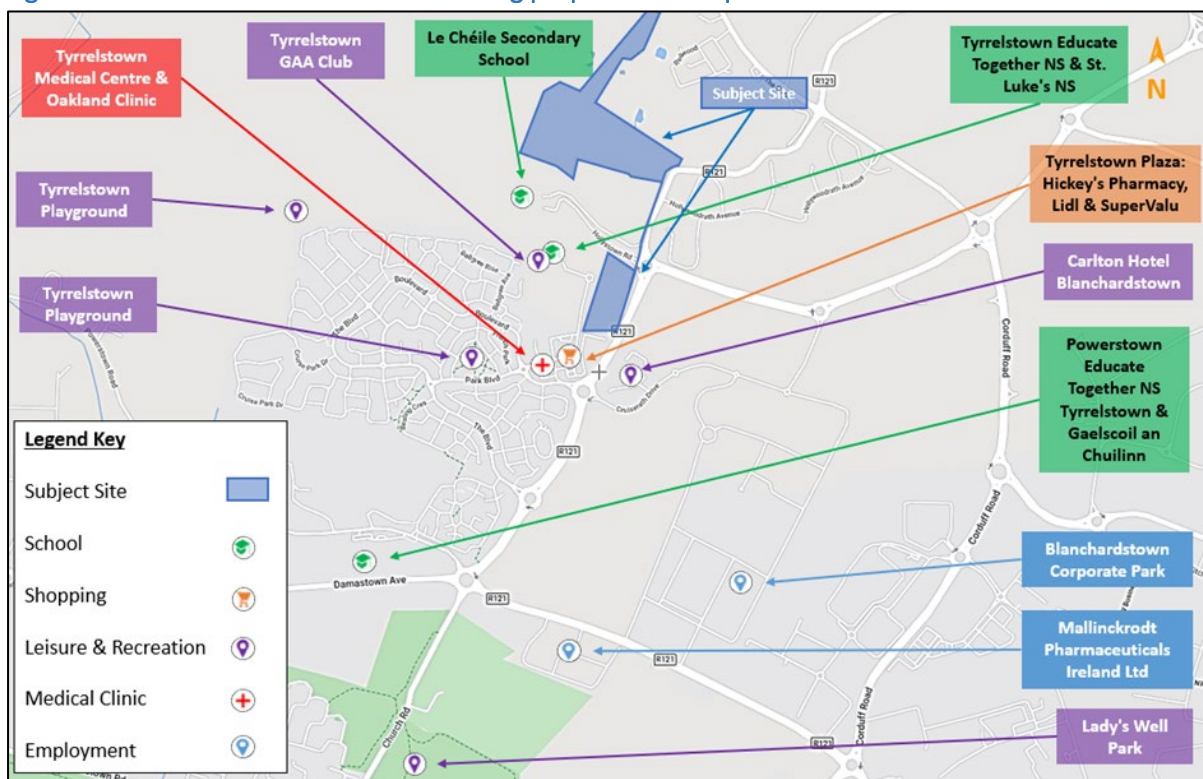
Figure 16.11 Existing bus stops in vicinity of the proposed development (Source: Google Maps)



16.3.4 Local Amenities

The proposed development site is ideally located to benefit from local amenities in the immediate area, as shown in Figure 16.12.

Figure 16.12 Local amenities surrounding proposed development site



There are a number of schools within 2.0 km of the subject site, including St. Luke's National School, Tyrrelstown Educate Together National School, Powerstown Educate Together NS Tyrrelstown, Gaelscoil an Chuilinn and Le Chéile Secondary School. Further Education opportunities are also available with TU Dublin's Blanchardstown Campus less than 5.0 km from the site.

Furthermore, the subject site benefits from good access to leisure facilities such as public parks, leisure centres and playgrounds. The subject site also has good access to Blanchardstown Shopping Centre and employment zones from the numerous Business Parks in the surrounding area (Northwest, Rosemount, Damastown).

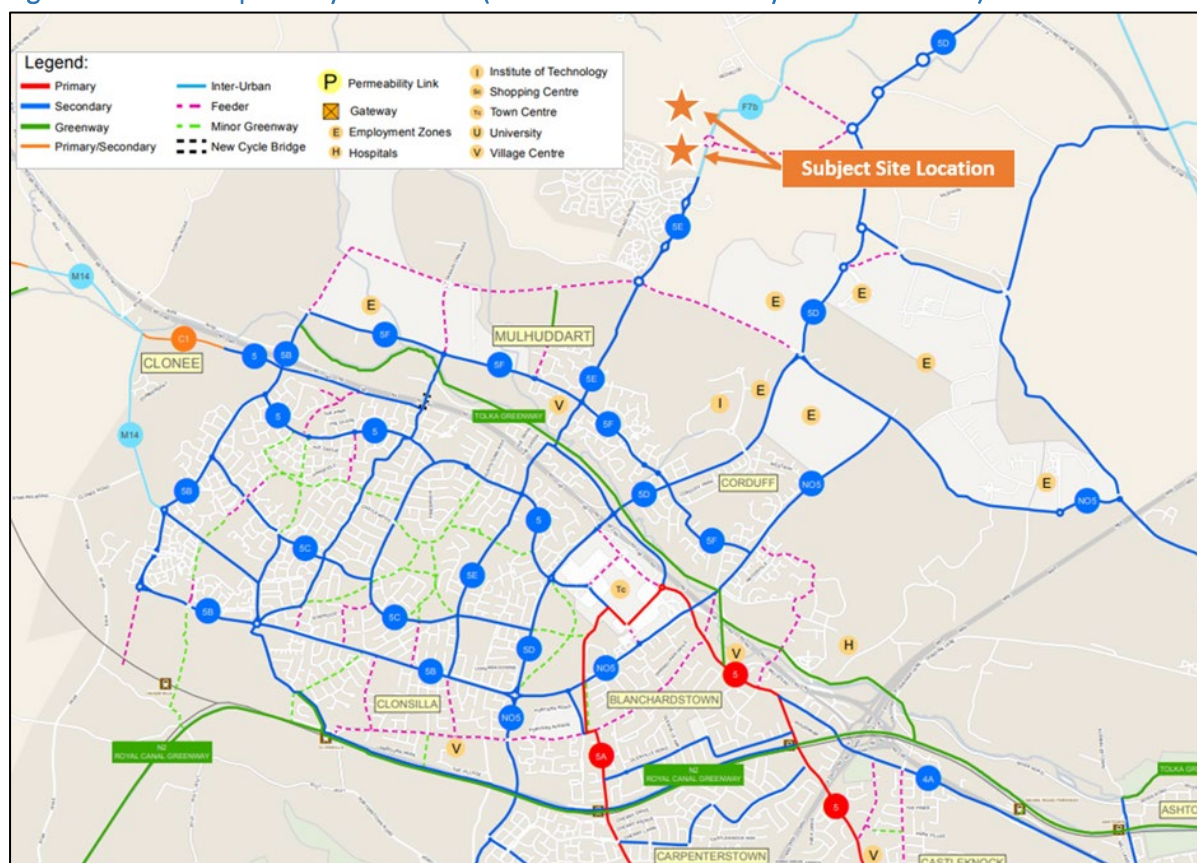
16.4 Proposed Transport Infrastructure

16.4.1 Cycle Network Proposals

16.4.1.1 Greater Dublin Area Cycle Network Plan

The proposed development site lies within the Greater Dublin Area Cycle Network Plan Zone 4 (Dublin North West), as outlined within the NTA's *Greater Dublin Area Cycle Network Plan* (2013). 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".

Figure 16.13 Proposed cycle facilities (Source: Sheet N4 GDA Cycle Network Plan)



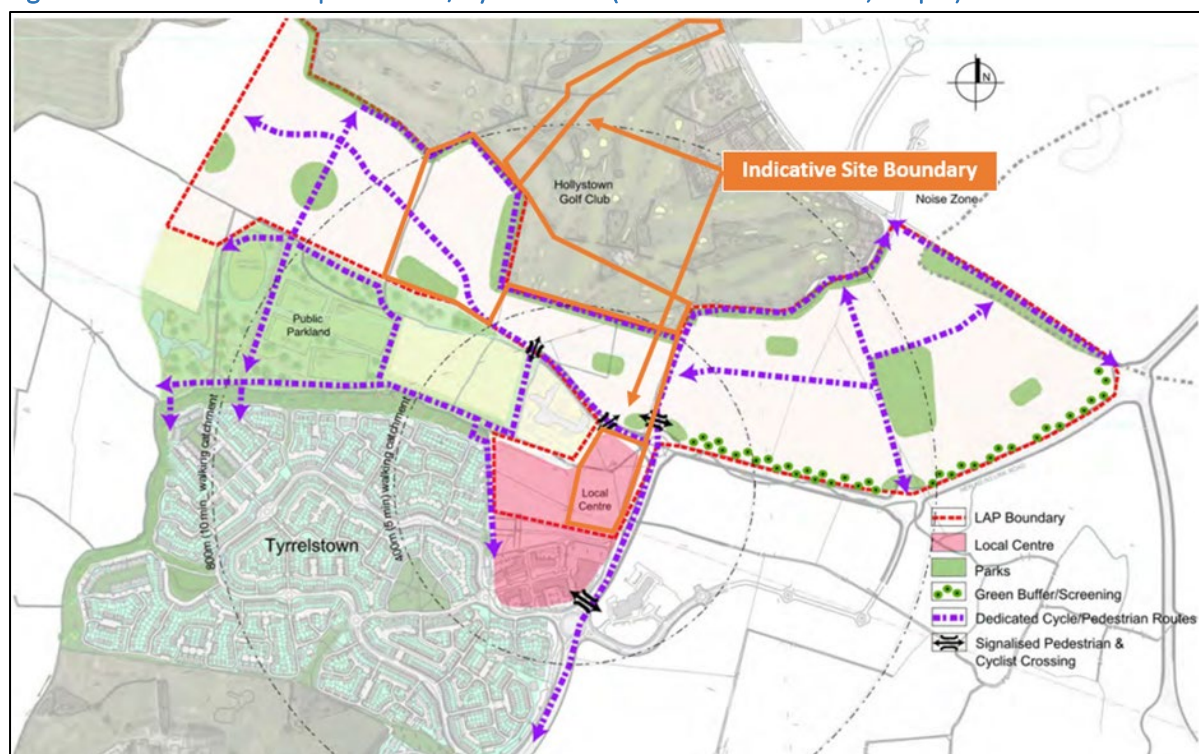
New routes such as the 5E on Church Road and segregated cycleways on the Cherryhound-Tyrrelstown Link Road have been built since the publication of the GDA Cycle Network Proposals. Proposals that are yet to be constructed in the vicinity of the development site include the formation of the following key routes:

- **F7b Inter-urban Route:** This route runs along Church Road (R121) past residential units in Hollywoodrath and Bellingsmore 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.
- **River Tolka Greenway:** This route will run from Drumcondra to Tolka Valley Park via Griffith Park and National Botanic Gardens.

16.4.1.2 Kilmartin Local Area Plan

The western section of the subject lands form part of the wider *Kilmartin Local Area Plan* (LAP), which incorporates a connected network of pedestrian and cycle routes around the subject site. As noted in the previous sections, some of these routes along the R121 and the partially constructed link street have already been constructed, providing connections to the schools, community centres and public open spaces within the wider environs of Tyrrelstown. As illustrated below in **Figure 16.14**, indicative dedicated pedestrian and cycle routes are proposed around the edges of the subject lands and through the lands.

Figure 16.14 Indicative pedestrian / cycle routes (Source: Kilmartin LAP; Map 8)



16.4.2 Public Transport Proposals

16.4.2.1 BusConnects

BusConnects is an initiative launched by the NTA with the aim of overhauling the bus system in the Dublin Region. This initiative includes review of bus services and the core bus network, which comprises radial, orbital and regional core bus corridors. It also includes enhancements to ticketing and fare systems as well as a transition to a new low emission vehicle fleet.

This initiative in the long-term proposes to implement a redesign of the existing bus network. The fundamental changes to the network expected would be as follows:

- Increasing the overall amount of bus services. Providing new and frequent orbital services connecting more outer parts of the city together;
- Simplifying the bus services on the key radial into ‘Spines’, where all buses will operate under a common letter system and buses will run frequently and be more evenly spaced;
- Increasing the number of routes where buses will operate every 15 minutes or less all day;
- The frequent network would become a web-shaped grid, with many interchange opportunities to reach more destinations. Everywhere that two frequent routes cross, a fast interchange is possible; and
- Additional service would be provided at peak hours to limit overcrowding.

The subject site will benefit from Routes B3 and L62, which will operate adjacent the subject site on the R121. **Figure 16.15** 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 the R121 and will 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 16.15 Proposed BusConnects network (Source: BusConnects – Revised Network 2020)

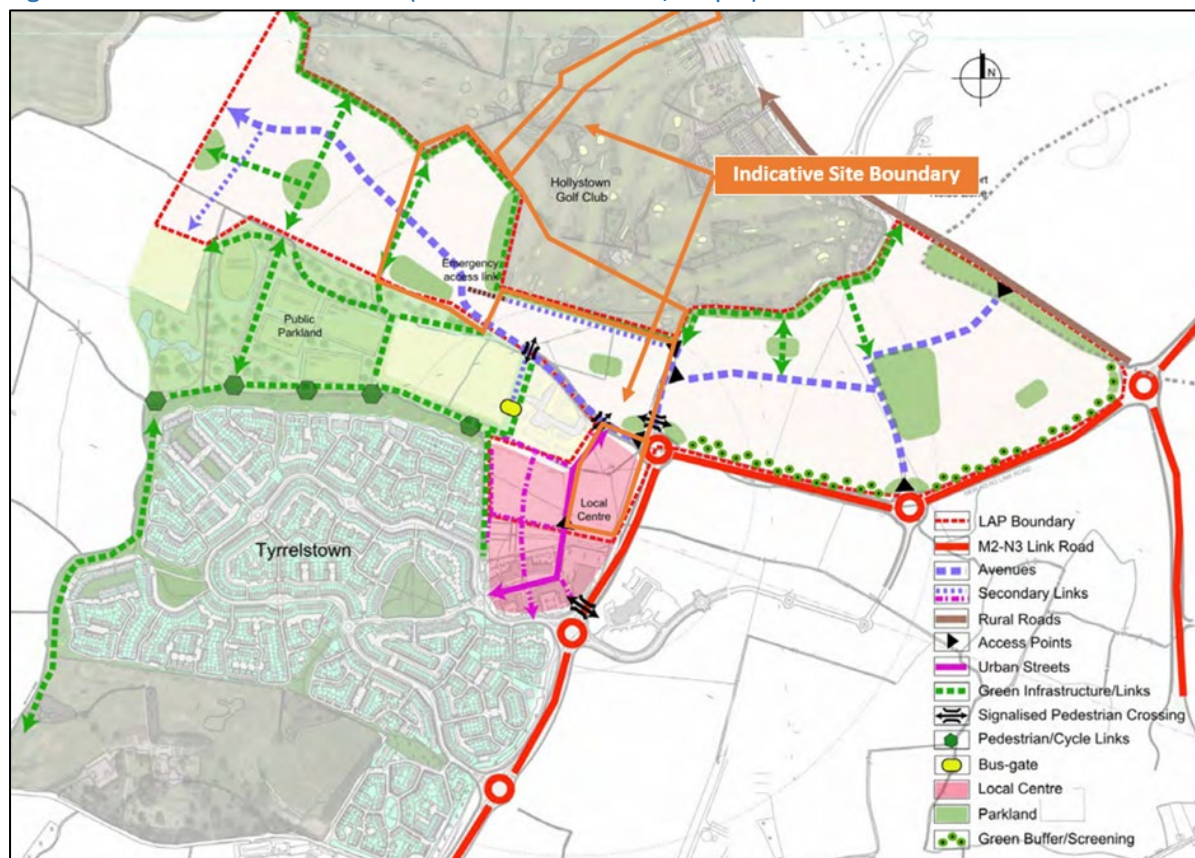


16.4.3 Road Network Proposals

The *Kilmartin Local Area Plan* provides for a tiered approach to movement in Kilmartin. A new ‘Avenue’ is identified as extending westwards from the R121/Cherryhound-Tyrrelstown Link Road, forming the main access route through the lands, as illustrated in **Figure 16.16**. As noted previously, this is already partially constructed over a length of approximately 315 m and forms the southern boundary of the Bellingsmore development currently under construction.

The partially constructed link street from the existing Tyrrelstown Local Centre to the existing schools is also identified within the LAP as an 'Urban Street'. The yet to be constructed northern arm from the roundabout to the Avenue is included as part of the subject proposals, which is also defined as an 'Urban Street' within the LAP (also referred to as the 'Link Street', as per DMURS definitions).

Figure 16.16 Roads and access (Source: Kilmartin LAP; Map 7)



16.5 Characteristics of the Proposed Development

16.5.1 Schedule of Accommodation

The proposed development (**Figure 16.17**) will include 548 no. residential units. With reference to Dedy Gahan and O'Mahony Pike Architects' drawings, as submitted with this planning application, the proposed development schedule is summarised in **Table 16.2**, below.

Table 16.2: Proposed development schedule – summary

	Unit Type		Number of Units / GFA
Residential	Hollystown Sites 2 + 3		
	House	2-Bed	97
		3-Bed	267
		4-Bed	37
	Apartment	1-Bed	27
	Sub-Total/		428
	Kilmartin Local Centre		
	Apartments	1-Bed	32
		2-Bed	68
		3-Bed	20
	Sub-Total/		120
Total		548	
Community Facilities	Kilmartin Local Centre		
	Community Hub		144.5 sqm
	Café / Retail		154 sqm
	Standalone Crèche		529.6 sqm
	Crèche		500 sqm
	Montessori		280 sqm

Figure 16.17 Proposed development site layout (indicative)



16.5.2 Site Access Arrangements

16.5.2.1 Pedestrian & Cyclist Access

The proposed site layout has been designed to maximise permeability and connectivity to, through and from the site by foot and by bicycle, as indicated in **Figure 16.18** below. The Primary Link Street (Hollystown Road) extension will incorporate segregated 2.0 m wide pedestrian footpaths and 2.0 m wide cycle tracks on both sides. The Secondary Link Street which connects to the R121 will have 3.0 m wide shared paths on both sides.

Within the proposed Local Centre, segregated cycle tracks (2.0 m wide) and footways (2.0 m wide) on both sides will be provided on the southern section of the Link Street. A raised Zebra crossing will be constructed on the Link Street adjacent the standalone crèche. The existing roundabout that serves as an access to the national schools will be upgraded to provide 4.0 m wide raised zebra crossings on all three arms.

A two-way cycle track (3.0 m wide) will be provided on the western side of the proposed Link Street extension (northern arm of the roundabout) with 2.0 m and 3.0 m wide footways on the west and

eastern sides, respectively. At the proposed Link Street junction with the Avenue, a controlled Toucan crossing is to be implemented at the western arm (The Avenue) and a raised uncontrolled crossing over the southern arm (Link Street).

These facilities are further supported by a network of off-road pedestrian / cyclist routes that run along the western and northern site boundaries and the boundary between Site 2 and the Bellingsmore Development currently under construction. Heading in north-easterly direction is the proposed pedestrian / cycle link which will extend out to the Ratoath Road. This will link through the former golf club car park and provide a connection to the existing controlled crossing on Ratoath Road.

Figure 16.18 Proposed pedestrian / cyclist access points



16.5.2.2 Vehicular Access

There are three proposed new vehicle access points proposed to serve the subject development, as indicated in **Figure 16.19** below. Access to Hollystown Site 2 will be made from the R121 and will be in the form of a priority junction.

The second site access will be via an extension to the existing Primary Link Street from the Avenue. This primary link street is proposed to extend through Hollystown Site 3, up to the western boundary, enabling future onward connections to the westernmost LAP lands. The third site access (priority-controlled) will serve the Kilmartin Local Centre site and will be accessed from the Avenue. The vehicle connection from the existing Tyrrelstown Local Centre will also be retained.

Figure 16.19 Proposed vehicular access points



16.5.3 Car Parking Provision

A total of 952 – 1,049 no. car parking spaces are required by the FCC Development Plan for the proposed quantum of residential development. By comparison, for the apartment element of the scheme, the DHPLG standards states that a reduced quantum of car parking should be considered.

A total of 930 no. car parking spaces will be provided at the proposed development. For the residential development, a total of 870 no. spaces will be included, and this equates to an overall car parking ratio of approximately 1.6 spaces per residential unit.

At Hollystown Sites 2 and 3, a total of 792 no. car park spaces will be provided with 762 no. spaces allocated to residents whilst the remaining 30 no. spaces will be provided as visitor car parking spaces.

At the Kilmartin Local Centre development, a total of 138 no. spaces will be provided. The breakdown at this location is as follows;

- 108 no. residential spaces,
- 5 no. staff parking at the crèches/Montessori,
- 10 no. set-down spaces at the crèches/Montessori,
- 6 no. visitor spaces and
- 9 no. on-street spaces along the Link Street

16.5.3.1 Electric Vehicle Parking

All residential car parking spaces within Hollystown Sites 2 & 3 will be equipped with the necessary infrastructure and ducting to facilitate electric vehicle charging points. This exceeds the FCC County Development Plans requirements of the one space or more per 100 spaces will be reserved for electric

vehicles with charging facilities. Within the Local Centre, 14 no. car park spaces within the podium car park will be provided with EV charging points, thereby equating to 13% of the resident parking and exceeding the FCC Development Plan requirements.

16.5.3.2 Bicycle Parking

In terms of Hollystown Sites 2 & 3, a total of 45 no. bicycle parking spaces are proposed to serve the apartments, comprising 5 no. cycle spaces for each triplex unit. This is in accordance with the DHPLG requirements. The bicycle parking for the triplex apartments will be provided for within secure covered bike parking areas in communal areas of the rear gardens.

The Courtyard houses that incorporate carports contain dedicated areas within the carport capable of storing two bicycles. The remaining house types will all have secure gardens areas to the rear of the properties capable of storing bicycles.

A further 9 no. covered bicycle racks have been provided across the site, which will be available for the use by the local community. This in recognition of the difficulty often encountered by occupants or visitors of terraced units with regards to accessing the rear garden areas to store bicycles, which requires bringing the bicycle through the house. The racks have been located so as they are in overlooked areas enabling passive surveillance, thereby enhancing security. These bicycle racks will accommodate 20 bicycles each, thereby providing an additional 180 bicycle parking spaces across the site.

With respect to the Kilmartin Local Centre element of the application, a total of 300 no. bicycle parking spaces are proposed as part of the development, comprising 230 no. long stay spaces for the residential activity and 70 no. short stay spaces for both the residential and non-residential activity. Under the FCC Development Plan a minimum of 153 spaces are required for the Kilmartin Local Centre element of the proposed development. The proposed provision of 300 spaces is therefore 147 spaces higher than the Development Plan requirements.

Furthermore, the proposed provision of 230 long stay spaces for the residential activity is in accordance with the DHPLG Apartment Guidelines which require 230 no. long stay spaces, i.e. equating to 1 cycle parking space per bedroom.

The design approach in regard to the specification of bicycle parking on-site, in the context of the sites' accessibility characteristics, is deemed to be more than adequate, particularly in relation to the apartment units, as it is higher than the FCC Development Plan cycle parking standards and is in accordance with the DHPLG Apartment Guideline requirements.

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) 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.

16.6.1.2 Construction Traffic

Construction traffic will only be generated on weekdays (07:00 – 19:00 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; and
- Excavation plant, dumper trucks and delivery vehicles involved in site development works and material delivery vehicles for the following: granular fill materials, concrete pipes, manholes, reinforcement steel, ready-mix concrete and mortar, concrete blocks, miscellaneous building materials, etc.

On-site employees will generally arrive before 08:00, thus avoiding the morning peak hour traffic. These employees will generally depart after 16:00. It should be noted that a large proportion of construction workers are anticipated to arrive in shared transport. Considering the sensitivity of the site, opportunities for remote off-site compound parking will be explored. Deliveries will be actively controlled and subsequently arrive at a dispersed rate during the course of the working day.

Based upon the experience of similar developments, a development of this type, scale rate of development would at a maximum necessitate approximately 200 staff on site at any one time, subsequently generating no more than 32 to 35 two-way vehicle trips during the peak AM and PM periods over the period of the phased construction works.

It is anticipated that the proposed development would be constructed over a period of approximately 5.6 years (December 2021 through June 2027) over four phases⁷⁶. 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 7 to 8 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 55,000 m³ of material will require excavation as part of the scheme proposals in regard to works associated with the swale, road construction and residential buildings. All of this excavated topsoil and subsoil will be re-used as part of the development's permanent landscaped works.

It is estimated that 30,000 m³ of clean material will be required to be imported to the subject site following the excavation works. It is estimated this equates to between 3,571 truckloads depending upon vehicle characteristics (assumed a dumper truck with a volume of 8.4 m³). Assuming construction

⁷⁶ Note that this period also includes for the construction of the previously permitted Hollystown Site 1 residential development to the northeast of the site (FCC reg. ref. FW21A/0042), also under the ownership of the Applicant, which includes the proposed foul water outfall to the west (Phase 1B). Refer to **Section 5.5.2** in Chapter 5 (Description of the Proposed Development).

takes place over one consecutive period and assuming 75 loads arrive per day, this equates to approx. 48 days (\approx 10 weeks) of arriving materials as part of the adopted worst-case assessment to import the estimated quantum of materials.

Further to the requirements of the local roads authority, an appropriate control and routing strategy for HGVs can also be implemented for the duration of site works as part of the CTMP. It is not proposed to utilise any roads with weight/height restrictions as part of the routing of HGVs during the construction phase.

All construction traffic, including HGVs, will be using the existing partially constructed Link Street, 'The Avenue', to access and egress the subject site. For the Kilmartin Local Centre site, construction vehicles will access the site via the new Link Street extension connecting to The Avenue. For Hollystown Sites 2 and 3, HGVs will use The Avenue which extends into Site 3. During Phase 2a and the construction of Site 2, construction traffic may also use the proposed new vehicle access on the R121.

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.

16.6.2 Operational Phase

16.6.2.1 Proposed Development 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 16.3, below, includes the predicted trip rates for the proposed development during the morning and evening peak hour periods using data from TRICS. Based on the trip rates, potential peak hour vehicle traffic flow has been calculated for the proposed development. For the 2023 Opening Year, it has been assumed that 100 units would be complete and occupied for Hollystown Sites 2 & 3, whilst the entire Kilmartin Local Centre development (120 apartment units plus retail/childcare facilities) would be built / occupied. For the Future Design Year (2028), it is assumed the entire development would be built and occupied (548 no. residential units plus retail/childcare facilities).

Table 16.3: Proposed development trip rates (TRICS)

TRICS Rate	AM Peak Hour (07:45-08:45)			PM Peak Hour (17:00 - 18:00)		
	Arr	Dep	Two-Way	Arr	Dep	Two-Way
Houses	0.141	0.416	0.557	0.402	0.263	0.665
Apartments	0.054	0.226	0.280	0.192	0.065	0.257
Community Hub	0.515	0.193	0.708	1.294	1.647	2.941
Crèche / Montessori	4.124	2.937	7.061	3.267	4.053	7.320
Retail	5.872	5.433	11.305	7.742	8.133	15.875
Café	0.000	0.000	0.000	1.117	0.921	2.038

Table 16.4, below, summarises the predicted AM and PM peak hour traffic generated by the proposed development in the 2023 Opening Year, whilst **Table 16.5** summarises the predicted peak hour traffic generated from the 2028 Future Design Year.

Table 16.4: Predicted trips at Opening Year 2023

Site	Unit Type	No. Units / GFA (per 100sqm)	AM Peak Hour (07:45-08:45)			PM Peak Hour (17:00 - 18:00)		
			Arr	Dep	Two-Way	Arr	Dep	Two-Way
Kilmartin L.C.	Apartments	120	4	15	19	23	13	35
	Café / Retail ⁷⁷	1.54	1	1	2	1	1	2
	Community Hub ⁷⁸	1.54	0	0	0	0	1	1
	Crèche ⁷⁸	9.97	10	7	17	8	10	18
	Montessori ⁷⁸	2.74	3	2	5	2	3	5
Hollystown Sites 2 + 3	Houses	100	14	42	56	40	26	67
Predicted Trips at Opening Year 2023			32	66	98	74	54	128

The non-residential land uses at the Kilmartin Local Centre site are predicted to predominantly serve the proposed and existing surrounding residential development. Therefore, it is anticipated that a proportion of the trips arriving to / departing from these land uses will already be occurring on the network. Therefore, in order to avoid the double counting of trips, DBFL has assumed that 25% of trips generated by the crèche, the Montessori and the community hub will be 'new' or 'diverted' trips, whilst the remaining 75% will be trips already generated on the network.

It has also been assumed that the proposed café / retail unit will generate mostly internal trips. Therefore, it has been assumed that 10% of trips generated will be 'new' whilst 90% of the trips will be from within the subject development.

Furthermore, the proposed high-quality walking and cycling linkages connecting the Kilmartin Local Centre development to the existing/proposed residential development areas will enable residents accessing the facilities and services in the Local Centre to do so by walking / cycling, thereby minimising the number of local trips made by private car.

⁷⁷ Café / retail trip rates discounted by 90%

⁷⁸ Crèche / Montessori / community hub rates discounted by 75%

Table 16.5: Predicted trips from Future Design Year 2028 onwards

Site	Unit Type	No. Units / GFA (per 100sqm)	AM Peak Hour (07:45-08:45)			PM Peak Hour (17:00 - 18:00)		
			Arr	Dep	Two-Way	Arr	Dep	Two-Way
Kilmartin L.C.	All Unit Types (120 units + Non-residential Land Uses		18	25	43	34	28	61
Hollystown Sites 2 + 3	Houses	401	57	167	223	161	105	267
	Apartments	27	1	6	8	5	2	7
Predicted Trips at Future Design Year 2028			76	197	274	200	135	335

16.6.2.2 Committed Development Trip Generation

Following a review of the FCC online planning portal, DBFL have established the extent of existing third party development, as located within the area of influence of the proposed development, which currently benefit from a planning permission but have yet to be constructed / occupied (i.e. ‘committed developments’). DBFL have subsequently included the following third-party development proposals as committed developments within the network assessment:

- Bellingsmore residential development (FCC reg. ref. FW13A/0088)
- Hollywoodrath residential development (FCC reg. ref. FW14A/0108)
- Hollystown Site 1 residential development (FCC reg. ref. FW21A/0042)

The network assessment has also accounted for educational facilities planned under the scope of the *Kilmartin Local Area Plan* (LAP). The location of the abovementioned committed developments and planned educational facilities are shown in **Figure 16.20**.

Figure 16.20 Committed developments and future schools (indicative boundaries)



Bellingsmore Residential Development (Reg. Ref: FW13A/0088)

The Bellingsmore residential development (FCC reg. ref. FW13A/0088) is located to the west of the R121 and forms part of the southern boundary of the subject site. The Bellingsmore development comprises 177 no. dwellings and, at the time of preparing this report, is nearing completion. It is noted that the Bellingsmore development is also in the ownership of the applicant (Glenveagh Homes Ltd).

The vehicle trips associated with this committed development were retrieved from the Traffic and Transport Assessment submitted as part of the development's planning application. These vehicle trips were included in the subject development's Traffic Model in order to assess the impact of the Bellingsmore development on the surrounding network in addition to the subject development's impact. **Table 16.6**, below, summarises the peak hour AM and PM traffic generated by the committed residential development.

Table 16.6: Committed development – Bellingsmore (reg. ref: FW13A/0088) traffic generation

Land Use	No. Units	AM Peak Hour (07:45-08:45)			PM Peak Hour (17:00 - 18:00)		
		Arr	Dep	Two-Way	Arr	Dep	Two-Way
Bellingsmore Development	177	30	80	111	78	49	127

Hollywoodrath Residential Development (Reg. Ref: FW14A/0108)

To the east of the R121 is the Hollywoodrath residential development (FCC Ref. No. FW14A/0108), which comprises 143 residential dwellings. At the time of preparing this report, the Hollywoodrath residential development was largely complete and occupied, with a portion of the lands to the far east still under construction.

It is noted that at the time the traffic surveys were undertaken (May 2019), the Hollywoodrath development was still under construction with a small number of houses complete and occupied. The full development trips would, therefore, not have been accounted for as part of the traffic surveys at that time. Consequently, to ensure a robust assessment of the potential impact of the Hollywoodrath development, the vehicle trips associated with the development were obtained for the TTA submitted as part of the development's planning application.

These vehicle trips were added to the subject development's Traffic Model in order to assess the impact of the Hollywoodrath development on the surrounding road network in addition to the subject development's impact. **Table 16.7**, below, summarises the peak hour AM and PM traffic generated by the committed residential development.

Table 16.7: Committed development – Hollywoodrath (reg. ref: FW14A/0108) traffic generation

Land Use	No. Units	AM Peak Hour (07:45-08:45)			PM Peak Hour (17:00 - 18:00)		
		Arr	Dep	Two-Way	Arr	Dep	Two-Way
Hollywoodrath	143	20	57	77	56	34	90

Hollystown Site 1 – Residential Development (Reg. Ref. FW21A/0042)

To the north-east of the Site 2 elements of the proposed development is the residential development referred to as 'Hollystown Site 1' (FCC reg. ref. FW21A/0042), which was granted permission in July 2021 for a development comprising 69 no. residential dwellings. It is noted that the Hollystown Site 1 lands are in the ownership of the applicant (Glenveagh Homes Ltd).

DBFL have utilised the trip rates and subsequent trip generation figures for the proposed development schedule as per the TTA accompanying the planning application, as shown in **Table 16.9**, below. These vehicle trips were added to the subject development's 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 development's impact.

Table 16.9: Committed development – Hollystown Site 1 (reg. ref. FW21A/0042) traffic generation

Land Use	No. Units	AM Peak Hour (07:45-08:45)			PM Peak Hour (17:00 - 18:00)		
		Arr	Dep	Two-Way	Arr	Dep	Two-Way
Hollystown Site 1	69	12	31	43	30	19	50

Kilmartin LAP – Educational 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 and secondary schools currently in Tyrrelstown. These include an additional primary school that is to be located on lands immediately south of the existing St. Luke's National School and Tyrrelstown Educate Together National School.

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 594 pupils.

A new secondary school is also proposed under the Kilmartin LAP, which is to be located within the Hollywoodrath residential development area. Similarly, details regarding the potential size of the future secondary 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 secondary school could cater for 602 pupils.

In order to determine the level of traffic generated by these two potential schools, DBFL have calculated these using the TRICS database for similar types of land use and derived corresponding vehicle trips for both the AM and PM peak hours.

Table 16.8: Kilmartin LAP planned educational facilities traffic generation

Land Use	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
Primary School	594	136	98	234	17	20	37
Secondary School	602	82	56	138	16	27	43

16.6.2.3 Baseline Traffic Characteristics

With the objective of quantifying the existing traffic movements across the local road network, a number of local traffic surveys were commissioned. Three junction turning counts (JTCs) were conducted over a 12.5-hour period from 06:30 to 19:00 on Wednesday the 8th of May 2019 at the following key junctions:

- JTC 1: R121 / Cherryhound-Tyrrelstown Link Road / The Avenue Roundabout;
- JTC 2: Boulevard / R121 / Cruiserath Drive Roundabout; and
- JTC 3: Boulevard Roundabout (West of Tyrrelstown Town Centre).

The surveys undertaken by IDASO Ltd. established that the local network's AM and PM peak hours occur between 07:45 – 08.45 and 17:00 – 18:00, respectively.

In order to analyse and assess the impact of the proposed development on the surrounding road network, a traffic generation and distribution model (excel based) of the following key junctions was created, as illustrated in **Figure 16.21**.

Figure 16.21 Junctions included within the network analysis



16.6.2.4 Traffic Growth

To ensure a robust analysis of traffic upon the local road network, growth rates using the National Roads Authority (NRA) / Transport Infrastructure Ireland (TII) *Project Appraisal Guidelines* projections were adopted. **Table 6.1** within the TII *Project Appraisal Guidelines* (May 2019) provides Annual National Traffic Growth Factors for the different regions within Ireland. The subject site lies within the 'Metropolitan Area of Dublin'.

Applying the annual factors (Central Growth) for the adopted Opening Year of 2023, Interim Year 2028 (+5 years) and Future Horizon Year of 2038 (+15 years), the following growth rates have been adopted to establish corresponding baseline network flows: -

- 2019 to 2023 – 1.0664 (or 6.6%);
- 2019 to 2028 – 1.1556 (or 15.6%); and
- 2019 to 2038 – 1.2293 (or 22.9%).

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:**

- A1 – 2023 Opening Year Base Flows + Committed Developments
- A2 – 2028 Interim Year Base Flows + Committed Developments
- A3 – 2038 Future Year Base Flows + Committed Developments

■ **Do-Something:**

- B1 – 2023 Do-Nothing (A1) + Proposed Development Flows
- B2 – 2028 Do-Nothing (A2) + Proposed Development Flows
- B3 – 2038 Do-Nothing (A3) + Proposed Development Flows

The analysis carried out represents a worst-case appraisal of a typical weekday as it is focused upon the two busiest periods of the day (i.e. AM and PM peak hours). During the remaining 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. Similarly, over the weekend periods, both the site generated traffic and the external road network traffic flows are generally lower compared to the weekday peak hour periods that have been assessed.

16.6.2.6 Operational Phase Impacts

The Institution of Highways and Transportation document, *Guidelines for Traffic Impact Assessments*, states 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 should be noted the impact assessment 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 County Council is required to be further analysed.

Table 16.10 and **Figure 16.22**, 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 2028 Interim Year, to show how the development may impact the network across design years. Percentage impacts were calculated for the impact of the development in "Do-Nothing" Scenarios vs "Do-Something" scenarios for the corresponding years.

Table 16.10: Network impact – key off-site junctions

Junction ID	Junction	Design Year	Percentage Impact	
			AM	PM
J1	Hollystown Sites 2 Access on the R121	2023	4.35%	7.32%
		2028	15.80%	24.90%
		2038	14.98%	23.57%
J2	Kilmartin Local Centre Development Access 1	2023	9.97%	79.56%
		2028	10.71%	90.55%
		2038	10.20%	87.25%
J3	Hollywood Drive / New Link Roundabout Junction	2023	5.31%	38.61%
		2028	6.97%	59.73%
		2038	6.65%	57.68%
J4	The Avenue / New Link Junction	2023	12.14%	68.85%
		2028	25.72%	150.93%
		2038	24.58%	148.21%
J5	The Avenue / R121 / Hollywoodrath / Cherryhound Tyrrelstown Link Roundabout Junction	2023	3.01%	5.03%
		2028	7.78%	13.00%
		2038	7.38%	12.32%
J6	Boulevard / Park Boulevard Roundabout Junction	2023	2.96%	4.07%
		2028	4.16%	6.52%
		2038	3.94%	6.14%
J7	R121 / Boulevard / Cruiserath Drive Roundabout Junction	2023	2.35%	3.48%
		2028	6.26%	8.80%
		2038	5.92%	8.31%

Under the Institution of Highways and Transportation document, *Guidelines for Traffic Impact Assessments*, the majority of junctions (with the exception of Junction 6 and 7) surpass 10% for normal networks. All junctions exceeded FCC's 2.5% threshold. An operational assessment of the junctions was undertaken using the junction computer package ARCADY and PICADY. Under the 'Do-Something' Scenario, the result of the analysis was as that:

■ In the **2023 Opening Year**:

- **Junction 1:** Maximum Ratio to Flow Capacity (RFC) of 5% (AM) and 3% (PM) on the Main Access arm of Hollystown Site 2.
- **Junction 2:** Maximum RFC of 6% during both the AM and PM peak on the Kilmartin Local Centre's site entrance.
- **Junction 3:** Maximum RFC of 37% (AM) and 7% (PM) on the southern arm of the Hollywood Drive Roundabout (with the proposed northern arm in place).
- **Junction 4:** Maximum Delay of 9.69 seconds (AM) and 7.69 seconds (PM) at the southern arm of the Link Street junction.
- **Junction 5:** Maximum RFC of 72% (AM) on the northern R121 arm and 40% (PM) on the southern R121 arm.
- **Junction 6:** Maximum RFC of 34% (AM) and 49% (PM) on the Boulevard arm.
- **Junction 7:** Maximum RFC of 62% (AM) on the northern R121 arm and 41% (PM) on the southern R121 arm.

■ In the **2038 Future Design Year**:

- **Junction 1:** Maximum RFC of 21% (AM) and 14% (PM) on the Main Access arm of Hollystown Site 2.
- **Junction 2:** Maximum RFC of 7% (AM) and 6% (PM) on the Kilmartin Local Centre's site entrance.
- **Junction 3:** Maximum RFC of 48% (AM) and 11% (PM) on the southern arm of the Hollywood Drive Roundabout (with the proposed northern arm in place).
- **Junction 4:** Maximum Delay of 11.11 seconds (AM) and 9.19 seconds (PM) at the southern arm of the Link Street junction.
- **Junction 5:** Maximum RFC of 106% (AM) on the northern R121 arm and 50% (PM) on the southern R121 arm.
- **Junction 6:** Maximum RFC of 44% (AM) and 60% (PM) on the Boulevard arm.
- **Junction 7:** Maximum RFC of 80% (AM) on the northern R121 arm and 52% (PM) on the southern R121 arm.

All of the results for this analysis show that all junctions operate within capacity in the Opening 2023 Year. At the 2038 Future Design Year, the majority of junctions once again operate within capacity. Junction 5 exceeds capacity in the AM peak. Junction 7 nears capacity but is observed to provide a Level of Service (LOS) of A.

16.7 Cumulative Impacts

16.7.1 Construction Phase

The analysis detailed above represents an appraisal in terms of potential cumulative impacts for a typical weekday as it is focussed upon the two busiest periods of the day (i.e. AM and PM peak hours). During the other 22 hours of the day, traffic flows are predicted to be significantly lower, resulting in the network operating with additional reserve capacity to that forecast for the peak hour periods.

The following committed and planned developments predicted peak hour vehicle trips, as outlined within the TTA submitted as part of the planning application, are incorporated into the subject development assessment:

1. Bellingsmore Residential Development (reg. ref: FW13A/0088)
2. Hollywoodrath Residential Development (reg. ref: FW14A/0108)
3. Hollystown Site 1 Residential Development (reg. ref. FW21A/0042)
4. Kilmartin LAP Educational Facilities

The completion of these aforementioned committed and planned developments is predicted to have an impact on the surrounding road network. However, nos. 1 and 2 (as listed above) are nearing completion and, therefore, construction activities are anticipated to be largely complete and units occupied prior to commencement of construction activities on Phase 1 of the proposed development. It is anticipated that construction on no. 3 (Hollystown Site 1) would commence and be largely progressed prior to the commencement of construction activities on Phase 1 of the proposed development.

Whilst the Kilmartin LAP education facilities (primary / post primary schools) have been included to ensure a robust assessment, there are no indicative timeframes as to when planning applications may be progressed nor subsequent construction work commencing on-site. Therefore, based on the above, the resulting cumulative impact is expected to have a negative but low impact on the key off-site road network junctions.

It is also noted that at the time of preparing this report a separate planning application was being prepared for the prospective GAA Pitches located off the Ratoath Road to the north of Site 3. This is not yet a Permitted Development, but for the purposes of providing a robust assessment, consideration has been given to the potential cumulative impact arising from the construction phase of this development should it be successful in gaining planning permission.

No detailed construction traffic information or construction programme was available for the GAA Pitches development at the time of preparing this report, however, construction traffic associated with the GAA pitches would likely access the site via either the R121 or Corduff Road / Ratoath Road. It is anticipated that HGV construction traffic movements associated with the GAA pitches would be relatively low and occur over a short period of time. Therefore, based on the above, the resulting cumulative impact is expected to have a negative but low and temporary impact of the key off-site road network junctions.

16.7.2 Operational Phase

The analysis detailed above represents an appraisal in terms of potential cumulative impacts for a typical weekday as it is focussed upon the two busiest periods of the day (i.e. AM and PM peak hours). During the other 22 hours of the day, traffic flows are predicted to be significantly lower, resulting in the network operating with additional reserve capacity to that forecast for the peak hour periods.

The results of the ARCADY and PICADY analysis have demonstrated that Junctions 1, 2, 3, 4, 6 & 7 will operate within capacity in both the AM and PM peak hours during the 2038 Future Design Year. Junction 5 is shown to reach capacity during the AM peak hour, on the northern R121 arm, but operates within capacity in the PM peak. **Figure 16.22** illustrates the percentage impact of the development traffic at each of the study junctions for the Future Design Year 2038.

As noted above, at the time of preparing this report a separate planning application was being prepared for the prospective GAA Pitches located off the Ratoath Road to the north of Site 3. This is not yet a Permitted Development, but for the purposes of providing a robust assessment, consideration has been given to the potential cumulative impact arising from the operational phase of this development should it be successful in gaining planning permission. To assist with this, trip generation information was obtained for the prospective GAA Pitches development from the Traffic & Transportation Consultants (J.B. Barry Consulting Engineers) who are working on behalf of the applicant.

The recorded weekday PM peak hour on the local road network occurs between 5pm – 6pm. Based on the trip generation data obtained for the GAA pitches, a negligible number of trips are anticipated to occur during the PM peak hour. Activity at the GAA pitches during the weekday is expected to occur from 6pm onwards with the busiest periods being between 7pm-9pm. The GAA generates a peak number of trips during 7pm-8pm (Monday – Wednesday) with total trips (arrivals & departures) in the region of 133-233 trips. Whilst on a Thursday and Friday the peak number of trips are generated slightly later between 8pm and 9pm, also with a total of 133-233 trips (arrival & departures).

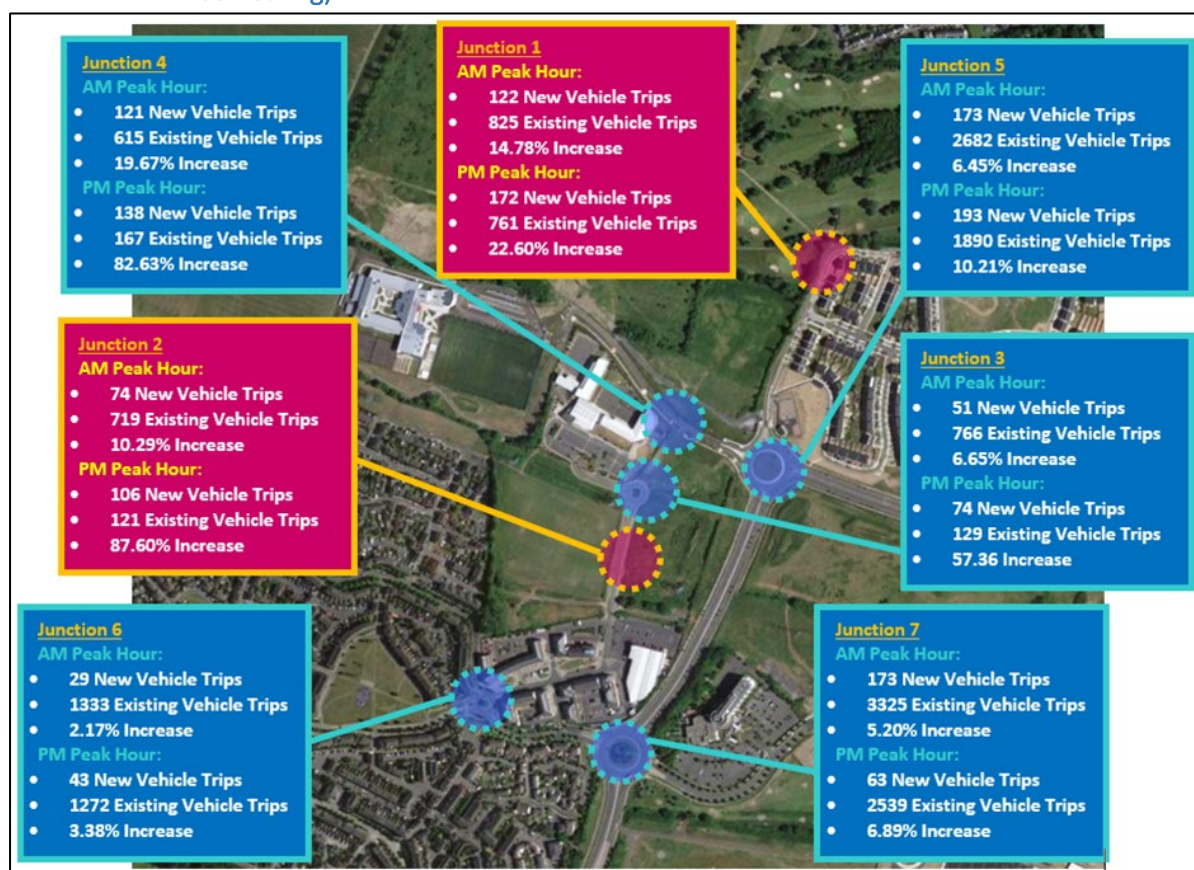
It noted that these are person trips and that in reality a portion of these trips would be made by walking, cycling and coaches. An element of car sharing would also be typically expected. Therefore, the number of vehicle trips and resulting impact on the road network would be significantly less.

Consequently, the analysis carried out still presents a robust assessment as it focuses on the two busiest periods of the day (i.e. AM and PM peak hours). Outside of these hours, traffic flows on the network

would be significantly lower, resulting in the network operating with additional reserve capacity to that forecast for the peak hours.

Therefore, any potential cumulative impact arising from both the site generated traffic and GAA pitches development traffic and the external road network traffic flows are anticipated to be negligible but low given that the typical weekday activity at the GAA pitches will predominantly occur outside of the local road network peak hours.

Figure 16.22 Increase in vehicle trips generated at site access and key off-site junctions (2038 Do-Something)



16.8 Mitigation Measures

16.8.1 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.
- It is likely that some numbers of the construction team will be brought to/from the site in vans/minibuses, which will serve to reduce the trip generation potential.
- 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).
- Site entrance points from the public highway will be constructed with a bound, durable surface capable of withstanding heavy loads and with a sealed joint between the access and public highway. This durable bound surface will be constructed for a distance of 10 m from the public highway.
- 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.
- Dedicated construction haul routes will be identified and 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 reinstated in full on completion of the works.

16.8.2 Operational Phase

Aspects of the design of the proposed development will mitigate potential negative impacts in relation to traffic and transportation. For instance, key measures to reduce reliance on private vehicles include the provision of ample secure cycle parking, high quality dedicated pedestrian and cycle paths and a high degree of permeability across the site and between the site and neighbouring areas for pedestrians and cyclists.

Additionally, 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 with 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 of the apartments in the Local Centre.

16.9 Residual Impacts

16.9.1 Construction Phase

Implementation of the mitigation measures outlined in **Section 16.8** 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 are detailed in **Table 16.11** for the following key junctions:

1. Hollystown Site 2 R121 Access Priority Junction
2. Kilmartin Local Centre Link Street Access Priority Junction
3. Hollywood Drive / New Link Street Roundabout Junction
4. The Avenue / New Link Street Junction
5. The Avenue / R121 / Hollywoodrath / Cherryhound Tyrrelstown Link Roundabout Junction
6. Boulevard / Park Boulevard Roundabout Junction
7. R121 / Boulevard / Cruiserath Drive Roundabout Junction

The significance of the impacts has been determined in accordance with the classifications stipulated within the EPA guidelines.

Table 16.11: Impact significance – construction Phase

Junction	Environmental Character	Quality / Scale of Impact	Impact Significance	Duration
1	Low Sensitivity	Negative - Low	Slight	Temporary
2	Low Sensitivity	Negative - Low	Slight	Temporary
3	Low Sensitivity	Negative - Low	Slight	Temporary
4	Low Sensitivity	Negative - Low	Slight	Temporary
5	Low Sensitivity	Neutral Effects	Not Significant	Temporary
6	Low Sensitivity	Neutral Effects	Slight	Temporary
7	Low Sensitivity	Neutral Effects	Not Significant	Temporary

16.9.2 Operational Phase

The implementation of the mitigation measures set out in **Section 16.8**, 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 16.11**, the analysis predicts the scale of residual impact at Junctions 6 and 7, during the 2023, 2028 and 2038 design years, as largely being below 5% on the surrounding junctions, with the exception of the following junctions, as shown in **Table 16.12**, below.

Table 16.12: Links with impact >10%

Junction		Peak Hour	2023 Do Something	2028 Do Something	2038 Do Something
1	Hollystown Site 2 R121 Access Priority Junction	AM	4.35%	15.80%	14.98%
		PM	7.32%	24.90%	23.57%
2	Kilmartin Local Centre Link Street Access Priority Junction	AM	9.97%	10.71%	10.20%
		PM	79.56%	90.55%	87.25%
3	Hollywood Drive / New Link Roundabout	AM	5.31%	6.97%	6.65%
		PM	38.61%	59.73%	57.68%
4	The Avenue / New Link Junction	AM	12.14%	25.72%	24.58%
		PM	68.85%	150.93%	148.21%
5	The Avenue / R121 / Hollywoodrath / Cherryhound Tyrrelstown Link Roundabout Junction	AM	3.01%	7.78%	7.38%
		PM	5.03%	13.00%	12.32%

With regards to the TII thresholds, the 2023, 2028 and 2038 analysis for the Boulevard / Park Boulevard Roundabout and the R121 / Boulevard / Cruiserath Drive Roundabout to the south of the subject site demonstrate that the proposed development will not generate an impact greater than 10% or 5% on these networks, respectively. As a result, the impact can be classified as sub-threshold.

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) 2038 Future Year scenarios.

Table 16.13: Impact significance – 2038 Design Year (AM)

Ref.	Environmental Character	Quality / Scale of Impact	Impact Significance	Duration
1	Low Sensitivity	Negative - Low	Not Significant	Long Term
2	Low Sensitivity	Negative - Low	Slight	Long Term
3	Low Sensitivity	Negative - Low	Slight	Long Term
4	Low Sensitivity	Negative - Low	Slight	Long Term
5	Low Sensitivity	Neutral Effects	Not Significant	Long Term
6	Low Sensitivity	Neutral Effects	Not Significant	Long Term
7	Low Sensitivity	Neutral Effects	Not Significant	Long Term

Table 16.14: Impact significance – 2038 Design Year (PM)

Ref.	Environmental Character	Quality / Scale of Impact	Impact Significance	Duration
1	Low Sensitivity	Negative - Low	Not Significant	Long Term
2	Low Sensitivity	Negative - Low	Slight	Long Term
3	Low Sensitivity	Negative - Low	Slight	Long Term
4	Low Sensitivity	Negative - Low	Slight	Long Term
5	Low Sensitivity	Neutral Effects	Not Significant	Long Term
6	Low Sensitivity	Neutral Effects	Not Significant	Long Term
7	Low Sensitivity	Neutral Effects	Not Significant	Long Term

16.10 Monitoring

16.10.1 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; and
- If issues with regards the timing or programming of construction activities occur – then timing of construction activities will be monitored.

16.10.2 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.

16.11 Reinstatement

The construction works areas will be reinstated following completion of the proposed development, with landscaped areas provided where proposed. The works will be restricted to the footprint of the site of the proposed development. Excavated topsoil and subsoil will be reused in reinstatement and landscaping, where appropriate, or dealt with in the appropriate manner, e.g. sent for soil recovery.

16.12 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.
- 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.

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.

16.13 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 2019.

16.14 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)
- Dublin Bus website (www.dublinbus.ie)
- BusConnects (www.busconnects.ie)
- Fingal Development Plan 2017-2023
- Environmental Protection Agency Guidelines on the Information to be Contained in Environmental Impact Assessment Reports – Draft (August 2017)
- National Transport Authority; *Greater Dublin Area Cycle Network Plan* (2013)
- NRA "*Traffic and Transport Assessment Guidelines*" (2014)
- Ordnance Survey Ireland (www.osi.ie)
- The Institution of Highways and Transportation 'Guidelines for Traffic Impact Assessments' (1994)
- Transport for Ireland (www.transportforireland.ie)
- Transport Infrastructure Ireland (www.tii.ie)

17 Material Assets – Waste

17.1 Introduction

This chapter presents an assessment of 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 *Eastern-Midlands Region Waste Management Plan 2015 – 2021*.

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. Technical reviews have been completed by Lorraine Guerin, Environmental Consultant at Brady Shipman Martin; and Thomas Burns, Partner at Brady Shipman Martin. Refer to **Table 1.3** in Chapter 1 (Introduction) for qualifications of authors and reviewers.

17.2 Method

17.2.1 Construction Waste Assessment Methodology

The construction and demolition waste management impact assessment has been prepared with regard to the following relevant legislative instruments, policies and best practice guidelines:

- Waste Management Act 1996;
- Waste Management (Collection Permit) Regulations 2007 (SI No. 820 of 2007).
- Waste Management (Collection Permit) Amendment Regulations 2008 (SI No. 87 of 2008).
- Department of the Environment, Heritage and Local Government (2006). *Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects*.
- EPA (2017). *Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports*.
- EPA (2019). *Guidance on Soil and Stone By-Products in the context of Article 27 of the European Communities (Waste Directive) Regulations*.
- EPA (2021). *Draft Best Practice Guidelines for the preparation of resource management plans for construction and demolition projects*.

The predicted volumes and types of construction and demolition waste to be produced have been determined by conducting a range of surveys, including ground investigations. Opportunities for the re-use of construction and demolition 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.

- Waste Management (Collection Permit) Regulations 2007 (SI No. 820 of 2007).
- Waste Management (Collection Permit) Amendment Regulations 2008 (SI No. 87 of 2008).
- Fingal County Council Segregation, Storage and Presentation of Household and Commercial Waste Bye-Laws 2020.
- *Eastern-Midlands Region Waste Management Plan 2015 – 2021.*
- Department of Housing, Local Government and Heritage (2020). *Sustainable Urban Housing: Design Standards for New Apartments.*
- Fingal County Council (2017). *Fingal Development Plan 2017 – 2023.*

The operational phase of the proposed development has been prepared in accordance with the relevant waste management objectives of the *Fingal Development Plan 2017 – 2023*, which include:

- **Objective DMS146:** Ensure all new largescale residential and mixed-use developments include appropriate facilities for source segregation and collection of waste.
- **Objective DMS147:** Ensure all new developments include well designed facilities to accommodate the three bin collection system.

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.

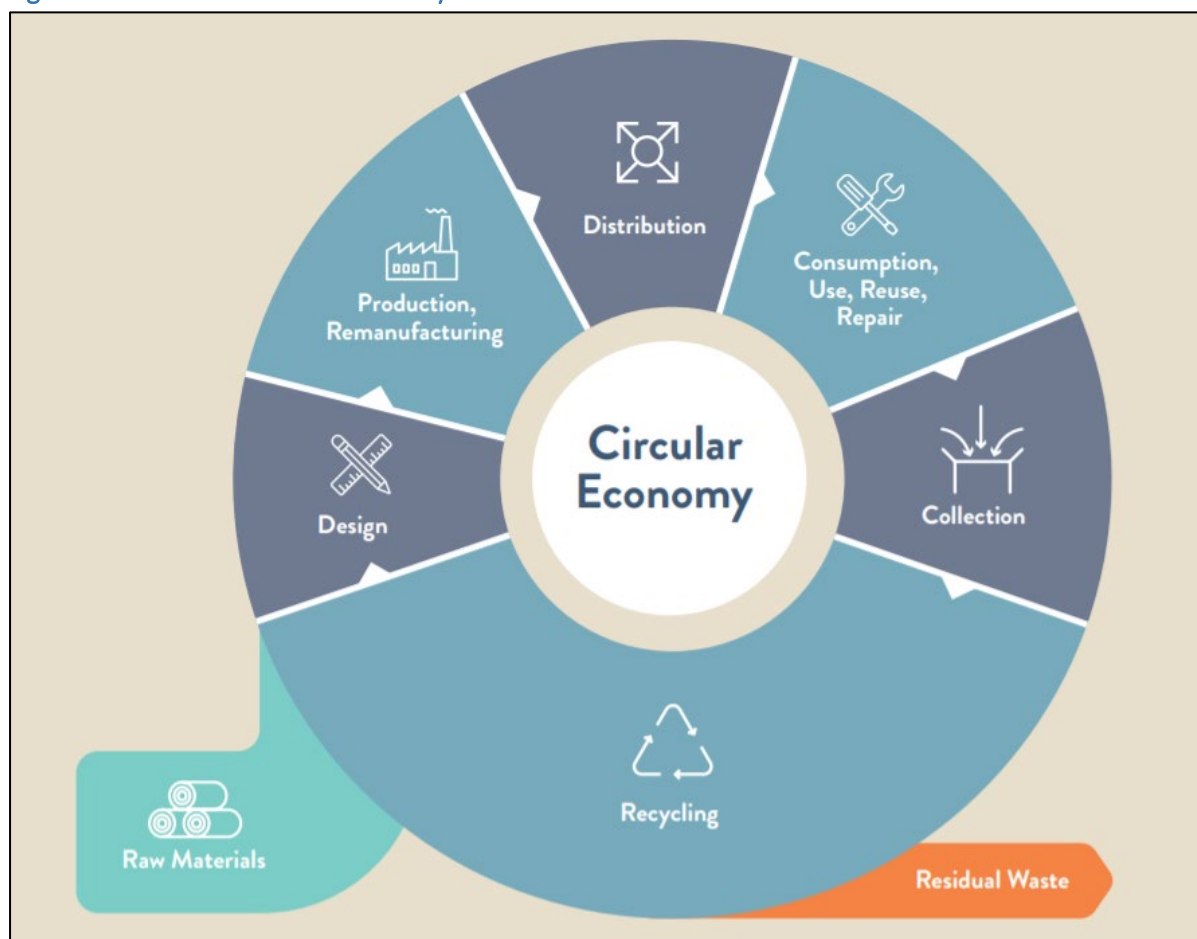
Figure 17.1 The waste hierarchy (European Commission)



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 and commercial waste when the proposed development is occupied.

There is a recycling centre in the local area at Coolmine, 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 Resource and Construction Waste Management Plan and the Operational Waste Management Plan, prepared in outline form as part of the application and to be finalised by the appointed contractor, shall be implemented throughout the construction and operational phases of the proposed development, respectively, to ensure the following:

- That all site demolition and 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 demolition and 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 and all associated Waste Management Regulations.
- That operational phase users of the proposed development are provided with sufficient facilities to segregate, store and recycle domestic and commercial waste.

17.5 Predicted Impacts of the Proposed Development

17.5.1 Construction Phase

The development of the subject site will require ground preparation works prior to the commencement of construction activities which will generate a range of waste types. 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.

Table 17.1 Impact of construction waste without mitigation

	Quality	Significance	Extent	Probability	Duration	Type
Construction waste	Negative	Slight	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 all 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 27⁷⁹ soils, where possible.

17.5.1.1 Predicted Construction Waste Generation

Table 17.2 Predicted construction waste generation

Type	Predicted tonnage	Re-use		Recyclable		Disposal	
		Tonnage	%	Tonnage	%	Tonnage	%
Mixed C&D	1250	125	10	1000	80	125	10
Timber	1000	400	40	550	55	50	5

⁷⁹ Of the European Communities (Waste Directive) Regulations 2011, as amended

Type	Predicted tonnage	Re-use		Recyclable		Disposal	
		Tonnage	%	Tonnage	%	Tonnage	%
Plasterboard	500	150	30	300	60	50	10
Metals	250	12.5	5	225	90	12.5	5
Concrete	200	60	30	130	65	10	5
Mixed waste	800	160	20	480	60	160	20
Total	4000	907.5		2685		407.5	

Table 17.3 Predicted waste soil generation

Type	Predicted volume	Re-use on-site		Recyclable		Disposal	
		Volume	%	Volume	%	Volume	%
Soils	55,000m ³	55,000m ³	100	0	0	0	0

17.5.2 Operational Phase

The operational phase of the development will consist of:

- Residential units
- Crèche
- Montessori school
- Café

The most recent EPA household waste statistics (2018) indicate that an average of 315 kg is produced per person per year or 0.863 kg/day.

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

Table 17.5 Calculated operational waste generation

Source	Waste/week (kg)
Residential Units	14,710
Residents Facilities	200
Retail / commercial	1500
Crèche/Montessori	300
Total	16,710

Table 17.6 Calculated domestic waste composition Sites 2&3

Type	% waste	Kg/week	Kg/day
Organic waste	30.6	3659	528
Paper	12.5	1509	216
Cardboard	3.6	435	62
Composites	1	121	17
Textiles	15.5	1872	267
Plastics	13.6	1642	235
Glass	3.4	411	59
Metals	3.1	374	53
Wood	1.2	145	21
Hazardous municipal waste	0.9	109	16

Type	% waste	Kg/week	Kg/day
Unclassified combustibles	1.4	169	24
Unclassified incombustibles	1.2	145	21
Fines	11.7	1413	202
Bulky Waste & WEEE	0.3	36	5
<i>Totals</i>	<i>100</i>	<i>12040</i>	<i>1726</i>

Table 17.7 Calculated domestic waste composition Local Centre

Type	% waste	Kg/week	Kg/day
Organic waste	30.6	806	115
Paper	12.5	329	47
Cardboard	3.6	95	14
Composites	1	26	4
Textiles	15.5	408	58
Plastics	13.6	358	51
Glass	3.4	90	13
Metals	3.1	82	12
Wood	1.2	32	5
Hazardous municipal waste	0.9	24	3
Unclassified combustibles	1.4	37	5
Unclassified incombustibles	1.2	32	5
Fines	11.7	308	44
Bulky Waste & WEEE	0.3	8	1
<i>Totals</i>	<i>30.6</i>	<i>2635</i>	<i>377</i>

17.6 Mitigation Measures

17.6.1 Construction Phase

The contractor will be responsible for ensuring that the following mitigation measures are fully implemented during the construction phase:

- A dedicated Resource and Construction Waste Manager shall manage all construction wastes. They shall oversee the implementation of the following measures.
- Construction wastes shall be managed in accordance with the Resource and Construction Waste Management Plan, appended in outline form (**Appendix 17.1**), to be finalised by the appointed contractor in agreement with Fingal County Council, prior to the commencement of works.
- Excavated rock shall be re-used on-site for pile pads, insofar as practicable.
- An on-site area / areas will be established for the segregation and secure storage of construction and demolition wastes.
- 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.
- A monthly waste-out record shall be issued to Fingal County Council.

- 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 communal domestic waste storage areas shall be managed by the Facilities Management Company.
- Domestic and commercial wastes shall be managed in accordance with the Site-Specific Operational Waste Management Plan, appended in outline form (**Appendix 17.2**) and to be finalised by the Applicant prior to the commencement of the operational phase, and maintained up-to-date throughout the operational phase.
- Residents shall be provided with information by the Facilities Management Company on the correct segregation and disposal of waste in order to minimise the generation of residual waste / contaminated waste streams and to increase recycling rates.
- 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 shall include WEEE and waste battery storage units.
- The communal waste storage areas shall be of sufficient size to allow for the contingency storage of waste.
- An annual bulky waste collection service will be provided to residents by the Facilities Management Company.
- A dedicated retail and commercial waste storage area shall be provided for the crèche, Montessori school and café, and any other community amenity / retail units on the site. This area shall be separate from the domestic communal waste storage areas, and shall also provide for a three-bin system, as above.
- The Facilities Management Company shall maintain a record of all domestic waste produced and shall prepare an annual report for residents and Fingal County Council detailing how waste reduction and recycling targets are being achieved with regard to the *Eastern-Midlands Region Waste Management Plan 2015 – 2021* (and any subsequent iterations).

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 a Resource and Construction Waste Management Plan (**Appendix 17.1**), to be finalised by the appointed contractor. With regard to how it has been demonstrated how demolition and 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 17.8 summarises the identified likely residual effects of the proposed development during the construction phase, i.e. post application of mitigation measures.

Table 17.8 Summary of construction phase residual effects

	Quality	Significance	Extent	Probability	Duration	Type
Construction waste	Negative	Not significant	Regional	Likely	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 17.9 summarises the identified likely residual effects of the proposed development during the operational phase, i.e. post application of mitigation measures.

Table 17.9 Summary of operational phase residual effects

	Quality	Significance	Extent	Probability	Duration	Type
Operational waste	Negative	Not significant	Regional	Likely	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

The identified interactions between the management of waste arisings during both the construction and operational stages are as follows;

- Population & Human Health (Chapter 7): management of waste in the construction and operational phase to mitigate nuisance, vermin, litter, etc.
- Land, Soils, Geology & Hydrogeology (Chapter 9): excavation to facilitate the development.
- Traffic & Transportation (Chapter 16), specifically movement of waste associated with the construction stage.

These have been comprehensively addressed herein and / or in the corresponding other specialist chapters, where appropriate.

17.10 Cumulative Impacts

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.

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 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, recycling facilities and waste disposal to process operational wastes.

Table 17.10 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	Residual

17.11 References

- Waste Management Act 1996;
- Waste Management (Collection Permit) Regulations 2007 (SI No. 820 of 2007);
- Waste Management (Collection Permit) Amendment Regulations 2008 (SI No. 87 of 2008);
- Eastern-Midlands Region Waste Management Plan 2015-2021;
- European Communities (Waste Directive) Regulations 2011;
- Fingal Development Plan 2017 – 2023;
- Department of the Environment, Heritage and Local Government – Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects – July 2006;
- 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 Draft Best Practice Guidelines for the preparation of resource management plans for construction and demolition projects, April 2021

18 Material Assets – Services

18.1 Introduction

This chapter of the EIAR assesses the potential impacts of the proposed development on ownership, access and utilities infrastructure.

It has been prepared by Lorraine Guerin, Environmental Consultant at Brady Shipman Martin. A technical review was completed by Thomas Burns, Partner at Brady Shipman Martin. Refer to **Table 1.3** in Chapter 1 (Introduction) for qualifications of authors and reviewers.

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:

“The meaning of this factor is less clear than others. In Directive 2011/92/EU it included architectural and archaeological heritage. Directive 2014/52/EU includes those heritage aspects as components of cultural heritage. Material assets can now be taken to mean built services and infrastructure. Traffic is included because in effect traffic consumes roads infrastructure. Sealing of agricultural land and effects on mining or quarrying potential come under the factors of land and soils.”

Based on this interpretation of what constitute ‘material assets’, impacts on material assets have been assessed in various places throughout this EIAR, but particularly in the following other chapters:

Table 18.1 Foregoing EIAR chapters where impacts on material assets are assessed

Chapter	Material asset(s)
Chapter 7 (Population & Human Health)	<ul style="list-style-type: none"> Community amenities and facilities Housing
Chapter 9 (Land, Soils, Geology & Hydrogeology)	<ul style="list-style-type: none"> Land / soils Quarrying
Chapter 10 (Hydrology)	<ul style="list-style-type: none"> Water supply infrastructure Wastewater drainage and treatment infrastructure
Chapter 14 (Cultural Heritage, Archaeology & Architectural Heritage)	<ul style="list-style-type: none"> Historic built environment
Chapter 16 (Traffic & Transportation)	<ul style="list-style-type: none"> Transport infrastructure
Chapter 17 (Material Assets – Waste)	<ul style="list-style-type: none"> Waste management infrastructure

This leaves the following outstanding material assets to be addressed herein:

- Ownership;
- Access; and
- Utilities infrastructure (i.e. gas and electricity supply, telecommunications and broadband).

18.2 Methodology

The potential impacts to material assets as a result of the proposed development were assessed through a desktop study of available information. The methodology is consistent with the following relevant guidance:

- EPA (2017). *Draft Guidelines on the Information to be Contained in EIARs*;
- EPA (2015). *Draft Advice Notes on Current Practice in the Preparation of Environmental Impact Statements*; and
- National Roads Authority (NRA) (2008). *Environmental Impact Assessment of National Road Schemes - A Practical Guide*.

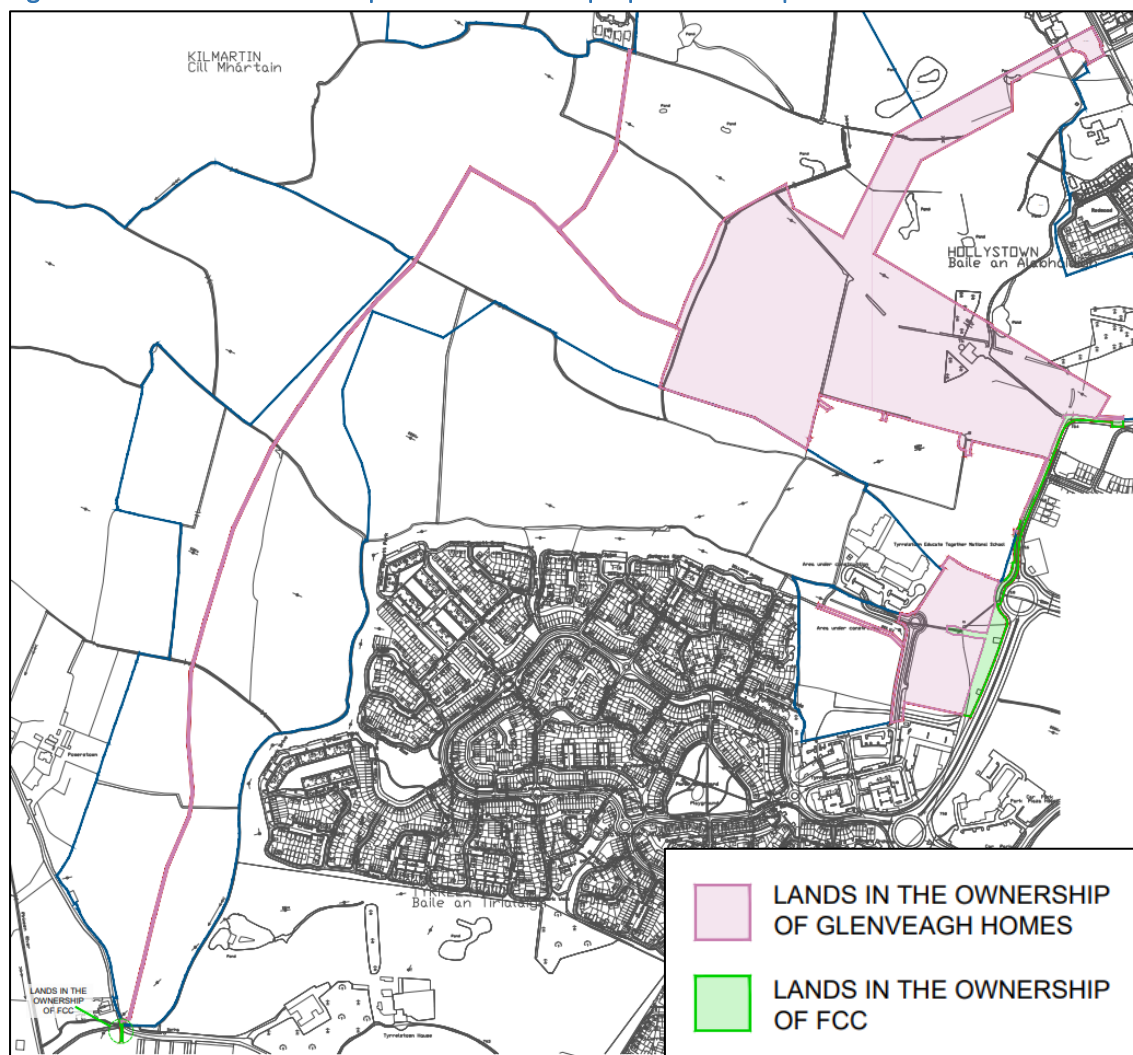
Effects and impacts have been characterised in accordance with the criteria set out in the EPA guidelines (Table 1.4).

18.3 Baseline Environment

18.3.1 Ownership

The majority of the site of the proposed development is under the ownership of the Applicant (Figure 18.1).

Figure 18.1 Land ownership at the site of the proposed development

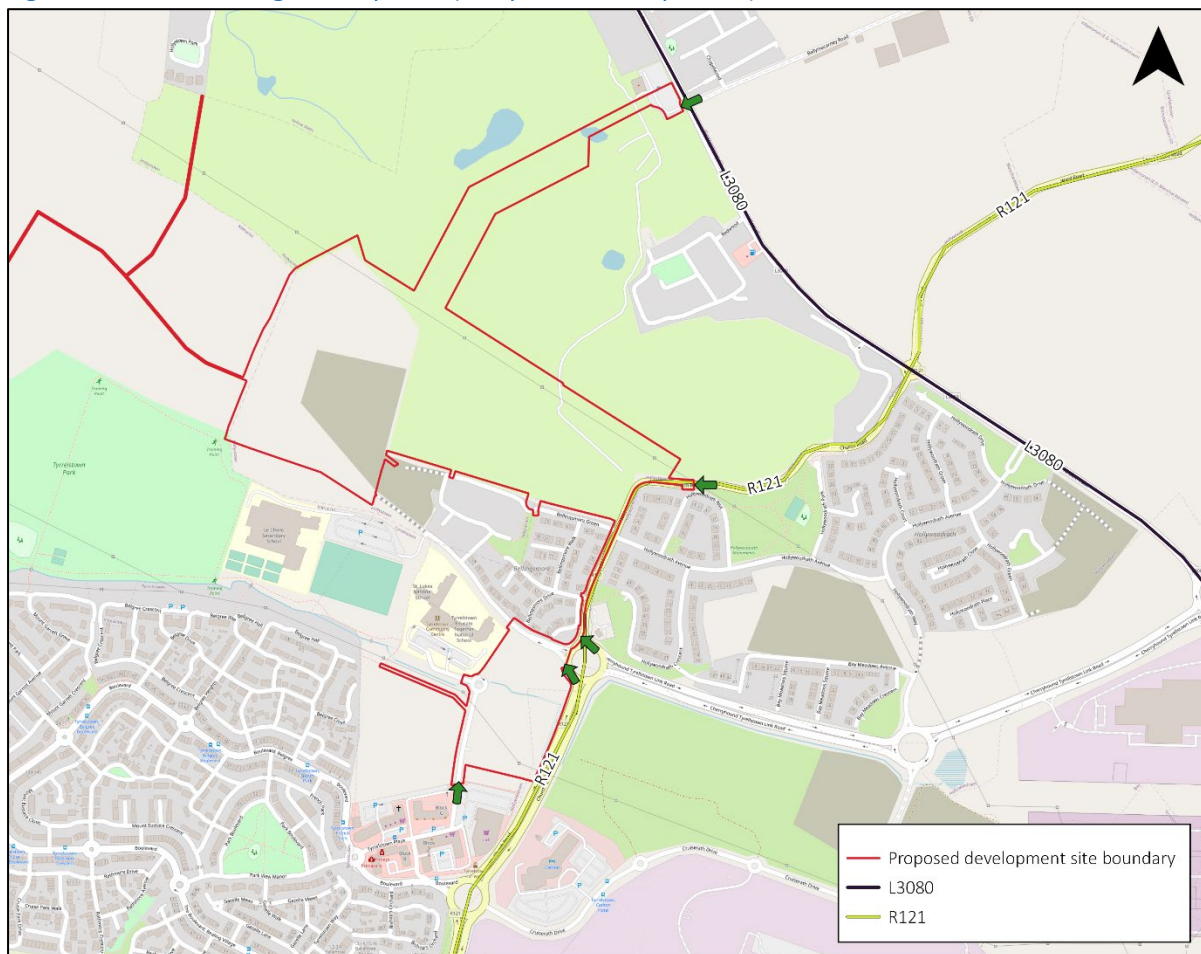


There are some small areas (e.g. of roadway and public realm) that are under the ownership of Fingal County Council. Additionally, there are two Electricity Supply Board (ESB) wayleaves associated with overhead power lines traversing Sites 2 & 3 and the Kilmartin Local Centre site, respectively. There is also a wayleave associated with the existing road infrastructure running north-south through the Local Centre site.

18.3.2 Access

The site of the proposed development may be accessed at a number of points via the R121 (directly and indirectly) and L3080, as illustrated in **Figure 18.2**.

Figure 18.2 Existing access points (© OpenStreetMap, 2021)



18.3.3 Services / Utilities Infrastructure

Maps of the existing gas, electricity, telecommunications and broadband infrastructure at the site of the proposed development and in the vicinity from the respective utility providers (Gas Networks Ireland (GNI), ESB Networks, Eir and Virgin Media), have been provided by DBFL Consulting Engineers, and are appended in **Appendix 18.1**. A review of these indicates that:

- There are two existing 4 bar (medium pressure) gas service pipes traversing the Kilmartin Local Centre portion of the site of the proposed development. There do not appear to be any high pressure gas transmission pipes at the site of the proposed development or in the immediate vicinity.

- There are low to medium voltage underground cables traversing the eastern portion of Site 2 of the proposed development, and running north-south through the Kilmartin Local Centre portion of the site (under an existing road). Additionally, there are 110 kV overhead cables running just inside the northern margin of Sites 2 and 3, and also traversing the Local Centre portion of the site.
- There is a telecommunications cable running north-south through the Kilmartin Local Centre portion of the site (under an existing road).
- There is broadband infrastructure in the north-western corner of Site 2, serving existing structures on the former golf course.

18.4 Predicted Impacts of the Proposed Development

18.4.1 Do-Nothing Impact

As discussed in Chapter 4 (Consideration of Alternatives), the Do-Nothing scenario in this case might entail:

- (a) A continuation of the existing status and use of the lands (i.e. predominantly agricultural land, waste ground and former golf course lands); or
- (b) Development (likely very similar to the current proposal) under the scope of a separate proposal and application at some point in the future.

In the event of scenario (a), there would be no impacts on ownership, access or utilities. The baseline scenario, as described above, would be maintained at the site.

The latter scenario (b) is considered somewhat more likely, considering the zoning and development objectives for the lands, and significant demand for housing in the Dublin Metropolitan Area. It is not possible to assess the likely impacts of scenario (b), as the nature and scale of any potential future proposals for the site (in the absence of the proposed development) are not known.

18.4.2 Construction Phase

18.4.2.1 Ownership

The majority of the site of the proposed development, which is currently under the ownership of the Applicant, will remain as such during the construction phase. A letter of consent will be required in relation to the small areas of land under the ownership of Fingal County Council. The design of the proposed development includes development free corridors associated with the ESB overhead power lines and associated wayleaves, and the proposed works will be carried out in accordance with any requirements of the ESB in relation to same. **No significant impacts** are anticipated in relation to land ownership or wayleaves during the construction phase.

18.4.2.2 Access

Construction works are likely to take place over a c. 39 months (or 3.25 years). During this time, there will be no significant interruptions to access or severance of land not under the ownership of the Applicant.

Construction traffic access and egress will be via the R121, as detailed in **Section 5.5**. There may be some minor impacts on the surrounding road network due to the presence of construction traffic on the surrounding road network and entering / leaving the site. However, a suite of traffic management measures will be implemented to minimise associated impacts on local road users, residents and

business owners, as set out in Chapter 16 (Traffic & Transportation) and in the Traffic Management Plan to be finalised by the appointed contractor (refer to **Section 5.5**).

No significant impacts are predicted to occur in relation to access as a result of the construction phase of the proposed development.

18.4.2.3 Services / Utilities Infrastructure

In order to facilitate the proposed development, new utilities infrastructure will need to be put in place at the site, tying in with existing infrastructure in neighbouring area. All utilities works shall be carried out in accordance with the relevant requirements of the respective services providers / authorities (i.e. Irish Water, GNI, ESB, Eir, Virgin Media and any others of relevance). These works will be carried out in a manner that is safe, and which avoids or minimises interruptions of service which might affect local residents and businesses, and adjacent development. As such, *no significant impacts* are predicted to occur in relation to utilities infrastructure as a result of the proposed development.

18.4.3 Operational Phase

18.4.3.1 Ownership

During the operational phase, it is proposed that the majority of public realm / open space areas in Hollystown Sites 2 & 3 and the internal road network across the site of the proposed development will be taken in charge by Fingal County Council, with the exception of smaller areas to be managed by a management company appointed by the Applicant, and electrical substations to be taken in charge by ESB Networks. It is proposed that the Kilmartin Local Centre area will be managed by a management company appointed by the Applicant during the operational phase. *No significant impacts* are predicted in relation to land ownership.

18.4.3.2 Access

Once the proposed development is completed, its internal road network will tie-in with the existing road network at three primary vehicular access points, as follows (refer to **Figure 16.20** in Chapter 16 – Traffic & Transportation):

1. Access to Site 2 will be via the R121 in the form of a priority junction.
2. Access to Site 3 will be via an extension to the existing primary link street (Hollystown Road), which is itself accessed via the R121.
3. Access the Kilmartin Local Centre will be via a priority controlled access road via the Hollystown Road.

These primary vehicular access points will be supported by a network of off-road and on-road pedestrian and cycle routes, as illustrated in **Figure 16.19** in Chapter 16 (Traffic & Transportation). As part of this network, it is proposed to provide a pedestrian and cycle link extending from Sites 2 & 3 northwards through the former golf course, to tie-in with the existing Ratoath Road, providing enhanced north-south permeability and a future link between the proposed development and planned future GAA facilities (refer to **Section 3.4.2** in Chapter 3 – Planning & Development Context).

The proposed extension to the Hollystown Road has been designed to allow for future onward connections to the westernmost *Kilmartin Local Area Plan* (2013; as extended) lands, also under the ownership of the Applicant.

The internal road and street network of the proposed development has been designed in accordance with the Government's *Design Manual for Urban Road and Streets* (DMURS) (2013). Refer to the DMURS Compliance Statement submitted under separate cover as part of the planning application.

During the operational phase, the proposed development is expected to improve permeability across the site and wider area, particularly providing enhanced north-south permeability for pedestrians and cyclists. A *moderate, positive, localised, long-term to permanent* impact is predicted in terms of access during the operational phase.

18.4.3.3 Services / Utilities Infrastructure

Maintenance of utilities infrastructure on the Site will be carried out during the operational phase, as per the relevant requirements of the various utility providers / authorities. The on-Site utilities infrastructure will be sufficient to provide for the operation of the proposed development and *no significant impacts* on services or the infrastructure itself are predicted to occur as a result of the operational phase.

18.5 Mitigation Measures

18.5.1 Construction Phase

As stated above, no significant impacts are predicted to occur in relation to 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 exact locations of all on-site services (underground and overhead, where applicable) will be confirmed, e.g. using slit trenches at key areas, prior to the commencement of works.
- All infrastructure is to be installed and constructed to the relevant codes of practice and guidelines.
- In planning and executing the proposed works, due reference shall be had to the GNI *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).
- Work in the vicinity of the overhead electricity lines will be executed in accordance with ESB Networks & Health and Safety Authority *Code of Practice for Avoiding Danger from Overhead Electricity Lines* (2019).
- All possible 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.
- Prior to the operational phase of the proposed development, utilities infrastructure connections will be tested by a suitable qualified person under the supervision of Fingal County Council.

- All mitigation measures set out in relation to site access and egress and construction traffic management set out in Chapter 16 (Traffic & Transportation) and in the Traffic Management Plan (to be finalised by the appointed contractor in agreement with Fingal County Council) shall be fully implemented throughout the proposed works.

18.5.2 Operational Phase

As stated above, no significant impacts are predicted to occur in relation to 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 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.

18.6 Residual Impacts

No significant residual impacts in relation to material assets are anticipated to occur as a result of the proposed development.

18.7 Monitoring

Monitoring will be provided for 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

Generally speaking, this topic can interact with Chapter 7 (Population & Human Health), in that impacts on ownership, access and / or utilities have the potential to affect the local population, e.g. by resulting in service interruptions or impeding access to a residence or business. However, in this case, since no significant impacts are predicted in relation to ownership, access or utilities infrastructure, there is no potential for associated impacts on the local community to arise (i.e. no interactions are expected to occur).

As noted in **Section 18.1**, the understanding of what constitutes a material asset is broad, and impacts on material assets have been assessed throughout this EIAR, but particularly in Chapters 7, 9, 10, 14, 16 and 17.

18.9 Cumulative Impacts

The effects of the proposed development in relation to ownership, access and utilities will generally not be felt outside the site, which limits the potential for cumulative impacts to arise. The exception would be in relation to access, since the positive impact of increased permeability across the area will benefit the population in the surrounding areas.

The proposed development is situated in an emerging peri-urban residential area, with lands earmarked for residential development, and with a number of recently completed, ongoing, permitted and planned residential developments in the surrounding area, as detailed in Chapter 20 (Cumulative Impacts). The net impact of these developments, in terms of access, will be improved permeability

across the wider area – a positive cumulative impact that is consistent with development trends in the area (i.e. not significant).

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. It has been concluded that; in terms of ownership, access and utilities; ***no significant negative cumulative impacts*** are likely to occur as a result of the proposed development in combination with other existing / proposed plans or projects.

18.10 References

- EPA (2017). *Draft Guidelines on the Information to be Contained in EIARs*.
- EPA (2015). *Draft Advice Notes on Current Practice in the Preparation of Environmental Impact Statements*.
- ESB Networks & Health and Safety Authority (2019). *Code of Practice for Avoiding Danger from Overhead Electricity Lines*.
- GNI (2018). *Guidelines for Designers and Builders – Industrial and Commercial (Non-Domestic) Sites*.
- HSA (2016). *Code of Practice for Avoiding Danger from Underground Services*.
- NRA (2008). *Environmental Impact Assessment of National Road Schemes - A Practical Guide*.

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).” (emphasis added)*

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 impacts 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 brief text describing the interactions.” (Section 3, p. 56)

A brief description of these interactions is presented below, as is an interactions matrix.

Note that this chapter provides an overview of the potential impacts that may 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.

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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	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 & 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 receptors:

- Cultural Heritage, Archaeology & Architectural Heritage (Chapter 14)
- Microclimate – Daylight & Sunlight (Chapter 15)
- Traffic & Transportation (Chapter 16)
- Material Assets – Services (Chapter 18)

19.2.1 Population & 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 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)

- Potential for nuisance impacts due to dust-generating activities of proposed works.

Noise & Vibration (Chapter 12)

- Potential for nuisance and disturbance due to noisy construction activities, plant and equipment;
- Potential for nuisance and disturbance due to construction traffic noise;
- Potential for nuisance and disturbance due to noisy building services plant, deliveries, operation of community amenity and commercial premises (i.e. crèches, café, Montessori, etc.) and operation of Dublin Airport during operational phase; and
- Potential for nuisance and disturbance due to additional traffic during operational phase.

Landscape & Visual (Chapter 13)

- 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.);
- Visual impacts due to completion of proposed development, establishing substantial new residential / local centre development.

Traffic & Transportation (Chapter 16)

- Potential for negative impacts on journey characteristics due to additional (construction) traffic on road network during proposed works;
- Potential for nuisance and disturbance due to construction traffic noise;
- Potential for negative impacts on journey characteristics due to additional traffic on road network during the operational phase; and
- Potential for nuisance and disturbance due to operational traffic noise.

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.

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.

Air Quality & Climate (Chapter 11)

Dust emissions from construction works have the potential to impact vegetation in sites designated for nature conservation. Vehicular emissions during construction and operation also have the potential to impact vegetation as a result of NO_x emissions leading to nitrogen deposition.

Landscape & Visual (Chapter 13)

The landscape design for the proposed development incorporates ecologically sensitive planting that will result in positive biodiversity impacts.

19.2.3 Land, Soils, Geology & Hydrogeology

The principal interaction between land, soils, geology and hydrogeology (Chapter 9) and other EIAR topics – wherein land, soils, geology and / or hydrogeology is the receptor – is with hydrology (Chapter 10), since contaminated surface water run-off may have the limited potential to enter soil and groundwater, resulting in negative impacts. This has been addressed in Chapters 9 and 10.

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, Soils, Geology & Hydrogeology (Chapter 9)

As discussed above, there is a potential interaction between hydrology (Chapter 10) and land, soils, geology and hydrogeology (Chapter 9), wherein the latter is the receptor, due to the potential for contaminated surface water run-off to enter soil and groundwater, in the absence of mitigation. Due to the potential for sediment-laden surface water run-off to arise, there is also a potential interaction between these two topics wherein hydrology (surface water) is the receptor.

Air Quality & Climate (Chapter 11)

Climate change has the potential to increase flood risk over time.

19.2.5 Air Quality & Climate

Where the potential for impacts on air quality and climate has been identified as a result of interactions with other EIA topics, these have been addressed comprehensively in this EIAR. In respect of the

proposed development, the noteworthy interactions between air quality and climate and other topics, in the absence of mitigation, may be summarised as follows:

Land, Soils, Geology & Hydrogeology (Chapter 9)

Construction phase activities such as land clearance, excavations, stockpiling of materials, etc., have the potential to results in interactions between air quality and land and soils in the form of dust emissions.

Traffic & Transportation (Chapter 16)

Interactions between air quality and traffic can be significant. With increased traffic movements and reduced engine efficiency, i.e. due to congestion, the emissions of vehicles increase, with associated air quality effects.

19.2.6 Noise & 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 has been addressed in Chapter 12.

19.2.7 Landscape & Visual

The principal interaction between landscape and visual (Chapter 13) and other EIA topics – wherein landscape and visual amenity is the receptor rather than the source – is with population and human health (Chapter 7), since the introduction of a new residential community to the site (i.e. the residents of the proposed development during the operational phase) will have a significant positive effect, enlivening the landscape setting of the proposed development.

19.2.8 Material Assets – Waste

The principal interaction between waste (Chapter 17) and other EIA topics – wherein waste is the receptor rather than the source – is with land, soils, geology and hydrogeology (Chapter 9). It is envisaged that all material excavated on-site during the proposed works will be suitable for re-use on-site as fill material. However, there is the possibility that a certain volume of excavated material will need to be exported off-site for re-use or disposal. This has been addressed in Chapters 9 and 17.

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.

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 significant 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 significant), 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 impacts taking account of traffic generated by other permitted or planned projects. It can also be prudent to also 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)

Cumulative impacts may be 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.

20.2 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:

- Fingal County Council (FCC) [Planning Portal](#) and [Map](#)
- An Bord Pleanála (ABP) website
- Department of Housing, Local Government and Heritage [EIA Portal](#)
- *Fingal Development Plan 2017 – 2023*
- *Kilmartin Local Area Plan* (2013; as extended)

Table 20.1 provides a list of relevant existing, permitted, planned 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. Known planned (but not yet formally proposed) projects (BusConnects, for example), have also been given due consideration in the assessment of potential cumulative impacts.

It is noted that this list 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.

20.3 Conclusion

For topic-specific assessments of the potential for cumulative impacts, please refer to the foregoing specialist EIAR chapters.

Assuming the full and proper implementation of the mitigation measures set out in this EIAR, no significant negative cumulative impacts are likely to arise during the construction or operational phases of the proposed development.

Table 20.1 Existing and permitted developments taken into consideration in the assessment of cumulative impacts

Ref.	Applicant	Description	Decisions & Status
Existing Developments			
PARTXI/002/16	FCC	Wellview Terrace Permission for development at Wellview Green, Mulhuddart, Dublin 15; comprising construction of 20 no. modular houses and all associated site works.	Granted by FCC on 11 April 2016 Development completed
PARTXI/003/17	FCC	Ladyswell Crescent Estate Construction of 22 new dwelling units and associated site development and external works at Church Road, Mulhuddart, Dublin 15.	Granted by FCC on 10 July 2017 Development completed
PARTXI/002/17	FCC Housing Department	Avondale Place Construction of 44 new dwelling units, and associated site development and external works at Avondale, Mulhuddart, Dublin 15.	Granted by FCC on 12 June 2017 Development completed
Permitted Developments			
FW16A/0002	Swords Laboratories T/A BMS Cruiserath	Permission for development at Cruiserath and Goddamendy, Cruiserath Road, Mulhuddart, Dublin 15; comprising the demolition and removal of a number of buildings / structures and their associated underground services in six distinct areas on the existing BMS API Facility in Cruiserath, with the land in question being left as grassland.	Granted by FCC on 3 May 2016 Development partially completed
PARTXI/004/17	FCC / Clúid Housing	Construction of 65 new dwelling units, and associated site development and external works at Church Road / Ladyswell Road, Mulhuddart, Dublin 15.	Granted by FCC on 10 July 2017 Development under construction
FW15A/0009; FW16A/0191; PL06F.248736	Kavcre Tyrrelstown Limited	Bay Meadows Permission for residential development on 8.33 ha site at Hollywoodrath, Hollystown, Dublin 15; 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.	Granted by FCC on 14 October 2015
		FW16A/0191 (PL06F.248736): Permission for amendments and alterations with the effect of increasing total number of units to 185	Granted by FCC on 25 May 2017 Appealed on 21 June 2017 Granted by ABP on 3 November 2017 Development under construction

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Ref.	Applicant	Description	Decisions & Status
FW17A/0025 ; PL06F.248544	ADSIL	Permission for development on a c. 26.14 ha site at R121 (Cruiserath Road), R121 (Church Road) and Hollywood Road, Dublin 15; comprising construction of a data storage facility building of c. 13 m height, and all associated works.	Granted by FCC on 25 April 2017 Appealed on 22 May 2017 Granted by ABP on 18 January 2018 Development under construction
PARTXI/006/18	FCC Architect's Department	Construction of 20 no. dwellings and all associated site development works, including private open space and car parking, at Wellview Estate, Mulhuddart, Dublin 15.	Granted by FCC on 8 April 2019 Development under construction
FW19A/0087	MIK Developments LLC	Permission for development at Cruiserath Road, Dublin 15; comprising construction of two data storage facilities with a maximum height of 22 m, and all associated works.	Granted by FCC on 23 July 2019 Development under construction
FW13A/0088 ; PL06F.243395 ; FW13A/0088/E1	Twinlite Services Ltd; Glenveagh Homes Limited	Bellingsmore Permission for development at Church Road, Kilmartin, Tyrrelstown, Dublin 15; consisting of the construction of 177 no. dwellings (13 no. with domestic garages) together with a new link road to the east of Tyrrelstown Educate Together School, to connect with Tyrrelstown Town Centre, and all associated and ancillary site works.	Granted by FCC on 23 April 2014 Appealed on 20 May 2014 Granted by ABP on 20 October 2014
		FW13A/0088/E1: Permission for extension of duration of permission sought by Glenveagh Homes Limited	Granted by FCC on 13 August 2019 Development under construction
FW19A/0177	ESB Engineering & Major Projects	Permission for development in townlands of Macetown Middle, Macestown South, Tyrrelstown, Cruiserath, Buzzardstown and Godamendy Bay; comprising construction / placement of underground ESB cables serving permitted data centre (PL06F.248544; FW17A/0025).	Granted by FCC on 30 January 2020 Development under construction
FW16A/0181 ; FW19A/0212	Betania Limited	Permission for development at Powerstown Road, Tyrrelstown, Dublin 15; comprising construction of a place of worship and all associated site works.	Granted by FCC on 9 February 2017
		FW19A/0212: Permission for modifications to the existing permission comprising internal reconfigurations	Granted by FCC on 13 February 2020 Development under construction
FW20A/0164	MIK Developments	Permission for development at Cruiserath Road, Dublin 15; comprising construction of a medium voltage substation and all associated ancillary works, to the south of permitted data centre PL06F.248544 / FW17A/0025.	Granted by FCC on 30 November 2020 Development under construction
FW14A/0108 ; PL06F.244736 ; FW16A/0099 ; FW16A/0148 ;	Gembira Ltd	Hollywoodrath 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.	Granted by FCC on 13 March 2015 Appealed on 9 April 2015 Appeal withdrawn on 5 June 2015

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Ref.	Applicant	Description	Decisions & Status
FW17A/0016 ; FW18A/0132 ; FW19A/0058 ; FW14A/0108/E1 ; FW18A/0132/E1 ; FW16A/0148/E1 ; FW16A/0099/E1 ; FW20A/0197		The development includes 435 no. dwelling units, a crèche, internal road network, and associated ancillary works.	
		FW16A/0099: Permission for alterations consisting of change in house types of 48 no. units	Granted by FCC on 23 August 2016
		FW16A/0148: Permission for alterations consisting of phased construction of crèche; changes in house types of 4 no. units; and amendments to condition of permission relating to retention of pylon, landscaping and art works	Granted by FCC on 6 December 2016
		FW17A/0016: Permission for alterations consisting of change in house type of 1 no. unit	Granted by FCC on 4 April 2017
		FW18A/0132: Permission for alterations with effect of increasing total number of units to 474	Granted by FCC 23 January 2019
		FW19A/0058: Permission for amendment with effect of increasing total number of units to 481	Granted by FCC on 29 May 2019
		FW14A/0108/E1: Permission for extension of duration of permission	Granted by FCC on 2 April 2020
		FW18A/0132/E1: Permission for extension of duration of permission for alterations	Granted by FCC on 30 July 2020
		FW16A/0148/E1: Permission for extension of duration of permission for alterations	Granted by FCC on 29 July 2020
		FW16A/0099/E1: Permission for extension of duration of permission for alterations	Granted by FCC on 31 August 2020
		FW20A/0197: Permission for alterations consisting of changes in house types of 11 no. units	Granted by FCC on 28 January 2021 Development under construction
FW21A/0039	MIK Developments	Permission for provision of artificial lighting to substation compound, transformers, GIS building and client control building, permitted under ABP ref. 30683420 and PL06F.248544 / FW17A/0025.	Granted by FCC on 22 April 2021 Development under construction
FW15A/0043 ; FW17A/0097 ; FW21A/0060	Jacobs Engineering Ireland Limited	Permission for the construction of a new Biopharmaceutical Manufacturing Facility to the north of the existing BMS Pharmaceutical Campus including: <ol style="list-style-type: none"> 1. A two-storey manufacturing facility with a mechanical penthouse, 25 m high, sized 21,570 m²; 	Granted by FCC on 29 May 2015

Ref.	Applicant	Description	Decisions & Status
		<p>2. A two-storey Laboratory and Administration Building with a mechanical penthouse, 18.7 m high, sized 16,346 m²;</p> <p>3. A two-storey Combined Utility Building 12 m high, sized 3,508 m² with 3 no. boiler stacks sized 25 m high;</p> <p>4. A single-storey extension to the existing Warehouse Building 14.9 m high, sized 2,343 m², including the demolition of an existing drum store sized 1,520 m²;</p> <p>5. A single-storey extension to the existing Electrical Building 8.3 m high, sized 285 m²;</p> <p>6. A single-storey Security Building 5 m high, sized 55 m²; and</p> <p>7. A single-storey extension to the existing Compressor building 8.8 m high, sized 551 m².</p> <p>The works include modifications to the existing Waste Water Treatment Facilities, the local demolition of items of plant, equipment and storage facilities.</p> <p>The works also include site works including permanent car parking for 500 cars, bicycle parking, docking and yard areas, internal roads, pipe bridges, painted steel boundary and security fencing 2.4 m high and gates, a new main vehicular entrance to the northern most part of the expanded Bristol-Myers Squibb site, a new construction entrance, modifications and alterations to existing underground and overground site utility systems, including a new surface water attenuation system, site lighting and security systems, a bunded tank farm, a gas pad, shipping and receiving docks, building and site signage, a single storey sprinkler pumphouse 6 m high and sized 78 m² and miscellaneous site tanks, stacks and utilities.</p> <p>The works include extensive landscaping, bermed features and the modification, resurfacing and completion of the existing third party access road to the northern boundary of the enlarged site.</p>	
		FW17A/0097: Permission for alterations and amendments consisting of 99 additional car parking space and other modifications to the car park	Granted by FCC on 4 August 2017

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Ref.	Applicant	Description	Decisions & Status
		FW21A/0060: Permission for a permanent construction compound in the centre of the BMS site that is the subject of existing permissions FW15A/0043 and FW17A/0097	Granted by FCC on 20 May 2021 Development under construction
FW18A/0121	Bestseller Retail Ireland Ltd.	<ul style="list-style-type: none"> ■ Permission for two-storey office building and all associated ancillary works at Cruiserath Drive, Mulhuddart, Dublin 15; and ■ Retention of existing fence. 	Granted by FCC on 8 October 2018 Development permitted
FW18A/0117	Lidl Ireland GmbH	Permission for development at Block E, Tyrrelstown Town Centre, Hollywood Road, Mulhuddart, Dublin 15; comprising demolition of existing store, ancillary retail unit and sub-station; and construction of a licensed discount foodstore with ancillary off-licence sales, two retail units, public realm improvements and all associated ancillary works.	Granted by FCC on 17 April 2019 Permitted development
PARTXI/010/19	FCC Architect's Department	Permission for development at Churchfields, Mulhuddart, Dublin 15; comprising construction of 70 no. dwellings and all associated site works.	Granted by FCC on 10 February 2020 Permitted development
N/A	Fingal County Council	<p><i>Church Fields Link Road and Cycle Network</i></p> <p>The permission includes for the construction of 800m of road including upgrade works to Wellview Avenue with high quality cycling and pedestrian facilities as well as an additional 1.5km of fully segregated cycling and pedestrian facilities linking into the schools campus on the Powerstown Road at Gaelscoil an Chuilinn and Powerstown Educate Together National School. Detailed design has now commenced and procurement and construction will follow on with a potential start of works on site in early 2021.</p>	Granted by FCC on 19 June 2020 Permitted development
SID/01/20	Amazon Data Services Ireland Ltd (ADSIL)	Permission for development at Goodamendy Bay, Cruiserath and Hollywoodrath, Dublin 15; comprising the construction of a 220kV GIS substation on lands to the north of permitted data centre PL06F.248544 / FW17A/0025 and west of permitted data centre FW19A/0087; and a double circuit 220kV transmission line.	Granted by ABP on 9 October 2020 Permitted development

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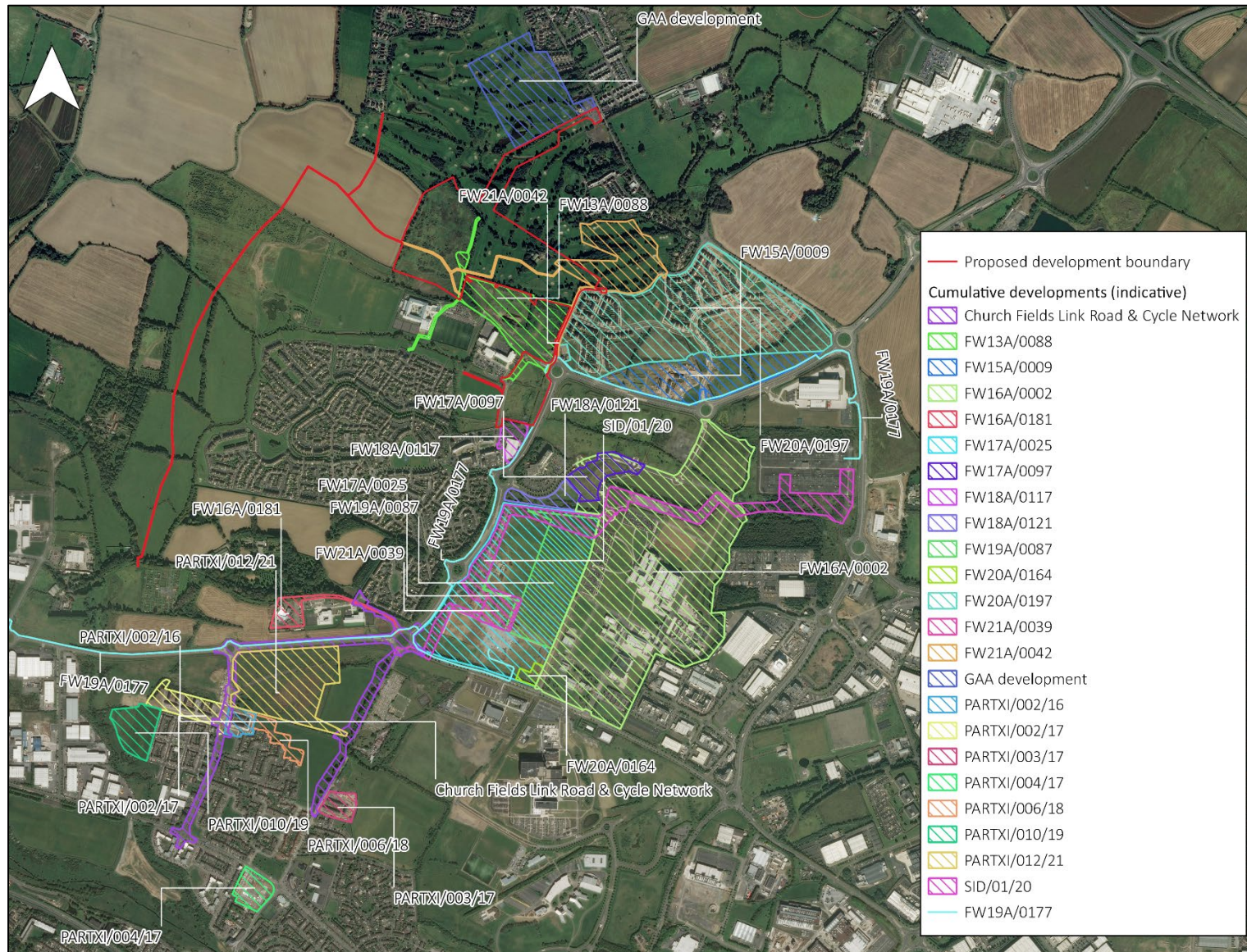
Ref.	Applicant	Description	Decisions & Status
FW21A/0042	Glenveagh Homes Ltd	<p>Hollystown Site 1</p> <p>Permission for residential development on c. 7.71 ha site at Hollywoodrath Road (R121), Hollystown, Dublin 15; consisting of 69 no. houses; comprising 52 no. two-storey houses, and 17 no. three-storey houses; private open spaces, car and bicycle parking, refuse storage; and all associated roads, services, public open spaces, changes in level, hard and soft landscaping and boundary treatments, where required. It is noted that the foul sewer outfall being proposed under the scope of the proposed development that is the subject of this EIAR, was previously permitted under the scope of this development.</p>	Granted by FCC on 20 July 2021 Permitted development
Planned & Proposed Developments			
N/A	Dublin G.A.A.	<p>As discussed briefly in Chapter 3 (Section 3.4.2), following consultations between the Applicant and the Dublin G.A.A., it has been decided to satisfy Local Objective 72, as set out in the <i>Fingal Development Plan 2017 – 2023</i> (“Provide a recreational facility for the Dublin G.A.A. County Board, through the provision by them of a 2.5ha playing pitch and local recreational community facility including a clubhouse, related ancillary facilities and car and cycle parking”), which applies to the Sites 2 & 3 portion of the proposed development site in the Fingal County Council zoning map, by providing a larger 9.25 ha GAA / community playing fields and facility to the north of the proposed development, at the site of the former Hollystown Golf Club. This development will be delivered outside of the scope of the proposed development, and will be subject to a separate application on the part of Dublin G.A.A. This larger landbank will seek to make use of existing car access, parking, and clubhouse facilities at the former Hollystown Golf Club, and connect back to residential areas through the links proposed as part of this application as Class 1 Public Open Space. The proposed development has been designed in order to tie-in with these future facilities, with ongoing consultation between the Applicant and the Dublin G.A.A.</p>	Planning application not submitted to date
PARTXI/012/21	FCC Architect’s Department	<p>Stage 1B Church Fields Phase 3 Housing and Eastern Linear Park</p> <p>Proposed housing consisting of 300 no. dwellings, 1 no. crèche facility, 1 no. communal facility, 2 no. retail units, Eastern Linear Park and all associated site</p>	Public consultation ongoing (9 December 2021 – 31 January 2022)

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Ref.	Applicant	Description	Decisions & Status
		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).	

Figure 20.1 Existing and permitted developments taken into consideration in the assessment of cumulative impacts (© Bing Maps, 2021)



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.

21.2 General Mitigation Measures

Table 21.1 Mitigation Measures – General

No.	Mitigation Measure
Construction Phase	
GE01	Deliveries and working hours will be scheduled in order to minimise disruption to the operation of the surrounding road network. Construction traffic will not be permitted to park outside of the site.
GE02	<p>Envisaged working hours are as follows:</p> <p>Monday – Friday: 07:00 – 19:00</p> <p>Weekends / Bank Hols.: No works</p> <p>Works outside of these hours will be subject to prior agreement with Fingal County Council.</p>
GE03	<p>A Preliminary Construction & Environmental Management Plan (pCEMP) has been prepared in respect of the proposed development by DBFL Consulting Engineers (refer to document submitted under separate cover). A CEMP will be finalised by the successful contractor in advance of the proposed works, in agreement with Fingal County Council. The CEMP will be fully implemented throughout the proposed works. The finalised CEMP will set out the measures to be implemented during the proposed works to mitigate potential impacts on the environment and local population. It will include the following:</p> <ul style="list-style-type: none"> ■ The measures recommended in the pCEMP (submitted under separate cover); ■ All construction phase mitigation set out in this EIAR; and ■ Any relevant conditions attached to a decision to grant planning permission. <p>The CEMP will not provide a lesser level of protection than that provided by the above-listed measures.</p>
GE04	<p>A Traffic Management Plan will be implemented during the construction phase. It will be finalised in advance of the commencement of works, in accordance with the following:</p> <ul style="list-style-type: none"> ■ Department of Transport, Tourism and Sport (2019). Chapter 8: Temporary Traffic Measures and Signs for Roadworks, in <i>Traffic Signs Manual</i> ■ National Roads Authority (NRA), Department of Transport, Health and Safety Authority (HSA) & Local Government Management Services Board (2010). <i>Guidance for the Control and Management of Traffic at Road Works</i> (2nd Edition) ■ Department of Transport, Tourism and Sport & Department of Environment, Community and Local Government (2013). <i>Design Manual for Urban Roads and Streets</i> ■ <i>Design Manual for Roads and Bridges</i>
GE05	A Tree Survey Report has been 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. 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.
GE06	A Construction Air Quality Management & Monitoring Plan (Appendix 11.1) shall be implemented during the construction phase in order to avoid / minimise and monitor the air quality effects of the

No.	Mitigation Measure
	construction phase, particularly in relation to dust generation and deposition. For further information, refer to Chapter 11 (Air Quality & Climate) and / or Appendix 11.1 .
GE07	A Resource & Construction Waste Management Plan will be implemented during the construction phase. An outline version of this plan has been prepared in respect of the proposed development, and is appended to this EIAR (Appendix 17.1). 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).

21.3 Mitigation & Monitoring for Population & Human Health

Table 21.2 Mitigation Measures – Population & Human Health

No.	Mitigation Measure
Construction Phase	
PHH01	A Preliminary Construction & Environmental Management Plan (pCEMP) has been prepared in respect of the proposed development by DBFL Consulting Engineers (refer to document submitted under separate cover). Using the pCEMP as a starting point, a CEMP will be finalised by the successful contractor 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	The appointed contractor will be responsible for ensuring that an asbestos survey of the existing structures to be demolished has been carried out prior to the commencement of any demolition works. The locations of ACMs, if any, will be identified. ACMs present, if any, will be removed at an appropriate stage (e.g. prior to other deconstruction / demolition works, where there is a risk of disturbance of ACMs) by competent and suitably qualified contractors, under strictly controlled conditions, in accordance with the Health and Safety Authority (HSA) guidelines, Asbestos-containing Materials (ACMs) in Workplaces: Practical Guidelines on ACM Management and Abatement (2013). ACMs must be disposed of in accordance with relevant waste legislation.

21.4 Mitigation & Monitoring for Biodiversity

Table 21.3 Mitigation Measures – Biodiversity

No.	Mitigation Measure
Construction Phase	
BIO01	As set out in some detail in the accompanying Landscape Design Report for Hollystown Sites 2 and 3, and as noted in this EIAR chapter, the existing hedgerows that are to be retained or incorporated into the development, that is, the western boundary and the hedge that divides Sites 2 and 3 (the former golf course boundary), as well as the boundary that divides Sites 2 and 3 from the Bellingsmore development are damaged and diseased, and are currently not as ecologically diverse as such features should be. In addition to the required creation of paths, cycleways and other development and open space infrastructure as part of the proposed development these boundaries will be enhanced through significant new planting. Where necessary the hedges may be cleared of dead or dying trees (as noted

No.	Mitigation Measure
	there is significant ash dieback disease at this location). This work will be undertaken under the supervision of the appointed project arborist and project ecologist.
BIO02	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 8.5.1.3 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).
BIO03	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.
BIO04	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.
BIO05	As a single bat roost (a Leisler's bat mating perch) was recorded in an ash tree that is to be removed, the specialist bat ecologist (Mr Brian Keeley) applied to the NPWS for a derogation licence under Regulation 54 of the <i>European Communities (Birds and Natural Habitats) Regulations 2011-2015</i> . This licence was granted on 2 December 2021 and is subject to no unusual conditions. Works can only proceed in accordance with the licence terms and only following the implementation of the required pre-construction mitigation (installation of bat boxes) being in place. A copy of the derogation licence is included as an appendix to the Bat Survey Report (Appendix 8.1).
BIO06	<p>As noted in the Bat Survey Report, any bats remaining within the site prior to the commencement of tree felling shall be excluded by means approved by NPWS including by hand capture, bat net or one-way valve by a licensed bat specialist named on the licence issued for that purpose.</p> <p>NPWS must be informed of all stages of implementation of the derogation. No exclusion shall take place between May and the start of August unless it is unambiguous that the bats present are not breeding females or their young. Exclusion shall preferably occur in September or October to avoid impacts upon nesting birds.</p> <p>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.</p> <p>Notwithstanding the acquisition of a derogation licence, as bats are highly mobile creatures, all mature trees shall be checked for bats by a bat specialist to identify trees and buildings with the highest potential prior to felling or major surgery. From this, trees with the highest roost potential as determined by the bat specialist shall be subjected to a higher level of examination that shall include thorough checking of all suitable crevices, cavities, ivy cover or loose bark. This will require access via a hoist to reach all suitable cavities and crevices. Should bats be noted during this evaluation, an additional derogation shall be required from NPWS.</p>
BIO07	It is proposed to install a significant number of bat and bird boxes both within the proposed development site itself and within the retained woodland blocks. The reason for the installation of

No.	Mitigation Measure
	<p>additional bat boxes is not to provide replacement roosts (other than to provide alternatives to the mating perch); rather, it is to augment the overall ecological value of the site. This will contribute to maximising the ecological value of the proposed development.</p> <p>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):</p> <ul style="list-style-type: none"> Specifically to replace the mating perch: it is proposed to install one bat box, such as the Eco Rocket Bat Box or similar, on a steel pole. If feasible it is also proposed to cut the mating perch branches from the ash tree and securely attach them to a pole within the retained woodland plantation; 12 no. Schwegler 2F with double front panel or similar; 9 no. Eco bat boxes (wooden); and 15 no. assorted wooden or woodcrete bird boxes, suitable for use by robins, blue tits and tree creepers.
BIO08	<p>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 8.5.2.1) includes the following measures:</p> <ul style="list-style-type: none"> 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.
BIO09	<p>In accordance with the application documents associated with reg. ref.: FW21A/0042, where the foul outfall sewer crosses existing streams and ditches, all works will be carried out in accordance with Irish Water Standard Details (IW STD-WW-21)⁸⁰ as well as the Inland Fisheries Ireland <i>Guidelines on the Protection of Fisheries During Construction Works in and Adjacent to Watercourses</i>⁸¹. Works will be undertaken in consultation with Inland Fisheries Ireland, and if necessary and appropriate, construction of crossings of fisheries waters will be by way of trenchless crossings.</p>
BIO10	<p>Once the construction of the foul outfall sewer has been completed, the development area will be reinstated to grassland, and any sections of the field boundary Hedgerows/tree lines removed to facilitate the pipeline construction will be replaced, with a new hawthorn planting.</p>

Table 21.4 **Monitoring – Biodiversity**

Phase	Monitoring
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

⁸⁰ <https://www.water.ie/connections/developer-services/faqs/Wastewater-Standard-Details.pdf>

⁸¹ <https://www.fisheriesireland.ie/documents/fisheries-management-1/624-guidelines-on-protection-of-fisheries-during-construction-works-in-and-adjacent-to-waters.html>

Phase	Monitoring
	<p>construction works take place in accordance with planning conditions, the project CEMP and the mitigation measures set out in this EIAR.</p> <p>As noted in Section 8.6.1.4, 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, other than as permitted in relation to the removal of the Leisler's bat mating roost.</p>
Post-construction / operation	<p>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.</p>
	<p>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.</p>

21.5 Mitigation & Monitoring for Land, Soils, Geology & Hydrogeology

Table 21.5 Mitigation Measures – Land, Soils, Geology & Hydrogeology

No.	Mitigation Measure
Construction Phase	
GEO01	A preliminary Construction & Environmental Management Plan (pCEMP) has been prepared for the proposed development and is included with this planning application (under separate cover). It is proposed that the CEMP will be finalised in advance of works and maintained by the appointed Contractor during the construction phase of the proposed development to minimise the impact of all aspects of the construction works on the local environment. The final CEMP will include emergency response procedures in the event of a spill, leak, fire or other environmental incident related to construction.
GEO02	The proposed development will incorporate the 'reduce, reuse and recycle' approach in terms of soil excavations on-site. The construction will be carefully planned to ensure only material required to be excavated will be, with as much material left <i>in situ</i> as possible. Excavation arisings will be reused on-site where possible.
GEO03	It is unlikely any contaminated material will be encountered during the construction phase of the proposed development (see Section 9.3.5.1). Nonetheless, any excavation works will be carefully monitored by a suitably qualified person to ensure any potentially contaminated soil is identified and segregated from clean / inert soil. In the unlikely event that any potentially contaminated soils are encountered, they should be tested and classified as hazardous or non-hazardous in accordance with the EPA Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous publication, HazWasteOnline™ tool or similar approved method. The material will then need to be classified as inert, non-hazardous, stable non-reactive hazardous or hazardous in accordance with EC Decision 2003/33/EC. It should then be removed from site by a suitably permitted waste contractor to an authorised waste facility.
GEO04	The effects of soil stripping and stockpiling will be mitigated through the implementation of an appropriate earthworks handling protocol during the construction phase. It is anticipated that any stockpiles will be formed within the boundary of the site and should be kept 10 m away from any open watercourses and there will be no direct link or pathway from this area to any surface waterbody (e.g. Pinkeen or River Tolka).

No.	Mitigation Measure
GEO05	Inland Fisheries Ireland documents such as <i>Guidelines on Protection of Fisheries During Construction Works and Adjacent to Waters</i> (IFI, 2016) should be consulted in the finalisation of the CEMP prior to works and implemented in full.
GEO06	Dust suppression measures (e.g. damping down during dry periods), vehicle wheel washes, road sweeping, and general housekeeping will ensure that the surrounding environment are free of nuisance dust and dirt on roads.
GEO07	It is envisioned that 55,000 m ³ of excavated soil / stones arising on the site will be re-used. It is anticipated that no excavated material will be removed off-site. If material does need to be removed, it will be sent for recovery or disposal at an appropriately authorised facility. Refer to Chapter 17 (Material Assets – Waste) for further detail.
GEO08	Soil required for removal from the site should be classified by an experienced and qualified environmental professional to ensure that the waste soil is correctly classed for transportation and recovery / disposal off-site. Refer to Chapter 17 (Material Assets – Waste) for further detail.
GEO09	All fill and aggregate for the proposed development will be sourced from reputable suppliers. All suppliers will be vetted for: <ul style="list-style-type: none"> ■ Aggregate compliance certificates / declarations of conformity for the classes of material specified for the proposed development; ■ Environmental Management status; and ■ Regulatory and legal compliance status.
GEO10	The following mitigation measures will be implemented during the construction phase in order to prevent any spillages to ground of fuels and prevent any resulting soil and / or groundwater quality impacts: <ul style="list-style-type: none"> ■ Designation of a 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: <ul style="list-style-type: none"> ■ Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use; <ul style="list-style-type: none"> □ 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; □ Operatives must have spill response training; and □ Drip trays used on any required mobile fuel units.
GEO11	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: <ul style="list-style-type: none"> ■ 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; ■ 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 to be loaded and unloaded by competent and trained personnel using appropriate equipment. <p>The aforementioned list of measures is non-exhaustive and will be included in the final CEMP.</p>
GEO12	Earthwork operations will be carried out such that surfaces, as they are being raised, shall be designed with adequate drainage, falls and profile to control run-off and prevent ponding and flowing. Correct management will ensure that there will be minimal inflow of shallow / perched groundwater into any excavation.
GEO13	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 will limit the potential for any off-site impacts. All run-off will be prevented from directly entering into any watercourses / drainage ditches.

No.	Mitigation Measure
GEO14	Should any discharge of construction water be required during the construction phase, discharge will be to foul sewer. Pre-treatment and silt reduction measures on-site will include a combination of silt fencing, settlement measures (silt traps, silt sacks and settlement tanks / ponds) and hydrocarbon interceptors. Active treatment systems such as siltbusters or similar may be required depending on turbidity levels and discharge limits.

Table 21.6 Monitoring – Land, Soils, Geology & Hydrogeology

Phase	Monitoring
Construction	Regular inspection of surface water run-off and any sediment control measures (e.g. silt traps) 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.

21.6 Mitigation & Monitoring for Hydrology

Table 21.7 Mitigation Measures – Hydrology

No.	Mitigation Measure
Construction Phase	
HYD01	A preliminary Construction & Environmental Management Plan (pCEMP) accompanies this planning application under separate cover. A final CEMP will be prepared in advance of works and maintained by the appointed Contractor during the construction phase of the proposed development. The CEMP will cover all potentially polluting activities and include an emergency response procedure. All personnel working on the site will be trained in the implementation of the CEMP. At a minimum, the CEMP will be formulated in consideration of the standard best international practice, including, but not limited to: <ul style="list-style-type: none"> ■ BPGCS005, <i>Oil Storage Guidelines</i>; ■ CIRIA (2001). <i>Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (C532)</i>; ■ CIRIA (2002). <i>Control of water pollution from construction sites: guidance for consultants and contractors (SPI56)</i>; ■ CIRIA (2005). <i>Environmental Good Practice on Site (C650)</i>; ■ CIRIA (2007). <i>The SUDS Manual (697)</i>; ■ UK Environment Agency (2004). <i>UK Pollution Prevention Guidelines (PPG)</i>.
HYD02	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 (e.g. silt traps, silt sacks and settlement tanks / ponds). Full protection measures for the Mooretown Stream and Pinkeen East to the east of the site highlighted in the CEMP will be strictly adhered to.
HYD03	The temporary storage of soil will be carefully managed. Stockpiles will be tightly compacted to reduce run-off and graded to aid in run-off collection. This will prevent any potential negative impact on the stormwater drainage.
HYD04	Excavated material will be stored away from any surface water drains / existing surface water features, allowing a minimum set-back of 10 m.
HYD05	The movement of material will be minimised to reduce the degradation of soil structure and generation of dust.
HYD06	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.

No.	Mitigation Measure
HYD07	Weather conditions will be considered when planning construction activities to minimise the risk of run-off from the site.
HYD08	All contractors will be made aware of the CEMP and all management/ mitigation measures within this area to be strictly adhered to.
HYD09	Documents such as Inland Fisheries Ireland's 2016 <i>Guidelines on Protection of Fisheries During Construction Works and Adjacent to Waters</i> will be consulted in the finalisation of the CEMP.
HYD10	<p>The following mitigation measures will be implemented during the construction phase in order to prevent any spillages to ground of fuels and prevent any resulting to surface water systems:</p> <ul style="list-style-type: none"> ■ Designation of a bunded refuelling areas on the site; ■ Provision of spill kit facilities across the site; ■ Where mobile fuel bowzers are used, the following measures will be taken: <ul style="list-style-type: none"> □ 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; and □ Portable generators or similar fuel containing equipment will be placed on suitable drip trays.
HYD11	<p>In the case of drummed fuel or other potentially polluting substances that may be used during the construction phase, the following measures will be adopted:</p> <ul style="list-style-type: none"> ■ 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; ■ 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 to be loaded and unloaded by competent and trained personnel using appropriate equipment. <p>The aforementioned list of measures is non-exhaustive and will be included in the final CEMP. All appointed Contractors will be required to implement the CEMP.</p>
HYD12	All ready-mixed concrete will be brought to the 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 stormwater to the underlying subsoil. Wash-down and washout of concrete transporting vehicles will take place at an appropriate facility off-site.
HYD13	Emergency response procedures will be outlined in the CEMP. All personnel working on the site will be suitably trained in the implementation of these procedures.
HYD14	Excavated material will be reused on-site where possible for site levelling, roads, car parking areas and other landscaping purposes. The Project Engineers have estimated that all excavated material will be re-used on-site. The temporary storage of soil will be carefully managed in such a way as to prevent any potential negative impact on the receiving environment. The material will be stored away from any surface water drains (see Surface Water Run-off section above) and at least 10 metres away from any surface water features such as the Mooretown Stream. The movement of material will be minimised to reduce the degradation of soil structure and generation of dust.
HYD15	All excavated materials will be visually assessed for signs of possible contamination such as staining or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of 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.

No.	Mitigation Measure
Operational Phase	
HYD16	Petrol interceptor(s) will be maintained and cleaned out in accordance with the manufacturer's instructions.
HYD17	Maintenance of the surface water drainage system and foul sewers as standard is recommended to minimise any accidental discharges to ground.

Table 21.8 Monitoring – Hydrology

Phase	Monitoring
Construction	Regular inspection of surface water run-off and any sediment control measures (e.g. silt traps) 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.

21.7 Mitigation & Monitoring for Air Quality & Climate

Table 21.9 Mitigation Measures – Air Quality & Climate

No.	Mitigation Measure
Construction Phase	
AIR01	The construction contractor will be responsible for ensuring that the Construction Air Quality Management and Monitoring Plan (Appendix 11.1) is implemented.
AIR02	Avoidance of unnecessary vehicle movements and manoeuvring, and limit speeds on site so as to minimise the generation of airborne dust.
AIR03	During dry periods, dust emissions from heavily trafficked locations (on and off-site) will be controlled by spraying surfaces with water.
AIR04	Hard surface roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads will be restricted to essential site traffic only.
AIR05	Re-suspension in the air of spillages material from trucks entering or leaving the site will be prevented by limiting the speed of vehicles within the site to 10 kmph and by use of a mechanical road sweeper.
AIR06	The overloading of tipper trucks exiting the site shall not be permitted.
AIR07	Road sweeping will be conducted to clean public road surfaces, as required.
AIR08	Where the likelihood of wind-blown fugitive dust emissions is high and during dry weather conditions, dusty site surfaces will be sprayed by a mobile tanker bowser.
AIR09	Exhaust emissions from vehicles operating within the construction site, including trucks, excavators, diesel generators or other plant equipment, will be controlled by the contractor by ensuring that emissions from vehicles are minimised by routine servicing of vehicles and plant, rather than just following breakdowns; the positioning of exhausts at a height to ensure adequate local dispersal of emissions, the avoidance of engines running unnecessarily and the use of low emission fuels.
AIR10	All plant not in operation shall be turned off and idling engines shall not be permitted for excessive periods.
AIR11	Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water sprays will be used as required if particularly dusty activities are necessary during dry or windy periods.
AIR12	Where drilling or pavement cutting, grinding or similar types of stone finishing operations are taking place, measures to control dust emissions will be used to prevent unnecessary dust emissions by the erection of wind breaks or barriers. All concrete cutting equipment shall be fitted with a water dampening systems, if required.

No.	Mitigation Measure
Operational Phase	
AIR13	All residential units shall be designed and constructed in accordance with the Government publication, <i>Building Regulations: Technical Guidance Document L 2021: Conservation of Fuel and Energy – Dwellings</i> (2021).
AIR14	U-values for floor and roof will exceed the building regulation backstops.

Table 21.10 Monitoring – Air Quality & Climate

Phase	Monitoring
Construction	The construction contractor will be responsible for ensuring that the Construction Air Quality Management and Monitoring Plan (Appendix 11.1) is implemented.

21.8 Mitigation & Monitoring for Noise & Vibration

Table 21.11 Mitigation Measures – Noise & Vibration

No.	Mitigation Measure																	
Construction Phase																		
NV01	<p>As previously outlined in Section 12.4.1 the following construction noise threshold levels are proposed for the construction stage of the proposed development: -</p> <ul style="list-style-type: none">■ For residential NSLs external to Site 2/3 and Kilmartin Local Centre site boundary, it is considered appropriate to adopt the 65 dB(A) threshold level, given the baseline monitoring carried out, which would indicate that Category A values are appropriate, using the ABC method.■ An appropriate construction noise limit at the nearest commercial buildings is considered to be 70 dB L_{Aeq,1hr}.																	
NV02	<p>As previously outlined in Section 12.2.1.2 vibration threshold levels are proposed for the construction stage of the proposed development, Table 12.4 is replicated below (as Table 12.31) for ease of reference.</p> <p>Table 12.31 Recommended construction vibration thresholds for buildings</p> <table><tr><th rowspan="2">Structure Type</th><th colspan="2">Allowable vibration (in terms of PPV) at closest part of sensitive property to source of vibration, at frequency of ≤4 Hz</th></tr><tr><th>Transient vibration</th><th>Continuous vibration</th></tr><tr><td>Reinforced or framed structures. Industrial and heavy commercial buildings</td><td>50 mm/s</td><td>25 mm/s</td></tr><tr><td>Unreinforced or light framed structures. Residential or light commercial-type buildings</td><td>15 mm/s</td><td>7.5 mm/s</td></tr><tr><td>Protected and Historic Buildings⁸²</td><td>6 – 15 mm/s</td><td>3 – 7.5 mm/s</td></tr><tr><td>Identified Potentially Vulnerable Structures and Buildings with Low Vibration Threshold</td><td colspan="2">3 mm/s</td></tr></table>	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	Unreinforced or light framed structures. Residential or light commercial-type buildings	15 mm/s	7.5 mm/s	Protected and Historic Buildings ⁸²	6 – 15 mm/s	3 – 7.5 mm/s	Identified Potentially Vulnerable Structures and Buildings with Low Vibration Threshold	3 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																
Reinforced or framed structures. Industrial and heavy commercial buildings	50 mm/s	25 mm/s																
Unreinforced or light framed structures. Residential or light commercial-type buildings	15 mm/s	7.5 mm/s																
Protected and Historic Buildings ⁸²	6 – 15 mm/s	3 – 7.5 mm/s																
Identified Potentially Vulnerable Structures and Buildings with Low Vibration Threshold	3 mm/s																	
NV03	<p>Best practice noise and vibration control measures will be employed by the contractor during the construction phase in order to avoid significant impacts at the nearest sensitive buildings. The best practice measures set out in BS 5228 (2009 +A1 2014) Parts 1 and 2 will be complied with. Noise control</p>																	

⁸² The relevant threshold value to be determined on a case by case basis. Where sufficient structural information is unavailable at the time of assessment, the lower value within the range will be used.

No.	Mitigation Measure
	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.
NV04	This practice [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. The least noisy item will be selected wherever possible. Should a particular item of plant already on the site be found to generate high noise levels, the first action will be to identify whether said item can be replaced with a quieter alternative.
NV05	If replacing a noisy item of plant is not a viable or practical option, consideration will be given to noise control at source. This refers to the modification of an item of plant or the application of improved sound reduction methods in consultation with the supplier. For example, resonance effects in panel work or cover plates can be reduced through stiffening or application of damping compounds; rattling and grinding noises can often be controlled by fixing resilient materials in between the surfaces in contact.
NV06	<p>The following best practice mitigation measures will be considered:</p> <ul style="list-style-type: none"> ■ Site compounds will be located away from noise sensitive boundaries within the site constraints. ■ The use / lifting of bulky items, dropping and loading of materials within these areas will be restricted to normal working hours. ■ For mobile plant items such as cranes, dump trucks, excavators and loaders, maintaining enclosure panels closed during operation can reduce noise levels over normal operation. Mobile plant will be switched off when not in use and not left idling. ■ For steady continuous noise, such as that generated by diesel engines, it may be possible to reduce the noise emitted by fitting a more effective exhaust silencer system. ■ For percussive tools such as pneumatic breakers, a number of noise control measures include fitting muffler or sound reducing equipment to the breaker tool and ensuring any leaks in the air lines are sealed. ■ Erecting localised screens around breaker or drill bit when in operation in close proximity to noise sensitive boundaries. ■ For concrete mixers, control measures will be employed during cleaning to ensure no impulsive hammering is undertaken at the mixer drum. ■ For all materials handling, ensure that materials are not dropped from excessive heights, lining drops chutes and dump trucks with resilient materials. ■ For compressors, generators and pumps, these can be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation. ■ All items of plant will be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures.
NV07	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, east and south of Site 2/3 perimeters and north and northwest of Kilmartin Local Centre perimeters.
NV08	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.
NV09	The phasing programme will be arranged so as to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity. If piling works are in

No.	Mitigation Measure
	progress on another site at the same time as other works of construction that themselves may generate significant noise and vibration, the working programme will be phased so as to ensure noise limits are not exceeded due to cumulative activities. This will be reviewed in relation to other potential cumulative works occurring on adjacent construction site in close proximity to noise sensitive properties which have the potential to lead to significant construction noise impacts.
Operational Phase	
NV10	<p>The assessment outlined previously has specified noise limits at the nearest noise sensitive properties that must be achieved in order to ensure the impact is acceptable, summarised in Section 12.2.2.1. To achieve these noise limits, consideration will be given, at the detailed design stage, to a variety of mitigation measures and forms of noise control techniques. Some examples of these measures are as follows:</p> <ul style="list-style-type: none"> ■ Duct-mounted attenuators on the atmosphere side of air moving plant; ■ Splitter attenuators or acoustic louvres providing free ventilation to internal plant areas; ■ Solid barriers screening external plant; and ■ Anti-vibration mounts on reciprocating plant.
NV11	<p>In addition to the above, the following measures will be adopted to minimise potential noise disturbance for neighbours:</p> <ul style="list-style-type: none"> ■ All mechanical plant items (e.g. motors, pumps etc.) shall be regularly maintained to ensure that excessive noise generated by any worn or rattling components is minimised; ■ Any new or replacement mechanical plant items, including plant located inside new or existing buildings, shall be designed so that all noise emissions from site do not exceed the noise limits outlined in this document; and ■ Plant items will be selected such that site noise emissions do not contain tonal or impulsive characteristics at nearby noise sensitive locations.

Table 21.12 Monitoring – Noise & Vibration

Phase	Monitoring
Construction	<p>During the construction phase, noise monitoring will be undertaken at the nearest sensitive locations to ensure construction noise limits outlined in Table 12.4 are not exceeded. Noise monitoring will be conducted in accordance with the International Standard ISO 1996: <i>Acoustics – Description, measurement and assessment of environmental noise Part 1</i> (2016) and <i>Part 2</i> (2017). The selection of monitoring locations will be based on the nearest sensitive buildings to the working areas.</p> <p>It is recommended that noise control audits are conducted at regular intervals throughout the construction programme in conjunction with noise monitoring. The purpose of the audits will be to ensure that all appropriate steps are being taken to control construction noise emissions and to identify opportunities for improvement, where required.</p>

21.9 Mitigation & Monitoring for Landscape & Visual

Table 21.13 Mitigation Measures – Landscape & Visual

No.	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 be finalised by the appointed contractor in advance of the commencement of works, in agreement with Fingal County Council. It will incorporate all of the mitigating principles required to ensure that the work is

No.	Mitigation Measure
	carried out in a way that minimises the potential for environmental impacts to occur. Please refer to Preliminary Construction & Environmental Management Plan (pCEMP) prepared in respect of the proposed development by DBFL Consulting Engineers, and submitted under 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 the 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. 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.
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.

21.10 Mitigation & Monitoring for Cultural Heritage, Archaeology & Architectural Heritage

Table 21.14 Mitigation Measures – Cultural Heritage, Archaeology & Architectural Heritage

No.	Mitigation Measure
Construction Phase	
ARC01	No archaeological mitigation is required for the western portion of the Sites 2 & 3 development area (under construction / in use as construction compound). Topsoil stripping in all other areas will be subject to archaeological monitoring. If any features of archaeological potential are discovered during the course of monitoring, further archaeological mitigation may be required, such as preservation <i>in situ</i> or by record and / or archaeological monitoring. Any further mitigation will require approval from the National Monuments Service of the DoHLGH.
ARC02	All ground disturbances associated with the construction of the proposed pipeline will be monitored by a suitably qualified archaeologist. If any features of archaeological potential are discovered during the course of the works, further archaeological mitigation may be required, such as preservation <i>in situ</i> or by record. Any further mitigation will require approval from the National Monuments Service of the DoHLGH.
ARC03	It is the Applicant's responsibility to ensure full provision is made available for the resolution of any archaeological remains, both on-site and during the post-excavation process, should that be deemed the appropriate manner in which to proceed.

Table 21.15 Monitoring – Cultural Heritage, Archaeology & Architectural Heritage

Phase	Monitoring
Construction	Construction phase monitoring, as detailed in the mitigation measures above, shall be carried out during the construction phase.

21.11 Mitigation & Monitoring for Microclimate – Daylight & Sunlight

No mitigation measures or monitoring set out in relation to Microclimate – Daylight & Sunlight.

21.12 Mitigation & Monitoring for Traffic & Transportation

Table 21.16 Mitigation Measures – Traffic & Transportation

No.	Mitigation Measure
Construction Phase	
TT01	<p>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.</p> <p>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.</p>
TT02	During the pre-construction phase, the site will be securely fenced off from adjacent properties, public footpaths and roads.
TT03	Appropriate on-site parking and compound area will be provided to prevent overflow onto the local network.
TT04	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.
TT05	Truck wheel washes will be installed at construction entrances and any specific recommendations with regard to construction traffic management made by Fingal County Council will be adhered to.
TT06	<p>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:</p> <ul style="list-style-type: none"> ■ 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).
TT07	Site entrance points from the public highway will be constructed with a bound, durable surface capable of withstanding heavy loads and with a sealed joint between the access and public highway. This durable bound surface will be constructed for a distance of 10 m from the public highway.
TT08	A material storage zone will be established in the compound area and will include material recycling areas and facilities.
TT09	Wayfinding signage will be provided to route staff / deliveries into the site and to designated compound / construction areas.
TT10	Dedicated construction haul routes will be identified and agreed with Fingal County Council prior to commencement of activities on-site.

No.	Mitigation Measure
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	
TT12	<p>A Mobility Management Plan (MMP) has been compiled by DBFL with 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:</p> <ul style="list-style-type: none"> ■ 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.
TT13	<i>Car Parking Management Strategy</i> – 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 of the apartments in the Local Centre.

Table 21.17 Monitoring – Traffic & Transportation

Phase	Monitoring
Construction	<p>During the construction stage, the following monitoring exercises are proposed:</p> <ul style="list-style-type: none"> ■ If issues with regards to the routing of construction vehicles occurs – then compliance with construction vehicle routing practices will be undertaken; ■ If issues with regards the parking of construction vehicles on the surrounding network occurs – then compliance with construction vehicle parking practices will be undertaken; ■ If issues with regards the condition of the surrounding road network occur – then internal and external road conditions will be monitored; and ■ If issues with regards the timing or programming of construction activities occur – then timing of construction activities will be monitored.
Post-construction / 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.

21.13 Mitigation & Monitoring for Material Assets – Waste

Table 21.18 Mitigation Measures – Material Assets – Waste

No.	Mitigation Measure
Construction Phase	
WA01	A dedicated Resource and Construction Waste Manager shall manage all construction wastes. They shall oversee the implementation of the following measures.

No.	Mitigation Measure
WA02	Construction wastes shall be managed in accordance with the Resource and Construction Waste Management Plan, appended in outline form (Appendix 17.1), to be finalised by the appointed contractor in agreement with Fingal County Council, prior to the commencement of works.
WA03	Excavated rock shall be re-used on-site for pile pads, insofar as practicable.
WA04	An on-site area / areas will be established for the segregation and secure storage of construction and demolition wastes.
WA05	Tool-box talks on waste prevention, re-use, recycling and segregation shall be provided to all site staff and contractors.
WA06	Routine waste management audits shall be conducted.
WA07	Waste collection permits and letters of acceptance from waste acceptance facilities shall be provided to Fingal County Council on the appointment of waste contractors.
WA08	All waste loads leaving the site shall be digitally recorded.
WA09	A monthly waste-out record shall be issued to Fingal County Council.
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 domestic waste storage areas shall be managed by the Facilities Management Company.
WA12	Domestic and commercial wastes shall be managed in accordance with the Site-Specific Operational Waste Management Plan, appended in outline form (Appendix 17.2) and to be finalised by the Applicant prior to the commencement of the operational phase, and maintained up-to-date throughout the operational phase.
WA13	Residents shall be provided with information by the Facilities Management Company on the correct segregation and disposal of waste in order to minimise the generation of residual waste / contaminated waste streams and to increase recycling rates.
WA14	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.
WA15	The communal waste storage areas shall include WEEE and waste battery storage units.
WA16	The communal waste storage areas shall be of sufficient size to allow for the contingency storage of waste.
WA17	An annual bulky waste collection service will be provided to residents by the Facilities Management Company.
WA18	A dedicated retail and commercial waste storage area shall be provided for the crèche, Montessori school and café, and any other community amenity / retail units on the site. This area shall be separate from the domestic communal waste storage areas, and shall also provide for a three-bin system, as above.
WA19	The Facilities Management Company shall maintain a record of all domestic waste produced and shall prepare an annual report for residents and Fingal County Council detailing how waste reduction and recycling targets are being achieved with regard to the <i>Eastern-Midlands Region Waste Management Plan 2015 – 2021</i> (and any subsequent iterations).

21.14 Mitigation & Monitoring for Material Assets – Services

Table 21.19 Mitigation Measures – Material Assets – Services

No.	Mitigation Measure
Construction Phase	
SRV01	The exact locations of all on-site services (underground and overhead, where applicable) will be confirmed, e.g. using slit trenches at key areas, prior to the commencement of works.

No.	Mitigation Measure
SRV02	All infrastructure is to be installed and constructed to the relevant codes of practice and guidelines.
SRV03	In planning and executing the proposed works, due reference shall be had to the GNI <i>Guidelines for Designers and Builders – Industrial and Commercial (Non-Domestic) Sites</i> (2018), the Health & Safety Authority (HSA) <i>Code of Practice for Avoiding Danger from Underground Services</i> (2016), and the ESB Networks & Health and Safety Authority <i>Code of Practice for Avoiding Danger from Overhead Electricity Lines</i> (2019).
SRV04	Work in the vicinity of the overhead electricity lines will be executed in accordance with ESB Networks & Health and Safety Authority <i>Code of Practice for Avoiding Danger from Overhead Electricity Lines</i> (2019).
SRV05	All possible precautions shall be taken to avoid unplanned disruptions to any services / utilities during the proposed works.
SRV06	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.
SRV07	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.
SRV08	Prior to the operational phase of the proposed development, utilities infrastructure connections will be tested by a suitable qualified person under the supervision of Fingal County Council.
Operational Phase	
SRV09	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.

Table 21.20 Monitoring – Material Assets – Services

Phase	Monitoring
Construction	Monitoring will be provided for by each utility company with an overseeing responsibility by the appointed contractor during the construction phase.
Post-construction / 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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