MOORETOWN LANDS PHASE 2, SWORDS, CO. DUBLIN

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

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1 Introduction

1.1 Introduction

This Environmental Impact Assessment Report (EIAR) provides a statement of the effects that the proposed residential development at Mooretown Phase 2 lands, Swords, Co. Dublin (hereafter referred to as the 'Proposed Development'), if carried out, would have on the environment.

This EIAR has been prepared in accordance with the provisions of the Planning and Development Act 2000, as amended ('PDA 2000'), the Planning and Development Regulations 2001, as amended ('PDR 2001') and the relevant guidance documents, as detailed herein.

1.2 The Applicant

The Applicant is Fingal County Council (hereafter referred to as the 'Applicant').

1.3 The Proposed Development

1.3.1 Site of the Proposed Development

The site of the Proposed Development is located on the Mooretown lands in County Dublin, approximately 2.5 km west of Swords, as measured along the local road network. The site extends to approximately 14.75 hectares and is currently characterised by greenfield lands. Surrounding land uses include established residential developments and multiple permitted residential development schemes under construction. Dividing the site of the Proposed Development into two separate land parcels is Mooretown Phase 1 (Planning Ref. LADP/002/24) currently under construction. Swords Community College lies to the west of the site. Further to the west of the site (approximately 1 km) is agricultural land and several dispersed residential dwellings.

Main site access is via a link road from the permitted residential development of Mooretown Phase 1 (Planning Ref. LADP/002/24) located in the centre of the overall site, which is accessed via Rathbeale Road (R125). The R125 provides connectivity to the wider road network, including R132 and the M1 to the east. The location of the site within the wider context is illustrated in Figure 1.1.

The site is located within the administrative boundary of Fingal County Council (FCC), in the townlands of Mooretown. In the Fingal Development Plan 2023–2029, the Mooretown lands are zoned RA - Residential Area, with the zoning objective to *"provide for new residential communities subject to the provision of the necessary social and physical infrastructure"*.

A detailed description of the site and its characteristics is provided in Chapter 5 (Description of the Proposed Development).

Figure 1.1 Location of the site within the wider context.

1.3.2 Overview of the Proposed Development

The Proposed Development represents Phase 2 of the wider development on the Mooretown lands, Swords, Co. Dublin. The Proposed Development will provide for the construction of a residential scheme comprising a mix of house types, duplex units and apartments, together with a crèche, associated infrastructure, services and ancillary works.

The principal components of the Proposed Development include:

- Construction of 360 no. residential units (305 no. houses and 55 no. apartment/duplex)
- A crèche facility to serve the Proposed Development and the wider area.
- Landscaping, public open space and communal open space areas;
- Internal access roads, footpaths and cycle infrastructure;
- Car parking, including EV charging infrastructure;
- Surface water drainage infrastructure, attenuation and SuDS measures;
- Site access arrangements, utilities and associated site development works.

The Proposed Development has been designed having regard to the characteristics of the site, surrounding land uses, planning policy context, environmental constraints and relevant technical requirements.

A detailed description of the Proposed Development, including the layout, design, access arrangements, infrastructure, landscaping, drainage proposals, construction methodology and operational characteristics, is provided in Chapter 5 (Description of the Proposed Development).

1.4 Environmental Impact Assessment

Environmental Impact Assessment Environmental Impact Assessment (EIA) is the *"process of examining the anticipated environmental effects of proposed project – from consideration of environmental aspects at design stage, through consultation and preparation of an Environmental Impact Assessment Report (EIAR), evaluation of the EIAR by a competent authority, the subsequent decision as to whether the project should be permitted to proceed, encompassing public response to that decision"*, as defined in the Environmental Protection Agency (EPA)'s 2022 *Guidelines on the information to be contained in Environmental Impact Assessment Reports* (Appendices, p.73) ('the EPA guidelines'). The EIAR is prepared by the developer (i.e. Applicant) and is intended to assist the competent authority in carrying out of an EIA by reporting on the effects, if any, which the Proposed Development if carried out would have on the environment and includes the information specified in Article 5 and Annex IV of the EIA Directive.

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

Table 1.1 Overview of the EIA process

Stage	Description	Status
Screening	*Is an EIA required?*	Yes: Completed
Informal Scoping	Informal scoping, which has been considered throughout the preparation of the EIAR, assisted in 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:	Completed

Stage	Description	Status
	■ Collection of baseline information ■ Analysis of the Proposed Development ■ Assessment of impacts ■ Identifying appropriate mitigation and monitoring measures	
Review and Decision	The EIAR accompanies the planning application to the planning authority (Meath County Council and Kildare County Council) for determination of the application	Current Stage
Monitoring	Implementation of the proposed mitigation and monitoring measures	Implemented in case of development consent

1.5 Format and Structure of the Environmental Impact Assessment Report

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

Table 1.2 Structure of the EIAR

Section	Description
Volume 1:	**Non-technical Summary (NTS)**
A summary of the EIAR in non-technical language	
Volume 2:	**Main Report**
Chapter 1	Introduction
Chapter 2	The EIA Process
Chapter 3	Planning and Development Context
Chapter 4	Consideration of Alternatives
Chapter 5	Description of the Proposed Development
Chapter 6	Consultation
Chapter 7	Population and Human Health
Chapter 8	Biodiversity
Chapter 9	Land, Soils and Geology
Chapter 10	Hydrology and Hydrogeology
Chapter 11	Air Quality
Chapter 12	Climate
Chapter 13	Noise and Vibration
Chapter 14	Landscape and Visual
Chapter 15	Cultural Heritage, Archaeology and Architectural Heritage
Chapter 16	Microclimate – Daylight and Sunlight
Chapter 17	Microclimate – Wind
Chapter 18	Traffic and Transportation
Chapter 19	Material Assets – Waste
Chapter 20	Material Assets – Services

Section	Description
Chapter 21	Interactions
Chapter 22	Cumulative Impacts
Chapter 23	Mitigation Measures and Monitoring
Volume 3: Appendices	
Technical reference material supporting the EIAR chapters	

Article 5(1) and Annex IV of the EIA Directive and Article 94 and Schedule 6 of the PDR provide detail on the information to be included in an EIAR. Table 1.3 provides a checklist of the information referred to in Article 5(1) of Annex IV and in Article 94 and Schedule 6 of PDR with a confirmation of where the relevant information is contained within the EIAR.

Table 1.3 Information required under Article 5(1) of Annex IV of the EIA Directive and Article 94 and Schedule 6 of PDR

Information Referred to in Article 5(1) of Annex IV of the EIA Directive and Article 94 and Schedule 6 of PDR	EIAR Section
1.Description of the project, including in particular:	
(a) a description of the location of the project;	Volume 2, Chapter 1
(b) a description of the physical characteristics of the whole project, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases;	Volume 2, Chapter 1 and Chapter 5
(c) a description of the main characteristics of the operational phase of the project (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used;	Volume 2, Chapter 5
(d) an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation) and quantities and types of waste produced during the construction and operation phases.	Volume 2, Chapter 5 Volume 2, Chapter 7 to 20
2. A description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.	Volume 2, Chapter 3
3. A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the project as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.	Volume 2, Chapter 1, Chapter 3, Chapter 7 to 20
4. A description of the factors specified in Article 3(1) likely to be significantly affected by the project: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape.	Volume 2, Chapter 7 to 22
5. A description of the likely significant effects of the project on the environment resulting from, inter alia:	
(a) the construction and existence of the project, including, where relevant, demolition works;	Volume 2, Chapter 7 to **Error! Reference source not found.**

Information Referred to in Article 5(1) of Annex IV of the EIA Directive and Article 94 and Schedule 6 of PDR	EIAR Section
(b) the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources;	Volume 2, Chapter 7 to **Error! Reference source not found.**
(c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste;	Volume 2, Chapter 7 to **Error! Reference source not found.**
(d) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters);	Volume 2, Chapter 7, Chapter 15, Chapter 2 (Section 2.5.1)
(e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;	Volume 2, **Error! Reference source not found.**
(f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change;	Volume 2, Chapter 7 to **Error! Reference source not found.**
(g) the technologies and the substances used.	Volume 2, Chapter 5
The description of the likely significant effects on the factors specified in Article 3(1) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the project. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the project.	Volume 2, Chapter 7 to **Error! Reference source not found.**
6. A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.	Volume 2, Chapter 7 to **Error! Reference source not found.**
7. A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases.	Volume 2, Chapter 7 to **Error! Reference source not found.**
8. A description of the expected significant adverse effects of the project on the environment deriving from the vulnerability of the project to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to Union legislation such as Directive 2012/18/EU of the European Parliament and of the Council (*) or Council Directive 2009/71/Euratom (**) or relevant assessments carried out pursuant to national legislation may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.	Volume 2, Chapter 2 (Section 2.5.1), Chapter 7 to **Error! Reference source not found.**
9. A non-technical summary of the information provided under points 1 to 8.	Volume 1
10. A reference list detailing the sources used for the descriptions and assessments included in the report.	Volume 2, Chapter 7 to **Error! Reference source not found.**

1.5.1 EIAR Chapters Structure

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

Introduction

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

Method

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

Baseline Environment

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

Predicted Impacts

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

The EPA Guidance (2022) provides guidance on impact assessment methodology and has been described further in Section 0.

Mitigation Measures

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

Residual Impacts

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

Monitoring

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

Interactions

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

Cumulative Impacts

Error! Reference source not found. of the EIAR discusses the potential for cumulative impacts to arise as a result of the Proposed Development in combination with other projects. Each of the specialist contributors to this EIAR have considered the potential for cumulative impacts to arise, with particular reference to the projects listed in **Error! Reference source not found.**.

Difficulties Encountered

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

References

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

1.5.2 The Environmental Impact Assessment Team

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

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

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

Table 1.4 EIAR Contributors

Name	Company	Input	Qualifications
Thomas Burns	BSM	EIAR Technical Review	▪ B.Agr.Sc. (Land.) Dip. EIA Mgmt., Adv. Dip. Plan. and Env. Law ▪ Environmental Planner and Landscape Architect ▪ Member of Irish Landscape Institute and Irish Environmental Law Association ▪ Over 30 years of experience in EIA and LVIA
Pauline Byrne	BSM	Project Manager	▪ BSc Mgmt., Adv. Dip. Marketing, MA Regional and Urban Planning ▪ Head of Planning ▪ Member of Royal Town Planning Institute (MRTPI) ▪ Member of Irish Planning Institute (MIPI) ▪ Over 25 years of experience
Niamh Carey	BSM	EIAR Background chapters; Population and Human Health	▪ BSc Environmental Science, MScEng Env. Engineering ▪ Environmental Consultant ▪ One year experience.
Matthew Hague	BSM	Chapter 8 – Biodiversity; Appropriate Assessment Screening	▪ BSc, MSc, Adv. Dip. Plan. and Env. Law ▪ Associate and Senior Ecologist ▪ Chartered Environmentalist – CEnv ▪ MCIEEM ▪ Member of Irish Environmental Law Association ▪ Over 20 years of experience
Sadye Goldfarb	BSM	Chapter 8 – Biodiversity; Appropriate Assessment Screening	▪ BSc Environmental Science and a MSc Biodiversity and Conservation from Trinity College Dublin. ▪ Ecologist ▪ Qualifying Member of the Chartered Institute of Ecology and Environmental Management ▪ Over 2 years of experience

Name	Company	Input	Qualifications
Alan Wilson	AWN Consulting	Chapter 9 – Land, Soils and Geology Chapter 10 – Hydrology and Hydrogeology Water Framework Directive Assessment Hydrological and Hydrogeological Risk Assessment	■ BSc (Hons) in Environmental Management in Agriculture and Environmental and Geographical Sciences ■ Environmental Consultant ■ Member of the International Association of Hydrogeologists (IAH), Irish Group, and holds Associate (AISEP) membership with the Institute of Sustainability and Environmental Professionals (ISEP). ■ Over 5 years' experience in environmental assessment and consultancy
Denis Power	AWN Consulting	Water Framework Directive Assessment Hydrological and Hydrogeological Risk Assessment	■ BSc in Environmental Management from Dublin Technical University (DTU), MSc Earth Surface and Water from Utrecht University ■ Junior Environmental Consultant ■ Member of International Association of Hydrogeologists (Irish Group). ■ Graduate-level experience.
Carl Ramskill	AWN Consulting	Chapter 11 – Air Quality	■ BSc Chemistry, MSc Air Pollution Management and Control (University of Birmingham) ■ Principal Air Quality Consultant ■ Member of the Institution of Environmental Science (MIEnvSc), Member of the Institute of Air Quality Management (MIAQM) ■ 9 years' experience in air quality consultancy
Dr. Jovanna Arndt	AWN Consulting	Chapter 11 – Air Quality	■ BSc Environmental Science, PhD Atmospheric Chemistry and Climatology (University College Cork) ■ Principal Air Quality Consultant ■ Associate Member of the Institution of Environmental Science (AMIEnvSc), Associate Member of the Institute of Air Quality Management (AMIAQM) ■ 9 years' experience in air quality consultancy

Name	Company	Input	Qualifications
Lee Shelton	AWN Consulting	Chapter 12 – Climate	▪ BSc (Hons) Environmental Protection from Scotland's Rural College through the University of Edinburgh ▪ Principal Climate and Air Quality consultant ▪ CEnv, MIEnvSc, MIAQM ▪ 11 years' experience in environmental assessment
Ciara Nolan	AWN Consulting	Chapter 12 – Climate	▪ BSc in Energy Systems Engineering, University College Dublin ▪ MSc in Applied Environmental Science, University College Dublin ▪ Member of the Institute of Air Quality Management (MIAQM) ▪ Member of the Institution of Environmental Sciences (MIEnvSc) ▪ Principal Air Quality and Climate Consultant
Dylan Floyd	AWN Consulting	Chapter 13 – Noise and Vibration	▪ BSc Agri-Environmental Science ▪ Acoustic Consultant ▪ Over 4 years' experience
Alistair Maclaurin	AWN Consulting	Chapter 13 – Noise and Vibration	▪ BSc PgDip ▪ Technical Reviewer ▪ Senior Consultant ▪ Qualified Member of the Institute of Acoustics ▪ 13 years' experience
Richard Butler	Model Works	Chapter 14 – Landscape and Visual	▪ BLarch (Hons) Landscape Architecture, MSc Spatial Planning ▪ Director ▪ Member of the Irish Landscape Instititute ▪ Member of the Irish Planning Institute ▪ Over 25 years' experience.
Siobhán Deery	Courtney Deery Heritage Consultancy Ltd	Chapter 15 – Cultural Heritage – Archaeology and Architectural Heritage	▪ BA, MA, H-Dip (Ed.), H-Dip Planning and Env. Law, MIAI, Licence Eligible Archaeologist. ▪ Managing Director and Senior Heritage Consultant ▪ Institute of Archaeologists of Ireland (AIA), Member of ICOMOS

Name	Company	Input	Qualifications
			■ A senior archaeological and cultural heritage specialist with over 30 years of professional experience, with a proven track record in the preparation of EIAR Archaeological and Cultural Heritage chapters for a wide range of developments. This experience encompasses all stages of assessment, from baseline studies and field evaluation (including test trenching and excavation and built heritage recording) through to impact assessment, mitigation design, and delivery of robust heritage reports to support planning and consent.
Barry Murphy	Model Works	Chapter 16 – Microclimate – Daylight/Sunlight	■ B Eng (Hons) Mechanical Engineering ■ Member of Institute at Engineers Ireland ■ Over 20 years' of relevant experience.
Dr. Sadia Siddiqa	B-Fluid	Chapter 17 – Microclimate – Wind	■ PhD. Mathematics, MS, BS ■ PM, CFD Modelling Specialist ■ MIEI Member
Dr. Cristina Paduano	B-Fluid	Chapter 17 – Microclimate – Wind	■ PhD. Mech Eng., MS Aereospace Eng. ■ Director, CFD Modelling Specialist ■ CEng MIEI ■ 20 years in construction industry
Lucrezia Vigo	B-Fluid	Chapter 17 – Microclimate – Wind	■ Ms. Aeronautical Engineering ■ CFD Modelling Specialist ■ MIEI Member
Cillian O'Reilly	Transport Insights	Chapter 18 – Traffic and Transportation	■ BSc (Hons) Geography, Planning and Environmental Policy, University College Dublin. MSc Transport and Planning, Cardiff University ■ Traffic consultant ■ Over 10 years' experience of transport planning and engineering

Name	Company	Input	Qualifications
Conor O'Brien	Transport Insights	Chapter 18 – Traffic and Transportation	▪ BSc in Social Sciences (Geography and Politics), University College Dublin, 2023 ▪ MSc in Geographic Information Science (GIS), Technological University Dublin, 2025 ▪ Traffic consultant ▪ 1 years' experience
Chonaill Bradley	AWN Consulting	Chapter 19 – Material Assets – Waste Resource and Waste Management Plan Operational Waste Management Plan	▪ Bsc ENV, PG Dip Circ Econ ▪ Principal Environmental Consultant ▪ AssocCIWM ▪ Over 10 years' experience
Thomas Power	ENX	Chapter 20 – Material Assets - Services	▪ Mechanical Engineer ▪ Over 5 years experience
Cathal Kennedy	AKM Design Group	Chapter 20 – Material Assets - Services	▪ BA, BAI Civil, Structural & Environmental Engineering, Masters through research in Civil Engineering. ▪ Associate Director Civil Engineering ▪ Chartered Member of Engineers Ireland (MIEI) ▪ Civil Engineer with 20 years of experience in urban infrastructure and land development projects in both Design & Construction.
Daniel Oliveira	AKM Design Group	Chapter 20 – Material Assets - Services	▪ BEng Civil Engineering, Master in Global BIM Management in Civil Engineering and GIS. ▪ Senior Civil Engineer ▪ Chartered Member of Engineers Ireland (MIEI) ▪ Over 14 years' experience in urban infrastructure and land development projects.

1.6 Impact Assessment Methodology

The impact assessment methodology is detailed in 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, effects/impacts will be described and characterised in accordance with the terminology and criteria set out in the EPA Guidance (as set out in Table 1.5). The significance of an impact is determined through comparison of the character of the predicted effect to the sensitivity of the environment / receptor in question (Figure 1.2).

Table 1.5 Description of effects (EPA, 2022)

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

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

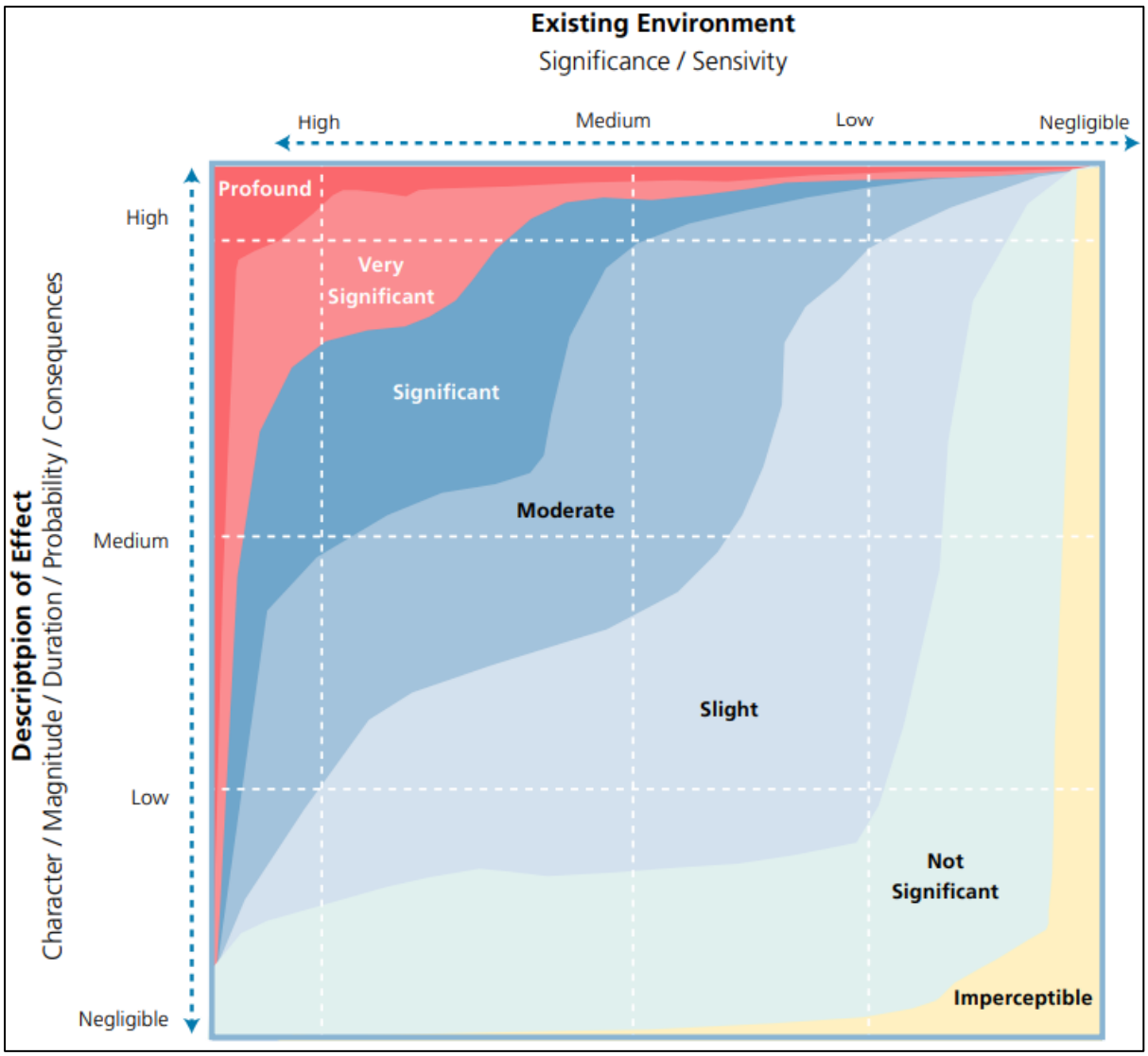


Figure 1.2 Determination of significance of effect (EPA, 2022)

2 The Environmental Impact Assessment (EIA) Process

2.1 Legislation

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

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

2.2 Guidelines

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

- EPA (2022). *Guidelines on the information to be contained in Environmental Impact Assessment Reports;*
- EC (2017). *Environmental Impact Assessment of Projects. Guidance on the preparation of Environmental Impact Assessment Report*;
- EC (2017). *Environmental Impact Assessment of Projects. Guidance on Scoping*;
- EC (2017). *Environmental Impact Assessment of Projects. Guidance on Screening*;
- Department of Housing, Planning and Local Government (DHPLG) (2019. *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment;*
- DHPLG (2017). Circular letter PL 1/2017 – Advice on Administrative Provisions in Advance of Transposition;
- European Commission (EC) (1999). *Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions;*
- EC (2013). *Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment.*

2.3 The EIA Process

EIA is the process of identifying, describing and assessing in an appropriate manner, the anticipated effects of a proposed project on the environment. It is defined in the amended Directive 2014/52/EU as follows:

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

(iii) the examination by the competent authority of the information presented in the environmental impact assessment report and any supplementary information provided, where necessary, by the developer in accordance with Article 5(3), and any relevant information received through the consultations under Articles 6 and 7;

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

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

In this case, 'the developer' refers to the Applicant, and 'the competent authority' refers to the planning authority, i.e. Meath County Council and Kildare County Council in this instance. It is important to emphasise that 'EIA' refers to the overall process of Environmental Impact Assessment, as defined above and illustrated in Figure 2.1, below.

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 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 matters that must be identified, described and assessed in the EIA process. The range of environmental topics that must be addressed in the EIAR, are set out in Article 5 and Annex IV.

Article 3 states as follows-

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

(a) population and human health;

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

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

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

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

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

"… the developer shall include at least:

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

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

1 Directive 92/43/EEC on the conservation of natural habitats and wild fauna and flora ('the Habitats Directive')
2 Directive 2009/147/EC on the conservation of wild birds ('the Birds Directive')
3 Refer to Chapter 21(Interactions)

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

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

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

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

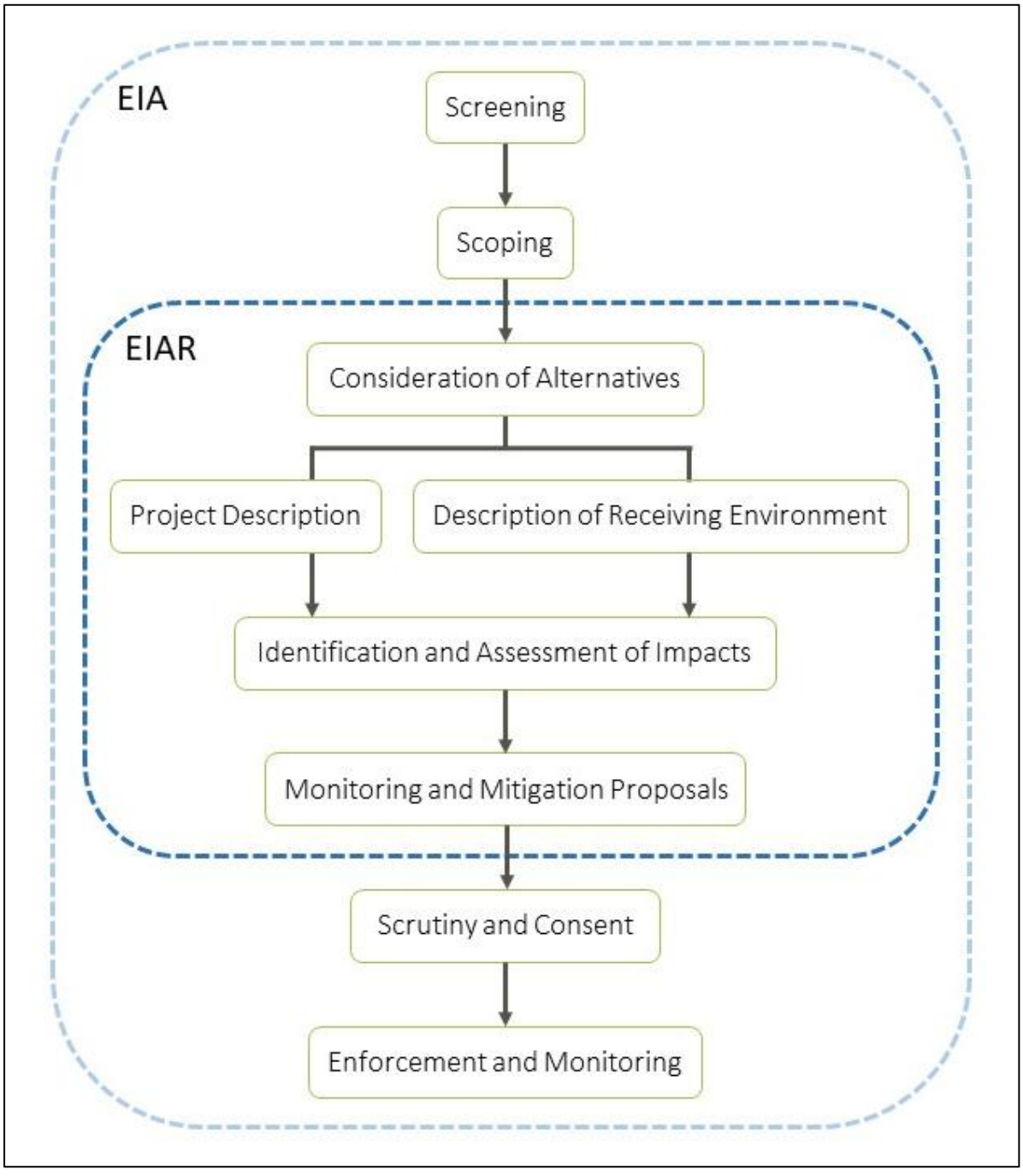


Figure 2.1 The EIA process (EPA, 2022).

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

The EIA process may be summarised as follows:

- **Screening:** The process of determining whether a Proposed Development should be subject to EIA;
- **Scoping:** The process of identifying the topics that should be addressed in the EIAR as well as the methods to do. This can be informal and is considered throughout the preparation of the EIAR;
- **Consideration of Alternatives:** The presentation and consideration of the various reasonable alternatives at several key stages during the EIA process;
- **Description of the receiving environment:** This stage aims to establish a robust baseline (a description of the environmental characteristics of the receiving environment plus any relevant trends in status), utilising a review of existing available information and undertaking surveys and analyses, where appropriate;
- **Impact assessment:** The primary purpose of the EIAR is to identify, describe[4] and present an assessment of the likely significant impacts of a Proposed Development on the environment;
- **Mitigation:** Where appropriate, mitigation measures are identified to avoid, prevent, reduce or offset any likely significant negative effects identified during the preparation of the EIAR or as part of the consultation process; as well as any proposed monitoring arrangements;
- **Consultation:** With statutory bodies, the public and other stakeholders, as appropriate;
- **Decision:** The competent authority (Meath County Council and Kildare County Council, in this case) decides, in the context of other considerations (including the outcomes of the consultation process), whether development consent should be granted;
- **Implementation and monitoring/ 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 2001 Regulations list the classes of development for which EIA is required. Project types listed in Part 1 comprise major developments (e.g. industrial, chemical, energy, waste, infrastructural and intensive agricultural projects) for which EIA and the preparation of the Environmental Impact Assessment Report (EIAR) is a mandatory requirement. Project types in Part 2,

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

include specific thresholds, which if met or exceeded, EIA and preparation of the Environmental Impact Assessment Report (EIAR) is also a mandatory requirement.

The Proposed Development is not of a class of development listed in Part 1 of Schedule 5 of the 2001 Regulations and, therefore, EIA is not required under this provision. In Part 2 of Schedule, the Proposed Development does correspond with classes of development listed under 'Infrastructure Projects' under paragraphs 10(b)(i) and 10(b)(iv) relating to urban developments. The two paragraphs and the associated threshold at or above which EIA is required are:

- *10(b)(i) Construction of more than 500 dwelling units;*
- *10(b)(iv) Urban development which would involve an area greater than 2 hectares in the case of a business district, 10 hectares in the case of other parts of a built-up area and 20 hectares elsewhere* *

* The site is not located within a business district and as such 10 hectares is the applicable threshold under 10(b)(iv) for the subject development.

The Mooretown Phase 2 development comprises 360 no. residential units on a total site area of c.14.75 ha. While the net developable area is 8.77 ha., public open space related works are proposed across the full site. In addition, when combined with the Mooretown Phase 1 development (under construction and permitted under FCC Reg. Ref.: LADP/002/24) which comprises 274 no. residential units on a total site area of c. 9.35ha, (net developable area of c.7ha), the total development on this Mooretown landholding extends to 634no. residential units on a total site area c. 24.1ha. (net developable area 15.77ha.) in the Oldtown-Mooretown area, west of Swords Town Centre.

Therefore, taking the overall site area of the Phase 2 development (i.e. 14.75 ha.) or the overall total Phase 1 and Phase 2 residential development (i.e. 634 no. units), the Proposed Development exceeds the stated thresholds under Project Type 10(b)(i) and 10(b)(iv), of Part 2 of Schedule 5 of the 2001 Regulations and therefore an EIA is required and an Environmental Impact Assessment Report (EIAR) has been prepared. Further shown in Error! Not a valid bookmark self-reference..

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

Provision (Part 2 of Schedule 5 of PDR 2001)	Proposed Development
Paragraph 10(b)(i): *"Construction of more than 500 dwelling units."*	Mooretown Phase 1 (Planning Ref LADP/002/24) – 274 units and; Mooretown Phase 2 – 360 units Combined total **634 units**
Paragraph 10(b)(iv): *"Urban development which would involve an area greater than 2 hectares in the case of a business district, 10 hectares in the case of other parts of a built-up area and 20 hectares elsewhere."*[5]	Mooretown Phase 1 (Planning Ref LADP/002/24) – 9.35 ha and; Mooretown Phase 2 – 14.75 ha Overall site area is **24.1 ha**

Therefore, under the provisions of the Section 176 PDA and Schedule 5 of PDR 2001, EIA is a statutory requirement for the Proposed Development, and the Applicant is required to prepare an Environmental Impact Assessment Report.

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

2.5 EIA Scoping (Informal)

The scoping stage of the EIAR is a process of determining the content and extent of the matters which should be covered in the environmental information to be submitted in the EIAR. Scoping requires the consideration of the nature and likely scale of the potential environmental impacts likely to arise from a Proposed Development or project. It is an iterative process that is ongoing throughout the development of the EIAR. Although Scoping can be considered as a discrete stage in the EIA process, one which ends with the issuing of the terms of reference for the EIA Report, the activity of Scoping continues throughout, so that the scope of work can be amended in light of new issues and new information during the process or as a result of design changes or through consultations, to be incorporated. The following topics, which include those stipulated in the amended Directive, have been scoped in for this assessment:

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

2.5.1 Major Accidents and Disasters

Reflecting the requirement set out in Article 3(2), Annex IV.8 requires that an EIAR shall provide -

> *"A description of the expected significant adverse effects of the project on the environment deriving from the vulnerability of the project to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to Union legislation such as Directive 2012/18/EU of the European Parliament and of the Council* (*) *or Council Directive 2009/71/Euratom* (**) *or relevant assessments carried out pursuant to national legislation may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies."*

Further recital 15 states that –

> (*15*) *In order to ensure a high level of protection of the environment, precautionary actions need to be taken for certain projects 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. For such projects, it is important to consider their vulnerability* (*exposure and resilience*) *to major accidents and/or disasters, the risk of those accidents and/or disasters occurring and the implications for the likelihood of significant adverse effects on the environment. In order to avoid duplications, it should be possible to use any relevant information available and obtained through risk assessments carried out pursuant to Union legislation, such as Directive 2012/18/EU of the European Parliament and the Council* (*4*) *and Council Directive 2009/71/Euratom* (*5*)*, or through relevant assessments carried out pursuant to national legislation provided that the requirements of this Directive are met.*

The principal guidance and best practice documents used to inform the assessment of major accidents and disasters are as follows:

- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (hereafter referred to as the Environmental Protection Agency (EPA) Guidelines) (EPA, 2022);
- Environmental Impact Assessment (EIA) Directive Guidance on the Preparation of the Environmental Impact Assessment Report (European Commission, 2017);
- A Framework for Major Emergency Management, Department of Housing, Local Government and Heritage (published September 2021 and updated June 2025);
- LA 104 - Environmental Assessment and Monitoring, Design Manual for Roads and Bridges, Highways England, Revision 1, (August 2020);
- Guidance on technical land-use planning advice for planning authorities and COMAH establishment operators (Health and Safety Authority, 2021).

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

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

Not all potential events will fall into the scope of a major accidents and/or disasters assessment. The level of risk therefore needs to be defined to inform what types of events are within the scope of the major accidents and/or disasters assessment. Events that have a high likelihood of occurring and would be of high consequence are a high risk and would be unacceptable for any development. These have already been managed or designed-out by a development. These might include, for example, an element of highway design that did not comply with standards leading to a major road traffic collision. These are therefore likely to be outside the scope of the assessment.

6 An event "… that threaten immediate or delayed serious environmental effects to human health, welfare and/or the environment and require the use of resources beyond those of the client or its appointed representatives to manage" (IEMA, 2020, p. 4).
7 A"… natural hazard (e.g. earthquake) or a man-made/external hazard (e.g. act of terrorism) with the potential to cause an event or situation that meets the definition of a major accident" (ibid.).

At the other end of the scale, low-impact events whatever the likelihood, such as minor spills, are low risk and are unlikely to be considered a major accidents and/or disasters risk. These events would not threaten immediate or delayed serious environmental effects to human health, welfare and/or the environment that require the use of resources beyond those of the client or its appointed representatives to manage. These are also therefore likely to be outside the scope of the assessment.

The assessment will typically focus on low likelihood but potentially high consequence events. The risks of feasible accidents and natural events are addressed, where relevant, in the various specialist chapters herein. Flood risk, for instance, is addressed in Chapter 10 (Hydrology and Hydrogeology), risk of Climate Change is addressed in Chapter 12 (Climate) and geohazards are addressed in Chapter 8 (Land, Soils, Geology).

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

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

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

Table 2.2 SEVESO sites in the Fingal County Council administrative area

Tier	Establishment	Consultation distance[8]	Distance from Proposed Development
Upper	Barclay Chemicals Manufacturing Ltd (t/a Barclay Crop Protection) Damastown Way, Damastown Industrial Park, Mulhuddart, Dublin 15	1,000 m	c. 12.40km

8 From site perimeter

Tier	Establishment	Consultation distance[8]	Distance from Proposed Development
	Chemco (Ireland) Limited (t/a Chemsource Logistics) Macetown North, Damastown Industrial Estate, Dublin 15	700 m	c. 12.40km
	Contract and General Warehousing Ltd Westpoint Business Park, Navan Rd. Mulhuddart, Dublin 15	700 m	c. 12.40km
	Guerbet Ireland ULC Damastown, Mulhuddart, Dublin 15	1,000 m	c. 12.40km
Lower	Astellas Ireland Co., Ltd Damastown Road, Damastown Industrial Park, Mulhuddart, Dublin 15	1,000 m	c. 12.40km
	Clarochem Ireland Limited Damastown, Mulhuddart, Dublin 15	1,000 m	c. 12.40km
	Exolum Aviation Ireland Ltd (formerly CLH) Corballis Road, Dublin Airport, Co. Dublin	500 m	c. 4.4km
	Gensys Power Ltd. Huntstown Power Station, Huntstown Quarry, Dublin 11	300 m	c. 7.5km
	SK Biotek Watery Lane, Swords, Co. Dublin	1,000 m	c. 1.5km

Considering the nature of the Proposed Development and its receiving environment, there is no source-pathway-receptor linkage of a hazard that could trigger an event constituting a MAD. As such, an assessment of impacts specifically in relation to MADs has been scoped out of this Environmental Impact Assessment Report.

2.6 Other Assessments

2.6.1 Appropriate Assessment

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

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

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

adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public."

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

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

Please refer to the AA Screening Report prepared by Brady Shipman Martin (2026), submitted under separate cover as part of the planning application.

2.6.2 Flood Risk Assessment

AKM Design Group (2026) have prepared a Flood Risk Assessment in accordance with the OPW guidelines *The Planning System and Flood Risk Management – Guidelines for Planning Authorities* (2009). The key findings and conclusions of the Flood Risk Assessment (FRA) are summarised as follows:

"The subject lands have been analysed for risks from flooding from the Irish Sea, fluvial flooding, pluvial flooding and ground water. Whilst residential developments are considered highly vulnerable to flooding it has been determined that the residual flood risk from any source is low"

Please refer to the FRA located within the Infrastructure Report - Section 8 (AKM Design Group, 2026) submitted under separate cover as part of the planning application. Refer also to Chapter 10 (Hydrology and Hydrogeology) of this EIAR.

2.6.3 Water Framework Directive

A WFD Assessment has been undertaken by AWN Consulting (2026), in respect of the Proposed Development in response to the requirements of the Water Framework Directive. Refer to Appendix 10.3, Volume 3 of the EIAR. The screening assessment concludes:

"The WFD assessment indicates that, based on the current understanding of the Proposed Development, there is no potential for adverse or minor temporary, long-term or localised effects on the Broadmeadow_040 WFD river waterbody [European code: IE_EA_08B020800], the Broadmeadow Water transitional waterbody [European code: IE_EA_060_0100] and the Malahide Bay coastal waterbody [European code: IE_EA_060_0000].

Therefore, it has been assessed that the Proposed Development will not cause any significant deterioration or change in water body status or prevent attainment, or potential to achieve, future good status or to meet the requirements and/or objectives in the Water Action Plan 2024 - A River Basin Management Plan for Ireland, (*Department of Housing Local Government and Heritage, Sept 2024*).

The WFD assessment indicates that there is no potential for adverse or minor temporary or localised effects on the Swords GWB (*European Code: IE_EA_G_011*). *Therefore, it has been assessed that it is unlikely that the Proposed Development will cause any significant deterioration or change on its water body status or prevent attainment, or potential to achieve the WFD objectives or to meet the requirements and/or objectives in the Water Action Plan 2024*

- A River Basin Management Plan for Ireland, (*Department of Housing Local Government and Heritage, Sept 2024*).

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

2.6.4 Hydrological and Hydrogeological Qualitative Risk Assessment

A Hydrological and Hydrogeological Qualitative Risk Assessment (HHQRA) has been prepared by AWN Consulting (2026) and submitted as part of the planning submission:

"Overall, the assessment concludes that there are no significant hydrological or hydrogeological pollutant linkages associated with the construction or operation of the Proposed Development which could result in a water quality impact which could alter the habitat requirements of the Natura 2000 sites located within the Broadmeadow Water transitional waterbody or Malahide Bay coastal waterbody.

No plausible scenario exists under which the Proposed Development would give rise to deterioration in groundwater or surface water quality, nor would it alter the hydrological or hydrogeological WFD status of the Broadmeadow_040 WFD river waterbody, Broadmeadow Water transitional waterbody, Malahide Bay coastal waterbody or the underlying 'PI - Poor Aquifer - Bedrock which is generally unproductive except for local zones' and Swords groundwater body (*GWB*)*."*

The HHQRA report is provided in full within the Appendix to the AA Screening Report (BSM, 2026), which is submitted under separate cover as part of this application.

3 Planning & Development Context

3.1 Introduction

This Chapter sets out the policy in relation to proper planning and sustainable development in the context of the Proposed Development. It has been prepared by Niamh Carey, Environmental Consultant at Brady Shipman Martin (BSM). The chapter has been reviewed by Pauline Byrne, Senior Planner, at Brady Shipman Martin (BSM). Additionally, a technical review was completed by Thomas Burns, Partner at BSM. Refer to Error! Reference source not found. in Chapter 1 (Introduction) for qualifications of authors and reviewers.

The following policy documents of relevance are discussed in relation to the Proposed Development herein:

International

- United Nations Sustainable Development Goals (2015)

European

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

National

- Project Ireland 2040 – National Planning Framework and National Development Plan (2021-2030) including the First Revision to the NPF (April 2025);
- Delivering Homes, Building Communities 2025-2030 – An Action Plan on Housing Supply and Targeting Homelessness (2025)
- Planning Design Standards for Apartments – Guidelines for Planning Authorities (2025);
- Urban Development and Building Heights – Guidelines for Planning Authorities (2018);
- Design Manual for Urban Roads and Streets (2019);
- Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities (2010);
- Sustainable Residential Development and Compact Settlements Guidelines for Planning Authorities (2024);
- The Planning System and Flood Risk Management – Guidelines for Planning Authorities (2009);
- Climate Action Plan 2025;
- Childcare Facilities – Guidelines for Planning Authorities (2001);
- Cycle Design Manual (2023);
- National Sustainable Mobility Policy (2022).

Regional

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

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

3.2 International Policy Context

3.2.1 United Nations Sustainable Development Goals (2015)

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

Figure 3.1 United Nations Sustainable Development Goals (SDGs)

3.3 European Policy Context

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

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

considering the characteristics of the Proposed Development, its location and characteristics of potential impacts.

As detailed in Chapter 2 of this EIAR, the Proposed Development is not of a class listed in Part 1 of Schedule 5 of the Planning and Development Regulations 2001 (as amended) and, therefore, Environmental Impact Assessment (EIA) is not required under that provision. However, the Proposed Development (Mooretown Phase 2) falls within the classes of development specified in paragraphs 10(b)(i) and 10(b)(iv) of Part 2 of Schedule 5 and exceeds the threshold for Class 10(b)(iv). Furthermore, when considered cumulatively with Phase 1 (permitted under FCC Reg. Ref. LADP/002/24), the overall quantum of development also exceeds the threshold for Class 10(b)(i). Accordingly, EIA is required for the Proposed Development under Part 2 of Schedule 5 of the Regulations.

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

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

Please refer to Section **Error! Reference source not found.** and the AA Screening Report prepared by BSM (2026), submitted under separate cover as part of the planning application, for full details.

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

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

Specifically, the WFD aims to:

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

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

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

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

A WFD Assessment has been undertaken by AWN Consulting (2026), in respect of the Proposed Development in response to the requirements of the Water Framework Directive. Refer to **Appendix 10.3,** Volume 3 of the EIAR. The screening assessment concludes:

> *"The WFD assessment indicates that, based on the current understanding of the Proposed Development, there is no potential for adverse or minor temporary/ long-term or localised effects on the Blackhall Little Stream, River Rye, River Liffey and European sites which the waterbodies hosts. Therefore, it has been assessed that the Proposed Development will not cause any significant deterioration or change in water body status or prevent attainment, or potential to achieve, future good status or to meet the requirements and/or objectives in the third RBMP 2022-2027 (River Basin Management Plan) and Water Action Plan 2024 - A River Basin Management Plan for Ireland.*
>
> *The WFD assessment indicates that there is no potential for adverse or minor temporary or localised effects on the Dublin groundwater body (GWB). Therefore, it has been assessed that it is unlikely that the proposed site will cause any significant deterioration or change on its water body status or prevent attainment, or potential to achieve the WFD objectives or to meet the requirements and/or objectives in the third RBMP 2022-2027 (River Basin Management Plan) and Water Action Plan 2024 - A River Basin Management Plan for Ireland.*
>
> *No further assessment of WFD is recommended given that no significant deterioration or change in water body status is expected based on the current understanding of the Proposed Development during construction and operation."*

A Hydrological and Hydrogeological Qualitative Risk Assessment (HHQRA) has been prepared by AWN Consulting (2026) and submitted as part of the planning submission. The HHQRA concludes that –

> *"It is concluded that there are no pollutant linkages as a result of the construction or operation of the Proposed Development which could result in a water quality impact which could alter the habitat requirements of the Natura 2000 sites within the River Rye.*
>
> *Finally, and in line with good practice, appropriate and effective mitigation measures will be included in the construction design, management of construction programme and during the operational phase of the Proposed Development. With regard the construction phase, adequate mitigation measures will be incorporated in the Construction Environmental Management Plan (CEMP). These specific measures will provide further protection to the receiving soil and water environments. However, the protection of downstream European sites is in no way reliant on these measures and they have not been taken into account in this assessment."*

3.4 National Policy Context

3.4.1 Project Ireland 2040 – National Planning Framework (NPF)

Project Ireland 2040 is the Government's overarching planning and development policy for the country to 're-imagine' Ireland and prepare for the future. 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 2021-2030 (NDP), which outlines the public expenditure required to implement this strategy and identifies priority future projects.

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

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

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

First Revision- National Planning Framework (April 2025)

The National Planning Framework (NPF) has been revised and updated to take account of changes that have occurred since its publishing in 2018 and to build on the framework that is in place. The final revised and approved NPF was published on 8th April 2025.

The revised NPF identifies, as per updated projections, the population of Ireland will increase to approximately 5.7 million by 2030 and to 6.1 million by 2040, which is an increase of 250,000 people over that planned for in 2018. The scale of growth that is projected in Ireland to 2040 coupled with the need to transition to a lower carbon society requires an increased delivery of housing and the improved integration of land use and transport.

The Government's long-term vision for Ireland's housing future aims to balance the provision of good quality housing that meets the needs of a diverse population, in a way that makes our cities, towns, villages and rural areas good places to live now and in the future. The NPF sets out national core principles to guide the delivery of future housing at all levels of governance, as follows (p. 88):

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

The NPF requires homes to be located in places that can support sustainable development; i.e. places that are served by existing infrastructure and a range of local services; and which can encourage the use of public transport, walking and cycling, in order to promote more efficient and low-carbon development. It notes under National Policy Objective 43 that – "*Prioritise the provision of new homes at locations that can support sustainable development and at an appropriate scale of provision relative to location.'* It is noted that Ireland's future homes will '*still be located in our smaller towns, villages and rural areas, including the countryside, but at an appropriate scale that does not detract from the capacity of our larger towns and cities to deliver homes more sustainably*" (p. 89). In order to deliver compact, smart and sustainable growth, the NPF intends for 50% of new housing development in the region to be delivered in the existing footprint of Dublin City and suburbs, with an additional 30% delivered elsewhere, within existing urban footprints.

Furthermore, the NPF has set out targets for delivery of housing under the National Policy Objective 42 – *"To target the delivery of housing to accommodate approximately 50,000 additional homes per annum to 2040."*

The NPF notes that (p. 32):

> *"One of the most significant spatial development changes in recent years is driven by the rising economic strength of Dublin, improving transport connectivity and issues relating to housing delivery and cost in the Capital. This has given rise to more intensive interactions between Dublin and towns along the key road and rail routes into Dublin, that function like a linear urban network."*

Future planning, development and place-making policy priorities for the region are identified in the NPF, including the following of pertinence to the Proposed Development (p. 29):

> *"Enabling the complementary development of large and county towns in the wider Greater Dublin Area and Midland areas on the key strategic and public transport routes in a regionally co-ordinated manner, with an enhanced emphasis on measures to promote self-sustaining economic and employment-based development opportunities to match and catch-up on rapid phases of housing delivery in recent years."*

The Proposed Development is broadly consistent with the objectives of the NPF in that it will deliver a high-quality residential development, contributing to the urban expansion of a rapidly growing suburban town within the Dublin Metropolitan area. While the Proposed Development will be delivered on a greenfield site, it is within a suburban housing context proximate to the town of Swords (the Fingal County town), which is served by public transport infrastructure to access Dublin City Centre. Furthermore, the site is situated on lands that have been zoned by Fingal County Council (FCC) for residential development of this nature.

The NPF requires homes to be constructed in places that can support sustainable development. This includes places that are accessible to a range of local services, can encourage the use of public transport, walking and cycling, and help tackle climate change. The Proposed Development is responding to the existing strong demand in the Dublin Metropolitan Area and in a location that is accessible to both existing local facilities and public transport routes to the Key town of Swords and the City Centre. The Proposed Development includes provision for future bus infrastructure and bus route, to be introduced by the NTA. It is also proposed to include pedestrian and cycle routes connecting to the surrounding area, and a crèche, which will contribute to supporting sustainable residential development.

The Proposed Development is consistent with the objectives of the NPF in that it will deliver a high-quality residential development within the Dublin Metropolitan Area, in proximity to public transport services providing access to Dublin City.

The Planning Report and Statement of Consistency, prepared by BSM (2026) and submitted under separate cover as part of this planning application, details the consistency of the Proposed Development with the NPOs.

3.4.2 Delivering Homes, Building Communities 2025-2030: An Action Plan on Housing Supply and Targeting Homelessness

Delivering Homes, Building Communities 2025-2030: Action Plan on Housing Supply and target Homelessness is the Government's latest Housing Plan ('the Housing Plan'), launched in November 2025. This Plan supersedes the previous Housing for All (2021) plan and aims to expedite the delivery of new homes and tackle homelessness in Ireland.

The Housing Plan aims for the construction of 300,000 homes, including 72,000 social homes and 90,000 affordable housing supports by 2030. Building on the progress of Housing for All, which has delivered 137,000 homes since 2021, and informed by the Housing Commission's work, this plan will see the State take a bigger role while also encouraging the private sector to play a key part in delivery.

To accelerate progress, the plan includes regulatory reforms, tax incentives, and the largest ever investment in infrastructure in the history of the State- €275.4 billion over ten years through the National Development Plan.

The Plan structures around two key pillars:

1. *Pillar 1: Activating Supply*

Activating supply centres on removing structural barriers to homebuilding, such as unlocking land, reforming planning, delivering infrastructure and creating conditions for investment. It also involves boosting construction capacity, adopting modern methods of construction and addressing vacancy and dereliction to bring homes back into use.

2. Pillar 2: Supporting People

Pillar 2 is aimed squarely at making homes accessible and affordable, particularly those who are most at-risk of homelessness or those waiting on housing lists around the country. It focuses on tackling homelessness and precarious living conditions, protecting children and families, increasing social and affordable housing output and improving rental security. It generally supports homeownership, seeking to give new buyers the opportunity to put down roots, while revitalising villages, towns and cities.

The Housing Plan identifies the need for the involvement of private developers to aid in the delivery of the required number of homes as outlined over the lifetime of the Plan. It seeks to support the delivery of a wide range of unit types suitable for different types of households and increasing housing supply.

Key priorities include the following:

- To activate the supply of 300,000 homes, Government will:
  - Ensure a strong pipeline of zoned and serviced land is available.
  - Create the conditions to attract the required investment.
  - Increase skills and support the adoption of Modern Methods of
  - Construction in the residential construction sector.
  - Work towards ending dereliction and vacancy.
- To support our people, Government will:
  - Focus on ending homelessness, deliver homes for older people and support social inclusion.
  - Deliver an average of 12,000 new social homes every year over the lifetime of the Plan.
  - Promote affordable homeownership, protect renters and make buying and renting homes more affordable
  - Invest in the built environment of towns, villages and cities across the country to enhance community well-being.

The Proposed Development is consistent with the Government's Housing Plan, in that it will provide approx. 360 no. new high quality housing units on appropriate zoned lands in accordance with Government housing policy.

Further information can be found within the Planning Report & Statement of Consistency prepared by BSM (2026), submitted under separate cover as part of this planning application.

3.4.3 Planning Design Standards for Apartments- Guidelines for Planning Authorities (2025)

In July 2025, the Minister for Housing, Local Government and Heritage published the Planning Design Standards for New Apartments: Guidelines for Planning Authorities, 2025 ('the Design Guidelines') under Section 28 of the Planning and Development Act 2000, as amended. The Design Standards supersede the previous guidelines in relation to apartment design: Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities 2022 (updated July 2023), which is now revoked.

The Guidelines are cognisant of the latest updates to the NPF and increasing pressure to increase housing supply. The matters dealt with in the guidelines include apartment mix, internal space standards, dual aspect ratios, floor to ceiling heights, apartment to stair/lift core ratios, storage space, and amenity space.

The Design Guidelines set out Specific Planning Policy Requirements (SPPRs), which planning authorities must apply as "*they take precedence over any conflicting policies and objectives of statutory plans*" (p. 3).

The Design Guidelines pay particular attention to the contents of the NPF, noting the delivery of 50,000 no. homes [per annum], and that "*It is therefore critical to ensure that apartment living is an attractive and desirable housing option for a range of household types and tenures, building on experience to date."* (p. 9). The guidelines relate generally to:

- *"Apartment mix;*
- *Internal space standards for different types of apartments;*
- *Dual aspect rations; Floor to ceiling heights;*
- *Apartment to stair/lift core ratios; Storage spaces; and*
- *Amenity spaces including balconies/patios."* (p. 4).

As such the SPPRs contained within the Design Guidelines are set out, and summarised, as follows:

- SPPR 1: Removal of restrictions on housing mix (save for certain prescribed developments);
- SPPR 2: Minimum floor area for apartments (except student housing):
  - Studio (1p): 32sq.m
  - 1-Bed (2p): 45sq.m
  - 2-Bed (3p): 63sq.m
  - 2-Bed (4p): 73sq.m
  - 3-Bed (4p): 76sq.m
  - 3-Bed (5p): 90sq.m
- SPPR 3: Minimum dual aspect ratios (25%, save for refurbishment schemes or urban infill);
- SPPR 4: Floor to ceiling heights (2.7m minimum, save for refurbishment schemes or urban infill);
- SPPR 5: Removal of restrictions on apartment to stair/lift core ratios;
- SPPR 6: Removal of blanket requirements for new Communal, Community and Cultural facilities within apartment schemes;
- SPPR 7: Presumption against consenting for development of shared accommodation/co-living development; and
- SPPR 8: Standards for purpose-built student accommodation.

Guidance is also provided in relation to matters including internal storage, private amenity space, security considerations, access and services, waste management, communal amenity space, children's play area, bicycle parking and storage, car parking and development management, however these are not covered by SPPRs in the guidelines. Some of these matters are covered by other guidance documents, such as the Sustainable Residential and Compact Settlements Guidelines for Planning Authorities (*Section 0*).

Please refer to the Housing Quality Audit prepared by DG Architects (2026) for a detailed demonstration of the compliance of the proposed units with the relevant guidelines, design standards and SPPRs as appropriate. The Planning Report and Statement of Consistency for the Proposed Development, prepared by BSM (2026) and submitted under separate cover as part of this planning application, details the consistency of the Proposed Development with these Design Guidelines.

It is noted that the Design Guidelines are currently subject to ongoing legal proceedings, however they remain in effect unless otherwise stated by any court ruling.

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

The Urban Development and Building Heights- Guidelines for Planning Authorities ('the Guidelines') were published in December 2018 by the Minster for Housing, Planning & Local Government under Section 28 of the PDA 2000. The Guidelines support the objectives of the NPF, by securing a more compact and sustainable manner of development in urban areas.

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

The Guidelines reference NPO 13[9], which states:

"In urban areas, planning and related standards, including in particular building height and car parking will be based on performance criteria that seek to achieve well-designed high-quality outcomes in order to achieve targeted growth. These standards will be subject to a range of tolerance that enables alternative solutions to be proposed to achieve stated outcomes, provided public safety is not compromised and the environment is suitably protected". (p. 5)

It recognises that in meeting the challenge set out above new approaches to urban planning and development are required and that securing an effective mix of uses within urban centres is critical. To bring about this increased density and increased residential development in urban centres the Guidelines state that *"significant increases in the building heights and overall density of development is not only facilitated but actively sought out and brought forward by our planning processes and particularly so at local authority and An Bord Pleanála levels" (p. 5).*

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

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

Heights proposed in the development range from 2-5 no. storeys which effectively integrates with the surrounding existing context consolidating the development of this urban area. Please refer to the *Architectural Design Statement* prepared by DG Architects for more detailed information regarding

[9] The numbering of NPOs has been adjusted in the First Revision of which are not reflected in guidelines that predate it, such as the *Urban Development and Building Heights- Guidelines for Planning Authorities* (2018) referenced above. NPO 13 is now NPO 22 in the First Revision of the NPF.

height. The Planning Report and Statement of Consistency, prepared by BSM (2026) and submitted under separate cover as part of the planning application, details the consistency of the Proposed Development with these Guidelines.

3.4.5 Design Manual for Urban Roads and Streets (DMURS) (2019)

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

The DMURS Compliance Statement prepared by Transport Insights (2026) provides further detail in respect of the compliance of the Proposed Development with DMURS, and is submitted as part of the Traffic and Transport Assessment Report.

In summary, the Proposed Development fully complies with DMURS principles by prioritising active travel, permeability, safety and placemaking.

3.4.6 Appropriate Assessment of Plans and Projects in Ireland- Guidance for Planning Authorities (2010)

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

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

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

An AA Screening Report has been prepared by BSM (2026) in respect of the Proposed Development, in accordance with the requirements of the Habitats Directive and the Birds Directive, the European Union

(Birds and Natural Habitats) Regulations 2011 (as amended) and the Planning and Development Act 2000 (as amended).

Please refer to Section 2.6.1 of this EIAR Report and the AA Screening Report (BSM, 2026), submitted under separate cover.

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

The Sustainable Residential Development and Compact Settlements Guidelines for Planning Authorities ('the Compact Settlement Guidelines'), published in 2024, supersede the Sustainable Residential Development in Urban Areas Guidelines for Planning Authorities *(2009)* which in turn replaced the Residential Density Guidelines (1999). The Compact Settlement Guidelines set out policy and guidance in relation to the planning and development of urban and rural settlements, with a focus on sustainable residential development and the creation of compact settlements.

Since the publication of the Residential Density Guidelines 1999 and subsequent 2009 Guidelines, planning authorities have been recommended to promote increased residential densities at appropriate locations. The Compact Settlement Guidelines note that "*given the NPF priorities for compact growth […], the Government considers that it is necessary to expand on the number of density bands contained in the 2009 Guidelines in order to ensure that densities are efficient while, at the same time, tailored to settlement context*." (p. 16)

Within the Compact Settlement Guidelines, area and density ranges are set out as applicable to maximise the return on public transport investment. These Guidelines further identify the importance of delivering the densities based on site accessibility.

Within the Compact Settlement Guidelines, area and density ranges are set out considering factors such as proximity to high-frequency public transport, to maximise the return on public transport investment. The Compact Settlement Guidelines further identify the importance of delivering higher densities based on site accessibility. The density of the Proposed Development reflects the overall size of the site, and the proximity to high frequency public transport routes. The site for the Phase 2 development has a density of c. 41 dwellings per hectare (dph).

Within these guidelines, area and density ranges are set out as applicable. The Mooretown lands are considered an '*urban extension'* of Swords as a Metropolitan Town of over 1,500 population, as follows: *"Suburban areas are the low density car-orientated residential areas constructed at the edge of the town, while urban extension refers to greenfield lands at the edge of the existing built-up footprint that are zoned for residential or mixed-use (including residential) development. It is a policy and objective of these Guidelines that residential densities in the range 35 dph to 50 dph (net) shall generally be applied at suburban and edge locations of Metropolitan Towns, and that densities of up to 100 dph (net) shall* be op*en for consideration at 'accessible' suburban / urban extension locations (as defined in Table 3.8)".*

The design strategy for the proposed lands aims to provide a socially inclusive and mixed scheme, creating character areas, providing connected and multi-function landscapes. It emphasises the key indicators of quality urban design & placemaking to create an inclusive and sustainable neighbourhood.

Please refer to the relevant documents prepared by the design team that accompany this planning application, notably the DG Architects Design Statement, and the Planning Report and Statement of Consistency prepared by BSM.

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

The Planning System and Flood Risk Management – Guidelines for Planning Authorities ('the Flood Guidelines') 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 (FRA) for development applications which relate to areas at risk of flooding and stipulate the content and level of detail to be presented therein.

An FRA was undertaken as part of the Infrastructure Report by AKM Design Group (2026) in response to the Proposed Development, in accordance with the Flood Guidelines, with the objective of informing the planning authority in relation to flood risk associated with the Proposed Development.

Locally, it is the objective of the Development Plan (IUO17- Strategic Flood Risk Assessment, p. 421) to:

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

A flood history was conducted for the site, showing that none had occurred within the immediate vicinity of the subject site, although previous flood events have been recorded within 2.5 km of the site.

The FRA determined that the site is not located within a Flood Zone as defined by the OPW Guidelines, meaning there is no risk of flooding. A desk study of available information and CFRAM analysis found that the subject site is not at risk from fluvial or coastal flooding under the high-end flood scenario.

The Infrastructure Report outlines the proposed surface water drainage strategy for the site. The development will utilise a combination of a conventional gully and pipe network together with an extensive Sustainable Drainage Systems (SuDS) approach. Surface water runoff will be managed through features including swales, permeable paving, bioretention areas (rain gardens and tree pits), green roofs, and both above- and below-ground attenuation storage.

It is considered that the flood risk mitigation measures if implemented are sufficient to provide a suitable level of protection to the Proposed Development. A regularly maintained drainage system will ensure that it remains effective and in good working order should a large pluvial storm occur. The FRA concludes as follows:

> "*The subject lands have been analysed for risks from flooding from the Irish Sea, fluvial flooding, pluvial flooding and ground water. Whilst residential developments are considered highly vulnerable to flooding it has been determined that the residual flood risk from any source is low.*"

For further information on the FRA, refer to Section 8 of the Infrastructure Report prepared by AKM (2026), submitted under separate cover. Refer also to Chapter 10 (Hydrology and Hydrogeology).

3.4.9 Climate Action Plan (2025)

The Climate Action Plan 2025 (CAP25) is the third annual update to Ireland's Climate Action Plan under the Climate Action and Low Carbon Development (Amendment) Act 2021. CAP25, published on 15th April 2025, lays out a roadmap of actions which will lead to meeting the national climate objective of pursuing and achieving, by no later than the end of the year 2050, the transition to a climate resilient,

biodiversity rich, environmentally sustainable and climate neutral economy. It aligns with the legally binding economy-wide carbon budgets and sectoral emissions ceilings that were agreed by Government in July 2022.

CAP 25 builds upon the previous year's Plan (CAP24) by refining and updating the measures and actions required to deliver the carbon budgets and sectoral emissions ceilings and it should be read in conjunction with CAP24. The Plan provides a roadmap for taking decisive action to halve Ireland's emissions by 2030 and achieve climate neutrality by no later than 2050, as committed to in the Climate Action and Low Carbon Development (Amendment) Act 2021.

The CAP25 Annex of Actions contains new, high-impact actions for delivery in 2025 onwards. The full set of measures and actions are set out in the CAP25 to provide the legally required roadmap of actions to reach climate targets while also supporting enhanced energy security with renewables, cleaner air, warmer homes with reduced energy bills, and better urban and rural transport services.

The Proposed Development has been designed to assist in achieving actions and policies as set out in the CAP25[10] and is set out in documents supporting this planning application including the Chapter 12 Climate of this EIAR. Furthermore, Climate Action Energy Statement has been prepared by ENX Engineering Excellence (2026) to comply with the building regulations. Please refer to this standalone report submitted under separate cover as part of the planning application.

3.4.10 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 Planning Design Standards for Apartments - Guidelines for Planning Authorities, 2025 *state that:*

> *"Notwithstanding the 'Planning Guidelines for Childcare Facilities* (2001)*', which are subject to review, 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, 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 on-site childcare provision and subject to the factors above, this may also apply in part or whole, to units with two or more bedrooms." (p. 27)*

[10] It should be noted that the Government has predicted that CAP26 should be released later this year. At the time of the writing of this report that document had not been released and therefore the CAP25 guidelines were used.

An assessment of Schools Demand and Childcare Facilities was undertaken as part of the Community and Social Infrastructure Report and Schools and Childcare Audit prepared by BSM (2026) and is submitted as part of this 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, in accordance with the requirements of the Childcare Facilities Guidelines for Planning Authorities (2001), Planning Design Standards for Apartments: Guidelines for Planning Authorities, 2025 and Fingal County Development Plan 2023-2029.

As part of the Proposed Development, a childcare facility is to be constructed in accordance with the Childcare Guidelines. As detailed in the Childcare and Schools Demand section within the Community and Social Infrastructure Report and Schools and Childcare Audit prepared by BSM, the provision of a 165 no. childcare spaces crèche (c. 670 sq.m), in combination with the previously permitted and existing childcare facilities in the area meets the requirements for delivering this proposed scheme of development. This proposed childcare facility meets the demand of childcare spaces generated by the Mooretown Phase 1 permitted development and proposed Mooretown Phase 2 Proposed Development.

Please refer to accompanying Community and Social Infrastructure Report and Schools and Childcare Audit prepared by BSM (2026) as part of this application, submitted under separate cover. Please also refer to the Architectural Design Statement and accompanying architectural drawings related to the childcare facility, both prepared by DG Architects (2026), under separate cover.

3.4.11 Cycle Design Manual (2023)

The Cycle Design Manual (2023) (the CDM) has been prepared by the National Transport Authority (NTA) and overseen by the Department of Transport. The CDM replaces the previous National Cycle Manual, published by the NTA in 2011.

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

The Proposed Development has been designed having regard to the provision of cycle facilities in accordance with the Greater Dublin Area Cycle Network Plan (forming part of the GDA Transport Strategy), published by the National Transport Authority. The subject site is well positioned within this strategic cycling framework. The R125 and the Mooretown Western Distributor Link Road are classified as secondary cycle links, while Murrough Road, to the east of the site, is identified as a primary radial cycle link. In addition, a feeder cycle route is indicated to run west from Murrough Road through existing residential areas and the Proposed Development, linking to the Mooretown Western Distributor Link Road. The Proposed Development shall facilitate this cycling connection.

It is also noted that the Phase 1 access road shall include active travel facilities, with pedestrian and cycle infrastructure provided on both sides of the carriageway. The Proposed Development shall deliver the facilities on the southern side of this access road. While the proposed cycle infrastructure on the northern side of the Phase 1 access road is not identified within the GDA Cycle Network Plan, it shall

provide direct connections for future residents to existing and planned active travel infrastructure in the surrounding area. The Proposed Development will facilitate this cycling link. Expansion of dedicated cycling facilities in Swords will enhance options for sustainable local mobility, with the planned interurban routes enabling longer distance travel.

It is also noted that the Phase 1 access road shall include active travel facilities with pedestrian and cycle infrastructure present on both sides of the carriageway.

More details about the proposed cycle infrastructure can be found in and the Infrastructure Report prepared by AKM (2026).

3.4.12 National Sustainable Mobility Policy (2022)

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

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

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

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

Principle 1: Safe and Green Mobility

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

Principle 2: People Focused Mobility

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

Principle 3: Better Integrated Mobility

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

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

- National Sustainable Mobility Policy Action Plan 2022-2025: The action plan to 2025 contains actions to improve and expand sustainable mobility options across the country by providing safe, green, accessible and efficient alternatives to car journeys. It also includes demand management and behavioural change measures to manage daily travel demand more efficiently and to reduce the journeys taken by private car.
- Ireland's Sustainable Mobility Policy (SMP) Action Plan 2026-2030: The National Sustainable Mobility Forum was held in May 2025 to engage with stakeholders regarding the new SMP action plan. The insights from the Forum are intended to inform the delivery of the new action plan. The Minister for Transport has stated that the action plan will be finalised for consideration by the Government following the conclusion of the National Development Plan review process and Budget 2026.

For further detail, please refer to the Planning Report and Statement of Consistency, prepared by BSM (2026) and Traffic and Transportation Assessment, prepared by Transport Insights (2026) submitted as part of the planning application under separate cover.

3.5 Regional Policy Context

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

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

The current RSES for the Region was published in 2019. The RSES' vision statement for the Region is as follows: *"To create a sustainable and competitive Region that supports the health and wellbeing of our people and places, from urban to rural, with access to quality housing, travel and employment opportunities for all."* (p. 6)

The RSES is based on three key principles:

1. *"Healthy Placemaking: To promote people's quality of life through the creation of healthy and attractive places to live, work, visit and study in;*
2. *Climate Action: The need to enhance climate resilience and to accelerate a transition to a low carbon economy recognising the role of natural capital and ecosystem services in achieving this;*

3. *Economic Opportunity: To create the right conditions and opportunities for the region to realise sustained economic growth and employment that ensures good living standards for all."* (p. 4)

In accordance with the requirements of the NPF, the RSES contains a Metropolitan Area Strategic Plan (MASP) for the Dublin Metropolitan Area (DMA), which includes 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 set out an integrated land use and transportation strategy for the sequential development of the DMA. It is stated that this strategy will be focussed on:

- "***Consolidation of Dublin City and suburbs***
- *Key towns of Swords, Maynooth and Bray [and]*
- *Planned development of strategic development areas in Donabate, Dunboyne, Leixlip and Greystones"* (p. 100, **emphasis** added by BSM).

The MASP seeks to focus housing delivery along high-quality public transport corridors (existing and planned) which have the capacity to accommodate significant development in an integrated and sustainable fashion. These include the 'Metrolink / LUAS Greenline Corridor (Metrolink/LUAS)', which is identified as having a potential long-term population capacity of 71,000:

"The proposed Metrolink project, subject to appraisal and delivery post 2027, will unlock significant long-term capacity in ***Swords-****Lissenhall and in South Fingal - Dublin Airport, subject to the protection of airport capacity and accessibility."* (p. 102, **emphasis** added by BSM)

In this context, Swords is characterised as a *Metropolitan Key Town* within the Eastern and Midland Regional Assembly RSES which pertains to towns that are "*large economically active service towns located within the Dublin Metropolitan Area, with high quality transport links and capacity for increased residential and employment densities at strategic nodes.*'

The Proposed Development represents the sequential growth of Swords and will be supported by the development of the enabling infrastructure. Metrolink Railway Order has been granted by ACP, and judicial reviews submitted regarding the project have since been withdrawn, paving the way for its delivery.

The Proposed Development seeks to connect to the existing section of the Mooretown Distributor Road via the School Access Road and the R125. The Mooretown Distributor Road is a planned single-carriageway distributor route, a section of which (c. 800 m) has already been constructed, as described in Section 18.3.5.

The full delivery of the Mooretown Distributor Road, including its extension to Brackenstown Road (L2030), is planned to provide a north–south link serving the Mooretown and Oldtown lands. These future sections will facilitate access to both the proposed residential development and the wider zoned lands identified under the Fingal Development Plan. The proposed project is consistent with the RSES and the Dublin MASP in that it will deliver high-quality residential development in an area identified for housing delivery. For further information, please refer to the Planning Report and Statement of Consistency, prepared by BSM (2026) and submitted as part of the planning application under separate cover.

3.5.2 Greater Dublin Area Transportation Strategy 2022-2042

The Greater Dublin Area Transport Strategy 2022-2042 prepared by the National Transport Authority (NTA) sets out the framework for investment in transport infrastructure and services over the next two decades to 2042. The overall aim of the Transport Strategy states- *"To provide a sustainable, accessible and effective transport system for the Greater Dublin Area which meets the region's climate change requirements, serves the needs of urban and rural communities, and supports the regional economy."* (p. 39) A key focus of the strategy is to enable increased use of other transport modes to meet environmental, economic and social objectives related to emissions, congestion and car dependency.

The strategy also provides the following strategy objectives:

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

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

- *Consolidation of development, to ensure more people live close to services and public transport, and to minimise urban sprawl and long distance commuting;*
- *Transit-oriented development to guide the growth of our cities and towns on the basis of accessibility;*
- *Mixed use development, to minimise travel distances between homes and local services, and to ensure vibrancy of urban areas;*
- *Filtered Permeability so that people can move about more easily by walking and cycling than by car;*
- *Development of schools to support sustainable transport use for the majority of trips, through appropriate location selection, site design and transport network development; and*
- *The prioritisation of walking, cycling and public transport in urban street networks, in tandem with high quality public urban spaces, through the Area Based Transport Assessment (ABTA) process.*

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

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

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

Please refer to the Traffic & Transportation Assessment prepared by Transport Insights (2026), that accompanies this planning application for further detail.

3.5.3 Fingal Development Plan 2023-2029 (as varied)

The subject site is located within the administrative are of Fingal County Council and is therefore subject to the land use policies and objectives contained within the Fingal Development Plan 2023-2029 (as varied) ('the Development Plan'). The Development Plan sets out an overall strategy for the proper planning and sustainable development of the functional areas of Fingal over a 6-year period. The Development Plan was created taking all relevant national and regional planning policy into account, including the NPF, NDP, and RSES.

Strategic Vision

The strategic vision of Fingal set out in the Development Plan, is as follows:

"*… This Plan will ensure the continued growth of the County in a sustainable way and ensure the County continues to develop as a series of well-serviced, well-connected towns, villages and communities and a low carbon economy….*" (p. 10).

The Development Plan is underpinned by five key cross cutting themes, including, climate action; healthy place-making and sustainable development; social inclusion; high-quality design and resilience; and a number of interlinked strategic objectives. Section 1.4 of the Development Plans sets out the 13 no. Strategic Objectives delivering the main aims of the Development Plan.

The following strategic objectives are of direct relevance to the future development of the subject lands:

Continue the development of a network of well-serviced, well-connected, sustainable neighbourhoods which have a range of facilities, a choice of tenure and universally designed adaptable house types, promote social inclusion and integration of all minority communities.

Ensure new residential development is of the highest quality, endorsing the principles of healthy placemaking, enabling life cycle choices and physical, community, recreation and amenity infrastructure are provided in tandem, to create sustainable, healthy, inclusive and resilient communities.

Ensure the highest quality of public realm and urban design principles are applied to all new developments, ensuring developments contribute to a positive sense of place and local distinctiveness of an area and facilitate the universal design approach into all developments.

The Proposed Development supports the achievement of these objectives through the delivery of a new residential community which is of a high-quality design, which is well-connected, provides high quality public and private open space and links to existing community uses, which will contribute to a sustainable community, within Swords, the administrative capital of Fingal County Council.

For a detailed list of the relevant policies and objectives please refer to the Planning Report and Statement of Consistency (BSM, 2026) submitted as part of this planning application.

Core Strategy

Chapter 2 of the Development Plan identifies the quantum, location and phasing of development for the Development Plan period that is consistent with regionally defined population targets and settlement hierarchy (derived from the RSES). It reflects the availability of existing services, planned investment, sequential development and environmental requirements.

Within the Development Plan, Swords is identified as a "Key Town" within the Core Strategy (Table 2.14 of the Development Plan).

Table 2.20 in the Development Plan defines the key town of Swords as follows:

"*Large economically active service and/or county towns that provide employment for their surrounding areas and with high-quality transport links and the capacity to act as growth drivers to complement the Regional Growth Centres*".

The Development Plan notes Swords' strategic location, strong connectivity to the national road network, the Dublin–Belfast Economic Corridor, and its links with Dublin Airport.

Overall, the Proposed Development has had careful regard to the policies and objectives contained within the Development Plan. In particular, the Proposed Development aligns with the following Core Strategy and Vision Policies and Objectives, some of which pertain to the Key Town of Swords:

"CSP1: Promote and facilitate housing and population growth in accordance with the overarching Core Strategy to meet the needs of current and future citizens of Fingal.

CSP2: Support the implementation of and promote development consistent with the National Strategic Outcome of Compact Growth as outlined in the NPF and the Regional Strategic Outcome of Compact Growth and Regeneration as set out in the RSES.

CSO6: Ensure the phased development of new housing areas in tandem with the delivery of physical and social infrastructure provision as identified within Local Area Plans or Masterplans, as informed by assessments carried out by the Planning Authority.

CSP18: *Promote residential development addressing the current shortfall in housing provision and meeting target guidance figures, through a co-ordinated planned approach to developing appropriately zoned lands at key locations, including regeneration areas, and vacant and underutilised sites.*

CSP26: Promote and facilitate the long-term consolidation and growth of Swords as a Key Town including the provision of key enabling public transport infrastructure, including MetroLink and BusConnects, in accordance with the relevant provisions of the NPF, RSES and the MASP.

CSP27: Support objectives to achieve a minimum of 30% of housing in the Key Town of Swords by way of compact growth through the identification of key sites for regeneration.

CSP30: Support the continued development of Swords as a vibrant Key Town with a thriving economy; an integrated public transport network; an attractive and highly accessible built environment with the highest standards of housing, employment, services, recreational amenities and community facilities."

In accordance with the aforementioned objectives, the Proposed Development will deliver 360 no. residential units and a crèche within the footprint of Swords and Environs. The Proposed Development forms the second phase of development at the Mooretown lands.

Land-use Zoning

The subject site is zoned 'RA – Residential', which, as per Chapter 13 of the Development Plan, has an overall objective to *"provide for new residential communities subject to the provision of the necessary social and physical infrastructure."* (p. 499). The vision for 'RA – residential' zoned lands is to *'ensure the provision of high quality new residential environments with good layout and design, with adequate public transport and cycle links and within walking distance of community facilities. Provide an*

appropriate mix of house sizes, types and tenures in order to meet household needs and to promote balanced communities.'

The areas to the north, east and south of the site are zoned 'RS – Residential', which refers to existing residential developments. To the west and north of the site is a portion of land zoned as 'CI -Community Infrastructure', this relates to the educational facilities that serve the area. North of the proposed site is zoned as 'OS – Open Space', this area is dedicated to the existing Rathbeale Archaeological Park. Error! Reference source not found. below shows the relevant land use zoning and objectives in the area surrounding the subject site.

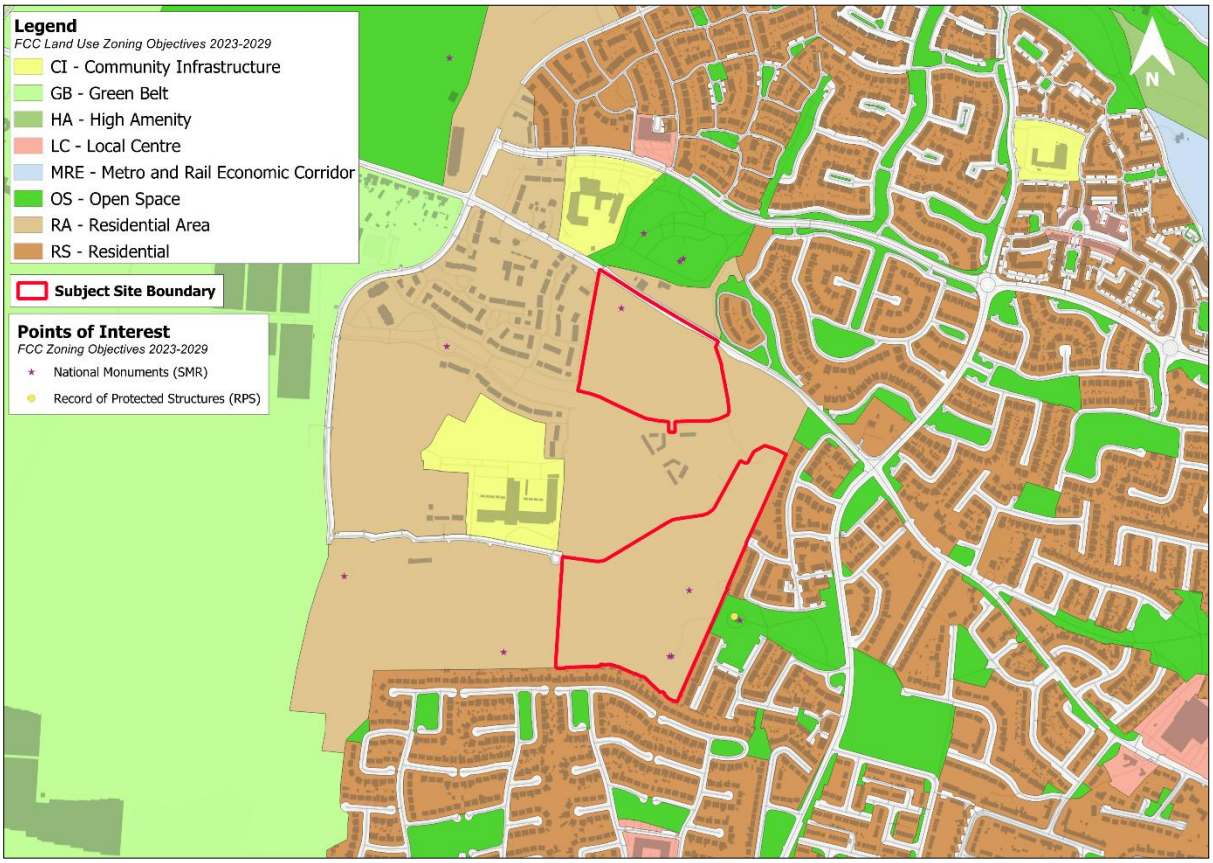


Figure 3.2 Map of land Use Zoning and Points of Interest (Architectural/Archaeological) for the Proposed Development (outlined in red) and surrounding FCC lands. (FCC Land use zoning Data ArcGIS online 2026, and BSM Annotations QGIS 2026).

There is a recorded monument located to the northwest of the site classified as a Field System (SMR number DU011-144004) as per Appendix 6 of the Development Plan. 'Archaeological Risk Zones' were first identified in the Oldtown-Mooretown LAP 2016-2020 (as extended) (now expired). These zones include Rathbeale Archaeological Park-Mooretown Section, Glasmore Green Archaeological Park and St Cronan's Well Archaeology Park.

For further details on archaeological heritage within the subject site, please refer to Archaeological Impact Assessment Report prepared by Courtney Deery (2026). Refer to Chapter 15 (Cultural Heritage, Archaeology and Architectural Heritage) of the EIAR.

Settlement and Housing

Chapter 3 of the Development Plan outlines the strategy for future settlement growth in Fingal through local context and housing policy, to promote *"successful placemaking and ensure quality housing within Fingal over the lifetime of this Plan and into the future."* (p.107).

The Proposed Development is fully aligned with the relevant residential policies and objectives set out in the Development Plan. The development provides for a mix of housing types, facilitating flexibility and adaptability to meet the diverse needs of current and future residents, including those of varying ages, mobility levels, and family compositions.

The Proposed Development has been designed to create an attractive, high-quality and sustainable residential environment, incorporating usable public and private open space, landscaping, and supporting infrastructure and amenities. The layout and architectural approach follow the Sustainable Residential Development and Compact Settlement Guidelines (2024), the Design Manual for Urban Roads and Streets (DMURS), and all updated national and local design guidance. A detailed Architectural Design Statement prepared by DG Architects (2026) submitted under separate cover and accompanies this planning application.

The proposal also ensures appropriate integration with transport infrastructure, facilitates walking and cycling, and supports public transport accessibility in accordance with policy requirements. A DMURS Statement of Consistency (2026), and a comprehensive Traffic and Transport Assessment (TTA) by Transport Insights has been prepared to demonstrate compliance with all movement and street layout objectives.

All residential units meet required development management standards, including floor areas, private open space, building height, and separation distances, in accordance with the Sustainable Residential Development and Compact Settlement Guidelines (2024).

The Proposed Development has been designed with regard to site capacity, infrastructure availability, and the ability of social and physical infrastructure to accommodate the future residential population. A Community and Social Infrastructure Report and Schools and Childcare Audit has been prepared by BSM (2026) and sets out existing and proposed social and community infrastructure in the area in accordance with the healthy placemaking policy of the Development Plan (SPQHP1).

Overall, the Proposed Development meets the overarching aims of achieving high-quality design, social inclusion, sustainable placemaking, housing mix, compliance with statutory standards, and integration with infrastructure, thereby aligning with all relevant residential policies and objectives of the Development Plan.

Connectivity and Movement

Chapter 6 of the Development Plan recognises that transport is essential to how people live and work. A key component of this plan is to "*deliver a sustainable transport network including key transport projects, new walking and cycling infrastructure, behavioural change initiatives and improved roads access.*

The Proposed Development is fully consistent with FCC's sustainable transport and mobility policies and objectives. It promotes a compact, well-connected urban form that encourages a shift towards more sustainable modes of transport, such as walking, cycling, and public transport. The location and layout of the development minimises the need for private vehicle travel and supports active and low-carbon mobility options. The proximity to the town centre of Swords and key public transport nodes encourages active travel and public transport use.

High-quality pedestrian and cycle infrastructure is prioritised throughout the scheme, promoting a highly permeable, safe and accessible space for people of all ages and abilities. The strategy provides active travel connections within the site and also enabling connections beyond the development site including public transport nodes and local amenities.

As part of the Proposed Development, a bus turning facility is proposed. The facility has been requested by the NTA to support the potential future provision of bus service(s) directly to the site. In addition, bus parking facilities are also proposed.

Climate Action

The Development Plan integrates the need to take climate action by stipulating a series of policies and objectives that support national and regional climate action goals and objectives, *"focusing on the various elements of mitigation and adaptation such as compact and sustainable settlement patterns, a resilient built environment, green infrastructure, energy efficiency and clean energy and sustainable transport*"

The Proposed Development demonstrates a clear commitment to climate action and environmental sustainability, aligning with the policies aimed at promoting climate resilience and low-carbon development in Fingal. It incorporates measures that support sustainable settlement patterns, and encourages a modal shift towards active and public transport.

Through its design and construction, the development includes climate mitigation and adaptation features that enhance its environmental performance and resilience. Building designs optimise the ingress of natural daylight/ sunlight to dwellings to provide good levels of natural light.

Adaptation strategies have been incorporated into the proposal to future-proof the development against climate-related risks. Please refer to the Climate Action & Energy Statement prepared by ENX (2026), submitted under separate cover and Chapter 12 (Climate) of the EIAR.

3.6 Local Planning Policy

The overall lands at Mooretown were previously subject to the Oldtown Mooretown Local Area Plan (2010-2016) (as extended to July 2020). The LAP included c. 111.5 ha of greenfield lands at the western edge of development in Swords zoned to provide residential communities. This LAP is now expired. The Mooretown lands subject of this Phase 2 development works within the Mooretown Framework Plan (prepared by BSM 2023), which set the non-statutory framework for Phase 1 and Phase 2 development.

3.7 Planning History

3.7.1 Local Authority Owned Lands

3.7.1.1 FCC Reg. Ref. LADP/002/24 (Mooretown Phase 1)

Under Section 179A of the Planning and Development Act 2000, in 2024, Fingal County Council achieved consent for a Local Authority owned housing development for Phase 1 development at the Mooretown Lands on Rathbeale Road, Mooretown, Swords, Co. Dublin.

The development comprises the construction of 274 residential units (187 no. houses and 87 duplex/apartments, 2-5 storeys) with a mix of 1–4 bed homes. It includes extensive landscaping with c.18,065 sq.m of open space, 8 no. pocket parks, and new pedestrian and cycle links.

The development was approved at a meeting of the elected representatives of Fingal County Council on 13th May 2024 and is currently under construction.

3.7.2 Surrounding Lands

3.7.2.1 FCC Reg. Ref. LRD0067/S3E (LRD & Amendments to Permitted Phase 2A, Phase 3 Extension)

Glenveagh Homes Limited applied for permission on 3rd November 2025 for a Large-Scale Residential Development (LRD), including permission for amendments to previously permitted developments (FCC Reg. Ref. F23A/0504) and ABP Ref. 313362-22, at these 2 no. sites totalling approximately 6.34 Ha in the townland of Mooretown, north-west of Swords, Co. Dublin.

Planning permission was sought for a mixed-use development ranging in height from 1 no. to 5 no. storeys that principally comprises: 381 no. residential dwellings of which 156 no. are houses and 225 no. apartment units, and 2 no. commercial units, and a childcare facility.

FCC granted permission on the 6th of January 2026.

3.7.2.2 FCC Reg. Ref. F25A/0585E (Extension of Duration for Oldtown Phases 2A, 2B and 2C)

Glenveagh Homes Limited applied for permission for development at these 3 no. sites with a combined site area of 1.2 Ha in the townlands of Oldtown and Rathbeale, north-west of Swords, County Dublin. The sites are identified as the remaining, undeveloped portions of the larger plots known as Oldtown Phases 2A, 2B and 2C. As part of the application, permission was also sought for amendments to the public open space permitted under Reg. Ref. F23A/0676 at Oldtown Phase 2C.

In total, across all 3 no. sites, permission was principally sought for 74 no. residential.

Development at the Phase 2A site primarily comprises: 2 no. 3-storey blocks with a total of 20 no. residential dwellings (10 no. 1-bed and 10 no. 3-bed) with a gross floor area of 1,758.0 sqm; access junction onto Westmill Lane; 3 no. pedestrian/cycle accesses onto Glen Ellan Road; 20 no. car parking spaces; changes to 6 no. existing car parking spaces at Glen Ellan Road to EV charging car parking spaces; cycle parking; bin stores; hard and soft landscaping, including communal amenity space and incidental planting; private amenity space as terraces and balconies; boundary treatments; and all associated works above and below ground.

Development at the Phase 2B site primarily comprises: 1 no. 3-storey block with a total of 12 no. residential dwellings (all 2-bed) with a gross floor area of 1,018.2 sqm; access junction onto Glen Ellan Road; pedestrian/cycle access onto Oldtown Avenue / Miller's Avenue; 12 no. car parking spaces; cycle parking; bin stores; hard and soft landscaping, including communal amenity space and incidental planting; private amenity space as terraces and balconies; boundary treatments; and all associated works above and below ground.

Development at the Phase 2C site primarily comprises: 2 no. 3-storey blocks with a total of 42 no. residential dwellings (all 2-bed) with a gross floor area of 3,563.7 sqm; 2 no. access junctions with, and integration into, the earlier stages of Phase 2C development (now known as the Granary); pedestrian/cycle access onto Glen Ellan Road, Rathbeale Road, and Oldtown Avenue / Miller's Avenue; 42 no. car parking spaces; cycle parking; bin stores; hard and soft landscaping, including amendments to public open space permitted under Reg. Ref. F23A/0676, communal amenity space and incidental planting; private amenity space as terraces and balconies; boundary treatments; sub-station; and all associated works above and below ground.

The development was granted on 22nd January 2026 by FCC with 10 no. directives alongside 28 no. conditions requiring, in summary, changes to unit types, various design elements, and layout; a crèche within Site 2C; as well as updated drawings and assessments. There is a total of 78 no. units granted as part of this permission.

3.7.2.3 FCC Reg. Ref. F23A/0504 (Phase 2A)

Gerard Gannon Properties applied for permission on 24th August 2023 for a residential development south of Rathbeale Road and to the North of Main Street and to the East of Mooretown Distributor Road (Western Distributor Link Road), Mooretown, Swords, Co. Dublin.

The Proposed Development comprised the construction of 96 no. residential units including 46 no. houses and 50 no. duplex units (25 no. apartment units and 25 no. duplex 'house' units) comprising 25 no. 1-bed units, 55 no. 3-bed units and 16 no. 4-bed units.

A total of 128 no. car parking spaces are proposed and 326 no. bicycle spaces located within external bike stores, landscaping, boundary treatments, public lighting, future pedestrian access to adjoining school lands and all associated site infrastructure are proposed.

Following a Request for Further Information issued by FCC on the 18th October 2023, permission was granted on 11th of June 2024.

3.7.2.4 FCC Reg. Ref F23A/0676 (Old town Phase 2C completion)

Gerard Gannon Properties applied for permission on 8th November 2023 for development on lands to the south of Glen Ellen Road, to the east of Miller's Avenue, north of Rathbeale Road, Oldtown, Swords, Co. Dublin.

The Proposed Development comprised of completing construction from a previously permitted application Reg. Ref. F11A/0473 and its 3 no. subsequent amendments/extensions (F19A/0101 (ABP Reg. Ref. 307003-20), F11A/0473/E1, and F11A/0473/E2).

Following a Request for Further information (RFI), FCC granted planning permission on 19th March 2024.

3.7.2.5 FCC Reg. Ref. F15A/0183/E2 (Phase 1- Watermill Park/Phase 1C Extension of Permission)

Gannon Properties applied for permission on 1st November 2023 to extend the duration of permission of FCC Reg. Ref. F18/0701 (amended by F18A/0791, F18A/0752, and F19A/0029) on lands south of Rathbeale Road, Mooretown, Swords, Co. Dublin.

The permission included for the construction of 190 no. houses and 60 no. apartments including 72 no. 4-bedroom houses, 15 no. 3-bedroom houses (3 storeys) and 103 no. 3 bedroom houses (2 storeys). The apartments are within 4 no. blocks consisting of 15 no. apartments comprising 4 no. 1-bed units and 11 no. 2-bedroom units.

Planning permission originally granted under F15A/0183 ceased to have effect on 18th March 2024 and an extension was sought until 18th March 2026.

FCC granted planning permission for the extension of duration on 8th December 2023.

3.7.2.6 FCC Reg. Ref. F18A/0701/E1 (Phase 1A Extension of Permission)

Gannon Properties applied for permission to extend the duration of permission for Mooretown Lands Phase 1A (FCC Reg. Ref. F18A/0701) and is the first of 3 no. planning applications to revise the parent

permission F15A/0183. The site is located on lands south of Rathbeale Road, east of Swords Western Distributor Link Road, and north of Watermill Park, Mooretown, Swords, Co. Dublin.

The permission included omission of 43 no. houses and 15 no. apartments (58 units in total) and the constructions of 39 no. houses and 60 no. apartments (99 no. units in total), a crèche of c. 352 no. sqm and 153 no. car parking spaces.

Planning permission originally granted under F18A/0701 ceased to have effect on 7th August 2024 and an extension was sought until 7th August 2026.

FCC granted permission for the extension of duration on 8th December 2023.

3.7.2.7 ABP-313362-22 & FCC Reg. Ref. SHD/012/21 (Phase 3 SHD)

Gannon Properties applied to An Bord Pleanala (ABP, now An Coimisiún Pleanála) for a Strategic Housing Development (SHD) on lands to the south of Rathbeale Road and to the north and south of Main Street, Mooretown Distributor Road, Celestica/Motorola Site, Swords, Co. Dublin.

The Proposed Development consisted of 650 no. units (265 no. houses and 385 no. apartments), a crèche facility and associated site works.

An Bord Pleanála granted planning permission for the SHD on 30th March 2023.

3.7.3 FCC Reg. Ref. F18A/0613 (Swords Community College and Primary school)

The Minister for Education and Skills applied for permission on 29th March 2018 for development of new school buildings on lands at Mooretown, off Rathbeale Road, Swords, Co. Dublin.

The development consists of 2 no. new school buildings with a total area of c. 15,913sqm including:

(1) Swords Community College – a new part 3, part 2 storey c. 11,397sqm post-primary school including a new sports hall, 2 no. classroom special needs units and ancillary pupil and staff facilities

(2) A new 2-storey primary school (c. 4,516sqm) with 24 no. classrooms, 2 no. special needs units, ancillary pupil and staff facilities and a GP hall.

The Proposed Development also includes for a total of 104 no. car parking spaces, landscaping, ball courts and soft play areas.

FCC granted planning permission on 26th June 2018, and both schools are constructed and operating.

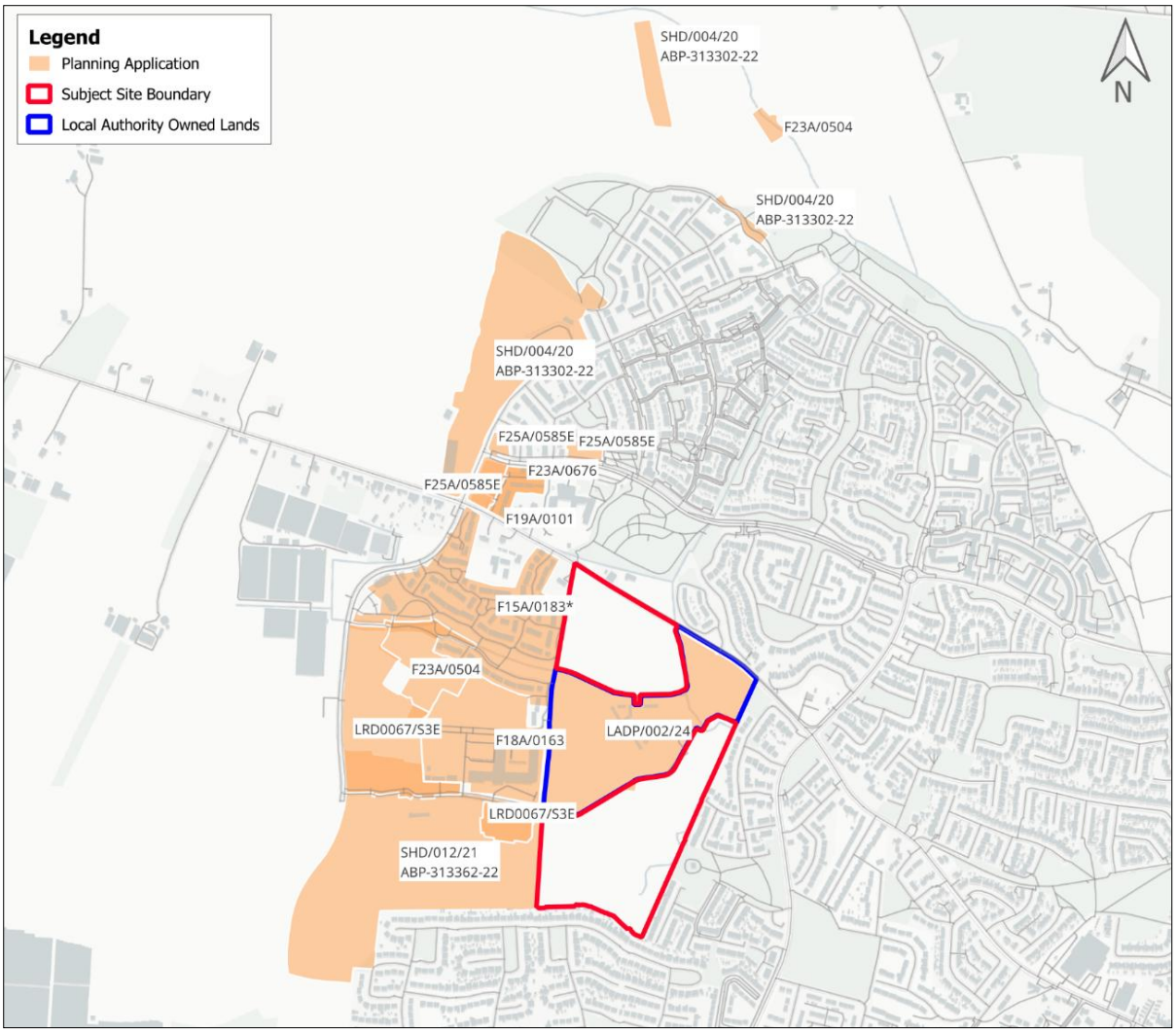


Figure 3.3: Map of planning history, shown in relation to the subject site (outlined in red) *please note in the Interest of clarity, F15A/0183 is the parent permission and subsequent amendments have taken place within the site boundary. (Source: Geohive DoHLGH, 2026 and QGIS BSM Annotations, 2026)

4 Consideration of Alternatives

4.1 Introduction

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

4.2 Legislation

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

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

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

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

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

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

4.3 Method

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

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

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

1. 'Do-Nothing' Alternative;

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

4.4 Do-Nothing Alternative

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

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

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

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

The latter scenario (b) is considered somewhat more likely, taking into consideration the policy context (including the zoning and development objectives for the lands under the Fingal Development Plan 2023-2029 and significant demand for housing in the area.

In the context of the ongoing housing crisis in the Dublin Metropolitan Area, the former scenario (a) is considered to represent an inefficient, uneconomical and socially suboptimal use of the Mooretown development lands. The opportunity cost, in this scenario, would include the 360 no. residential units proposed and the accommodation that these would otherwise provide.

The site is zoned as 'RA – Residential Area' with a zoning objective to *"provide for new residential communities subject to the provision of the necessary social and physical structure"*. The elements of the Proposed Development are in accordance with the zoning objective and permitted uses.

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

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

4.5 Alternative Locations

The site is zoned as 'RA – Residential Area' with a zoning objective to *"provide for new residential communities subject to the provision of the necessary social and physical structure*". The Proposed Development is in accordance with the Fingal zoning and development objectives, it is concluded that the site is suitable for the Proposed Development, which has been tailored to deliver site specific development objectives.

As stated in the EPA guidelines:

"Some locations have more inherent environmental sensitivities than others. Depending on the type of project and the range of alternatives which the developer can realistically consider, it may be possible to avoid such sites in favour of sites which have fewer constraints and more capacity to sustainably assimilate the project. It can be useful to ensure that a range of options, that may reasonably be available, are included in the evaluation." (*p. 35*)

[…]

"Clearly in some instances some of the alternatives described below will not be applicable – e.g. there may be no relevant 'alternative location'…" (*p. 33*)

At this location, the Proposed Development will deliver additional dwellings in a range of house types along with public and private open spaces and links to existing community facilities. It is considered that the site is entirely suitable for the nature of the Proposed Development, and it is not necessary to consider alternative locations or sites.

4.6 Alternative Layouts & Design

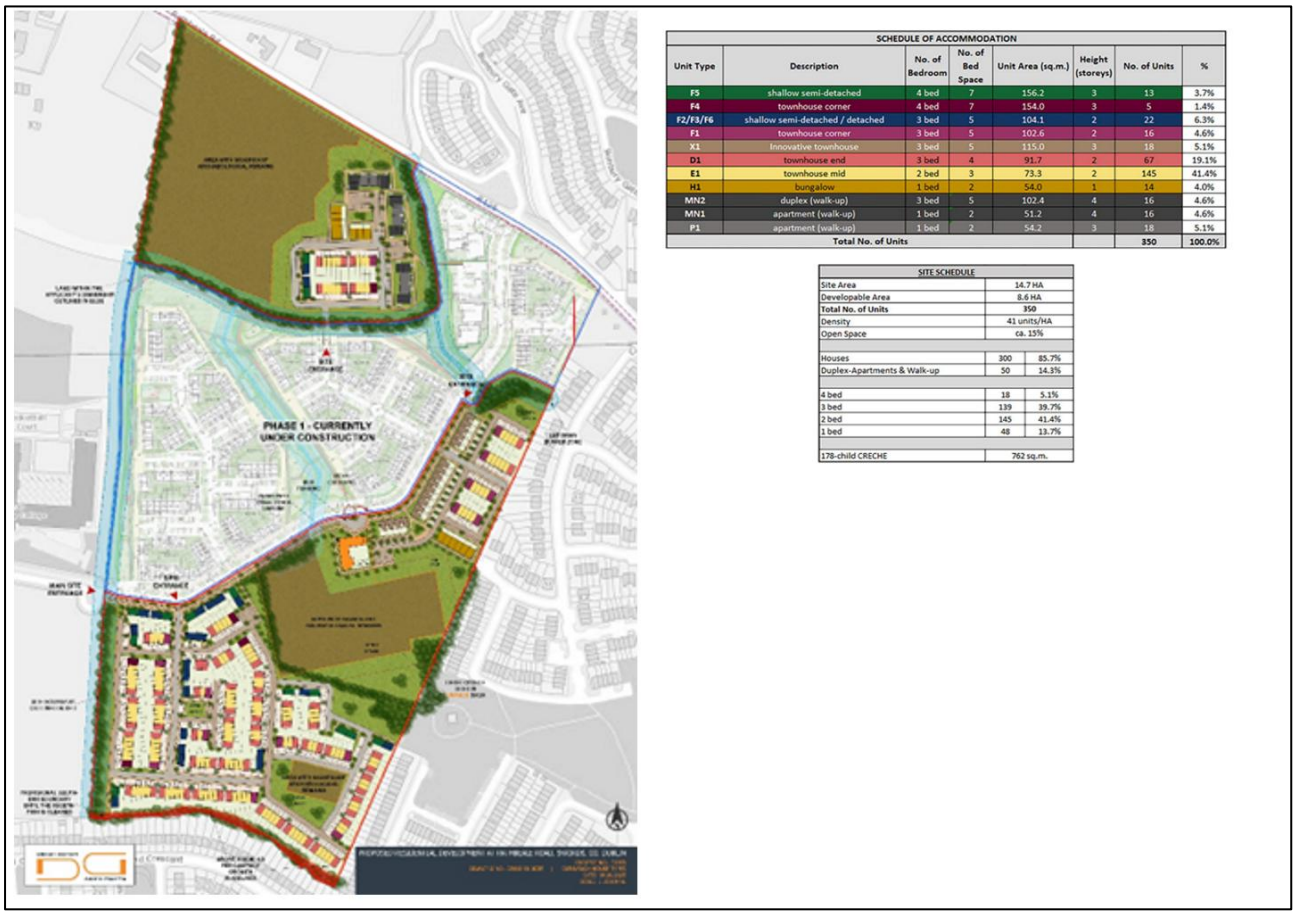
The evolution of the design and layout for the Proposed Development has been an iterative process which involved the entire design team. The design has undergone rigorous appraisal, which has led to a final layout that responds appropriately to the site characteristics, opportunities and constraints.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

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

4.6.1 Alternative A – Meeting with FCC post 09/06/2025

- 350 no. units @ 41.0 uph with 1 no. crèche
- Arranged to retain as many of the existing hedgerows and trees on the site as possible
- Provision to retain and incorporate the areas with significant archaeological remains within the open space strategy
- Urban edge in the form of 3-storey walk-up apartments to the north-east and innovative townhouses along a portion of the link street – stronger urban edge needed along full extent of link street
- Active travel routes proposed along the link street
- Dwellings orientated to passively survey public open spaces throughout the site and allowed for adequate distances between dwellings to limit overlooking
- Permeability within the scheme. Hierarchy of these routes needed further refinement and development
- Approximately 15% open space provided – minimum of 15% to be achieved
- Urban form and arrangement of site fragmented due to retention of all archaeological features – further investigation needed to determine if some may be recorded and removed to facilitate a more coherent urban design

- Consider locating higher scale apartment block along the link street to reflect Phase 1 currently under construction



SCHEDULE OF ACCOMMODATION

Unit Type	Description	No. of Bedroom	No. of Bed Space	Unit Area (sq.m.)	Height (storeys)	No. of Units	%
F5	shallow semi-detached	4 bed	7	156.2	3	13	3.7%
F4	townhouse corner	4 bed	7	154.0	3	5	1.4%
F2/F3/F6	shallow semi-detached / detached	3 bed	5	104.1	2	22	6.3%
F1	townhouse corner	3 bed	5	102.6	2	16	4.6%
X1	Innovative townhouse	3 bed	5	115.0	3	18	5.1%
D1	townhouse end	3 bed	4	91.7	2	67	19.1%
E1	townhouse mid	2 bed	3	73.3	2	145	41.4%
H1	bungalow	1 bed	2	54.0	1	14	4.0%
MN2	duplex (walk-up)	3 bed	5	102.4	4	16	4.6%
MN1	apartment (walk-up)	1 bed	2	51.2	4	16	4.6%
P1	apartment (walk-up)	1 bed	2	54.2	3	18	5.1%
Total No. of Units						350	100.0%

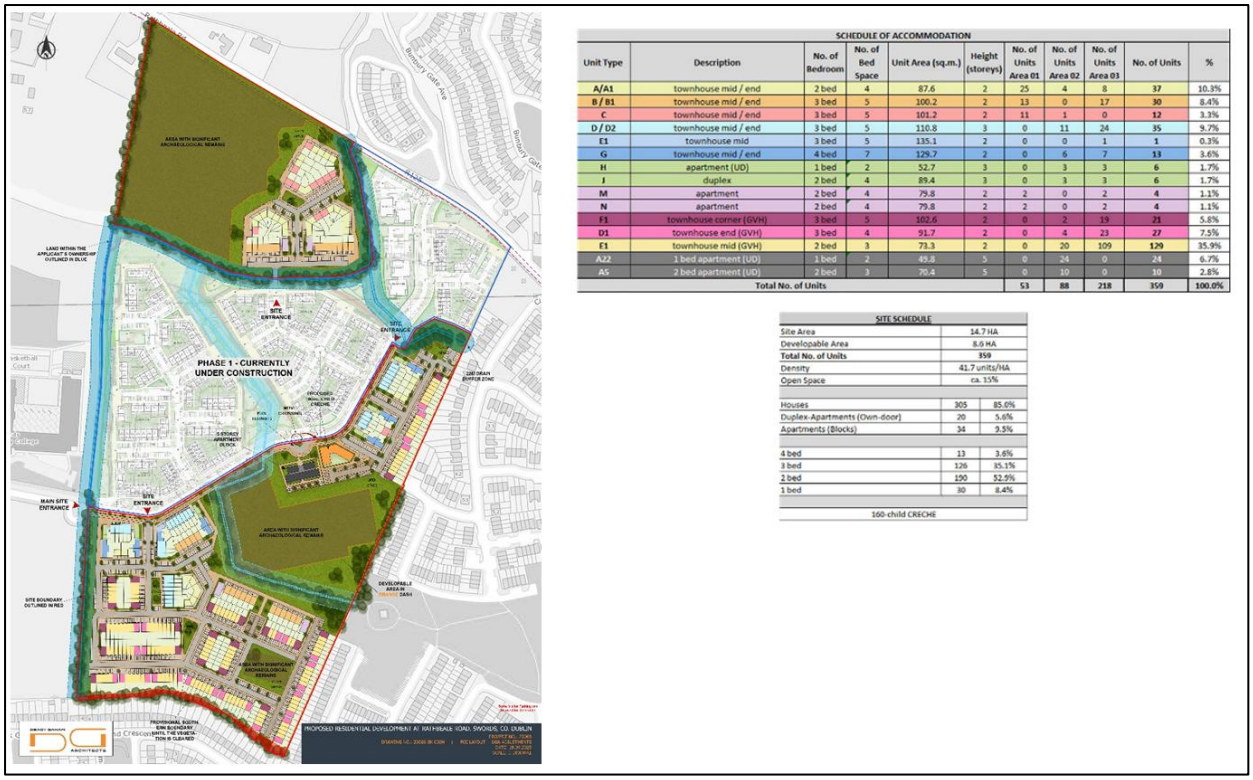
SITE SCHEDULE

Site Area	14.7 HA	
Developable Area	8.6 HA	
Total No. of Units	350	
Density	41 units/HA	
Open Space	ca. 15%	
Houses	300	85.7%
Duplex-Apartments & Walk-up	50	14.3%
4 bed	18	5.1%
3 bed	139	39.7%
2 bed	145	41.4%
1 bed	48	13.7%
178-child CRECHE	762 sq.m.	

Figure 4.1 Site Layout Dwg no. 23068_SK_003E (DG Architects, 2026)

4.6.2 Alternative B – Meeting with FCC post 19/09/2025

- 360 no. units @ 41.7 uph with 1 no. crèche
- Three-storey crèche and apartment block proposed along the link street
- Density increased to 41.7 uph
- More coherent urban form created with the introduction of Phase 1-unit types – greater variety of unit types
- Stronger edge provided along the link street in the form of 3-storey houses & duplex units and a 5-storey apartment block
- Quantity of open space retained (15%) – additional open spaces not within open space quantum provided
- Total of 579 no. car parking spaces provided – 2 no. spaces per 3/4 bed unit & 1no. space per 1/2 bed unit
- A clear hierarchy of active travel routes now proposed
- Transport Infrastructure Ireland (TII) was introduced to the project and indicated the need for a bus turning circle and bus stops - further refinement of these areas needed



SCHEDULE OF ACCOMMODATION

Unit Type	Description	No. of Bedroom	No. of Bed Space	Unit Area (sq.m.)	Height (storeys)	No. of Units Area 01	No. of Units Area 02	No. of Units Area 03	No. of Units	%
A/A1	townhouse mid / end	2 bed	4	87.6	2	25	4	8	37	10.3%
B / B1	townhouse mid / end	3 bed	5	100.2	2	13	0	17	30	8.4%
C	townhouse mid / end	3 bed	5	101.2	2	11	1	0	12	3.3%
D / D2	townhouse mid / end	3 bed	5	110.8	3	0	11	24	35	9.7%
E1	townhouse mid	3 bed	5	135.1	2	0	0	1	1	0.3%
G	townhouse mid / end	4 bed	7	129.7	2	0	6	7	13	3.6%
H	apartment (UD)	1 bed	2	52.7	3	0	3	3	6	1.7%
J	duplex	2 bed	4	89.4	3	0	3	3	6	1.7%
M	apartment	2 bed	4	79.8	2	2	0	2	4	1.1%
N	apartment	2 bed	4	79.8	2	2	0	2	4	1.1%
F1	townhouse corner (GVH)	3 bed	5	102.6	2	0	2	19	21	5.8%
D1	townhouse end (GVH)	3 bed	4	91.7	2	0	4	23	27	7.5%
E1	townhouse mid (GVH)	2 bed	3	73.3	2	0	20	109	129	35.9%
A22	1 bed apartment (UD)	1 bed	2	45.8	3	0	24	0	24	6.7%
A5	2 bed apartment (UD)	2 bed	3	70.4	3	0	10	0	10	2.8%
Total No. of Units						53	88	218	359	100.0%

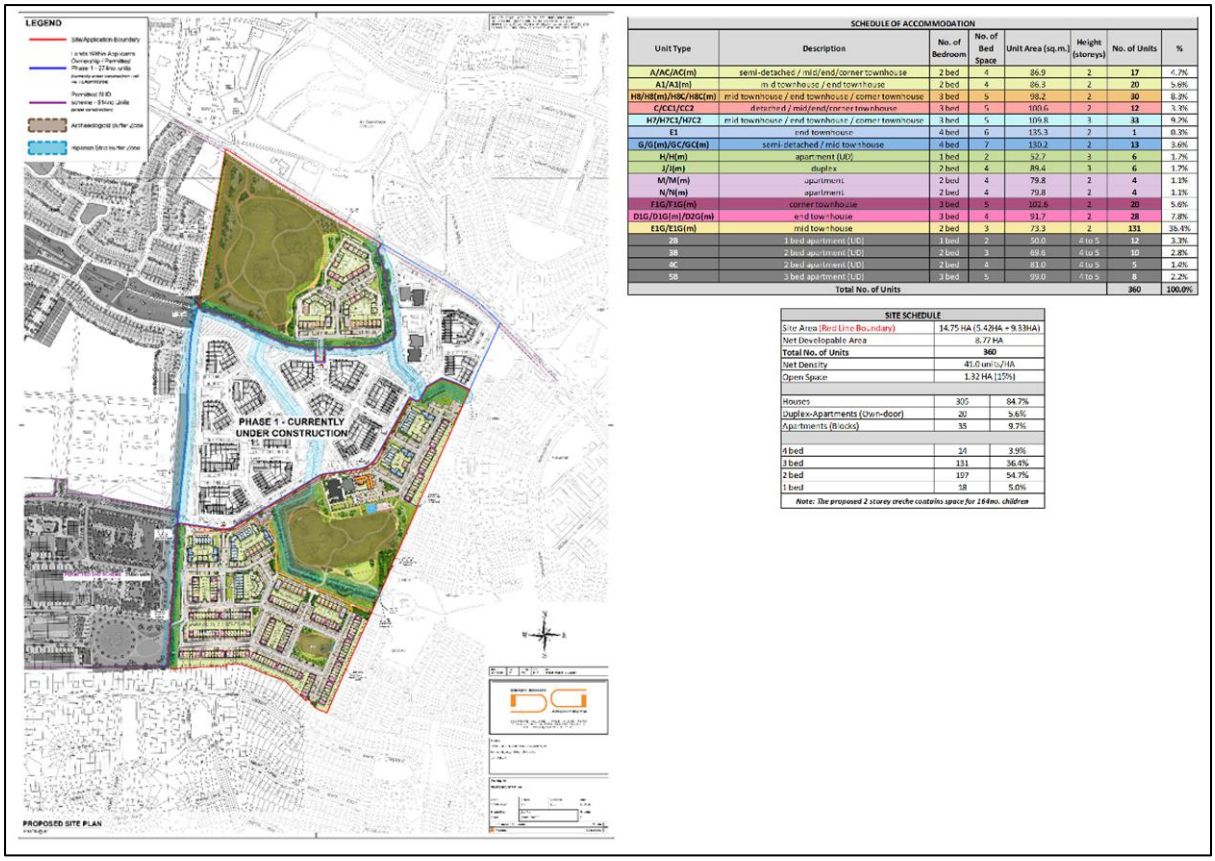
SITE SCHEDULE

Site Area	14.7 HA	
Developable Area	8.6 HA	
Total No. of Units	359	
Density	41.7 units/HA	
Open Space	ca. 15%	
Houses	305	85.0%
Duplex-Apartments (Own-door)	20	5.6%
Apartments (Blocks)	34	9.5%
4 bed	13	3.6%
3 bed	126	35.1%
2 bed	190	52.9%
1 bed	30	8.4%
160-child CRECHE		

Figure 4.2 Site Layout Dwg no. 23068_SK_003H (DG Architects, 2026)

4.6.3 Alternative C – Meeting with FCC post 04/03/2026 – Final Layout

- 360 no. units @ 41.0 uph with 1 no. crèche;
- Paths shown within archaeological features redesigned to avoid any encroachment on the feature or buffer area;
- Overall cohesive arrangement of active travel routes between Phase 2 and Phase 1, and the adjacent developments;
- Further amendments to the urban edge made along the link street: 4- to 5-storey apartment block and 2-storey pitched roof crèche proposed to tie into the scale along the link street from Phase 1
- Total of 580 no. car parking spaces provided – includes 72 no. visitor spaces, 19 no. accessible spaces and 17 no. EV spaces;
- The bus turning circle has been re-located further west along the link street – this provides a more receptive environment for cyclists and pedestrians within the community;
- Additional communal open spaces provided for the apartment block and duplex apartments – semi-private spaces;
- Further amendment of apartment block – larger quantum of bike parking spaces.



SCHEDULE OF ACCOMMODATION

Unit Type	Description	No. of Bedroom	No. of Bed Space	Unit Area (sq.m.)	Height (storeys)	No. of Units	%
A/AC/AC(m)	semi-detached / mid/end/corner townhouse	2 bed	4	86.9	2	17	4.7%
A1/A1(m)	m d townhouse / end townhouse	2 bed	4	86.3	2	20	5.6%
H8/H8(m)/H8C/H8C(m)	mid townhouse / end townhouse / corner townhouse	3 bed	5	98.2	2	30	8.3%
C/CC1/CC2	detached / mid/end/corner townhouse	3 bed	5	100.6	2	12	3.3%
H7/H7C1/H7C2	mid townhouse / end townhouse / corner townhouse	3 bed	5	109.8	3	33	9.2%
E1	end townhouse	4 bed	6	135.3	2	1	0.3%
G/G(m)/GC/GC(m)	semi-detached / mid townhouse	4 bed	7	130.2	2	13	3.6%
H/H(m)	apartment (UD)	1 bed	2	52.7	3	6	1.7%
J/J(m)	duplex	2 bed	4	89.4	3	6	1.7%
M/M(m)	apartment	2 bed	4	79.8	2	4	1.1%
N/N(m)	apartment	2 bed	4	79.8	2	4	1.1%
F1G/F1G(m)	corner townhouse	3 bed	5	102.6	2	20	5.6%
D1G/D1G(m)/D2G(m)	end townhouse	3 bed	4	91.7	2	28	7.8%
E1G/E1G(m)	mid townhouse	2 bed	3	73.3	2	131	36.4%
2B	1 bed apartment (UD)	1 bed	2	50.0	4 to 5	12	3.3%
3B	2 bed apartment (UD)	2 bed	3	69.6	4 to 5	10	2.8%
4C	2 bed apartment (UD)	2 bed	4	81.0	4 to 5	5	1.4%
5B	3 bed apartment (UD)	3 bed	5	99.0	4 to 5	8	2.2%
Total No. of Units						360	100.0%

SITE SCHEDULE

Site Area (Red Line Boundary)	14.75 HA (5.42HA + 9.33HA)	
Net Developable Area	8.77 HA	
Total No. of Units	360	
Net Density	41.0 units/HA	
Open Space	1.32 HA (15%)	
Houses	305	84.7%
Duplex-Apartments (Own-door)	20	5.6%
Apartments (Blocks)	35	9.7%
4 bed	14	3.9%
3 bed	131	36.4%
2 bed	197	54.7%
1 bed	18	5.0%

Note: The proposed 2 storey creche contains space for 164no. children

Figure 4.3 Site Layout Dwg no. 23068_P_003E Proposed Site Plan (DG Architects, 2026)

4.7 Alternative Processes

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

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

4.8 Alternative Mitigation Measures

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

5 Description of the Proposed Development

5.1 Introduction

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

5.2 Site of the Proposed Development

The overall site of the Proposed Development is a greenfield site located within the townland of Mooretown, Swords in County Dublin. The site is situated generally to the west of Swords town centre (c. 2.5km), north of Dublin airport (c.4km) and Dublin City Centre (c. 20km). This application for residential development forms Phase 2 of the Mooretown lands (Phase 1 is under construction as per FCC Reg. Ref. LADP/002/24), under the ownership of Fingal County Council.

Phase 1 comprises 274 no. residential units on a total site area of c.9.35 ha, and a net developable area of c.7 ha., and combined now with Phase 2 Proposed Development of 360 no. residential units, brings a total development of 634 no. residential units to this important landbank (overall total site area c.24.1 ha) in the Oldtown-Mooretown area, west of Swords Town Centre.

The overall site is located south of Rathbeale Road (R125) and bound by several established residential communities including Cian Lea and Lioscain to the east and Swords Manor and Ormond Crescent to the south. The existing residential surrounds are largely characterised by detached, semi-detached and terrace dwellings of two to three storeys. To the west, the site adjoins Swords Community College, Cronan's Well Park housing and several permitted development schemes, some currently under construction.

The site of the Proposed Development is divided into two parcels of land, see Figure 5.1, which are located to the north and south of the current Mooretown Phase 1 residential development (Planning Ref. LADP/002/24), currently under construction by Glenveagh Homes Ltd. Chapter 22 of this EIAR addresses all cumulative impacts associated with proposed and permitted developments in the surrounding area and provides a description for each development.

The northern parcel is immediately opposite to the established Rathbeale Archaeological Park located along Rathbeale Road (R125). The eastern border of this parcel is enclosed by the Mooretown Phase 1 development, and the western border broadly comprises a residential estate (Cronan's Park).

The southern parcel is bordered by residential developments, Cianlea and Ormond Crescent, with a permitted development (Planning Ref SHD/012/21), currently under construction located to the west. Glasmore Abbey ruin is also situated to the east serving as open space to the surrounding residences. St Cronan's well (a natural spring) is located within the southern site, which once provided water to the Glasmore Abbey ruins located outside the eastern border of the site. Both the northern and southern parcels contain archaeological remains, which will be retained as open space for the development.

The site is characterised by agricultural land criss-crossed by hedgerows and drainage ditches. The existing drainage ditches form isolated low points within the site, supporting natural, gravity-based

surface water runoff. Vegetation across the lands is dominated by a network of established hedgerows marking historic field boundaries and drainage channels.

Figure 5.1 Site of the Proposed Development (redline boundary).

5.3 Need for the Proposed Development

The development of the proposed site is supported by national, regional and local policy and guidance documents, as detailed in Chapter **Error! Reference source not found.** (Planning and Development Context) and in the Planning Report and Statement of Consistency prepared by Brady Shipman Martin (2026) and submitted under separate cover as part of the planning application pack. In summary:

- The Government's National Planning Framework (NPF) (2018) predicts that there will be a need for at least half a million additional homes in Ireland by 2040, in order to meet the needs of our growing population. In order to promote sustainable development, the NPF sets out a policy of compact growth, targeting 40% of new housing development within and close to the existing footprint of built-up areas. The National Planning Framework (NPF), published in 2018 has been revised and updated to take account of changes that have occurred since it was published in 2018 and to build on the framework that is in place. The final revised and approved NPF was published on 8th April 2025. The revised NPF identifies that, as per updated projections, the population of Ireland will increase to approximately 5.7 million by 2030 and to 6.1 million by 2040, which is an increase of 250,000 people over that planned for in 2018. The scale of growth that is projected in Ireland to 2040 coupled with the need to transition to a lower carbon society requires an increased delivery of housing and the improved integration of land use and transport;
- More recently (2025), the Government's housing plan, Delivering Homes, Building Communities 2025-2030, targets the delivery of 300,000 new homes, coupled with greater provision of affordable and social housing;
- The Eastern and Midland Regional Assembly Regional Spatial and Economic Strategy 2019 – 2031 (RSES) targets the delivery of at least 50% of all new homes within or contiguous to the built up area of Dublin City and suburbs, with at least an additional 30% being delivered in other urban areas in the Region – which takes in Counties Longford, Westmeath, Offaly, Laois, Louth, Meath, Kildare, Wicklow and Dublin. The Proposed Development will contribute to the achievement of the population growth targets in the RSES, by providing a high-quality new residential development on lands zoned for this purpose by the Local Authority (Fingal County Council);
- Under the Fingal Development Plan 2023-2029 the Swords area is identified as the 'County Town' for Fingal and has been identified by RSES as a 'Key Town' contributing to the Dublin Metropolitan Area. As highlighted within the Development Plan, Swords is the primary focus of the Settlement Strategy to be a focal point for 'compact growth and enhanced public realm in the town centre along with the planned sequential development of Swords' (pg 51);
- Under the Development Plan, the site of the Proposed Development is predominantly zoned as 'RS – Residential' area with the corresponding zoning objective to *"provide for new residential communities subject to the provision of the necessary social and physical infrastructure"*

5.4 Characteristics of the Proposed Development

5.4.1 Overview of the Proposed Development

The Proposed Development is a residential development, representing Phase 2 of the wider development on the Mooretown lands, Swords, County Dublin and in summary plans to deliver:

- 360 no. residential units comprised of: 305no. houses and 55 no. apartment/duplex units (ranging from 2- to 5- storeys). Accommodation will be a mix of terrace, semi-detached and detached with varying 1- to 4-bedroom units;
- a 2-storey crèche unit (c. 670 sq.m);
- 580 no. car parking spaces (including 17 no. EV charging spaces);
- 1,009 no. cycle parking spaces will be provided;
- 1,070 sq.m of communal space;
- open space to include three public parks (Rathbeale Archaeological Park South, Glasmore Park and St. Cronan's Park;
- All associated enabling site works.

New pedestrian/cycle links, road improvements, storage services (including water, wastewater, electricity and telecommunications) and plant areas will be included. Landscaping will include communal amenity spaces, SuDS features, and a significant public open space, including outdoor exercise and play equipment.

Please refer to the Planning Report and Statement of Consistency prepared by Brady Shipman Martin (2026) and submitted under separate cover for further details of the Proposed Development.

The proposed site layout, designed by Deady Gahan Architects (DG Architects), is shown in Figure 5.2 below. Figure 5.3 and Figure 5.4 shows the Proposed Development at each land parcel. Detailed architectural design drawings prepared by DG Architects (2026) have been submitted under separate cover as part of the planning application.

Figure 5.2 Proposed Site Layout – Drawing No. 23068/P/003E (Architectural Drawings prepared DG Architects, 2026)

Figure 5.3 Proposed Site Layout – Northern Parcel – Drawing No. 23068/P/003F (Architectural Drawings prepared DG Architects, 2026)

Figure 5.4 Proposed Site Layout – Southern Parcel – Drawing No. 23068/P/003G (Architectural Drawings prepared DG Architects, 2026)

5.4.2 Detailed Project Description

The Proposed Development has an overall area of c. 14.75 ha of land zoned for residential at Mooretown. Swords, Co. Dublin. The Proposed Development will be accessed via a link road from the permitted residential development of Mooretown Phase 1 (Planning Ref. LADP/002/24) located in the

centre of the overall site, which is accessed via Rathbeale Road (R125) and further access to the west will be possible via the Mooretown Western Distributor Road.

The Proposed Development will consist of the construction of a residential development, which is a continuation of permitted Mooretown Phase 1 lands (FCC Planning Ref. LADP/002/24), and represents Phase 2 of the wider development of the Mooretown Lands, ranging in height from 2- to 5-storeys to accommodate 360 no. residential dwellings at 41 units/ha (305 no. houses and 55 no. apartments/duplex mix) and public open space. The site will accommodate 580 total no. car parking spaces, 1,009 total no. cycle parking spaces, pedestrian cycle links, road connectivity enhancements, storage, services and plant areas. Landscaping will include significant public open space. The Proposed Development will consist of:

- The construction of 360 no. new residential dwellings consisting of 305 no. houses and 20 no. own-door duplex units and 35 no. apartments set out as follows:
  - 305 no. 2- and 3-storey houses (168 no. 2 beds, 123 no. 3 beds, & 14 no. 4 beds);
  - 20 no. own-door duplex units (6 no. 2-storey 2-bed units over 6 no. 1-bed ground floor apartments, and 4 no. 2-bed apartments over 4 no. 2-bed apartments);
  - 35 no. apartment units arranged within 1 no. 4-5 storey block, with balconies on all elevations, green roofs and external amenity areas (12 no. 1-bed units, 15 no. 2-bed units, & 8 no. 3 bed units);
- Construction of a two-storey crèche (c. 670 sq.m) located at the centre of the Proposed Development;
- Provision of c. 15% Class 2 open space including playgrounds, Multi-Use Games Area (MUGA), and natural play areas in addition to ancillary open space areas, and Class 1 open space area of c. 2.9 ha.
- Provision of a total of 580 no. car parking spaces (combination of residential spaces, in-curtilage and on-street and visitor parking) including 17 no. EV charging spaces.
- Delivery of 1,009 no. cycle spaces (including 72 no. spaces for the proposed crèche)
- All site enabling and development works, landscaping works, PV panels, bins stores, plant, storage, boundary treatments, ESB substations, lighting, servicing, signage, and all site development works above and below ground.
- Associated site and infrastructural works including provision for water services, foul and surface water drainage and associated connections to the permitted Mooretown Phase 1 water & wastewater infrastructure (permitted under Planning Ref. LADP/002/24), and Sustainable Urban Drainage Systems (SuDS), including permeable paving, green roofs and swales.

5.4.3 Water Infrastructure

For a detailed description of the proposed water infrastructure, refer to the Infrastructure Report prepared by AKM Design Group (2026) and submitted under separate cover as part of the planning application. The proposed water infrastructure for this development is largely facilitated by the permitted Phase 1 development (under construction) and capacity to accommodate the Proposed Development has been incorporated into the Phase 1 design.

5.4.3.1 Drainage Strategy - Construction Phase

Construction activities have potential to give rise to sediment-laden runoff, accidental spillage of fuels or chemicals, and contamination from concrete works if not appropriately managed. Accordingly, a precautionary approach will be adopted throughout the construction phase.

As set out in the Surface Water Management Plan (SWMP) prepared by AKM Design Group (2026), surface water management measures will be implemented from the outset of site establishment. Clean and dirty water will be segregated where practicable. Surface runoff from undisturbed or vegetated areas will be diverted around active construction zones using temporary berms or diversion drains. Temporary drainage controls will include silt fencing, settlement basins, silt traps, check dams and temporary attenuation features. Pumped water arising from excavations will be discharged only after passing through settlement tanks or appropriate filtration systems. No direct discharge of untreated construction runoff to watercourses will occur. Settlement measures will be inspected daily during periods of active earthworks and following significant rainfall events. Where silt accumulation reaches approximately 50% of settlement capacity, removal and appropriate disposal will be undertaken. In the event that turbid discharge is observed, pumping operations will cease immediately pending corrective action.

Permanent drainage infrastructure, including attenuation systems and Sustainable Drainage Systems (SuDS) components, will be installed at an early stage within each sub-phase in accordance with the approved drainage strategy. Permanent systems will be protected from compaction and sediment ingress during construction.

The works adjacent to the existing ditches increase the risk of pollution of the watercourses. To mitigate the risk of oil spillages and sediment discharge to adjacent watercourses, all plant and machinery operating in proximity to watercourses will be subject to enhanced environmental protection measures. Where works are being carried out adjacent to drainage ditches, plant will be positioned on drip trays with bunded surrounds, or on a similar approved impermeable containment system, to prevent hydrocarbons or other contaminants from entering the receiving environment.

Silt traps and protection curtains / nets, or similar methods to prevent silt, debris, and other material, from falling into the river during construction activity shall be employed. All works in or near watercourses will be carried out in line with the “Guidelines on the protection of fisheries during construction works in and adjacent waters” as published by Inland Fisheries Ireland in 2016 or as updated prior to construction works. The Project Supervisor Construction Stage (PSCS) will oversee implementation of water protection measures and will maintain inspection records throughout the construction phase. Discharge points will be identified on site drawings and agreed with the Engineer prior to commencement of pumping activities.

5.4.3.2 Surface Water Drainage

The site is divided by existing drainage ditches which flow from the east and west into the site before combining within Phase 1 development to flow north under Rathbeale Road and through Rathbeale Archaeological Park to discharge into the Broadmeadow River. The existing drainage ditches form isolated low points within the site. Infiltration characteristics are poor throughout the site.

The details of the surface water drainage strategy are contained in the Infrastructure Report prepared by AKM Design Group (2026).

As detailed in the engineering report the surface water drainage for the Proposed Development will utilise SuDS features to intercept all surface water runoff, including permeable paving, bioretention systems and swales. The proposed drainage strategy for the site will be designed to comply with the Fingal County Council Green/Blue Infrastructure for Development Guidance Note and the CIRIA SUDS Guide for best practice.

As per the Infrastructure Report, the site is divided into 4 no. drainage sub-catchments each designed with respect to the 3no. drainage sub-catchments under construction within Phase 1. Prior to discharge to the public network, each catchment is provided with a flow control to limit discharge of runoff during major storm events and promote utilisation of the SUDS components within each catchment area. These SUDS components will provide treatment via filtration, infiltration, evapo-transpiration and long-term storage of runoff from major storm events to minimise the impact of the development on the downstream receiving network.

The main sources of runoff are identified as green space (private gardens), soft landscaping (public spaces), roofs, hard landscaping, parking and roads. Swales are proposed to manage excess run off from open space. Runoff from roofs will be drained via permeable paving and towards vegetated zones at the property's front. For extreme events there will be an overflow connection to the main conveyance drainage network. Water runoff from hard landscaped areas and roads will be channelled to edge drainage systems and SuDs features.

A Flood Risk Assessment (FRA) was carried out by AKM Design Group (2026) and is submitted with this planning application. The key findings and conclusions of the FRA are summarised in Chapter 2 (EIA Process) in Section 2.6 (Other Assessments). Refer also to Chapter 10 (Hydrology and Hydrogeology).

5.4.3.3 Foul Water Drainage

As detailed in the design reports, the proposed foul network for the site is to be integrated into the Phase 1 network, currently under construction. Capacity has been built into Phase 1 to support the Proposed Development.

As per the design report, the foul drainage network will comprise of 2 no. catchments. The 53 no. units contained in the northern parcel of the Proposed Development will connect via gravity to the foul pump station currently under construction as part of the Phase 1 works. The pump station will discharge via the gravity foul network within Phase 1. The southern parcel of the Proposed Development will connect via gravity via 4 no. connections to the Phase 1 pipe network which connects to the public network west of the site in the Cronan's Well estate. Capacity for all Phase 2 units has been incorporated into designing Phase 1, including the Phase 1 permitted pump station.

5.4.4 Water Supply

Water supply to the Proposed Development will be provided through 5 no. 150mm dia. connections to the Phase 1 water distribution network. These connections and capacity were allowed for in the design of the Phase 1 network.

Hydrants shall comply with the requirements of BS 750:2012 and shall be installed in accordance with Uisce Eireann's Code of Practice and Standard Details and TGD Part B. Refer to Figure 5.5 and the design drawings prepared by AKM Design Group (2026) for further detail on watermain connections and hydrant locations.

Figure 5.5 Proposed watermain connection for northern parcel – Drawing no. 25051-AKM-XXXX-XX-DR-C01-300008 (Source: AKM Design Group, 2026).

5.4.5 Landscaping and Open Space

The Proposed Development includes a landscape-led layout with a significant proportion of the site provided as public open space (c. 15% of the site). This is primarily influenced by the presence of archaeological constraints and existing hedgerows, which are retained and integrated into the scheme.

Three principal areas of public open space are proposed across the site. These comprise a large public park area (Rathbaele Archaeological Park South) to the north along Rathbeale Rd across from the existing archaeological park, and two additional open space areas (Glasmore Park and St. Cronan's Park) located to respond to archaeological constraints and retained landscape features in the southern portion of the site. These spaces will provide a mix of passive and active recreational opportunities.

Existing hedgerows are retained where feasible and incorporated as part of the site's green infrastructure, defining boundaries and contributing to the overall landscape structure. Additional native planting is proposed throughout the development.

Landscaped areas will include footpaths, seating, and natural play opportunities. Sustainable Drainage Systems (SuDS) features are also incorporated within the open space where required. For further detailed regarding the proposed landscaping refer to the Landscape and Green Infrastructure report prepared by SRLA (2026) and submitted under separate cover.

5.4.6 Incorporated Design Mitigation

The Proposed Development incorporates comprehensive individual and specific measures that are required by legislation, regulations and guidelines, by Fingal Development Plan 2023-2029 and by applicable standards and construction best practices that are generally required for Proposed Developments of this nature.

The design of the Proposed Development has evolved through a process of design iteration, with particular emphasis on minimising the potential for environmental impacts, where practicable, whilst ensuring that the objectives of the Proposed Development are attained and that the environment of the completed development is enhanced insofar as possible.

While these design measures are inherent in the design development of the Proposed Development, appropriate mitigation is also detailed in the relevant chapters of this EIAR where likely significant environmental effects have been identified during the environmental impact assessment process.

5.5 Construction Phase

A Construction and Environmental Management Plan (CEMP) has been prepared in respect of the Proposed Development by AKM Design Group (2026) (refer to standalone document submitted under separate cover). It contains best practice measures and protocols to be implemented during the construction phase of the Proposed Development to avoid / minimise environmental impacts.

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

5.5.1 Construction Methodology

5.5.1.1 General Construction Measures

Initial works will include an archaeological watching brief, geotechnical investigations and ecological preparation works, including the establishment of tree protection measures and ecological mitigation measures where required. These activities will be followed by site clearance and enabling works.

Internal service infrastructure works will proceed in tandem or in phased sequence as appropriate. The main building works will comprise substructure works, followed by superstructure construction, and subsequently external works and finishing works to complete the development.

The construction phase of the Proposed Development will include the following elements:

- Site establishment and enabling works;
- Sub-structure and superstructure works;
- Fit-out and finishes

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

Site Establishment and Enabling Works

Site establishment and enabling works will include, but will not be limited to, the securing of the site boundary and the erection of appropriate fencing or hoarding to prevent unauthorised access. This will also include establishment of the main construction compound and welfare facilities. The compound will include welfare facilities, site offices, material storage areas and designated fuel storage zones.

Wheel wash facilities will be installed at the site entrance as required to maintain cleanliness of adjoining public roads. Security arrangements will include the provision of a gateman during daytime activities and appropriate security measures during out-of-hours periods.

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

- Existing live services within the site will be identified, isolated and, where feasible, removed in consultation with the relevant utility providers. All service terminations will be carried out in accordance with statutory requirements and utility provider specifications
- Engagement with statutory service and utility providers will commence at an early stage of the detailed design process to facilitate appropriate planning and coordination of infrastructure connections. All works associated with service connections will be carried out in accordance with the requirements of the relevant utility providers and the Local Authority;
- Prior to the commencement of any works within the site or at its boundaries in relation to service connections, a desktop study will be undertaken to identify existing utility infrastructure. This will be followed by on-site investigations, which may include trial holes, slit trenching and CAT scanning to confirm the precise location and depth of existing services;
- Temporary power and water services will be arranged to facilitate site accommodation and welfare facilities. The site compound (as identified in the accompanying CEMP and also Section 5.5.2) will be established in a location that minimises interference with the progression of the main construction works and will generally be positioned in proximity to the site entrance;
- Protected trees identified for retention will be secured in advance of construction works. Appropriate protective fencing will be installed to safeguard both the tree canopy and root

protection areas, in accordance with the recommendations of the appointed Arborist and Ecological specialist. Following the establishment of tree protection measures, trees identified for removal, together with associated scrub and vegetation, will be clearly marked and removed in accordance with the approved arboricultural strategy;

- The site perimeter will be secured with appropriate hoarding or fencing to prevent unauthorised access. Construction activities will be managed to control noise levels and to minimise disruption to adjoining properties and local residents;
- Establishment of temporary drainage and sediment control measures will also be undertaken;
- Where feasible, the use of shared service corridors and single trench installations for multiple utilities will be adopted in order to reduce excavation works and limit ground disturbance. Utility infrastructure will also be designed, where appropriate, to allow for future capacity and potential expansion of the development.
- All topsoil stripping associated with the Proposed Development area will be monitored by an archaeologist under licence from the National Monuments Service of the DoHLGH. 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.

Sub-structure and Superstructure Works

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

- Overall substructure works will generally comprise the excavation of foundations to the required depth and width, followed by installation of concrete foundations in accordance with the structural design. Underground drainage and service ducting will be installed concurrently where practicable, including excavation, pipe laying, testing and backfilling to the required standards. Incoming services will be coordinated and installed in a structured sequence to minimise rework and to maintain site efficiency. Ground-bearing slabs and associated substructure elements will then be completed in preparation for commencement of superstructure works.
- Substructure works for apartment and duplex blocks will typically involve excavation to formation level and construction of foundations in accordance with the structural design parameters and ground conditions confirmed by geotechnical investigation. Depending on the final design solution, this may include strip foundations, pad foundations and/or localised ground improvement measures where required. Underground drainage, attenuation infrastructure, service ducting and incoming utility connections will be coordinated with the substructure works, including testing and verification prior to commencement of superstructure construction.
- The superstructure of the house units is anticipated to utilise modern construction methods appropriate to residential delivery, which may include timber frame construction and/or traditional masonry construction, subject to final design and procurement. External wall construction will typically be completed in parallel with roof works, followed by installation of windows and doors to achieve weather-tightness as early as practicable. Once a unit is weather-tight, internal first-fix works will proceed, including electrical and mechanical installations, followed by internal finishes and fit-out works.
- The apartment and duplex superstructure is anticipated to comprise structural systems appropriate to the final design, which may include load-bearing masonry walls, precast concrete elements and

reinforced concrete components as required. Floor structures may include precast systems such as hollow core slabs or equivalent, subject to detailed design. Cranes and lifting equipment may be utilised for superstructure construction, with lifting plans and temporary works designs prepared in advance. External envelope works will progress to achieve weather-tightness, enabling internal trades and fit-out works to commence efficiently.

Fit Out and Finishes

- Fit-out works will follow typical residential construction practice and will include internal partitions, services installation, plastering, joinery, painting, floor finishes and final fixtures and fittings. Works will be sequenced to minimise disturbance and maximise efficiency, particularly during later phases where parts of the development may be nearing completion.
- External works will include completion of roads, footpaths, kerbing, public lighting, boundary treatments, and landscaping in accordance with the approved drawings. Public open spaces and private gardens will be graded, topsoiled and planted in accordance with the landscape proposals. Final surfacing and snagging works will be completed prior to handover.

5.5.2 Site Compound

The construction layout, including site compound location, will be refined and finalised by the appointed Main Contractor prior to the commencement of construction works.

The final positioning of the compound will be determined following detailed construction phasing and programming and will incorporate appropriate temporary drainage measures and safe access provisions for construction traffic and personnel.

The compound will be established with due regard to environmental and site constraints, including maintaining an appropriate buffer from sensitive drainage features. The final location will be within the footprint of the proposed apartment development area and will avoid proximity to existing drainage ditches and recorded archaeological areas.

Please refer to the accompanying Construction Environmental Management Plan prepared by AKM Design Group (2026).

5.5.3 Construction Phasing and Duration

The envisaged duration of the construction phase is c. 3 years (36 months). The duration of the construction phase is, therefore, assumed to be 'short-term', as per the EPA criteria set out in Table 1.5 (EPA, 2022). The phasing strategy will be designed to account for site constraints and its interface with the adjoining Phase 1 works. The anticipated construction sequence is expected to include Phase 2a, Phase 2b, and Phase 2c, with Phase 2c requiring consideration for the reuse and/or relocation of the existing construction compound (refer to Figure 5.6). The final sequence will be confirmed by the appointed Main Contractor prior to the start of works. However, the programme must ensure continuous provision of temporary drainage, sediment control measures, safe and emergency access, and all necessary utility diversions or connections.

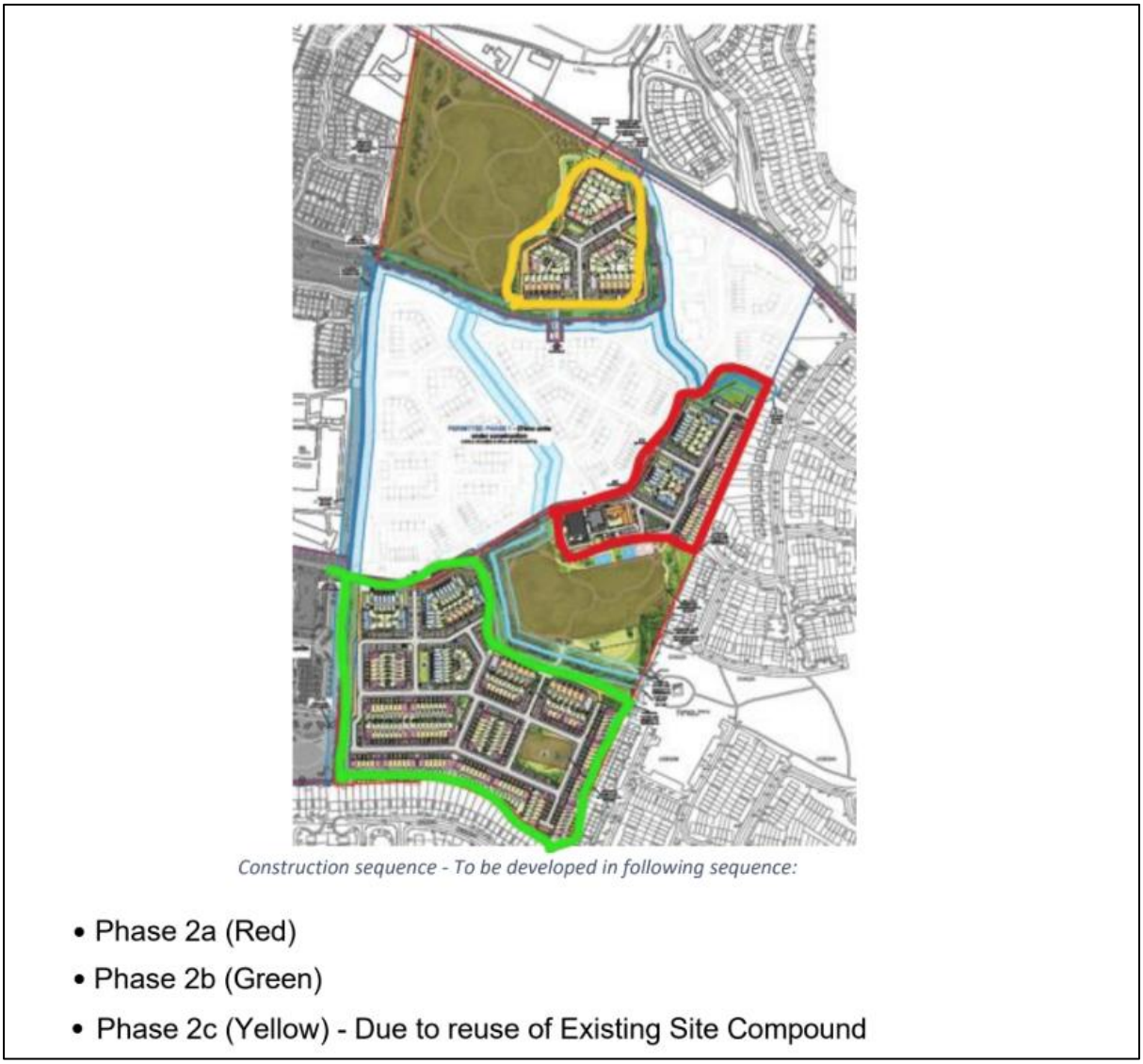


Figure 5.6 Construction Phasing for the Phase 2 Development on Mooretown Lands

5.5.4 Construction Materials

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

5.5.5 Earthworks

The site of the Proposed Development is predominantly greenfield in nature. In order to facilitate the construction of the Proposed Development, soil stripping, earthworks and the storage and handling of excavated material will be required. Stockpiles will be located away from watercourses and drainage ditches and will be managed to prevent erosion, sediment runoff and dust generation.

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

Indicative earthworks figures are as follows:

- Estimated excavation volume: 21,860 m³
- Volume reused on-site: 21,860 m³
- Volume removed from site: 0 m³
- Imported engineered fill: 35,000 m³
- Maximum excavation depth: 3.93 m BGL

5.5.6 Hazardous Substances

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

5.5.7 Construction Traffic and Haul Route

The principal construction access to the site will be provided from the existing site access for Phase 1 via Rathbeale Road (R125). The haul route and access are presented below on Figure 5.7, prepared by Transport Insights (2026). The proposed route directs traffic towards the M1 and avoids Swords Town Centre. Movements of abnormal loads or oversized deliveries will be coordinated in advance with the relevant statutory authorities and will comply with applicable road traffic legislation.

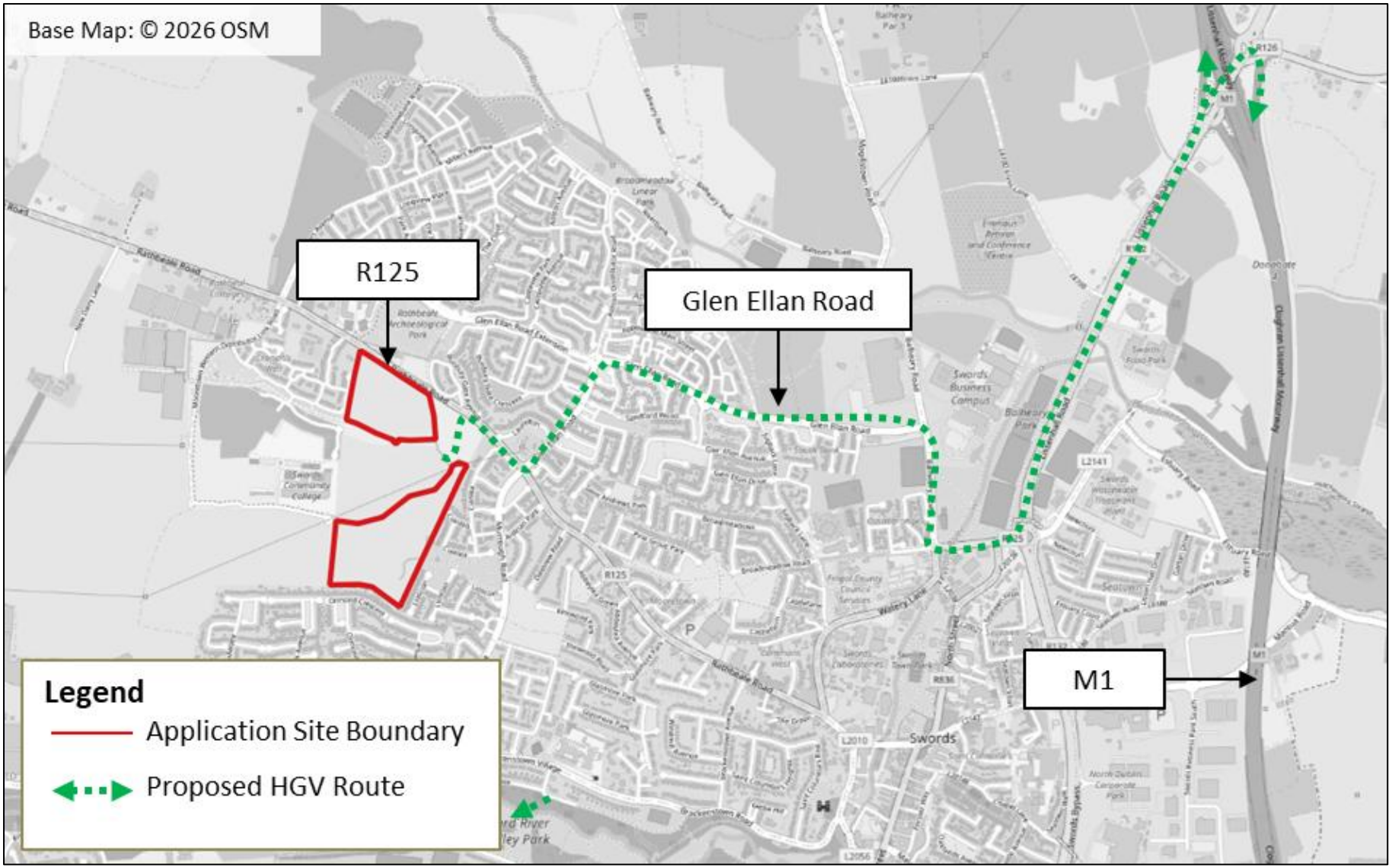


Figure 5.7 Indicative haul route (Source: Transport Insights, 2026)

During the peak period of construction works, construction personnel and construction delivery vehicles will be present on the surrounding road network. A maximum of 35 construction personnel and 30 HGVs per day are estimated to arrive and depart the site during peak construction periods. Working hours will be from 07:00-19:00 weekdays, and as such the arrival and departure times of construction personnel will be outside of the existing morning and evening peak periods on the surrounding road network.

All construction activities on-site will be governed by the traffic management measures outlined in the Construction and Environmental Management Plan (CEMP) prepared by AKM Design Group (2026) and submitted under a separate cover as part of the planning application. A construction phase Construction Traffic Management Plan (CTMP) will be prepared for the works in accordance with the principles outlined below and shall comply at all times with the requirements of:

- Department of Transport Traffic Signs Manual 2019 – Chapter 8 Temporary Traffic Measures and Signs for Roadworks
- Department of Transport Guidance for the Control and Management of Traffic at Road Works (2010)
- Any additional requirements detailed in the Design Manual for Roads and Bridges (DMRB) and Design Manual for Urban Roads and Streets (DMURS)

5.5.8 Working Hours

Envisaged working hours are as follows:

- Monday – Friday: 07:00 – 19:00;
- Saturday: 08:00 – 14:00;
- Sunday/ Bank Holidays: No works.

Works (ex: water main connections, foul drainage connections, etc.) outside of these hours will be subject to prior agreement with Fingal County Council.

5.5.9 Construction Phase Plans

5.5.9.1 Construction and Environmental Management

A Construction and Environmental Management Plan (CEMP) has been prepared in respect of the Proposed Development by AKM Design Group (2026) (refer to standalone document submitted under separate cover). It contains best practice measures and protocols to be implemented during the construction phase of the Proposed Development to avoid / minimise environmental impacts. In the preparation of this Environmental Impact Assessment Report, regard has been had to the mitigation measures and protocols proposed in the CEMP.

The appointed contractor will be responsible for the implementation of the CEMP. The contractor will appoint a suitably qualified Project Supervisor Construction Stage (PSCS) with responsibility for overseeing the implementation of the CEMP (and all construction phase environmental commitments).

To ensure the CEMP remains fit for purpose, it will be maintained as a live document. The appointed contractor will be responsible for updating the CEMP, as required, e.g. to reflect the publication of relevant new or revised guidelines and / or new statutory requirements. The full schedule of environmental commitments (i.e. all mitigation measures set out in the CEMP and Environmental

Impact Assessment Report as part of the planning application, as well as any applicable conditions of development consent) will be included in the CEMP by the appointed contractor.

5.5.9.2 Dust Management

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

5.5.9.3 Arboricultural Method Statement

A Tree Survey and Arboricultural Report has been prepared in respect of the Proposed Development by Charles McCorkell (2026) and submitted under separate cover as part of the planning application. It contains an Arboricultural Method Statement and recommendations in relation to tree protection on construction sites. The method statement and recommendations contained in the Tree Survey Report shall be integrated into the final CEMP and implemented in full during the proposed construction works.

5.5.9.4 Resource and Waste Management Plan (RWMP)

A Resource and Construction Waste Management Plan has been prepared by AWN Consulting Ltd. and will be implemented during the construction phase and is submitted as part of the planning application. This document shall be finalised by the appointed contractor, in agreement with the competent authorities, prior to the commencement of the proposed works. For further information, refer to Chapter 18 (Material Assets – Waste) and **Appendix 19.1** (Volume 3 of the EIAR).

5.6 Operational Phase

5.6.1 Operational Phase Plans

5.6.1.1 Residential Travel Plan

An outline Residential Travel Plan (RTP) has been prepared by Transport Insights (2026) for the operational phase of the Proposed Development (refer to Section 7 of the Traffic & Transport Assessment submitted under separate cover), to promote sustainable mobility among the residents of the Proposed Development through a range of measures. The appointed Travel Plan Co-Ordinator (TPC) of the site during the operational phase will be responsible for ensuring – allocating personnel and resources, as needed – the ongoing implementation of the RTP. This is intended to be a live document, to be updated by the Applicant / Operator, where appropriate, e.g. to ensure the Plan remains fit for purpose and up-to-date with relevant policy.

5.6.1.2 Operational Waste Management Plan

An Operational Waste Management Plan (OWMP) has been prepared by AWN Consulting Ltd. (submitted as part of the planning application – **Appendix 19.2**, Volume 3 of the EIAR), containing measures to promote operational phase waste management in accordance with the waste hierarchy, i.e. high rates of reuse, recycling and recovery. The Operator / Facilities Management of the site during the operational phase will be responsible for ensuring – allocating personnel and resources, as needed – the ongoing implementation of this OWMP. This is intended to be a live document, to be updated by

the Applicant / Operator, where appropriate, e.g. to ensure the Plan remains fit for purpose and up-to-date with relevant policy.

6 Consultation

This chapter of the Environmental Impact Assessment Report (EIAR) has been prepared by Pauline Byrne, Senior Planner / Partner, with Brady Shipman Martin (BSM), Planning, Landscape and Environmental Consultants. A technical review was completed by Thomas Burns, Partner at Brady Shipman Martin. Refer to Table 1.4 in Chapter 1 (Introduction) for qualifications of authors and reviewers.

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

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

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

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

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

Informal scoping of potential environmental impacts was undertaken with the Fingal County Council through pre-application meetings. Direct and formal public participation in the EIA process will be through the statutory planning application process under the procedures for an application under Section 175 of PDA 2000. Section 175 of the PDA 2000 provides that an application for permission with an EIAR by a local authority shall be made directly to An Bord Pleanála.

6.1 Pre-Application Stage

A series of consultation meetings have been held with the relevant departments of Fingal County Council, including the following Departments:

- Planning;
- Roads and Transport;
- Environment;
- Housing;
- Heritage;
- Parks and Green Infrastructure;
- Water Services; and
- Architects.

In addition, consultation has been undertaken with Uisce Éireann and Design Acceptance, confirming availability for connection to existing infrastructure, has been received in relation to connection to the water supply and waste water infrastructure. Prior to lodging this application, information in relation to the EIAR was uploaded to the Department of Housing, Local Government, and Heritage (DHLGH) EIA Portal. The EIA Portal is an online map-based website that provides users with access to applications for development consent with an EIAR.

6.2 Application Stage

The planning application is being submitted directly to An Coimisiún Pleanála, and this stage allows for further consultation, including with prescribed bodies, stakeholders and the general public. The application and all accompanying documents will be available on public display for review, and the Project has a dedicated website on the Fingal County Council Website Consultation Portal as set out in the planning notices.

Details of the Proposed Development have been forwarded to the following prescribed bodies:

- Department of Housing, Local Government and Heritage
- Department of Climate, Energy and the Environment
- An Chomhairle Ealaíon
- Environmental Protection Agency
- Fáilte Ireland
- The Heritage Council
- Inland Fisheries Ireland
- An Taisce
- Uisce Éireann,
- Health and Safety Authority
- Irish Aviation Authority (IAA)
- Dublin Airport Authority (DAA)
- Transport Infrastructure Ireland (TII)
- National Transport Authority (NTA)
- Air Nav Ireland

Submissions / observations on any aspect of the proposed Project may be made to An Coimisiún Pleanála within the specific timeframe and such submissions / observations will be taken into account in the determination of the application by the Commission

7 Population and Human Health

7.1 Introduction

This chapter of the EIAR presents an assessment of the likely impacts on the local population during both the construction and operational phases of the Proposed Development at Mooretown lands, Swords, County Dublin.

The Proposed Development is described in Chapter 5 (Description of the Proposed Development), and these details are reiterated in this chapter only insofar as is relevant to population and human health.

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

This chapter considers and assesses the potential effects of the Proposed Development on the people and businesses in the surrounding community, during the construction and operational phases.

7.2 Method

Amended Directive 2014/52/EU updated the list of topics to be addressed in an EIAR and has replaced *'human beings'* with *'population and human health'*. The term *'human health'* is not defined in the amended Directive; however, the European Commission *Guidance on the Preparation of the Environmental Impact Assessment Report* states that:

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

The EPA guidelines state that:

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

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

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

The EPA guidelines also state that:

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

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

- EPA (2022). Guidelines on the information to be contained in Environmental Impact Assessment Reports ('the EPA guidelines');
- ISEP (2022). Effective Scoping of Human Health in Environmental Impact Assessment;
- ISEP (2022). Determining Significance for Human Health in Environmental Impact Assessment;
- ISEP (2017). Health in Environmental Impact Assessment: A Primer for a Proportionate Approach;
- Institute of Public Health (2021). Health Impact Assessment Guidance: A Manual. Standalone Health Impact Assessment and health in environmental assessment.
- Transport Infrastructure Ireland (TII) (2024). Population and Human Health Assessment Standard (PE-ENV-01108).

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

- Central Statistics Office (CSO) census data from 2011, 2016 and 2022;
- Fingal County Council (2021). Fingal County Development Plan 2023 – 2029 (as varied)
- Department of Housing, Planning and Local Government (DHPLG) (2025). My Plan Map Viewer;
- Department of Health (2025). Health in Ireland – Key Trends 2024;
- Department of Health (2026). Public Health Strategy 2025-2030;
- Eastern and Midlands Regional Assembly (2019). Regional Spatial and Economic Strategy 2019-2031.

The Proposed Development is materially consistent with the Development Plan, which was the subject of separate assessments under the SEA Directive (SEA), the Habitats and Birds Directives (AA), the Water Framework Directive and the Floods Directive (see FRA), and this Development Plan and the results of those assessments have been considered in the preparation of this EIAR. The SEA Report for the Development Plan addresses Population and Human Health at Section 5.3 and Table 6.1 sets out the Strategic Environmental Objectives (SEOs) for the Development Plan.

This assessment has also considered the potential indirect and direct socio-economic impacts of the construction and operation of the Proposed Development.

Receptors were identified and assessed for sensitivity, magnitude and significance to provide an appropriate and adequate assessment of how they could be impacted by the construction and operational phases of the Proposed Development.

Effects have been characterised in accordance with the EPA guidelines (refer to Chapter 1, Section 0).

7.3 Baseline Environment

7.3.1 Land Use Zoning

The Fingal County Development Plan 2023-2029 (the 'Development Plan') allocated the zoning objectives for this proposed site area. The subject site is 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",* as outlined in Figure 7.1.

The vision of this objective is to:

"Ensure the provision of high quality new residential environments with good layout and design, with adequate public transport and cycle links and within walking distance of community facilities. Provide an appropriate mix of house sizes, types and tenures in order to meet household needs and to promote balanced communities." (p. 499)

The areas surrounding the site are zoned 'RS – Residential', which refers to existing residential developments. To the west and north of the site is a portion of land zoned as 'CI -Community Infrastructure', this relates to the educational facilities within this area that serve the Swords community. North of the proposed site is zoned as 'OS – Open Space', this area is dedicated to the existing Rathbeale Archaeological Park.

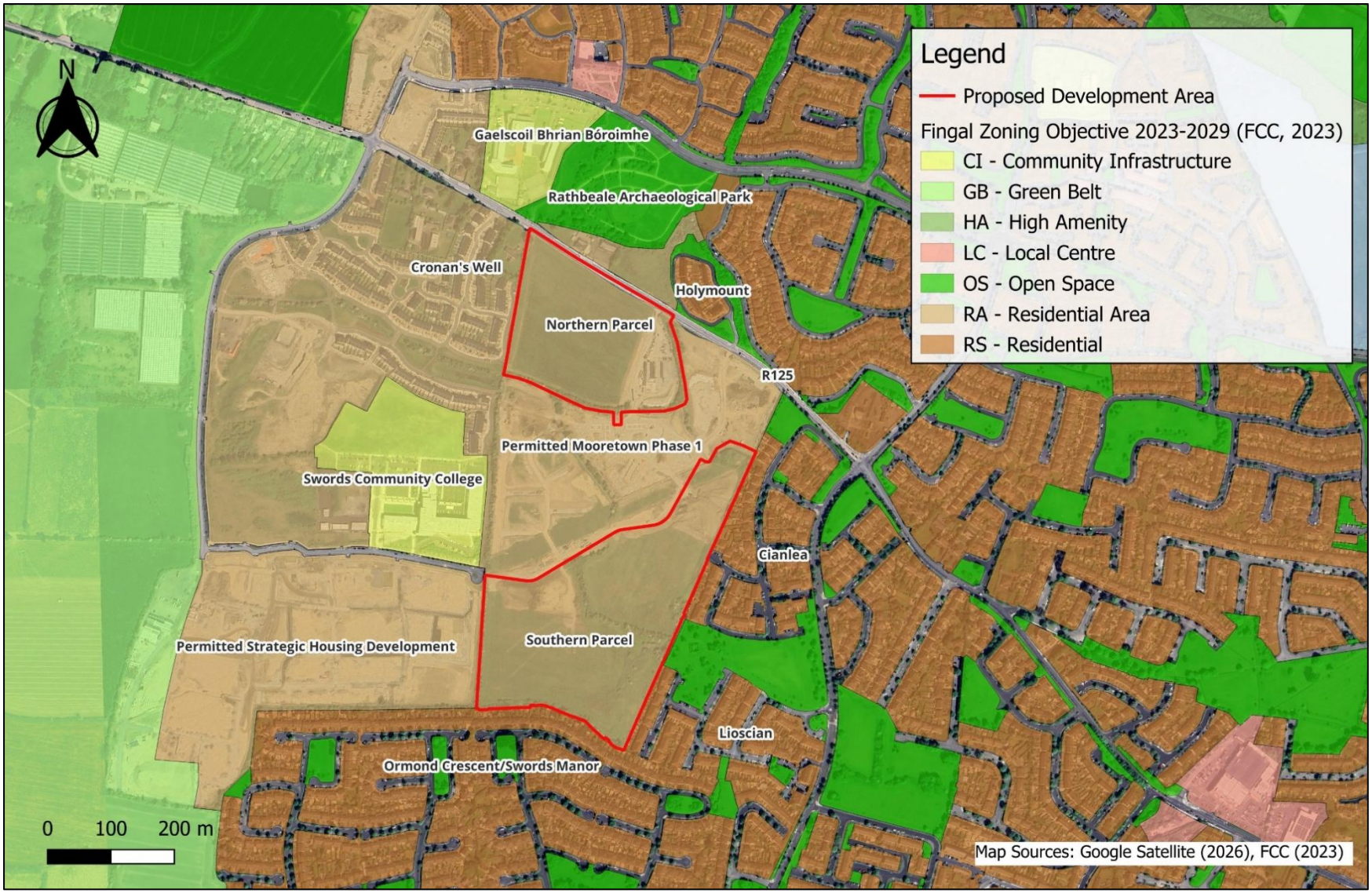


Figure 7.1 Land Use Zoning Map of Mooretown lands, zoned as RA- Residential Area (Source FCC Development Plan 2023-2029).

7.3.2 Population

The Central Statistics Office (CSO) provides data on population and socio-economic aspects of the population at different levels from the State, County Council level, Local Electoral Area (LEA), Individual Electoral Divisions (ED) to Small Areas (SA) within each county. The most recent census was taken in April 2022. CSO published preliminary results for 'Census of Population 2022' on 23 June 2022 (updated September 2022) which have since been superseded by the main results published from May 2023 onwards.This chapter uses the most up to date and detailed statistical data that is available at the time of preparing this chapter.

The Mooretown Phase 2 site is situated within Fingal County Council administrative area and is approximately 2.5 km from Swords town centre. The site of the Proposed Development is within the Electoral Division (ED) of Swords-Glasmore. The CSO census population statistics for the national, regional and local levels are set out in Table 7.1 below.

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

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

Table 7.1 CSO census population statistics 2011 – 2022 (CSO 2011, 2016 and 2022 Census Data)

Area	Number of Persons			
	2011	2016	2022	Change
Ireland – State	4,588,252	4,761,865	5,149,139	**+3.8%** (2011-2016) **+8.1%** (2016-2022)
Fingal County Council	273,991	296,020	330,506	**+8.0%** (2011-2016) **+11.6%** (2016-2022)
Swords Town	36,924	39,248	40,776	**+6.3%** (2011-2016) **+3.9%** (2016-2022)
Mooretown Lands - within Swords-Glasmore ED	7,748	7,711	7,674	**-0.5%** (2011-2016) **-0.5%** (2016-2022)

Although Census 2022 shows a slight population decrease in the Swords-Glasmore ED, this can be explained by typical demographic patterns in rural areas, including small reductions in household size, ageing in place, and limited dwelling turnover. It is also likely that recent residential development has occurred in neighbouring EDs or was completed after the 2022 census date and therefore is not yet reflected in the official population count. Overall, the modest decline observed is not unusual and does not indicate a reduction in local housing demand.

A review of Fingal County Council planning portal indicates significant residential developments in the pipeline for Mooretown, with numerous medium- to large-scale developments permitted or proposed, as detailed in **Error! Reference source not found.** (Cumulative Impacts).

The age profile of the Swords-Glasmore Electoral Division shows a broadly balanced and settled community, with 66.1% of residents in the working-age cohort (15–64 years), 21% aged 0–17, and 13% aged 65 and over. This distribution reflects a stable population with ongoing household formation, a sustained presence of families, and a growing older demographic typical of mature suburban areas. While overall population numbers in the ED have remained relatively static in recent census periods, the age structure does not indicate declining demand for housing. It suggests a continuing need for new residential development, as it aligns with the demographic conditions of a community likely to benefit from additional, well-located housing options. The age profile for Swords-Glasmore ED, taken from the Census, are shown below in Figure 7.2.

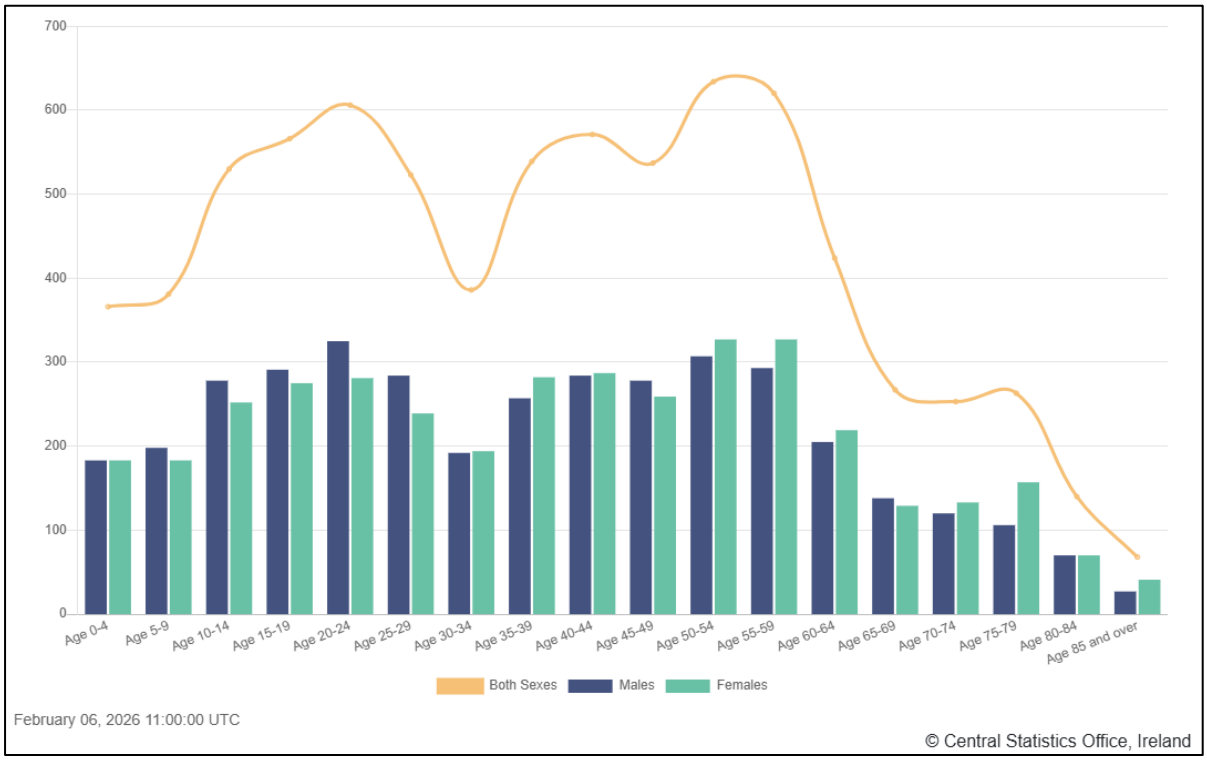


Figure 7.2 Age Profile Data – Swords-Glasmore ED (CSO, 2022).

7.3.3 Land Use and Settlement Patterns

The immediate context of the proposed greenfield site is predominantly characterised by a mix of suburban, rural, and agricultural land. Residential development within the Swords-Glasmore ED, as illustrated in Figure 7.3 below, consists mainly of private houses and future residential developments under construction.

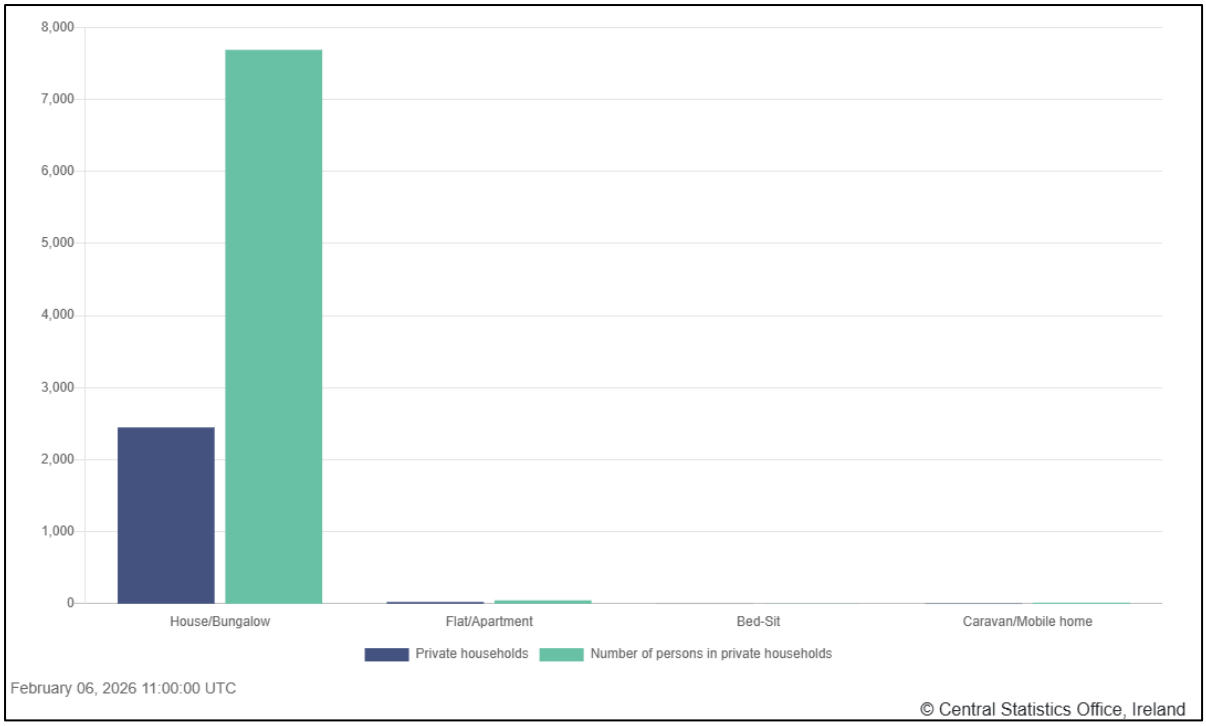


Figure 7.3 Private households by type of accommodation – Swords-Glasmore ED (CSO, 2022).

Figure 7.4 shows car use ('car driver') as the primary means of travel to work, school or college in the Swords-Glasmore ED in 2022. Commuting patterns in the area reflect a strong reliance on private vehicles, with many trips oriented towards Swords and the wider Dublin region. It should be noted that commuting to both school and work via bus, minivan, or coach is the second most popular form of movement in the area, indicating a level of support towards public transport.

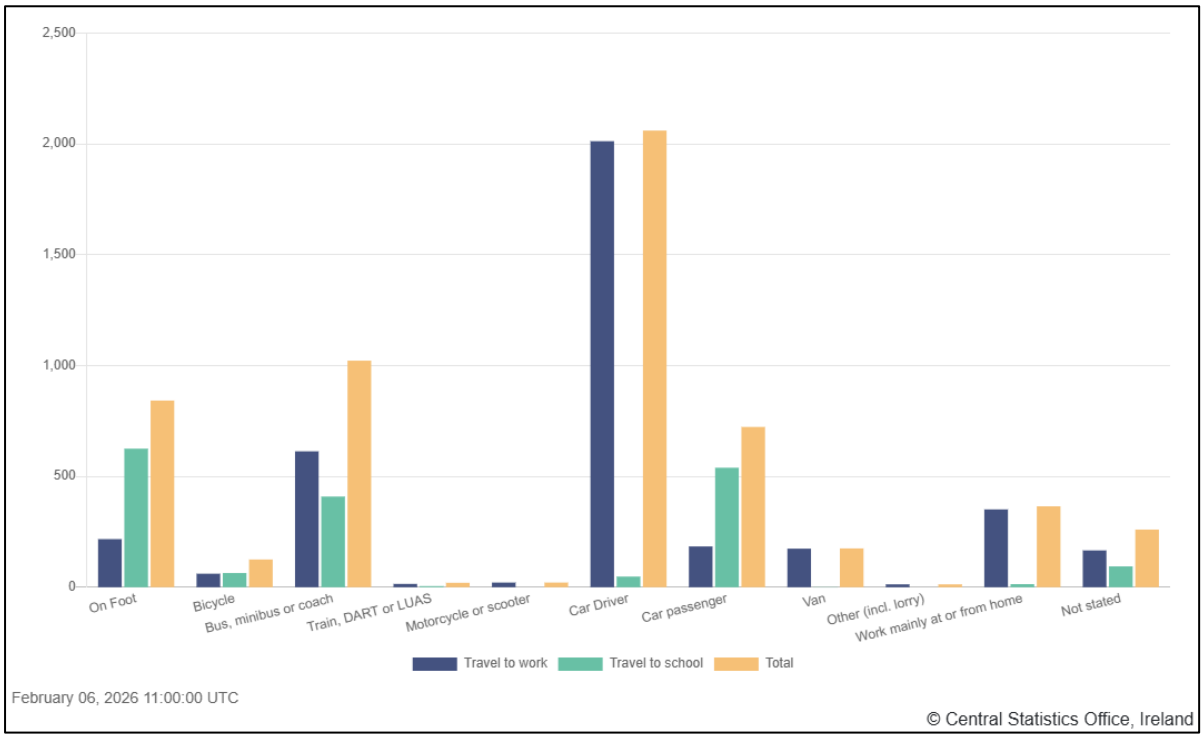


Figure 7.4 Means of Travel to Work, School or College – Swords-Glasmore ED (CSO, 2022).

7.3.4 Economic and Employment Activity

7.3.4.1 National Context

The CSO's Labour Force Survey (LFS) is the official source of labour markets statistics for Ireland, including the official rates of employment and unemployment. The LFS data is based on the International Labour Organisation (ILO) methodology.

According to the CSO, Ireland's employment rate for those aged 15–64 rose slightly from 74.3% in Q4 2024 to 74.5% in Q4 2025, indicating more people in work. Over the same period, the unemployment rate for those aged 15–74 increased from 4.0% to 4.4%. These figures show that while employment increased, the number of people counted as unemployed also rose, which is consistent with a growing labour force. Refer to Table 7.2.

Table 7.2 Labour Force Survey Data for Ireland (CSO).

Indicator	Status	
	Q4 2024	Q4 2025
Employment rate among 15 – 64 year olds	74.3%	74.5%
Unemployment rate among 15 – 74 year olds	4.0%	4.4%

The Economic and Social Research Institute (ESRI)'s Quarterly Economic Commentary for Winter 2025 presents forecasts for key indicators of the Irish economy for 2024 to 2026. The ESRI's figures for consumer spending, employment growth and Modified Domestic Demand (MDD) provide useful context for understanding Ireland's overall economic conditions. MDD is a more accurate measure of domestic economic performance than Gross Domestic Product (GDP), which is heavily influenced by multinational activity. Table 7.3 shows that consumer spending is expected to grow steadily, employment growth is set to moderate, and MDD is projected to continue expanding, albeit at a slower pace. These trends outline a stable national economic backdrop for the Proposed Development.

Table 7.3 ESRI Quarterly Economic Commentary – Winter 2025.

Indicator (annual % growth)	2024	2025	2026 (Forecast)
Consumer spending	3.0%	2.9%	2.5%
Employment	2.7%	2.0%	1.1%
Modified Domestic Demand (MDD)	3.1%	4.0%	2.1%

7.3.4.2 Local Context

The CSO Electoral Division profiles are used to establish a local socio-economic baseline for the area of the Proposed Development. These datasets describe the economic activity of residents, employment status, as well as the skill and occupational profile of the local labour force.

The distribution of Principal Economic Status within the Swords-Glasmore ED, presented in Figure 7.5, illustrates a predominately active and engaged labour force. The largest cohort of residents is recorded as 'At work' significantly exceeding all other categories, followed by smaller proportion of retirees, students, and individuals engaged in home or family care. This profile generally indicates an economically stable local population with low levels of short-, long-term unemployment. The predominance of working-age persons highlights ongoing demand for suitable housing options.

The socio-economic group profile of the Swords-Glasmore ED, presented in Figure 7.6, demonstrates a diverse local work force, spanning a broad range of employment categories. The figure shows substantial representation in professional and technical roles, alongside strong participation in

administrative and skilled trades occupations. There is also a notable presence in elementary occupations, caring and service-related roles, sales and customer service, and operatives. This varied occupational mix indicates a balanced local labour market with a wide spread of skills and job types. In the context of the proposed residential development, such a profile suggests that housing demand is likely to come from a workforce with differing income levels, household structures, and commuting patterns, reinforcing the need for a mix of residential options and supporting local services. The breadth of occupational types also reflects the area's role as part of a wider employment catchment within Fingal and the Greater Dublin Area.

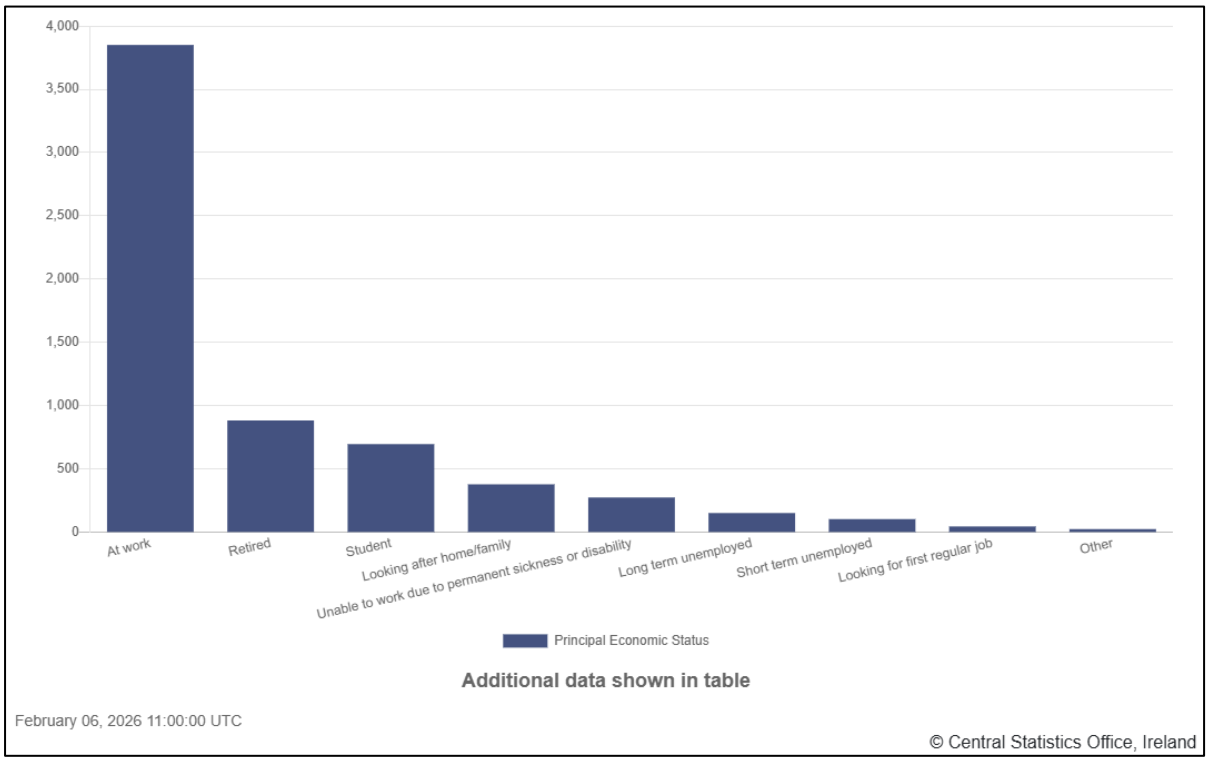


Figure 7.5 Principal Economic Status – Swords-Glasmore ED (CSO, 2022).

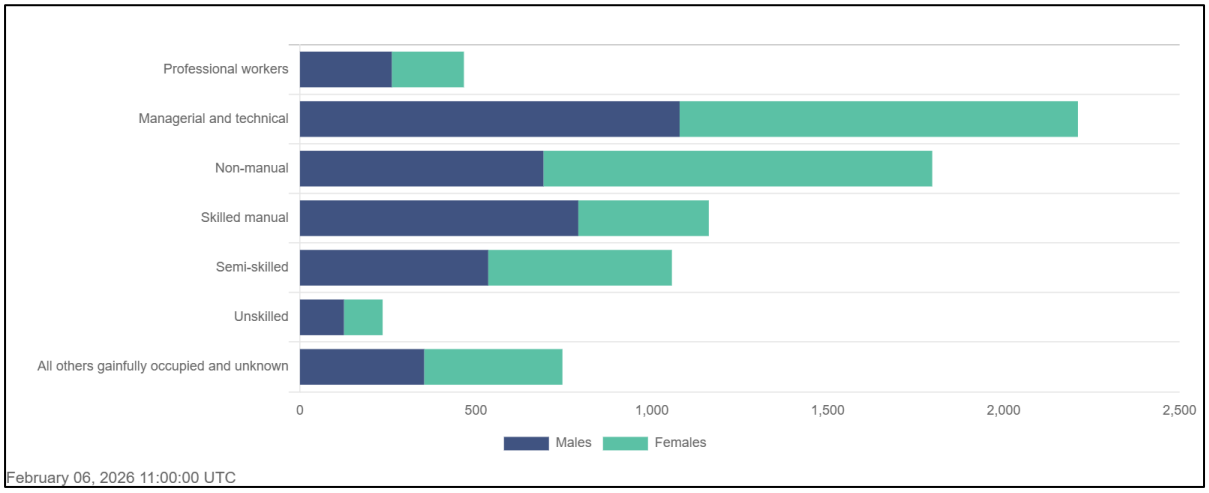


Figure 7.6 Occupation – Swords-Glasmore ED (2022 Census).

7.3.5 Human Health and Community Infrastructure

Health as defined by the World Health Organization (WHO) is "*a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity*". The Health Service Executive (HSE)'s Public Health Strategy 2025-2030 describes Ireland's current public health baseline as one marked by a growing aging population, significant levels of chronic disease and persistent socio-economic inequality shaping health outcomes. This health strategy also highlights the impact of housing insecurity on well-being, noting that a large majority (89%) of 25-year-olds report concern about access to housing in Ireland.

The Department of Health's 2025 report, Health in Ireland – Key Trends 2024, provides summary statistics on health and health care in Ireland and touches on several areas, including demographics, population health, hospital and primary care, health sector employment and expenditure. Each section has a series of detailed charts and tables relevant to that aspect of healthcare in Ireland. It highlights the significant achievements that Ireland has made for key health outcomes in the past decade. However, it also highlights the challenges that persist in terms of the accessibility of timely and efficient healthcare across the population.

The report highlights the following key trends:

- Ireland has the highest self-perceived health status in the EU, with c. 80.0% of people rating their health as good or very good;
- The population in Ireland in 2024 is estimated to be 5.15 million, an increase of 2.6% on Census 2022 and the largest change was seen in the over 65 age group which increased by 36.5% since 2014;
- Life expectancy has improved in Ireland since the past decade, however the rate of increase of life expectancy has been declining;
- Over the past decade, both cigarette and alcohol consumption has declined. The alcohol consumption has declined at a slower rate than cigarette consumption.

Figure 7.7 presents the self-reported health status of the population in Swords-Glasmore ED, as reported in the 2022 Census. While the data is self-reported and, therefore, does not provide an entirely accurate picture of the health profile of the area, it does indicate a relatively high level of individual wellbeing in the area.

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

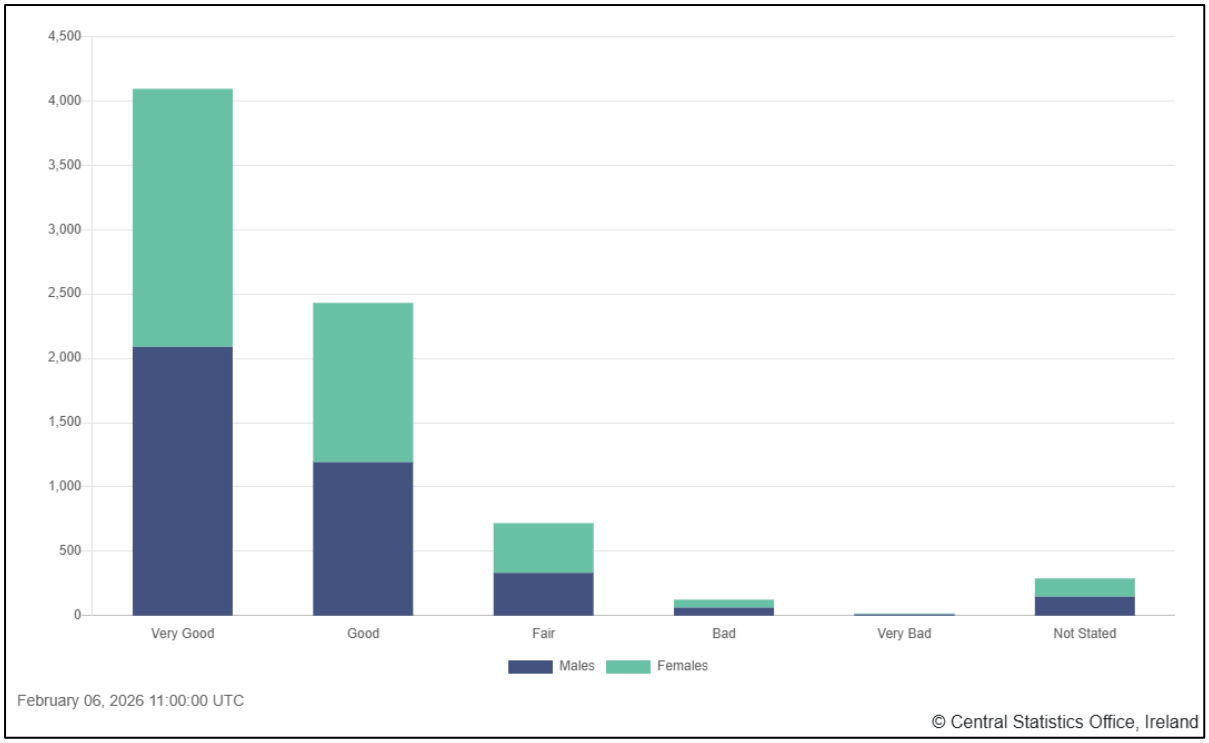


Figure 7.7 Self-reported general health – Swords-Glasmore ED, 2022 (CSO, 2022).

The receiving environment comprises a range of health facilities including general practitioners, pharmacies, physiotherapists and other health services located within Swords centre and the wider area. The nearest hospital is Beamount Hospital, located approximately 10km away and accessible via private vehicle or public transport.

The Proposed Development is located immediately adjacent to Swords Community College to the east of the site. A crèche facility is currently underway for the permitted Phase 1 development, and similarly a childcare facility is included in the Proposed Development to serve the future inhabitants.

Rathbeale Archaeological Park is immediately to the north of the Proposed Development and provides access to walking trails and connection to the cultural heritage of the Mooretown area, discussed in detail in Chapter 15 (Cultural Heritage, Archaeology and Architectural Heritage) of this EIAR.

7.4 Predicted Impacts of the Proposed Development

7.4.1 Do-Nothing Impact

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

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

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

Under scenario (a), no significant impacts would arise in relation to population and human health locally. In the context of the ongoing housing crisis in the Dublin Metropolitan Area (DMA), this scenario is to represent an inefficient, uneconomical and socially suboptimal use of the Mooretown development lands. In this scenario, the long-term impacts associated with the operation of the

Proposed Development on population and human health (as assessed below) would not arise. The short-term construction phase impacts (as assessed below) would also be avoided.

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 significant demand for housing in the DMA. It is not possible to assess in full, 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. However, in the light of the zoning objectives and requirements of the Development Plan 2023-2029 for this site, it is likely that any such development will be materially consistent with the Plan's requirements and the effects are likely to be similar to the effects of the Proposed Development.

7.4.2 Construction Phase

The duration of the construction phase is anticipated to be in the range of c. 36 months. As such, associated effects are expected to be short-term in duration, at worst. During this time, there will be no community severance, loss of rights of way or amenities as a result of the Proposed Development.

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

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

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

7.4.2.1 Air Quality and Climate

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

The German TA-Luft standard for dust deposition (non-hazardous dust) (German VDI, 2002) sets a maximum permissible emission level for dust deposition of 350 mg/(m_2*day) averaged over a one-month period at any receptors outside the site boundary. Recommendations from the Department of

the Environment, Health and Local Government (DoEHLG, 2004) apply the Bergerhoff limit value of 350 mg/(m_2*day) to the site boundary of quarries.

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

Chapter 11 (Air Quality) has rated the sensitivity of the area to dust soiling as high and the sensitivity of the area to human health is considered low. Chapter 11 (Air Quality) states that there is an overall high risk of dust soiling impacts and a low risk of dust-related human health impacts as a result of the proposed construction phase (earthworks, construction and track out) in the absence of mitigation. In the absence of mitigation, dust impacts in relation to dust soiling and human health effects are predicted to be ***short-term, direct, localised, negative and moderate.***

There is also the potential for traffic emissions to affect air quality in the short-term over the construction phase, particularly due to the increase in HGVs accessing the site. As detailed in the Air Quality chapter, the construction stage traffic has been reviewed, and a detailed air quality assessment has been scoped out as none of the road links impacted by the Proposed Development satisfy the TII assessment criteria. In the absence of mitigation, it has predicted a ***neutral, short-term and not-significant impact*** on population and human health, resulting from the air quality effects of the construction phase.

Chapter 12 (Climate) conducted a greenhouse gas assessment which predicted the impact of GHG emissions during construction of the Proposed Development to have a ***negative, long-term and not significant impact***.

Corresponding mitigation measures have been set out in Chapter 11 (Air Quality) and Chapter 12 (Climate) and are discussed further below.

7.4.2.2 Noise and Vibration

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

The closest Noise Sensitive Locations (NSL), as set out in Chapter 13 (Noise and Vibration), to the Proposed Development are individual residential houses along the R125 and Holymount Road housing estate to the north, residential dwellings of Cianlea to the east, Ormond Crescent and Lioscian to the south/south-west and Cronan's Well Brook, Cronan's Well Park and Swords Community College to the west.

For the purposes of the noise impact assessment, 'Category A' and 'Category B' noise threshold levels with threshold values of 65 dB(A) and 70 dB(A) respectively will be applied to the NSLs. In the absence of mitigation and in a worst-case scenario, general construction works will have a ***temporary, negative, slight to moderate impact*** for all NSLs.

7.4.2.3 Traffic

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

There will be traffic generated from deliveries of construction materials and equipment. It should be pointed out that construction traffic generated during the development works tends to be off-peak. Such trips would generally incremental and temporary and are unlikely to be higher than the peak hour predicted for the operational stage. Site access is to be provided to the north-east of the Proposed Development via the existing site access for the Phase 1 residential development currently under construction. A proposed construction traffic route (refer to Figure 5.7) has been developed which routes construction traffic towards the M1 (avoiding Swords Town Centre) via Glen Ellan Road. Warning signage will be provided where required for pedestrians and other road users on all approaches in accordance with Chapter 8 of the Traffic Signs Manual and the Contractor's Traffic Management Plan.

Chapter 18 (Traffic and Transportation) has assessed the potential impacts of the Proposed Development in this regard as ***negative, not significant and short-term***.

7.4.2.4 Landscape and Visual Impacts

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

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

- The removal of some hedgerows and trees and the protection of retained hedgerows and trees on site, where applicable – See Arboricultural Impact Assessment and Method Statement by Charles McCorkell (2026);
- The temporary movement and stockpiling of earth and materials;
- The temporary movement of machinery in and out of the site; and
- All engineering, building and landscape works required with associated site infrastructure, fencing and plant.

Chapter 14 has concluded that, in the absence of mitigation, the worst-case impacts in this regard are predicted to be ***negative, short-term and varying from slight significance to not significant***. Corresponding mitigation measures have been set out and are discussed below.

7.4.2.5 Waste Management

Incorrect management of waste material during the construction phase can result in littering, presence of vermin and / or pollution, with associated potential for negative impacts on human health and

residential amenity. Chapter 18 (Material Assets – Waste) assesses the impacts of the Proposed Development in this regard. In the absence of proper waste management procedures (e.g. littering or use of non-permitted waste contractors / facilities), a ***negative, significant and short-term to long-term impact*** is predicted. Corresponding mitigation measures have been proposed in Chapter 19 and are discussed in Section 7.5, below.

7.4.2.6 Interruptions to Services

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

7.4.2.7 Economic Impacts

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

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

7.4.3 Operational Phase

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

The Proposed Development will comply with the statutory land use zoning policies and objectives of the Fingal Development Plan (2023 – 2029) and the Government's National Planning Framework (NPF). Development of the site will align with the NPF's high-level objective to achieve compact, sustainable growth and, in doing so, will realise the efficient use of currently underutilised former institutional lands with higher housing density. Refer to Chapter 3 (Planning and Development Context) for an in-depth discussion of the Proposed Development's consistency with national and regional planning and development policy.

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

- Potential impacts due to greenhouse gas emissions and climate vulnerability;

- Potential nuisance and disturbance of residents due to noisy building services plant and vehicular deliveries / collections within the site;
- Potential negative impacts on journey characteristics due to additional operational phase traffic generated by the Proposed Development;
- Positive impacts on journey characteristics due to enhanced permeability across the site;
- Potential visual impacts due to completion of Proposed Development, establishing substantial new residential development;
- Potential positive impacts by retention and enhancement of the landscape and biodiversity value of the parts of the site;
- Health impacts related to improper waste management;
- Potential impacts due to daylight and sunlight availability for the Proposed Development;
- Potential socio-economic impacts due to demand for goods and services locally;
- Positive socio-economic impacts due to provision of significant additional housing;
- Positive impacts on existing and new residents due to provision of new community amenities and facilities.

These are discussed and characterised, where relevant, in the following sections and in the corresponding chapters of the EIAR.

7.4.3.1 Air Quality and Climate

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

The Proposed Development is committing to reducing climate impacts, where feasible, and the development will comply with the Do-Minimum standards set through regulation – many of which are embedded design mitigations. The impact of the Proposed Development in relation to GHG emissions prior to mitigation measures being put in place is considered ***long-term, negative and not significant.***

Furthermore, Chapter 12 (Climate) has considered the following climate hazards in the context of the Proposed Development: flooding (coastal, pluvial, fluvial); extreme heat; extreme cold; wildfire; drought; extreme wind; lightning, hail, landslides and fog. It has been assessed that there is a low risk as a result of future climate change hazards. However, the above accounts for embedded design mitigation being put in place. Without this mitigation in place, the impact of the Proposed Development in relation to climate vulnerability emissions is considered ***long-term, negative and not significant***.

In addition, the Proposed Development has been designed to reduce the impact to climate where possible (see the Climate Action Energy Statement prepared by ENX (2026) for full details).

7.4.3.2 Noise and Vibration

During the operational phase, the Proposed Development will generate noise typical of a development of this nature and scale. The main potential noise impact associated with the Proposed Development is considered therefore to relate to the generation of additional traffic to and from the site as a result of the new residential element. The predicted increase in AADT traffic levels associated with the

development are between +0.0 to +1.6 dB(A) in the vicinity of the roads assessed for the Opening Year and between +0.0 to +1.5 dB(A) during the Future Design Year. The increase in the Opening Year is ***negligible, not significant and long-term.*** The increases in the Future Design Year are ***negligible, 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.***

Plant items and their location will be selected at the detailed design stage to ensure that noise emissions to sensitive receivers both external and within the development itself will be within the relevant criteria set out above. The resultant effects are considered ***negative, imperceptible and long-term.***

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

The closest NSL to the proposed crèche is 8m away, the expected standard noise insulation of the façade of the nearest NSL, predicts that the internal noise criteria (see Table 13.8) will be met in all residential units and the resultant noise impact due to the crèche is ***negative, long-term and not significant***.

It is noted that the site lies within Noise Zone D for the Dublin Airport Authority (DAA) Airport. A summary of the measured noise data used to establish the baseline environmental conditions is provided in Section 13.3.9.

7.4.3.3 Cultural Heritage, Archaeology and Architectural Heritage

The provision of accessible archaeological parks and interpretative signage will provide educational and amenity benefits, contributing positively to community well-being and sense of place. This will result in a ***direct, positive, moderate, long-term impact*** on population and human health.

7.4.3.4 Traffic

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

Chapter 18 (Traffic and 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 Mooretown Phase 1 (Ref: LADP/002/24), residential development (Ref: F23A/0504), Mooretown SHD (Ref: SHD/012/21), Oldtown Phase 5 (Ref: SHD/004/20 (ABP-313302-22)) and Swords School Development (F18A/0163).

Traffic modelling was carried out of the impacts of operational traffic flows on the five key junctions on the surrounding road network, as detailed in Chapter 18. Prior to mitigation during the operational phase, impacts are considered in the range of ***negative, long-term, and low to moderate significance*** across the local road network.

7.4.3.5 Landscape and Visual Impacts

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

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

Upon operation and into the future, the development would have a ***moderate to not significant impact*** (depending on proximity) and the significance of the landscape effects during operation can be classified as ***moderate positive.***

7.4.3.6 Waste Management

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

7.4.3.7 Microclimate – Wind

Chapter 17 Microclimate – Wind assessed the potential effects on wind microclimate at the site during the operational phase for the Proposed Development. Overall, the assessment concluded that no area is unsafe, and no conditions of distress are created by the Proposed Development on the site location when considering the cumulative scenario. All the roads within the area analysed can be used for their intended scope (walking where required). The proposed open areas can be used for long-term sitting/short term-sitting. The wind microclimate of the Proposed Development is comfortable and usable for pedestrians. ***No significant impacts*** are predicted.

7.4.3.8 Microclimate - Daylight and Sunlight

Chapter 16 (Microclimate – Daylight and Sunlight) conducted scoping for a Daylight and Sunlight Assessment which included Sunlight to amenity areas. No surrounding dwellings fell within the criteria for detailed assessment according to the BRE Guide and therefore the impact would be ***imperceptible*** to surrounding area.

With regard to Daylight provision for the proposed 55 apartments and duplex units, 94% of rooms achieved compliance with the BRE Guide. It is concluded that the Proposed Development demonstrates the capacity to achieve acceptable levels of internal daylight amenity.

The units achieved a high level of compliance for sunlight exposure, with 89% of all units meeting the BRE Guide. The duplex units achieve 100% compliance, and the apartments achieves 83% compliance. In accordance with these findings, it is concluded that the Proposed Development demonstrates the capacity to achieve acceptable levels of sunlight amenity.

7.4.3.9 Economic Impacts

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

Additionally, the Proposed Development is expected to increase the local population, 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, Community and Social Infrastructure and Schools Demand and Childcare Facilities Assessment (BSM, 2026) reports have been prepared and submitted under separate cover as part of the planning application. The assessment concluded that there is sufficient infrastructure in the area to meet the resultant demand for school places and community amenities. ***Significant negative impacts are not predicted*** in this regard.

7.5 Mitigation Measures

Mitigation measures have been prescribed elsewhere in this EIAR in order to avoid / minimise the predicted impacts detailed above. These are measures required by law, by the Development Plan 2023-2029, by guidance and regulations, and by standards for good construction practice and operational standards that are generally applicable to developments of this nature. 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 in the specialist chapters of the EIAR and also within Chapter 23 that includes the schedule of mitigation measures) are summarised as follows, insofar as they relate to population and human health.

7.5.1 Construction Phase

- A Construction and Environmental Management Plan (CEMP) has been prepared in respect of the Proposed Development by AKM Design Group (2026) (refer to document submitted under separate cover). The CEMP will remain a 'live document' and will be further updated by the Contractor (subject to planning approval) in advance of the proposed works, in agreement with Fingal County Council. The CEMP will be fully implemented throughout the proposed works. It will set out the measures to be implemented during the proposed works to mitigate potential impacts on the environment and local population, e.g. measures in relation to good housekeeping, site hoarding and security, traffic management, pollution control and safety;
- A Community Liaison Officer (CLO) will be appointed by the contractor for the duration of the construction phase. They will be responsible for keeping the local community and businesses informed of the timing and duration of potentially disruptive works, and for receiving and addressing concerns of local residents and businesses in relation to the proposed works;
- Chapter 11 (Air Quality) and Chapter 12 (Climate) includes a suite of mitigation measures to minimise air quality (including dust) impacts during the construction phase. Dust minimisations measures are included in Chapter 11 and shall be finalised by the appointed contractor in agreement with Fingal County Council and implemented during the proposed works. Other mitigation measures are included in relation to community liaison, site management, maintenance

of site, control of construction machinery, waste management especially earthworks and measures specific to trackout;

- Chapter 13 (Noise and 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, measures for piling activities, screening, adherence to noise limits, community liaison and project programme / phasing;

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

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

- Chapter 19 (Material Assets - Waste) includes a suite of measures in relation to management of construction waste to minimise the impacts of all site construction activities. A Resource and Waste Management Plan (**Appendix 19.1,** Volume 3 of the EIAR) prepared as part of the application shall be implemented throughout the construction phase of the Proposed Development;

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

7.5.2 Operational Phase

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

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

- The impacts of the Proposed Development on Chapter 16 (Microclimate – Daylight and Sunlight) to itself have been mitigated through considered design and development to ensure the highest level of compliance for the operational phase and human health.

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

- Chapter 19 (Material Assets- Waste) includes a suite of measures in relation to management of operational phase waste to minimise the impacts of the operational phase of the Proposed Development. An Operational Waste Management Plan (Appendix 19.2, Volume 3 of the EIAR) prepared as part of the application shall be implemented throughout the operational phase of the Proposed Development;

7.6 Residual Impacts

7.6.1 Construction Phase

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 on population and human health are predicted:

- The application of binding noise limits and hours of operation, along with implementation of appropriate noise and vibration control measures (as set out in Chapter 13), will ensure that noise and vibration impacts are minimised as far as practicable. Appropriate mitigation measures will be implemented in this regard. For the duration of the construction period, construction noise impacts will be ***short-term, negative*** and ranging between ***very significant to not significant,*** depending on the proximity of the works to the site boundary. As such, it is considered that this potentially ***significant, negative, residual impact*** on the local population is commensurate with the Proposed Development and acceptable considering the net merit of the proposal, and that the likely alternative to this Proposed Development is a development of a similar nature in accordance with the land use zoning objectives and requirements for the site as set out in the FCC Development Plan 2023-2029, which was subject to SEA, AA and SFRA prior to its adoption.

No other significant, negative residual impacts are predicted in relation to population and human health during the construction phase.

7.6.2 Operational Phase

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

7.7 Indirect and /or Secondary Impacts

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

7.8 Monitoring

Monitoring and maintenance recommended in Chapters 11 (Air Quality), 12 (Climate), 13 (Noise and Vibration), 14 (Landscape and Visual), 18 (Traffic and Transportation), 19 (Material Assets - Waste) and 20 (Material Assets – Services) shall be implemented in full during the construction and / or operational phases of the Proposed Development, as specified in those respective chapters. Beyond that which has been recommended elsewhere in this EIAR, no additional monitoring is considered necessary in respect of population and human health.

7.9 Interactions

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

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

Air Quality (Chapter 11)

There is potential for nuisance impacts on the local receptors due to dust-generating activities of Proposed Development during construction phase. With appropriate mitigation measures in place the interaction will be ***negative, not significant and short-term impact.***

Vehicles accessing the site will emit pollutants which may impact Air Quality and Human Health. However, the increased number of vehicles associated with the Proposed Development will not cause a significant change in air pollutant emissions in the locality. During operation phase of the Proposed Development the predicted impact on population and health due to air quality and climate will be ***long-term, not significant and negative.***

Noise and Vibration (Chapter 13)

The interaction between population and human health and noise and vibration during construction phase is due to potential nuisance and disturbance due to noisy construction activities, plant and equipment and construction traffic noise. Appropriate mitigation measures will be implemented in this regard. Implementation of the mitigation measures set out and adherence to good practice noise reducing measures will ensure that the residual impact on human health will be lessened and impacts will be ***negative, temporary and slight to moderate.***

Similarly, during the operational phase, plant selections designed to achieve the relevant noise criteria will result in a residual impact that is ***negative, long term and not significant*** to people in nearby noise sensitive locations. External noise sources have been assessed and mitigation to ensure internal noise levels achieve the relevant noise criteria have been provided. The predicted change in noise levels associated with additional traffic is expected to be ***negligible, long-term and not significant*** along the existing road network.

Landscape and Visual (Chapter 14)

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

The operational phase will result in positive contribution to the emerging residential community of the wider area, as well as enhancing green infrastructure and green space connectivity. The predicted impact will be ***negative to positive, moderate to not significant and long-term*** as the landscape (including replacement tree planting) matures and the views become more residential.

Traffic and Transportation (Chapter 18)

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

During the operational phase the Proposed Development will not have a significant impact on local road network.

Microclimate- Daylight and Sunlight (Chapter 16)

There are potential impacts due to changes to daylight and sunlight availability on the population and human health e.g. overshadowing of neighbouring buildings, can negatively or positively affect residential amenity in the receiving environment. Following the BRE Guide's recommendations for essential daylight and sunlight, internal daylighting is required to meet more than 50% of the targeted illuminance in lux throughout the year. As detailed above, 94% of rooms assessed were in excess of the BRE Guide recommendation for daylight, and compensatory measures are provided for the rooms that are not receiving the minimum guidelines recommendation. In terms of sunlight, each unit needs to receive over 1.5 hours of sunlight on March 21st. Eighty-three to one hundred percent of units assessed were in excess of the BRE Guide recommendation for sunlight percent (depending on housing type), and compensatory measures are provided for the units that are not receiving the minimum guidelines recommendation. All of the eleven communal spaces achieved compliance for sunlight provision under the BRE Guidelines. The assessment determined that the neutral long-term impacts to neighbouring residential areas, including outdoor spaces, and potential solar panel locations, are ***imperceptible***, and the Proposed Development itself will provide well-lit homes and amenity areas. All analysis were deemed to be compliant in accordance with the BRE Guide.

Microclimate – Wind (Chapter 17)

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

population and human health are predicted as a result of the wind effects of the Proposed Development.

Material Assets- Waste (Chapter 19)

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

Material Assets- Services (Chapter 20)

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

7.10 Cumulative Impacts

The potential for cumulative impacts to arise as a result of the Proposed Development in combination with other existing / proposed plans and projects, as listed in **Error! Reference source not found.** (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), Chapter 12 (Climate), Chapter 13 (Noise and Vibration), Chapter 14 (Landscape and Visual), Chapter 16 (Microclimate - Daylight and Sunlight) and Chapter 0 (Traffic and 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 **Error! Reference source not found.** (Cumulative Impacts).

7.11 Difficulties Encountered

No difficulties were encountered in the preparation of this chapter.

7.12 References

- CSO (2022). 2022 Summary Census Data
- CSO (2012). 2011 Census Data
- CSO (2017). 2016 Census Data

- CSO (2025). Labour Force Survey Quarter 4 2025.
- CSO (2024). Labour Force Survey Quarter 4 2024.
- Fingal County Council (2023). Fingal County Development Plan 2023 – 2029 (including all variations)
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- Department of Health (2025). Health in Ireland – Key Trends 2024
- Department of Health (2026). Public Health Strategy 2025-2030
- ISEP (2022). Effective Scoping of Human Health in Environmental Impact Assessment
- ISEP (2022). Determining Significance for Human Health in Environmental Impact Assessment
- ISEP (2017). Health in Environmental Impact Assessment: A Primer for a Proportionate Approach
- Institute of Public Health (2021). Health Impact Assessment Guidance: A Manual. Standalone Health Impact Assessment and health in environmental assessment.

8 Biodiversity

8.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) comprises an appraisal of the likely effects on biodiversity (flora and fauna) of the proposed development at Mooretown in Swords, Co. Dublin (Phase 2). The proposed development is described in detail in Chapter 5 of this EIAR (and in the Statutory Notices).

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

Brady Shipman Martin was commissioned to prepare this chapter of the EIAR on behalf of the applicant (Fingal County Council). It was written by Ecologist Sadye Goldfarb and technically reviewed by Senior Ecologist and Associate Matthew Hague CEnv MCIEEM. Additional ecological surveys were undertaken by bat and large mammal specialist, Brian Keeley; and breeding and wintering bird specialist, John Fox. The bat survey report is included at Appendix 8.1, and the bird survey reports at Appendix 8.2 in Volume 3 of this EIAR. Biodiversity data gathered in the preparation of the previous phase of development (Phase 1) at Mooretown was also considered.

Sadye Goldfarb holds a bachelor's degree in Environmental Science from the University of Vermont and a master's degree in Biodiversity and Conservation from Trinity College Dublin. She is a Qualifying Member of the Chartered Institute of Ecology and Environmental Management and is experienced in drafting and reviewing AA Screening Reports, Natura Impact Statements, EIA Screening Reports and SEA Screening Reports. She is also experienced in undertaking baseline ecological surveys, preparing Ecological Impact Assessments (EcIA), and undertaking Biodiversity Net Gain (BNG) assessments.

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

8.2 Methodology

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

8.2.1 Desk Study

This Ecological Impact Assessment (EcIA) and EIAR Biodiversity chapter report has been prepared in accordance with the following publications:

- EPA *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* (EPA, 2022).
- *Environmental Impact Assessment of Projects - Guidance on Screening* (European Commission, 2017).
- *Environmental Impact Assessment of Projects: Guidance on the Preparation of the Environmental Impact Assessment Report* (European Commission, 2017).
- OPR Practice Note PN02: Environmental Impact Assessment Screening (Office of the Planning Regulator (OPR) (2021).
- *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).
- Chartered Institute of Ecology and Environmental Management (CIEEM). *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine*, September 2018, updated in September 2019 (V1.1), further updated in April 2022 (V1.2) and again in September 2024 (V1.3).

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

- The Planning and Development Act 2000 as amended (the "Planning Acts").
- The Planning and Development Regulations 2001, as amended (the "Planning Regulations").
- The Wildlife Act 1976 to 2022 and the Wildlife (Amendment) Act 2000.
- Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (the "Habitats Directive").
- Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (the "Birds Directive").
- European Communities (Birds and Natural Habitats) Regulations 2011, as amended;
- Flora (Protection) Order 2022 (SI No. 235 of 2022).
- Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment (the "EIA Directive").
- European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018).

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

- *Ireland's Fourth National Biodiversity Plan 2023 – 2030* (National Parks and Wildlife Service, 2023);
- *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 County Development Plan 2023-2029*, including the accompanying Appropriate Assessment documentation (Natura Impact Report), and specifically the numerous policies relevant to

biodiversity and sustainable development, such as Policy Objectives: Policy GINHP1, Policy GINHP4, Policy GINHP5, Objective GINHO3, Objective GINHO9, Policy GINHP7, Objective GINHO12, Objective GINHO14, Objective GINHO25, Policy GINHP11, Policy GINHP13, Policy GINHP14, Policy GINHP15, Objective GINHO29, Objective GINHO30, Policy GINHP21, Policy GINHP22, Objective DMSO138, Objective DMSO242, Objective DMSO248.6.

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

- Data on rare and protected plant and animal species contained in the following databases:
  - The National Parks and Wildlife Service (NPWS) of the Department of Housing, Local Government and Heritage (www.NPWS.ie).
  - The National Biodiversity Data Centre (NBDC) (www.biodiversityireland.ie).
  - Birdwatch Ireland (www.birdwatchireland.ie).
  - Bat Conservation Ireland (www.batconservationireland.org).
- Recent aerial photography and photographs taken at the site.
- Recent and historic ordnance survey (OSI) mapping (www.geohive.ie).
- Information on protected areas, as well as watercourses, catchments and water quality in the area available from EPA, (gis.epa.ie/EPAMaps/).
- Information on soils, geology and hydrogeology in the area available from Geological Survey Ireland (GSI) (gsi.ie).
- The NPWS Article 17 Reports:
  - The Status of EU Protected Habitats and Species in Ireland – Volume 1 (NPWS, 2025a).
  - The Status of EU Protected Habitats and Species in Ireland – Volume 2 (Habitat Assessments) (NPWS, 2025b).
  - The Status of EU Protected Habitats and Species in Ireland – Volume 3 (Species Assessments) (NPWS, 2025c).
- Information on land-use zoning from the online mapping of the Department of the Environment, Community and Local Government (myplan.ie/en/index.html);
- Gilbert, G., Stanbury, A. and Lewis, L. (2021) *Birds of Conservation Concern in Ireland 4: 2020 – 2026* (Irish Birds 43: 1-22).
- Benson, L. (2009). *Use of Inland Feeding Sites by Light-bellied Brent Geese in Dublin 2008 – 2009: A New Conservation Concern?* Irish Birds 8: 563-570.
- EU Biodiversity Strategy to 2030.

This chapter of the EIAR takes full account of the design of the proposed development, and a detailed examination of all relevant elements of the proposal as it currently stands, was undertaken. This includes the following documents, among others submitted with the planning application:

- Hydrological & Hydrogeological Qualitative Risk Assessment (HHQRA) (AWN Consulting, 2026).
- Water Framework Directive Assessment (WFD) (AWN Consulting, 2026).
- Infrastructure Design Report (AKM Design Group, 2026).
- Construction & Environmental Management Plan (AKM Design Group, 2026).
- Surface Water Management Plan (AKM Design Group, 2026).
- Landscape and Green Infrastructure Report (Simon Ronan Landscape Architects, 2026).
- Resource and Waste Management Plan (AWN Consulting, 2026).
- Operational Waste Management Plan (AWN Consulting, 2026).

- Climate Action Energy Statement (ENX, 2026).

8.2.2 Field Study

A desk-based assessment was undertaken between February and May 2026 of the Mooretown site and its environs. This built on previous assessments that were carried out by Brady Shipman Martin in 2024 as part of the Part 8 process related to Phase 1 of the Mooretown development, now under construction.

A full habitat survey of the site, including rare and legally protected plants and invasive species, was carried out by Ecologist Ms Sadye Goldfarb of Brady Shipman Martin on 29 October 2025 and 25 February 2026.

Ornithologist Mr John Fox and bat and large mammal specalist Mr Brian Keeley and others from Wildlife Surveys Ireland (WSI) have also undertaken biodiversity surveys at the site as part of this project. These surveys, which include large mammal surveys, bat surveys, breeding bird surveys and winter bird surveys, commenced in November 2025 and continued until May 2026.

Biodiversity surveys were undertaken on the following dates:

- Habitat and botanical surveys (Brady Shipman Martin)
  - Detailed habitat and botanical surveys as well as large mammal surveys took place on 29 October 2025, 25 February 2026 and 18 May 2026.
- Bat and large mammal Surveys (Wildlife Surveys Ireland) (**Appendix 8.1**)
  - 18 and 19 May 2026 (bats, including dusk/dawn bat detector surveys)
- Bird surveys (Ornithologist John Fox) (**Appendix 8.2**)
  - A total of five winter bird visits were carried out between November 2025 and March 2026
  - A total of three breeding bird visits were carried out, in April and May 2026

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

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

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*[11] and were classified using

[11] Smith, G. F., O'Donoghue, P., O'Hora, K., and Delaney, E. (2010) "*Best Practice Guidance for Habitat Survey and Mapping*". Available at: https://www.heritagecouncil.ie/content/files/best_practice_guidance_habitat_survey_mapping_onscreen_version_2011_8mb.pdf [accessed June 2025]

A Guide to Habitats in Ireland[12] with due regard to the *Interpretation Manual of European Habitats*[13]. Vascular plant nomenclature follows that of the *New Flora of the British Isles 4th Edition*[14].

8.2.2.1 Habitats, flora and hedgerows

During the course of the site visits, the habitats were identified, described and mapped by the authors. Habitats were surveyed using the guidelines of Smith *et al*. (2011) and were classified using A Guide to Habitats in Ireland (Fossitt, 2000). Vascular plant nomenclature follows that of the New Flora of the British Isles, 4th Edition (Stace, 2019).

8.2.2.2 Bats

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

8.2.2.3 Large mammals

All hedgerows, tree lines, field edges and ditches have been searched for any evidence of badgers, such as setts, commuting routes, territorial marking, latrines or feeding signs as well as paw prints, snagged hairs and piles of bedding material.

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

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

8.2.2.4 Birds

The site was visited five times in winter, between November 2025 and March 2026. Each visit was for a duration of less than 2 hours. The visits were made in the early morning when conditions were suitable for winter bird surveying.

Further surveys, of breeding birds, took place in April and May 2026.

The lands were scanned from various points with 42x10 binoculars. The accessible hedgerows were walked slowly, any birds heard or seen were identified, when possible, their behaviour noted, numbers counted and their locations plotted on aerial photography. Transects were also walked across open areas of the lands to look and listen for any birds that might be present away from the hedgerows.

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[12] Fossitt, J. (2000) "*A Guide to Habitats in Ireland*". Heritage Council. Available at: https://www.npws.ie/sites/default/files/publications/pdf/A%20Guide%20to%20Habitats%20in%20Ireland%20-%20Fossitt.pdf [accessed June 2025]

[13] European Commission (2007) "*Interpretation Manual of European Union Habitats*". Available at: https://www.miteco.gob.es/content/dam/miteco/es/biodiversidad/temas/espacios-protegidos/doc_manual_intp_habitat_ue_tcm30-207191.pdf [accessed June 2025]

[14] Stace, C. (2019) "*New Flora of the British Isles, 4th Edition*". Cambridge University Press.

[15] https://www.tii.ie/tii-library/environment/construction-guidelines/Guidelines-for-the-Treatment-of-Badgers-prior-to-the-Construction-of-a-National-Road-Scheme.pdf

[16] https://www.tii.ie/tii-library/environment/construction-guidelines/Guidelines-for-the-Treatment-of-Otters-prior-to-the-Construction-of-National-Road-Schemes.pdf

8.2.2.5 Other Species

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

8.2.2.6 Watercourses

A visual appraisal of ditches in the vicinity of the Mooretown site was undertaken. Biological kick-sampling, a method of assessing the ecological quality of a watercourse, was not carried out, due to the unsuitable substrate of the drainage ditches within the site, the flow regime and general overall condition. This includes the field boundaries as well as a locally significant spring-fed feature, St Cronan's Well (Record of Monuments and Places Code: DU011-018), located in the south-eastern corner of the southern part of the subject site.

8.2.3 Evaluation of Ecological Features

The methodologies used to determine the value of ecological resources, to characterise impacts of the proposed development, and to assess the significance of impacts and any residual effects are consistent with the EPA *Guidelines on the information to be contained in Environmental Impact Assessment Reports* (2022) (the 'EPA Guidelines') and are in accordance with the NRA (TII) *Guidelines for Assessment of Ecological Impacts of National Road Schemes* (2009) (the '*NRA Guidelines*' hereafter)[17]. This methodology is in turn consistent with the *Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland – Terrestrial, Freshwater, Coastal and Marine* (Version 1.3) (2018, updated 2024) (the '*CIEEM Guidelines*' hereafter). The methodology allows the baseline to be comprehensively evaluated. This then makes it possible to assess the potential impacts (including cumulative impacts) of the proposed development, to set out appropriate mitigation measures and to assess the residual impacts of the proposed development.

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

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

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.

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

8.3 Baseline Environment

8.3.1 General Description of the Existing Environment

The site of the proposed residential development is a greenfield site located at Rathbeale Road, Swords, Co. Dublin within the townland of Mooretown, c. 3km west of Swords town centre and c. 20km north of Dublin City Centre. The subject lands are positioned within an established and expanding residential area and represent a strategic infill opportunity to deliver a high-quality residential development that benefits from existing and proposed connectivity to both Swords and Dublin City.

The overall site is bound by several established residential communities including Oldtown to the north, Cian Lea to the east and Swords Manor to the south. The existing residential surrounds are largely characterised by detached, semi-detached and terrace dwellings of two to three storeys. To the west, the site adjoins Swords Community College and several permitted development schemes, some currently under construction.

The site of the proposed development is divided into two parcels of land, located to the north and south of the Mooretown Phase 1 residential development (Planning Ref. LADP/002/24) currently under construction.

The northern parcel is immediately opposite to Rathbeale Archaeological Park located along Rathbeale Road (R125). The eastern border of this parcel is enclosed by the Mooretown Phase 1 development, and the western border is alongside a residential estate (Cronan's Park) and a privately owned bungalow.

The southern parcel is bordered by residential developments, Cianlea and Ormond Crescent, with the permitted development (Planning Ref SHD/012/21), currently under construction located to the west. St Cronan's well is located within the southern site, which once provided water to the Glasmore Abbey ruins located outside the eastern border of the site. Both the northern and southern parcels contain archaeological constraints below ground, which will be retained as open space for the development.

The site is located within the administrative boundary of Fingal County Council (FCC), in the townlands of Mooretown. In the Fingal Development Plan 2023–2029, the Mooretown lands are zoned RA - Residential Area, with the zoning objective to 'provide for new residential communities subject to the provision of the necessary social and physical infrastructure'.

The site of the proposed development is within the 'Nanny-Delvin' (08) catchment, the 'Broadmeadow_SC_010' sub-catchment, and the BROADMEADOW_040 sub basin. The only EPA mapped watercourse within the proposed development is the Newtown 08 (River Waterbody Code IE_EA_08B020800). This watercourse originates from multiple small tributaries and ditches (some unnamed) that surround and sometimes intersect the proposed development site. These tributaries all converge c. 90m northeast of the proposed development, forming the Newtown, which then flows north into the Broadmeadow 08, and then into Malahide Estuary (which is designated as a Special Area of Conservation, Special Protection Area, and potential Natural Heritage Area).

The proposed development site is c. 540m north of the River Ward (River Waterbody Code IE_EA_08W010610) which flows east and then north to meet the Broadmeadow 08 and discharge into the Malahide Estuary.

A review of the Environmental Protection Agency (EPA) web-tool indicates that the Newtown 08 stream (EPA Code: IE_EA_08B020800) flows in a west to east direction through the site before turning north

and flowing through Oldtown to merge into the Broadmeadow River c. 1km to the north of the proposed site. The Broadmeadow 08 River (EPA Code: IE_EA_08B020800) flows west to east and discharges downstream into the Malahide Estuary.

The proposed development site is located within the Nanny-Delvin catchment (08), Broadmeadow (SC_010) sub-catchment and Broadmeadow_040 river sub-basin.

As per the WFD 2019-2024 status, the Newtown Stream is of 'Poor' status and is 'At risk' for failing to meet its Water Framework Directive (WFD) objectives by 2027. As per the WFD 2016-2021 status, the Broadmeadow Water transitional water (IE_EA_060_0100) is of 'Moderate' status and 'At risk'.

The proposed development therefore has an indirect hydrological connection to the Broadmeadow river waterbody, via a network of on-site and adjacent drainage ditches and minor streams.

There is therefore a potential (albeit unlikely) surface water link between the proposed development site and the Natura 2000 Sites in the Malahide Bay and North-western Irish Sea (i.e. Malahide Estuary SAC & SPA and North West Irish Sea SPA). Refer to Figure 8.1.

In addition to the drainage ditches and river waterbodies in the vicinity, a locally significant spring-fed feature, St Cronan's Well (Record of Monuments and Places Code: DU011-018), is located in the south-eastern corner of the southern part of the subject site. The well represents a point of groundwater emergence at surface and forms part of the local hydrological environment and cultural landscape. While St Cronan's Well does not form part of the mapped EPA river network and does not provide surface water flow to downstream watercourses, it represents a sensitive local water feature whose hydrological regime is influenced by shallow groundwater conditions rather than surface runoff processes.

In summary, surface water arising within the Mooretown area discharges to Malahide Estuary via the Newtown and Broadmeadow Rivers.

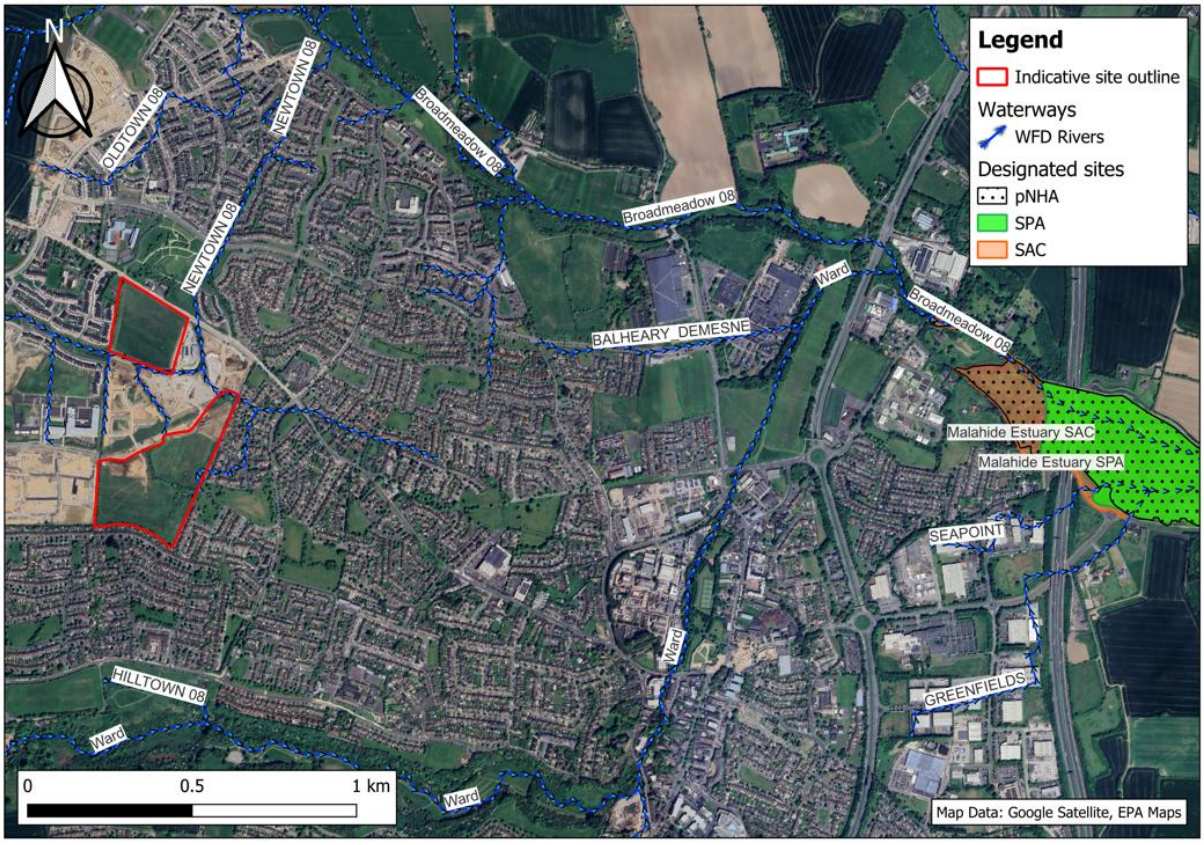

Figure 8.1 Location of the proposed development, with European sites and EPA-mapped watercourses shown.

8.3.2 Description of the proposed development

The proposed development consists of 360 no. residential units; a mix of houses, own-door duplexes, and apartments arranged in urban blocks ranging from 2- to 5-storeys, at a net density of 41 dwellings per hectare. A 2-storey crèche of c. 670 sq.m is proposed at the centre of the site. Supporting infrastructure proposed includes 580 no. car parking spaces (resident and visitor), 1,009 no. cycle parking spaces, public open space, communal amenity space, pedestrian and cycle links, hard and soft landscaping, connections to all utilities, and all associated and enabling site works.

8.3.3 Designated Conservation Areas

For an effect to occur, there must be a 'source' (such as a construction site); a 'receptor' (such as a designated site for nature conservation); and a 'pathway' between the two (such as a watercourse that links the construction site to the designated site). A construction site or completed development may also create a barrier to movement, for example, by preventing the migration of fauna along a river corridor, or by obstructing the migration of birds.

Identification of a potential effect means that there is a possibility of ecological or environmental damage occurring, with the level and significance of the impact depending upon the nature and exposure to the potential effect and the characteristics of the receptor. Although there may be a risk of an impact, it may not necessarily occur, and if it does occur, it may not be significant. In other words, the existence of a source, a pathway and a receptor does not necessarily mean that a significant effect is likely.

The potential for any significant effects on European sites arising as a result of the proposed development has been considered. Full details of that study are presented in the stand-alone Appropriate Assessment Screening Report.

8.3.3.1 Relevant European Sites

No designated conservation areas occur within or in the immediate vicinity of the area of the proposed development at Mooretown. There are a number of designated sites within the potential Zone of Influence of the proposed development; however, the AA Screening report (refer to the report submitted separately for full details) 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.

The nearest European sites are the Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) associated with Dublin Bay:

- Special Areas of Conservation (SACs)
    - Malahide Estuary SAC (site code 000205), c. 2.1km to the east.
    - Rogerstown Estuary SAC (site codes 000208), c. 4.7km to the north-east.
    - Baldoyle Bay SAC (site code 000199), c. 8.6km to the south-east.
    - Rockabill to Dalkey Island SAC (site code 003000), c. 11.4km to the east.
    - North Dublin Bay SAC (site code 000206), c. 11.4km to the south-east.
    - Ireland's Eye SAC (site code 002193), c. 13.2km to the south-east.
    - Lambay Island SAC (site code 000204), c. 14km to the north-east.
    - Howth Head SAC (site code 000202), c. 14.2km to the south-east.
    - South Dublin Bay SAC (site code 000210), c. 14.7km to the south-east.
    - Rye Water Valley/Carton SAC (site code 001398), c. 19.8km to the south-west.
- Special Protection Areas (SPAs)
    - Malahide Estuary SPA (site code 004025), c. 2.5km to the north-east.
    - Rogerstown Estuary SPA (site code 004015), c. 5.3km to the north-east.
    - North-West Irish Sea SPA (site code 004236), c. 7.6km to the east.
    - Baldoyle Bay SPA (site code 004016), c. 8.6km to the south-east.
    - North Bull Island SPA (site code 004006), c. 11.2km to the south-east.
    - South Dublin Bay and River Tolka Estuary SPA (site code 004024), c. 11.8km to the south-east.
    - Ireland's Eye SPA (site code 004117), c. 12.8km to the south-east.
    - Lambay Island SPA (site code 004069), c. 13.8km to the north-east.
    - Howth Head Coast SPA (site code 004113), c. 15.0km to the south-east.
    - Skerries Island SPA (site code 004122), c. 15.2km to the north-east.
    - Rockabill SPA (site code 004014), c. 16.4km to the north-east.

Site Specific Conservation Objectives have been established for all the listed European sites. The Conservation Objectives of these sites are to maintain (or restore) the favourable conservation condition of the QIs / SCIs in question. Where specific conservation objectives have been set out by the NPWS, 'favourable conservation condition' is defined in respect of specific attributes and targets for the habitat or species in question. Note that the above-listed distances are linear (i.e. 'as the crow flies'). The European sites are shown in Figure 8.2, below.

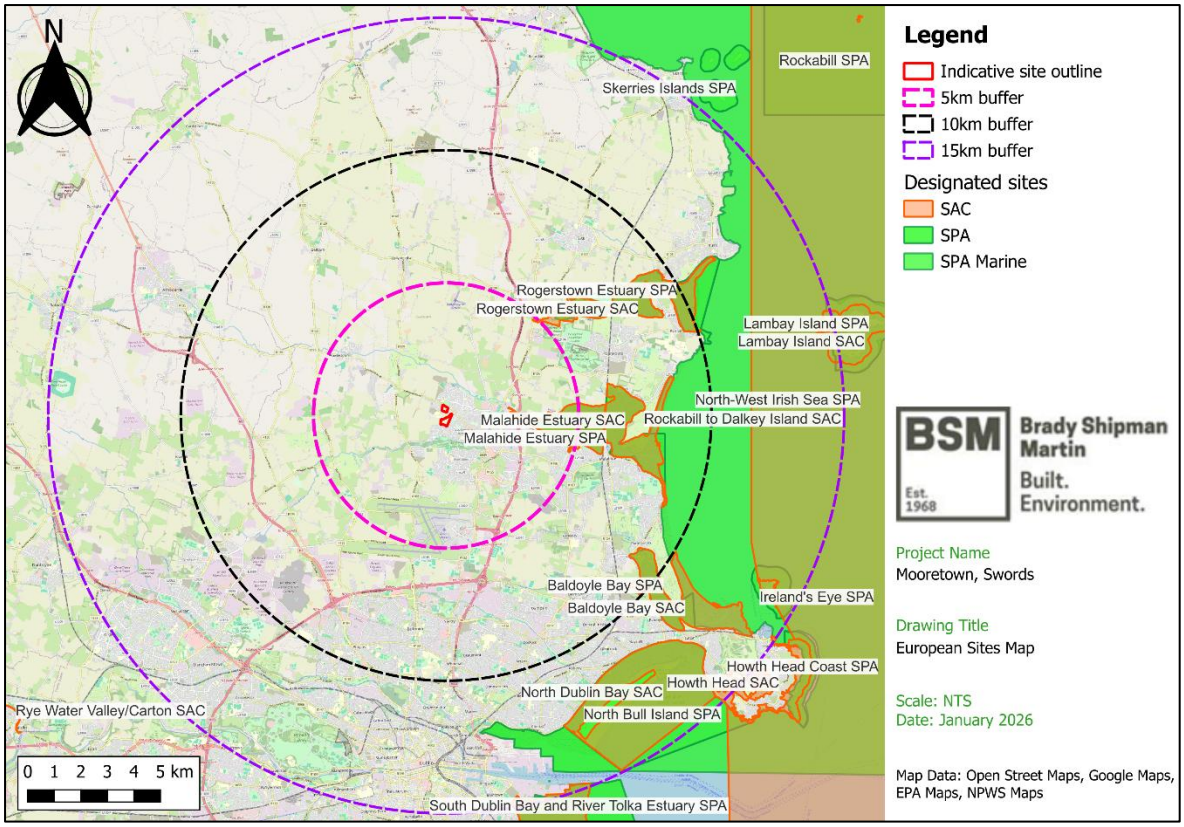

Figure 8.2 European sites within potential Zone of Influence of the proposed development. 5, 10 and 15km radii are shown for scale.

8.3.3.2 Other Designated Conservation Areas

Designated sites other than European sites (i.e. proposed Natural Heritage Areas (pNHAs) and designated Natural Heritage Areas (NHAs)) within the potential Zone of Influence (ZoI) have been included in this assessment. There are no fully designated Natural heritage Areas within the potential ZoI, the nearest being Skerries Island NHA (site code 001218), c. 15.2km to the northeast.

- Proposed Natural Heritage Areas (pNHAs)
    - Malahide Estuary (site code 000205), c. 2.2 km to the east.
    - Feltrim Hill pNHA (site code 001208) c. 4.2km to the south-east.
    - Rogerstown Estuary pNHA (site code 000208), c. 4.7km to the north-east.
    - Santry Demesne pNHA (site code 000178), c.6.5km to the south.
    - Sluice River Marsh pNHA (site code 001763) c. 7.5km to the south-east.
    - Portraine Shore pNHA (site code 001215), c. 8.5km to the north-east.
    - Baldoyle Bay pNHA (site code 000199), c. 8.7km to the south-east.
    - Royal Canal pNHA (site code 002103), c. 11.1km to the south-west.
    - North Dublin Bay pNHA (site code 000206), c. 11.5km to the south-east.
    - Bog of the Ring pNHA (site code 001204), c. 11.8km to the north.
    - Knock Lane pNHA (site code 001203), c. 12.8km to the north.
    - Ireland's Eye pNHA (site code 000203), c. 13.2km to the south-east.
    - Grand Canal pNHA (site code 002104), c. 13.6km to the south.
    - Lambay Island pNHA (site code 000204), c. 14km to the north-east.
    - Howth Head pNHA (site code 000202), c. 14.5km to the south-east.
    - Loughshinny Coast pNHA (site code 002000), c. 14.5km to the north-east.

- South Dublin Bay pNHA (site code 000210), c. 14.8km to the south-east.

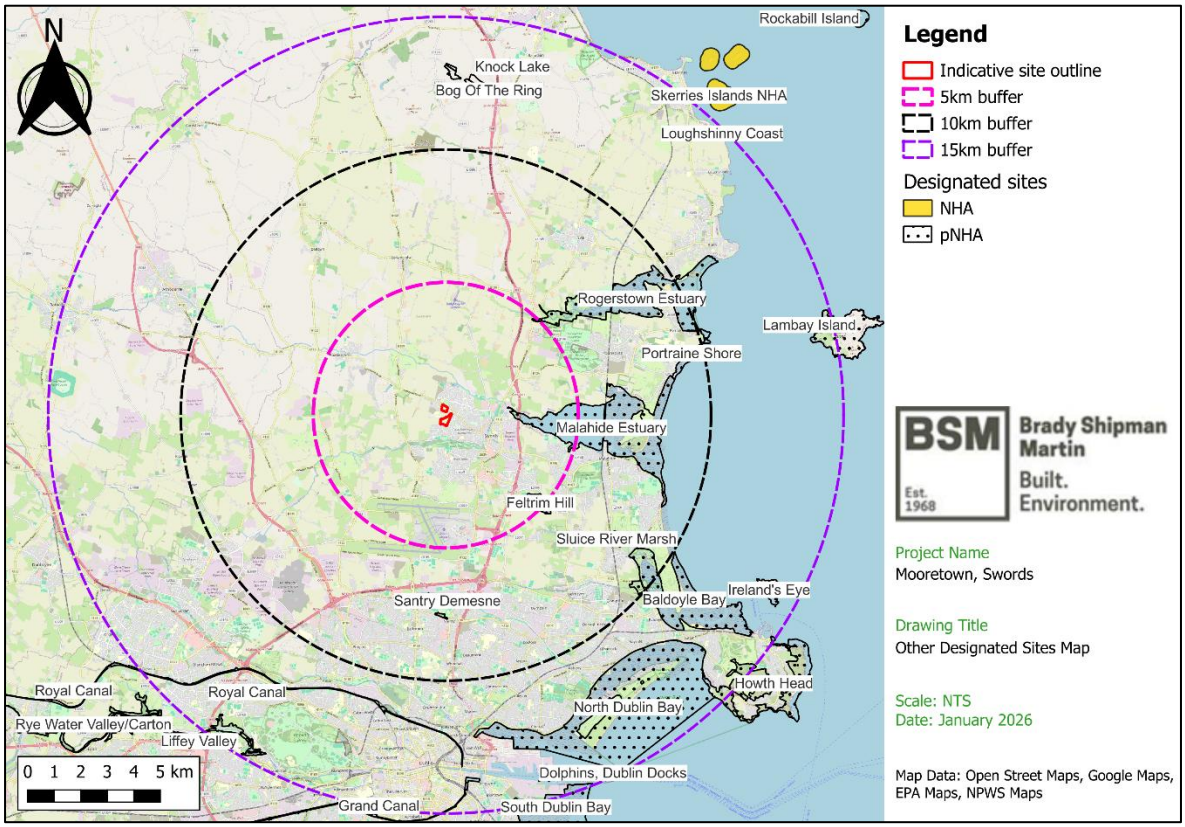

Figure 8.3 NHAs and pNHAs within potential Zone of Influence of the proposed development. 5, 10, and 15km radii are shown for scale.

8.3.4 Rare and Protected Plant Species

The NPWS and The National Biodiversity Data Centre (NBDC) databases were consulted with regard to rare species[18] and species protected under the *Flora Protection Order* (2022). According to the NBDC database, there are no known records of rare or protected plant species within the proposed development site or within the 1km grid squares (Grid no. O1647) that covers the site, and none have been recorded during any of the site visits undertaken.

8.3.5 Invasive Alien Plant Species

No plant species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 (as amended), such as Japanese knotweed (*Reynoutria japonica*) or giant hogweed (*Heracleum mantegazzianum*) were recorded during any of the field surveys.

8.3.6 Habitats

The habitats present on the proposed development site are shown in Figure 8.4, below. The proposed development site comprises a range of habitats typical of a suburban, previously agricultural landscape, and are described in the following sections.

[18] Curtis & McGough (1988)

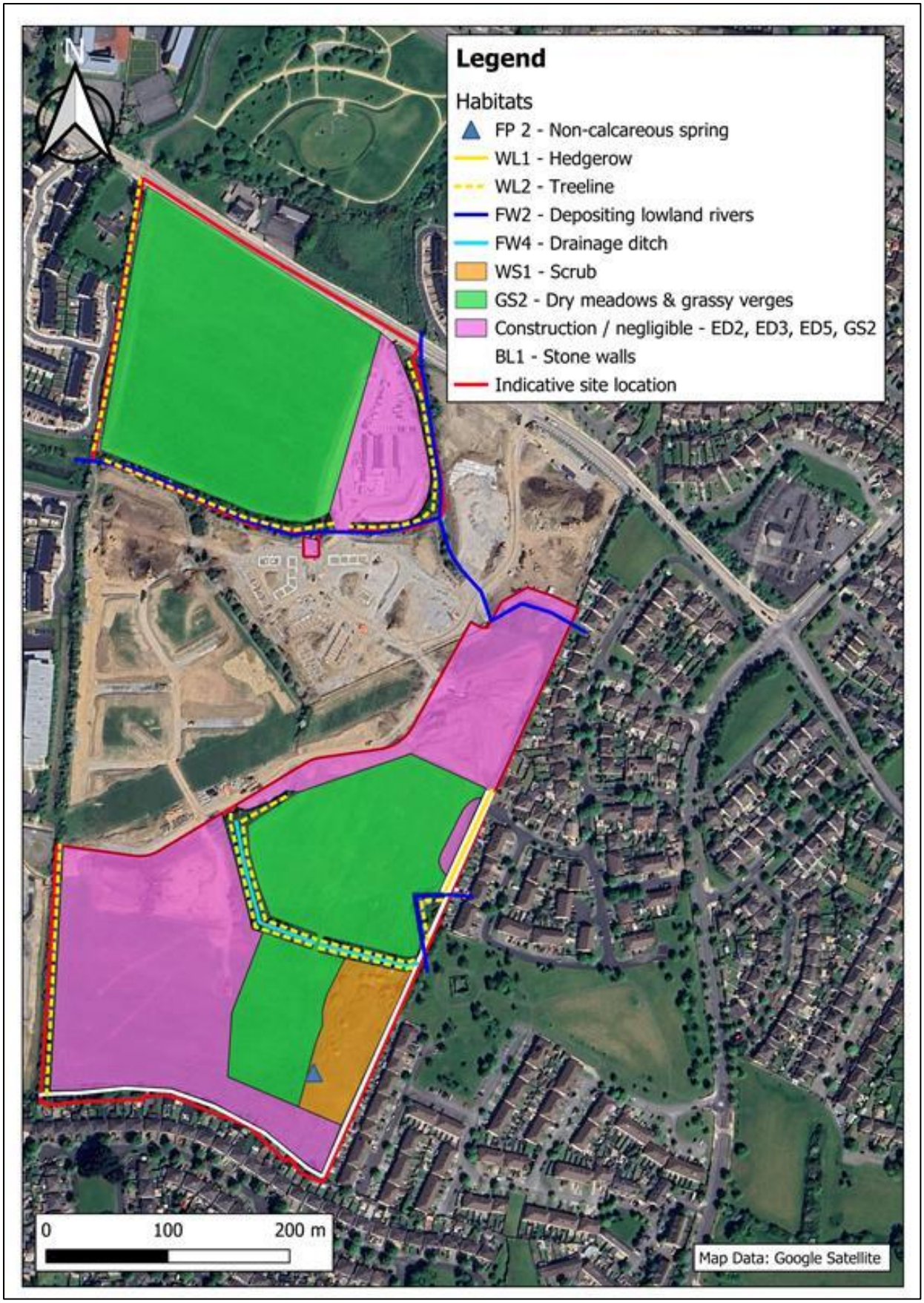

Figure 8.4 Habitat map for the site at Mooretown, Swords.

8.3.6.1 Dry meadows and grassy verges (GS2)

Dry meadows make up a majority of the proposed development site at Mooretown. The species composition onsite is to be expected of disused agricultural fields left to recolonise naturally. Species include white clover (*Trifolium repens*), dock (*Rumex* spp.), willowherb (*Epilobium* spp.), silverweed (*Potentilla anserina*), ribwort plantain (*Plantago lanceolata*), creeping cinquefoil (*Potentilla reptans*), common ragwort (*Jacobaea vulgaris*), meadow buttercup (*Ranunculus acris*) and various common grass species. These fields are of moderately low species diversity when compared to high-quality semi-natural grasslands in the wider area. The fields are of value as a food source for bats, birds, and insects as well as habitat for various mammal species. The GS2 habitat onsite at Mooretown is of **Local Importance (lower value)** in accordance with the NRA Guidelines.

Figure 8.5 Dry meadow habitat in the northern portion of the proposed development site.

8.3.6.2 Hedgerows (WL1), Treelines (WL2) & Drainage ditches (FW4)

Hedgerows and treelines occur along field boundaries within the proposed development site. The treelines present are the result of lapsed management and growth of hedgerows. Species include ash (*Fraxinus excelsior*), dog rose (*Rosa canina*), ivy (*Hedera helix*), bramble (*Rubus fruticosus* agg.), alder (*Alnus glutinosa*), blackthorn (*Prunus spinosa*), elder (*Sambucus nigra*), hawthorn (*Crataegus monogyna*), and sycamore (*Acer pseudoplatanus*) and one large gum tree (*Eucalyptus* sp.) in the northwest corner. The linear woodland habitats onsite are of moderate species diversity and are ecologically important for food and habitat resources for wildlife, especially the commuting of mammal species. Many of the linear woodlands onsite have associated drainage ditches, a few of which had some standing water at the time of survey. These three linear habitats are of **Local Importance (higher value)** in accordance with the NRA Guidelines.

Figure 8.6 Treeline present in the north west of the site.

8.3.6.3 Scrub (WS1)

There is a patch of mostly willow and bramble scrub located along the southeastern boundary of the proposed development site. This area has two small drainage ditches running north-south, which have caused the ground to become saturated and have supported the growth of species like rush and horsetail that do well in water-logged soils. Despite its relatively low species diversity, this scrub provides valuable habitat to local wildlife and is an ecologically valuable part of the proposed development site at Mooretown. This habitat is of **Local Importance (higher value)** in accordance with the NRA Guidelines.

Figure 8.7 Scrub habitat with a drainage ditch running through the middle.

8.3.6.4 Depositing/lowland rivers (FW2)

The Mooretown Stream, Newtown Stream, and several small unnamed tributaries traverse the proposed development site. These streams are typical of the habitat type, with slow flow and fine sediments deposited on the riverbed. This habitat type has a lot of value to wildlife not only as a source of food and water, but also a path for commuting and movement. This habitat is of **Local Importance (higher value)** in accordance with the NRA Guidelines.

Figure 8.8 The Newtown Stream, a deposition/lowland river that runs along the southern boundary of the northern section.

8.3.6.5 Non-calcareous spring (FP2)

St Cronan's Well (Record of Monuments and Places Code: DU011 018) is a locally significant natural spring located in the southeastern corner of the southern parcel of the site. St Cronan's Well is documented as a holy well fed by a natural spring, with groundwater emerging via percolation through overlying natural subsoils, rather than through karst conduits or fractured bedrock pathways. The spring is therefore interpreted as being supported by shallow, perched and discontinuous groundwater seepage within the limestone derived glacial tills that overlie the underlying 'PI – Poor Aquifer', consistent with the findings of the site investigation and regional hydrogeological mapping. There is no evidence to suggest that the well is hydraulically connected to deeper bedrock groundwater systems or to any regionally important aquifer. This habitat is of **Local Importance (higher value)** in accordance with the NRA Guidelines.

8.3.6.6 Construction mosaic and Negligible Habitats (GS2 / ED2 / ED3 / ED5 & BL1)

There are areas of habitat on site previously disturbed by construction activities. These areas consist of a mosaic of dry meadows, spoil and bare ground, recolonising bare ground, and refuse and other waste. These areas are of limited value to biodiversity.

There are stone walls along the southeastern boundary of the proposed development site. These are not dry-stone walls, nor are they calcareous lime mortar walls, and therefore have limited benefit to biodiversity.

These habitats are considered to be of **Negligible importance** due to their low species diversity and poor habitat potential.

8.3.7 Fauna

8.3.7.1 Badgers

Badgers and hares are fully protected under the *Wildlife Act* (1976) and subsequent amendments. No evidence of badgers or of hares has been recorded on the proposed development site. Foxes, which are not protected under wildlife legislation, were seen at the site by the authors on occasion.

Otters are protected under the *Wildlife Act* (1976) and subsequent amendments, and under the *EU Habitats Directive*, via the *European Communities (Birds and Natural Habitats) Regulations*, 2011, as amended. No signs of otters have been recorded on the subject site which is of low suitability for use by otter, and there is no pathway to the site for otter from the Broadmeadow River.

Overall, given the habitats present, the site is of no more than **Local Importance (lower value)** for large mammals.

8.3.7.2 Bats

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

No bat roosts were noted within the site. All bat activity was of feeding or commuting bats. Three species of common bat were recorded (common pipistrelle, soprano pipistrelle, and Leisler's bat) . Bats

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

were noted to leave the site towards the northwest and east. There are suitable buildings for roosts in the immediate area to the northwest (outside the site) while a bat recorded heading east (refer to Appendix 8.1) may have further to reach a roost site (or potentially may be roosting within a new building outside the subject site). Trees within the site are generally unsuitable for roosting bats and no obvious roost trees were noted. Mature or maturing trees that offer good foraging were noted towards the northwestern corner. One ivy covered tree offers very minor roost potential towards the southern section of the site while all other trees within the development area have no roost potential.

Overall, given the habitats present and the results of the bat surveys, the site is of no more than **Local Importance (lower value)** for bats.

8.3.7.3 Birds

A total of 31 bird species were recorded on the lands over the winter of 2025/2026 (Table 8.1). These are all common and widespread bird species of Ireland. They include two Red-listed and six Amber-listed species. (Gilbert *et al*. 2021). The red listed species were snipe and meadow pipit. A maximum of just two snipe was flushed during a single visit with single birds flushed on other occasions. A small flock of five wintering meadow pipit was detected during one visit while one to three individuals were detected on other occasions. The six amber listed species were mallard, herring gull, skylark, starling, house sparrow and linnet. A single pair of mallard were seen in flight over the lands on just one occasion. Herring gulls were seen infrequently and only in flight over the lands. A single skylark was seen on one occasion only in the southwestern area of the site.

A total of 28 bird species were recorded on the site during the surveys undertaken in April and May 2026 (Table 8.2). These are all common and widespread bird species of Ireland. They include one red-listed species (meadow pipit) and six amber-listed species (herring gull, barn swallow, house martin, starling, house sparrow and linnet). Although meadow pipit is red-listed, the species is common and widespread in north county Dublin. A total of 21 additional green listed species were also detected on the lands, most of which were observed on several occasions.

Just one waterbird species was recorded on the lands, that species was herring gull. Herring gull was observed foraging on top of the spoil heaps on one occasion when six birds were present. Herring gull were also seen flying over the lands frequently. Despite the presence of very small numbers of herring gulls, the subject site is of no significance for the species. While herring gull is listed as an SCI species in the North-West Irish Sea SPA, located some 7.6km distant, only very small numbers of birds were recorded.

The total of six herring gulls recorded during the winter bird surveys equates to, at most, only 0.058% of the 1% international population[20] of the species (the 1% figure is estimated at 10,200 birds) this figure is negligible in the context of the importance of Irish coastal sites for herring gulls.

No other SCI species, such as lapwing, golden plover or oystercatcher were recorded on site.

There is no habitat on the site suitable for use, even on a very occasional basis, by any overwintering birds, such as pale-bellied Brent goose, or any other protected bird species listed as a Special Conservation Interest (SCI) in any European site within the Zone of Influence.

[20] References to international populations of birds are after Nagy, S and Lagendoen, T (2021) AEWA Report on the Conservation Status of Migratory Waterbirds in the Agreement Area – 8th Edition.

Table 8.6 List of bird species found at the Mooretown lands (winter 2025/2026). Text colour indicates species conservation status (Red, Amber, or Green listed).

Common Name	BTO Code	Species	Activity	Estimated Maximum Numbers Detected
Mallard	MA	*Anas platyrhynchos*	In Flight	2 birds
Pheasant	PH	*Phasianus colchicus*	Foraging	5 birds
Buzzard	BZ	*Buteo buteo*	Hunting, Soaring	1 bird
Herring Gull	HG	*Larus argentatus*	In Flight	6 birds
Gt Black-backed Gull	GB	*Larus marinus*	In Flight	1 bird
Feral Pigeon	FP	*Columba livia (domest)*	In Flight	4 birds
Woodpigeon	WP	*Columba palmubus*	Foraging	10 birds
Collared Dove	CD	*Streptopellia decaocto*	Foraging	3 birds
Skylark	S.	*Alauda arvensis*	Foraging	1 bird
Snipe	SN	*Gallinago gallinago*	Foraging	3 birds
Meadow Pipit	MP	*Anthus pratensis*	Foraging	Flock of up to 5 birds
Wren	WR	*Troglodytes troglodytes*	Foraging	5 birds
Dunnock	D.	*Prunella modularis*	Foraging	3 birds
Robin	R.	*Erithacus rubecula*	Foraging	3 birds
Stonechat	SC	*Saxicola torquatus*	Foraging	2 birds
Song Thrush	ST	*Turdus philomelos*	Foraging	3 birds
Mistle Thrush	M	*Turdus pilaris*	Foraging	1 bird
Blackbird	B.	*Turdus merula*	Foraging	5 birds
Great Tit	GT	*Parus major*	Foraging	2 birds
Blue Tit	BT	*Parus caeruleus*	Foraging	3 birds
Magpie	MG	*Pica pica*	Foraging	2 birds
Jackdaw	JD	*Corvus monedula*	Foraging	6 birds
Rook	RO	*Corvus frugilegus*	Foraging	4 birds
Hooded Crow	HC	*Corvus corone cornix*	Foraging	2 birds
Starling	SG	*Sturnus vulgaris*	Foraging	Flock of up to 4 birds.
House Sparrow	HS	*Passer domesticus*	Foraging	1 bird
Chaffinch	CH	*Fringilla coelebs*	Foraging	Flocks of up 5 birds
Linnet	LI	*Carduelis cannabina*	Foraging	Flocks of up to 6 birds
Goldfinch	GO	*Carduelis carduelis*	Foraging	Flocks of up to 4 birds
Bullfinch	BF	*Pyrrhula pyrrhulla*	Foraging	2 birds
Reed Bunting	RB	*Emberiza schoeniclus*	Foraging	1 female bird

Table 8.2 List of bird species found at the Mooretown lands (spring 2026). Text colour indicates species conservation status (Red, Amber, or Green listed).

Common Name	BTO Code	Species	Breeding Status	Estimated Maximum Numbers Detected
Pheasant	PH	*Phasianus colchicus*	Probable	1 - 3 birds
Herring Gull	HG	*Larus argentatus*	Non	4 birds
Feral Pigeon	FP	*Columba livia (domest)*	Possible	4 birds
Woodpigeon	WP	*Columba palmubus*	Probable	8 - 12 birds
Collared Dove	CD	*Streptopellia decaocto*	Probable	2 singing males
Barn Swallow	SL	*Hirundo rustica*	Non	1 bird in flight
House Martin	HM	*Delichon urbicum*	Non	1 bird in flight
Meadow Pipit	MP	*Anthus pratensis*	Probable	2 birds
Wren	WR	*Troglodytes troglodytes*	Possible	4 - 6 singing males
Dunnock	D.	*Prunella modularis*	Confirmed	2 - 3 singing males
Robin	R.	*Erithacus rubecula*	Confirmed	2 - 4 singing males
Blackcap	BC	*Sylvia atricapilla*	Possible	1 singing male
Whitethroat	WH	*Sylvia communis*	Possible	1 singing male
Stonechat	SC	*Saxicola torquatus*	Confirmed	2 pairs
Song Thrush	ST	*Turdus philomelos*	Possible	2 singing males
Blackbird	B.	*Turdus merula*	Confirmed	5 - 6 birds
Great Tit	GT	*Parus major*	Possible	1 bird
Blue Tit	BT	*Parus caeruleus*	Possible	2 - 3 birds
Magpie	MG	*Pica pica*	Possible	2 birds
Jackdaw	JD	*Corvus monedula*	Possible	6 birds
Rook	RO	*Corvus frugilegus*	Non	4 birds
Hooded Crow	HC	*Corvus corone cornix*	Possible	2 birds
Starling	SG	*Sturnus vulgaris*	Confirmed	Flocks of up to 45 birds.
House Sparrow	HS	*Passer domesticus*	Confirmed	1 bird
Chaffinch	CH	*Fringilla coelebs*	Possible	1 - 2 singing males
Linnet	LI	*Carduelis cannabina*	Possible	3 - 4 birds
Goldfinch	GO	*Carduelis carduelis*	Possible	2- 4 birds
Reed Bunting	RB	*Emberiza schoeniclus*	Probable	1 pair

- Overall, given the habitats present, the site is of **Local Importance (higher value)** for birds.

8.3.7.4 Other fauna

The two NBDC database 1km grid squares that cover the proposed development site (O1647 and o1648) have records of European hedgehog (*Erinaceus europaeus)* in 2021 and 2023.

The main evidence for mammals within the site was fox and rabbit and these species are not protected under the Wildlife Act. No protected species, other than bats (Section 8.3.7.2) were noted. Wood mouse and hedgehog are recorded previously from the site and are likely to still be present.

Amphibians and reptiles are fully protected under the Wildlife Act (1976) and subsequent amendments. There are few areas particularly suitable for amphibians within the subject site, with the exception of the drainage ditches and the spring (St. Cronan's Well). No amphibians have been observed during the surveys undertaken at the subject site. Nevertheless, minor wet areas and ponds may be of value for amphibians, in particular during the spring breeding season.

Similarly, 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 or heathland) is negligible.

The site was assessed for the presence of butterflies and for the suitability of the habitats for butterfly abundance and diversity. 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 subject site.

- Overall, given the habitats present, the site is of no more than **Local Importance (lower value)** for other fauna.

8.3.8 Overall Evaluation of the Proposed Development Site

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

No rare habitats or habitats of particularly high ecological value (i.e. International or National) are present at the site. All of the hedgerows, however, remain of **Local (Higher Value) Importance**.

No protected plants have been recorded during any of the site visits undertaken.

The hedgerows are of ecological value for their ecological/habitat connectivity and for nesting birds as well as commuting and foraging bats. The mature hedgerows and trees within the site are of greatest importance as they are relatively diverse and act as significant ecological corridors.

While some of the hedgerows on site represent 'Heritage Hedgerows' and are of high historical importance, all the hedgerows assessed can be considered as hedgerows of 'Unfavourable Condition'.

Overall, the site is of **Local Importance (Higher Value)** in accordance with the ecological resource valuations presented in the National Roads Authority/Transport Infrastructure Ireland Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA/TII, 2009 (Rev.2)).

8.4 Predicted Impacts of the Proposed Development

8.4.1 Do-Nothing Impact

As noted above, the proposed development site is of local (higher value) ecological importance. Should the Mooretown remain undeveloped, no significant changes to the biodiversity value of the site can be expected. Disturbed areas and areas that have been left unmanaged are being recolonised by vegetation. The general pattern of succession that is from recolonising bare ground to patches of grassland to woodland would be expected to continue.

However, the area is zoned for residential development, and as such, development is highly likely to take place at the site, sooner or later. Should the site be re-developed at a later stage, it is reasonable to expect that any potential impacts would be similar to those predicted to arise as a result of the proposed development.

8.4.2 Construction Phase

The following potential impacts have been identified in relation to biodiversity during the construction phase:

8.4.2.1 Designated Conservation Areas

The potential for any impacts 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 Mooretown (Phase 2) in Swords, Co. Dublin, individually or in combination with another plan or project, will not have a significant effect on any European sites. This conclusion was reached without considering or taking into account mitigation measures or measures intended to avoid or reduce any impact on European sites.*
>
> *It is considered that this report provides sufficient relevant information to allow the Competent Authority (An Coimisiún 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 in light of their conservation objectives."*

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

8.4.2.2 Habitats, Flora and Fauna

The proposed development will result in the removal of existing habitats of Local Importance (Lower Value) and Local Importance (Higher Value).

In the absence of mitigation, the loss of grassland and associated habitats is considered to be a ***direct, permanent, moderate (significant) negative impact at a local level***. However, appropriate landscape planting (refer to the Landscape and Green Infrastructure Report (SRLA, 2026)), as well as long-term biodiversity-focused landscape management will be undertaken within the development.

St. Cronan's Well is fed by shallow, perched and discontinuous groundwater seepage within the overlying clay tills rather than by deep bedrock groundwater. As set out in the Hydrological and Hydrogeological Qualitative Risk Assessment report (HHQRA) prepared by AWN Consulting (Trinity Consultants) and submitted as an appendix to the AA Screening Report, no credible construction-phase pathway exists whereby contaminants could migrate to St Cronan's Well. There will be no impacts on the spring as a result of the proposed development.

The development shall maximise the inclusion of biodiversity-focussed planting that aims to maximise contribution to sitewide biodiversity while limiting management requirements. The landscape design will also adopt a variety of site-wide planting material to offer environmental interest, visual screening, and sustainable drainage opportunities.

Reduced vegetation will lead to reduced insect abundance. This will reduce foraging opportunities for bats.

In the absence of mitigation, this will be a ***direct, permanent, slight negative impact at the local level***.

There will be a reduction in vegetation cover through the removal of grassland and scrub habitats. The grassland offers habitat for ground nesting birds. In the absence of clear protocols for the protection of birds and their nests, there is potential for direct impacts on nesting birds and/or mortality of birds arising from the proposed development, should vegetation clearance take place during the bird nesting season, without accompanying bird-nesting surveys.

In the absence of mitigation, this will be a ***direct, permanent, slight negative impact at the local level***.

Reduced vegetation due to the removal of on-site habitats will also lead to reduced insect abundance. This will reduce foraging opportunities for bats.

In the absence of mitigation, this will be a ***direct, permanent, slight negative impact at the local level***.

There are no structures on the site, and the vegetation to be removed is of no significance for roosting bats.

There will be no impacts on roosting bats.

In the absence of mitigation (including the lighting design), the comprehensive landscape planting and the long-term habitat management proposed), the proposed development would cause a ***direct, long-term, moderate (significant) negative impact at the local level*** on biodiversity. However, the landscaping proposed (refer to the landscape design by SRLA and submitted as part of this application under separate cover) will ultimately lead to the introduction of new habitat (feeding and nesting) for birds and (foraging) bats.

No significant impacts on otters, badgers or any other large mammals within the site are expected as a result of the proposed development. Further, there will be no impacts on amphibians, reptiles,

lepidoptera (butterflies and moths) or any other species groups as a result of the proposed development.

The implementation of biosecurity measures will ensure that no invasive alien plant species will be introduced, either deliberately or inadvertently, to the site.

There will be no impacts on wintering birds are expected as a result of the proposed development. As confirmed in the AA Screening Report (submitted as part of this application under separate cover) and **Appendix 8.2**, no Brent geese (or other SCI species) utilise the site.

8.4.2.3 Water Quality, Dust and other emissions

There is a potential risk to flora and fauna arising from dust deposition, which in extreme cases can inhibit photosynthesis in plants and can increase turbidity in watercourses. As set out in the chapter on Air Quality, construction dust tends to be deposited within 250 m of a construction site, with the majority of the deposition occurring within the first 50 m.

- Therefore, in the absence of adequate management and (best practice) mitigation measures, the construction phase of the development could have a ***direct, short-term, slight-negative impact at the local level*** on ambient air quality as a result of dust generation.

8.4.3 Operational Phase

8.4.3.1 Designated Conservation Areas

The potential for any impacts 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.

8.4.3.2 Habitats, Flora and Fauna

As noted in Section 8.5.1, the proposed development will involve the removal of the existing habitats and their replacement with residential development, open space, landscaping and infrastructure.

The proposed development site is of no importance as a feeding site for the bird species (the Special Conservation Interests) associated with Rogerstown / Malahide Estuary SPA. However, the areas of meadow, scrub, mature trees and hedgerows are habitats of importance for the birds present on the site.

The loss of existing vegetation from the site may affect small numbers of commuting bats, by removing cover. It may also affect feeding for bats by reducing the habitat for their invertebrate prey.

Having regard to Specific Planning Policy Requirement SPPR3 of the Urban Development and Building Height Guidelines for Planning Authorities (December 2018), no issues arise in relation to any ecological receptors, for example via the disruption of flight lines for birds, or disruption to commuting or foraging bats.

- Given the nature, scale and duration of the operational phase for the proposed development, there is the potential for **direct, permanent, negative impacts at the local level that are not significant** on the local fauna due to change of land use.

8.4.3.3 Impacts of Lighting from the Proposed Development

Increased lighting and increased human activity have the potential to impact on bat feeding and commuting behaviour. There are no bat roosts within the site and therefore illumination will only affect commuting and feeding bats.

- Poorly designed lighting has the potential to be a ***permanent, negative impacts at the local level that are not significant***.

8.4.3.4 Discharges to Surface Water from the Proposed Development

The site is zoned for residential development. During the operational phase, typical environmental effects associated with the presence and operation of a residential development are predicted, including water consumption, surface and foul water loading to the municipal network, additional traffic volumes and direct and indirect greenhouse gas emissions. Operational phase effects are expected to be permanent in duration.

As set out in the HHQRA, d*uring the operational phase, potential contaminant pathways are limited to controlled surface water discharges from the Proposed Development and the fully engineered foul drainage network.*

Surface water runoff generated during operation will be managed through a SuDS-led, fully separated stormwater drainage system. Runoff will pass through multiple treatment stages—including permeable paving, bioretention systems, swales and detention storage—providing filtration, settlement and biodegradation prior to controlled discharge at QBAR greenfield-equivalent rates. This ensures that any hydrocarbons or suspended solids associated with residential land use cannot migrate rapidly or in untreated form into the receiving hydrological or hydrogeological environment.

There remains an indirect hydrological pathway between operational surface water runoff and the Broadmeadow 08 river c. 1.4 km downstream, which subsequently discharges to the Broadmeadow Water transitional waterbody (c. 4 km downstream) and to Malahide Bay coastal waterbody a futher 3.5 km downstream. However, the combination of source control, treatment and attenuation within the drainage system ensures that operational-phase runoff poses a very low pollution risk to downstream surface water receptors.

The underlying bedrock aquifer remains hydraulically protected by the thick, low-permeability glacial till and is not considered a sensitive receptor during the operational phase. No groundwater abstraction, infiltration drainage or interception measures form part of the operational design.

With respect to St Cronan's Well, the operational drainage strategy does not introduce any pathway capable of altering shallow groundwater levels or flow directions supporting the spring. Untreated runoff is not permitted to infiltrate in the vicinity of the well, and local groundwater recharge patterns remain broadly unchanged. Accordingly, no operational pathway exists whereby contaminants could migrate to, or adversely affect, St Cronan's Well.

There is no direct pathway between foul sewage generated within the Proposed Development and any receiving surface water or groundwater body. The foul sewer network is fully separated from the

stormwater system and conveys effluent via the Phase 1 pump station (Planning Ref. LADP/002/24) to the public wastewater network, ultimately discharging to Swords Wastewater Treatment Plant (WWTP) for full treatment. Treated effluent only is discharged to the Broadmeadow transitional waterbody in accordance with the WWTP's EPA licence (D0024-01). Given that the additional loading from the Proposed Development represents approximately 1.54 % of the WWTP's peak hydraulic capacity, and that the plant operates in compliance with its licence, no plausible pathway exists for untreated or harmful effluent to reach ecologically sensitive receptors.

As set out in the Infrastructure Report prepared by AKM Design Group (2026), surface water runoff from the development will be managed using the appropriate Sustainable Urban Drainage Systems (SuDS) techniques as required in the Fingal Development Plan 2023-2029.

The proposed development will not generate any additional uncontrolled stormwater runoff compared with the existing greenfield conditions, as all surface-water discharges will be restricted to QBAR (greenfield equivalent) for each catchment through the use of Hydro-Brake controls and the proposed SuDS-based attenuation systems. The surface water drainage network has been designed to fully attenuate runoff up to the 1-in-100-year storm event including a 20% climate-change allowance, ensuring that outflows do not exceed greenfield discharge rates and therefore do not contribute to downstream flood risk or increased hydraulic loading of the receiving system.

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

8.4.3.5 Discharges to Foul Sewer from the Proposed Development

As set out in Infrastructure Report prepared by AKM Design Group (2026), the peak foul effluent discharge from the proposed development is 10.81 l/s, which represents approximately 1.54% of the available peak hydraulic capacity at Swords Wastewater Treatment Plant (WWTP), which operates at 60,750 m³/day as reported in the Swords WWTP AER (2024). This level of loading is considered negligible in hydraulic terms and will not adversely affect the operational performance of Swords WWTP or the receiving waters in the Nanny–Delvin catchment.

Accordingly, with surface water restricted to greenfield rates and foul discharge representing a small fraction of the available WWTP capacity, the proposed development will have no measurable impact on downstream water quality, flood risk, or wastewater treatment operations.

The foul drainage network will be divided into 2no. catchments: The 53 units in the northern cell of the proposed development will connect via gravity to the foul pump station currently under construction as part of the Phase 1 works, permitted and under construction. This pump station will discharge to the gravity foul network within Phase 1. Capacity has been built into the pump station for these additional units. The southern part of the proposed development will connect via gravity to the Phase 1 pipe network which connects to the public network west of the site in the Cronan's Well estate. A pre-Connection Enquiry was made to Uisce Éireann and a Confirmation of Feasibility (CoF) was issued on Aug 26, 2025, with a Statement of Design Acceptance (SoDA) on issued on 16 March 2026 Ref CDS25003155. The Uisce Éireann correspondence is attached as an appendix to the Infrastructure Report

- 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 14 (Landscape & Visual) and the Landscape and Green Infrastructure Report and associated drawings, prepared by SRLA, the project landscape architects) and submitted as part of this application under separate cover). The planting and long-term management proposed will greatly enhance the biodiversity resource on the proposed development site by 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

- The high value field boundaries will be retained and protected in so far as is feasible and incorporated into the landscaping of the proposed development.
- All of the retained hedgerows and woodland will be treated in accordance with British Standard *BS5837:2012 Trees in Relation to Design, Demolition and Construction – Recommendations*, with protective fencing being installed prior to commencement of development.
- All site clearance and landscaping works will comply with current legislative requirements and best practice. The clearance of any vegetation that may be suitable for use by nesting birds will be undertaken outside the bird nesting season (avoiding the period 1 March to 31 August). Should the construction programme require vegetation clearance between March and August, and this is unavoidable, bird nesting surveys will be undertaken by suitably qualified ecologists. If no active nests are recorded, vegetation clearance will take place within 24 hours. In the event that active nests are observed, an appropriately sized buffer zone (up to 5 m radius around the nest) will be maintained around the nest until such time as all the eggs have hatched and the birds have fledged – a period that may be three weeks from the date of the survey. Once it is confirmed that the birds have fledged and no further nests have been built or occupied, vegetation clearance may take place immediately.
- The planting proposed for the development will, wherever possible, comprise an appropriate mixture of native trees and shrubs, preferably of local provenance. The planting will also incorporate a range of species that will attract feeding invertebrates, including moths, butterflies and bees. It will take account of and implement the relevant objectives of the All-Ireland Pollinator Plan 2021-2025.
- Species listed on Schedule 3 of the Birds and Habitats Regulations, 2011-2015, such as Japanese knotweed and giant hogweed, have not been recorded on the site. Nevertheless, appropriate biosecurity measures will be implemented during the construction phase of the proposed development to ensure that no invasive species are introduced, either deliberately or inadvertently, to the site.

- The following recommendations from Inland Fisheries Ireland 'Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters' (2016) will be implemented as necessary:
  - No direct discharges be made to waters where there is potential for cement or residues in discharge.
  - The pH of any and all discharges made from and during construction works shall be in the range of 6.0 – 9.0 units and not alter the pH of any receiving fisheries waters by more than+/- 0.5 pH units.
  - The level of suspended solids in any discharges to fisheries waters as a consequence of construction works shall not exceed 25 mg/l, nor result in the deposition of silts on gravels or any element of the aquatic flora or fauna.

8.5.1.4 Fauna

8.5.1.4.1 Nesting birds

Where feasible and practicable, 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, 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.

8.5.1.4.2 Otters and other large mammals

There will be no impacts on otters and no mitigation is required. No badger setts will be in any way affected by the proposed development, and no mitigation measures will be required for the protection of badgers. Nevertheless, a watching brief will be maintained by the project ecologist throughout the construction phase, in the event that badgers should establish a territory at the site.

8.5.1.4.3 Bats

No bat roosts have been recorded at the proposed development site, and it will not be necessary to apply for a derogation licence under Regulation 54 or 55 of the *European Communities (Birds and Natural Habitats) Regulations 2011, as amended*. There are no suitable structures (natural or manmade) available for use by roosting bats within the subject site.

8.5.1.4.4 Installation of bat and bird boxes, and hedgehog access points

Notwithstanding the lack of roosting potential of the site, it is proposed to install bat (and bird) boxes both within the proposed development. The reason for the installation of habitat boxes is not to provide replacement roosts/nesting; 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. The boxes proposed are as follows (this list is subject to revision based on the availability of suitable boxes in the future):

- Bat and bird boxes proposed:
  - 6* 2FN bat boxes or similar will be incorporated into the site within the northwestern corner where a park is proposed. These should be at least 3 metres high, with a clear drop below (as bats need to drop to start their flight).
  - 6 no. assorted wooden or woodcrete bird boxes, suitable for use by robins, blue tits and tree creepers will also be installed.
  - 6 no. insect hotels, to be distributed through the landscaped areas, as advised by the project ecologist during the construction phase.

The installation of boxes that can accommodate swifts will increase the available nesting potential of the proposed development site for this species, which has not been recorded at the subject site, and which has undergone significant decline in recent years[21], and has now been placed on the red list of BoCCI[22]. Where feasible (i.e. where topography allows) hedgehog access points shall be incorporated into the site from garden fences / perimeter walls.

Any ponds/wet areas found will be inspected by a suitably experienced ecologist prior to works being undertaken. Should any frog spawn or tadpoles be discovered, a licence to remove frog spawn may be required from NPWS.

8.5.1.5 Water Quality, Dust and Other Emissions

The surface water mitigation measures proposed in Chapter 10 (Hydrology), and in the Surface Water Management Plan and Outline Construction Management Plan, (all submitted as part of this application under separate cover), will ensure that no sediment contamination, contaminated run-off or untreated wastewater will enter any on-site surface water ditches as a result of the construction of the proposed development. Refer also to the Appropriate Assessment Screening report.

The measures set out in Chapter 11 (Air Quality) of this EIAR will be implemented to ensure that no air-related impacts arise on biodiversity. No further mitigation measures, in the context of biodiversity, are required.

8.5.2 Operational Phase

8.5.2.1 Lighting

Increased artificial lighting has the potential to impact on bat feeding and commuting behaviour. The proposed lighting for the proposed development has been designed in accordance with the following guidelines:

- Bat Mitigation Guidelines for Ireland – V2 (IWN no. 134)[23]
- Bats and Lighting – Guidance Notes for Planners, Engineers, Architects and Developers (Bat Conservation Ireland, 2010)[24];
- Bats and Artificial Lighting at Night, Institute of Lighting Professionals, 2023[25];

[21] Swift Conservation Ireland
[22] Gilbert *et al*. (2021)
[23] https://www.npws.ie/sites/default/files/publications/pdf/IWM134.pdf
[24] https://www.batconservationireland.org/wp-content/uploads/2013/09/BCIrelandGuidelines_Lighting.pdf
[25] https://theilp.org.uk/publication/guidance-note-8-bats-and-artificial-lighting/

- Guidance Notes for the Reduction of Obtrusive Light GN01-21 (Institute of Lighting Professionals, 2021)[26];
- Dark Sky Ireland's Environmentally Friendly Lighting Guide[27]
- Guidelines for consideration of bats in lighting projects (Eurobats Publication Series No 8, 2018)[28].

The proposed lighting will have the following characteristics:

- The minimum level of lighting will be provided within the developed areas, within the lux level criteria required by Fingal County Council.
- The light temperature of all fittings will comply with the specifications required by FCC.
- No flood lighting will be provided within the proposed development and all light fittings will be LED and are designed to shine downwards and will avoid sky glow and light spill.
- Lighting will be directed onto the roadways and paths – and away from the retained hedgerows and open space network.

8.5.2.2 Water

There will be no impacts on foul water treatment capacity at the Swords WwTP as a result of the proposed development. No mitigation measures are required.

There will be no impacts related to surface water, as a result of the proposed development. The proposed development is designed in accordance with the principles of SuDS as embodied in the recommendations of the Greater Dublin Strategic Drainage Study (GDSDS), which addresses the issue of sustainability 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. The proposed surface water design is also in line with the following standards:

- The Greater Dublin Strategic Drainage Study (GDSDS), Volume 2
- The Greater Dublin Regional Code of Practice for Drainage Works
- British Standard BS EN 752:2008 (Drains and Sewer Systems Outside Buildings)
- Part H of the Building Regulations (Building Drainage).
- Nature based solutions to the management of rainwater and surface water runoff in urban areas by the Department of Housing Local Government and Heritage

No mitigation is proposed for the operational phase of the proposed development, once the measures required during the construction phase are implemented.

[26] https://theilp.org.uk/publication/guidance-note-1-for-the-reduction-of-obtrusive-light-2021/
[27] https://www.darksky.ie/lighting-documents/#guidelines
[28] https://www.eurobats.org/sites/default/files/documents/publications/publication_series/WEB_DIN_A4_EUROBATS_08_ENGL_NVK_28022019.pdf

8.6 Residual Impacts

8.6.1 Construction Phase

With the implementation of proposed mitigation measures in place for the protection of surface water and air quality, the residual impact of the construction phase in this regard is assessed to be ***direct, short-term, imperceptible*** and ***neutral***.

8.6.2 Operational Phase

Overall, although the proposed development may have negative impacts on biodiversity at the local level, these impacts will be fully mitigated over time by the implementation of the proposed biodiversity-focussed landscape design.

There will be a limited loss of foraging habitat within the site and a loss of nesting areas for birds. Vegetation will establish over time, and these losses will be reduced considerably.

There is the potential for slightly less bat activity within the area where the cover is reduced by vegetation removal and lighting has increased. Bats will avail of bat boxes or other modifications within the site to roost over a period of time once the construction phase activity ceases.

The residual impact of the proposed development in this regard is assessed to be ***direct, permanent, not significant*** and ***negative at the local level***.

8.7 Monitoring

8.7.1 Construction Phase

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, vegetation clearance will only be permitted outside the bird-nesting season. Should vegetation clearance be required during the bird nesting season, and should this work be unavoidable, such clearance will take place only after the Project Ecologist has undertaken a survey to ensure that no active bird nests or recently fledged birds are present. Pre-construction surveys will be required to ensure that any necessary tree felling or works to buildings continue to have no impact on roosting bats.

Monitoring of construction dust deposition along the site boundary to nearby sensitive receptors during the construction phase of the proposed development will ensure mitigation measures are working satisfactorily.

Monitoring of all fuel / oil storage areas will also be undertaken to ensure that all related mitigation measures are being implemented effectively.

8.7.2 Operational Phase

No long-term ecological monitoring is required, other than post-construction monitoring of the bat and bird boxes and insect hotels. The bat and bird boxes, and insect hotels installed on the site will be

checked annually for a period of two years post-completion of the works, to ensure that they continue to be accessible to these species. If necessary, they will be repositioned within the site.

On completion of construction, the lighting installed will be reviewed by the Project Ecologist and a bat specialist, to ensure that it is operating according to the approved specifications. The landscape architect will similarly ensure that all works undertaken are in full compliance with the landscape specification. The arborist will ensure that all hedgerow and tree management measures are fully implemented. All monitoring tasks will be recorded and logged for inspection by the site manager.

8.8 Reinstatement

The majority of the site to be removed and replaced with the various elements of the proposed development is of no more than Local Importance (Lower or Higher Value). As set out in the Landscape and Green Infrastructure Report, prepared by SRLA and submitted under separate cover, new habitats will be provided, including new trees and shrubs as well as formal planting, with biodiversity-focused SuDS measures and wildflower meadows.

The long-term management of the site 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 Land, Soils, Geology & Hydrogeology (Chapter 9), Hydrology (Chapter 10), and Landscape & Visual (Chapter 14). The mitigation measures for the proposed development have been designed to minimise the potential impact that the demolition, construction and operational phases may have on the receiving environment.

As noted in Chapter 11 (Air Quality), dust generation can occur during extended dry weather periods due to construction traffic along haul routes and construction activities such as excavations and infilling works. Dust emissions can coat vegetation leading to a reduction in the photosynthesising ability as well as other effects. There are no designated ecological sites within 250 m of the proposed development site area. Significant dust impacts are not predicted beyond this distance. Dust mitigation measures will be implemented on site as set out in Chapter 11.

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 14 and the Landscape and Green Infrastructure Report and associated drawings, prepared by SRLA 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 21 (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

A description of relevant developments within the area which have a potential to produce in-combination environmental impacts with the proposed development during the construction and operational phase are listed in Chapter 22 of this EIAR.

8.10.1 Construction Phase

Each of the plans and projects under review in Chapter 22 have been required to take nature conservation into account, and an iterative approach to the preparation of each plan and project has been undertaken, with a view to coordinating the plans and projects for maximum overall benefit and minimum impact. Each has been separately subject to stringent appraisal, both for their potential impacts on European sites and their Qualifying Interests / Special Conservation Interests as well as on non-European sites and ecological receptors. In each case it has been reasonably concluded, based on the best available scientific evidence, that there will be no significant effects on designated sites, habitats, species or water quality, either alone or in-combination with other plans or projects.

The Fingal County Development Plan 2023-2029 has a series of objectives intended to protect and enhance the natural environment. For example, the Development Plan includes policies for the protection of the county's flood plains, to prevent development in flood plains not satisfying the appropriate justification test and to require the use of sustainable drainage systems (SuDS) to minimise and limit the extent of hard surfacing and paving in order to reduce the potential impact of existing and predicted flooding risks. The objectives of the Development Plan have themselves been subject to Appropriate Assessment, which has concluded that their implementation would not adversely affect the integrity of European sites. The proposed development at Mooretown, along with other developments in the vicinity will have to incorporate SuDS measures to protect surface water quality and hence, cumulative impacts on biodiversity are considered to be neutral and not significant.

8.10.2 Operational Phase

The proposed development will result in the removal of existing habitats and their replacement with a new residential development and associated (significant, biodiversity-focussed) landscaping. All developments proposed in the wider area, in accordance with Development Plan policy, will be required to demonstrate a commitment to minimising biodiversity loss.

The implementation of mitigation and monitoring measures as part of the construction of all relevant developments will ensure there will be minimal cumulative potential for impacts on biodiversity during the operational phase of the proposed development.

8.11 Difficulties Encountered in Compiling the Chapter

This Biodiversity chapter is based on ecological surveys undertaken over several years by Brady Shipman Martin and other specialist ecologists.

No difficulties were encountered in compiling this chapter of the EIAR. All surveys were undertaken to an appropriate level given the nature of the site and the proposed development. The timeframe for the project facilitated the undertaking of surveys during all seasons.

8.12 Conclusion

Overall, although the proposed development is likely to have negative effects on biodiversity at the site level that are moderate and therefore significant, at the local scale, these impacts will be fully mitigated over time to be rendered not significant or imperceptible.

There will be a loss of feeding habitat internally within the site for bats and birds and a loss of nesting habitat for birds as a result of the proposed development. However, following mitigation this loss is not significant. Any long-term impact upon bats or on biodiversity receptors in general within the site will not be significant. There will be no loss of bat roosting sites as a result of the proposed development.

The landscape design proposed, which includes the provision of significant replacement and new planting, as well as ecologically sensitive management of the retained hedgerow resource, will ensure that vegetation will establish over time and the losses will be reduced considerably.

There will be no long-term impact on watercourses, or on the on-site spring as a result of the proposed development.

In summary there will be no long-term residual impacts on biodiversity or on ecological receptors, and therefore no significant effects, either within or in the vicinity of the proposed development site or associated with any site designated for nature conservation as a result of the proposed development.

8.13 Selected References

- Bat Conservation Ireland (2010). *Bats and Lighting – Guidance Notes for Planners, Engineers, Architects and Developers.*
- Chartered Institute of Ecology and Environmental Management (CIEEM) (2024) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine*. V1.3.
- Council Directive 79/409/EEC on the Conservation of Wild Birds. (The EU Birds Directive).
- Council Directive 92/43/EEC of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora. (The EU Habitats Directive).
- Council Directive 2000/60/EC of the European Parliament and of the Council establishing a Framework for the Community Action in the Field of Water Policy (The Water Framework Directive).
- Dark Sky Ireland's Environmentally Friendly Lighting Guide.
- FCC (2023). Fingal Development Plan 2023-2029.
- FCC (2023). Fingal Biodiversity Action Plan 2023-2030.
- Department of Housing, Local Government and Heritage (2023) *Ireland's Fourth National Biodiversity Plan.*
- DG Environment (2003). *Interpretation Manual of European Union Habitats. European Commission*.
- Doogue D., Nash D., Parnell J., Reynolds S., & Wyse Jackson P. (1998). *Flora of County Dublin*. The Dublin Naturalists' Field Club.
- Environmental Protection Agency (EPA) (2022) *Guidelines on the information to be contained in Environmental Impact Assessment reports.*
- Fossitt J. (2000). *A Guide to Habitats in Ireland*. Heritage Council.
- Hayden T. & Harrington R. (2001). *Exploring Irish Mammals*. Town House Dublin.
- Institute of Lighting Professionals (2021). *Guidance Notes for the Reduction of Obtrusive Light GN01-21.*
- Institute of Lighting Professionals (2023). *Bats and Artificial Lighting at Night.*

- NPWS (2025a). *_The Status of EU Protected Habitats and Species in Ireland – Volume 1_. *NPWS, Department of Culture, Heritage and the Gaeltacht.
- NPWS (2025b). *_The Status of EU Protected Habitats and Species in Ireland – Volume 2_ (Habitat Assessments). *NPWS, Department of Culture, Heritage and the Gaeltacht.
- NPWS (2025c). *_The Status of EU Protected Habitats and Species in Ireland – Volume 3_ (Species Assessments). *NPWS, Department of Culture, Heritage and the Gaeltacht.
- NRA (2009). *Guidelines for Assessment of Ecological Impacts of National Road Schemes.*
- Smith G. F., O'Donoghue P., O'Hora K. and Delaney E. (2010). *Best Practice Guidance for Habitat Survey and Mapping.* Heritage Council.
- Stace, C. (2019). *New Flora of the British Isles*, 4th Edition. Cambridge University Press.
- Webb D.A., Parnell J. & Doogue D. (1996). *An Irish Flora*. Dundalgan Press

9 Land, Soils and Geology

9.1 Introduction

This chapter of the EIAR evaluates the likely significant effects, if any, which the Proposed Development will have on Land, Soils and Geology. This chapter contains necessary information as defined in the Environmental Protection Agency (EPA) 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (EPA, 2022). Where reference is made to hydrogeology, this aspect is covered in more detail in Chapter 10 (Hydrology and Hydrogeology).

The chapter provides a description of the receiving environment of the site and the potential impacts of the development. When assessing the potential impacts, this assessment considers the significance of the environmental attributes, and the predicted scale and duration of the likely effects. The chapter also outlines the proposed mitigation measures that will reduce or eliminate the identified potential impacts and define the residual effects of the overall Proposed Development (the effect after the implementation of mitigation measures).

9.2 Expertise and Qualifications

This report was prepared by Denis Power and Alan Wilson. Alan Wilson (BSc, AISEP) is an Environmental Consultant at AWN with over five years of professional experience in environmental assessment and consultancy. Alan holds a BSc (Hons) in Environmental Management in Agriculture and Environmental and Geographical Sciences. He has worked on a wide range of large-scale infrastructure and development projects, contributing to the preparation of Land, Soils, Geology and Hydrology and Hydrogeology Environmental Impact Assessment Reports (EIARs), site-specific Flood Risk Assessments (Stages 1 and 2), baseline environmental studies, hydrological and hydrogeological risk assessments, Water Framework Directive (WFD) assessments, assimilative capacity assessments, environmental sensitivity assessments and environmental due diligence assessments (Stages 1 and 2). Alan also has experience in supervising site investigations, as well as groundwater and surface water monitoring on operational developments and both greenfield and brownfield sites. Prior to his role at AWN, he gained additional experience within ecology and forestry-related projects. Alan is a member of the International Association of Hydrogeologists (IAH), Irish Group, and holds Associate (AISEP) membership with the Institute of Sustainability and Environmental Professionals (ISEP).

Denis Power is a Junior Environmental Consultant with AWN Consulting with ongoing roles within the water department. Denis has a BSc in Environmental Management and planning from Dublin Technical University and has studied in Utrecht University's Earth surface and water master's programme. Denis has worked on a range of projects including ground and surface water monitoring and sampling, environmental impact assessment reports, hydrological risk assessments, lake abstraction assessments and QGIS mapping. Denis is a member of the International Association of Hydrogeologists (Irish Group).

9.3 Method

The assessment has been carried out in accordance with the Institute of Geologists of Ireland (IGI) Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements (2013), along with all other relevant best-practice guidance and legislation outlined below. The methodology evaluates the existing land, soil and geological environment within the context of the Proposed Development and assesses the potential for likely and predicted environmental impacts. The

Environmental Impact Assessment considers both the importance (sensitivity) of each attribute, and the magnitude of potential impacts associated with the proposed works.

The Transport Infrastructure Ireland (TII) criteria (formerly NRA) are used to determine the importance of soil, geological and hydrogeological attributes (Tables 1–2, **Appendix 9.1**). The magnitude of potential impacts is evaluated using the TII impact matrix (Table 3, **Appendix 9.1**). The resulting significance, type and duration of potential impacts are then described in accordance with the rating system outlined in Chapter 1, Table 1.5 of this EIAR.

The assessment takes account of both the value of the receiving environment and the scale, nature and duration of predicted impacts. Where potential impacts are identified, mitigation measures have been developed, and the effectiveness of these measures has been evaluated.

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

- Geological heritage sites within or immediately surrounding the site;
- Historical or existing landfills or industrial activities and the associated potential for contaminated ground;
- Soil quality, drainage characteristics and agricultural value of soils;
- Existing quarries or extractive sites and any implications for current or potential resource extraction;
- The extent and characteristics of topsoil and subsoil, including opportunities for reuse on site or requirements for off-site removal, recovery or disposal.

9.3.1 Relevant Legislation and Guidance

The baseline study and impact assessment were undertaken in accordance with the following key guidance and established best practice:

- Environmental Protection Agency (EPA) Advice notes on current practice in the preparation of Environmental Impact Statement (EPA, 2003) and Guidelines on the Information to be contained in Environmental Impact Statements (EPA, 2022a).
- TII/National Roads Authority Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (TII/formerly NRA, 2009).
- Transport Infrastructure Ireland - Road Drainage and Water Environment (TII, 2015).
- Institute of Geologists Ireland (IGI) - Geology in Environmental Impact Statements, a guide (IGI, 2002) and Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements (IGI, 2013).
- The Planning System and Flood Risk Management, Guidelines for Planning Authorities (Department of the Environment, Heritage and Local Government (DoEHLG) and the Office of Public Works (OPW, November 2009).

The baseline study and impact assessment were undertaken in accordance with the following key legislation, guidance documents and established best practice:

- Environmental Protection Agency (EPA) Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (EPA, 2003) and Guidelines on the Information to be Contained in Environmental Impact Statements (EPA, 2022a).

- Institute of Geologists Ireland (IGI) – Geology in Environmental Impact Statements, A Guide (IGI, 2002) and Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements (IGI, 2013).
- TII / formerly National Roads Authority – Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (TII / NRA, 2009).
- Transport Infrastructure Ireland – Road Drainage and the Water Environment (TII, 2015).
- The Planning System and Flood Risk Management: Guidelines for Planning Authorities (Department of the Environment, Heritage and Local Government and the Office of Public Works, November 2009).
- Consolidated EIA Directive 2011/92/EU, as amended by 2014/52/EU.

Land, soil and geology resource management in Ireland is addressed by the following additional legislation and guidance documents, as applicable:

- Waste Management Acts 1996, as amended.
- Environmental Protection Agency – Guidance on the Management of Contaminated Land and Groundwater at EPA Licensed Sites (EPA, 2013).
- Environment Agency – Land Contamination: Risk Assessment (EA, 2020).
- BS 10175:2011 + A2:2017 – Investigation of Potentially Contaminated Sites: Code of Practice (British Standards Institution, 2017).
- CIRIA C552 – Contaminated Land Risk Assessment: A Guide to Good Practice (CIRIA, 2001).
- Transport Infrastructure Ireland – The Management of Waste from National Road Construction Projects (TII, 2017).
- Local authority planning guidance, as applicable.

9.3.2 Sources of Information

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

- Geological Survey of Ireland (GSI) - on-line mapping, Geo-hazard Database, Geological Heritage Sites and Sites of Special Scientific Interest, Bedrock Memoirs and 1:100,000 mapping.
- Teagasc soil and subsoil database.
- Ordnance Survey Ireland - aerial photographs and historical mapping.
- Environmental Protection Agency (EPA) – website mapping and database information.
- Dublin Institute for Advanced Studies (DIAS), School of Cosmic Physics, Geophysics Section. Irish National Seismic Network – on-line mapping.
- Fingal County Council Development Plan (2023-2029)

Site specific data was derived from the following sources:

- Various design site plans and drawings, as submitted with this planning application.
- Infrastructure Report - Residential Development on Lands at Mooretown, Swords or Fingal County Council (AKM, 2026).
- Appendix B of Infrastructure Report – Ground Investigation Report (Site Investigations Ltd, 2024).
- Construction and Environmental Management Plan (CEMP) – Mooretown Phase 2 – Fingal County Council (AKM, 2026).

- Surface Water Management Plan (SWMP) – Mooretown Phase 2 – Fingal County Council (AKM, 2026)
- Consultation with design engineers.

9.3.3 Forecasting Methods and Difficulties Encountered

No difficulties were encountered in the production of this chapter.

9.4 Baseline Environment

9.4.1 Existing Land Use and Site History

The Proposed Development lands (c. 14.75 ha) are located on the western edge of Swords, fronting onto Rathbeale Road. The surrounding context reflects the town's transition from a historically rural landscape to a planned suburban expansion area. To the east and south, the lands adjoin established residential neighbourhoods and community facilities, while to the west the landscape becomes more semi-rural in character, comprising primarily of open agricultural fields.

The development comprises two discrete land parcels situated south of Rathbeale Road. The northern parcel directly fronts the road, while the southern parcel lies immediately south and east of lands currently under construction as part of Phase 1 of the wider Mooretown scheme (permitted under Planning Ref. LADP/002/24). These Phase 1 lands separate the two parcels and form part of the sequential build-out of the overall Mooretown lands. Both parcels remain predominantly greenfield, defined by long-established field boundaries and hedgerow networks typical of the area's agricultural history. The site topography shows a gentle fall from south to north, reflecting natural drainage pathways that historically guided surface water movement toward the watercourse along the northern boundary.

Historic Ordnance Survey Ireland (OSI) mapping demonstrates that the site has remained in continuous agricultural use from the earliest available records through to the modern era. The first detailed OSI maps show the Proposed Development area as irregularly shaped fields with no buildings or farm structures present. A watercourse bordering the northern boundary is consistently recorded across all editions, confirming its longstanding role as a natural drainage feature.

Early nineteenth-century mapping identifies "Holy Studs" north of Rathbeale Road. Archival OS Name Books (O'Donovan, 1843) describe this feature as the remnants of a small tumulus or cairn partially destroyed during historic road-cutting works, during which human bones and rounded stones were discovered—indicating a probable prehistoric funerary or ritual feature. The 1837 OS edition also records St. Cronan's Holy Well (DU011-018) to the southeast, flowing northeast towards Glasmore Abbey (DU011-019). A small structure, scrub enclosure, and a laneway linking the abbey and the well are illustrated, suggesting historic movement between these ecclesiastical sites.

Historic mapping also depicts a former trackway running north along the western side of the wider study area, connecting Rathbeale Road to a farmstead further north. A bridge beneath Rathbeale Road is also shown on early maps; this crossing has since been replaced by a modern culvert, though its alignment remains consistent.

Across later OSI mapping editions (1837–1846; 1906), the Proposed Development lands appear largely unchanged. Field boundaries, the watercourse alignment, and the undeveloped nature of the land remain stable. The only notable evolution in the immediate area is the appearance of a modest linear

cluster of approximately twelve houses along Rathbeale Road to the northeast reflecting incremental roadside settlement during the late nineteenth and early twentieth centuries.

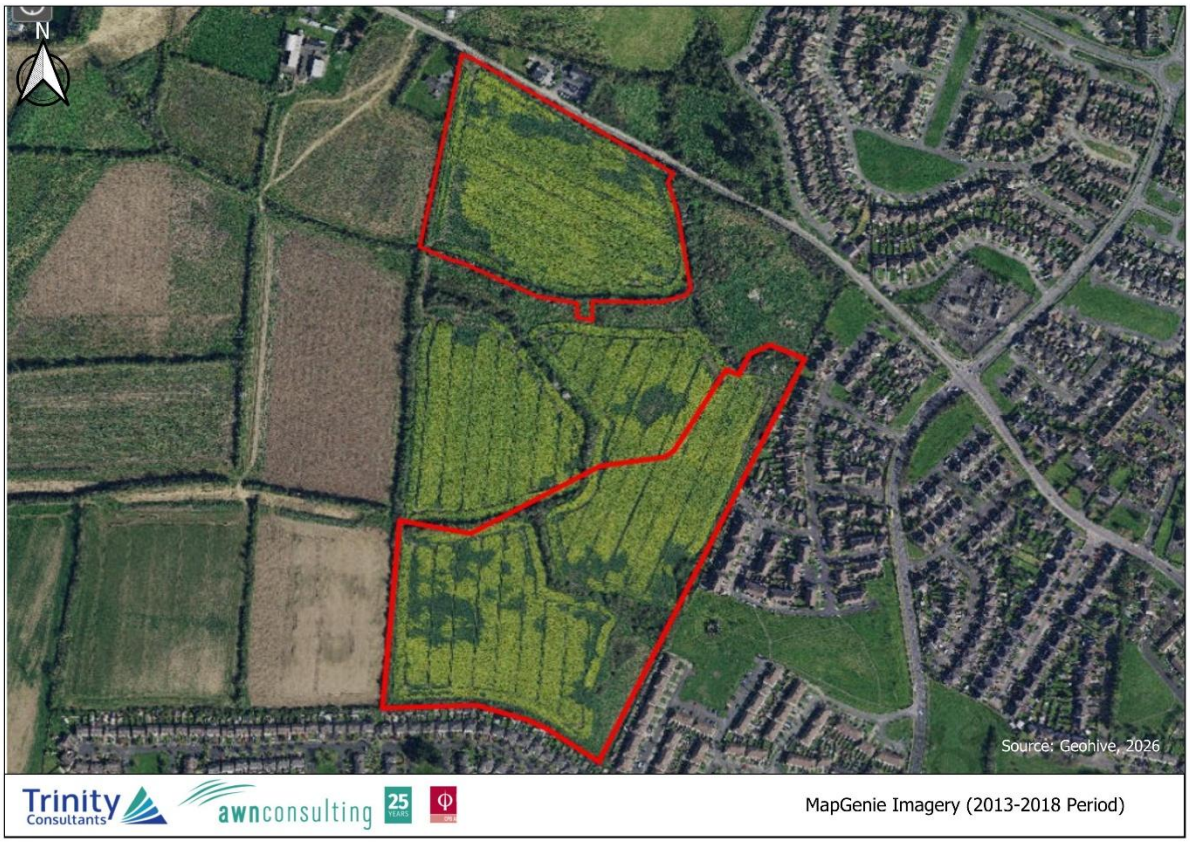

Figure 9.1 Geohive Mapping at the Proposed Development Site for Period 2013-2018 (Geohive, 2026)

As shown in Figure 9.1 above depicting the 2013–2018-year period at the Proposed Development site, this greenfield agricultural condition persisted throughout the twentieth century and into recent years, with no recorded built development within the site boundary until the commencement of the Phase 1 Mooretown development under Planning Ref. LADP/002/24. Phase 1 represents the first significant shift in land use in this area, marking the transition from agricultural use to a planned residential and educational expansion area.

Under the Fingal Development Plan 2023–2029, the Mooretown lands are zoned 'RA - Residential Area', supporting their long-term transition from agricultural soils to new residential communities, subject to the delivery of appropriate social and physical infrastructure.

A more detailed description of the Proposed Development layout and its relationship to the surrounding area is provided in Chapter 5 (Description of the Proposed Development) of this EIAR.

Refer to Figure 9.2 below for the site location and surrounding land use for the present-day scenario, where the commencement of the Phase 1 Mooretown development permitted under Planning Ref. LADP/002/24 can be observed.

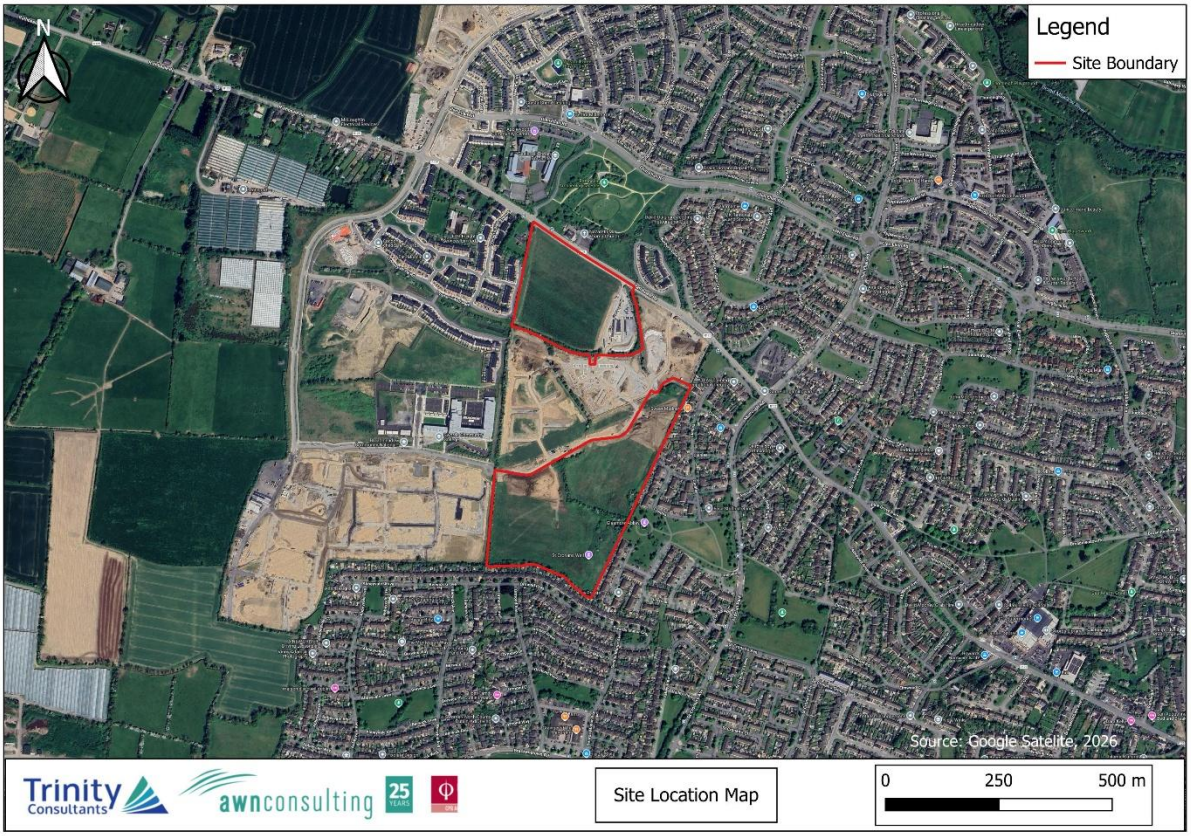

Figure 9.2 Site Location and Surrounding Land Use for Present Day (Google Satellite, 2026)

9.4.2 Licensed Facilities in the Surrounding Area

Licensed industrial and waste facilities operate under strict conditions requiring continuous monitoring and reporting of emissions to air, water, and soil to ensure they do not pose a risk to human health or the environment. There are no licensed facilities; Industrial Emissions (IE), Integrated Pollution Control (IPC) or waste-licensed installations within the boundary or immediate vicinity of the Proposed Development.

The nearest licensed operations are SK Biotek Ireland Limited (Licence No. P0014-04) and Arch Chemicals BV (Licence No. P0060-01), located c. 1.4 km and 1.42 km east of the southern parcel of the Proposed Development. These are the only active EPA-licensed facilities within a 2 km radius, as illustrated in Figure 9.3 below.

The presence of licensed facilities in the wider area does not in itself imply any impact on the Proposed Development, as their emissions are strictly regulated and monitored in accordance with statutory licence requirements.

A more detailed description of the site and its wider context is provided in Chapter 5 (Description of the Proposed Development) of the EIAR.

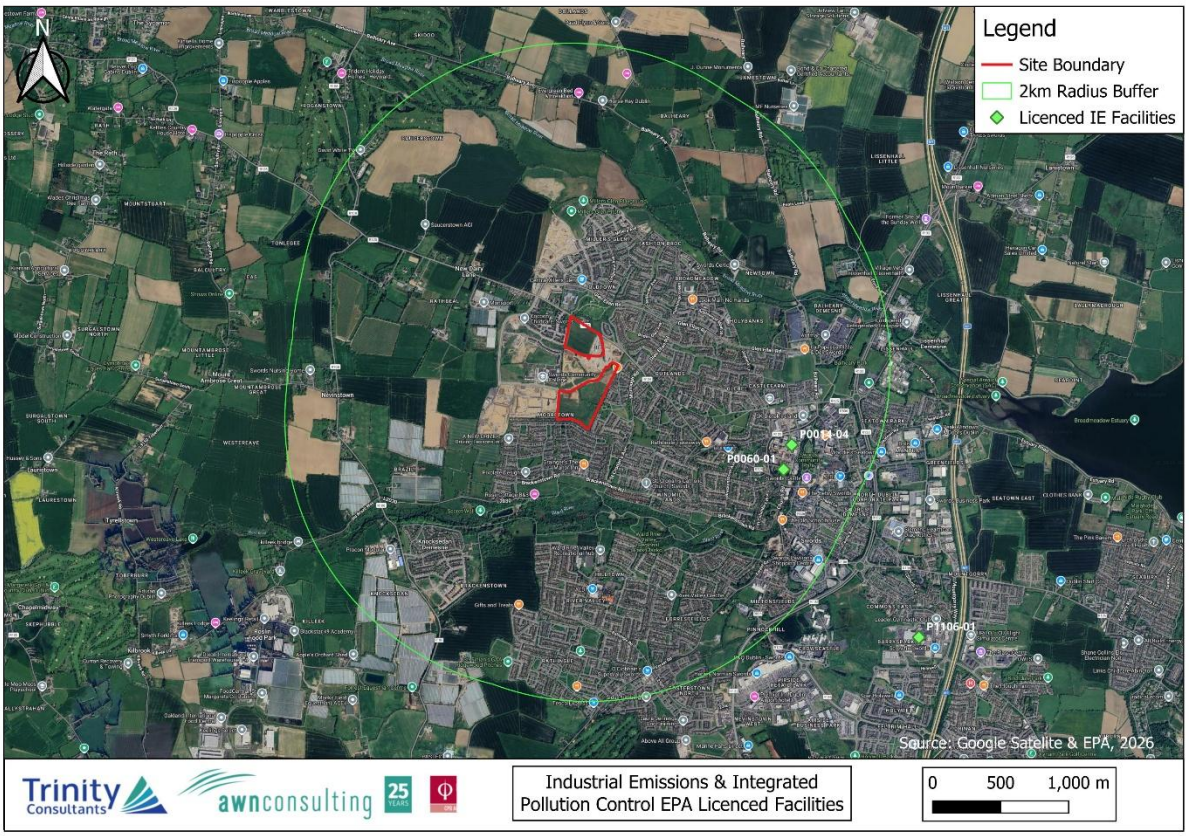

Figure 9.3 EPA Licenced facilities within a 2km radius of Proposed Development (EPA, 2026)

9.4.3 Regional Soils

According to GSI/Teagasc (2026) Soil Mapping, the Proposed Development encompasses four (4) no. soil types distributed across the northern and southern land parcels. Both parcels are predominantly underlain by BminDW, classified as well-drained mineral soils. These soils typically exhibit good permeability, favourable infiltration capacity, and are generally well-suited for agricultural, landscape, and construction uses.

Localised areas of BminPD soils, representing poorly drained mineral soils, are mapped along the north-western portion of the southern parcel and the southern margin of the northern parcel. These soils tend to retain moisture for prolonged periods, are prone to seasonal waterlogging, and may require additional drainage measures or careful foundation design where encountered.

Alluvium (A) is mapped along the southern boundary of the northern parcel and immediately north of the southern parcel, following the course of the Newtown 08 river waterbody (refer to Chapter 10 of this EIAR). Alluvial soils typically comprise fine silts, sands, and organic-rich sediments deposited by fluvial processes. These materials are generally poorly consolidated, variable in strength, and may be susceptible to settlement.

To the east of the Proposed Development, Made Ground is mapped by the GSI and is associated with historic and ongoing residential development. Although not mapped by the GSI, further areas of Made Ground are also likely to be present to the north and west of the Proposed Development, reflecting similar historic and ongoing residential land use in these areas. In addition, Phase 1 of the wider

Mooretown scheme (permitted under Planning Ref. LADP/002/24), located between the northern and southern parcels of the Proposed Development, is also likely to incorporate areas of Made Ground.

Made Ground typically comprises reworked in situ soils, imported fill and construction-derived materials and commonly exhibits heterogeneous physical and engineering properties.

Refer to Figure 9.4 below for the soil's environment in the context of the Proposed Development.

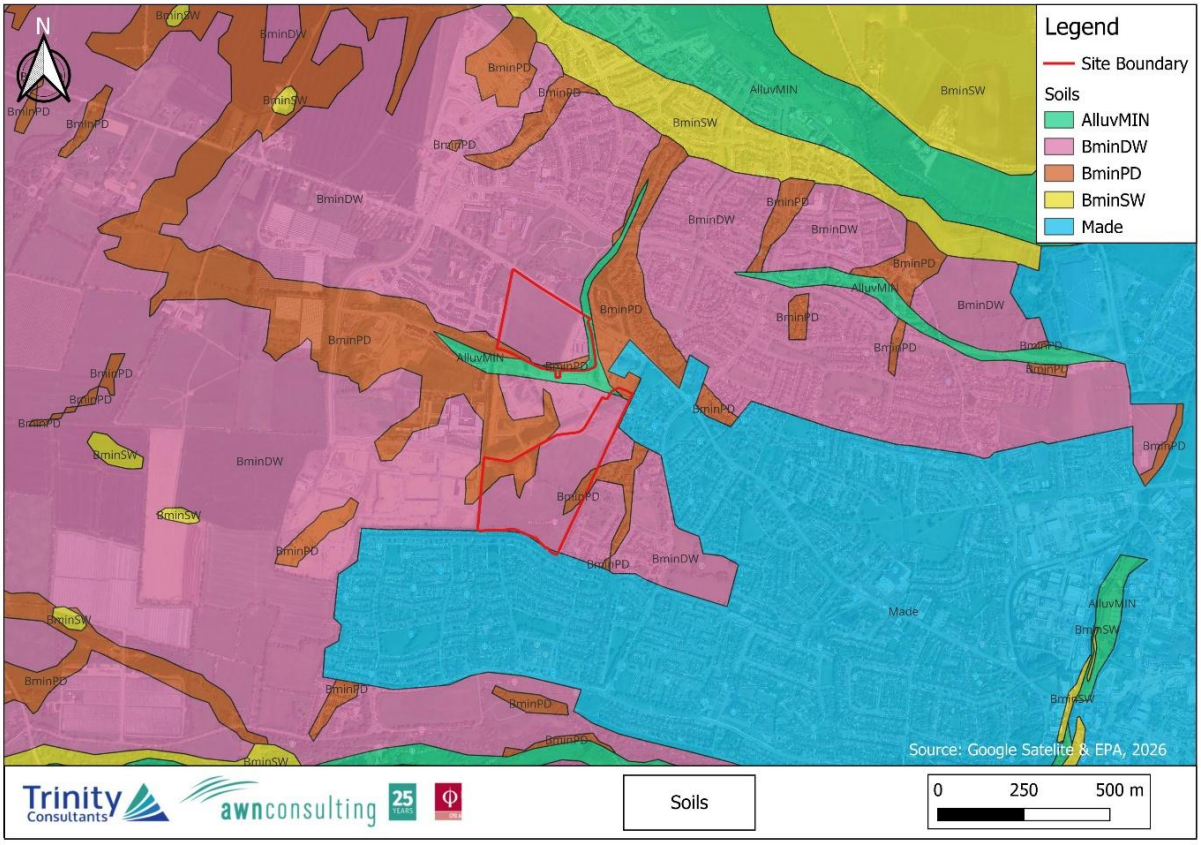

Figure 9.4 Soils Map (GSI, 2026)

9.4.4 Regional Subsoils (Quaternary)

The Quaternary geology of the area reflects the influence of Pleistocene glaciation followed by fluvial reworking during the Holocene. GSI/Teagasc (2026) mapping identifies three principal subsoil types within the Proposed Development, as shown in Figure 9.5 below:

- Till derived from limestones (TLs) underlies the entire southern parcel and extends into the south-western and north-western areas of the northern parcel. This glacial till typically comprises clay, silt, sand, and gravel, and is generally dense and of low to moderate permeability.
- Alluvium (A) occurs along the southern and eastern edges of the northern parcel and adjacent to the Newtown 08 river waterbody. These deposits are usually soft to firm, with fine-grained, moisture-sensitive characteristics and relatively low bearing strength.
- Gravels derived from limestones form the predominant subsoil unit in the central and northern portions of the northern parcel. These coarse-grained deposits are typically well-drained and highly permeable, allowing rapid groundwater movement.

In addition to the mapped subsoil units, areas of Made Ground and Made Ground subsoils may also be present locally, particularly in areas subject to historic or recent development. Such deposits are not consistently mapped by the Geological Survey Ireland (GSI) and may overlie natural subsoils in the same areas. Made Ground subsoils may comprise reworked natural soils, imported fill and construction-derived materials, and are typically heterogeneous in nature, with variable thickness, permeability and geotechnical properties.

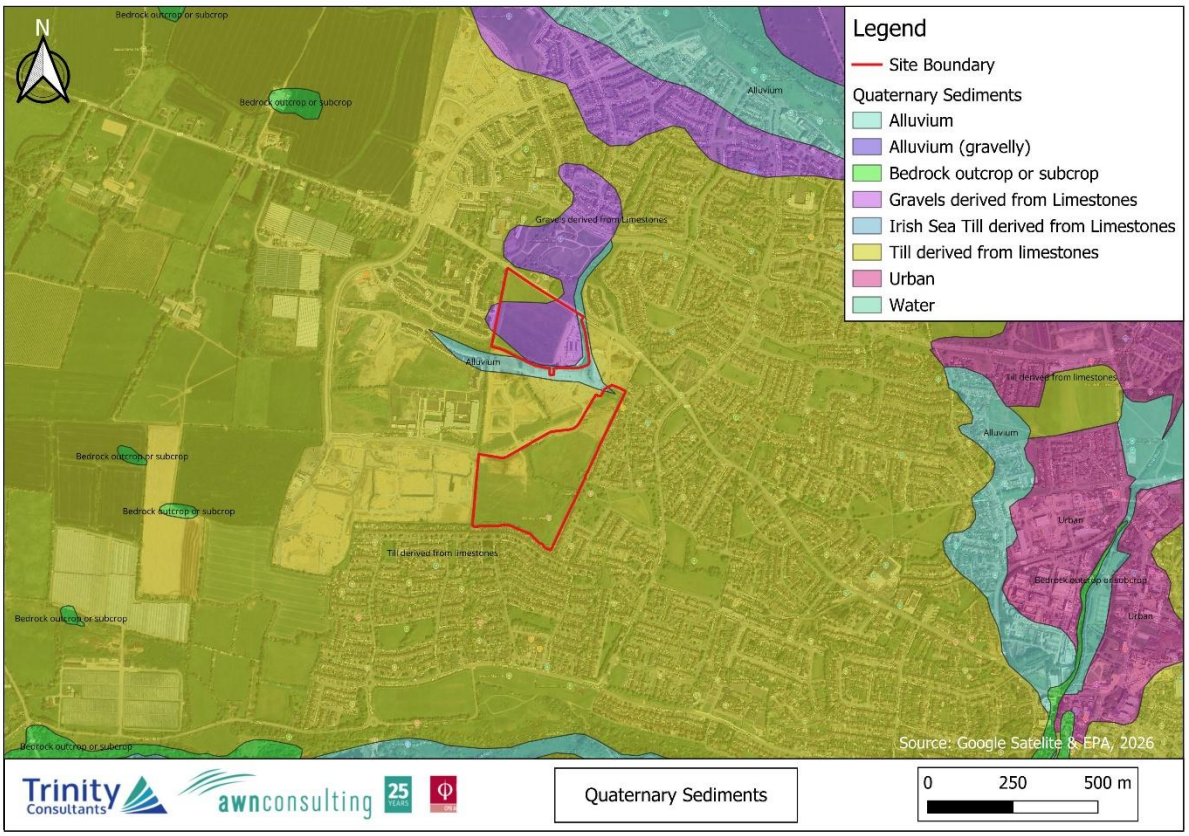

Figure 9.5 Quaternary Sediments Map (GSI, 2026)

9.4.4.1 Site Investigation

Based on the completed geotechnical investigation for the Proposed Development carried out by Site Investigations Ltd (SIL) in April 2024 on behalf of Waterman Moylan, the recorded ground conditions are generally consistent with the soil and subsoil mapping provided by GSI/Teagasc (2026).

The ground conditions recorded in the site investigation closely align with the GSI/Teagasc mapping, but the SI data provides a far more detailed picture of the subsurface. The investigation confirmed that the site is dominated by cohesive glacial till, consisting of firm brown to very stiff black slightly sandy, slightly gravelly silty clay with high cobble and low boulder content, which is entirely consistent with the mapped limestone-derived till (TLs).

Localised Made Ground was identified only in four trial pits to depths of 0.7-1.8 m BGL, comprising silty clay with anthropogenic debris such as timber, brick, plastic, concrete and metal, which matches mapping of nearby developed areas but indicates that Made Ground is far less extensive on site than regional datasets may suggest.

The SI found no significant granular or gravel-dominated horizons, only gravel and cobbles embedded within the cohesive till, despite GSI mapping indicating more extensive gravelly subsoils in the northern parcel. This reflects typical glacial variability rather than a mapping inconsistency.

The laboratory results further reinforce the cohesive character of the site, with tills showing low to intermediate plasticity (PI 14-16%) and high fines content (41-45%), and SPT N-values increasing steadily with depth (11-18 at 1 m BGL; 23-35 at 3 m BGL), confirming dense, competent but low-permeability ground.

Although alluvium is mapped along the Newtown 08 river waterbody, the SI did not intercept any such deposits, likely because trial pits and boreholes were located outside the narrow alluvial corridor. Overall, the SI results provide a coherent and internally consistent ground model that broadly corroborates the GSI mapping while demonstrating that the site is more uniformly cohesive, less permeable, and less granular than the regional datasets imply.

Refer to Appendix B of the Infrastructure Report (Document Ref: 25051-AKM-XXXX-XX-RP-C01-100001), prepared by AKM Design Group (2026) for the complete Mooretown Phase 2 - Site Investigation Report (2024).

9.4.5 Bedrock Geology

Inspection of the GSI and EPA (2026) datasets indicates that the Proposed Development is underlain predominantly by the Tober Colleen Formation (Rock Unit Code: CDTOBE). This formation is described by the GSI as comprising calcareous shale and limestone conglomerate. The Tober Colleen Formation typically consists of thinly bedded calcareous mudstones and silty shales interbedded with limestone-rich conglomeratic layers. These rocks generally display moderate to low strength, moderate weathering susceptibility, and can contain thin, weaker shale horizons that influence geotechnical behaviour. The calcareous content often results in locally elevated hardness within limestone-rich bands, while shale layers may break down more readily when exposed.

A small portion of the north-western area of the northern parcel is underlain by the Malahide Formation (Rock Unit Code: CDMALH), comprising argillaceous bioclastic limestone and shale. This formation is characterised by fine-grained limestones containing fossil fragments (bioclasts) interbedded with shale units. The limestone elements tend to be competent, moderately strong, and relatively resistant to weathering, whereas the shale layers are softer, more fissile, and may degrade when exposed. The interbedding of lithologies can lead to variable rock quality and anisotropic engineering behaviour, particularly where shale partings create preferential planes of weakness.

The GSI Bedrock Mapping Database identifies a geological structural fault traversing the most north-western portion of the northern parcel, corresponding to the boundary between the Tober Colleen and Malahide Formations. Such structural features can influence rock mass integrity, fracture density, and local groundwater movement, although their significance is typically dependent on orientation, continuity, and degree of displacement. No evidence of bedrock outcrop or exposed rock faces was observed within the site, indicating that bedrock is overlain by a substantial thickness of glacial till and alluvial deposits, consistent with the mapped Quaternary sediments in the area.

Refer to Figure 9.6 for the bedrock geology in the region of the Proposed Development.

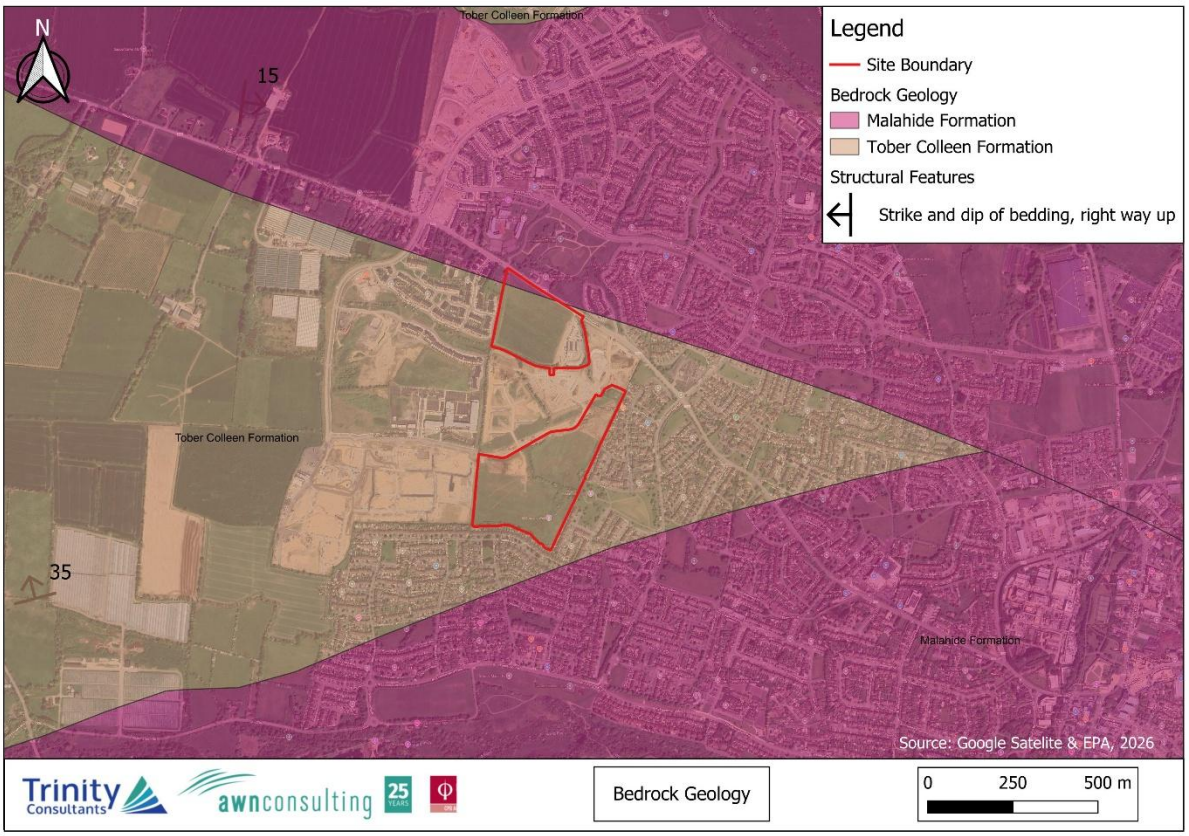

Figure 9.6 Bedrock Geology Map (GSI, 2026)

9.4.5.1 Site Investigation

The ground investigation completed by Site Investigations Ltd (SIL) in April 2024 did not encounter bedrock within any of the cable percussive boreholes advanced on the site. Boreholes were terminated at depths ranging from 6.70 m to 8.80 m BGL due to obstructions interpreted as large cobbles or possible boulders, rather than confirmed bedrock. No competent rock was proven at any location, and no rotary coring was undertaken as part of this investigation.

Across all boreholes, the strata encountered comprised cohesive glacial till principally slightly sandy, slightly gravelly silty CLAY with high cobble and low boulder content extending to the full depth of excavation. These deposits, which became stiff to very stiff with increasing depth, are characteristic of the regional limestone-derived tills that overlie bedrock in north Co. Dublin. The presence of frequent cobbles and occasional suspected boulders is consistent with tills derived from Carboniferous limestone bedrock and suggests that the underlying rockhead is irregular and likely deeper than the maximum investigation depth.

No limestone fragments, intact rock cores, or bedrock refusal were recorded; instead, borehole termination was caused by drilling obstruction rather than competent rock. This indicates that the bedrock surface lies below 6.7-8.8 m BGL, deeper than the reach of the exploratory logs.

Groundwater ingress was recorded across the trial pits and boreholes at depths ranging from 0.40 m to 3.50 m BGL, but no distinct bedrock groundwater conditions (such as inflows through fractures) were observed, further supporting that the investigation did not intercept the rockhead.

Overall, the ground investigation results are consistent with regional GSI bedrock mapping, which identifies Carboniferous limestone bedrock beneath the site, but they also confirm that the rockhead was not reached during the intrusive works and is likely located deeper than 6.7-8.8 m BGL. The cohesive till profile encountered throughout all boreholes aligns with expectations for a site underlain by limestone-derived glacial sediments over bedrock.

Refer to Appendix B of the Infrastructure Report (Document Ref: 25051-AKM-XXXX-XX-RP-C01-100001), prepared by AKM Design Group (2026) for the complete Mooretown Phase 2 - Site Investigation Report (2024).

9.4.6 Geological Heritage Areas

A review of the Geological Survey Ireland (GSI) online mapping (2026) was undertaken to identify any designated Geological Heritage Areas within or near the Proposed Development. One (1) no. geological heritage site is recorded within a 5 km radius of the Proposed Development.

The nearest site is Feltrim Quarry (Geological Site Code: DF005), located c. 4 km south-east of the Proposed Development. Feltrim Quarry is described by the GSI as a working quarry on Feltrim Hill with exposed faces of Lower Carboniferous limestone and shale, including Waulsortian mudmound facies which are locally fossiliferous. These mound-forming carbonates represent a distinctive geological environment of the Lower Carboniferous and are of scientific importance due to their palaeoenvironmental and sedimentological significance.

No Geological Heritage Areas occur within or immediately adjacent to the Proposed Development. Given the distance from Feltrim Quarry and the absence of any direct geological connection or shared geomorphological features, no impact on this geological heritage site is anticipated from the Proposed Development.

9.4.7 Economic Geology

The EPA Extractive Industry Register and the GSI Minerals Database were reviewed to identify any active or historical mineral extraction sites in proximity to the Proposed Development. There are no recorded mineral localities or extractive industry sites within 2 km of the Proposed Development.

The nearest mineral locality is Feltrim Quarry, located in the townland of Feltrim, Co. Dublin, and described in Section 9.4.6 above. Feltrim Quarry (Geological Site Code: DF005) is a non-metallic extraction site, worked primarily for limestone originating from Lower Carboniferous formations. The quarry provides locally significant aggregate and construction materials but is not hydraulically or geologically connected to the Proposed Development lands.

Given the distance to this facility and the localised nature of limestone extraction activities at Feltrim Quarry, there is no potential for any detrimental effect on economic geology resources or extractive industry interests as a result of the Proposed Development.

9.4.8 Karst landforms

Karst refers to a distinctive suite of landforms created by the chemical dissolution of soluble bedrock, most commonly limestone, which is the dominant karst-forming rock in Ireland. Typical karst features include sinkholes (dolines), swallow holes, enclosed depressions, caves, losing streams, turloughs, springs, and enlarged fracture networks. These features develop where groundwater movement is concentrated along bedding planes, joints and faults, progressively enhancing voids within the

carbonate bedrock. Karst terrains are generally associated with rapid groundwater flow, limited natural attenuation capacity, and heightened vulnerability to pollution.

A review of the GSI (2026) karst database, bedrock geology mapping, and available hydrogeological information confirms that no karst landforms occur within the Proposed Development boundary or in its immediate surroundings. This is consistent with the local bedrock setting, where the Tober Colleen Formation comprises calcareous shale and limestone conglomerate, only moderately soluble and not typically associated with fully developed karst systems.

The nearest recorded karst-related features are:

- St Catherine's Well – located c. 6.5 km north-east of the Proposed Development. This feature is mapped as a spring and recorded as possibly karstic. Such springs may drain localised dissolution-enhanced fractures but do not necessarily represent a developed karst conduit system.
- St Doolagh's Well – located c. 6.8 km south-east, also recorded as a spring of potential karstic origin. These wells are commonly associated with shallow groundwater emergence along permeable horizons or fracture zones in limestone units.

Both features occur outside the local groundwater catchment, within different sub-catchments and underlain by different bedrock formations. They are positioned at significant distance from the Proposed Development and lie well outside the zone of influence of the Poor Aquifer (Pl) underlying the site.

Given the absence of karst features locally, the limited solubility of the on-site bedrock, the moderate to high glacial till cover, and the lack of any hydrogeological connectivity with recorded features, there is no potential for the Proposed Development to impact karst landforms.

9.4.9 Radon

According to the Environmental Protection Agency (EPA) (which now incorporates the functions of the former Radiological Protection Institute of Ireland), the Proposed Development is located within an area classified on the current EPA Radon Risk Map of Ireland as one where approximately 1 in 20 homes is likely to have indoor radon concentrations above the Reference Level of 200 Bq/m³.

The EPA Radon Risk Map is based on an analysis of measured indoor radon concentrations in combination with geological and hydrogeological parameters, including bedrock type, Quaternary geology, soil permeability and aquifer classification.

The radon risk mapping in use prior to May 2022 indicated that the Proposed Development site was located within a Low Radon Area, where it was estimated that less than 1% of homes within the corresponding 10 km grid square would exceed the Reference Level of 200 Bq/m³. This represents the lowest radon risk category identified by the EPA at that time.

While updated mapping indicates a slightly elevated radon risk classification, the area remains one of relatively low radon potential, and appropriate radon protection measures can be readily incorporated into building design in accordance with current Building Regulations and EPA guidance.

9.4.10 Geohazards

In general, risk of landslides in Ireland is considered to be low, as the country is not located in a region with high seismic activity or large mountain ranges. 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 occurred in Ireland in recent years in upland peat areas due to disturbance of peat associated with construction activities. The landslide susceptibility map (GSI spatial map viewer) identifies areas which are subject to landslides and is measured from low to high. The landslide susceptibility map considers the location of landslides and what causes them (slope, soil type and the impact of the flow of water).

Based on the GSI spatial map viewer, the Proposed Development site is not in an area susceptible to landslides, with a GSI Landslide Susceptibility Classification of '*Low*'. This is consistent with the topography and the geology across the proposed Gas to Milltown Pipeline route.

In Ireland, seismic activity is recorded by the Irish National Seismic Network. The Geophysics Section of the School of Cosmic Physics, Dublin Institute for Advanced Studies, has been recording seismic events in Ireland since 1978 (www.dias.ie). This network consists of several seismometers that are located throughout Ireland. Seismic activity and earthquake risk in Ireland are generally considered to be low. This is because Ireland is located on the western edge of the Eurasian Plate, which is a tectonic plate that is not known for its seismic activity. However, earthquakes can still occur in Ireland, although they are typically small and have little impact. There is a very low risk of seismic activity to the Proposed Development site.

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

9.4.11 Soil Quality

As part of the ground investigation undertaken by Site Investigations Ltd. (SIL) in April 2024, twelve (12) no. soil samples were collected from trial pits (TP11, TP15, TP19, TP60, TP68, TP75, TP115, TP119, TP132, TP142, TP152 and TP155) and submitted to ALS Laboratories (UK) Limited, Hawarden, for chemical analysis. The samples were analysed for a comprehensive suite of contaminants, including:

- Metals and Inorganic Parameters
  - Antimony, Arsenic, Barium, Cadmium
  - Chromium (III) and Chromium (VI)
  - Copper, Lead, Mercury, Molybdenum
  - Nickel, Selenium, Zinc
- Polycyclic Aromatic Hydrocarbons (PAHs)
  - Full USEPA 16 PAH suite (Naphthalene to Benzo(g,h,i)perylene)
  - Total PAH (USEPA 16)
  - Total PAH17 (including Coronene), moisture-corrected
- Total Petroleum Hydrocarbons (TPH – CWG Fractions)
  - Aliphatics: C5–C6, >C6–C8, >C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35–C44
  - Total Aliphatics >C10–C44
  - Total Aliphatics and Aromatics >C10–C44
  - Aromatics: EC5–EC7, >EC7–EC8, >EC8–EC10, >EC10–EC12, >EC12–EC16, >EC16–EC21, >EC21–EC35, >EC35–EC44
  - Total Aromatics >EC10–EC44
  - Total Aliphatics and Aromatics >C5–C44
- Gasoline Range Organics (GRO) Fractions

- C5–C6, >C6–C7, >C7–C8, >C8–C10, >C10–C12
- GRO >C5–C10 Total

- Volatile Organic Compounds (VOCs)
  - Methyl Tertiary-Butyl Ether (MTBE)
  - Benzene, Toluene, Ethylbenzene
  - m/p-Xylene, o-Xylene
- Polychlorinated Biphenyls (PCBs)
  - PCB-28, -52, -101, -118, -138, -153, -180
  - Total 7 PCBs
- Other Parameters
  - Mineral Oil (C10–C40)
  - Moisture Content (% wet weight)
  - Loss on Ignition (LOI)
  - pH, Total Organic Matter, Total Organic Carbon

Refer to Appendix B of the Infrastructure Report (Document Ref: 25051-AKM-XXXX-XX-RP-C01-100001), prepared by AKM Design Group (2026) for the complete Mooretown Phase 2 - Site Investigation Report and the Environmental Laboratory Test Results and Waste Classification Report results.

9.4.11.1 Generic Assessment Criteria – LQM/CIEH S4ULs

There are no legislated threshold values for soils in Ireland. Soil samples were compared to Generic Assessment Criteria (GAC) derived to be protective of human health, water bodies (including groundwater) and ecology for residential and commercial/industrial end use.

GAC in the UK has been derived using the Contaminated Land Exposure Assessment (CLEA) model to be protective of human health for a number of different land uses. Land Quality Management (LQM) and the CIEH (Chartered Institute of Environmental Health) developed a document in July 2009 detailing their own research and derivation of their own 'LQM GACs'. A total of 82 substances, including many organic substances had LQM GACs derived, for the standard land uses of residential, commercial/industrial and allotments. This was updated in 2015 following further research and the derived results are now called LQM / CIEH Suitable 4 Use Levels (S4UL). The LQM / CIEH S4ULs are intended for use in assessing the potential risks posed to human health by contaminants in soil and as transparently derived and cautious "trigger values" above which further assessment of the risks or remedial action may be needed. For each contaminant, S4ULs have been derived for six land use scenarios based on assessing exposure pathways in each planning scenario. In this instance, the residential (without homegrown produce) at 1% SOM has been considered.

Soil type and soil organic matter (SOM) has an influence on the behaviour of contaminants. S4ULs have been derived for three SOM contents (1%, 2.5% and 6%) to cover the likely range in soils. A prudent approach has been taken by considering the lower 1% SOM content.

The UK values do not have any legal standing within the Republic of Ireland and no statutory guidance for assessing the significance of soil contamination currently exists. However, the values do provide a

means of placing the data within context when considering magnitude of risk and have been used in that capacity in this assessment.

All recorded contaminant concentrations were below the most conservative S4UL values for Residential (without homegrown produce), with the exception of Chromium (VI; Hexavalent), which slightly exceeded the 6 mg/kg threshold at:

- TP11 (7.29 mg/kg)
- TP15 (6.30 mg/kg)
- TP60 (7.55 mg/kg)
- TP75 (7.79 mg/kg)

ALS laboratory reported Chromium III (Trivalent) and Chromium VI (Hexavalent) separately i.e. Total Chromium was not tested. Chromium III (Trivalent) is the dominant, naturally occurring, low-toxicity trivalent form and all measured concentrations were well below its corresponding S4UL. The slight exceedances relate only to Chromium VI (Hexavalent) which is more toxic and has a much lower S4UL.

These slight exceedances are small in magnitude and occur within cohesive glacial till, a soil type with low permeability and reducing geochemical conditions. Under such conditions, Chromium VI (Hexavalent) readily converts to Chromium III (Trivalent) through natural reduction processes, significantly limiting its persistence, mobility, and potential exposure risk. The absence of elevated Chromium III (Trivalent) concentrations further supports the interpretation that these Chromium VI (Hexavalent) detections represent localised, low-level anomalies rather than widespread contamination.

No other exceedances were identified for any parameter.

Soil quality results are presented in Table *9.1* to Table *9.4* below, with comparisons to the relevant S4UL values.

Table 9.1 Soil Quality Results compared against most conservative S4UL values for Residential (without homegrown produce)

			Sample ID	TP11	TP15	TP19	TP60	TP68	TP75
			Depth (mBGL)	0.5	0.5	1	0.5	1	0.5
			ALS Report Ref	727344	727344	727344	727344	727344	727344
			Sample Date	Apr-24	Apr-24	Apr-24	Apr-24	Apr-24	Apr-24
Parameters	**Units**	**LOD**	**LQM/CIEH S4ul for HHRA Residential (RwoHP) Threshold (mg/kg)**						
				Result	**Result**	**Result**	**Result**	**Result**	**Result**
Metals									
Antimony	mg/kg	<0.6	nv	-	-	nt	-	nt	-
Arsenic	mg/kg	<0.6	40	12.00	10.40	nt	12.40	nt	11.10
Barium	mg/kg	<0.6	nv	104.00	188.00	nt	113.00	nt	80.20
Cadmium	mg/kg	<0.02	85	1.10	1.24	nt	1.89	nt	1.24
Chromium III (Trivalent)	mg/kg	<0.9	910	7.29	6.30	nt	7.55	nt	7.79
Chromium VI (Hexavalent)	mg/kg	<0.6	6	**7.29**	**6.3**	nt	**7.55**	nt	**7.79**
Copper	mg/kg	<1.4	7,100	25.50	24.60	nt	23.40	nt	24.20
Lead	mg/kg	<0.7	nv	17.00	14.50	nt	16.20	nt	14.70
Mercury	mg/kg	<0.1	1.2	-	-	nt	-	nt	-
Molybdenum	mg/kg	<0.1	nv	4.030	4.070	nt	4.370	nt	5.030
Nickel	mg/kg	<0.2	180	32.70	32.60	nt	39.20	nt	31.50
Selenium	mg/kg	<1	430	1.37	1.06	nt	1.58	nt	1.39
Zinc	mg/kg	<1.9	40,000	55.20	50.80	nt	56.20	nt	55.20
PAH by GCMS									
Naphthalene	mg/kg	<0.009	2.3	-	-	nt	-	nt	-
Acenaphthylene	mg/kg	<0.012	2900(86.1)sol	-	-	nt	-	nt	-
Acenaphthene	mg/kg	<0.008	3000(57.0)sol	-	-	nt	-	nt	-
Fluorene	mg/kg	<0.010	2800 (30.9)sol	-	-	nt	-	nt	-
Phenanthrene	mg/kg	<0.015	1300 (36.0)sol	-	-	nt	-	nt	-
Anthracene	mg/kg	<0.016	31000(1.17)vap	-	-	nt	-	nt	-
Fluoranthene	mg/kg	<0.017	1500	-	-	nt	-	nt	-
Pyrene	mg/kg	<0.015	3700	-	-	nt	-	nt	-
Benzo(a)anthracene	mg/kg	<0.014	11	-	-	nt	-	nt	-
Chrysene	mg/kg	<0.010	30	-	-	nt	-	nt	-
Benzo(b)fluoranthene	mg/kg	<0.015	3.9	-	-	nt	-	nt	-
Benzo(k)fluoranthene	mg/kg	<0.014	110	-	-	nt	-	nt	-
Benzo(a)pyrene	mg/kg	<0.015	3.2	-	-	nt	-	nt	-
Indeno(1,2,3-cd)pyrene	mg/kg	<0.018	45	-	-	nt	-	nt	-
Dibenzo(a,h)anthracene	mg/kg	<0.023	0.31	-	-	nt	-	nt	-
Benzo(g,h,i)perylene	mg/kg	<0.024	360	-	-	nt	-	nt	-
PAH, Total Detected USEPA 16	mg/kg	<0.118	nv	-	-	nt	-	nt	-
PAH 17 Total (incl. Coronene) Moisture Corrected	mg/kg	<10	nv	-	-	nt	-	nt	-
Polychlorinated Biphenyls (PCBs)									
PCB 28	mg/kg	<0.003	nv	-	-	nt	-	nt	-
PCB 52	mg/kg	<0.003		-	-	nt	-	nt	-
PCB 101	mg/kg	<0.003		-	-	nt	-	nt	-
PCB 118	mg/kg	<0.003		-	-	nt	-	nt	-
PCB 138	mg/kg	<0.003		-	-	nt	-	nt	-
PCB 153	mg/kg	<0.003		-	-	nt	-	nt	-
PCB 180	mg/kg	<0.003		-	-	nt	-	nt	-
Total 7 PCBs	mg/kg	<0.021		-	-	nt	-	nt	-
Mineral Oil (C10-C40)	mg/kg	<5	nv	-	-	nt	-	nt	-
Moisture Content (% Wet Weight	%	%	nv	11.0	13.0	8.5	10.0	17.0	9.4
Loss on Ignition	%	<0.7		2.5	3.2	nt	3.0	nt	2.4
pH	pH unit	<1		8.94	8.72	nt	8.68	nt	8.94
Total Organic Matter	%	<0.35		nt	nt	1.57	nt	1.34	nt
Total Organic Carbon	%	<0.2		0.486	0.533	nt	0.637	nt	0.826

Legend	
0.45	Results exceed LQM/CIEH S4ul for HHRA Residential Threshold without homegrown produce at 1% SOM (mg/kg)
-	Results below Limit of Detection (LOD)
nv	Guideline threshold value not available
nt	Not Tested

Notes
HHRA 2015 - LQM/CIEH Suitable 4 Use Levels based on 1% Soil Organic Matter (SOM). Metals are compared against a 6% SOM
Sol : sol S4UL presented exceed the solubility saturation limit, which is presented in brackets
Vap: vap S4UL presented exceed the vapour stauration limit which is presented in brackets

Table 9.2 Soil Quality Results compared against most conservative S4UL values for Residential (without homegrown produce)

			Sample ID	TP11	TP15	TP19	TP60	TP68	TP75
			Depth (mBGL)	0.5	0.5	1	0.5	1	0.5
			ALS Report Ref	727344	727344	727344	727344	727344	727344
			Sample Date	Apr-24	Apr-24	Apr-24	Apr-24	Apr-24	Apr-24
Parameters	**Units**	**LOD**	**LQM/CIEH S4ul for HHRA Residential (RwoHP) Threshold (mg/kg)**						
				Result	**Result**	**Result**	**Result**	**Result**	**Result**
TPH CWG (S)									
Aliphatics									
>C5-C6	mg/kg	<0.01	42	-	-	nt	-	nt	-
>C6-C8	mg/kg	<0.01	100	-	-	nt	-	nt	-
>C8-C10	mg/kg	<0.01	27	-	-	nt	-	nt	-
>C10-C12	mg/kg	<1	130	-	-	nt	-	nt	-
>C12-C16	mg/kg	<1	1100	-	-	nt	-	nt	-
>C16-C21	mg/kg	<1	65,000 (combined)	-	-	nt	-	nt	-
>C21-C35	mg/kg	<1	65,000	-	-	nt	-	nt	-
>C35-C44	mg/kg	<1	65,000	-	-	nt	-	nt	-
Total Aliphatics >C10-C44	mg/kg	<5	nv	-	-	nt	-	nt	-
Total Aliphatics & Aromatics >C1	mg/kg	<10		-	-	nt	-	nt	-
Aromatics									
>EC5-EC7	mg/kg	<0.01	370	-	-	nt	-	nt	-
>EC7-EC8	mg/kg	<0.01	860	-	-	nt	-	nt	-
>EC8-EC10	mg/kg	<0.01	47	-	-	nt	-	nt	-
>EC10-EC12	mg/kg	<1	250	-	-	nt	-	nt	-
>EC12-EC16	mg/kg	<1	1800	-	-	nt	-	nt	-
>EC16-EC21	mg/kg	<1	1900	-	-	nt	-	nt	-
>EC21-EC35	mg/kg	<1	1900	-	-	nt	-	nt	-
>EC35-EC44	mg/kg	<1	1900	-	-	nt	-	nt	-
Total Aromatics >EC10-EC44	mg/kg	<5	nv	-	-	nt	-	nt	-
Total Aliphatics and Aromatics >C5-C44	mg/kg	<10		-	-	nt	-	nt	-
Gasoline Range Organics (GROs)									
>C5-C6	mg/kg	<0.02	nv	-	-	nt	-	nt	-
>C6-C7	mg/kg	<0.02		-	-	nt	-	nt	
>C7-C8	mg/kg	<0.02		-	-	nt	-	nt	
>C8-C10	mg/kg	<0.02		-	-	nt	-	nt	
>C10-C12	mg/kg	<0.02		-	-	nt	-	nt	
Total Aliphatics >C10-C44	mg/kg	<0.05		-	-	nt	-	nt	
Total Aromatics >EC10-EC44	mg/kg	<0.05		-	-	nt	-	nt	
GRO >C5-C10 Total	mg/kg	<0.02		-	-	nt	-	nt	
VOC MS (S)									
Methyl Tertiary Butyl Ether	mg/kg	<0.0005	nv	-	-	nt	-	nt	-
Benzene	mg/kg	<0.001	0.38	-	-	nt	-	nt	-
Ethylbenzene	mg/kg	<0.001	83	0.00188	0.0037	nt	-	nt	-
m/p-Xylene	mg/kg	<0.002	m: 82 p: 79	0.00857	0.0164	nt	-	nt	0.00248
o-Xylene	mg/kg	<0.002	88	-	-	nt	-	nt	-
Toluene	mg/kg	<0.001	880vap (869)	0.0219	0.0305	nt	-	nt	0.00399

Legend	
0.45	Results exceed LQM/CIEH S4ul for HHRA Residential Threshold without homegrown produce at 1% SOM (mg/kg)
-	Results below Limit of Detection (LOD)
nv	Guideline threshold value not available
nt	Not Tested

Notes
HHRA 2015 - LQM/CIEH Suitable 4 Use Levels based on 1% Soil Organic Matter (SOM). Metals are compared against a 6% SOM
Sol : sol S4UL presented exceed the solubility saturation limit, which is presented in brackets
Vap: vap S4UL presented exceed the vapour stauration limit which is presented in brackets

Table 9.3 Soil Quality Results compared against most conservative S4UL values for Residential (without homegrown produce)

			Sample ID	TP115	TP119	TP132	TP142	TP152	TP155
			Depth (mBGL)	1	0.5	1	1	1	0.5
			ALS Report Ref	727344	727344	727344	727344	727344	727344
			Sample Date	Apr-24	Apr-24	Apr-24	Apr-24	Apr-24	Apr-24
Parameters	**Units**	**LOD**	**LQM/CIEH S4ul for HHRA Residential (RwoHP) Threshold (mg/kg)**						
				Result	**Result**	**Result**	**Result**	**Result**	**Result**
Metals									
Antimony	mg/kg	<0.6	nv	nt	-	nt	nt	nt	-
Arsenic	mg/kg	<0.6	40	nt	14.50	nt	nt	nt	13.90
Barium	mg/kg	<0.6	nv	nt	139.00	nt	nt	nt	127.00
Cadmium	mg/kg	<0.02	85	nt	2.00	nt	nt	nt	1.74
Chromium III (Trivalent)	mg/kg	<0.9	910	nt	13.50	nt	nt	nt	11.00
Chromium VI (Hexavalent)	mg/kg	<0.6	6	nt	-	nt	nt	nt	-
Copper	mg/kg	<1.4	7,100	nt	34.90	nt	nt	nt	28.80
Lead	mg/kg	<0.7	nv	nt	23.00	nt	nt	nt	20.30
Mercury	mg/kg	<0.1	1.2	nt	-	nt	nt	nt	-
Molybdenum	mg/kg	<0.1	nv	nt	5.59	nt	nt	nt	5.08
Nickel	mg/kg	<0.2	180	nt	51.20	nt	nt	nt	43.30
Selenium	mg/kg	<1	430	nt	1.20	nt	nt	nt	1.17
Zinc	mg/kg	<1.9	40,000	nt	73.80	nt	nt	nt	67.30
PAH by GCMS									
Naphthalene	mg/kg	<0.009	2.3	nt	-	nt	nt	nt	-
Acenaphthylene	mg/kg	<0.012	2900(86.1)sol	nt	-	nt	nt	nt	-
Acenaphthene	mg/kg	<0.008	3000(57.0)sol	nt	-	nt	nt	nt	-
Fluorene	mg/kg	<0.010	2800 (30.9)sol	nt	-	nt	nt	nt	-
Phenanthrene	mg/kg	<0.015	1300 (36.0)sol	nt	-	nt	nt	nt	-
Anthracene	mg/kg	<0.016	31000(1.17)vap	nt	-	nt	nt	nt	-
Fluoranthene	mg/kg	<0.017	1500	nt	-	nt	nt	nt	-
Pyrene	mg/kg	<0.015	3700	nt	-	nt	nt	nt	-
Benzo(a)anthracene	mg/kg	<0.014	11	nt	-	nt	nt	nt	-
Chrysene	mg/kg	<0.010	30	nt	-	nt	nt	nt	-
Benzo(b)fluoranthene	mg/kg	<0.015	3.9	nt	-	nt	nt	nt	-
Benzo(k)fluoranthene	mg/kg	<0.014	110	nt	-	nt	nt	nt	-
Benzo(a)pyrene	mg/kg	<0.015	3.2	nt	-	nt	nt	nt	-
Indeno(1,2,3-cd)pyrene	mg/kg	<0.018	45	nt	-	nt	nt	nt	-
Dibenzo(a,h)anthracene	mg/kg	<0.023	0.31	nt	-	nt	nt	nt	-
Benzo(g,h,i)perylene	mg/kg	<0.024	360	nt	-	nt	nt	nt	-
PAH, Total Detected USEPA 16	mg/kg	<0.118	nv	nt	-	nt	nt	nt	-
PAH 17 Total (incl. Coronene) Moisture Corrected	mg/kg	<10		nt	-	nt	nt	nt	-
Polychlorinated Biphenyls (PCBs)									
PCB 28	mg/kg	<0.003	nv	nt	-	nt	nt	nt	-
PCB 52	mg/kg	<0.003		nt	-	nt	nt	nt	-
PCB 101	mg/kg	<0.003		nt	-	nt	nt	nt	-
PCB 118	mg/kg	<0.003		nt	-	nt	nt	nt	-
PCB 138	mg/kg	<0.003		nt	-	nt	nt	nt	-
PCB 153	mg/kg	<0.003		nt	-	nt	nt	nt	-
PCB 180	mg/kg	<0.003		nt	-	nt	nt	nt	-
Total 7 PCBs	mg/kg	<0.021		nt	-	nt	nt	nt	-
Mineral Oil (C10-C40)	mg/kg	<5	nv	nt	-	nt	nt	nt	-
Moisture Content (% Wet Weight	%	%	nv	14.0	17.0	11.0	11.0	12.0	14.0
Loss on Ignition	%	<0.7		nt	3.2	nt	nt	nt	4.7
pH	pH unit	<1		nt	7.11	nt	nt	nt	8.62
Total Organic Matter	%	<0.35		0.95	nt	1.24	0.96	0.89	nt
Total Organic Carbon	%	<0.2		nt	0.725	nt	nt	nt	0.609

Legend	
0.45	Results exceed LQM/CIEH S4ul for HHRA Residential Threshold without homegrown produce at 1% SOM (mg/kg)
-	Results below Limit of Detection (LOD)
nv	Guideline threshold value not available
nt	Not Tested

Notes
HHRA 2015 - LQM/CIEH Suitable 4 Use Levels based on 1% Soil Organic Matter (SOM). Metals are compared against a 6% SOM
Sol : sol S4UL presented exceed the solubility saturation limit, which is presented in brackets
Vap: vap S4UL presented exceed the vapour stauration limit which is presented in brackets

Table 9.4 Soil Quality Results compared against most conservative S4UL values for Residential (without homegrown produce)

			Sample ID	TP115	TP119	TP132	TP142	TP152	TP155
			Depth (mBGL)	1	0.5	1	1	1	0.5
			ALS Report Ref	727344	727344	727344	727344	727344	727344
			Sample Date	Apr-24	Apr-24	Apr-24	Apr-24	Apr-24	Apr-24
Parameters	**Units**	**LOD**	**LQM/CIEH S4ul for HHRA Residential (RwoHP) Threshold (mg/kg)**						
				Result	**Result**	**Result**	**Result**	**Result**	**Result**
TPH CWG (S)									
Aliphatics									
>C5-C6	mg/kg	<0.01	42	nt	-	nt	nt	nt	-
>C6-C8	mg/kg	<0.01	100	nt	-	nt	nt	nt	-
>C8-C10	mg/kg	<0.01	27	nt	-	nt	nt	nt	-
>C10-C12	mg/kg	<1	130	nt	-	nt	nt	nt	-
>C12-C16	mg/kg	<1	1100	nt	-	nt	nt	nt	-
>C16-C21	mg/kg	<1	65,000 (combined)	nt	-	nt	nt	nt	-
>C21-C35	mg/kg	<1	65,000	nt	-	nt	nt	nt	-
>C35-C44	mg/kg	<1	65,000	nt	-	nt	nt	nt	-
Total Aliphatics >C10-C44	mg/kg	<5	nv	nt	-	nt	nt	nt	-
Total Aliphatics & Aromatics >C1	mg/kg	<10		nt	-	nt	nt	nt	-
Aromatics									
>EC5-EC7	mg/kg	<0.01	370	nt	-	nt	nt	nt	-
>EC7-EC8	mg/kg	<0.01	860	nt	-	nt	nt	nt	-
>EC8-EC10	mg/kg	<0.01	47	nt	-	nt	nt	nt	-
>EC10-EC12	mg/kg	<1	250	nt	-	nt	nt	nt	-
>EC12-EC16	mg/kg	<1	1800	nt	-	nt	nt	nt	-
>EC16-EC21	mg/kg	<1	1900	nt	-	nt	nt	nt	-
>EC21-EC35	mg/kg	<1	1900	nt	-	nt	nt	nt	-
>EC35-EC44	mg/kg	<1	1900	nt	-	nt	nt	nt	-
Total Aromatics >EC10-EC44	mg/kg	<5	nv	nt	-	nt	nt	nt	-
Total Aliphatics and Aromatics >C5-C44	mg/kg	<10		nt	-	nt	nt	nt	-
Gasoline Range Organics (GROs)									
>C5-C6	mg/kg	<0.02	nv	nt	-	nt	nt	nt	-
>C6-C7	mg/kg	<0.02		nt	-	nt	nt	nt	-
>C7-C8	mg/kg	<0.02		nt	-	nt	nt	nt	-
>C8-C10	mg/kg	<0.02		nt	-	nt	nt	nt	-
>C10-C12	mg/kg	<0.02		nt	-	nt	nt	nt	-
Total Aliphatics >C10-C44	mg/kg	<0.05		nt	-	nt	nt	nt	-
Total Aromatics >EC10-EC44	mg/kg	<0.05		nt	-	nt	nt	nt	-
GRO >C5-C10 Total	mg/kg	<0.02		nt	-	nt	nt	nt	-
VOC MS (S)									
Methyl Tertiary Butyl Ether	mg/kg	<0.0005	nv	nt	-	nt	nt	nt	-
Benzene	mg/kg	<0.001	0.38	nt	-	nt	nt	nt	-
Ethylbenzene	mg/kg	<0.001	83.00	nt	-	nt	nt	nt	0.00155
m/p-Xylene	mg/kg	<0.002	m: 82 p: 79	nt	-	nt	nt	nt	0.00829
o-Xylene	mg/kg	<0.002	88.00	nt	-	nt	nt	nt	-
Toluene	mg/kg	<0.001	880vap (869)	nt	-	nt	nt	nt	0.0138

Legend	
0.45	Results exceed LQM/CIEH S4ul for HHRA Residential Threshold without homegrown produce at 1% SOM (mg/kg)
-	Results below Limit of Detection (LOD)
nv	Guideline threshold value not available
nt	Not Tested

Notes
HHRA 2015 - LQM/CIEH Suitable 4 Use Levels based on 1% Soil Organic Matter (SOM). Metals are compared against a 6% SOM
Sol : sol S4UL presented exceed the solubility saturation limit, which is presented in brackets
Vap: vap S4UL presented exceed the vapour stauration limit which is presented in brackets

9.4.11.2 Waste Acceptance Criteria

In accordance with Council Decision 2003/33/EC, a subset of six (6) no. samples (TP011, TP015, TP0155, TP060, TP075 and TP119) collected at 0.5 m BGL were submitted for Waste Acceptance Criteria (WAC) testing. These samples were assessed for total pollutant content and leachability to determine whether excavated soils would be classified as inert, non-hazardous, or hazardous for landfill disposal.

HazWasteOnline™ waste classification, based on solid and leachate results (EN 12457-2), confirmed that:

- All samples were classified as non-hazardous, and
- All leachate concentrations were within the Inert Waste thresholds.

Although six (6) no. samples were analysed, it cannot be fully excluded that small areas of localised contamination may exist outside the sampled locations.

All results were classified as 'Inert' and 'Non-Hazardous'.

9.4.12 Rating of Site Importance of the Geological Features

In accordance with the NRA/TII criteria for evaluating the importance of geological features (refer to Appendix 9.1), the bedrock, soil and subsoil characteristics of the Proposed Development are assessed as being of 'Low' Importance at a local scale. This rating reflects the fact that the geological attributes present on site namely widespread limestone-derived tills, localised alluvium, gravel deposits, and bedrock units of the Tober Colleen and Malahide Formations are common, regionally extensive, and do not exhibit any rare, distinctive, or scientifically significant geological features.

No bedrock exposures, karst features, geological heritage sites, or mineral resources occur within or immediately adjacent to the site, and the geological units present are well-represented throughout the wider Swords area. The soils and subsoils identified (well-drained mineral soils, pockets of poorly drained mineral soils, and local alluvium) are also typical for this part of north Co. Dublin and do not display characteristics that would confer elevated geological value or sensitivity.

On this basis, and consistent with TII methodology, the site's geological features are considered to be of low quality, low vulnerability, and limited significance, resulting in an overall rating of 'Low Importance'.

9.5 Characteristics of the Proposed Development

The purpose of this section is to provide an overview of the key relevant details of the construction phase and operational phase of the Proposed Development. The information presented in this section is informed by the project design, but it is not a complete description of the Proposed Development. Therefore, it should be read in conjunction with the full development package. For a more comprehensive understanding of the Proposed Development, please refer to Chapter 5 (Description of the Proposed Development) of the EIA Report. Chapter 5 provides a detailed overview of the lifecycle of the project, including reference to the architectural and civil engineering, drawings, plans, reports, and other relevant documents in order to define the Proposed Development.

9.5.1 Construction Phase

The activities required for the construction phase of the Proposed Development present the greatest risk of potential impact on the geological environment. These activities primarily pertain to the site preparation, excavation and infilling activities required to facilitate construction of the Proposed Development.

Based on a review of the local information and historical and present-day knowledge on the ground conditions at the site, it is not anticipated that any exceptional or unusual risks are posed by the ground conditions which would cause difficulties during the construction phase of the Proposed Development

9.5.1.1 Site Levelling and Excavations

The Proposed Development requires excavation of soils and stones to facilitate foundations, services, and general site establishment. Based on the engineering design and ground investigation results:

- Estimated total volume of excavation material: 21,860 m³
- Volume to be reused on site: 21,860 m³
- Volume to be removed off-site: 0 m³
- Imported fill required: 35,000 m³
- Maximum excavation depth: 3.93 m BGL

These figures reflect the cohesive clay soils encountered across the site during trial pits and boreholes, which extended to depths of 6.7–8.8 m BGL, with groundwater recorded in boreholes at 2.5–3.5 m BGL and typically dry or slow seepage in trial pits.

Clay soils are unsuitable for infiltration-based drainage, as soakaway tests failed due to minimal fall in water levels, consistent with low permeability.

Excavated material will be carefully managed to avoid degradation of soil structure and unnecessary stockpiling. Where possible, excavated soils will be reused within the works (e.g., landscaping, backfill). Any imported aggregate or engineered fill will comply with specification and be sourced from authorised suppliers.

9.5.1.2 Storage of Hazardous Materials

Temporary storage of fuels, oils and cementitious materials will be required during construction. Storage will occur within the site compound in bunded, hard-standing areas, using double-skinned tanks or bunded containers. The formation height of bunds for generator and fuel tanks will be 300 mm.

These measures reduce the potential for ground contamination in the event of accidental leaks. Localised spills from construction vehicles or machinery may occur but will be mitigated through routine maintenance, designated refuelling areas and spill-containment procedures.

9.5.1.3 Imported/Exported Materials

Construction materials such as engineered fill, aggregates, concrete, steel, services ducting and ancillary construction products will be transported to the site by road during the construction phase. Where practicable, a “just-in-time” delivery system will be implemented to minimise the duration and extent of onsite material storage and to reduce disturbance to existing ground conditions and working areas.

Vehicles transporting friable or fine materials will be appropriately covered to prevent loss of material onto public roads or within the site. Designated delivery routes and controlled access points will be used to limit unnecessary trafficking over exposed soils and to reduce the potential for compaction or degradation of subsoil structure outside active construction zones.

All excavated material arising from site preparation and earthworks is proposed to be reused within the site as part of the earthworks and landscaping strategy. Accordingly, no routine export of excavated soils is anticipated. Reuse of excavated material will be undertaken in accordance with appropriate engineering specifications to ensure its suitability for placement, stability and long-term performance. Should any surplus, unsuitable or contaminated material arise during construction, it will be removed

from site and transported only to authorised and licensed facilities, in accordance with relevant waste management legislation.

Temporary stockpiling of soils or imported materials, where required, will be undertaken in accordance with the Construction and Environmental Management Plan (CEMP). Stockpiles will be appropriately located, managed and, where necessary, segregated to preserve soil quality and integrity, prevent cross-contamination, and facilitate reuse. Good construction practice will be employed to minimise soil compaction, erosion potential and unnecessary disturbance to underlying geological strata during all earthworks activities.

9.5.2 Operational Phase

During operation, the Proposed Development will introduce permanent hardstanding (c. 5.471 ha) across parts of the site, altering the existing soil profile within the development footprint and reducing natural infiltration. No further excavation or disturbance of soils or bedrock is anticipated once the development is completed.

The underlying geology comprises a 'PI – Poor Aquifer, defined as bedrock, which is generally unproductive except for local zones', overlain by natural cohesive subsoils typical of a greenfield site. As there is no requirement for bulk fuel or diesel storage during the operational phase, the potential for soil or groundwater contamination is negligible. Heating for the development will be provided through air-to-water heat pumps, and the operational use does not introduce any significant ground-based risk pathways.

Operational effects on land, soils and geology are therefore minor, localised and limited to the areas permanently sealed by buildings, pavements and other hardstanding surfaces.

9.6 Predicted Impacts of the Proposed Development

An analysis of the potential effects of the Proposed Development on the land, soils and geological environment during the construction and operational phases are outlined below. Due to the inter-relationship between land, soils, and geology, and hydrology and hydrogeology the following impacts discussed will be considered applicable to both Chapter 8 (Land, Soils and Geology) and Chapter 10 (Hydrology and Hydrogeology) of this EIA Report. Remediation and mitigation measures are included in the design of this project to address these potential impacts are presented in Section 9.6.2 (Construction Phase) and Section 9.6.3 (Operational Phase) below.

9.6.1 Do-Nothing Impact

If the Proposed Development were not to proceed, no excavation, construction activity, or alteration of existing ground conditions would occur within the site. In this scenario, the land, soils and geological environment would remain unchanged, resulting in a neutral effect.

However, the lands are zoned 'RA - Residential Area' under the Fingal Development Plan 2023–2029, which supports their future development for housing. As noted in consultation for similar projects, if this specific development does not proceed, it is highly likely that an alternative residential scheme of similar scale would eventually be delivered on these lands, with comparable land, soils and geology impacts to those assessed in this EIAR.

Therefore, while the strict "Do-Nothing" scenario results in a ***neutral*** effect on land, soils and geology, this must be viewed in the context that the zoning objectives anticipate development on the lands, and

similar effects on soil excavation, ground disturbance and permanent sealing of soils would reasonably be expected under any compliant future scheme.

9.6.2 Construction Phase

9.6.2.1 Potential Impacts on Land, Soils and Geology

During the construction phase, the principal risks to soils and geology arise from excavation, earthworks, accidental spills, material handling, and general construction traffic.

There is potential for underlying soils and shallow bedrock to be affected by pollutants such as fuels, oils, cementitious materials, or contaminated runoff generated during construction. Without controls, accidental leaks or contaminated surface water could percolate downward, resulting in localised contamination of soils or the underlying geological strata.

Excavation and earthworks will alter the natural soil structure, particularly in areas where reduced or increased compaction occurs as materials are removed, replaced or reinstated. The construction phase will require the following volumes of earthworks:

- Estimated excavation volume: 21,860 m³
- Volume reused on-site: 21,860 m³
- Volume removed from site: 0 m³
- Imported engineered fill: 35,000 m³
- Maximum excavation depth: 3.93 m BGL

The ground investigation undertaken in April 2024 by Site Investigations Ltd, confirmed that bedrock was not encountered within any of the boreholes. All boreholes terminated at depths between 6.70 m and 8.80 m BGL due to refusal on large cobbles or possible boulders rather than competent rock. No rotary coring was undertaken as part of the investigation. Groundwater ingress was recorded at depths ranging from 0.40 m to 3.50 m BGL, with no indication of bedrock-related groundwater inflows. These results confirm that the rockhead lies deeper than the investigation depths and that construction excavations will remain entirely within cohesive till soils.

As a result, excavation will not reach bedrock at any point on the site, and groundwater is not expected to be encountered at the proposed formation depths, except for minor shallow seepage within the tills. Excavation, removal, and reinstatement of soils prior to installation of hardstanding and drainage systems temporarily increases vulnerability of the shallow soil profile during construction. Once the permanent drainage network and hard surfaces are installed, the potential for infiltration of contaminants will be significantly reduced.

Hydrocarbons, cement washout water, and other chemicals used during construction have the potential to negatively affect soil quality if accidental spills occur. Runoff from uncured concrete surfaces is particularly alkaline, and if allowed to infiltrate, could temporarily alter soil pH or degrade soil structure.

Without appropriate mitigation measures, the potential impacts during the construction phase on land, soils and geology would be ***negative, significant and short-term.***

9.6.2.2 Potential Impacts on Human Health and Populations

Potential impacts on human health during construction relate primarily to the disturbance of soil, potential exposure of any previously unidentified contamination, accidental spills or leaks of fuels, oils, chemicals or concrete washout and generation of contaminated dust or vapours.

Although no contamination has been identified (refer to Section 9.4.10), excavation may expose isolated pockets of pollutants if previously unrecorded land uses occurred. Incorrect handling or transport of excavated soils could pose health risks to workers or the public.

Accidental release of hydrocarbons or alkaline concrete wash water could generate fumes, vapours or contaminated dust that, if unmanaged, may affect nearby receptors.

Without the application of appropriate mitigation measures, potential construction-phase impacts on human health and populations due to soil contamination pathways are ***negative, slight and short-term.***

9.6.3 Operational Phase

9.6.3.1 Potential Impacts on Land, Soils and Geology

During operation, the majority of the Proposed Development will be capped by hardstanding, buildings and landscaped areas. This will significantly reduce the potential for direct contact between rainfall, surface run-off and the underlying soils, thereby limiting pathways for contamination or alteration of the geological environment.

The site is underlain by a 'PI – Poor Aquifer – bedrock which is generally unproductive except for local zones', overlain by natural cohesive subsoils. Although the 2024 ground investigation (SIL) did not encounter bedrock (boreholes terminated at depths of 6.7–8.8 m BGL due to refusal on cobbles and boulders rather than competent rock), the bedrock surface is interpreted to lie at a deeper level than the planned formation depths. Minor groundwater seepage was recorded in trial pits and boreholes between 0.40 m and 3.50 m BGL, but no bedrock-related groundwater conditions were observed. As a result, operational-phase activities are not expected to interact with deeper geological or hydrogeological units.

In the absence of mitigation measures, a low-level risk remains of localised soil impacts arising from accidental hydrocarbon spills or leaks associated with vehicles during normal operation. If such contaminants were to infiltrate untreated into exposed soil areas, localised changes in soil quality could occur. However, as the majority of the site will be sealed or landscaped, exposure pathways will be limited.

Without mitigation, the potential operational-phase impacts on land, soils and geology would be ***negative, not significant and long-term.***

9.6.3.2 Potential Impacts on Human Health and Populations

During the operational phase, the Proposed Development will be largely sealed by buildings, roads, paths and landscaped areas. As a result, direct contact with underlying soils or subsoils will be removed, eliminating any realistic pathway for exposure to land or soil-related contaminants for future residents, visitors, or maintenance personnel.

The site is a greenfield location with no known areas of soil contamination, and the operational use of the development does not involve any bulk storage of fuels, chemicals, or hazardous substances.

Therefore, there are no hydrocarbons stored onsite during normal operation, and no credible mechanism exists for contamination of soils or for the introduction of new pollutants that could affect human health.

Any minor risks associated with hydrocarbons from vehicles (e.g., during parking or routine use of access roads) are extremely limited and would be confined to small, isolated areas of hardstanding. These surfaces are not used for food production or any activity that would result in soil exposure to people, and any accidental drips or leaks would be addressed through normal operational maintenance.

As a result, there is no potential for impacts on human health or populations arising from changes in land, soils, or geology.

9.7 Mitigation Measures

The following measures will protect the land, soils and geological environment during the construction phase of the Proposed Development. These measures reflect industry best practice and standard environmental protection procedures. They are not included for the purpose of avoiding or reducing effects on European sites, but rather to maintain soil quality, prevent contamination, and manage earthworks sustainably.

9.7.1 Construction Phase

To minimise impacts on land, soils and geology, the following mitigation measures will be implemented during all construction activities. These measures address key potential impact sources, including:

- Control of soil excavation, handling and potential export
- Sources and management of imported fill and aggregates
- Fuel and chemical handling, transport and storage
- Control of construction-related runoff and potential contamination pathways

A Construction and Environmental Management Plan (CEMP) has been prepared for the Proposed Development (AKM Design Group, March 2026). It sets out the construction techniques, sequencing, environmental controls and site management procedures. A Surface Water Management Plan (SWMP) (AKM Design Group, March 2026) supports the CEMP by detailing settlement, silt-control and runoff-management measures essential for preventing contamination of soils during earthworks.

Construction activities and associated mitigation measures have been informed by best practice guidance for controlling pollution and protecting surface water and groundwater during development works, including but not limited to:

- Construction Industry Research and Information Association (CIRIA), Control of Water Pollution from Construction Sites: Guidance for Consultants and Contractors (C532);
- CIRIA C741 Environmental Good Practice on Site (4th Edition);
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (IFI, 2016);
- Enterprise Ireland Best Practice Guide – Oil Storage Guidelines (BPGCS005);
- Eastern Regional Fisheries Board – Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites;
- Central Fisheries Board – Channels and Challenges: The Enhancement of Salmonid Rivers;
- CIRIA C648 Control of Water Pollution from Construction Sites;

- Guidelines for the Crossing of Watercourses During the Construction of National Road Schemes (NRA, 2008);
- Inland Fisheries Ireland (IFI) – Planning for Watercourses in the Urban Environment.

The CEMP will set out the proposed procedures and operations to be utilised on the proposed construction site to protect water quality. The CEMP will be implemented and adhered to by the construction Contractor and will be overseen and updated as required if site conditions change by the Project Manager, Environmental Clerk of Works where relevant. All personnel working on the site will be trained in the implementation of the procedures. All relevant personnel will be fully trained in the use of this equipment. Guidelines such as "Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors" (CIRIA 532, 2001) will be complied with.

During the project planning phase, a comprehensive emergency response plan will be developed by the construction contractor. This plan will outline a well-defined procedure for effectively managing emergencies as they arise. Furthermore, it's imperative to disseminate this emergency protocol to all site personnel during the site induction process. This plan will include for events such as:

- Pollution incidents: These may involve spillages, the malfunction of temporary structures, embankment collapse, acts of vandalism, fires, and other related events.
- Extreme weather occurrences: Events such as heavy rainfall, flooding, are important factors to consider due to their potential impact on the construction process.

All mitigation measures outlined here, and within the CEMP will be implemented during the construction phase, as well as any additional measures required pursuant to planning conditions which may be imposed.

9.7.1.1 Measures for the Reuse of Soils and Sourcing of Aggregates

During construction, topsoil and subsoil will be stripped and stockpiled separately in designated areas to preserve their structure, avoid cross-contamination and prevent unnecessary compaction. Stockpiles will be protected from erosion using measures such as silt fencing where required.

All excavated soils will be visually inspected by suitably qualified personnel for signs of contamination, including staining or odour, and any suspect materials will be sampled and analysed. Contaminated soils, if encountered, will be segregated and removed from the site by a licensed contractor. As the entirety of the excavated material (21,860 m³) is intended to be reused on site, the need for soil export is not anticipated; however, if export becomes necessary, waste soils will be classified by a competent environmental professional prior to off-site recovery or disposal.

Where feasible, excavated soils and stones will be reused on site in accordance with Regulation 27 (By-product) procedures under S.I. 323/2020, subject to EPA approval. Regulation 28 (End-of-Waste) will also be considered for any recycled aggregate or fill material meeting the appropriate criteria. Imported fill, including CL.503 material, will comply with IS 328:2021 and all relevant national standards.

9.7.1.2 Sourcing of Engineering Fill and Aggregates

The construction phase will require the importation of approximately 35,000 m³ of engineering fill and aggregate material to facilitate site development and infrastructure works. All imported fill materials,

including Clause 503 (CL.503) material, will comply with IS 328:2021 and all other relevant Irish and European standards.

Engineering fill and aggregates will be sourced exclusively from appropriately licensed and permitted quarries or suppliers, operating in compliance with environmental, planning and regulatory requirements. Material specifications, certification and traceability documentation will be reviewed prior to delivery to site to verify compliance with project requirements and environmental best practice.

All suppliers will be vetted in advance to ensure conformity with applicable quality controls, environmental obligations and waste management legislation. Records of material source, volumes and certification will be maintained for audit and reporting purposes.

9.7.1.3 Measures for the Control of Pollution from Fuels, Oils and Other Substances

The following mitigation measures will be implemented during the construction phase in order to prevent any spillages of fuels and other construction chemicals and prevent any resulting discharge to the soil or geological environment:

- All plant and machinery will be regularly maintained and serviced to minimise the risk of release of hydrocarbons. This will only be undertaken by qualified personnel;
- Designation of bunded maintenance and refuelling areas on the site;
- Provision of spill kit facilities across the site strategically located in high risk areas;
- Where mobile fuel bowsers are used, the following measures will be taken:
    - Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use;
    - The pump or valve will be fitted with a lock and will be secured when not in use;
    - All bowsers to carry a spill kit and operatives must have spill response training;
    - Portable generators or similar fuel containing equipment will be placed on suitable drip trays.

In the case of drummed fuel or other potentially polluting substances which may be used during the construction phase, the following measures will be adopted:

- Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded area;
- Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be stored within temporary bunded areas, doubled skinned tanks or bunded containers to a volume of 110% of the capacity of the largest tank/container. Drainage from the bunded area(s) shall be diverted for collection and safe disposal.
- Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage;
- All drums to be quality approved and manufactured to a recognised standard;
- If drums are to be moved around the Site, they will be secured and on spill pallets; and
- Drums will be loaded and unloaded by competent and trained personnel using appropriate equipment.

Refuelling and maintenance of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area or within the construction compound (or where possible off the site) which will be away from watercourses. Emergency procedures and spill protection equipment such as oil booms, oil soakage pads, socks and sand will be available in clearly marked bins/silos and in construction vehicles to be used in the event of an accidental release during refuelling.

This equipment will be checked weekly to ensure there is sufficient supply for the site. Any spillage of fuels, lubricants or hydraulic oils will be immediately contained, and the contaminated soil removed from the site and disposed of in accordance with all relevant waste management legislation. Training will be given to site workers in how to manage a spill event. Prior to any work commencing on site, all construction equipment will be checked to ensure that it is mechanically sound, to avoid leaks of oil, hydraulic fluids and grease. In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank.

The following measures will be put in place to prevent any spillages to ground of fuels during machinery activities and prevent any resulting soil and/or groundwater quality impacts:

- Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use.
- Any 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.
- Weekly checks of spill kits will be carried out to ensure they are sufficiently stocked.

Guidelines such as “Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors” (CIRIA 532, 2001) will be complied with.

9.7.1.4 Measures for the Use of Concrete

Concrete works will be subject to a pre-works risk assessment to identify appropriate controls for preventing the discharge of alkaline wash water or cementitious material to the soil environment. No concrete washout will be permitted on bare ground. All washout activities will be confined to a designated impermeable, bunded washout area within the construction compound. Washout water and residues will be collected and removed from site by a licensed contractor or reused where appropriate. Mixer trucks will not wash out anywhere other than the designated area, and pumped concrete operations will be supervised at all times to prevent accidental discharge.

9.7.1.5 Human Health and Populations

No additional mitigation measures are required beyond standard construction good practice as set out in the CEMP. The site is a greenfield landholding with no known hazardous soils identified (Refer to Section 9.4.10), and therefore no significant risks to human health are predicted.

All excavated materials will be visually assessed for potential contamination, and any suspect soil will be segregated, sampled and managed appropriately. Where contaminated material is identified, it will be removed by a licensed waste contractor in accordance with waste legislation.

Personnel handling soils or construction materials will be trained and equipped with suitable PPE. Fuels and oils will be stored and managed within designated bunded areas, and spill control equipment will be accessible at all work locations to minimise risks associated with accidental releases.

With these procedures in place, no significant risks to human health and populations are expected during construction.

9.7.2 Operational Phase

A number of permanent design measures will be in place to minimise the likelihood of accidental spills or contaminants entering the underlying soils, subsoils or geological environment during the

operational phase of the Proposed Development. These measures are embedded within the project layout, materials specification and operational management procedures.

9.7.2.1 Land, Soils and Geology

There is no requirement for bulk fuel, oil, or chemical storage during the operational phase, and therefore the potential for soil or geological contamination is inherently low. The main residual source of potential contamination arises from the possibility of minor hydrocarbon drips or leaks from vehicles in parking areas or along internal access roads. Such events would be small in scale, localised and intermittent. To ensure these risks remain minimal, standard operational procedures will be followed, including the provision of spill kits within maintenance stores and training for appointed personnel in spill response and incident reporting. These procedures will ensure any accidental spill is contained and remediated before it can infiltrate into the soil.

The Proposed Development will introduce an increase in hardstanding (c. 5.471 ha), which will permanently seal sections of the existing soil profile and reduce natural infiltration. Given that the site is underlain by cohesive glacial tills and a 'PI – Poor Aquifer', the reduction in infiltration will not materially alter the geological or hydrogeological regime. The extent of sealed surface is modest in the context of the overall groundwater body and geological formation, and the resulting change in recharge is considered negligible.

The site drainage strategy incorporates Sustainable Urban Drainage System (SuDS) measures such as permeable paving, bioretention areas, swales and detention basins, which collectively manage and treat runoff during operation. These SuDS features ensure that surface water generated on hardstanding areas is collected, conveyed and controlled without creating pathways for pollutants to enter the soil or subsoil. As the operational drainage system is fully contained and functions independently of the underlying geology, no additional mitigation measures are required to protect soils and geology.

Surface water and groundwater management measures are detailed in Chapter 10 (Hydrology and Hydrogeology). Accordingly, the residual potential for impacts on the land, soils and geological environment during operation is extremely limited, and no further soils-specific mitigation is necessary beyond the inherent design measures already incorporated.

9.7.2.2 Human Health and Populations

There are no sensitive geological or socio-economic receptors within the Proposed Development site, and the operational phase will not introduce any activities that could expose residents or visitors to underlying soils or subsoils. As the site will be predominantly capped by buildings, pavements and landscaped areas, direct contact with soil will be removed entirely. Furthermore, as stated in Section 9.6.3.2 above, there is no requirement for the storage or handling of hazardous substances during operation, eliminating any associated risk pathways.

The mitigation measures outlined in Section 9.7.1 above will be implemented during operation, ensuring that any minor spill risks are effectively managed. With these measures in place, no additional mitigation is required for the protection of human health or populations, and no significant operational-phase risks are anticipated.

9.8 Residual Impacts

9.8.1 Construction Phase

9.8.1.1 Land, Soils and Geology

The implementation of the mitigation and monitoring measures detailed in Section 9.7.1 above and Section 9.9.1 below, will ensure that potential impacts on the land, soils and geological environment do not occur during the construction phase.

The residual effect on the soils and bedrock during the construction phase is considered to be ***neutral, imperceptible and short term.***

9.8.1.2 Human Health and Populations

The implementation of the mitigation and monitoring measures detailed in Section 9.7.1 above and Section 9.9.1 below, will ensure that potential impacts on the human health and populations do not occur during the construction phase.

The residual effect on human health and populations during the construction phase is considered to be ***neutral, imperceptible and short term.***

9.8.2 Operational Phase

9.8.2.1 Land, Soils and Geology

The implementation of the mitigation and monitoring measures detailed in Section 9.7.2 above and Section 9.9.2 below, will ensure that the potential impacts on land, soils and geology once the Proposed Development is constructed and operational are adequately mitigated.

The residual effect on land, soils and geology during the operational phase of the Proposed Development is considered to be ***neutral, imperceptible and long-term.***

9.8.2.2 Human Health and Populations

The implementation of the mitigation and monitoring measures detailed in Section 9.7.2 above and Section 9.9.2 below, will ensure that the potential impacts on human health and populations once the Proposed Development is constructed and operational are adequately mitigated.

The residual effect on human health and populations during the operational phase of Proposed Development is considered to be ***neutral, imperceptible and long-term.***

9.9 Monitoring or Reinstatement Measures

9.9.1 Construction Phase

During the construction phase the following monitoring measures will be carried out for the protection of the land, soils and geological environment:

- Monitoring will be undertaken by the Contractor in accordance with planning conditions and in full compliance with the project CEMP.
- Daily inspections will be undertaken to address potential environmental risks including soil management, dust, litter, waste, machinery leaks and general housekeeping.

- Excavated soil will be visually assessed for signs of contamination such as staining or odour. Soil sampling will be undertaken where required to confirm suitability for reuse or disposal.
- Construction activities with potential to affect soils, including concreting, refuelling, plant maintenance and excavation, will be inspected regularly to confirm that pollution-prevention measures are being correctly implemented.
- Weekly checks will be undertaken to ensure that temporary drainage features including surface water drains, silt traps, silt fencing and sediment-control measures remain unblocked and fully functional.
- Silt fences and other sediment-control measures will be maintained throughout the construction phase to ensure they continue to perform effectively.
- Runoff diversion channels and temporary bunds will be regularly maintained to prevent erosion, sediment movement and uncontrolled surface runoff.
- Regular auditing of mitigation measures will be completed, including verification that refuelling occurs only within designated bunded areas and that concrete washout procedures are followed.
- A site inspection log will be maintained at all times, recording inspections, incidents such as spills or blockages, and corrective actions. Significant incidents will be investigated to determine root causes and to prevent recurrence.

9.9.2 Operational Phase

During the operational phase, potential impacts on land, soils and geology are minimal due to the presence of extensive hardstanding and SuDS features that limit direct infiltration to underlying soils.

The following monitoring measures will be carried out for the protection of the land, soils and geological environment during operation:

- Regular maintenance of the surface water drainage system will be undertaken, including inspection and cleaning of hydrocarbon interceptors, to ensure pollutants from vehicles are effectively captured and do not reach underlying soils.
- Foul sewer infrastructure will be monitored to prevent blockages, leaks or deterioration that could result in uncontrolled discharge to surrounding soils or subsoils.
- Maintenance of SuDS components such as permeable paving, swales, bioretention features and detention basins will ensure that operational drainage continues to function as designed and prevents accidental release to ground.

These measures will ensure that the operational phase does not introduce any new contamination pathways and that long-term protection of soils and geology is maintained throughout the lifecycle of the development.

9.10 Interactions

This section discusses the interactions between this chapter (Chapter 8 (Land, Soils and Geology)) and other specialist environmental topics considered in this EIAR.

9.10.1 Hydrology and Hydrogeology

9.10.1.1 Construction Phase

The excavation of material for site levelling, foundations and installation of services has the potential to temporarily increase the vulnerability of shallow soils and subsoils to contamination until the

permanent surface water drainage network is installed. Although groundwater seepage was recorded at depths between 0.40 m and 3.50 m BGL in the ground investigations carried out by Site Investigation Ltd (April 2024), no bedrock groundwater conditions were encountered, and bedrock was not reached in any borehole or trial pit. Given that the maximum excavation depth is 3.93 m BGL for the Proposed Development, only minor seepage within cohesive tills may be encountered, and no interaction with the deeper bedrock aquifer is expected.

Construction activities may generate sediment-laden runoff if not controlled, and this could interact negatively with the hydrological environment prior to installation of permanent SuDS and drainage systems. However, the construction phase mitigation measures set out in Chapter 8 (Land, Soils and Geology) and Chapter 10 (Hydrology and Hydrogeology), including silt control, bunded storage, controlled refuelling and settlement measures, will ensure that sediment and contaminants are appropriately managed.

Taking account of these measures, the residual interaction between Land, Soils and Geology; and Hydrology and Hydrogeology during the construction phase is considered ***negative, imperceptible and short-term.***

9.10.1.2 Operational Phase

During operation, the site will be predominantly sealed and served by a fully controlled SuDS network. No significant interaction between Land, Soils and Geology and Hydrology and Hydrogeology is predicted during the operational phase.

9.10.2 Air Quality and Climate

9.10.2.1 Construction Phase

Construction activities such as excavation, soil handling, vehicle movements and stockpiling have the potential to generate dust, which may settle on exposed soils or be transported to nearby water features. This represents a potential interaction between air quality and land and soils.

The dust-suppression and housekeeping measures outlined in the CEMP will minimise dust generation and prevent deposition on sensitive areas. With these measures in place, the interaction between Air Quality and Climate; and Land, Soils and Geology is considered ***negative, not significant and short-term.***

9.10.2.2 Operational Phase

No significant interactions between Air Quality and Climate and Land, Soils and Geology are predicted during the operational phase.

9.10.3 Biodiversity

9.10.3.1 Construction Phase

Dust emissions from construction activities have the potential to settle on vegetation, causing minor effects on local ecological receptors. With the dust control measures included in the CEMP, any interaction between Biodiversity and Land, Soils and Geology will be ***negative, imperceptible and short-term.***

9.10.3.2 Operational Phase

No significant interaction between Biodiversity and Land, Soils and Geology is predicted during the operational phase.

9.10.4 Material Assets - Waste

9.10.4.1 Construction Phase

During construction, excavated soil will be generated from site levelling, foundations and service installations. For this project, approximately 21,860 m³ of material will be excavated and 100% reused on-site, meaning no export of soil is expected. Imported engineered fill (c. 35,000 m³) will also be required.

Mitigation measures set out in Chapter 18 (Material Assets – Waste), combined with those in Chapter 10 (Hydrology and Hydrogeology), will ensure proper handling, reuse and management of soil and construction waste. As a result, the interaction between Waste and Land, Soils and Geology during construction is considered ***neutral, imperceptible and long-term***.

9.10.4.2 Operational Phase

No significant interaction between Waste and Land, Soils and Geology is predicted during the operational phase.

9.11 Indirect and/or Secondary Impacts

9.11.1 Construction Phase

Indirect or secondary impacts on land, soils and geology during the construction phase of the Proposed Development are not expected to be significant due to the extensive environmental controls embedded in the Construction Environmental Management Plan (CEMP).

The CEMP includes strict measures for the management of excavated soils, segregation of clean and potentially contaminated material, correct stockpile handling, minimisation of soil compaction, and implementation of erosion-control measures such as silt fencing, stockpile protection and controlled access routes. These controls ensure that excavation, earthworks, vehicle movements and materials handling do not give rise to unintended degradation of soil structure or unnecessary disturbance of subsoils.

Procedures relating to fuel and chemical handling, designated bunded refuelling areas, spill-response equipment, containment measures and controlled concrete washout locations also reduce the potential for accidental contamination of soils or subsoils during construction. Furthermore, settlement and silt-control measures included in the SWMP contribute to preventing sediment mobilisation and protect reinstated or exposed soil surfaces from secondary impacts caused by erosion or surface wash-off.

Given the robustness of these soil-protection measures, and the absence of activities that would result in widespread or persistent alteration of the soil or geological environment, no significant indirect or secondary impacts on land, soils and geology are anticipated during the construction phase.

9.11.2 Operational Phase

In the operational phase, the Proposed Development is not expected to generate indirect or secondary impacts on land, soils or the geological environment. The operational footprint will be largely sealed by buildings, pavements, roads and landscaped areas, eliminating pathways for direct interaction with underlying soils.

There will be no bulk storage of fuels, oils or hazardous substances, and routine residential activities do not introduce processes that would generate contaminants capable of affecting soil or geological conditions. Minor accidental drips or leaks from vehicles using parking areas will be captured and managed through the site's hardstanding surfaces and operational management procedures, preventing any secondary effects on soils.

Because the operational development does not involve excavation, ground disturbance, or the introduction of substances that could affect soil quality, and because the underlying 'PI - Poor Aquifer - Bedrock which is generally unproductive except for local zones' remains unconnected to routine operational activities, no indirect or secondary impacts on land, soils or geology are predicted during the operational lifetime of the Proposed Development.

9.12 Cumulative Impacts

Error! Reference source not found. (Cumulative Impacts) of this EIA Report provides a description of relevant developments within the area which have the potential to produce environmental impacts during their operational and/or construction phases which, when combined with the predicted impacts for this Proposed Development may give rise to cumulative impacts.

Existing constructed and operational developments form part of the baseline hydrological and hydrogeological environment. Accordingly, any additional environmental effects arising from the Proposed Development have been evaluated in the preceding sections of this chapter. Any future development proposals on adjacent or nearby lands will be subject to the statutory planning process and relevant environmental assessment (including EIA or EIA Screening) and will take account of the presence of the Proposed Development.

9.12.1 Construction Phase

Potential cumulative construction-phase effects on land, soils and geology relate primarily to earthworks, soil disturbance, stockpile management, and potential contamination risks. Construction activities associated with the Proposed Development and any concurrent nearby developments could theoretically give rise to:

- Increased soil disturbance and excavation volumes, potentially intensifying cumulative effects on soil structure if multiple sites undertake earthworks simultaneously in the same locality.
- Localised compaction from construction traffic, which could combine cumulatively with similar activities on other developments.
- Improperly managed stockpiles, which, if occurring on several sites simultaneously, could cumulatively elevate erosion or sediment mobilisation risks.
- Accidental leaks or spills of hydrocarbons, oils or chemicals from construction plant, which—if repeated across multiple developments—could cumulatively elevate soil contamination risk.

For the Proposed Development, approximately 21,860 m³ of material will be excavated and 100% reused on-site, meaning no soil export is anticipated, and approximately 35,000 m³ of engineered fill will be imported. These earthworks will be fully controlled under the CEMP through designated stockpile areas, erosion and sediment controls, bunded fuel storage, designated refuelling points, concrete washout facilities, and strict material handling measures.

A review of the permitted developments listed in **Error! Reference source not found.** indicates that none are expected to interact cumulatively with this project in a manner that would cause significant land, soils or geology effects. Provided that all developments adhere to their respective CEMPs, waste management plans and planning conditions, cumulative impacts will remain well controlled.

With the implementation of mitigation and monitoring measures described in Sections 9.7.1 and Section 9.9.1, the residual cumulative construction-phase impact on land, soils and geology is assessed as ***neutral, imperceptible and short-term.***

9.12.2 Operational Phase

Potential cumulative operational impacts relating to land, soils and geology are limited, as the Proposed Development and nearby residential schemes will:

- Introduce new hardstanding, permanently sealing soil surfaces and reducing infiltration in the immediate footprint.
- Generate localised vehicle-related hydrocarbon drips or leaks in parking and access areas.
- Require routine maintenance of drainage and foul sewer infrastructure to ensure no inadvertent discharge to ground.

The Proposed Development is a greenfield site underlain by cohesive glacial tills and a PI – Poor Aquifer at depths between >6.70m BGL and >8.80m BGL. The amount of soil permanently sealed by the development is small in the context of the wider land area and groundwater body (Swords GWB). As a result, cumulative effects on geological conditions or soil resources are negligible.

Other developments in the area will be required to implement their own mitigation measures, such as proper erosion control, soil management, hardstanding drainage design, and fuel-handling protocols. Therefore, cumulative long-term impacts on land, soils and geology across multiple operational developments are expected to be minimal.

With the mitigation and monitoring measures outlined in Sections 9.7.2 and Section 9.9.2 and considering the regulatory controls applied to all surrounding developments, the residual cumulative operational impact is assessed as ***neutral, imperceptible and long-term***.

9.13 References

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- Dublin Institute for Advanced Studies (DIAS), School of Cosmic Physics, Geophysics Section. Irish National Seismic Network – on-line mapping (Accessed 11.03.2029).
- Fingal County Council Development Plan (2023-2029) (Accessed 11.03.2029)
- Infrastructure Report - Residential Development on Lands at Mooretown, Swords or Fingal County Council (AKM, February 2026).
- Appendix B of Infrastructure Report – Ground Investigation Report (Site Investigations Ltd, 2024).
- Construction and Environmental Management Plan (CEMP) – Mooretown Phase 2 – Fingal County Council (AKM, March 2026).
- Surface Water Management Plan (SWMP) – Mooretown Phase 2 – Fingal County Council (AKM, March 2026).
- Various design site plans and drawings, as submitted with this planning application.

10 Hydrogeology and Hydrology

10.1 Introduction

This chapter of the EIAR evaluates the likely significant effects, if any, which the Proposed Development will have on hydrology (surface water) and hydrogeology (groundwater). In assessing likely potential and predicted effects, account is taken of both the importance of the attributes and the predicted scale and duration of the likely effects.

10.2 Expertise and Qualifications

This report was prepared by Denis Power and Alan Wilson. Alan Wilson (BSc, AISEP) is an Environmental Consultant at AWN with over five years of professional experience in environmental assessment and consultancy. Alan holds a BSc (Hons) in Environmental Management in Agriculture and Environmental and Geographical Sciences. He has worked on a wide range of large-scale infrastructure and development projects, contributing to the preparation of Land, Soils, Geology and Hydrology and Hydrogeology Environmental Impact Assessment Reports (EIARs), site-specific Flood Risk Assessments (Stages 1 and 2), baseline environmental studies, hydrological and hydrogeological risk assessments, Water Framework Directive (WFD) assessments, assimilative capacity assessments, environmental sensitivity assessments and environmental due diligence assessments (Stages 1 and 2). Alan also has experience in supervising site investigations, as well as groundwater and surface water monitoring on operational developments and both greenfield and brownfield sites. Prior to his role at AWN, he gained additional experience within ecology and forestry-related projects. Alan is a member of the International Association of Hydrogeologists (IAH), Irish Group, and holds Associate (AISEP) membership with the Institute of Sustainability and Environmental Professionals (ISEP).

Denis Power is a Junior Environmental Consultant with AWN Consulting with ongoing roles within the water department. Denis has a BSc in Environmental Management and planning from Dublin Technical University and has studied in Utrecht University's Earth surface and water master's programme. Denis has worked on a range of projects including ground and surface water monitoring and sampling, environmental impact assessment reports, hydrological risk assessments, lake abstraction assessments and QGIS mapping. Denis is a member of the International Association of Hydrogeologists (Irish Group).

10.3 Method

10.3.1 Water Framework Directive (WFD) Assessment Methodology

In accordance with the requirements of the Water Framework Directive (2000/60/EC), a stand-alone Water Framework Directive (WFD) Assessment has been prepared to accompany this planning application and is submitted as a separate supporting document (Document Ref: 257501.1029WR01, AWN Consulting Ltd, March 2026).

The WFD Assessment has been undertaken to support the competent authority in determining whether the Proposed Development has the potential to:

- Cause deterioration in the status of any surface water or groundwater body, either directly or indirectly;

- Prevent the achievement of current or future WFD environmental objectives, including the attainment of "Good" status; and
- Adversely affect water-dependent protected areas, habitats or species.

The assessment methodology follows relevant European, national and EPA guidance and is consistent with the EPA Guidelines on the Information to be contained in Environmental Impact Assessment Reports (2022) and the Water Action Plan 2024 – A River Basin Management Plan for Ireland (2022–2027). The WFD Assessment has been undertaken at an appropriate spatial scale, informed by the hydrological and hydrogeological connectivity between the Proposed Development and the receiving environment.

The WFD methodology includes the following key steps:

- Identification of relevant surface water, transitional, coastal and groundwater bodies potentially affected by the Proposed Development, based on proximity and hydrological or hydrogeological connectivity;
- Review of the latest EPA WFD Status and Risk classifications (2019–2024 status; 3rd Cycle risk) for each identified waterbody using EPA datasets and catchment information available via www.catchments.ie;
- Assessment of potential source–pathway–receptor (S-P-R) linkages during both the construction and operational phases of the Proposed Development;
- Completion of surface water and groundwater 'no deterioration' assessments, applying EPA and Common Implementation Strategy guidance to determine whether the Proposed Development could result in deterioration of any WFD quality element or overall waterbody status;
- Consideration of the Proposed Development in the context of future waterbody objectives, as set out in the Water Action Plan 2024 and the associated programme of measures for the Nanny–Delvin catchment; and
- Identification and incorporation of embedded mitigation measures, including construction-phase controls, SuDS design measures and wastewater management arrangements, to ensure compliance with WFD objectives.

The findings of the WFD Assessment inform and support the conclusions presented within this Hydrology and Hydrogeology chapter of the EIAR. The assessment confirms whether the Proposed Development, alone or in combination with other plans or projects, is consistent with the objectives of the Water Framework Directive. For full details of the WFD assessment methodology, baseline environment, impact assessment and conclusions, reference should be made to the stand-alone WFD Assessment report submitted with this application.

10.3.2 Relevant Legislation and Guidance

This impact assessment was undertaken having regard to the following legislation and guidance:

- EPA Guidelines on the Information to be contained in Environmental Impact Assessment Reports (May 2022). Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (Transport Infrastructure Ireland (TII), October 2009; previously NRA). The TII criteria for rating the hydrogeological and hydrological related attributes are presented in **Appendix 10.1** and **Appendix 10.2** of this EIAR, respectively.
- Water Framework Directive 2000/60/EC.

The strategies and objectives of the Water Framework Directive (WFD) in Ireland have influenced a range of national legislation, regulations and guidelines. Compliance with the WFD is assessed in detail in a stand-alone Water Framework Directive Assessment, submitted as part of the planning application. Notwithstanding this, the following WFD-related legislation and guidance are of relevance to this chapter:

- European Communities (Water Policy) Regulations, 2003 (S.I. No. 722 of 2003).
- European Communities (Drinking Water) Regulations 2014 (S.I. 122 of 2014).
- European Communities Environmental Objectives (Surface Waters); Regulations, 2009 (S.I. No. 272 of 2009 as amended SI No. 77 of 2019).
- European Communities Environmental Objectives (Groundwater) Regulations, 2010 (S.I. No. 9 of 2010 S.I. No. 366 of 2016).
- European Communities (Good Agricultural Practice for Protection of Waters) Regulations, 2010 (S.I. No. 610 of 2010).
- European Communities (Technical Specifications for the Chemical Analysis and Monitoring of Water Status) Regulations, 2011 (S.I. No. 489 of 2011).
- Statutory Instrument (SI) No. 293 of 1988 European Communities (Quality of Salmonid Waters) Regulations 1988.
- Local Government (Water Pollution) Acts 1977-1990.
- SI No. 258 of 1988 Water Quality Standards for Phosphorus Regulations 1998.
- Water Services Guidelines for Planning Authorities Draft (Department of Housing, Planning and Local Government, May 2018).
- Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites (Eastern Regional Fisheries Board);
- Central Fisheries Board Channels and Challenges – The enhancement of Salmonid Rivers;
- CIRIA C532 Control of Water Pollution from Construction Sites Guidance for Consultants and Contractors (November 2001);
- CIRIA C648 Control of Water Pollution from Constructional Sites;
- Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes (NRA, December 2008); and
- Inland Fisheries Ireland (IFI) – A Guideline on Planning for Watercourses in the Urban Environment (January 2020).

10.3.3 Sources of Information

Desk-based hydrological and hydrogeological information in the vicinity of the site was obtained through accessing databases and other archives where available. Data was sourced from the following:

- Latest EPA Envision water quality monitoring data for watercourses in the area.
- Geological Survey of Ireland (GSI) - on-line mapping, Geo-hazard Database, Geological Heritage Sites and Sites of Special Scientific Interest, Bedrock Memoirs and 1:100,000 mapping.
- River Basin Management Plan for Ireland 2018-2021 (Department of Housing, Planning and Local Government, 2018).
- Water Action Plan 2024 - A River Basin Management Plan for Ireland, (Department of Housing Local Government and Heritage, September 2024).

- The Planning System and Flood Risk Management, Guidelines for Planning Authorities (Department of the Environment, Heritage and Local Government (DoEHLG) and the Office of Public Works (OPW, November 2009).
- Office of Public Works (OPW) flood mapping data (www.floodmaps.ie).
- Relevant Eastern Catchment Flood Risk Assessment and Management (CFRAM) Flood Reports (OPW, 2018–2019).
- National Parks and Wildlife Services (NPWS) – Protected Site Register.
- Fingal County Development Plan 2023–2029 – Strategic Flood Risk Assessment (SFRA) (Fingal County Council, February 2022).

Site specific data was derived from the following sources:

- Various design site plans and drawings, as submitted with this planning application.
- Infrastructure Report - Residential Development on Lands at Mooretown, Swords or Fingal County Council (AKM Design Group, 2026).
- Appendix B of Infrastructure Report - Ground Investigation Report (Site Investigations Ltd, 2024).
- Section 8 of Infrastructure Report - Site-Specific Flood Risk Assessment (FRA) (AKM Design Group, 2026).
- Construction and Environmental Management Plan (CEMP) – Mooretown Phase 2 – Fingal County Council (AKM Design Group, 2026).
- Surface Water Management Plan (SWMP) – Mooretown Phase 2 – Fingal County Council (AKM Design Group, 2026)
- Consultation with design engineers.

The principal attributes (and effects) assessed include the following:

- Water Framework Directive (WFD) Status and potential for increased risk of deterioration of this status due to the activities of the site.
- River and aquifer water quality in the vicinity of the site (where available).
- Surface, transitional and coastal watercourses near the site and potential impact on surface water quality arising from Proposed Development related works including any discharge of surface water run-off.
- Localised flooding (potential increase or reduction) and floodplains including benefitting lands and drainage districts (if any); and
- Surface water features within the area of the site.
- High-yielding water supply springs/ wells in the vicinity of the site to within a 2km radius and the potential for increased risk presented by the Proposed Development.
- Classification (regionally important, locally important etc) and extent of aquifers underlying the site perimeter area and increased risks presented to them by the Proposed Development 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.

10.3.4 Forecasting Methods and Difficulties Encountered

No difficulties were encountered in the production of this chapter.

10.4 Baseline Environment

10.4.1 Existing and Historical Land Use and Topography

The Proposed Development lands (c. 14.75 ha) are located on the western side of Swords, fronting directly onto Rathbeale Road, Swords, Co. Dublin. The surrounding context is predominantly suburban to the east and south, characterised by established medium-density residential neighbourhoods, local schools, and a network of green spaces. To the west, the landscape transitions toward a more semi-rural character, with open agricultural fields still present.

The overall development area comprises two (2) no. distinct land parcels located on the southern side of Rathbeale Road. The northern parcel is bounded directly by Rathbeale Road to the north, while the southern parcel lies immediately south and east of Phase 1 of the wider Mooretown development, which is currently under construction (Planning Ref. LADP/002/24). The southern parcel is bounded on three sides by existing residential development and schemes presently under construction. The two parcels are separated by Phase 1 of the Mooretown development, reflecting the phased build-out of the broader Mooretown lands.

The site itself is a greenfield area defined largely by historic field patterns. Topographic survey data shows that the site is gently graded and generally falls from highpoints of 40m in the south-west to low points of 24m to the north across the overall site. The existing drainage ditches form isolated low points within the site, supporting natural, gravity-based surface water runoff. Vegetation across the lands is dominated by a network of established hedgerows marking historic field boundaries and drainage channels. These hedgerows form the most significant ecological and visual features within the landscape, providing structure, natural screening, and a sense of maturity within an otherwise open agricultural setting.

The site is principally bounded by established residential communities to the north, east, and south. To the west, the lands adjoin Swords Community College and several permitted development schemes, a number of which are currently under construction. This evolving built environment illustrates the ongoing transition of the broader Mooretown area from agricultural lands to a planned residential and educational urban extension.

For a more detailed description of the historical land use at the Proposed Development site refer to Chapter 8 (Land, Soils and Geology) of the EIAR.

In the Fingal Development Plan 2023–2029, the Mooretown lands are zoned RA - Residential Area, with the zoning objective '*Provide for new residential communities subject to the provision of the necessary social and physical infrastructure*'.

A detailed description of the Proposed Development and its context is provided in Chapter 5 (Description of the Proposed Development) of the EIAR.

Refer to Figure 10.1 below for the site location and surrounding land use for the present-day scenario, where the commencement of the Phase 1 Mooretown development permitted under Planning Ref. LADP/002/24 can be observed.

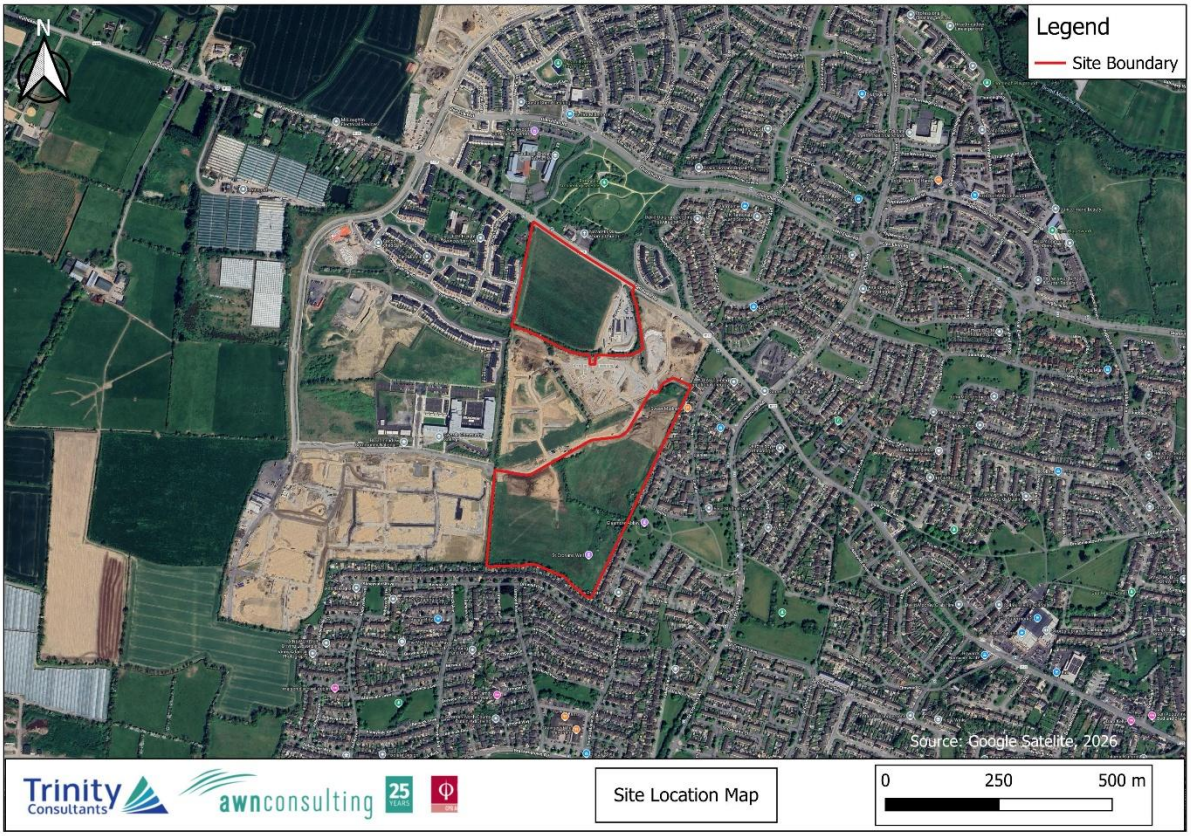

Figure 10.1 Site Location and Surrounding Land Use (Google Satellite, 2026)

10.4.2 Hydrology

10.4.2.1 Regional Hydrological Environment

The Proposed Development is located within the former Eastern River Basin District (ERBD) (now the Irish River Basin District), as defined under the European Communities Directive 2000/60/EC, establishing a framework for community action in the field of water policy - this is commonly known as the Water Framework Directive (WFD). According to EPA Maps, the site lies within the Nanny-Delvin Catchment (Catchment ID: 09) and the Broadmeadow_SC_010 Sub-Catchment (Sub-Catchment ID: 08_3). According to EPA mapping, the Proposed falls under Nanny-Delvin Hydrometric Area the Irish River Network. It lies within the IE_EA_Broadmeadow Water Management Unit (WMU).

Figure 10.2 below presents the Proposed Development location and regional hydrological environment as per the latest EPA mapping.

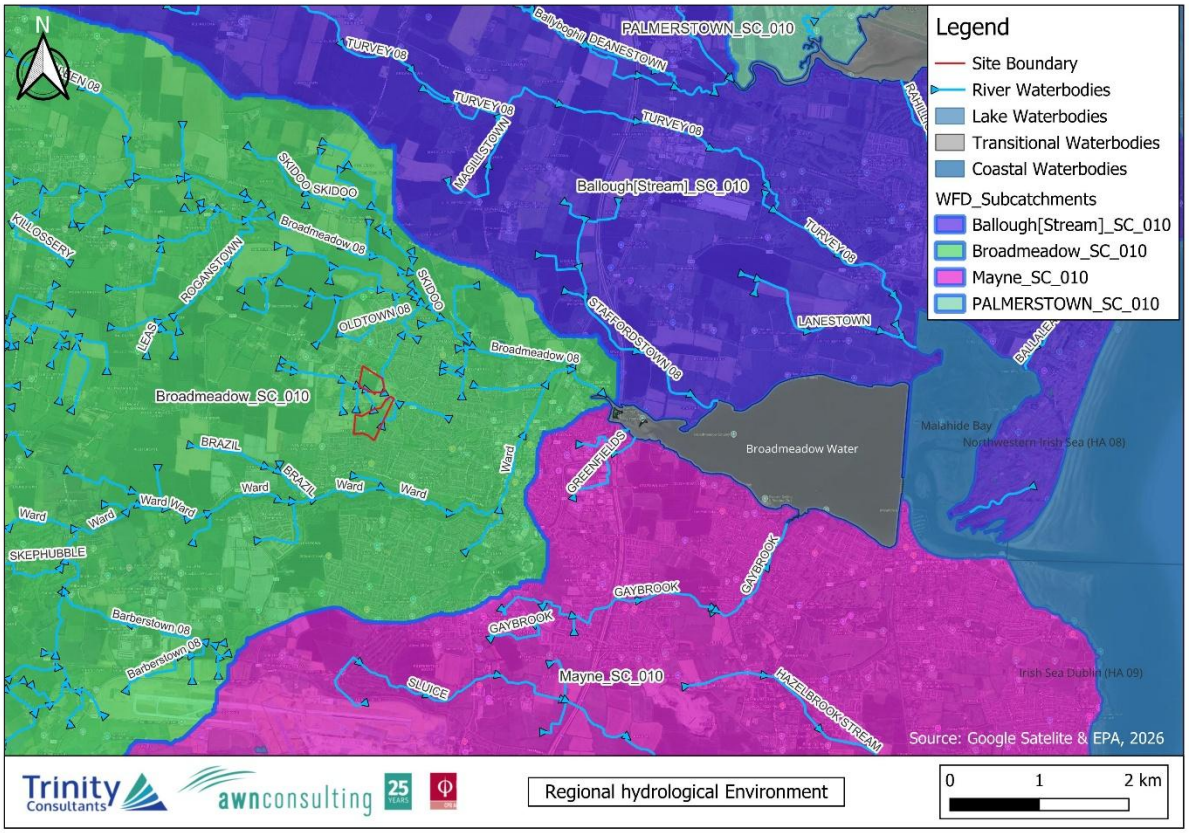

Figure 10.2 Regional Hydrological Environment (EPA, 2026)

10.4.2.2 Local Hydrological Environment

According to EPA mapping (2026), there are several drainage ditches and streams that traverse and bound the southern and northern parcels of the Proposed Development. The southern parcel contains a drainage ditch that traverses the centre of the site from west to east/east to west. This drainage ditch appears to be hydrologically connected to the Newtown 08 river (European Code: IE_EA_08B020800) located along the eastern boundary of the northern parcel, commonly referred to as the Mooretown Water.

As stated above, the drainage ditch traverses the southern parcel from west to east/east to west and is connected to two (2) no. unnamed EPA river waterbodies located to the immediate east and north-west of the southern parcel, respectively. The eastern unnamed waterbody flows north through a residential area and appears to be culverted for most of its route, before discharging to another unnamed waterbody c. 400 m downstream of where it exits the southern parcel. This unnamed waterbody discharges to the Newtown 08 river along the eastern boundary of the northern parcel.

The unnamed waterbody along the north-western boundary of the southern parcel appears to originate where the drainage ditch intersects the western boundary. This waterbody flows north and is also largely culverted beneath the Baile na Móna residential area, before discharging to the Newtown 08 river along the southern boundary of the northern parcel. The Mooretown 09 river is located along the western boundary of the Phase 1 wider Mooretown development (Planning Ref. LADP/002/24), i.e. north of the southern parcel and south of the northern parcel and discharges to the Newtown 08 along the southern boundary of the northern parcel.

The Newtown 08 river flows along the southern and eastern boundary of the northern parcel of the Proposed Development, establishing hydrological connectivity between both parcels. From here, the Newtown 08 flows north before discharging into the Broadmeadow 08 (Broadmeadow River) approximately 1.4 km downstream / c. 1.1 km north of the northern parcel of the Proposed Development.

It should be noted that all of the aforementioned river waterbodies belong to the Broadmeadow_040 WFD river waterbody, as discussed in Section 10.3.4 below.

The Broadmeadow 08 river flows in an easterly direction before discharging to the Broadmeadow Water Transitional Waterbody (European Code: IE_EA_060_0100) c. 4 km downstream / c. 2.6 km east of the Proposed Development. A further 3.5 km downstream, the Broadmeadow Water transitional waterbody discharges to the Malahide Bay coastal waterbody (European Code: IE_EA_060_0000).

Refer to Figure 10.3 below for the local hydrological environment in the context of the Proposed Development.

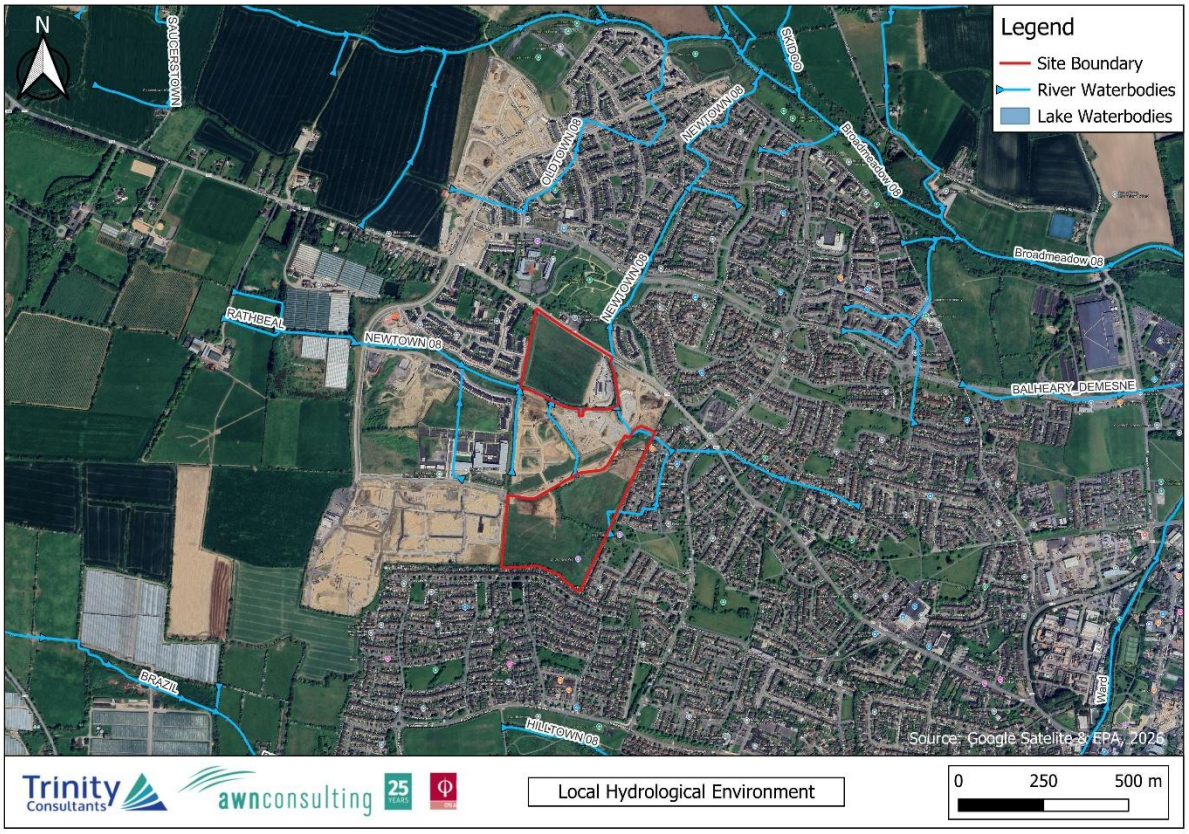

Figure 10.3 Local Hydrological Environment (EPA, 2026)

10.4.2.3 Bathing Waters and Recreational Waterbodies

A review of the Environmental Protection Agency's (EPA) online mapping that includes the Register of Protected Areas (RPA) under the Water Framework Directive (WFD) has shown that there are no Recreational Waters or Bathing Waterbodies located in the vicinity of, or downstream of the Proposed Development. The nearest designated bathing waters are:

- Portmarnock, Velvet Strand Beach, located approximately 8.6 km south-east of the Proposed Development. This is a long, gently sloping, east-facing beach and is an EPA-designated bathing water.
- Donabate, Balcarrick Beach, located approximately 8.3 km north-east of the Proposed Development. This is a south-east facing sandy beach designated as a bathing water by the EPA.

These bathing waters are located within the Irish Sea Dublin (Hydrometric Area 09) and the Northwestern Irish Sea (Hydrometric Area 08), respectively. As confirmed through EPA hydrological datasets and RPA mapping, no hydrological connection exists between the Proposed Development site and these coastal bathing waterbodies.

10.4.2.4 Regional Surface Water Quality

The Proposed Development is located within the Irish River Basin District, as defined under the European Communities Directive 2000/60/EC, establishing a framework for community action in the field of water policy - this is commonly known as the Water Framework Directive (WFD).

The WFD requires 'Good Water Status' for all European waters to be achieved through a system of river basin management planning and extensive monitoring by 2015 or, at the least, by 2027. 'Good status' means both 'Good Ecological Status' and 'Good Chemical Status'. In 2009 the first River Basin Management Plan (RBMP) 2009-2015 was published. The second cycle river basin management plan was carried out between 2018-2021 with the previous management districts now merged into one Ireland River Basin District (Ireland RBD). The third cycle river basin management plan (2022-2027) i.e. Water Action Plan 2024 - A River Basin Management Plan for Ireland (Dept. of Housing Local Government and Heritage, Sept 2024) has since been published.

During the development of this plan, a prioritisation exercise was undertaken by the local authorities, the EPA and other stakeholders to identify those water bodies that require immediate action within this plan cycle to 2027. During the catchment characterisation, the EPA has carried out an analysis of the likely water quality outcomes that may be achieved as a result of the measures outlined in the third-cycle River Basin Management Plan. The analysis forecasts the number of water bodies that are likely to achieve their 2027 status objectives, and those that are likely to show improvements, so that an assessment can be made of the gap to achieving Water Framework Directive (WFD) environmental objectives. The forecast analysis is a snapshot in time based on the best available information on the measures being implemented as of September 2023. It depends on assumptions being made about how the measures in the plan will be implemented, for example, where measures are voluntary. Improved information on the measures being implemented will allow the forecasts to be further refined over time. The 2021 characterisation assessment identified there were 2,610 water bodies, out of a total of 4,842 water bodies (54%), which had met their objectives. These water bodies require ongoing basic measures to protect water quality. Of the remainder, 1,649 (34% of the total) were categorised as being 'At Risk' of not achieving their objectives and had evidence available to determine the water quality issue(s) and the pressure(s) that needs to be addressed. These water bodies are prioritised in the Plan for measures to restore water quality. The other 583 water bodies are in 'Review', which means additional evidence is required to confirm the nature of any water quality issues and the impacts from any relevant pressures.

The third cycle river basin management plan (2022-2027) i.e. "Water Action Plan 2024 - A River Basin Management Plan for Ireland" has been reviewed in the context of ensuring mitigation measures

comply with current and expected future measures required to be implemented for protection of water body status within the context of the Proposed Development.

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

- European Communities (Water Policy) Regulations, 2003 (S.I. No. 722 of 2003);
- European Communities (Drinking Water) Regulations 2014 (S.I. 122 of 2014);
- European Communities Environmental Objectives (Surface Waters); Regulations, 2009 (S.I. No. 272 of 2009 as amended SI No. 77 of 2019)
- European Communities Environmental Objectives (Groundwater) Regulations, 2010 (S.I. No. 9 of 2010 S.I. No. 366 of 2016);
- European Communities (Good Agricultural Practice for Protection of Waters) Regulations, 2010 (S.I. No. 610 of 2010);
- European Communities (Technical Specifications for the Chemical Analysis and Monitoring of Water Status) Regulations, 2011 (S.I. No. 489 of 2011);
- Statutory Instrument (SI) No. 293 of 1988 European Communities (Quality of Salmonid Waters) Regulations 1988;
- Local Government (Water Pollution) Acts 1977-1990;
- SI No. 258 of 1988 Water Quality Standards for Phosphorus Regulations 1998;
- Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites (Eastern Regional Fisheries Board);
- Central Fisheries Board Channels and Challenges – The enhancement of Salmonid Rivers;
- CIRIA C532 Control of Water Pollution from Construction Sites Guidance for Consultants and Contractors;
- CIRIA C648 Control of Water Pollution from Constructional Sites;
- Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes (NRA 2008); and
- Inland Fisheries Ireland (IFI) – A Guideline on Planning for Watercourses in the Urban Environment.

The Proposed Development lies within the Nanny–Delvin Catchment (Catchment ID: 09) and the Broadmeadow_SC_010 Sub-Catchment (Sub-Catchment ID: 08_3).

The Broadmeadow_040 WFD river waterbody (which hosts the aforementioned river waterbodies; refer to Section 10.3.2.2) is classified as having a 'Poor' status for the WFD period 2019–2024, with a current risk score 'At Risk' of not achieving good status for the 3rd Cycle i.e. by 2027. Its overall ecological status is poor, reflecting deficits in biological and habitat quality, while chemical status also fails to meet good standards, likely due to elevated priority pollutants common in urban catchments. Hydromorphology is significantly impacted by altered channel morphology and habitat degradation, contributing to the poor ecological outcome. The main pressures on Broadmeadow_040 are associated with agriculture and Hydromorphology sources, particularly farmyards and channelisation, respectively, as reported in the WFD Cycle 2 Sub-Catchment Assessment Report on the Broadmewdow_SC_010 Sub-Catchment (EPA, December 2018). These findings are consistent with the Cycle 3 Nanny-Delvin Catchment Report (HA08, EPA, May 2024), which highlights ongoing concerns about nutrient enrichment and hydromorphological alterations.

The Broadmeadow Water transitional waterbody is classified as having a 'Moderate' status for the WFD period 2019–2024, with a current risk score 'At Risk' of not achieving good status for the 3rd Cycle i.e.

by 2027. Its overall ecological status is moderate, reflecting deficits in biological and habitat quality, while chemical status also fails to meet good standards, likely due to elevated priority pollutants common in urban catchments. The main pressures on Broadmeadow Water transitional waterbody are associated with domestic wastewater and urban wastewater sources, particularly wastewater discharge and agglomeration PE > 10,000, respectively, as reported in the WFD Cycle 2 Sub-Catchment Assessment Report on the Broadmewdow_SC_010 Sub-Catchment (EPA, December 2018). These findings are consistent with the Cycle 3 Nanny-Delvin Catchment Report (HA08, EPA, May 2024), which highlights ongoing concerns about nutrient enrichment and organics associated with urban wastewater and DWTS.

Malahide Bay coastal waterbody is classified as having a 'Moderate' status for the WFD period 2019–2024, with a current risk score 'At Risk' of not achieving good status for the 3rd Cycle i.e. by 2027. Its overall ecological status is moderate, reflecting deficits in biological and habitat quality, while chemical status achieved a high status. The main pressures on Malahide Bay coastal waterbody are associated urban wastewater sources as reported in the Cycle 3 Nanny-Delvin Catchment Report (HA08, EPA, May 2024), which highlights ongoing concerns about nutrient enrichment and organics associated with urban wastewater.

Surface water quality is monitored periodically by the EPA at various regional locations along with principal and other smaller watercourses. The EPA assess the water quality of rivers and streams across Ireland using a biological assessment method, which is regarded as a representative indicator of the status of such waters and reflects the overall trend in conditions of the watercourse. The biological indicators range from Q5 - Q1. Level Q5 denotes a watercourse with good water quality and high community diversity, whereas Level Q1 denotes very low community diversity and bad water quality, as presented in Table 10.1 below.

Table 10.1 EPA Biological Q Rating System

Q Value	WFD Status	Pollution Status	Condition
Q5, Q4-5	High	Unpolluted	Satisfactory
Q4	Good	Unpolluted	Satisfactory
Q3-4	Moderate	Slightly polluted	Unsatisfactory
Q3, Q2-3	Poor	Moderately polluted	Unsatisfactory
Q2, Q1-2	Bad	Seriously polluted	Unsatisfactory

In relation to the Proposed Development, there are no EPA water quality monitoring stations located upstream or downstream within the Broadmeadow_040 WFD river waterbody. The nearest (active) surface waterbody EPA water quality monitoring station is 'Br d/s Scotchstone B' (Station Code: RS08W010610), located approximately 1.6km to the east in the Ward River i.e. Ward_040 WFD river waterbody (European Code: IE_EA_08W010610). Although there is no hydrological connection between this EPA water quality monitoring station and the Proposed Development, it is located within the same WFD sub-catchment i.e. Broadmeadow_SC_010.

The water quality at this station was classified by the EPA as 'Q3-4 - Moderate', based on data obtained by the EPA in 2024. This 'Moderate' status is in relation to the waterbody's ecological status or potential an supporting chemistry conditions.

The locations of the EPA Q Value monitoring stations and the WFD river waterbody status (WFD Period: 2019-2024) are presented in Figure 10.4 below.

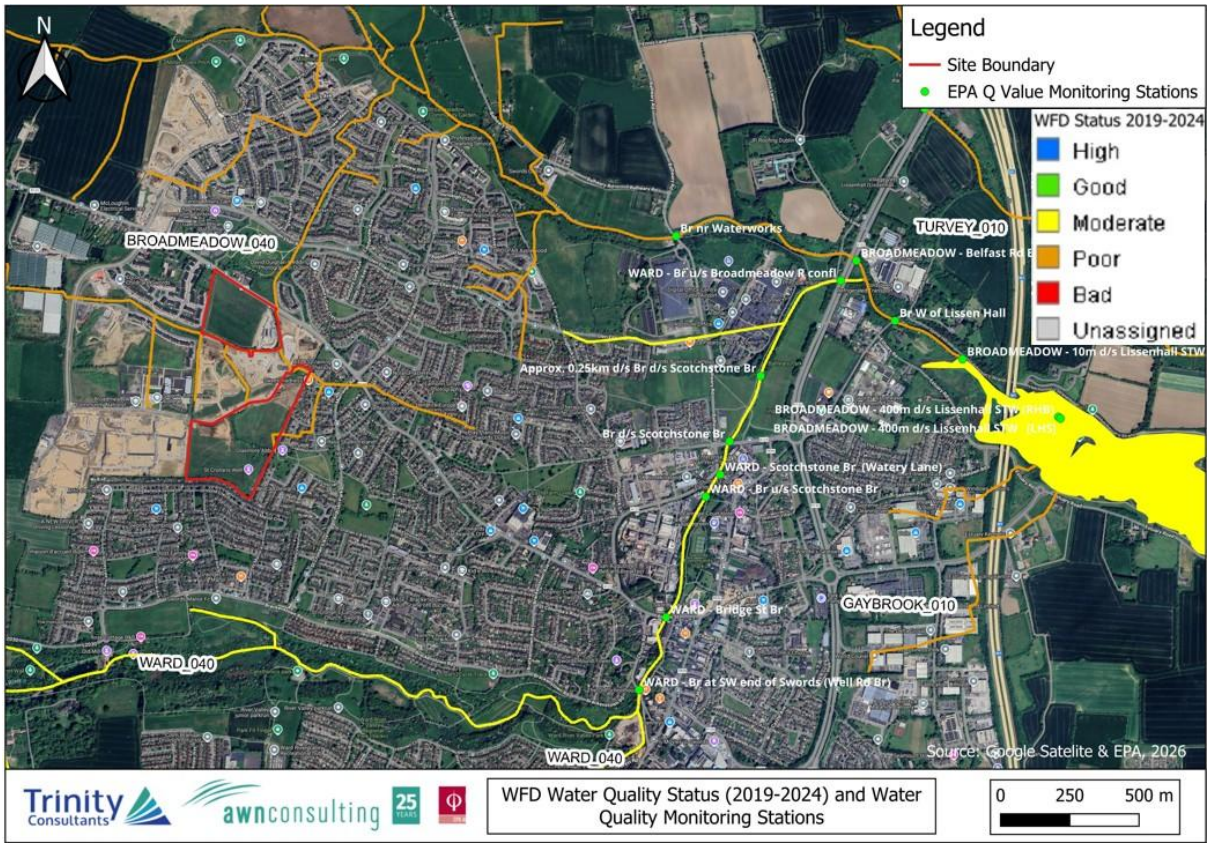

Figure 10.4 Surface Waterbody Status (WFD: 2019-2024) and EPA River Monitoring Stations (EPA, 2026)

10.4.2.5 Register of Protected Areas

A review of the Environmental Protection Agency's (EPA) online mapping, which includes the Register of Protected Areas (RPA) established under the Water Framework Directive (WFD), indicates the Broadmeadow_040 WFD river waterbody is not located within a designated Surface Water Drinking RPA.

This classification of drinking water river lines has been delineated in accordance with the European Communities (Drinking Water) (No. 2) Regulations 2007 (SI No. 278/2007). This regulatory framework aims to ensure the protection of water resources utilised for human consumption, thus safeguarding public health and the environment.

10.4.2.6 Water Infrastructure

There are no existing water infrastructure assets currently within the Proposed Development site i.e. the northern and southern parcels.

10.4.2.7 Flood Risk

The EU Floods Directive (2007/60/EC) required Member States to undertake a national preliminary flood risk assessment by 2011 to identify areas where significant flood risk exists or might be considered likely to occur. Members States were also required to prepare catchment-based Flood Risk Management Plans by 2018 that will set out flood risk management objectives, actions and measures. The OPW in co-operation with various Local Authorities produced a number of PFRAs which aimed to

map out current and possible future flood risk areas and develop risk assessment plans. As part of the CFRAM programme provisional flood maps had been produced by the OPW which have been used in this assessment.

A Site-Specific Flood Risk Assessment (FRA) has been prepared by AKM Design Group and is included in the Infrastructure Report (Document Ref: 25051-AKM-XXXX-XX-RP-C01-100001) prepared by AKM Design group (2026).

The FRA has been undertaken in accordance with The Planning System and Flood Risk Management Guidelines for Planning Authorities (DoEHLG, 2009), which provide the national framework for identifying, assessing and managing flood risk in land-use planning.

As part of the assessment, predictive flood mapping for the Mooretown Phase 2 lands was reviewed using the following datasets:

- CFRAM Predictive Flood Maps – Present-Day Scenario.
- CFRAM Coastal Flood Extents – High-End Future Scenario (0.1% AEP / 1-in-1000-year) Incorporating climate change allowances of +30% rainfall and +1,000 mm sea-level rise.
- CFRAM River Flood Extents – High-End Future Scenario (0.1% AEP / 1-in-1000-year) Also applying +30% rainfall and +1,000 mm sea-level rise projections.

To assess the suitability of development in relation to flood risk, the national guidelines classify lands into three flood zones:

- Flood Zone A i.e. areas with a high probability of flooding:
  - >1% AEP (1-in-100-year) fluvial
  - >0.5% AEP coastal
  - Highly vulnerable development is generally not appropriate unless a Justification Test is passed.
- Flood Zone B i.e. areas with a moderate probability of flooding:
  - 0.1–1% AEP fluvial
  - 0.1–0.5% AEP coastal
  - Development may be appropriate subject to site-specific FRA and design measures.
- Flood Zone C i.e. areas with a low probability of flooding:
  - <0.1% AEP (i.e., outside Zones A and B) Most land uses, including residential, are appropriate in Flood Zone C.

The main findings of the Site-Specific Floor Risk Assessment (FRA) are as follows:

- Fluvial Flooding: CFRAM mapping confirms that the site is not at risk from fluvial flooding under present-day or high-end future conditions. No part of the development footprint lies within Flood Zone A (1% AEP) or Flood Zone B (0.1% AEP), nor within future fluvial flood extents.
- Coastal Flooding: Given its inland location (c. 5.8km west from Malahide Bay coastal waterbody), the site is not susceptible to coastal flooding, including under the most extreme sea-level rise and climate-change scenarios modelled in the CFRAM.
- Pluvial Flooding: Available pluvial flood datasets indicate no mapped pluvial flood extents within the development site. While minor temporary ponding may occur on surrounding road corridors during intense rainfall events, no pluvial flood risk affects the development footprint.

- Groundwater Flooding: GSI groundwater flood mapping, supported by the ground investigation findings (cohesive, low-permeability glacial tills), confirms a low risk of groundwater flooding across the lands.
- Flood Risk Vulnerability Classification: The proposed residential development is classed as Highly Vulnerable under OPW guidance. However, as the site is fully within Flood Zone C and no credible flood mechanisms pose a material risk, a Development Management Justification Test is not required.
- Impact of the Development on Flood Risk: The development will not materially alter ground levels, reduce floodplain storage, or increase runoff beyond what will be managed through standard Sustainable Drainage Systems (SuDS). Accordingly, the proposal will not increase flood risk either on-site or downstream.

10.4.2.8 Rating of Importance of Hydrological Attributes

Based on the review of the receiving environment (Section 10.4.2.1 to Section 10.4.2.7) and in accordance with the TII Guidelines (2009) (refer to **Appendix 10.1**), the hydrological features within the study area are assessed as having 'Medium' importance and medium quality or value at a local scale.

This rating reflects the status of the waterbodies associated with the Proposed Development, which lies within the Nanny–Delvin Catchment and the Broadmeadow_SC_010 Sub-Catchment. The Broadmeadow_040 WFD river waterbody is classified as 'Poor' for the WFD period 2019–2024 and is identified as 'At Risk' of failing to achieve a 'Good' Status. Downstream, both the Broadmeadow Water transitional waterbody and Malahide Bay coastal waterbody hold a 'Moderate' status and are similarly assessed as 'At Risk' for the WFD 3rd Cycle.

10.4.3 Areas of Conservation

The Environmental Protection Agency (EPA) and National Parks and Wildlife Service (NPWS) (2026) online databases have been reviewed to identify designated conservation sites within or near the Proposed Development. This review confirms that there are no Special Protection Areas (SPAs) established under the EU Birds Directive (79/409/EEC), no Special Areas of Conservation (SACs) established under the EU Habitats Directive, and no Natural Heritage Areas (NHAs) or proposed NHAs (pNHAs) designated under the Wildlife Acts 1976–2000 (as amended) located on or within the boundary of the Proposed Development.

At a broader regional scale, the nearest Natura 2000 sites occur within the Broadmeadow Water transitional waterbody and the Malahide Bay coastal waterbody, both of which support the Malahide Estuary SPA (Site Code: 004025). Along the Malahide coastline at Donabate Beach, the North-West Irish Sea SPA (Site Code: 004236) is also present; however, this SPA lies along the exposed Irish Sea coastline, outside the hydrodynamic influence of the Broadmeadow transitional system, and therefore no hydrological connectivity exists between the Proposed Development and this site.

The Broadmeadow Water transitional waterbody and Malahide Bay coastal waterbody additionally support the Malahide Estuary Natural Heritage Area (NHA; Site Code: 000205), a nationally designated conservation area recognised for its ecological importance.

Given the significant separation distance, the dilution capacity along the downstream hydrological pathway, and the absence of a direct hydrological linkage between the Proposed Development and

these designated coastal and transitional waterbodies, the Proposed Development is unlikely to have any hydrological connection to the relevant SACs, SPAs, or NHA.

Refer to Figure 10.5 for the spatial context of these designated sites relative to the Proposed Development. Further assessment is provided in **Chapter** Error! Reference source not found. (Biodiversity).

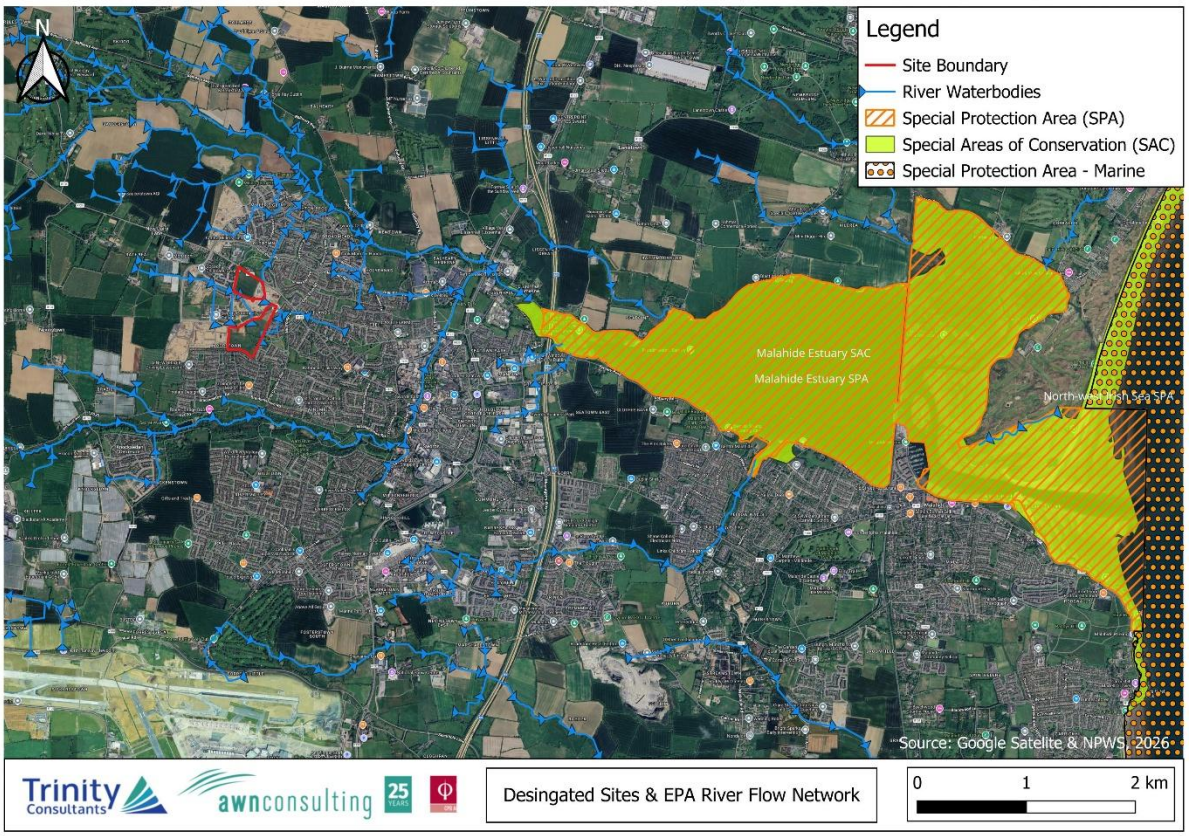

Figure 10.5 Areas of Conservation and Regional Hydrological Environment (EPA and NPWS, 2026)

10.4.4 Hydrogeology

10.4.4.1 Aquifer Classification

The GSI has devised a system for classifying the bedrock aquifers in Ireland. The aquifer classification for bedrock depends on a number of parameters including, the area extent of the aquifer (km2), well yield (m3/d), specific capacity (m3/d/m) and groundwater transmissivity (mm3/d). There are three main classifications: regionally important, locally important and poor aquifers. Where an aquifer has been classified as regionally important, it is further subdivided according to the main groundwater flow regime within it. This sub-division includes regionally important fissured aquifers (Rf) and regionally important karstified aquifers (Rk). Locally important aquifers are sub-divided into those that are generally moderately productive (Lm) and those that are generally moderately productive only in local zones (Ll). Similarly, poor aquifers are classed as either generally unproductive except for local zones (Pl) or generally unproductive (Pu).

The GSI (2026) classifies the principal aquifer types in Ireland as:

- Bedrock Aquifer

- Rkc – Regionally Important Aquifer – Karstified (conduit)
- Rkd – Regionally Important Aquifer – Karstified (diffuse)
- RK – Regionally Important Aquifer – Karstified
- Rf – Regionally Important Aquifer – Fissured bedrock
- Lm – Locally Important Aquifer – Bedrock which is Generally Moderately Productive
- Lk – Locally Important Aquifer – Karstified
- LI – Locally Important Aquifer – Bedrock which is Moderately Productive only in Local Zones
- PI – Poor Aquifer – Bedrock which is Generally Unproductive except for Local Zones
- PU – Poor Aquifer – Bedrock which is Generally Unproductive

- Gravel Aquifer
  - Lg - Locally Important Aquifer - Sand and Gravel
  - Rg - Regionally Important Aquifer - Sand and Gravel

The bedrock aquifer underlying the Proposed Development, according to the GSI National Bedrock Aquifer Map, is classified as a 'PI - Poor Aquifer - Bedrock which is generally unproductive except for local zones'. This aquifer type typically has low permeability and limited groundwater storage, providing only small, localised yields. Groundwater flow is generally restricted to isolated fractures, meaning that connectivity, recharge potential, and the potential for contaminant migration are all low and confined to very local scales.

The northern parcel of the Proposed Development is bounded to the north by a 'Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones (LI)'. These aquifers can support smaller public or group water supplies but still exhibit limited permeability and low regional connectivity. The potential for significant vertical or lateral migration of groundwater within this aquifer is limited to local zones of enhanced fracturing.

The GSI mapping does not identify any structural faults beneath the site, further reducing the likelihood of preferential pathways for groundwater movement.

Figure 10.6 below presents the current bedrock aquifer map for the region.

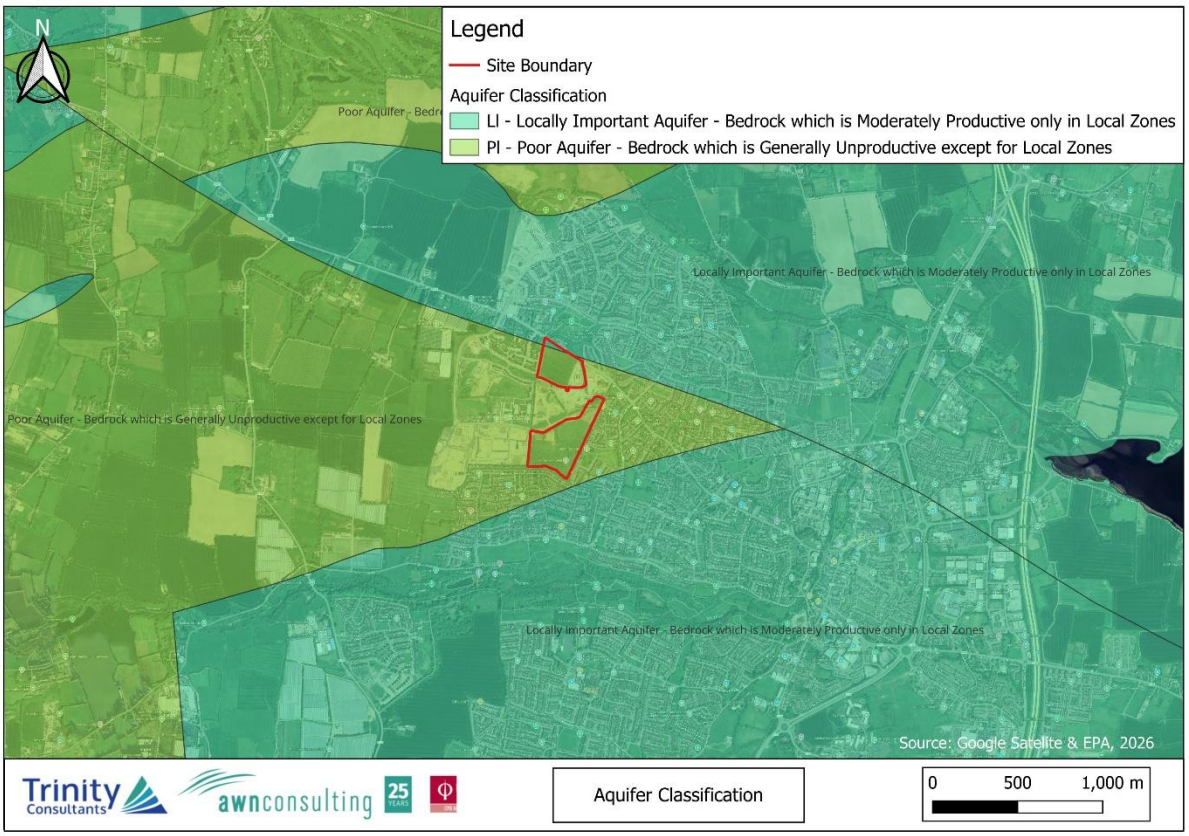

Figure 10.6 Aquifer Classification Map (GSI, 2026)

The Proposed Development is underlain entirely by the Swords Groundwater Body (GWB) (European Code: IE_EA_G_011), which currently holds a Water Framework Directive (WFD) status of 'Good' for the period 2019-2024. The WFD risk score for the third cycle is presently classified as 'Not at Risk'. This status reflects compliance with both quantitative and chemical groundwater conditions.

10.4.4.2 Aquifer Vulnerability

Groundwater vulnerability is an indication of how easily the aquifer can become contaminated by human activity. It is dependent on the thickness and permeability of the overlying soils and depth to the water table. For example, a bedrock aquifer with minimal thickness of overburden or with a thin layer of permeable overburden will be more vulnerable to contamination than a bedrock aquifer which has a thick layer of low permeability overburden. Extreme groundwater vulnerability is also associated with karst landforms as these are a direct pathway for water and contaminants to enter the aquifer from the surface.

The GSI (2026) mapping indicates that the Proposed Development is underlain by areas of 'Moderate' (M) groundwater vulnerability. Within Carboniferous Limestone till, this typically corresponds to overburden depths in the region of approximately 3-10 m, where the cohesive, generally low-permeability till provides a moderate degree of protection to the underlying aquifer. To the immediate west of the northern parcel, an area of 'High' (H) vulnerability is mapped, generally associated with shallower overburden depths of less than 3 m, where thinner or more permeable till deposits offer reduced natural protection and increase susceptibility to contamination arising from human activities.

Groundwater vulnerability is governed by the thickness and permeability of subsoils overlying the bedrock aquifer. As the Proposed Development is largely underlain by limestone till, which typically affords moderate protection due to its clay-rich, low-permeability characteristics, the mapped classifications are considered appropriate. Given the localised variations in till thickness, these vulnerability ratings may be conservative in places. Considering the overburden depths, groundwater is not considered a sensitive receptor in this context.

10.4.4.3 Site Investigation

The recent ground investigation carried out by Site Investigations Ltd (SIL) in April 2024 confirms that the site is predominantly underlain by cohesive glacial till, with ground conditions characterised by firm brown to very stiff black slightly sandy, slightly gravelly silty clay with high cobble content. Subsoil depths extend to the full depth of investigation, with trial pits and boreholes advanced to between 6.70m BGL and 8.80m BGL, where drilling refusal was encountered on large cobbles or possible boulders. Bedrock was not encountered at any location, indicating that the rockhead lies deeper than previously indicated by GSI mapping.

Only localised Made Ground was identified at four trial pit locations (generally <0.70 m BGL, up to 1.80m BGL at TP004), consisting of slightly sandy, slightly gravelly silty clay containing small quantities of anthropogenic material. The cohesive glacial till beneath this Made Ground is of low permeability, and laboratory testing confirmed high fines content (41–45%) and low to intermediate plasticity, typical of dense, protective till deposits.

Although groundwater ingress was recorded in several trial pits, it was variable and generally shallow, occurring between 0.40 m BGL and 3.50 m BGL, reflecting perched or discontinuous groundwater conditions typical of clay-rich tills. Groundwater ingress was also observed in all boreholes, with depths ranging from 2.50 m BGL (BH10) to 3.50 m BGL (BH09). Across the 46 trial pits, ingress rates ranged from slow seepage to rapid inflows, further indicating localised pockets of perched groundwater rather than a continuous or well-developed groundwater horizon. No significant or sustained flowing groundwater horizons were encountered.

These findings indicate that actual groundwater vulnerability at the site is lower than suggested by GSI mapping, as the presence of thick, low-permeability cohesive till provides natural attenuation and protection to the underlying aquifer. The absence of bedrock encounters and the cohesive nature of the subsoil further support this interpretation.

Refer to Chapter 8 (Land, Soils and Geology) for further detail on the ground conditions and geological environment encountered on site. Additional supporting information, including the full Mooretown Phase 2 Site Investigation Report (July 2024), is provided in the Infrastructure Report (Document Ref: 25051-AKM-XXXX-XX-RP-C01-100001), prepared by AKM Design Group for Fingal County Council (2026), where the complete investigation data is presented in Appendix B.

Refer to Figure 10.7 below for the GSI's mapped groundwater vulnerability in the context of the Proposed Development.

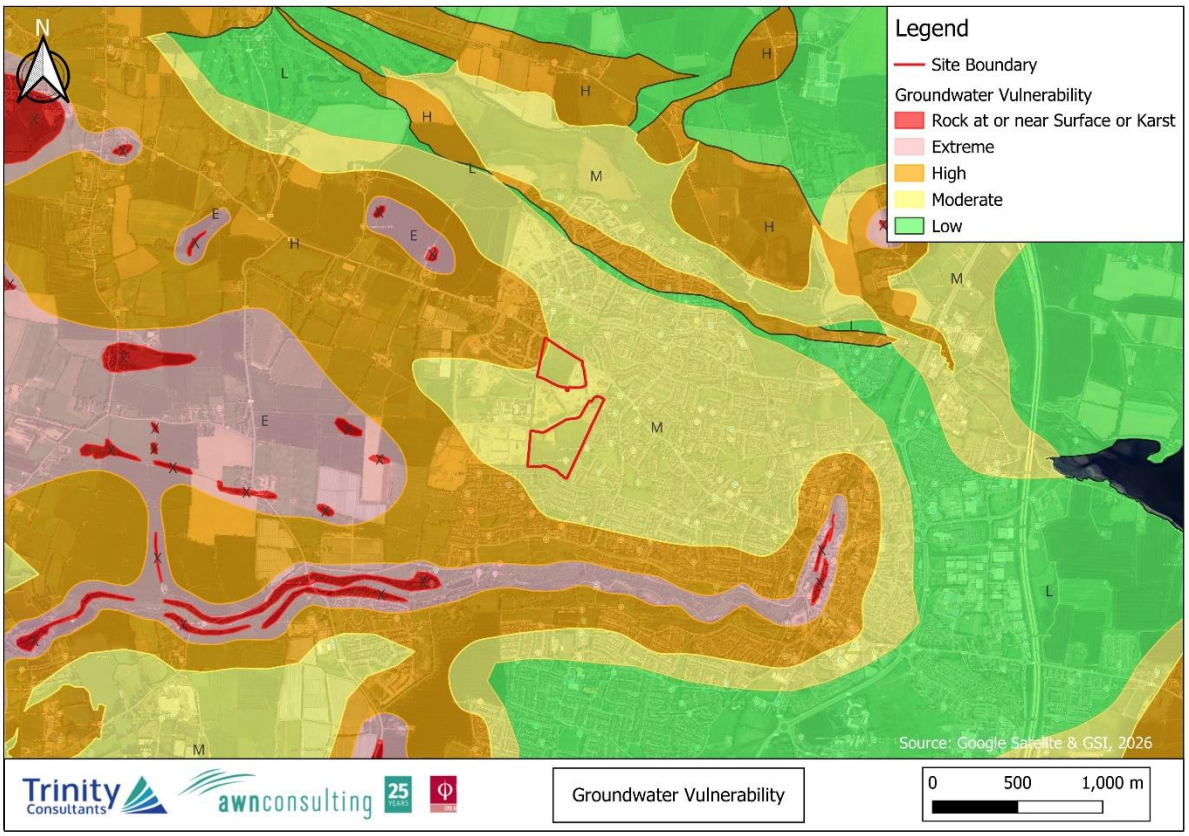

Figure 10.7 Groundwater Vulnerability Map (GSI, 2026)

10.4.4.4 Groundwater Wells and Flow Direction

The GSI Well Index is a record of known wells drilled in Ireland, maintained by the Geological Survey of Ireland (GSI). It is noted that this database is not comprehensive, as licensing of wells is not a statutory requirement in Ireland and data submission is voluntary. As such, the absence of wells from the index does not preclude the presence of undocumented groundwater features.

The well card data presented in Table 10.2 below shows the occurrence of 3 no. recorded wells within a 2 km radius of the Proposed Development, information regarding the depth to bedrock, and hence the depth of overburden is noted for each well where available. Abstractions of up to 385 m3/day are obtained from the bedrock aquifer at well 2923NEW019, which is located approximately 2km km to the south-east. Yield class at this location is classified as 'Good', as it is at all 3 no. locations.

The well card data shows minimal information regarding the depth of overburden. At well 2923NE1018, the depth of overburden is 1.5m below ground level (bgl), which is located c. 1.35 km to the south-east.

Table 10.2 GSI Well Card Data for the Site Location and Surrounding Areas (GSI, 2026)

GSI Name		Type	Usage	Yield Class	Yield m3/d	Depth (m)	Depth to Bedrock	Townland
2923NEW020		Borehole	Unknown	Good	220	27.4	Unknown	Swords
2923NEW018		Borehole	Industrial use	Good	110	46.9	1.5	Swords
2923NEW019		Borehole	Unknown	Good	385	33.5	Unknown	Swords

In addition to the GSI-recorded wells, a historically and archaeologically significant holy well (St Cronan's Well; RMP DU011-018) is located within the south-eastern corner of the southern parcel

of the Proposed Development. St Cronan's Well is recognised as a naturally occurring spring, historically associated with Glasmore Abbey to the north-east, and is recorded by the National Monuments Service as a spring percolating upward through natural subsoils, rather than a deep bedrock abstraction or constructed well. The feature is understood to be fed by shallow groundwater seepage within the overlying glacial till, consistent with local hydrogeological conditions and the Site Investigation findings.

The Proposed Developments proposed water supply is to be integrated into the Phase 1 network (Planning Ref. LADP/002/24) and the surrounding area is serviced by public supply. No groundwater abstraction, harvesting or drawdown is proposed, and therefore no alteration to local or regional groundwater flow direction is expected.

Detailed consideration of the potential impacts on St Cronan's Well, along with the embedded and proposed mitigation measures, is set out in Sections 10.6.2.2, 10.6.3.2, 10.7.1.2 and 10.7.2.2 of this EIAR.

Refer to Figure 10.8 below for well locations in relation to the Proposed Development.

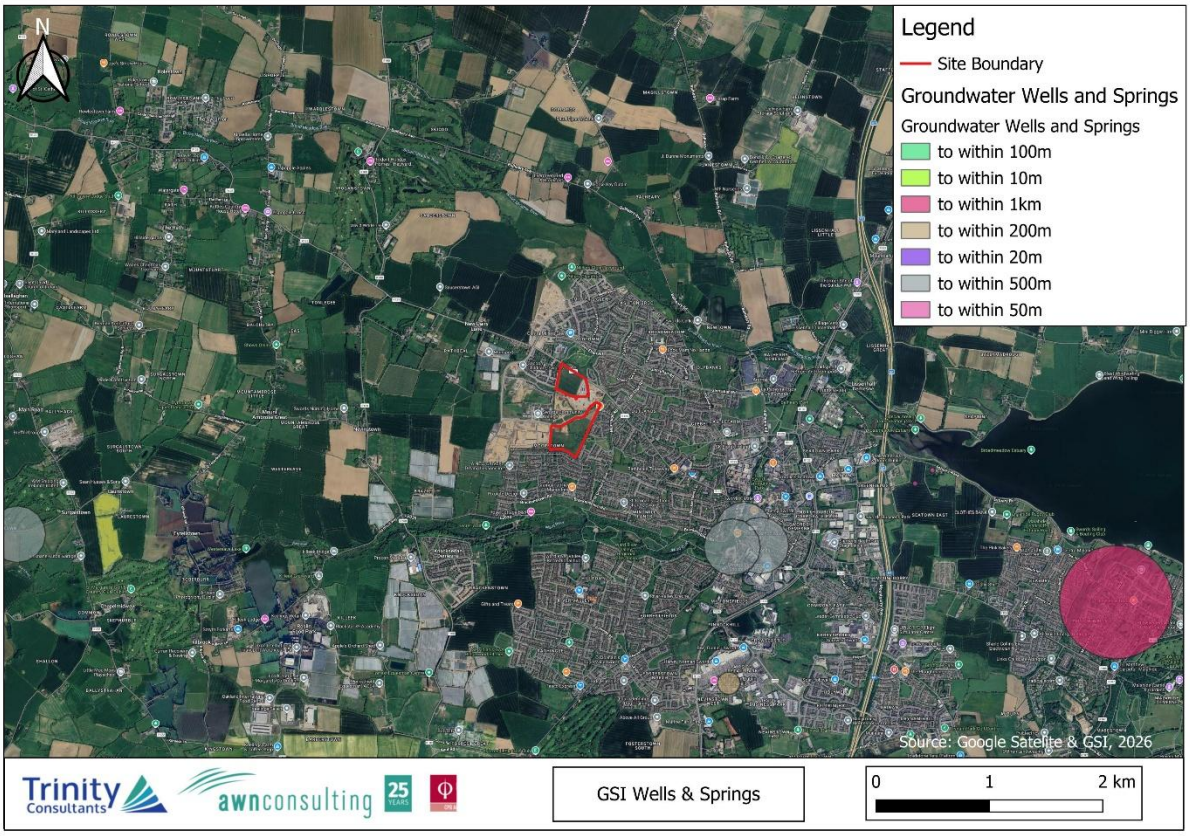

Figure 10.8 Groundwater Wells and Springs Map (GSI, 2026)

10.4.4.5 Regional Groundwater Quality

The Water Framework Directive (WFD) 2000/60/EC was adopted in 2000 as a single piece of legislation covering rivers, lakes, groundwater, transitional (estuarine) and coastal waters. In addition to protecting said waters, its objectives include the attainment of 'Good Status' in water bodies that are of lesser status at present and retaining 'Good Status' or better where such status exists at present. The EPA co-ordinates the activities of the River Basin Districts, local authorities and state agencies in implementing

the Directive, and operates a groundwater quality monitoring programme undertaking surveys and studies across the Republic of Ireland.

As mentioned in Section 10.3.9.1 above, the Proposed Development is underlain entirely by the Swords Groundwater Body (GWB) (European Code: IE_EA_G_011), which currently holds a Water Framework Directive (WFD) status of 'Good' for the period 2019-2024. The WFD risk score for the third cycle is presently classified as 'Not at Risk'. This status reflects compliance with both quantitative and chemical groundwater conditions.

A review of the WFD Cycle 2 Sub-Catchment Assessment Report on the Broadmewdow_SC_010 Sub-Catchment (EPA, December 2018) and the Cycle 3 Nanny-Delvin Catchment Report (HA08, EPA, May 2024), shows there are no significant issues or pressures identified on the groundwater body.

It should be noted that no groundwater samples or analysis was undertaken during the ground investigations carried out by Site Investigations Ltd (SIL) in April 2024.

10.4.4.6 Source Protection Areas

There are no recorded source protection areas within a 2 km radius of the Proposed Development. The nearest source protection areas are Curragha PWS and Dunboyne PWS, located c. 14.13 km north-west and c. 15 km south-west of the Proposed Development, respectively.

10.4.4.7 Hydrogeological Features

There is no evidence of karstification within the Proposed Development site or its wider vicinity. The underlying bedrock aquifer is classified as a 'Pl - Poor Aquifer - Bedrock which is generally unproductive except for local zones', overlain by thick, cohesive limestone-derived glacial tills, which substantially limit rapid groundwater flow and preclude the development of karst features. Groundwater at the site occurs predominantly as shallow, perched and discontinuous seepage within the till deposits, consistent with the findings of the Site Investigation and regional hydrogeological mapping.

A review of the Geological Survey of Ireland (GSI) Karst, Spring and Well databases indicate the presence of one (1) no. locally significant natural spring within the Proposed Development boundary, St Cronan's Well (Record of Monuments and Places Code: DU011-018), located in the south-eastern corner of the southern parcel of the site. St Cronan's Well is documented as a holy well fed by a natural spring, with groundwater emerging via percolation through overlying natural subsoils, rather than through karst conduits or fractured bedrock pathways.

10.4.4.8 Rating of Site Importance of the Hydrogeological Features

Based on the review of the receiving environment (Sections 10.4.4.1 to 10.4.4.6) and in accordance with the NRA/TII Guidelines (2009) (refer to **Appendix 10.1**), the hydrogeological features at the site are assessed as having Low to Medium importance at a local scale.

This rating predominantly reflects the classification of the bedrock underlying the Proposed Development as a 'Pl – Poor Aquifer – Bedrock which is generally unproductive except for local zones'. Such aquifers typically exhibit low permeability, limited groundwater storage and connectivity, and yield only small, localised supplies. Groundwater flow within the bedrock is generally confined to isolated fractures, resulting in limited recharge potential and minimal capacity for significant vertical or lateral contaminant migration.

Groundwater vulnerability mapping (GSI, 2026) identifies the Proposed Development as being predominantly underlain by 'Moderate' (M) vulnerability, typically associated with Carboniferous Limestone till overburden depths of approximately 3–10 m BGL. In these areas, the cohesive, low-permeability glacial till provides a moderate degree of natural protection to the underlying aquifer.

In addition to the regional and site-wide hydrogeological context, the presence of St Cronan's Well (RMP DU011-018) within the south-eastern corner of the southern parcel represents a locally significant hydrogeological feature. The well comprises a naturally occurring shallow spring, fed by perched or discontinuous groundwater seepage within the overlying glacial tills, rather than by karstified or regionally important bedrock flow systems. While the spring does not function as a potable water supply and is not associated with a Source Protection Area or aquifer of regional importance, its localised sensitivity and cultural significance elevate the hydrogeological value of the site above that associated with the underlying bedrock aquifer alone.

Taken together, the poor aquifer classification, limited groundwater flow, moderate vulnerability, and the presence of a locally important natural spring, indicate that groundwater resources and hydrogeological features at the site are of Low to Medium importance at a local scale, but do not represent a regionally or nationally sensitive receptor in the context of hydrogeological assessment.

10.4.5 Conceptual Site Model

A Conceptual Site Model (CSM) has been prepared as part of this Environmental Impact Assessment Report (EIAR) to summarise the geological, hydrogeological and hydrological setting of the Proposed Development. The CSM integrates desk-based data, national geological, hydrogeological and hydrological mapping, and findings from the ground investigation carried out by Site Investigations Ltd (SIL) in April 2024; to provide a clear understanding of subsurface and surface conditions, potential contaminant pathways, and environmental receptors relevant to the project.

- The GSI/Teagasc (2026) soil mapping indicates that the Mooretown Phase 2 lands are predominantly underlain by natural mineral soils. Limited occurrences of Made Ground were also recorded in four trial pits during the SI, which is consistent with the partially developed and disturbed nature of adjacent lands.
- According to the GSI/Teagasc subsoil mapping, the primary subsoil type beneath the Proposed Development is Glacial Till derived from Limestone (TLs). These tills are typically low-permeability cohesive deposits, a condition confirmed by the ground investigation, which recorded gravelly silty clay tills with high cobble content.
- GSI bedrock mapping (2026) indicates that the site is underlain by the Lucan Formation (CDLUCN),. However, no bedrock was encountered in the SIL (2024) investigation, despite boreholes being advanced to depths of 6.70 m BGL to 8.80 m BGL, with refusal occurring on large cobbles or boulders. This confirms that rockhead lies significantly deeper than predicted by regional mapping.
    - Groundwater: Ingress recorded in all boreholes (2.50–3.50 m BGL) and in 46 trial pits (0.40–2.60 m BGL), ranging from seepage to rapid inflow, indicative of perched or discontinuous groundwater pockets.
- According to the GSI National Bedrock Aquifer Map, the Proposed Development is underlain by a 'Pl – Poor Aquifer (Bedrock generally unproductive except for local zones)', which has low permeability, limited storage, and groundwater movement confined to isolated fractures. This strongly limits recharge potential, connectivity, and the likelihood of contaminant migration. The

northern boundary of the northern parcel is adjacent to a 'Locally Important Aquifer (LI) – Moderately Productive only in Local Zones', which can support small water supplies but still exhibits low regional permeability and limited lateral groundwater movement.

- The Proposed Development overlies the Swords Groundwater Body (GWB) (European Code: IE_EA_G_011), which currently holds a WFD status of 'Good' for 2019–2024 and is classified as 'Not at Risk' in the third cycle. This indicates full compliance with chemical and quantitative groundwater standards.
- GSI (2026) groundwater vulnerability mapping classifies most of the site as 'Moderate' (M) vulnerability, typically associated with 3–10 m of low-permeability limestone till. An area of 'High' (H) vulnerability is mapped immediately west of the northern parcel, where till thickness may be <3 m. Based on the SI findings of deep cohesive tills and no bedrock encountered, actual vulnerability at the site is considered lower than mapped and groundwater is not regarded as a sensitive receptor.
- EPA (2026) hydrology mapping identifies multiple drainage ditches and small streams within both the southern and northern parcels. A central drainage ditch traverses the southern parcel (west–east/east–west) and is hydrologically connected to the Newtown 08 river (Mooretown Water; IE_EA_08B020800):
    - The eastern unnamed waterbody flows north through residential areas, largely culverted, before joining another unnamed waterbody c. 400 m downstream.
    - The western unnamed waterbody originates where the site ditch meets the western boundary and flows north beneath the Baile na Móna estate, discharging to the Newtown 08 c. 250 m downstream.
    - The Newtown 08 waterbody flows along the southern and eastern boundary of the northern parcel, creating hydrological connectivity between both land parcels.
    - Downstream, the Newtown 08 discharges to the Broadmeadow River (Broadmeadow 08) c. 1.4 km downstream (c. 1.1 km north) of the Proposed Development.
    - The site drainage network ultimately connects to the Broadmeadow River system, but the combination of low-permeability tills, perched groundwater, and lack of direct watercourse crossings significantly limits the potential for contaminant migration to surface water receptors.

Overall, the CSM indicates that the Proposed Development site is characterised by deep cohesive tills, low groundwater sensitivity, discontinuous perched water, and limited Made Ground, with hydrological connectivity managed through existing drainage ditches. No significant contamination sources were identified, and natural attenuation potential is high. Environmental risk associated with the Proposed Development is therefore low, with minimal potential for adverse impact on groundwater or downstream surface water bodies.

Refer to Chapter 8 (Land, Soils and Geology) for further information on the soils, subsoils and geological environment at the Proposed Development site.

10.5 Characteristics of the Proposed Development

The purpose of this section is to provide an overview of the key relevant details of the construction phase and operational phase of the Proposed Development. The information presented in this section is informed by the project design, but it is not a complete description of the Proposed Development. Therefore, it should be read in conjunction with the full development package. For a more

comprehensive understanding of the Proposed Development, please refer to Chapter 5 (Description of the Proposed Development) of the EIA Report. Chapter 5 provides a detailed overview of the lifecycle of the project, including reference to the architectural and civil engineering, drawings, plans, reports, and other relevant documents in order to define the Proposed Development.

10.5.1 Construction Phase

The activities required for the construction phase present the greatest risk of potential impact on the hydrological and hydrogeological environment. These activities primarily pertain to the site preparation, excavation and infilling activities required to facilitate construction of the Proposed Development. The site is underlain predominantly by cohesive brown/black silty clays with local cobbles/boulders; soakaway tests failed (poor infiltration), and groundwater was recorded in boreholes at approximately 2.5-3.5 m BGL (trial pits generally dry to slow seepage). Accordingly, the drainage design does not rely on infiltration and construction methods assume localised shallow groundwater management where encountered.

Based on the available ground investigation data (refer to Infrastructure Report prepared by AKM Design Group (2026) and the supporting appendices) and Chapter 8 (Land, Soils and Geology) of the EIAR, no unusual ground risks are anticipated that would preclude conventional earthworks. Where groundwater is encountered locally, sump pumping may be required; trial pit stability was generally good with only occasional local instability recorded.

In addition to earthworks and groundwater considerations, estimated construction-phase water demands and discharges have been defined as follows:

- Peak Potable Water Demand: 0.43 l/s
- Peak Foul Water Flows: 0.42 l/s

These flows represent short-term construction-related demands and will be managed in accordance with Irish Water requirements.

10.5.1.1 Site Levelling and Excavations

The Proposed Development requires excavation of soils and stones to facilitate foundations, services, and general site establishment. Based on the engineering design and ground investigation results:

- Estimated total volume of excavation material: 21,860 m³
- Volume to be reused on site: 21,860 m³
- Volume to be removed off-site: 0 m³
- Imported fill required: 35,000 m³
- Maximum excavation depth: 3.93 m

These figures reflect the cohesive clay soils encountered across the site during trial pits and boreholes, which extended to depths of 6.7–8.8 m BGL, with groundwater recorded in boreholes at 2.5–3.5 m BGL and typically dry or slow seepage in trial pits.

Clay soils are unsuitable for infiltration-based drainage, as soakaway tests failed due to minimal fall in water levels, consistent with low permeability.

Excavated material will be carefully managed to avoid degradation of soil structure and unnecessary stockpiling. Where possible, excavated soils will be reused within the works (e.g., landscaping, backfill).

Any imported aggregate or engineered fill will comply with specification and be sourced from authorised suppliers.

10.5.1.2 Storage of Soils/Aggregates

Good construction management will be implemented in accordance with the Construction and Environmental Management Plan (AKM, 2026) CEMP: stockpiles will be sited to avoid overland flow paths, covered or damped down to control dust, with interception/silt controls to prevent sediment-laden run-off. Clean inert arisings will be prioritised for on-site re-use (or managed under Article 27 where off-site re-use is proposed); licensed hauliers and full waste dockets will be used for any off-site movements.

10.5.1.3 Storage of Hazardous Material

Temporary storage of fuels, oils and cementitious materials will be required during construction. Storage will occur within the site compound in bunded, hard-standing areas, using double-skinned tanks or bunded containers. The formation height of bunds for generator and fuel tanks will be 300 mm.

These measures reduce the potential for ground contamination in the event of accidental leaks. Localised spills from construction vehicles or machinery may occur but will be mitigated through routine maintenance, designated refuelling areas and spill-containment procedures.

10.5.1.4 Imported/Exported Materials

Construction materials such as engineered fill, aggregates, concrete, steel, services ducting and ancillary construction products will be transported to the site by road during the construction phase. Where practicable, a “just-in-time” delivery system will be implemented to minimise the duration and extent of onsite material storage and to reduce the potential for runoff-related impacts.

Vehicles transporting friable or fine materials will be appropriately covered to prevent loss of material onto public roads or within the site. Designated delivery routes and wheel-washing facilities will be utilised, where required, to minimise the risk of sediment tracking and subsequent migration to the surface water drainage network.

All excavated material arising from site preparation and earthworks is proposed to be reused within the site as part of the earthworks and landscaping strategy. Accordingly, no routine export of excavated soils is anticipated. Should any surplus or unsuitable material arise during construction, it will be removed from site and transported only to authorised and licensed facilities, in accordance with relevant waste management legislation.

Temporary stockpiling of soils or imported materials, where required, will be managed in accordance with the Construction and Environmental Management Plan (CEMP) and the Surface Water Management Plan (SWMP). Measures will include appropriate placement away from surface water features, use of protection covers where necessary, and implementation of silt and runoff control measures to prevent mobilisation of sediment or contaminants to the hydrological environment.

10.5.1.5 Potential Dewatering Activities

Excavation works associated with the Proposed Development will extend to a maximum depth of approximately 3.93 m below ground level (BGL). Ground investigation works undertaken by Site Investigations Ltd (2024) indicate that the site is predominantly underlain by cohesive, low-permeability

limestone-derived glacial tills, with no bedrock encountered within the depths investigated (6.7–8.8 m BGL).

Groundwater was recorded during the site investigation at variable shallow depths, ranging from approximately 0.40 m to 3.50 m BGL, predominantly as perched or discontinuous groundwater seepage within the cohesive till deposits, rather than as a continuous groundwater table. Trial pits were generally recorded as dry or exhibiting slow seepage, while boreholes recorded groundwater ingress typically between 2.5 m and 3.5 m BGL. These conditions are characteristic of clay-rich glacial tills, where groundwater occurs locally following rainfall events and is retained within isolated lenses or along low-permeability horizons.

Based on the proposed excavation depths and the recorded subsurface conditions, large-scale or continuous dewatering is not anticipated during construction. However, localised and temporary dewatering may be required in some excavation areas to manage perched groundwater seepage or rainfall accumulation, particularly following periods of prolonged or intense rainfall.

Where required, dewatering will be undertaken using localised sump pumping, limited to individual excavation areas. Any water arising from excavations will be treated as construction water and will not be discharged directly to ground, watercourses or surface water drainage infrastructure. Pumped water will be directed to appropriate settlement and filtration measures (e.g. silt bags, settlement tanks or ponds) prior to controlled discharge, in accordance with the Construction and Environmental Management Plan (CEMP) and the Surface Water Management Plan (SWMP).

Dewatering activities, where required, will be short-term, localised and intermittent, and will not result in any sustained lowering of groundwater levels, alteration of regional groundwater flow regimes, or interaction with deeper groundwater systems. Given the low permeability of the underlying glacial tills and the absence of a continuous groundwater horizon, no adverse impacts on the Swords Groundwater Body or surrounding hydrogeological regime are anticipated.

10.5.2 Operational Phase

The Proposed Development characteristics which relate to the hydrological and hydrogeological environment during operation are summarised below. The permanent drainage strategy follows the Greater Dublin Strategic Drainage Study (GDSDS) and Fingal County Council (FCC) requirements, with a SuDS-led approach and discharge controls limited to QBAR (greenfield equivalent) for each catchment. Finished Floor Levels are set ≥ 500 mm above the 1 % AEP (+CC) drainage level.

10.5.2.1 Surface Water Drainage Infrastructure

A new, fully-separated surface water network serves the development and ties into the receiving network that ultimately conveys flows beneath Rathbeale Road towards the Broadmeadow River, consistent with the established drainage through the Phase 1 lands.

Hydro-Brake® (or similar approved) flow controls at each catchment restrict discharge to QBAR, with attenuation provided in a combination of detention basins and sub-surface stone/tank storage. Key hydrological parameters used for design include SAAR = 770.8 mm, M5–60 = 15.2 mm, r = 0.277, +20 % climate change and 10 % urban creep; runoff coefficients of 0.90 (roofs/roads), 0.50 (permeable paving), 0.10 (gardens) and 0.47 (open space) have been applied.

The design prioritises Sustainable Drainage Systems (SuDS) to minimise impact on the receiving environment and to deliver source, site and regional control:

- Permeable Paving: Used extensively on private driveways/parking to provide source control and water quality treatment via filtration/biodegradation within the sub-base.
- Rain Gardens / Bioretention (incl. Tree-pit systems): Landscaped bio-retention areas capture and treat runoff with engineered media and underdrains where required, providing interception storage and evapotranspiration.
- Swales: Vegetated channels receive sheet flow from road edges via dropped kerbs, with check-dams on steeper grades and overflows to the pipe network for exceedance conditions.
- Detention Basins and Underground Storage: Provide long-term attenuation for the 1:100 year event (with climate change), with Hydro-Brake® controls set to catchment-specific QBAR limits.
- Pollution Control: Class 1 petrol interceptors are provided at outfalls to protect receiving waters.

During construction, temporary settlement tanks are required for any pumped groundwater/run-off prior to discharge; these controls are removed or adapted following commissioning of the permanent network.

For detailed information on the operational surface water strategy, attenuation design, SuDS components, pollution control and foul drainage layout, refer to Infrastructure Report (AKM Design Group, 2026) and Drawing Number: 5051-AKM-XXXX-XX-DR-C01-300001 (Proposed Storm and Foul Drainage – General Layout, AKM Design Group, 2026) submitted as part of the planning application.

10.5.2.2 Wastewater Infrastructure

The foul drainage system for the Proposed Development is fully separated from surface water and is designed in accordance with the Uisce Éireann Code of Practice. The network integrates with the Phase 1 application currently under construction (Planning Ref. LADP/002/24) as follows:

The northern cell (c. 53 units) discharges by gravity to the on-site pump station approved under ref. CDS2400952001 (constructed under Phase 1; Planning Ref. LADP/002/24), which then conveys flows to the downstream gravity network; a foul gravity pipe bridge is proposed to facilitate this connection.

The southern areas connect by gravity via four connections to the Phase 1 (Planning Ref. LADP/002/24) foul network, which ultimately ties into the public system at Cronan's Well Estate.

A Pre-Connection Enquiry (PCE) was submitted under CDS25003155, with a Confirmation of Feasibility issued on August 26th, 2025. The CoF notes that public network capacity is available subject to completion of the Glen Ellen Road storage tank upgrade (by third party, at detailed design stage); the combined Phase 1/2 arrangements will be reviewed at connection application stage.

According to current capacity information, the Swords Wastewater Treatment Plant (WWTP; Active Licence Number: D0024-01) has sufficient operational capacity to accommodate the Proposed Developments peak foul effluent discharge of 10.81 l/s.

This foul loading will not adversely impact the operational capacity of Swords WWTP nor downstream surface water environments within the wider Nanny-Delvin WFD catchment. According to the Swords Waste Water Treatment Plant (WWTP) Annual Environmental Report (AER, 2024), the plant's reported peak hydraulic capacity is 60,750 m³/day (703.125 l/s). The Proposed Development's peak foul effluent discharge of 10.81 l/s represents approximately 1.54% of this capacity. This level of additional loading is negligible in hydraulic terms and will not constrain the ability of Swords WWTP to continue operating within its licensed limits or to meet the relevant environmental objectives for the receiving waters. All

foul water conveyed to Swords WWTP will receive full treatment prior to discharge, ensuring no operational-phase pathway to the hydrological or hydrogeological environment.

For detailed information on the operational foul drainage layout and Pre-Connection Enquiry (PCE), refer to the Infrastructure Report (AKM Design Group, February 2026) and Drawing Number: 5051-AKM-XXXX-XX-DR-C01-300001 (Proposed Storm and Foul Drainage – General Layout, AKM Design Group, 2026) submitted as part of the planning application.

10.5.2.3 Water Supply

Potable water supply to the Proposed Development will be provided through five 150 mm diameter connections to the Phase 1 water distribution network (Planning Ref. LADP/002/24) with spare capacity for Phase 2 (Proposed Development) already incorporated into the Phase 1 design. A Confirmation of Feasibility, issued by Uisce Éireann on August 26th, 2025, confirms that the public water network has sufficient capacity to service the developments peak potable water demand (11.26 l/s), with full design details to be finalised at connection-application stage.

In operation, the development will be served by a fully separated, pressurised potable water system, supplying each dwelling via individual service connections as required by Uisce Éireann standards. Hydrants will be installed in accordance with BS 750:2012 and Uisce Éireann Standard Details, and the layout of the watermains will comply with the Uisce Éireann Code of Practice, ensuring appropriate cover, location, thrust restraint and identification measures.

This configuration ensures a reliable and compliant potable water supply network forming an integral part of the operational infrastructure for Mooretown Phase 2.

For detailed information on the potable water design, refer to Infrastructure Report (AKM Design Group, 2026) submitted as part of the planning application.

10.6 Predicted Impacts of the Proposed Development

An analysis of the potential impacts of the Proposed Development on the hydrological and hydrogeological environment during the construction and operational phases are outlined below. Due to the inter-relationship between land, soils and geology with hydrogeology and hydrology the following impacts discussed will be considered applicable to both Chapter 8 (Land, Soils and Geology) and Chapter 10 (Hydrology and Hydrogeology) of the EIA Report. Remediation and mitigation measures are included in the design of this project to address these potential impacts are presented in Section 10.6.2 (Construction Phase) and Section 10.6.3 (Operational Phase).

10.6.1 Do-Nothing Impact

If the Proposed Development were not to proceed, no excavation, construction activity or alteration of existing ground conditions would occur within the site. In this scenario, the existing surface water drainage patterns, groundwater levels, infiltration characteristics and hydrological features would remain unchanged, resulting in a neutral impact on the hydrology and hydrogeology of the area.

However, the lands are zoned RA - Residential Area under the Fingal Development Plan 2023–2029, which anticipates their future development for housing. Based on experience with comparable residential projects on similarly zoned lands, if this particular scheme did not proceed, it is highly likely that an alternative residential development of similar scale would eventually be delivered. Such a development would introduce similar hydrological and hydrogeological effects, including changes to

runoff volumes, attenuation requirements, infiltration patterns, and the extent of impermeable surfaces.

Therefore, while the strict 'Do-Nothing scenario' indicates a ***neutral*** effect on hydrology and hydrogeology, this must be considered in the context of the site's zoning objectives. Under any future compliant development, comparable alterations to surface water management, drainage infrastructure, and groundwater interaction would be expected, similar to those assessed in this EIAR.

10.6.2 Construction Phase

10.6.2.1 Potential Impacts on Surface Water and Groundwater Quality

There is potential for run-off generated during construction to become contaminated through mobilisation of suspended solids, hydrocarbons, cementitious materials, and other substances. If unmitigated, contaminated run-off may enter the existing drainage ditches within the northern and southern parcels, which are hydrologically connected to the Newtown 08 river and ultimately to the Broadmeadow 08 river waterbody, increasing the risk of temporary water quality impacts.

In addition, contaminated runoff or poorly controlled construction activities could, in the absence of mitigation, indirectly influence shallow groundwater conditions that support localised groundwater features, including St Cronan's Well (RMP DU011-018), which is a natural spring located in the south-eastern corner of the southern parcel.

- Suspended solids arising from excavation, soil stripping, stockpiles and vehicle movements, potentially increasing turbidity and depositing fine sediment in downstream ditches, watercourses and shallow seepage zones.
- Excavation and soil disturbance may mobilise pollutants (e.g., naturally occurring metals) or increase erosion and sediment run-off, especially during rainfall events.
- Cement and concrete residues have the potential to increase pH and turbidity if released into drainage pathways. Accidental discharges from wash-out areas or mismanagement of wet concrete pose a temporary risk.
- Hydrocarbons, fuels, lubricants and construction chemicals present a risk through accidental spills or leaks from machinery, generators or refuelling areas.
- Sanitary wastewater will be fully contained in sealed tanks and removed off-site by licensed contractors; therefore, no pollution risk arises from welfare facilities.

In the absence of mitigation measures, the potential impacts during the construction phase on surface water quality and shallow groundwater quality are ***negative***, ***significant*** and ***short term***.

10.6.2.2 Potential Impacts on Surface Water and Groundwater Flow and Quantity

Surface water run-off during construction may contain elevated silt concentrations originating from exposed ground, temporary haul routes, stockpiles, and potential localised dewatering operations within both the northern and southern parcels.

Construction activities will introduce new temporary impermeable areas and may cause localised soil compaction. These changes have the potential to reduce infiltration capacity and increase the rate and volume of surface water run-off.

If unmanaged, increased run-off could result in localised scouring, sedimentation, or overloading of the existing drainage ditches that traverse both land parcels and connect to associated unnamed

watercourses and the Newtown 08 river waterbody and the Broadmeadow 08 (Broadmeadow River).. This may temporarily alter flow patterns or reduce conveyance efficiency within the connected drainage network.

No surface water or groundwater abstractions are proposed as part of the development, and no diversions, culverting, or alteration of existing watercourses are included within the design of the Proposed Development.

Groundwater beneath the site occurs as perched, discontinuous pockets within cohesive glacial till. Given the low permeability of the subsoils and the absence of a continuous groundwater horizon, construction activities are not expected to significantly modify regional groundwater levels or flows. Any interaction with groundwater during construction is expected to be localised, short-term and related to perched seepage or rainfall accumulation only.

On this basis, construction activities are not expected to result in any sustained drawdown or reduction in the groundwater regime feeding St Cronan's Well, nor to alter the natural functioning of the spring.

In the absence of mitigation measures the potential impacts during the construction phase on surface water and groundwater flow and quantity are ***negative***, ***significant*** and ***short term***.

10.6.2.3 Potential Impacts on Human Health and Populations

A reduction in water quality arising from unmitigated pollutants during construction has the potential to affect the receiving hydrological and hydrogeological environment. Contaminants entering the onsite drainage ditches and unnamed watercourses could migrate into the connected unnamed EPA waterbodies east and northwest of the southern parcel, before discharging to the Newtown 08 river waterbody, which ultimately flows to the Broadmeadow 08 river waterbody downstream of the Proposed Development.

Should hydrocarbons, petroleum-derived contaminants, concrete washout, or other construction pollutants enter these drainage pathways, there is a theoretical potential for indirect human exposure through environmental degradation. However, due to the absence of sensitive downstream receptors—such as drinking water abstractions, bathing waters or recreational waters—the potential for impacts on human health is inherently low.

The underlying bedrock aquifer (PI – Poor Aquifer, transitioning to LI – Locally Important Aquifer to the north) is of low sensitivity, characterised by low permeability, limited fracture connectivity and shallow perched groundwater within the overlying cohesive till. These conditions significantly restrict downward migration of contaminants.

There are no public groundwater supplies, group water schemes, GSI Source Protection Zones, public supply protection areas or preliminary protection areas in the vicinity of the site. Accordingly, there are no potable water receptors at risk from potential construction-related contamination.

There are no designated Bathing Waters or Recreational Waters downstream of the Proposed Development catchment that could be impacted by short-term water quality changes within the Newtown 08 river, Broadmeadow 08 river or their tributaries (Broadmeadow_040 WFD river waterbody).

Drainage pathways connected to the Broadmeadow 08 river receive sufficient dilution and attenuation before reaching any populated downstream area, further reducing potential exposure risks.

Considering the hydrological setting, the low-sensitivity groundwater environment, and the absence of human receptors reliant on downstream water supplies, no potential impacts on human health or populations are anticipated in the absence of mitigation measures.

10.6.2.4 Potential Impacts on Water Framework Directive Status

Accidental discharges during the construction phase (as outlined in Section 10.4.2.1) could occur in the absence of mitigation; however, these events would be temporary and short-lived. They are not expected to result in any measurable deterioration in the WFD status of the Newtown 08 river or the downstream Broadmeadow 08 river i.e. Broadmeadow_040 WFD river waterbody, nor of the underlying Swords Groundwater Body (GWB), which is currently classified as 'Good' and 'Not at Risk' under the Water Framework Directive.

The short duration and localised nature of any potential construction-related discharges, combined with the natural resilience of the receiving environment (i.e., multiple drainage ditches, partially culverted tributaries, and the well-connected Newtown 08 and Broadmeadow 08 river waterbody systems i.e. Broadmeadow_040 WFD river waterbody, means that there will be no long-term impact on water quality trends or overall WFD status assessment. The cohesive, low-permeability glacial till underlying the site also limits downward migration of contaminants, preventing any significant effect on the Swords groundwater body.

As such, the Proposed Development will not cause any significant deterioration or change in the WFD status of surface or groundwater bodies, nor will it prevent the attainment of WFD objectives, or the requirements set out in the Water Action Plan 2024 – Ireland's River Basin Management Plan (2022–2027).

A Water Framework Directive (WFD) Screening Report, prepared by AWN Consulting Ltd (March 2026) in support of the planning application, provides a more detailed assessment of potential WFD interactions.

In the absence of mitigation measures the potential impacts during the construction phase on the Water Framework Directive (WFD) status due to changes to the hydrological and hydrogeological environment are ***negative***, ***not significant*** and ***short term***.

10.6.3 Operational Phase

10.6.3.1 Potential Impacts on Surface Water and Groundwater Quality

The surface water runoff during the operational phase will primarily discharge to the Proposed Development's engineered stormwater drainage system, rather than directly to the hydrological or hydrogeological environment. Runoff will be conveyed through a fully separated drainage network incorporating multiple SuDS components, as detailed in the Infrastructure Report of the EIAR.

During the operational phase, surface water runoff from hardstanding and trafficked areas may contain very low concentrations of hydrocarbons, suspended solids and trace pollutants. If unmanaged, these could enter the existing drainage ditches within the northern and southern parcels, which ultimately connect to the Newtown 08 river and the downstream Broadmeadow 08 river.

Discharge from the Proposed Development will be controlled to QBAR greenfield runoff rate, via flow control devices (e.g. hydrobrakes) and attenuation systems, ensuring that only limited, regulated volumes of water enter the existing receiving drainage network.

In addition, unmanaged runoff or infiltration could, in the absence of controls, theoretically influence shallow groundwater conditions that support localised groundwater features, including St Cronan's Well (RMP DU011-018), which is a naturally occurring spring located in the south-eastern corner of the southern parcel. However, the operational drainage design ensures that no untreated runoff is permitted to infiltrate in the vicinity of the well and that shallow groundwater pathways remain undisturbed.

Potential contaminant migration to the underlying Swords Groundwater Body (PI aquifer) could theoretically occur through infiltration; however, the cohesive limestone till underlying the Proposed Development provides substantial natural protection, and the drainage strategy minimises infiltration from hard surfaces.

The potential for water quality impacts during the operational phase is substantially reduced due to the SuDS-led drainage design, which provides integrated treatment and attenuation across the Proposed Development. Runoff from roofs, hardstanding and parking areas will pass through permeable paving, bioretention systems, rain gardens, tree pits, swales, detention basins, filter drains and the attenuation pond, all of which help to remove sediments, hydrocarbons and other pollutants. Interception storage for small rainfall events (5–10 mm) further prevents routine discharge of untreated runoff. As a result, only low levels of contaminants are expected in operational surface water discharges, reducing the potential for adverse impacts on downstream surface water or groundwater receptors including St Cronan's Well.

The site is designed as a fully separated drainage system, with foul drainage entirely independent of stormwater pathways and routed to a pumping station designed in accordance with Uisce Éireann standards, thereby eliminating the potential for foul surface water cross-contamination.

Most land uses within the Proposed Development (roofs, open spaces, pedestrian areas, gardens) are classified by the CIRIA SuDS Manual as Low or Very Low pollution hazard, meaning the intrinsic pollution risk is already minimal. The widespread SuDS treatment train further reduces contaminant loads prior to discharge.

Given the level of built-in treatment, attenuation and interception, and the low permeability of the underlying glacial till, significant impacts on surface water or groundwater quality during the operational phase are not anticipated.

For detailed information on the operational surface water strategy, attenuation design, SuDS components, pollution control and foul drainage layout, refer to the Infrastructure Report (AKM Design Group, 2026) and Drawing Number: 5051-AKM-XXXX-XX-DR-C01-300001 (Proposed Storm and Foul Drainage – General Layout, AKM Design Group, 2026) submitted a spart of the planning application.

In the absence of mitigation measures (or design measures) the potential impacts during the operational phase on surface water and groundwater quality are ***negative***, ***significant*** and ***long-term***.

10.6.3.2 Potential Impacts on Surface Water and Groundwater Flow and Quantity

The Proposed Development will introduce additional hardstanding areas (roads, footpaths, driveways, parking bays; c. 5.471 ha), which would ordinarily increase surface water runoff and reduce natural infiltration capacity. However, the existing site already contains large areas of compacted agricultural soils and drainage ditches, meaning baseline infiltration is inherently low and existing runoff rates are already elevated.

The site is underlain by cohesive glacial till with poor infiltration characteristics, confirmed by extensive soakaway testing, which failed to satisfy BRE 365 infiltration criteria (Appendix B of Infrastructure Report; AKM Design Group, 2026). As such, the potential for meaningful recharge to the underlying Swords Groundwater Body is limited under both baseline and post-development conditions.

In the absence of controls, additional hard surfaces could increase surface water runoff volumes entering the existing drainage ditches that traverse the southern and northern parcels, potentially increasing hydraulic loading in the connected unnamed tributaries and the Newtown 08 river waterbody, with onward flow to the Broadmeadow 08 river.

The Proposed Development incorporates a comprehensive SuDS-led drainage strategy (Infrastructure Report; AKM Design Group, 2026) which includes permeable paving, bioretention areas, rain gardens, swales, detention basins and attenuation ponds. These features collectively attenuate flows to QBAR greenfield equivalent runoff rates, reduce runoff volume via infiltration and evapotranspiration where feasible, slow conveyance along the drainage network, and provide long-term storage for major storm events.

Surface water calculations incorporate a 20% climate change allowance and 10% urban creep factor, consistent with GDSDS guidance. Storage and routing have been modelled using Causeway Flow, ensuring that no flooding occurs in the storm network for up to the 1-in-100-year rainfall event, including climate change.

Finished floor levels for all buildings will be set a minimum of 500 mm above the 1:100-year flood level within the SuDS network and attenuation features, providing protection from exceedance flows and ensuring no adverse impacts on the development.

No surface water or groundwater abstractions form part of the operational design. Therefore, no impacts on water quantity due to extraction or resource depletion are expected, and no alteration of groundwater levels feeding St Cronan's Well will occur.

Given the engineered SuDS approach, the low-permeability nature of the site's glacial tills, and the controlled discharge to the receiving environment, the Proposed Development is not expected to cause significant changes to surface water or groundwater flow regimes, nor to affect the shallow groundwater regime supporting St Cronan's Well, and no increase in downstream flood risk is anticipated. For detailed information on the operational surface water strategy, attenuation design, SuDS components, pollution control and foul drainage layout, refer to Infrastructure Report (AKM Design Group, 2026) and Drawing Number: 5051-AKM-XXXX-XX-DR-C01-300001 (Proposed Storm and Foul Drainage – General Layout, AKM Design Group, 2026) submitted a spart of the planning application.

In the absence of mitigation measures (or design measures) the potential impacts during the operational phase on surface water and groundwater flow and quantity are ***negative***, ***slight***, and ***long term***.

10.6.3.3 Potential Impacts on Human Health and Populations

Given the proposed drainage design and SuDS-integrated stormwater infrastructure, there is no potential for unmitigated off-site flooding during the operational phase. All runoff generated within the Proposed Development will be intercepted, treated, attenuated and released at QBAR greenfield runoff

rates, ensuring no additional hydraulic loading is placed on the drainage ditches, unnamed tributaries, the Newtown 08 or Broadmeadow 08 river waterbody.

There is no potential for off-site contamination from hydrocarbons or other pollutants arising from car parking areas, roads or trafficked surfaces. Runoff from these areas will be conveyed through a multistage SuDS treatment train—including permeable paving, bioretention areas, tree-pit systems, swales, filter drains, detention basins and an attenuation pond, all designed to remove sediments, hydrocarbons and dissolved pollutants prior to controlled discharge.

No recreational waters, bathing waterbodies or surface water abstraction points exist downstream of the Proposed Development that could be affected by changes in operational water quality or flow. The receiving environment (i.e., unnamed watercourses, the Newtown 08 waterbody and the downstream Broadmeadow River) contains no designated human-use receptors such as public bathing areas or drinking water abstractions.

Geological Survey Ireland (GSI) mapping confirms there are no Public Supply Source Protection Areas, no Group Scheme Preliminary Source Protection Areas, and no potable water abstractions within the zone of influence of the Proposed Development. As such, there are no identified pathways by which contaminants could migrate into sensitive groundwater receptors that supply drinking water.

The underlying Swords Groundwater Body (PI / LI aquifer) is characterised by low permeability and limited connectivity, with perched or discontinuous groundwater conditions restricted to shallow glacial till layers. This significantly limits the possibility of pollutant transport and minimises any potential link to human health receptors.

Given the absence of human water-use receptors, the robustness of the SuDS-led drainage design, and the limited sensitivity of the receiving groundwater environment, no significant impacts on human health or local populations are anticipated during the operational phase.

10.6.3.4 Potential Impacts on Water Framework Directive Status

During the operational phase, only limited, highly controlled surface water discharges will occur from the Proposed Development. Runoff will be attenuated within SuDS features and discharged at QBAR greenfield runoff rates to the existing drainage ditches on-site, which flow to the unnamed tributaries and subsequently to the Newtown 08 river waterbody, before ultimately entering the Broadmeadow 08 river waterbody (all of which form part of the Broadmeadow_040 WFD river waterbody).

A potential pathway exists whereby operational runoff could reach the Newtown 08 river and the downstream Broadmeadow 08; however, without appropriate controls, increased flows, suspended solids or hydrocarbons could theoretically result in localised hydromorphological or water quality impacts within these receiving waters. A similar theoretical pathway exists for the underlying Swords Groundwater Body (GWB).

The likelihood of such impacts occurring is very low, as the Proposed Development incorporates a robust SuDS treatment train designed in accordance with the GDSDS and Fingal County Council's Green/Blue Infrastructure guidance. These systems provide filtration, sediment removal, hydrocarbon breakdown, infiltration (where feasible), evapotranspiration and long-term attenuation.

Under typical rainfall conditions, runoff from roofs, roads and hardstanding areas will be fully intercepted and treated within the SuDS network. Overflows from individual SuDS features will only occur during higher-intensity storm events, and even then, discharge will be attenuated, treated and

released at greenfield-equivalent rates, ensuring no deterioration of flow regime, channel morphology or water quality within receiving watercourses.

Given the level of treatment and hydraulic control integrated into the drainage strategy, the Proposed Development will not cause deterioration in WFD status of the Broadmeadow_040 WFD river waterbody, or the underlying Swords GWB, which is currently classified as having a 'Good' status and a risk score (3rd cycle) of 'Not at Risk' of not achieving a 'Good' status.

The foul sewer network for the Proposed Development will be fully separate from the stormwater system and will discharge to the public foul sewer for onward treatment at a Uisce Éireann wastewater treatment plant (WWTP) with adequate available capacity. This ensures that no untreated foul water enters surface waters, and no additional pressures are placed on WFD waterbodies.

According to current capacity information, the Swords Wastewater Treatment Plant (WWTP; Active Licence Number: D0024-01) has sufficient operational capacity to accommodate the Proposed Developments peak foul effluent discharge of 10.81 l/s. This foul loading will not adversely impact the operational capacity of Swords WWTP nor downstream surface water environments within the wider Nanny-Delvin WFD catchment.

According to the Swords Waste Water Treatment Plant (WWTP) Annual Environmental Report (AER, 2024), the plant's reported peak hydraulic capacity is 60,750 m³/day (703.125 l/s). The Proposed Development's peak foul effluent discharge of 10.81 l/s represents approximately 1.54% of this capacity. This level of additional loading is negligible in hydraulic terms and will not constrain the ability of Swords WWTP to continue operating within its licensed limits or to meet the relevant environmental objectives for the receiving waters. All foul water conveyed to Swords WWTP will receive full treatment prior to discharge, ensuring no operational-phase pathway to the hydrological or hydrogeological environment.

A Water Framework Directive (WFD) Screening Report, prepared by AWN Consulting Ltd (2026) in support of the planning application, provides a more detailed assessment of potential WFD interactions.

Based on the proposed operational drainage design and the comprehensive SuDS strategy outlined in the Infrastructure Report (AKM Design Group, 2026), there is no potential for adverse impacts on Water Framework Directive status during the operational phase.

10.7 Mitigation Measures

These specific measures will provide protection to the receiving hydrological, hydrogeological and soil environment during the construction phase. These measures represent industry best practice and standard environmental protection procedures. They are not included for the purpose of avoiding or reducing significant effects on European sites.

10.7.1 Construction Phase

A Construction and Environmental Management Plan (CEMP) has been prepared by AKM Design Group (March 2026) for the Proposed Development. The CEMP outlines and explains the construction techniques, sequencing and environmental control measures to be implemented throughout the construction period. It is supported by a Surface Water Management Plan (SWMP) (AKM Design Group,

2026), which sets out detailed requirements for drainage protection, settlement systems, and pollution mitigation during earthworks and infrastructure delivery.

Construction activities and associated mitigation measures have been informed by best practice guidance for controlling pollution and protecting surface water and groundwater during development works, including but not limited to:

- Construction Industry Research and Information Association (CIRIA), Control of Water Pollution from Construction Sites: Guidance for Consultants and Contractors (C532);
- CIRIA C741 Environmental Good Practice on Site (4th Edition);
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (IFI, 2016);
- Enterprise Ireland Best Practice Guide – Oil Storage Guidelines (BPGCS005);
- Eastern Regional Fisheries Board – Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites;
- Central Fisheries Board – Channels and Challenges: The Enhancement of Salmonid Rivers;
- CIRIA C648 Control of Water Pollution from Construction Sites;
- Guidelines for the Crossing of Watercourses During the Construction of National Road Schemes (NRA, 2008);
- Inland Fisheries Ireland (IFI) – Planning for Watercourses in the Urban Environment.

The CEMP and SWMP set out the onsite procedures, controls and environmental protection measures required to prevent pollution of the existing drainage ditches, the unnamed tributaries within the northern and southern land parcels, and downstream receiving waters including the Newtown 08 the Broadmeadow 08 rivers. All construction personnel will receive appropriate induction and task-specific training to ensure full implementation of the CEMP. Key hydrological and hydrogeological mitigation measures will include:

- Surface Water Pollution Prevention
    - A comprehensive silt and sediment control strategy will be implemented in accordance with the CEMP and SWMP. This includes the use of silt fencing, settlement tanks/ponds, silt bags, temporary drainage channels, stockpile controls and erosion-prevention measures to prevent sediment mobilisation from exposed soils, haul routes, excavations and stockpiles.
    - No direct discharge of untreated runoff will be permitted to the existing drainage ditches. All run-off will be intercepted, directed to settlement tanks or settlement ponds incorporating internal baffles and forebays, or routed through proprietary treatment systems prior to controlled release, in accordance with the SWMP.
    - Concrete works will be strictly managed. All concrete washouts will occur within a designated, bunded washout area located within the construction compound. Mixer washings or cementitious materials will not be discharged to the drainage system or ground. Pumped concrete will be supervised to prevent accidental release.
    - Fuel, oils and construction chemicals will be stored in bunded, impermeable areas with a minimum 110% containment capacity. Refuelling will occur only at designated bunded locations or via mobile double-skinned refuelling units. Spill kits will be available at all refuelling, maintenance and storage areas, consistent with both the CEMP and SWMP requirements.
    - Sanitary wastewater will be fully contained within sealed units and will be removed off-site by licensed waste contractors for treatment at an authorised facility.

- Protection of Groundwater
  - Excavations will be managed to limit rapid groundwater ingress within the cohesive glacial tills. Where perched water pockets are encountered, dewatering (if required) will be undertaken using local sump pumps discharging to settlement tanks or vegetated areas only after filtration via silt bags or equivalent controls.
  - No infiltration of untreated or potentially contaminated runoff will be permitted to the subsoil during construction. All potentially silty water will be directed to appropriate treatment measures prior to disposal, in accordance with the SWMP.
  - Temporary works will be designed to avoid unnecessary compaction of soils, to minimise increased runoff rates.
- Run-off and Flow Management
  - Temporary works will be designed to avoid unnecessary compaction of soils, helping to maintain natural infiltration pathways and minimise increased overland flow.
  - Where practicable, temporary attenuating features including settlement ponds, check dams within temporary channels, or localised barriers will be installed to prevent hydraulic overloading of the existing onsite drainage ditches.
  - The contractor will prepare and maintain a site plan identifying drainage lines, discharge points and all water protection measures, as required by the SWMP.
- Emergency Response
  - The contractor will prepare a Construction Phase Emergency Response Plan, consistent with the CEMP, setting out procedures for managing environmental incidents, including accidental spillages, concrete washout failures, hydrocarbon leaks, sediment releases and blockages of drainage systems. All staff will be trained in the emergency response procedures and in the use of spill kits.
  - The plan will also include measures to address extreme weather events, including high-intensity rainfall, which may mobilise sediments or affect site drainage and settlement systems.
- Implementation and Oversight
  - All mitigation measures specified in the CEMP and SWMP, as well as those outlined above, will be implemented throughout the construction phase.
  - The Project Manager, supported by the Environmental Clerk of Works (ECoW), will oversee compliance with the CEMP and ensure that measures are updated in response to changing site conditions, weather events or evolving construction methodologies. Monitoring inspections will be undertaken in accordance with the CEMP and SWMP inspection schedules (daily, weekly and activity-based requirements).
  - Any additional mitigation measures required under planning conditions will be incorporated and adhered to for the full duration of the works.

10.7.1.1 Measures for the Control of Suspended Solids

Given the potential for construction-phase runoff to indirectly enter the existing drainage ditches within the northern and southern land parcels which are hydrologically connected to the Newtown 08 river and ultimately to the Broadmeadow 08 river waterbody, a robust set of suspended-solid control measures will be implemented during the construction phase. These measures will ensure that

sediment, silt-laden flows and associated contaminants are prevented from entering the receiving drainage network, consistent with the Construction Environmental Management Plan (CEMP) and the Surface Water Management Plan (SWMP).

The following mitigation measures will be applied:

- Prior to commencement of construction, the appointed contractor(s) will prepare a method statement identifying the areas likely to be disturbed, confirming that the extent of excavation and earthworks is the minimum necessary to complete the works.
- During earthworks and excavation, exposed soil surfaces will be stabilised to minimise erosion. Movement and double-handling of soils will be kept to a minimum to avoid unnecessary degradation and sediment generation.
- Hard-surfaced construction roads will be routinely swept to remove mud, clay and aggregate deposits. Unsurfaced haul routes will be restricted to essential construction traffic only, reducing sediment mobilisation.
- Where stockpiling is required, temporary stockpiles will be located at least 20 m from any drainage feature. Stockpiles will be positioned on level ground, compacted, graded inward, covered in periods of heavy rainfall, and surrounded on three sides with silt fencing. Downslope banks will be provided to prevent runoff entering drainage lines.
- Silt fencing will be installed along low-lying boundaries and adjacent to drainage ditches, using double-layer geotextile membrane keyed into the ground to prevent bypassing.
- Silt fences will be monitored frequently, with a silt fence inspection log maintained by the Site Manager. Daily inspections will occur during wet weather, and accumulated silt will be removed from the upslope side before capacity is exceeded.
- Cut-off drains and temporary drainage channels will be installed where necessary to intercept clean water flows and divert them away from exposed soils and excavations, reducing the potential for water ingress and uncontrolled inflow during earthworks.
- Collected runoff requiring treatment will be directed to appropriately sized settlement ponds or temporary settlement tanks. Settlement ponds will incorporate a forebay equal to 10% of the total pond area to capture coarse sediment and will maintain a permanent water level to support fine sediment settlement. Where space is limited, proprietary mobile settlement units may be used. Only clarified surface water will be discharged.
- Weather conditions will be considered in construction planning, with high-risk activities suspended during prolonged or intense rainfall to prevent sediment mobilisation.
- Excavations will be left open for the minimum time practicable, and backfilling and reinstatement will proceed without delay to prevent unnecessary water ingress into the cohesive glacial tills.
- All reinstatement, including topsoil replacement and rapid revegetation/grass cover, will be completed as soon as practicable to restore surface stability and minimise erosion.
- Regular inspection of all surface water controls including silt fences, settlement systems, cut-off drains, wheel wash areas and stockpile measures will be undertaken. A construction-phase inspection log will be maintained, and any blockages, failures or pollution incidents will be promptly recorded, investigated and corrected, with measures adapted where necessary.

10.7.1.2 Measures for the Control and Treatment of Construction Surface Water

No water that has accumulated onsite from any source (groundwater, surface water, or precipitation) will be pumped directly to ground or to any surface water feature. All water intercepted within the site

during the construction phase will be treated as construction water and will be actively managed, controlled and monitored to prevent the uncontrolled discharge of silt-laden or contaminated runoff to the existing drainage ditches, associated unnamed tributaries, the Newtown 08 waterbody, or downstream to the Broadmeadow 08 river waterbody.

Construction water containing suspended solids or other pollutants will require treatment prior to discharge. Under no circumstances will untreated, silty or contaminated water be released into any surface water drainage pathway.

Dewatering may be required in localised excavation areas to maintain a dry working environment. Construction water may arise from rainfall, surface water inflow or perched groundwater seepages within the cohesive glacial tills. All dewatering activities will be carefully managed to ensure that flows are captured, treated and discharged in accordance with best practice.

The following control and treatment measures will be implemented:

- Surface water, groundwater or rainwater collected within excavations or across the working area will not be pumped directly to watercourses, drainage ditches or stormwater infrastructure. All such water will undergo appropriate settlement and filtration prior to any discharge.
- Discharge of treated construction water will only occur after water-quality testing confirms compliance with agreed discharge standards. Where suitable, treated water may be discharged to the existing stormwater drainage network following attenuation within settlement ponds or proprietary treatment units, subject to agreement with the relevant authorities. Water exceeding permitted thresholds will be either re-treated onsite or removed to a licensed waste facility by tanker.
- Where feasible, clean water pumped from excavations—following sediment removal through settlement or filtration may be dispersed to permeable vegetated areas within the site to promote infiltration and natural attenuation. Discharge will be controlled to avoid erosion or bypassing of treatment.
- If treated water is discharged to any receiving ditch or watercourse, energy-dissipating and sediment-control measures will be installed at the discharge point. These may include baffles, geotextile curtains, sediment mats, riprap or other appropriate devices to prevent scour and minimise sediment mobilisation. The design of any temporary discharge outfalls will be agreed with the appropriate statutory bodies.
- Excavation works will temporarily halt during periods of prolonged or intense rainfall, allowing water levels to stabilise and reducing the likelihood of turbid runoff or excessive dewatering flows.
- For the avoidance of doubt, no untreated, silty or contaminated construction water shall be discharged to any watercourse, drainage ditch, stormwater system or the wider hydrological environment. Should removal of contaminated construction water be necessary, discharge will occur only to the foul sewer with prior agreement from Uisce Éireann, or alternatively the water will be tankered off-site to a licensed facility for appropriate disposal.

10.7.1.3 Measures for the Control of Pollution from Other Substances

The following mitigation measures will be implemented during the construction phase to prevent spillages of fuels, hydraulic oils, lubricants, cementitious materials and other construction-related chemicals. These measures will minimise the potential for pollutants to enter soils, the existing drainage

ditches, unnamed tributaries, the Newtown 08 waterbody or the underlying low-permeability glacial till groundwater environment.

- All plant and machinery will be regularly inspected, serviced and maintained by qualified personnel to minimise the risk of hydrocarbon leaks or mechanical failure. Any defective plant will be removed from service until repaired.
- Designated bunded maintenance and refuelling areas will be established within the construction compound, located away from drainage ditches and surface water pathways.
- Spill kits (including pads, absorbent granules, booms and socks) will be provided at strategic high-risk locations, including refuelling points, plant storage areas, material laydown areas and within construction vehicles.

Where mobile fuel bowsers are used, the following measures will apply:

- Flexible pipes, taps and valves will be fitted with locks and secured when not in use;
- Pumps/valves will be locked in the closed position when unattended;
- All bowsers will carry a spill kit and operators will receive spill response training;
- Portable generators, compressors and similar equipment will be placed on impermeable drip trays.

For drummed fuels, chemicals or other potentially polluting substances, the following measures will be adopted:

- All containers will be stored in a dedicated bunded storage area or within an internally bunded chemical cabinet.
- Fuel and oil tanks will be stored in bunded or double-skinned units, with secondary containment sized to at least 110% of the largest container. Any liquid collected within bunds will be removed and disposed of appropriately.
- Containers will be clearly labelled to ensure correct handling and response actions in the event of a spill.
- Drums will be certified to an approved standard and kept in good condition.
- Where drums require movement around the site, they will be transported on spill pallets, secured to prevent tipping, and handled only by trained personnel using appropriate lifting equipment.

Refuelling and maintenance of construction vehicles, and the addition of oils or lubricants, will take place only in designated areas within the construction compound (or off-site where practical) and well away from any watercourses or drainage ditches. Emergency spill response equipment including booms, pads, socks and sand—will be stored in clearly marked bins, with weekly checks undertaken to ensure all kits are fully stocked.

Any accidental spillage of hydrocarbons, chemicals or cementitious material will be immediately contained, with contaminated soil removed for off-site disposal at a licensed waste facility in accordance with relevant waste legislation. All site personnel will receive spill response training as part of site induction.

Prior to work commencing, all construction equipment and mobile plant will be inspected to confirm that they are mechanically sound and free of leaks. If refuelling must occur outside the designated refuelling area, fuel will be transported in a mobile double-skinned tank.

The following additional measures will prevent soil and groundwater contamination during plant operation:

- All flexible hoses, taps and valves will be locked when not in use;
- All pumps and valves will be secured when unattended;
- All bowsers will contain spill kits and trained operatives;
- Portable generators or fuel-containing equipment will be placed on drip trays;
- Spill kits will undergo weekly inspections to ensure adequate stock and readiness.

All works will be undertaken in accordance with CIRIA C532 - Control of Water Pollution from Construction Sites: Guidance for Consultants and Contractors to ensure industry best practice is applied throughout the construction period.

10.7.1.4 Wastewater Management

Foul wastewater generated during the construction phase will be fully managed and controlled throughout the works. All welfare facilities including toilets, wash areas and canteen provisions will be located within the designated construction compound, which will remain in place for the full duration of the development. The compound will be situated within the application site boundary in a location that avoids any areas identified as being at risk of flooding, ensuring no interaction with Flood Zone A or Flood Zone B.

Water required for welfare use and general construction activities will be supplied from the existing public watermain, via a connection agreed with Uisce Éireann and installed in accordance with their current infrastructure requirements.

Foul effluent arising from site offices, canteen facilities and other welfare units (c. 0.42 l/s) will be collected in self-contained portable sanitary units or similar sealed systems. These units will be regularly serviced, maintained and emptied by a licensed waste contractor, ensuring that all wastewater is removed off-site and treated at an authorised wastewater treatment facility. No foul effluent will be allowed to enter the ground, surface water drains, the stormwater network or any watercourse under any circumstances.

Where a temporary connection to the public foul sewer is permitted, it will be used strictly for the disposal of welfare-related wastewater only. Any such connection will incorporate appropriate control measures to prevent accidental discharge of contaminated water and will be decommissioned upon completion of the construction works.

The appointed contractor will implement a site-specific Emergency Response Plan, setting out the procedures for responding to accidental spills, welfare-system failures, or any incident that could pose a risk to surface water or groundwater. Spill kits and containment equipment will be available at all welfare and waste storage locations, and all site personnel will be trained in the relevant emergency response procedures during induction and throughout the construction phase.

No foul wastewater will be discharged to ground, drainage ditches, surface water systems or any element of the stormwater network at any time during construction. All waste-water will be fully contained and removed off-site for appropriate treatment, ensuring protection of the receiving hydrological and hydrogeological environment.

10.7.1.5 Measures Relating to Works in Proximity to Waterbodies

In combination with the measures outlined above, the following specific controls will be implemented during construction works undertaken in proximity to the existing drainage ditches, overland flow paths

and localised groundwater features, including St Cronan's Well (RMP DU011-018) located in the south-eastern corner of the southern parcel. These measures are required to ensure that surface water quality, shallow groundwater conditions, drainage conveyance and downstream hydrological receptors including the unnamed tributaries, the Newtown 08 river and the Broadmeadow 08 river waterbody are not adversely affected.

Work areas will be kept to the minimum footprint necessary. All working zones will be clearly marked, fenced or cordoned off in advance to prevent unnecessary disturbance of soil or vegetation adjacent to drainage features and the vicinity of St Cronan's Well.

- No vehicles or machinery will enter, traverse or track within any drainage channel, swale or low-lying surface water flow path, or within the immediate vicinity of St Cronan's Well. Where access across minor drainage features is unavoidable, temporary culverts or bridging structures will be installed to protect channel integrity and maintain natural flow.
- Unnecessary tracking, excavation or disturbance of vegetated areas will be avoided to reduce the risk of sediment mobilisation into drainage pathways and shallow seepage zones.
- Silt fencing will be installed along all construction working areas adjacent to drainage features and around sensitive areas associated with St Cronan's Well. Fencing will be securely keyed into the ground and maintained for the duration of works to ensure effective sediment retention.
- On completion of works, all silt fencing will be removed and disposed of at a licensed waste management facility.
- Temporary stockpiles will be located at least 20 m from any drainage ditch, watercourse or St Cronan's Well. Stockpiles will be positioned on level ground, compacted and protected from erosion during heavy rainfall.
- Stockpiles will be surrounded on three sides with silt fencing, with downslope banks provided to prevent sediment-laden runoff entering drainage lines.
- Earthworks will be managed to minimise erosion, and exposed soils will be stabilised wherever practicable. Movement and double-handling of excavated materials will be minimised to limit degradation and sediment generation.
- Excavation works will cease during periods of continuous, heavy or prolonged rainfall, allowing surface water to dissipate before works resume and reducing the risk of excessive runoff or sediment mobilisation.
- Where required, temporary drainage ditches or cut-off drains will be installed to intercept and divert surface water away from excavations and sensitive areas, including the locality of St Cronan's Well, preventing uncontrolled flow to adjoining lands or drainage pathways. These drains will be regularly inspected and maintained.
- Dewatering, where required following heavy rainfall, will be localised and temporary. Any discharge will occur only to vegetated areas at least 20 m from drainage features and away from St Cronan's Well, and only after prior treatment through silt bags, settlement tanks, or equivalent sediment removal systems. Silt fencing will be installed around discharge areas to ensure no sediment-laden water reaches the drainage system.
- Collected surface water requiring treatment will be directed to settlement ponds or mobile settlement units. Settlement ponds will incorporate a forebay equal to 10% of the pond footprint to capture coarse sediment. Ponds will maintain a permanent water level to allow fine sediment settlement before any controlled discharge to the existing surface water network. Mobile

settlement tanks will be sized and operated to ensure effective removal of suspended solids before discharge.

All works will be carried out in accordance with the best practice guidance documents Control of Water Pollution from Construction Sites – Guidance for Consultants and Contractors (CIRIA C532, 2001) and Inland Fisheries Ireland's Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (2016).

10.7.1.6 Human Health and Populations

It has been established (refer to Section 10.4.2.3 above) that there are no designated Recreational Waters or Bathing Waterbodies located within the immediate downstream environment. The existing drainage ditches, the unnamed tributaries within the site, and the downstream receiving rivers all form part of the Broadmeadow_040 WFD river waterbody, which is not associated with any downstream drinking-water abstraction point that could give rise to a human-health risk.

As there is no source–pathway–receptor (SPR) linkage, no further mitigation is required.

10.7.1.7 Water Framework Directive Status

It has been established (refer to Section 10.6.2 above) that there is a potential for accidental discharges during the construction phase. However, these would be temporary, short-lived events that will not impact the WFD status of the Broadmeadow_040 WFD river waterbody, which includes:

- The existing drainage ditches on-site,
- The unnamed tributaries draining the northern and southern development parcels, and
- The Newtown 08 and Broadmeadow 08 river waterbodies.

The underlying groundwater body (Swords GWB) comprises a 'PI - Poor Aquifer – Bedrock which is generally unproductive except for local zones' and the Proposed Development will not cause any long-term deterioration in groundwater quality or status.

Accordingly, the Proposed Development will not cause any significant deterioration or prevent compliance with the Water Framework Directive objectives for the Broadmeadow_040 waterbody or the Swords groundwater body (GWB), nor will it impede the ability of the receiving waters to meet the requirements of the current river basin management cycle.

On a precautionary basis, the mitigation measures set out in Section 10.7.1 and Section 10.7.2 will be implemented during the construction works for the protection of surface water and groundwater quality.

For further information, refer to the Water Framework Directive (WFD) Screening Report, prepared by AWN Consulting Ltd (2026) in support of the planning application.

10.7.2 Operational Phase

10.7.2.1 Surface Water and Groundwater Quality

The design has taken account of the potential impacts of the Proposed Development on surface water and groundwater quality, and a range of measures have been incorporated to mitigate these potential impacts and safeguard local receptors, including St Cronan's Well (RMP DU011-018) located within the south-eastern corner of the southern parcel.

The proposed surface water management design establishes a hydrological connection to the existing on-site drainage ditches, including the central drainage ditch within the southern parcel, the north-western and eastern unnamed tributaries, and the Mooretown_09 watercourse, all of which drain towards the Newtown 08 river along the eastern and southern boundaries of the northern parcel. These receiving ditches and tributaries subsequently convey flows northwards to the Broadmeadow 08, forming part of the Broadmeadow_040 WFD river waterbody.

Discharge from the Proposed Development will be controlled via hydrobrake flow-control devices located upstream of the stormwater outfalls, ensuring that flows are restricted to greenfield-equivalent rates and conveyed by gravity to the receiving ditch and downstream tributary.

To mitigate potential contamination from surface water runoff which may originate from roads, car parks, and hardstanding areas; a Sustainable Drainage System (SuDS) will be implemented throughout the site. This system is designed to minimise the risk of contaminants such as hydrocarbons, suspended solids, and particulate-bound pollutants entering the stormwater drainage network and subsequently impacting the hydrological and hydrogeological environment, including shallow groundwater conditions that support St Cronan's Well.

SuDS measures across the development include permeable paving, filter drains, bioretention tree pits and raingardens, roadside swales, underground attenuation storage, and full-retention petrol interceptors at appropriate discharge locations. These measures collectively provide interception, treatment and attenuation prior to controlled discharge, ensuring that untreated runoff is not permitted to infiltrate sensitive areas or local groundwater features.

The proposed drainage system has been designed using industry-standard hydraulic modelling software and in accordance with the Recommendations for Site Development Works for Housing Areas (DoEHLG), the Greater Dublin Strategic Drainage Study (GDSDS), current SuDS design guidance, and the requirements of the local authority.

A new fully separated surface water sewer network is proposed for the development. In accordance with drainage standards applied within the Greater Dublin Area, surface water discharge will be restricted to the greater of 2 l/s/ha or Qbar. The system has been designed to accommodate the 1% AEP (1:100-year) storm event, including a 30% allowance for climate change, with attenuation provided through a combination of underground tanks, swales, and raingarden systems to ensure effective management of runoff volumes and peak flows.

The operational drainage design ensures that no adverse effects on surface water quality, groundwater quality or the shallow spring feeding St Cronan's Well are anticipated during the operational phase.

For detailed information on the operational surface water strategy, attenuation design, SuDS components, pollution control and foul drainage layout, refer to the Infrastructure Report (AKM Design Group, 2026) and Drawing Number: 5051-AKM-XXXX-XX-DR-C01-300001 (Proposed Storm and Foul Drainage – General Layout, AKM Design Group, 2026) submitted a spart of the planning application.

10.7.2.2 Surface Water and Groundwater Flow and Quantity

During the operational phase, the introduction of additional hardstanding has the potential to marginally reduce local groundwater recharge and increase surface water runoff if not appropriately controlled. As the site is predominantly greenfield, the Proposed Development will result in a shift from permeable to impermeable surfaces; however, the overall reduction in infiltration to the underlying 'PI

– Poor Aquifer – Bedrock which is generally unproductive except for local zones' (Swords Groundwater Body) will be small and is not considered hydrologically significant.

Given the cohesive, low-permeability nature of the limestone-derived glacial tills across the site, groundwater recharge is already limited under baseline conditions. The operational development will not introduce any abstraction, drainage interception or ground reduction capable of altering the shallow, perched groundwater regime that supports St Cronan's Well, and its natural flow conditions will be maintained.

In the absence of mitigation, increased surface water runoff could potentially contribute to downstream hydraulic pressures within the existing on-site drainage ditches, including the southern parcel ditch, the north-western and eastern unnamed tributaries, and the Mooretown_09 watercourse, all of which drain to the Newtown 08 river before entering the Broadmeadow River. However, the Proposed Development is located within Flood Zone C, where the probability of fluvial flooding is low. All elements of the Proposed Development have been positioned outside areas identified as susceptible to localised flooding, effectively eliminating residual flood risk to the development itself.

To ensure runoff is properly managed and does not exceed pre-development conditions, the proposed drainage system incorporates a suite of Sustainable Drainage Systems (SuDS) and attenuation features. These measures regulate, treat and attenuate flows before discharge to the receiving ditches and tributaries, ensuring that:

- Runoff rates remain restricted to greenfield-equivalent conditions;
- Peak flows are contained on-site;
- Downstream drainage networks, including the local ditches and unnamed tributaries, are not hydraulically overloaded; and
- Local groundwater recharge patterns, including those relevant to St Cronan's Well, remain broadly unchanged

The system has been designed to manage the 1% AEP (1:100-year) storm event, with an additional 30% climate-change allowance and 10% urban-creep allowance, providing robust long-term resilience under future climate scenarios.

No surface water or groundwater abstractions are proposed during the operational phase. Therefore, no impacts on the quantity of local water resources are anticipated, and no drawdown or flow reduction at St Cronan's Well will occur.

Overall, with the proposed SuDS measures and attenuation systems in place, no significant operational impacts on surface water or groundwater flow or quantity are expected.

For detailed information on the operational surface water strategy, attenuation design, SuDS components, pollution control and foul drainage layout, refer to Infrastructure Report (AKM Design Group, 2026) and Drawing Number: 5051-AKM-XXXX-XX-DR-C01-300001 (Proposed Storm and Foul Drainage – General Layout, AKM Design Group, 2026) submitted as part of the planning application.

10.7.2.3 Human Health and Populations

It has been established (refer to Section 10.4.2.3 above) that there are no recorded Recreational Waters or designated Bathing Waterbodies located within the downstream environment of the Proposed Development. The existing on-site drainage ditches, the unnamed tributaries, the Mooretown_09

stream and the Newtown 08 waterbody which collectively form part of the Broadmeadow_040 WFD river waterbody do not support any identified recreational water uses.

There are no public surface-water drinking-water abstraction points located downstream of the site within the Broadmeadow catchment. Similarly, there are no recorded public groundwater supply sources, Group Water Schemes, groundwater source protection zones, public supply source protection areas, or Group Scheme preliminary source protection areas identified by the Geological Survey of Ireland (GSI) within or in the vicinity of the Proposed Development.

The underlying groundwater body is classified as a 'PI – Poor Aquifer – Bedrock which is generally unproductive except for local zones' (Swords GWB), and no groundwater abstraction wells serving public or private potable supplies are located within the zone of influence of the site.

As there is no source–pathway–receptor (SPR) linkage between the Proposed Development and any human health receptors, no further mitigation is required during the operational phase.

10.7.2.4 Water Framework Directive Status

There is a potential risk of accidental discharges during the operational phase from car parking areas and roads (as detailed in Section 10.6.3.4). However, these events would be temporary and short-lived, with no long-term impacts. Given the level of treatment, attenuation and flow control provided by the SuDS infrastructure, the Proposed Development will not cause deterioration in the WFD status of any of the surface water features hydrologically connected to the site, including the central southern drainage ditch, the north-western and eastern unnamed tributaries, the Mooretown_09 watercourse, and the Newtown 08 river waterbody, all of which form part of the Broadmeadow_040 WFD river waterbody.

The underlying groundwater body comprises a 'PI – Poor Aquifer – Bedrock which is generally unproductive except for local zones' (Swords GWB). Given the low permeability of the bedrock and the treatment measures incorporated into the surface-water drainage system, there is no pathway for any operational-phase runoff to cause deterioration in groundwater status.

During the operational phase, only limited and highly controlled surface-water discharges will occur from the Proposed Development. Runoff will be regulated by Hydro-Brake® flow-control devices located upstream of the stormwater outfalls, ensuring that flows are attenuated, treated and conveyed by gravity to the receiving on-site drainage ditches and downstream unnamed tributaries before ultimately discharging to the Newtown 08 waterbody.

Consequently, the Proposed Development will not lead to any significant deterioration or change in water-quality status, nor will it hinder the achievement of Water Framework Directive (WFD) objectives or the goals outlined in the current river basin-management cycle.

The proposed foul-water drainage system for the subject site has been designed to discharge via gravity into the existing foul drainage system within the Cronan's Well Estate. Minimum gradients and pipe diameters for the main foul sewers have been designed in accordance with Uisce Éireann's Code of Practice and Standard Details for Wastewater Infrastructure, IS EN 752 (2008), IS EN 12056: Part 2, and Building Regulations Part H.

According to current capacity information, the Swords Wastewater Treatment Plant (WWTP; Active Licence Number: D0024-01) has sufficient operational capacity to accommodate the Proposed Developments peak foul effluent discharge of 10.81 l/s.

This foul loading will not adversely impact the operational capacity of Swords WWTP nor downstream surface water environments within the wider Nanny-Delvin WFD catchment. According to the Swords Waste Water Treatment Plant (WWTP) Annual Environmental Report (AER, 2024), the plant's reported peak hydraulic capacity is 60,750 m³/day (703.125 l/s). The Proposed Development's peak foul effluent discharge of 10.81 l/s represents approximately 1.54% of this capacity. This level of additional loading is negligible in hydraulic terms and will not constrain the ability of Swords WWTP to continue operating within its licensed limits or to meet the relevant environmental objectives for the receiving waters. All foul water conveyed to Swords WWTP will receive full treatment prior to discharge, ensuring no operational-phase pathway to the hydrological or hydrogeological environment.

As the Proposed Development will drain to a fully separated foul system, it will not contribute any additional stormwater flows to Swords WWTP. Furthermore, as the underlying groundwater body is a 'PI – Poor Aquifer – Bedrock which is generally unproductive except for local zones' (Swords GWB), there is no pathway for foul-water infrastructure to impact groundwater quality or status during operation.

For further information, refer to the Water Framework Directive (WFD) Screening Report, prepared by AWN Consulting Ltd (2026) in support of the planning application.

No further mitigation is required.

10.8 Residual Impacts

10.8.1 Construction Phase

10.8.1.1 Surface Water and Groundwater Quality

The implementation of the mitigation and monitoring measures detailed in Section 10.7 above and Section 10.9 below, will ensure that the potential impacts on surface water and groundwater quality during the construction phase are adequately mitigated. There will be no change to overall flow and quality within the hydrological and hydrogeological regime as a result of construction.

The residual effect on surface water and groundwater quality during the construction phase is considered to be ***neutral, imperceptible*** and ***short-term***.

10.8.1.2 Surface Water and Groundwater Flow and Quantity

The implementation of the mitigation and monitoring measures detailed in Section 10.7 above and Section 10.9 below, will ensure that the potential impacts on surface water and groundwater flow and quantity during the construction phase are adequately mitigated. There will be no change to overall flow and quality within the hydrological and hydrogeological regime as a result of construction.

The residual effect on surface water and groundwater flow and quantity during the construction phase is considered to be ***neutral, imperceptible*** and ***short-term***.

10.8.1.3 Human Health and Populations

It has been established (refer to Section 10.4.2.3 above) that there are no recorded Recreational Waters, designated Bathing Waterbodies or surface-water abstraction points located downstream of the Proposed Development within the receiving hydrological network, which includes the on-site drainage ditches, the north-western and eastern unnamed tributaries, the Mooretown_09

watercourse, the Newtown 08 riverand the Broadmeadow 08 river waterbody; all of which form part of the Broadmeadow_040 WFD river waterbody.

In addition, there are no Public Supply Source Protection Areas, Group Water Scheme Preliminary Source Protection Areas or groundwater abstraction zones defined by the Geological Survey of Ireland (GSI) in the vicinity of the site. The underlying groundwater body is classified as a 'PI – Poor Aquifer – Bedrock which is generally unproductive except for local zones' (Swords GWB), and no groundwater-based drinking water receptors are located within the zone of influence of the Proposed Development.

As there is no source–pathway–receptor (SPR) linkage, no residual impacts on human health or populations are anticipated during the construction phase.

10.8.1.4 Water Framework Directive Status

The implementation of the mitigation and monitoring measures detailed in Section 10.7 above and Section 10.9 below, will ensure that the potential impacts on the status of the surface water features hydrologically connected to the site, including the southern drainage ditch, the north-western and eastern unnamed tributaries, the Mooretown_09 watercourse, the Newtown 08 river waterbody, and the Broadmeadow 08 river waterbody, all of which form part of the Broadmeadow_040 WFD river waterbody, will be avoided in the long term. This includes protection of their chemical status, ecological status, and flow/quantity characteristics, and ensures no effect on their ability to meet the objectives of the current Water Framework Directive river basin management cycle.

The underlying groundwater body is classified as a 'PI – Poor Aquifer – Bedrock which is generally unproductive except for local zones' (Swords GWB). With the mitigation measures in place, there will be no pathway for pollutants associated with construction activities to impact groundwater quality or cause deterioration in groundwater WFD status.

The residual effect on Water Framework Directive status during the construction phase is considered to be ***neutral, imperceptible*** and ***short-term***.

10.8.2 Operational Phase

10.8.2.1 Surface Water and Groundwater Quality

The implementation of the mitigation and monitoring measures detailed in Section 10.7 above and Section 10.9 below, will ensure that the potential impacts on surface water and groundwater quality once the Proposed Development is operational are adequately mitigated.

The residual effect on surface water and groundwater quality during the operational phase is considered to be ***neutral, imperceptible*** and ***long-term***.

10.8.2.2 Surface Water and Groundwater Flow and Quantity

The implementation of the mitigation and monitoring measures detailed in Section 10.7 above and Section 10.9 below, will ensure that the potential impacts on surface water and groundwater flow and quantity once the Proposed Development is operational are adequately mitigated.

The residual effect on surface water and groundwater flow and quantity during the operational phase is considered to be ***neutral, imperceptible*** and ***long-term***.

10.8.2.3 Human Health and Populations

It has been established (refer to Section 10.4.2.3 above) that there are no recorded Recreational Waters or designated Bathing Waterbodies located within the downstream environment of the Proposed Development. The receiving hydrological network which includes the on-site drainage ditches, the north-western and eastern unnamed tributaries, the Mooretown_09 watercourse, and the Newtown 08 river(which form part of the Broadmeadow_040 WFD river waterbody) does not contain any downstream public surface-water abstraction points.

In addition, there are no Public Supply Source Protection Areas or Group Scheme Preliminary Source Protection Areas defined by the Geological Survey of Ireland (GSI) within or near the Proposed Development site. The underlying groundwater body is classified as a 'PI – Poor Aquifer – Bedrock which is generally unproductive except for local zones' (Swords GWB), and there are no groundwater-based drinking-water receptors within the zone of influence of the development.

As there is no source–pathway–receptor (SPR) linkage, no residual impacts on human health and populations are anticipated during the operational phase.

10.8.2.4 Water Framework Directive Status

The implementation of the mitigation and monitoring measures detailed in Section 10.7 above and Section 10.9 below will ensure that potential operational-phase impacts on the status of the surface water features hydrologically connected to the site including the southern drainage ditch, the north-western and eastern unnamed tributaries, the Mooretown_09 watercourse, the Newtown 08 river waterbody, and the downstream Broadmeadow 08 river waterbody, all of which form part of the Broadmeadow_040 WFD river waterbody are fully avoided in the long term. This includes protection of their chemical status, ecological status and hydrological regime, and ensures no impact on their ability to meet the objectives of the current river basin management cycle.

The underlying groundwater body is classified as a 'PI – Poor Aquifer – Bedrock which is generally unproductive except for local zones' (Swords GWB). With the operational-phase surface water controls, foul sewer separation and SuDS treatment train in place, there is no pathway for operational-phase runoff or foul infrastructure to impact groundwater quality, quantity or WFD status.

There are appropriately designed mitigation measures which will be implemented during the operational phase to protect all hydrological and hydrogeological receptors. While accidental discharges are possible during operation, these would be temporary, short-lived events that would not impact long-term trends in water quality or influence overall WFD status assessments.

Therefore, no residual impacts are anticipated on the Water Framework Directive status. The residual effect on Water Framework Directive status during the operational phase is considered to be ***neutral, imperceptible*** and ***short-term***.

10.9 Monitoring or Reinstatement Measures

10.9.1 Construction Phase

During the construction phase, the following monitoring measures will be implemented:

- Monitoring will be undertaken in accordance with planning conditions and carried out by the contractor in compliance with the project CEMP.

- Contractors will carry out regular inspections to confirm compliance with the CEMP. Daily inspections will address potential environmental impacts including dust, litter, waste management and general housekeeping.
- Weekly checks will be carried out to ensure surface water drains are not blocked by silt or debris and that all material-storage areas are located at least 20 m from surface-water receptors.
- Regular inspection of surface-water runoff and all sediment-control measures (such as silt traps, silt bags, settlement tanks and silt fencing) will be undertaken. Silt fences will be maintained throughout the entire construction period, with accumulated sediment removed to ensure continued effectiveness.
- Runoff-diversion channels, temporary bunds and cut-off drains will be inspected and maintained regularly to ensure they function effectively for the duration of the works.
- Regular auditing of construction and mitigation measures will be undertaken, including checks on concrete works, refuelling only in designated areas, storage of fuels and chemicals, and adherence to pollution-prevention procedures.
- Stockpiles, material-deposition areas and similar working zones will be monitored during active use and periodically thereafter to ensure erosion and sediment-release controls remain effective.
- A log of all inspections will be maintained. Any significant blockages, spills, pollution incidents or non-conformances will be recorded, investigated and followed by corrective action to prevent recurrence.

10.9.2 Operational Phase

No routine surface-water monitoring is proposed during the operational phase due to the low hazard potential associated with the completed development and the presence of SuDS features designed to treat and control runoff.

Hydrocarbon interceptors will be maintained and cleaned out in accordance with the manufacturer's instructions to ensure continued effectiveness.

Routine maintenance of the surface-water drainage system and foul sewers, consistent with standard practice for residential developments, is recommended to minimise the risk of accidental discharges, blockages or spillages reaching surface-water receptors.

10.10 Interactions

This section discusses the interactions between this chapter (Chapter 10 (Hydrology and Hydrogeology)) and the other specialist environmental topics considered in this EIAR.

10.10.1 Land, Soils and Geology

10.10.1.1 Construction Phase

The construction phase of the Proposed Development has the potential to result in increased sediment runoff, which could interact negatively with surface water quality before the permanent drainage infrastructure is installed. However, the construction-phase mitigation measures will ensure that the Proposed Development does not result in any significant negative impact on surface-water quality in the local area.

Taking into account the design and mitigation measures set out in Chapter 8 (Land, Soils and Geology) and Chapter 10 (Hydrology and Hydrogeology) of this EIAR, there is a residual negative interaction

between Land, Soils and Geology, and Hydrology and Hydrogeology during the construction phase. The interaction is considered to be ***negative, not significant*** and ***short term***.

10.10.1.2 Operational phase

There are no potentially significant interactions identified between Land, Soils and Geology, and Hydrology and Hydrogeology during the operational phase.

10.10.2 Biodiversity

10.10.2.1 Construction Phase

Taking into consideration the discharge of surface and foul water to the sewer network and the mitigation measures outlined in Section 10.7, the impact on biodiversity should be minimal.

Considering the design and mitigation measures set out in Chapter 10 (Hydrology and Hydrogeology) and Chapter **Error! Reference source not found.** (Biodiversity) of this EIAR, the interaction between Hydrology and Hydrogeology, and Biodiversity is considered to be ***neutral***, ***imperceptible*** and ***short term***.

10.10.2.2 Operation Phase

The Proposed Development design incorporates SuDS measures across the site. These features reduce runoff rates and pollutant loading, thereby minimising the potential for hydrology-related impacts on downstream aquatic or wetland habitats. The SuDS have been designed to manage the 1% AEP (1-in-100-year) storm event with allowances for climate change and urban creep.

Process wastewater will be treated at Swords WWTP before discharge, which is shown to have capacity to accommodate the Proposed Development.

Taking into account the design and mitigation measures set out in Section 10.7, the interaction between Hydrology and Hydrogeology and Biodiversity during the operational phase is considered to be ***neutral***, ***imperceptible*** and ***long-term***.

10.10.3 Material Assets - Waste

10.10.3.1 Construction Phase

During construction, excavated soil will be generated from site levelling, foundations and service installations. For this project, approximately 21,860 m³ of material will be excavated and 100% reused on-site, meaning no export of soil is expected. In addition, approximately 35,000 m³ of imported engineered fill will be required to achieve design levels and formation requirements.

There is potential for an increase in surface run-off due to temporary exposed ground, compaction of soils and the introduction of temporary working areas. These activities can reduce natural infiltration capacity and increase the rate and volume of direct run-off, which can mobilise sediment. Run-off containing elevated silt loads has the potential to enter temporary drainage features or construction-phase systems and, if unmanaged, may pose a risk to surface water drainage networks or nearby receiving waters.

Adherence to the mitigation measures in Chapter 18 (Material Assets – Waste), Chapter 10 (Hydrology and Hydrogeology), and the RWMP (**Appendix 19.1**) will ensure that earthworks, soil handling and waste management activities do not adversely interact with the hydrological and hydrogeological

environment. With these measures in place, the interaction between Waste with Hydrology and Hydrogeology is ***neutral***, ***imperceptible*** and ***long-term***.

10.10.3.2 Operational Phase

The use of SuDS during operations will mean that the development will result in neutral water impacts in the operational phase with regard to runoff rates and flooding risk. As a part of the SuDS features, it is anticipated that small amounts of hydrocarbon sludge waste and debris may be generated in the hydrocarbon interceptors which will treat the surface water run-off.

Process wastewater will be treated at the WWTP before being discharged to the wastewater outfall.

This waste stream will be managed in accordance with the relevant legislation identified in Chapter 18 (Material Assets – Waste). The interaction is considered to be ***negative***, ***not significant*** and ***long-term***.

10.10.4 Air Quality

10.10.4.1 Construction Phase

Construction phase activities, such as excavations and stockpiling of materials, have the potential for interactions between air quality and hydrology in the form of dust emissions that may deposit in surface waters.

Mitigation measures implemented during the construction phase will ensure that the deposition of dust is minimised. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that there will be no significant interactions between Air Quality and Hydrology and Hydrogeology. The interaction is considered to be ***neutral, imperceptible*** and ***short-term***.

There are no potentially significant interactions identified between Hydrology and Hydrogeology and Climate during the construction phase.

10.10.4.2 Operational Phase

Projected increases in rainfall due to climate change may influence surface-water runoff and potential flood risk. However, the Site-Specific Flood Risk Assessment confirms that the Proposed Development is located within Flood Zone C, and the operational SuDS network incorporates climate-change and urban-creep allowances (refer to Section 10.3.6 above).

Therefore, no significant interactions between Climate and Hydrology and Hydrogeology are predicted during the operational phase. The Site-Specific Flood Risk Assessment (SSFRA) is included in the Infrastructure Report (Document Ref: 25051-AKM-XXXX-XX-RP-C01-100001) prepared by AKM Design Group (2026) in support of the planning application.

10.10.5 Climate

10.10.5.1 Construction Phase

The impact of flood risk has been assessed and due to the nature of the Proposed Development being subsurface once operational, flooding as a result of increased rainfall from climate change is not a risk. The effect of the interactions between climate and land, soils, geology and hydrology and hydrogeology are ***direct, temporary, negative*** and ***imperceptible*** during the construction phase.

There are no potentially significant interactions identified between climate, and hydrology and hydrogeology during the construction phase.

10.10.5.2 Operational Phase

The impact of flood risk has been assessed and due to the nature of the Proposed Development being subsurface once operational, flooding as a result of increased rainfall from climate change is not a risk. The effect of the interactions between climate and land, soils, geology and hydrology and hydrogeology are ***direct, long-term, negative*** and ***imperceptible*** during the operational phase, which is overall ***not significant*** in EIA terms.

10.10.6 Cultural Heritage – Archaeology and Architectural Heritage

10.10.6.1 Construction Phase

During the construction phase, a potential interaction exists between Hydrology and Hydrogeology and Cultural Heritage – Archaeology and Architectural Heritage due to the presence of St Cronan's Well (RMP DU011-018), a statutorily protected archaeological monument located within the south-eastern corner of the southern parcel.

St Cronan's Well is a naturally occurring spring supported by shallow, perched groundwater within overlying glacial tills. Construction activities will not involve any sustained groundwater abstraction, deep excavation or drainage interception capable of altering the hydrological regime that supports the well. Temporary groundwater management, if required, will be localised, short-term and related to rainfall accumulation or minor perched seepage only, and will be undertaken in accordance with the Construction and Environmental Management Plan (CEMP) and Surface Water Management Plan (SWMP).

Specific mitigation measures have been incorporated to protect the well during construction, including buffering, controlled drainage, sediment controls and restrictions on works in its vicinity. With these measures in place, no significant adverse interactions between Hydrology and Hydrogeology and Cultural Heritage are predicted during the construction phase.

10.10.6.2 Operational Phase

During the operational phase, the Proposed Development is not anticipated to give rise to significant interactions between Hydrology and Hydrogeology and Cultural Heritage – Archaeology and Architectural Heritage.

The operational drainage strategy comprises a fully separated, SuDS-led system that controls runoff, provides water quality treatment and restricts discharges to greenfield-equivalent rates. The design does not introduce any groundwater abstraction, infiltration interception or ground reduction measures that could alter the shallow groundwater regime feeding St Cronan's Well.

The well is retained within dedicated public open space, and its hydrological regime will remain unchanged during operation. As a result, the continued functioning and cultural significance of St Cronan's Well will be maintained, and no significant operational-phase interactions are predicted between Hydrology and Hydrogeology and Cultural Heritage.

10.11 Indirect and/or Secondary Impacts

10.11.1 Construction Phase

Indirect or secondary hydrological and hydrogeological impacts during the construction phase of the Proposed Development are not expected to be significant. This is due to the extensive and embedded

environmental protection measures contained within the Construction Environmental Management Plan (CEMP).

The CEMP prescribes strict controls for the handling and storage of fuels and chemicals, including bunded storage areas, designated refuelling zones, spill-response procedures, and containment measures for concrete washout. These measures ensure that construction activities involving excavation, material handling, temporary stockpiling, vehicle movement and construction-phase runoff do not create unintended pathways for pollutants to reach surface water or groundwater receptors.

Additional protection is provided through the Surface Water Management Plan (SWMP), which requires the use of settlement tanks, silt-control measures, designated wash-down areas, and pollution-prevention buffers. These controls minimise the risk of sediment-laden or contaminated runoff entering drains, ditches or downstream watercourses. Structured monitoring and inspection requirements within the SWMP further ensure that any temporary construction-period discharges are controlled, treated and appropriately managed.

Given the robustness of these measures, and the absence of construction activities likely to generate uncontrolled off-site pollutant pathways, no significant indirect or secondary hydrological or hydrogeological impacts are anticipated during the construction phase.

10.11.2 Operational Phase

In the operational phase, the Proposed Development is not expected to generate indirect or secondary impacts on the hydrological or hydrogeological environment. This is due to the inherently low-impact nature of residential land use and the incorporation of a comprehensive, SuDS-led surface water management system throughout the development.

The permanent drainage network includes permeable paving, bioretention areas, swales, detention basins and controlled discharge via Hydro-Brake® flow controls. These features are designed to regulate runoff quantity and quality in accordance with the GDSDS and Fingal County Council requirements. This approach ensures long-term attenuation, treatment, and gradual release of surface water, thereby preventing downstream impacts such as increased flood risk, erosion, scouring, or deterioration in water quality.

No operational processes, emissions or activities associated with the Proposed Development have the potential to create indirect pathways for contaminants to reach surface waters or groundwater. With routine inspection and maintenance of SuDS components, and adherence to established operational practices, no significant indirect or secondary hydrological or hydrogeological impacts are predicted during the operational lifetime of the Proposed Development.

10.12 Cumulative Impacts

Error! Reference source not found. (Cumulative Impacts) of this EIA Report provides a description of relevant developments within the area which have the potential to produce environmental impacts during their operational and/or construction phases which, when combined with the predicted impacts for this Proposed Development may give rise to cumulative impacts. Existing constructed and operational developments form part of the baseline hydrological and hydrogeological environment. Accordingly, any additional environmental effects arising from the Proposed Development have been evaluated in the preceding sections of this chapter. Any future development proposals on adjacent or

nearby lands will be subject to the statutory planning process and relevant environmental assessment (including EIA or EIA Screening) and will take account of the presence of the Proposed Development.

10.12.1 Construction Phase

Potential cumulative construction-phase impacts relate primarily to surface water quality, drainage and pollution risk. Construction activities associated with the Proposed Development and other concurrent developments could theoretically give rise to:

- Sediment-laden surface water runoff, particularly where soils are exposed.
- Polluted runoff resulting from accidental spills, fuel/oil handling, or mismanagement of cementitious materials.
- Wash-off from stockpiled materials, if not properly managed and separated from open drains and gullies.

However, the Proposed Development incorporates robust environmental controls through its Construction Environmental Management Plan (CEMP), including bunded fuel storage, designated refuelling areas, silt and sediment controls, concrete washout containment and strict run-off management measures.

During construction, any dewatering or runoff requiring discharge will be treated via temporary settlement tanks to remove suspended solids before release, in accordance with the Surface Water Management Plan (SWMP).

A review of other permitted developments listed in Chapter 5 indicates that there are no projects capable of interacting cumulatively with the Proposed Development to create significant hydrological effects. Provided that all developments adhere to their respective planning conditions and statutory water quality obligations (e.g. European Communities Environmental Objectives Regulations), cumulative impacts will remain well controlled.

With the implementation of the mitigation and monitoring measures described in Section 10.7 and Section 10.9, the residual cumulative construction-phase impact is considered ***neutral***, ***imperceptible*** and ***short-term***.

10.12.2 Operational Phase

Potential cumulative operational impacts on hydrology and hydrogeology relate to:

- Increases in hardstanding areas across multiple developments, potentially reducing ground infiltration and increasing surface water runoff unless attenuated.
- Hydrocarbon runoff risks from roads and parking areas unless properly collected and treated.
- Additional foul wastewater loading and potable water demand from multiple developments.

The foul drainage and potable water supply for the Proposed Development have been designed to integrate with the wider public network, and Uisce Éireann has issued a Confirmation of Feasibility confirming that sufficient capacity exists, subject to final connection-stage review.

Surface water from the Proposed Development is managed entirely on-site through a comprehensive SuDS system including permeable paving, bioretention areas, swales, detention basins, and controlled QBAR-limited discharge using Hydro-Brakes. These measures ensure that the Proposed Development does not increase downstream flood risk, nor contribute cumulatively to catchment flooding, in line with GDSDS and Local Authority requirements.

Other permitted developments are required to follow similar standards, including on-site attenuation, water quality protection and compliance with relevant legislation (e.g. the Water Framework Directive). As a result, cumulative operational impacts on surface water quantity and quality are expected to remain minimal.

With implementation of the mitigation and monitoring measures set out Section 10.7 and Section 10.9 and taking into account the regulatory obligations on all other developments, the residual cumulative operational impact is considered ***neutral***, ***imperceptible*** and ***long-term***.

10.13 References

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- Fingal County Development Plan 2023–2029. Strategic Flood Risk Assessment (SFRA). Available at: https://www.fingal.ie/development-plan (Accessed: 10.03.2026).
- Infrastructure Report - Residential Development on Lands at Mooretown, Swords or Fingal County Council (AKM, 2026).
- Appendix B of Infrastructure Report - Ground Investigation Report (Site Investigations Ltd, 2024).
- Section 8 of Infrastructure Report - Site-Specific Flood Risk Assessment (FRA) (AKM Design Group, 2026).
- Construction and Environmental Management Plan (CEMP) – Mooretown Phase 2 – Fingal County Council (AKM, March 2026).
- Surface Water Management Plan (SWMP) – Mooretown Phase 2 – Fingal County Council (AKM, 2026).
- Various design site plans and drawings, as submitted with this planning application.

11 Air Quality

11.1 Introduction

This chapter assesses the likely air quality impacts associated with the Proposed Development located on Mooretown Lands in Swords, Co. Dublin. This report assesses the baseline air quality conditions at the site and evaluates the potential effects of the Proposed Development's construction and operation. Where required, appropriate mitigation measures to limit any identified likely significant adverse impacts to air quality are recommended.

A full description of the development is available in Chapter 5 (Development Description). This chapter should be read in conjunction with Chapter 18 (Traffic and Transportation) submitted with the planning application.

11.2 Expertise and Qualifications

This chapter was prepared by Carl Ramskill. Carl Ramskill is a Principal Environmental Consultant in the Air Quality section of AWN Consulting with 9 years' experience in air quality consulting. He holds a BSc. in Chemistry and MSc. in Air Pollution Management and Control from the University of Birmingham. He is a Member of the Institution of Environmental Science (MIEnvSc), Member of the Institute of Air Quality Management (MIAQM) and specialises in the fields of air quality, EIA and air dispersion modelling and monitoring. Carl has prepared air quality impact assessments for EIARs, planning application support and permitting/licencing support. He has worked on a diverse range of projects including large scale infrastructure road and rail schemes, residential developments, commercial developments, data centres and energy centres.

This chapter was reviewed by Dr. Jovanna Arndt, a Principal Environmental Consultant in the Air Quality and Climate section of AWN Consulting. She has been specialising in the area of air quality and climate over 9 years and has prepared air quality and climate assessments for inclusion within EIARs for residential developments such as Twenties Lane (planning application Ref: 22713), Cherrywood T13 (planning application Ref: DZ23A/0028), Corballis Donabate LRD (planning application Ref: LRD0017/S3), commercial and industrial developments by Dublin Airport Authority, Zoetis, Ipsen, Merck Millipore, Greener Ideas Limited and Abbvie, as well as renewable energy developments such as Codling Wind Park and the Cúil Na Móna Anaerobic Digestion Facility. She also specialises in assessing air quality impacts using air dispersion modelling of transportation schemes such as BusConnects Dublin, major Highways England Road schemes and major rail infrastructure in the form of High Speed 2 (HS2 in the UK). She has prepared air dispersion modelling assessments of emissions from data centres, energy centres and the chemical industry as part of EPA Industrial Emissions Licences for Microsoft, Greener Ideas Limited, Merck Millipore, Lilly Limerick, Chemifloc, Takeda, Kingspan and Kilshane Energy. She has also provided Air Quality Action Plan (AQAP) and Air Quality Management Area (AQMA) support to several UK councils and assessed the air quality impacts of potential Clean Air Zones in the UK.

11.2.1 Aspects Relevant to this Assessment

11.2.1.1 Construction Phase

During the construction phase, construction dust emissions have the potential to impact air quality. Dust emissions will primarily occur as a result of site preparation works, earthworks and the movement of trucks on site and exiting the site. There is also the potential for engine emissions from site vehicles and machinery to impact air quality. Construction phase impacts will be short-term in duration.

11.2.1.2 Operational Phase

During the operational phase, engine emissions from vehicles accessing the site have the potential to impact air quality through the release of nitrogen dioxide (NO_2) and particulate matter (as PM_{10} and $PM_{2.5}$). Operational phase impacts will be long-term in duration.

11.3 Method

11.3.1 Relevant Legislation and Guidance

The principal guidance and best practice documents used to inform the assessment of potential impacts on air quality are summarised below.

- Guidance on the Assessment of Dust from Demolition and Construction v2.2 (Institute of Air Quality Management [IAQM] (hereafter referred to as the IAQM guidance) (IAQM, 2024);
- A Guide To The Assessment Of Air Quality Impacts On Designated Nature Conservation Sites (Version 1.1) (IAQM, 2020); and
- PE-ENV-01106: Air Quality Assessment of Specified Infrastructure Projects (hereafter referred to as the TII guidance) (Transport Infrastructure Ireland [TII], 2025a).

In addition to specific air quality guidance documents, the following guidelines were considered and consulted in the preparation of this chapter:

- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (hereafter referred to as the Environmental Protection Agency (EPA) Guidelines) (EPA, 2022);
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning and Local Government, 2018); and
- Environmental Impact Assessment (EIA) Directive Guidance on the Preparation of the Environmental Impact Assessment Report (European Commission, 2017).

11.3.2 Criteria for Rating of Impacts

11.3.2.1 Ambient Air Quality Standards

National and European statutory bodies, the Department of the Environment, Heritage and Local Government in Ireland and the European Parliament and Council of the European Union, have set limit values in ambient air for a range of air pollutants to reduce the risk to health from poor air quality. These limit values or "*Air Quality Standards*" are health or environmental-based levels for which additional factors may be considered. For example, natural background levels, environmental conditions and socio-economic factors may all play a part in the limit value which is set.

Air quality significance criteria are assessed on the basis of compliance with the appropriate standards or limit values. The applicable standards in Ireland are set out in *Directive* (*EU*) *2024/2881 of the European Parliament and of the Council of 23 October 2024 on ambient air quality and cleaner air for Europe* (*recast*). This directive supersedes *EU Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe* (*CAFE Directive*). It sets out new air quality standards for pollutants to be achieved by 2026 and by 2030.

The Ambient Air Quality Standards Regulations 2022 (S.I. 739 of 2022) (the Air Quality Standards Regulations 2022) further transposed the CAFE Directive and revoked the Air Quality Standards Regulations 2011, as amended. With the adoption of Directive (EU) 2024/2881, Ireland must similarly transpose this directive into national law within the statutory two-year period, i.e. update the Air Quality Standards Regulations, before December 2026.

The ambient air quality limit values for pollutants are set out in Annex I of Directive (EU) 2024/2881. Table 1 of Annex I in Directive (EU) 2024/2881 sets out the updated air quality limit values for pollutants to be achieved by 1 January 2030, which are more closely aligned with the Interim Target 4 (IT4) WHO air quality guidelines. Table 2 of Annex I in Directive (EU) 2024/2881 sets out the limit values for air pollutants which are to be achieved by 11 December 2026 and are also applicable up to 2030. The limit values in Table 2 of Annex I are the same as the limits set under Directive 2008/50/EC and the Air Quality Standards Regulations 2022.

The ambient air quality standards applicable for nitrogen dioxide (NO_2) and particulate matter (as PM_{10} and $PM_{2.5}$) are outlined in Table 11.1. Table 11.1 outlines the limit values pre-2030 and post-2030 for the specified pollutants. For the purposes of this assessment the post-2030 limit values set out in Table 1 of Annex I of Directive (EU) 2024/2881 have been applied. This is in line with the TII PE-ENV-01106 guidance (TII, 2025a) and ensures a conservative approach to the assessment.

Table 11.1 Ambient Air Quality Limit Values

Pollutant	Directive (EU) 2024/2881 Annex I Table 2		Directive (EU) 2024/2881 Annex I Table 1	
	Limit Type	Limit Value (to be attained by 2026 and applicable until 2030)	Limit Type	Limit Value (to be attained by 2030)
Nitrogen Dioxide (NO_2)	Hourly limit for protection of human health - not to be exceeded more than 18 times/year	200 µg/m^3	Hourly limit for protection of human health - not to be exceeded more than 3 times/year	200 µg/m^3
	N/A	N/A	24-hour limit for protection of human health - not to be exceeded more than 18 times/year	50 µg/m^3
	Annual limit for protection of human health	40 µg/m^3	Annual limit for protection of human health	20 µg/m^3

Pollutant	Directive (EU) 2024/2881 Annex I Table 2		Directive (EU) 2024/2881 Annex I Table 1	
	Limit Type	Limit Value (to be attained by 2026 and applicable until 2030)	Limit Type	Limit Value (to be attained by 2030)
Particulate Matter (as PM_{10})	24-hour limit for protection of human health - not to be exceeded more than 35 times/year	50 µg/m^3	24-hour limit for protection of human health - not to be exceeded more than 18 times/year	45 µg/m^3
	Annual limit for protection of human health	40 µg/m^3	Annual limit for protection of human health	20 µg/m^3
Particulate Matter (as $PM_{2.5}$)	N/A	N/A	24-hour limit for protection of human health - not to be exceeded more than 18 times/year	25 µg/m^3
	Annual limit for protection of human health	25 µg/m^3	Annual limit for protection of human health	10 µg/m^3

11.3.2.2 WHO Air Quality Guidelines and Clean Air Strategy

In April 2023, the Government of Ireland published the Clean Air Strategy for Ireland (Government of Ireland, 2023), which provides a high-level strategic policy framework needed to reduce air pollution. The strategy commits Ireland to achieving the 2021 WHO Air Quality Guidelines Interim Target 3 (IT3) by 2026, the IT4 targets by 2030 and the final targets by 2040 (Table 11.2). The strategy notes that a significant number of EPA monitoring stations observed air pollution levels in 2021 above the WHO targets; 80% of these stations would fail to meet the final $PM_{2.5}$ target of 5 µg/m^3. The strategy also acknowledges that "meeting the WHO targets will be challenging and will require legislative and societal change, especially with regard to both $PM_{2.5}$ and NO_2".

Annex II of Directive (EU) 2024/2881 gives assessment thresholds which align with the clean air strategy final 2040 WHO targets. Directive (EU) 2024/2881 states that "*Member States shall endeavour to achieve and preserve the best ambient air quality and a high level of protection of human health and the environment, with the aim of achieving a zero-pollution objective as referred to in Article 1(1), in line with WHO recommendations, and below the assessment thresholds laid down in Annex II.*"

These assessment thresholds relate to monitoring of ambient air quality by Member States, where "*exceedances of the assessment thresholds specified in Annex II shall be determined on the basis of concentrations during the previous 5 years where sufficient data are available. An assessment threshold shall be deemed to have been exceeded if it has been exceeded during at least 3 separate years out of those previous 5 years.*"

Table 11.2 WHO Air Quality Guidelines 2021

Pollutant	Limit Type	IT3 (2026)	IT4 (2030)	Final Target (2040)
NO_2	24-hour limit for protection of human health	-	-	25 µg/m^3
	Annual limit for protection of human health	20 µg/m^3	-	10 µg/m^3
PM (as PM_{10})	24-hour limit for protection of human health	75 µg/m^3	50 µg/m^3	45 µg/m^3
	Annual limit for protection of human health	30 µg/m^3	20 µg/m^3	15 µg/m^3
PM (as $PM_{2.5}$)	24-hour limit for protection of human health	37.5 µg/m^3	25 µg/m^3	15 µg/m^3
	Annual limit for protection of human health	15 µg/m^3	10 µg/m^3	5 µg/m^3

The applicable air quality limit values for the purposes of this assessment are those set out in Table 11.1. The limit values stipulated in Table 1 of Annex I of Directive (EU) 2024/2881 are applicable for both the Opening year 2028 and Design Year 2043 for the Proposed Development.

11.3.2.3 Dust Deposition Guidelines

The concern from a health perspective is focused on particles of dust that are less than 10 microns (PM_{10}) and less than 2.5 microns ($PM_{2.5}$). The EU ambient air quality standards outlined in Table 11.1 have set ambient air quality limit values for PM_{10} and $PM_{2.5}$.

With regards to larger dust particles that can give rise to nuisance dust, there are no statutory guidelines regarding the maximum dust deposition levels that may be generated during the construction phase of a development in Ireland. Furthermore, no specific criteria have been stipulated for nuisance dust in respect of this development.

With regard to dust deposition, the German TA-Luft standard for dust deposition (non-hazardous dust) (German VDI, 2002) sets a maximum permissible emission level for dust deposition of 350 mg/m^2/day averaged over a one-year period at any receptors outside the site boundary. The TA-Luft standard has been applied for the purpose of this assessment based on recommendations from the EPA in Ireland in the document titled Environmental Management Guidelines - Environmental Management in the Extractive Industry (Non-Scheduled Minerals) (EPA, 2006). The document recommends that the TA-Luft limit of 350 mg/m^2/day be applied to the site boundary of quarries. This limit value can be implemented with regard to dust impacts from construction of the Proposed Development.

11.3.2.4 Air Quality and Traffic Significance Criteria

The Transport Infrastructure Ireland (TII) guidance document Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106 (TII, 2025a) details a methodology for determining air quality impact significance criteria for road schemes which can be applied to any project that causes a change in traffic. The degree of impact is determined based on the percentage change in pollutant concentrations relative to the Do-Minimum scenario. The TII significance criteria are outlined in Table 4.9 of *Air Quality Assessment of Specified Infrastructure Projects* – PE-ENV-01106 (TII, 2025a) and reproduced in Table 11.3 below. These criteria have been adopted for the Proposed Development to predict the impact of NO_2, PM_{10} and $PM_{2.5}$ emissions as a result of the Proposed Development.

Table 11.3 Air Quality and Traffic Significance Criteria

Long-term average concentration at receptor in assessment year	% Change in concentration relative to Air Quality Limit Value (AQLV)			
	1%	2-5%	6-10%	>10%
75% or less of AQLV	Neutral	Neutral	Slight	Moderate
76 – 94% of AQLV	Neutral	Slight	Moderate	Moderate
95 – 102% of AQLV	Slight	Moderate	Moderate	Substantial
103 – 109% of AQLV	Moderate	Moderate	Substantial	Substantial
110% or more of AQLV	Moderate	Substantial	Substantial	Substantial

Source: Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106 (TII, 2025a))

As per Table 11.3 a neutral effect is one where a change in concentration at a receptor is:

- 5% or less where the Opening Year, without the Proposed Development, annual mean concentration is 75% or less of the standard; or
- 1% or less where the Opening Year, without the Proposed Development, annual mean concentration is 94% or less of the standard.

Where an effect does not meet the criteria for neutral, as described above, the effect can either be positive or negative. The TII guidance (TII, 2025a) states that "*the evaluation of significance of effects for the operational phase should be undertaken for the Opening Year only as the Design Year is likely to show lower total pollutant concentrations and changes in concentration*" (TII, 2025a).

Non-significant effects (i.e. of local importance only) are '*neutral*' or '*slight*' changes in concentrations while significant effects can be changes in pollutant concentrations that are either 'moderate' or '*substantial*'. However, the TII guidance (TII, 2025a) states that these must be considered in the context of the project and 'moderate' or 'substantial' increases are not necessarily always significant effects.

The impact descriptors in Table 11.3 are used to describe the impact at each modelled receptor location, and the significance of the impacts is then determined, aligning with the terminology in the EPA guidelines (EPA, 2022). Whilst it may be determined that there are '*slight*', '*moderate*' or '*substantial*' impacts at one or more receptors, an overall judgement should be made of whether the Proposed Development is '*significant*' or '*not significant*' in terms of air quality. Factors to consider when determining the overall significance of a Proposed Development are provided in Table 4.10 of the TII guidance (TII, 2025a).

11.3.3 Construction Phase Dust Assessment

The Institute of Air Quality Management in the UK (IAQM) guidance document *'Guidance on the Assessment of Dust from Demolition and Construction'* (IAQM, 2024) outlines an assessment method for predicting the impact of dust emissions from construction activities based on the scale and nature of the works and the sensitivity of the area to dust impacts. The IAQM methodology has been applied to the construction phase of this development to predict the likely risk of dust impacts in the absence of mitigation measures and to determine the level of site-specific mitigation required. The use of UK guidance is recommended by Transport Infrastructure Ireland in their guidance document *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2025a).

The IAQM states that as assessment of construction dust impacts is normally required where there is a human or ecological receptor within 250 m of the boundary of the site (this should consider offsite construction compounds) and/or within 50 m of the route(s) used by construction vehicles on the public road network (on roads up to 250 m from the site entrance). This constitutes the Zone of Influence (ZoI) for the construction dust assessment.

The major dust generating activities are divided into four types within the IAQM guidance (IAQM, 2024) to reflect their different potential impacts. These are:

- Demolition;
- Earthworks;
- Construction; and
- Trackout (transport of dust and dirt from the construction site onto the public road network).

The magnitude of each of the four categories is divided into Large, Medium or Small scale depending on the nature of the activities involved. The criteria for determining the category for the works involved are outlined in Table 11.4, these are based on the IAQM guidance (IAQM, 2024). The magnitude of each activity is combined with the overall sensitivity of the area to determine the risk of dust impacts from site activities. This allows the level of site-specific mitigation to be determined.

Table 11.4 IAQM Criteria to Determine Dust Emissions Magnitude

Dust Emission Magnitude		
Small	**Medium**	**Large**
Demolition		
■ Total building volume <12,000 m^3 ■ Construction material with low potential for dust release (e.g. metal cladding or timber) ■ Demolition activities <6 m above ground ■ Demolition during wetter months	■ Total building volume 12,000 - 75,000 m^3 ■ Potentially dusty construction material ■ Demolition activities 6 – 12 m above ground level	■ Total building volume >75,000 m^3 ■ Potentially dusty construction material (e.g. concrete) ■ On-site crushing and screening ■ Demolition activities >12 m above ground level
Earthworks		
■ Total site area <18,000 m^2 ■ Soil type with large grain size (e.g. sand) ■ <5 heavy earth moving vehicles active at any one time ■ Formation of bunds <3 m in height	■ Total site area 18,000 m^2 - 110,000 m^2 ■ Moderately dusty soil type (e.g. silt) ■ 5 – 10 heavy earth moving vehicles active at any one time ■ Formation of bunds 3–6 m in height	■ Total site area >110,000 m^2 ■ Potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size) ■ >10 heavy earth moving vehicles active at any one time

Dust Emission Magnitude		
▪ Earthworks during wetter months		▪ Formation of bunds >6 m in height
Construction		
▪ Total building volume <12,000 m^3 ▪ Construction material with low potential for dust release (e.g. metal cladding or timber)	▪ Total building volume 12,000 - 75,000 m^3 ▪ Potentially dusty construction material (e.g. concrete) ▪ On-site concrete batching	▪ Total building volume >75,000 m^3 ▪ On-site concrete batching ▪ Sandblasting
Trackout (**Truck Movements**)		
▪ <20 HDV (>3.5 t) outward movements in any one day ▪ Surface material with low potential for dust release ▪ Unpaved road length <50 m	▪ 20 – 50 HDV (>3.5 t) outward movements in any one day ▪ Moderately dusty surface material (e.g. high clay content) ▪ Unpaved road length 50 – 100 m	▪ >50 HDV (>3.5 t) outward movements in any one day ▪ Potentially dusty surface material (e.g. high clay content) ▪ Unpaved road length >100 m

The sensitivity of the area must then be assessed as outlined below. Both receptor sensitivity and proximity to proposed works areas are taken into consideration. For the purposes of this assessment, high sensitivity receptors are regarded as residential properties where people are likely to spend the majority of their time. Commercial properties and places of work are regarded as medium sensitivity while low sensitivity receptors are places where people are present for short periods or do not expect a high level of amenity.

Dust emissions also have the potential to impact sensitive ecology. Dust can affect vegetation through chemical means such as chemical changes like increased acidity in soils or watercourses. Physical effects include reduced photosynthesis, respiration and transpiration through smothering. These changes are likely to occur only as a result of long-term demolition and construction works adjacent to a sensitive habitat. Often impacts will be reversible once the works are completed, and dust emissions cease. High sensitivity ecological receptors are those with international or national designation (SPAs, SACs, NHAs) and where the designated feature is dust sensitive. Effects to ecology can occur up to 50 m from the source. Table 11.5 outlines the criteria for determining the sensitivity of the area to dust soiling and dust-related human health effects and dust-related ecological effects as per the IAQM guidance (IAQM, 2024).

Table 11.5 Criteria for Determining the Sensitivity of the Area

Sensitivity of the Area to Dust Soiling Effects on People and Property					
Receptor Sensitivity	Number of Receptors	Distance from Source (m)			
		<20	<50	<100	<250

Sensitivity of the Area to Dust Soiling Effects on People and Property					
High	>100	High	High	Medium	Low
	10 - 100	High	Medium	Low	Low
	1 - 1	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Sensitivity of the Area to Dust-Related Human Health Impacts						
Receptor Sensitivity	Annual Mean PM_{10} Concentration	Number of Receptors	Distance from Source (m)			
			<20	<50	<100	<250
High	< 24 µg/ m^3	>100	Medium	Low	Low	Low
		10 - 100	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low
Medium	< 24 µg/ m^3	>10	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low
Low	< 24 µg/ m^3	>1	Low	Low	Low	Low

Sensitivity of the Area to Dust-Related Ecological Impacts		
Receptor Sensitivity	Distance from Source (m)	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

Once the dust emission magnitude has been determined the next step, according to the IAQM guidance (IAQM, 2024), is to establish the level of risk by combining the magnitude with the overall sensitivity of the area to dust soiling and human health effects. The level of risk associated with each activity is determined using the criteria in Table 11.6.

Table 11.6 IAQM Criteria to Determine Risk of Dust Impacts

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
Demolition			
High	High risk	Medium risk	Medium risk
Medium	High risk	Medium risk	Low risk
Low	Medium risk	Low risk	Negligible

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
Earthworks			
High	High risk	Medium risk	Low risk
Medium	Medium risk	Medium risk	Low risk
Low	Low risk	Low risk	Negligible
Construction			
High	High risk	Medium risk	Low risk
Medium	Medium risk	Medium risk	Low risk
Low	Low risk	Low risk	Negligible
Trackout			
High	High risk	Medium risk	Low risk
Medium	Medium risk	Medium risk	Low risk
Low	Low risk	Low risk	Negligible

11.3.4 Construction Phase Road Traffic Assessment

Construction phase traffic has the potential to impact air quality. The TII guidance *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2025a), states that road links meeting one or more of the following criteria can be defined as being 'affected' by a Proposed Development and should be included in the local air quality assessment. While the guidance is specific to infrastructure projects, the approach can be applied to any development that causes a change in traffic.

- Annual average daily traffic (AADT) changes by 1,000 or more.
- Heavy duty vehicle (HDV) AADT changes by 200 or more;
- Daily average speed change by 10 kph or more;
- Peak hour speed change by 20 kph or more;
- A change in road alignment by 5m or greater.

Transport Insights have prepared a Traffic and Transport Impact Assessment for the Proposed Development enclosed separately and have prepared Chapter 0 (Traffic and Transportation) of this EIAR. As per Chapter 0, it has been determined by Transport Insights that there will be, at most, an additional 32 AADT and 10 HDV AADT during the construction phase. Therefore, the traffic changes do not exceed the above scoping criteria, and a detailed air quality assessment of construction phase traffic emissions is not required.

11.3.5 Operational Phase Road Traffic Emissions Assessment

11.3.5.1 Traffic Screening Criteria

Operational phase traffic also has the potential to impact air quality. The TII guidance *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2025a), states that road links meeting one or more of the criteria detailed above in Section 11.3.4 can be defined as being 'affected' by a Proposed Development and should be included in the local air quality assessment. While the guidance is specific to infrastructure projects, the approach can be applied to any development that causes a change in traffic.

As per Chapter 0, it has been determined by Transport Insights that during the operational phase there are some links that will experience a traffic increase of more than 1,000 AADT. Therefore, the traffic changes meet the scoping criteria in Section 11.3.4, and a detailed air quality assessment of operational phase traffic emissions is required.

The impact of traffic emissions on air quality is assessed for both human and ecological receptors within 200 m of impacted roads as per the TII PE-ENV-01106 guidance (TII, 2025a). Sensitive receptors are discussed in further detail within Section 11.4.3.2 and shown graphically in Figure 11.3.

11.3.5.2 Modelling Scenarios

The TII guidance (2025a) states that modelling should be conducted for NO_2, PM_{10} and $PM_{2.5}$ for the Base, Opening and Design Years for both the Do Minimum (without the Proposed Development in place) and Do Something (with the Proposed Development in place) scenarios for the operational phase. Modelling of operational NO_2, PM_{10} and $PM_{2.5}$ concentrations has been conducted for these scenarios using the TII Road Emissions Model (REM) online calculator tool (TII, 2025b).

11.3.5.3 Model Inputs

The following inputs are required for the REM tool: receptor locations, light duty vehicle (LDV) annual average daily traffic movements (AADT), heavy duty vehicles (HDV) AADT (HDV AADT), annual average traffic speeds, road link lengths, road type, project county location and pollutant background concentrations. The Default fleet mix option was selected which includes the following assumptions for fleet composition:

- Cars - Climate Action Plan (CAP), the CAP projection assumes that the policies set out in the CAPs up to 2024 are implemented resulting in increased adoption of electrified vehicles.
- LDV - Business as Usual (High Ambition), this is based on a review of market capacity for different technologies within each category. This is broken down further into "high ambition" in the LGV fleet, where the distinction is the rate of adoption of low emissions technologies based on available and emerging technologies, adjusted to recognise the unique conditions, constraints and opportunities in the Irish market.
- HDVs - EU target projections for HDVs, this represents interim targets for emissions from sales of new HDVs.

The Default fleet mix represents a realistic worst-case scenario according to the TII PE-ENV-01106 guidance (2025a). The TII REM uses county-based Irish fleet composition for different road types, for different European emission standards from pre-Euro to Euro 6/VI with scaling factors to reflect

improvements in fuel quality, retrofitting, and technology conversions. The TII REM also includes emission factors for PM_{10} emissions associated with brake and tyre wear (TII, 2025b).

Using this input data the model predicts the road traffic contribution to ambient ground level concentrations at the identified sensitive receptors using generic meteorological data. The predicted road contributions are then added to the existing background concentrations to give the predicted ambient concentrations. The ambient concentrations are then compared with the relevant ambient air quality standards to assess the compliance of the Proposed Development with these ambient air quality standards.

11.3.5.4 Ecological Impacts from Traffic Emissions

The TII guidance (2025) also states that impacts to sensitive ecology due to traffic emissions should be considered. Consideration should be given to designated sites within 2km of the Proposed Development. However, a detailed assessment is only required at a local level, where there is a designated site within 200 m of impacted road links. The TII guidance (TII, 2025a) notes that only sites that are sensitive to nitrogen and acid deposition need to be included in the assessment. No relevant designated ecological sites are present within 200 m of the impacted road links and therefore no assessment was required as there is no potential for significant air quality impacts to designated sites.

11.3.5.5 Traffic Data used in Modelling Assessment

Traffic flow information is detailed in Table 11.7 as obtained from Transport Insights for the purposes of this assessment. Data for the Do Minimum and Do Something scenarios for the Opening Year 2028 and Design Year 2043 were provided. The traffic data included traffic associated with the development site and other cumulative sites as relevant (see Chapter 0 - Traffic and Transportation for further details). For the purposes of this assessment the following two scenarios have been assessed:

- Do Minimum (DM) Scenario: this scenario assumes the Proposed Development is not in place in the future. Traffic associated with other existing and permitted developments, including Phase 1 of the Mooretown Swords Development, has been included in this scenario.
- Do Something (DS) Scenario: this scenario includes the Proposed Development, as described in Chapter 5. Additionally, the traffic associated with other existing and permitted developments, including Mooretown Phase 1, has been included in this scenario.

The modelling assessment has been undertaken for road links that were within 200 m of receptors. Background concentrations have been included as per Section 11.4.2 of this chapter based on available EPA background monitoring data (EPA, 2025).

Table 11.7 Traffic Data used in Road Traffic Emissions Modelling Air Quality Assessment

Link ID	DM AADT	DM HGV AADT	DM Speed (kph)	DS AADT	DS HGV AADT	DS Speed (kph)
Operational Phase (Opening Year 2028)						
Site Access	1,740	59	50	2,966	59	50
R125 Rathbeale Rd	11,788	339	50	12,788	339	50
Operational Phase (Design Year 2043)						

Link ID	DM AADT	DM HGV AADT	DM Speed (kph)	DS AADT	DS HGV AADT	DS Speed (kph)
Site Access	1,758	75	50	2,985	75	50
R125 Rathbeale Rd	12,836	435	50	13,836	435	50

11.4 Baseline Environment

11.4.1 Meteorological Data

A key factor in assessing temporal and spatial variations in air quality is the prevailing meteorological conditions. Depending on wind speed and direction, individual receptors may experience very significant variations in pollutant levels under the same source strength (i.e. traffic levels) (WHO, 2006). Wind is of key importance in dispersing air pollutants and for ground level sources, such as traffic emissions, pollutant concentrations are generally inversely related to wind speed. Thus, concentrations of pollutants derived from traffic sources will generally be greatest under very calm conditions and low wind speeds when the movement of air is restricted. In relation to PM_{10}, the situation is more complex due to the range of sources of this pollutant. Smaller particles (less than $PM_{2.5}$) from traffic sources will be dispersed more rapidly at higher wind speeds. However, fugitive emissions of coarse particles ($PM_{2.5}$ - PM_{10}) will actually increase at higher wind speeds. Thus, measured levels of PM_{10} will be a non-linear function of wind speed.

The nearest weather station collating detailed weather records is Dublin Airport meteorological station, which is located approximately 3.9 km south of the site. Dublin Airport met data has been examined to identify the prevailing wind direction and average wind speeds over a five-year period (see Figure 11.1) (Met Éireann, 2026). For data collated during five representative years (2021 – 2025), the predominant wind direction is westerly to south-westerly with a mean wind speed of 5.3 m/s over the 30-year period of 1991 – 2020 (Met Éireann, 2025).

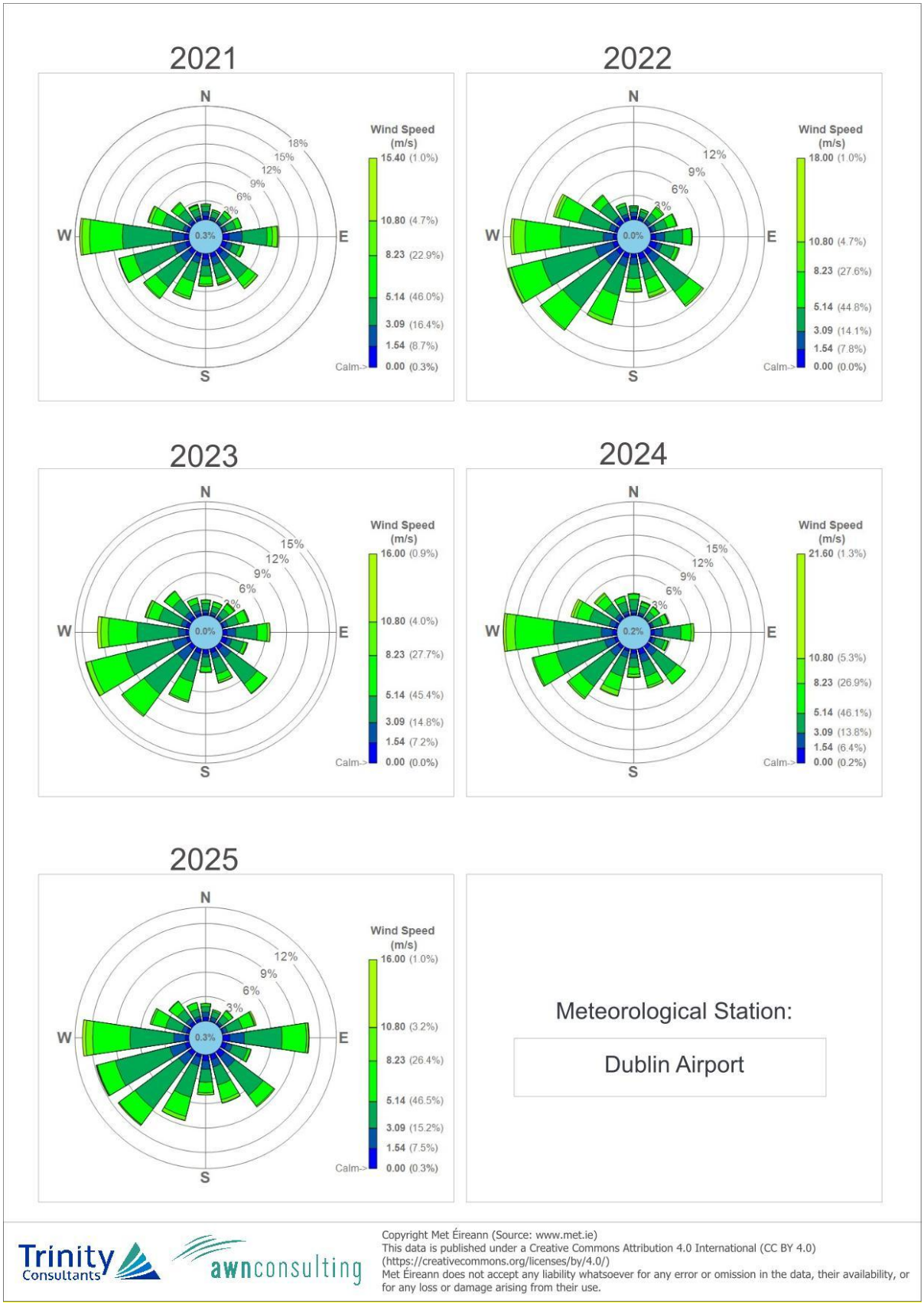

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Figure 11.1 Wind Roses for Dublin Airport Meteorological Station

11.4.2 Baseline Air Quality

Air quality monitoring programs have been undertaken in recent years by the EPA. The most recent annual report on air quality in Ireland is '*Air Quality In Ireland 2024'* (EPA, 2025). The EPA website details the range and scope of monitoring undertaken throughout Ireland and provides both monitoring data and the results of previous air quality assessments.

As part of the implementation of the Air Quality Standards Regulations 2022 (S.I. No. 739 of 2022), as amended, four air quality zones have been defined in Ireland for air quality management and assessment purposes (EPA, 2025). Dublin is defined as Zone A and Cork as Zone B. Zone C is composed of 23 towns with a population of greater than 15,000. The remainder of the country, which represents rural Ireland but also includes all towns with a population of less than 15,000, is defined as Zone D.

In terms of air monitoring and assessment, the Proposed Development site is within Zone A (EPA, 2025).

The long-term monitoring data has been used to determine background concentrations for the key pollutants in the region of the Proposed Development. The background concentration accounts for all non-traffic derived emissions (e.g. natural sources, industry, home heating etc.). The use of publicly available long-term datasets is recommended by TII in their PE-ENV-0016 guidance (TII, 2025a). This use of long-term data sets is preferred over on-site baseline air monitoring surveys as it gives a better indication of long-term trends in air quality. The use of long-term monitoring data from the EPA is considered appropriate for determining the background air quality in the area of the Proposed Development.

Continuous monitoring by the EPA is carried out at a number of monitoring stations within Zone A; these include urban background sites, roadside (traffic) sites and suburban background sites. It is necessary to select monitoring stations that are representative of the site location. Not all monitoring stations are considered suitable for determining background pollutant concentrations and must be reviewed on a case-by-case basis to determine the most appropriate EPA monitoring sites for the current assessment.

The EPA, on their website (EPA, 2026), state that background sites generally represent overall area-wide exposure more closely than roadside sites. Roadside monitoring sites are heavily influenced by traffic emissions and are not considered representative of area-wide pollutant levels.

The full suite of EPA Zone A monitoring locations were reviewed. These included urban traffic, suburban traffic and suburban background locations. Suburban background was determined to be the most representative background for the area of the Proposed Development. Influences from traffic emissions will be captured within the traffic modelling assessment and therefore, suburban background concentrations give the best indication of other, non-traffic derived sources of pollutants.

11.4.2.1 NO_2

Long-term NO_2 monitoring was carried out at Zone A suburban background locations for the period 2020 – 2024 inclusive (Table 11.8) (EPA, 2025).

Long-term average concentrations are significantly below the current annual average limit of 40 µg/m^3 and the post-2030 limit value of 20 µg/m^3.

Average results range from 10 - 16 µg/m^3 over the 2020 – 2024 period. The overall annual average concentration for this 5-year period is 13 µg/m^3. Additionally, there were no exceedances of the hourly

limit value of 200 µg/m^3. Based on the above information a conservative estimate of the current background NO_2 concentration for the region of the Proposed Development is 13 µg/m^3.

Table 11.8 Baseline Air Quality - Nitrogen Dioxide (NO_2)

Station	Averaging Period	Year				
		2020	2021	2022	2023	2024
Ballyfermot (Suburban Background)	Annual Mean NO_2 (µg/m^3)	12	13	13	13	12
	1-hr Mean > 200 µg/m^3 (days)	0	0	0	0	0
Dun Laoghaire (Suburban Background)	Annual Mean NO_2 (µg/m^3)	13	16	16	13	11
	1-hr Mean > 200 µg/m^3 (days)	0	0	0	0	0
Swords (Suburban Background)	Annual Mean NO_2 (µg/m^3)	11	11	12	10	10
	1-hr Mean > 200 µg/m^3 (days)	0	0	0	0	0
Tallaght (Suburban Background)	Annual Mean NO_2 (µg/m^3)	14	13	14	14	12
	1-hr Mean > 200 µg/m^3 (days)	0	0	0	0	0

11.4.2.2 PM_{10}

Continuous PM_{10} monitoring was carried out at Zone A suburban background locations for the period 2020 – 2024 inclusive (EPA, 2025).

Long-term PM_{10} concentrations are in compliance with the current annual average limit value of 40 µg/m^3 and the post-2030 limit value of 20 µg/m^3.

Annual average PM_{10} concentrations across the sites ranged from 9 – 14 µg/ m^3 over the 2020 – 2024 period (Table 11.9). The overall annual average concentration for this 5-year period is 12 µg/ m^3. There were at most 3 exceedances of the daily limit of 50 µg/m^3 in 2022 (at Marino). However, 35 exceedances are currently permitted per year (EPA, 2025). Based on the EPA data, a conservative estimate of the current background PM_{10} concentration in the region of the Proposed Development is 12 µg/m^3.

Table 11.9 Baseline Air Quality - PM_{10}

Station	Averaging Period	Year				
		2020	2021	2022	2023	2024
Ballyfermot (Suburban Background)	Annual Mean PM_{10} (µg/m^3)	12	12	13	11	11
	24-hr Mean > 50 µg/m^3 (days)	2	0	1	0	0
Dún Laoghaire (Suburban Background)	Annual Mean PM_{10} (µg/m^3)	12	11	12	12	12
	24-hr Mean > 50 µg/m^3 (days)	0	0	1	0	1
Finglas	Annual Mean PM_{10} (µg/m^3)	12	12	12	12	12

Station	Averaging Period	Year				
		2020	2021	2022	2023	2024
(Suburban Background)	24-hr Mean > 50 µg/m^3 (days)	0	0	1	0	0
Marino (Suburban Background)	Annual Mean PM_{10} (µg/m^3)	13	12	14	12	12
	24-hr Mean > 50 µg/m^3 (days)	0	0	3	0	0
Phoenix Park (Suburban Background)	Annual Mean PM_{10} (µg/m^3)	10	10	11	9	10
	24-hr Mean > 50 µg/m^3 (days)	0	0	0	0	0
St. Anne's Park (Suburban Background)	Annual Mean PM_{10} (µg/m^3)	11	11	13	11	11
	24-hr Mean > 50 µg/m^3 (days)	0	0	1	0	0
Tallaght (Suburban Background)	Annual Mean PM_{10} (µg/m^3)	10	10	11	11	10
	24-hr Mean > 50 µg/m^3 (days)	1	0	1	1	0

11.4.2.3 $PM_{2.5}$

Average $PM_{2.5}$ levels in Zone A suburban background locations over the period 2020 – 2024 inclusive ranged from 6 - 9 µg/m^3 (EPA, 2025) which is in compliance with the current annual mean limit value of 25 µg/m^3 and the post-2030 limit value of 10 µg/m^3. The overall annual average concentration for this 5-year period is 7 µg/m^3 (Table 11.10). Based on this information, an estimate of the background $PM_{2.5}$ concentration in the region of the Proposed Development is 7 µg/m^3.

Table 11.10 Baseline Air Quality - $PM_{2.5}$

Station	Averaging Period	Year				
		2020	2021	2022	2023	2024
Ballyfermot (Suburban Background)	Annual Mean $PM_{2.5}$ (µg/m^3)	8	8	8	7	7
Dún Laoghaire (Suburban Background)	Annual Mean $PM_{2.5}$ (µg/m^3)	8	8	8	7	7
Finglas (Suburban Background)	Annual Mean $PM_{2.5}$ (µg/m^3)	7	8	7	7	7
Marino (Suburban Background)	Annual Mean $PM_{2.5}$ (µg/m^3)	8	8	9	7	8
Phoenix Park (Suburban Background)	Annual Mean $PM_{2.5}$ (µg/m^3)	7	6	6	6	7
St. Anne's Park (Suburban Background)	Annual Mean $PM_{2.5}$ (µg/m^3)	7	7	8	7	6
Ballyfermot (Suburban Background)	Annual Mean $PM_{2.5}$ (µg/m^3)	8	8	8	7	7

11.4.2.4 Summary

Based on the above information the air quality in the Zone A suburban area is generally good, with concentrations of the key pollutants generally well below the current relevant limit values set out in Table 2 of Annex I of Directive (EU) 2024/2881.

The current pollutant concentrations at all of these monitoring sites are also in compliance with the 2030 limit values set out in Table 1 of Annex I in Directive (EU) 2024/2881 and the clean air strategy. Further measures will be needed at a national scale to reduce air pollution in future years. The EPA have indicated that road transport emissions are contributing to increased levels of NO_2 with the potential for breaches in the annual NO_2 limit value in future years at locations within urban centres and roadside locations. In addition, burning of solid fuels for home heating is contributing to increased levels of particulate matter (PM_{10} and $PM_{2.5}$). The EPA predict that exceedances in the particulate matter limit values are likely in future years if burning of solid fuels for residential heating continues (EPA, 2025).

11.4.2.5 Background Projections for future

The TII PE-ENV-01106 (2025a) guidance provides a methodology for predicting future year background concentrations. This is necessary to allow for changes in background air quality in future years. For the purposes of the air quality assessment of traffic emissions, impacts are predicted for the future opening and design years for the Proposed Development, and it is overly pessimistic to assume that the current background pollutant concentrations will remain the same in these future years.

Future year projection factors are provided in Appendix C of the PE-ENV-01106 guidance (2025a). Projection factors have been provided to allow for calculation of background pollutant concentrations up to 2040. Where background concentrations beyond 2040 are required TII state that the background concentrations for 2040 can be used as representative concentrations the future year (TII, 2025a). The realistic worst-case scenario has been applied in relation to future year background projections.

Current baseline background pollutant concentrations have been derived from EPA data and are discussed in Section 11.4.2. These baseline concentrations have been used in combination with the future year projection factors to produce background concentrations for the Opening Year of 2028 and the Design Year of 2043 for the Proposed Development. The background concentrations used in this assessment are shown in Table 11.11.

Table 11.11 Background Pollutant Concentrations

Pollutant	Base Year (µg/m³)	Opening Year (µg/m³)		Design Year (µg/m³)	
		Adjustment Factor	Adjusted Background	Adjustment Factor	Adjusted Background
NO_2	13.0	0.89	11.6	0.75	9.8
PM_{10}	12.0	0.96	11.5	0.89	10.7
$PM_{2.5}$	7.0	0.94	6.6	0.83	5.8

11.4.3 Sensitivity of the Receiving Environment

11.4.3.1 Construction Phase

The effect on air quality from construction phase activities is assessed at sensitive receptors within 250 m of the development boundary. In terms of receptor sensitivity to dust soiling, there are a number of highly sensitive residential properties within 250 m of the Proposed Development boundary (see Figure 11.2). There are more than 100 residential properties within 20 m of the site boundary.

There are no designated ecology sites within 50 m of the site boundary. Ecological impacts have therefore not been considered further in the dust assessment.

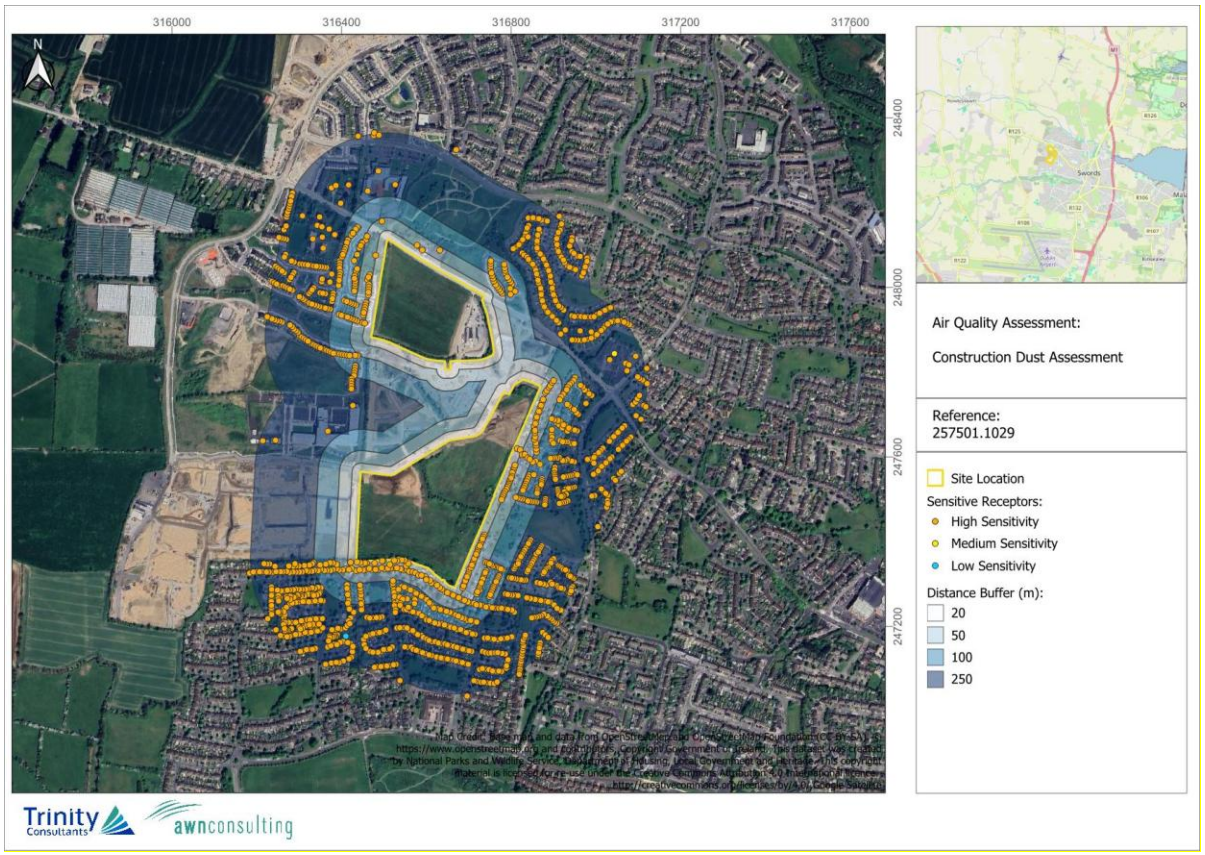

Figure 11.2 Sensitive Receptors within 250 m of the site.

11.4.3.2 Operational Phase Road Traffic Emissions

The effect on air quality due to changes in traffic is assessed at sensitive receptors in the vicinity of affected roads. The TII guidance (TII, 2025a) states that a proportionate number of representative receptors, which are located in areas which will experience the highest concentrations or largest impacts from the Proposed Development traffic, are to be included in the modelling.

The TII criteria state that receptors within 200 m of impacted road links should be assessed; roads which are greater than 200 m from receptors will not impact pollutant concentrations at that receptor (TII, 2025a). The TII guidance (TII, 2025a) defines sensitive receptor locations for the purposes of modelling annual mean pollutant concentrations as: residential housing, schools, hospitals, care homes and short term-accommodation such as hotels, i.e. locations where members of the public are likely to be regularly present for 24 hours. A total of 2 no. high sensitivity residential receptor receptors, R1 and R2, were included in the modelling assessment (see Figure 11.3). One potential development receptor

(P1) was included in the assessment to determine pollutant concentrations at new residential dwellings within the Proposed Development in the opening and design years at the location closest to the affected roads.

There are no designated ecological sites within 200 m of the affected road links.

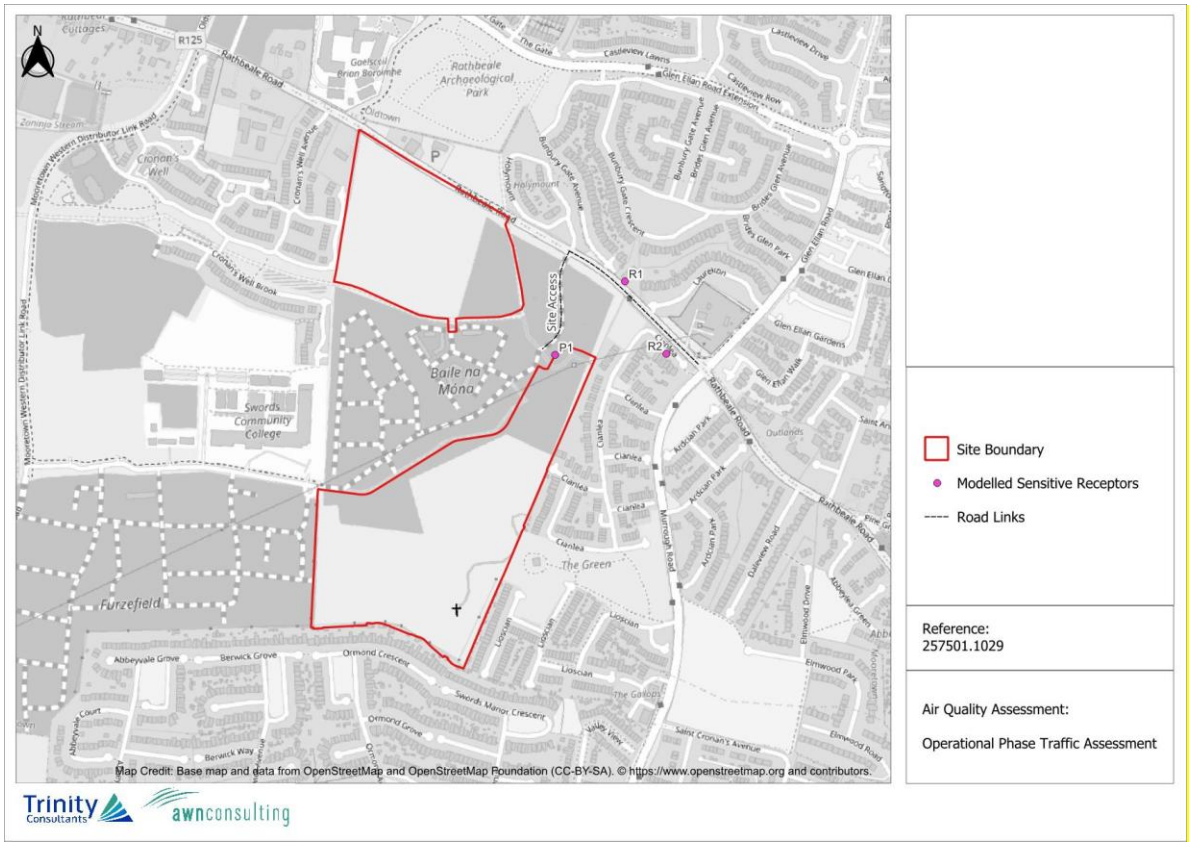

Figure 11.3 Location of Sensitive Receptors used in Operational Phase Air Quality Assessment

11.5 Predicted Impacts of the Proposed Development

11.5.1 Do-Nothing Impact

In the Do-Nothing scenario, ambient air quality at the site will remain as per the baseline and will change in accordance with trends within the wider area (including influences from potential new developments in the surrounding area, changes in road traffic, etc).

The Do-Nothing scenario associated with the operational phase of the development is assessed within Section 11.5.3, concentrations of the key pollutants in future years are predicted to be in compliance with the relevant air quality limit values.

11.5.2 Construction Phase

11.5.2.1 Construction Dust Assessment

The greatest potential impact on air quality during the construction phase of the Proposed Development is from construction dust emissions and the potential for nuisance dust. While construction dust tends to be deposited within 250 m of a construction site, the majority of the deposition occurs within the first 50 m (IAQM, 2024). The extent of any dust generation depends on

the nature of the dust (soils, peat, sands, gravels, silts etc.) and the nature of the construction activity. In addition, the potential for dust dispersion and deposition depends on local meteorological factors such as rainfall, wind speed and wind direction. A review of Dublin Airport meteorological data indicates that the prevailing wind direction is westerly to south-westerly and wind speeds are generally moderate in nature (Section 11.4.1). Dust impacts are likely to occur during drier periods, as rainfall acts as a natural dust suppressant (IAQM, 2024). Days with less than 0.2 mm of rainfall can be classified as days with little or no rainfall. A review of historical 30-year average data for Dublin Airport indicates that on average 200 days per year have rainfall over 0.2 mm (Met Éireann, 2025). Therefore, it can be determined that over 54% of the time dust generation will be reduced due to natural meteorological conditions.

To determine the level of dust mitigation required during the proposed works, the potential dust emission magnitude for each dust generating activity needs to be taken into account, in conjunction with the sensitivity of the area (Section 11.5.2.3). The major dust generating activities are divided into four types within the IAQM guidance (IAQM, 2024) to reflect their different potential impacts. These are: demolition, earthworks, construction and trackout (movement of construction vehicles on public roads).

11.5.2.2 Determining the Potential Dust Emission Magnitude

The magnitude of the works under each category can be classified as either Small, Medium or Large depending on the scale of the works involved. The magnitude of each activity (Table 11.12) has been determined below for the Proposed Development using the criteria in Table 11.4.

Table 11.12 Potential Dust Emissions Magnitude

Activity	Dust Emission Magnitude	Justification
Demolition	n/a	No buildings to be demolished
Earthworks	Large	Total site area is > than 110,000 m^2
Construction	Large	More than 75,000 m^3 of building to be constructed
Trackout	Medium	Approximately 30 outward vehicles (HGV) movements per day from construction site activities

11.5.2.3 Determining the Sensitivity of the Area

In terms of receptor sensitivity to dust soiling, there are a number of highly sensitive residential properties within 250 m of the Proposed Development boundary (Figure 11.2). There are over 100 high sensitivity residential properties within 20 m of the site boundary. Based on these receptor numbers and using the IAQM criteria in Table 11.5, the sensitivity of the area to dust soiling impacts from the Proposed Development is high.

In addition to sensitivity to dust soiling, the IAQM guidelines also outline the assessment criteria for determining the sensitivity of the area to human health impacts. The criteria take into consideration the current background annual mean PM_{10} concentration, receptor sensitivity based on type (residential receptors are classified as high sensitivity) and the number of receptors affected within

various distance bands from the construction works. A conservative estimate of the current background annual mean PM_{10} concentration in the vicinity of the Proposed Development is 12 µg/m^3. There are more than 100 high sensitivity receptors within 20 m of the Proposed Development boundary. Based on the IAQM criteria outlined in Table 11.5 the worst-case sensitivity of the area to dust-related human health effects is medium.

Table 11.13 Sensitivity of the Area

Potential Impact	Sensitivity of the Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	n/a	High	High	Medium
Human Health	n/a	Medium	Medium	Low

11.5.2.4 Determining the Risk of Dust Impacts

As detailed in Table 11.6, the predicted dust emission magnitude has been combined with the sensitivity of the area to determine the risk of impacts during the construction phase, prior to mitigation. Table 11.14 below provides a summary of the risk of dust impacts for the Proposed Development.

There is at most a high risk of dust soiling impacts and a medium risk of dust-related human health impacts associated with the proposed works (earthworks, construction and trackout). Without mitigation in place, construction dust will have a ***short-term, direct, localised, negative*** and ***moderate*** effect on air quality, which has the potential to be significant and have an impact in terms of dust soiling and human health. Best practice dust mitigation measures associated with high-risk works will be implemented to ensure there are no significant effects at nearby sensitive receptors (see **Section 11.6.1**).

Table 11.14 Risk of Dust Impacts used to Define Site-Specific Mitigation

Potential Impact	Sensitivity of the Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	n/a	High Risk	High Risk	Medium Risk
Human Health	n/a	Medium Risk	Medium Risk	Low Risk

11.5.3 Operational Phase

11.5.3.1 Operational Phase Traffic Assessment

The potential impact of the Proposed Development has been assessed by modelling emissions from the traffic generated due to the development. The traffic data has included specific cumulative developments within the area to provide for a worst-case assessment and to assess potential cumulative impacts (see Traffic and Transport Assessment and Chapter 0 (Traffic and Transportation), both prepared by Transport Insights for further details).

The traffic data includes the Do Minimum (DM) scenario and Do Something (DS) scenario. The impact of NO_2, PM_{10} and $PM_{2.5}$ emissions for the Opening and Design Years was predicted at the nearest

sensitive receptors to the impacted road links. This assessment allows the significance of the development, with respect to both relative and absolute impacts, to be determined.

The TII guidance PE-ENV-01106 (TII, 2025a) details a methodology for determining air quality impact significance criteria for TII road schemes and infrastructure projects. However, this significance criteria can be applied to any development that causes a change in traffic. The degree of impact is determined based on both the absolute and relative impact of the Proposed Development. Results are compared against the 'Do Minimum' scenario, which assumes that the Proposed Development is not in place in future years, to determine the degree of impact.

Traffic related air emissions have the potential to impact air quality which can affect human health. The following details the results of the air dispersion modelling assessment of traffic emissions to determine the effect on human health. The predicted pollutant concentrations have been compared against the post-2030 ambient air quality limit values set out in Table 11.1 as derived from Table 1 of Annex I in Directive (EU) 2024/2881 as per TII guidance PE-ENV-01106 (TII, 2025a).

NO_2

The results of the NO_2 modelling are shown in Table 11.15. In the Opening Year 2028, predicted annual mean concentrations of NO_2 are in compliance with the annual mean limit value of 20 µg/m^3, reaching at most 67% of the limit. In addition, the TII guidance (2025a) states that the hourly limit value for NO_2 of 200 µg/m^3 is unlikely to be exceeded where the annual mean is below 30 µg/m^3. The daily NO_2 limit value of 50 µg/m^3 is unlikely to be exceeded where the annual mean NO_2 concentration is below 25 µg/m^3. As predicted NO_2 concentrations are significantly below 25 µg/m^3 (Table 11.15), it can be concluded that the daily and hourly short-term NO_2 limit values will be complied with at all receptor locations. Some increases in NO_2 concentrations are predicted at the worst-case receptors assessed in the Opening Year when compared with the Do Minimum scenario (see Table 11.15). Concentrations are predicted to increase by at most 0.13 µg/m^3 at receptor R1. When comparing the change in concentration with the air quality limit value, it results in a maximum change of 0.65% at receptor R1. All increases are considered 'neutral' as per the TII criteria in Table 11.3.

In the Design Year 2043, predicted annual mean NO_2 concentrations are in compliance of the limit value of 20 µg/m^3 at the worst-case receptors assessed, reaching at most 50% of the limit. The short-term NO_2 limit value will be complied with at all receptor locations in the Design Year based on the low annual mean concentrations. The Proposed Development will result in a 'neutral' increase in NO_2 concentrations according to the TII significance criteria in Table 11.3, with concentrations increasing by at most 0.01 µg/m^3 as a result of the Proposed Development (at receptor R1, Table 11.15), which is an increase of 0.05% when compared with the applicable annual mean limit value for NO_2. All increases are considered 'neutral' as per the TII criteria in Table 11.3.

Therefore, the impact of the Proposed Development on NO_2 concentrations is neutral.

Table 11.15 Predicted Annual Mean NO_2 Concentrations (µg/m³)

Receptor	Impact Opening Year						
	DM	% of AQLV	DS	% of AQLV	DS-DM	% Change of AQLV	Description
R1	13.2	66%	13.3	67%	0.13	0.65%	Neutral
R2	12.7	64%	12.8	64%	0.09	0.45%	Neutral
P1	N/A	N/A	11.9	60%	N/A	N/A	N/A
Receptor	**Impact Design Year**						
	DM	**% of AQLV**	**DS**	**% of AQLV**	**DS-DM**	**% Change of AQLV**	**Description**
R1	10.0	50%	10.0	50%	0.01	0.05%	Neutral
R2	9.9	50%	9.9	50%	0.01	0.05%	Neutral
P1	N/A	N/A	9.8	49%	N/A	N/A	N/A
Note: As P1 is a potential development receptor, no associated DM concentrations or impacts have been predicted as this receptor will not exist without the development in place.							

PM_{10}

The results of the PM_{10} modelling can be seen in Table 11.16 for the Opening Year 2028 and Design Year 2043.

In the Opening Year 2028, annual mean PM_{10} concentrations are in compliance with the annual mean limit value of 20 µg/m³ reaching at most 73% of the limit. In the Design Year 2043 annual mean PM_{10} concentrations are also in compliance with the annual mean limit value of 20 µg/m³ reaching at most 69% of the limit. In addition, the TII guidance (2025a) states that the daily limit value for PM_{10} of 45 µg/m³ is unlikely to be exceeded where the annual mean is below 22.8 µg/m³. As predicted PM_{10} concentrations are significantly below 22.8 µg/m³ (Table 11.16), it can be concluded that the short-term PM_{10} limit value will be complied with at all receptor locations.

The changes in PM_{10} concentrations as a result of the Proposed Development can be assessed relative to the DM levels. In the Opening Year 2028 annual PM_{10} concentrations are predicted to increase by at most 0.23 µg/m³ at receptor R1. When comparing the change in concentration with the air quality limit value, it results in a maximum change of 1.15% at receptor R1. All increases are considered 'neutral' as per the TII criteria in Table 11.3.

In the Design Year 2043 the Proposed Development will result in a maximum increase of 0.21 µg/m³ at receptor R1, which is a 1.05% increase when compared with the annual mean limit of 20 µg/m³. The changes in concentrations in the Design Year are considered 'neutral' based on the TII criteria in Table 11.3.

Therefore, the impact of the Proposed Development on PM_{10} concentrations is neutral.

Table 11.16 Predicted Annual Mean PM_{10} Concentrations (µg/m^3)

Receptor	Impact Opening Year						
	DM	% of AQLV	DS	% of AQLV	DS-DM	% Change of AQLV	Description
R1	14.4	72%	14.7	73%	0.23	1.15%	Neutral
R2	13.6	68%	13.7	69%	0.16	0.80%	Neutral
P1	N/A	N/A	12.1	60%	N/A	N/A	N/A
Receptor	**Impact Design Year**						
	DM	% of AQLV	DS	% of AQLV	DS-DM	% Change of AQLV	Description
R1	13.6	68%	13.8	69%	0.21	1.05%	Neutral
R2	12.8	64%	12.9	65%	0.15	0.75%	Neutral
P1	N/A	N/A	11.2	56%	N/A	N/A	N/A
Note: As P1 is a potential development receptor, no associated DM concentrations or impacts have been predicted as this receptor will not exist without the development in place.							

$PM_{2.5}$

In relation to changes in $PM_{2.5}$ concentrations as a result of the Proposed Development, the results of the assessment can be seen in Table 11.17 for the modelled Opening Year 2028 and Design Year 2043.

In the Opening Year 2028, predicted annual mean concentrations of $PM_{2.5}$ are in compliance with the annual mean limit value of 10 µg/m^3 reaching at most 83% of the limit. The TII guidance (2025a) states that the daily limit value for $PM_{2.5}$ of 25 µg/m^3 is unlikely to be exceeded where the annual mean is below 10.4 µg/m^3. As predicted $PM_{2.5}$ concentrations are below 10.4 µg/m^3 it can be concluded that the short-term $PM_{2.5}$ limit value will be complied with at all receptor locations. There is predicted to be an increase in $PM_{2.5}$ concentrations at the worst-case receptor assessed in the Opening Year when compared with the Do Minimum scenario (see Table 11.17). Concentrations are predicted to increase at receptors R1 and R2; with concentrations increasing by at most 0.12 µg/m^3 at receptor R1. When comparing the change in concentration with the air quality limit value, it results in a maximum change of 1.20% at receptor R1 which is a 'neutral' impact as per the TII criteria. All increases are considered 'neutral' as per the TII criteria in Table 11.3.

In the Design Year 2043, predicted annual mean $PM_{2.5}$ concentrations are in compliance with the limit value of 10 µg/m^3 at the assessed receptors. Concentrations reach at most 75% of the annual mean limit value. The Proposed Development will result in a 'neutral' increases in $PM_{2.5}$ concentrations according to the TII significance criteria Table 11.3, with concentrations increasing by at most 0.11 µg/m^3 as a result of the Proposed Development (at receptor R1, see Table 11.17), which is an increase of 1.10% when compared with the annual mean limit value of 10 µg/m^3 for $PM_{2.5}$. All increases are considered 'neutral' as per the TII criteria in Table 11.3.

Table 11.17 Predicted Annual Mean $PM_{2.5}$ Concentrations ($\mu g/m^3$)

Receptor	Impact Opening Year						
	DM	% of AQLV	DS	% of AQLV	DS-DM	% Change of AQLV	Description
R1	8.2	82%	8.3	83%	0.12	1.20%	Neutral
R2	7.7	77%	7.8	78%	0.09	0.90%	Neutral
P1	N/A	N/A	6.9	69%	N/A	N/A	N/A
Receptor	**Impact Design Year**						
	DM	% of AQLV	DS	% of AQLV	DS-DM	% Change of AQLV	Description
R1	7.4	74%	7.5	75%	0.11	1.10%	Neutral
R2	6.9	69%	7.0	70%	0.07	0.70%	Neutral
P1	N/A	N/A	6.1	61%	N/A	N/A	N/A
Note: As P1 is a potential development receptor, no associated DM concentrations or impacts have been predicted as this receptor will not exist without the development in place.							

Significance of Predicted Changes in NO_2, PM_{10} and $PM_{2.5}$ Concentrations

As outlined in Section 11.3.2.4, the TII guidance (2025a) states that the significance of effects should be assessed based on the opening year only. Non-significant effects are 'neutral' or 'slight' changes in concentrations while significant effects can be changes in pollutant concentrations that are either 'moderate' or 'substantial'. However, the TII guidance (2025a) states that these must be considered in the context of the project and 'moderate' or 'substantial' increases are not necessarily always significant effects.

In relation to NO_2, PM_{10} and $PM_{2.5}$ there are predicted increases in pollutant concentrations at both receptors. The predicted changes in NO_2, PM_{10} and $PM_{2.5}$ concentrations are 'neutral' as per the TII criteria, and are therefore considered not significant according to the TII criteria as outlined in Section 11.3.2.4.

It can be concluded that the effect of traffic emissions on air quality and human health during the operational phase is ***long-term, direct, localised, negative*** and ***not significant*** in EIA terms.

The measures set out in the Clean Air Strategy for Ireland (Government of Ireland 2023) aim to work towards solutions to ensure that air pollution concentrations are reduced in order to comply with the future changes in limit values. Ireland will need to continue to implement and develop measures to ensure continuing improvements in air quality in future years in order to meet the objectives of the Clean Air Strategy for Ireland (Government of Ireland, 2023) and to ensure the ambient air quality limit values set out in Directive (EU) 2024/2881 are achieved. The estimated background concentrations used in the assessment are the largest contribution to predicted pollutant concentrations, rather than pollutant contributions associated with the Proposed Development. Strategies to improve air quality at a national level in future years will contribute to reducing background concentrations and therefore it is envisioned that air quality will improve in the future.

11.6 Mitigation Measures

11.6.1 Construction Phase

Based on the assessment results in Section 11.5.2.4, mitigation associated with a high-risk of construction dust impacts is required. Mitigation measures for high-risk sites as recommended by IAQM construction dust guidance are detailed below.

- Communications
  - Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
  - Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.
  - Display the head or regional office contact information.
- Site Management
  - Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
  - Make the complaints log available to the local authority when asked.
  - Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book.
- Preparing and Maintaining the Site
  - Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
  - Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
  - Fully enclose site or specific operations where there is a high potential for dust production and the site is actives for an extensive period
  - Avoid site runoff of water or mud.
  - Keep site fencing, barriers and scaffolding clean using wet methods.
  - Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
  - Cover, seed or fence stockpiles to prevent wind whipping.
- Operating vehicle/machinery and sustainable travel
  - Ensure all vehicles switch off engines when stationary – no idling vehicles.
  - Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable.
  - Impose and signpost a maximum-speed-limit of 20 kmph on surfaced and 15 kmph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate)
  - Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
  - Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and carsharing).

- Operations
  - Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems
  - Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate
  - Use enclosed chutes and conveyors and covered skips.
  - Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
  - Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.
- Waste management
  - Bonfires and burning of waste materials are legally prohibited.
- Measures Specific to Earthworks
  - Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable
  - Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as is practicable.
  - Only remove the cover in small areas during work and not all at once.
- Measures Specific to Construction
  - Avoid scabbling (roughening of concrete surfaces) if possible.
  - Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
  - Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
  - For smaller supplies of fine powder materials, ensure bags are sealed after use and stored appropriately to prevent dust.
- Measures Specific to Trackout
  - Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.
  - Avoid dry sweeping of large areas.
  - Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
  - Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
  - Record all inspections of haul routes and any subsequent action in a site logbook.
  - Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.

- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permit.
- Access gates to be located at least 10 m from receptors where possible.

11.6.2 Operational Phase

No site-specific mitigation measures are proposed for the operational phase as impacts are predicted to be not significant.

11.7 Residual Impacts

11.7.1 Construction Phase

11.7.1.1 Air Quality

To minimise dust emissions during construction, a series of mitigation measures have been prepared as outlined in Section 11.6.1. Provided the dust minimisation measures are adhered to, the predicted residual air quality effects during the construction phase are ***short-term, direct, negative, localised*** and ***not significant***.

11.7.1.2 Human Health

Best practice mitigation measures are proposed for the construction phase of the Proposed Development, which will focus on the proactive control of dust and other air pollutants, to minimise generation of emissions at source. The mitigation measures that will be put in place during construction will ensure that the impact complies with all EU ambient air quality legislative limit values, which are based on the protection of human health (Table 11.1). Therefore, the predicted residual, dust-related, human health effect of the construction phase of the Proposed Development is ***short-term, direct, negative, localised*** and ***not significant***.

11.7.2 Operational Phase

11.7.2.1 Air Quality

Air dispersion modelling of operational traffic emissions associated with the Proposed Development was carried out using the TII REM tool. The modelling assessment determined that the change in emissions of NO_2, PM_{10} and $PM_{2.5}$ at nearby sensitive receptors as a result of the Proposed Development will be 'neutral' in line with the TII assessment criteria (Table 11.3). Therefore, the operational phase effect on air quality is ***long-term, direct, localised, negative*** and ***not significant***.

11.7.2.2 Human Health

Dispersion modelling of traffic emissions at sensitive receptors in proximity to impacted road links during the operational phase indicate pollutant emissions will be in compliance with the TII assessment criteria which is based on the impacts in the opening year. Section 11.5.3 determined that the effect on air quality as a result of increased traffic volumes during the operational phase of the Proposed Development will be ***localised, direct, long-term, negative*** and ***not significant***. However, Ireland will need to develop measures to ensure continuing improvements in air quality in future years in order to

meet the objectives of the Clean Air Strategy for Ireland (Government of Ireland, 2023) and to ensure the ambient air quality limit values set out in Directive (EU) 2024/2881 are achieved.

11.8 Monitoring

11.8.1 Constructional Phase

The following monitoring measures are proposed to ensure the dust mitigation measures are working satisfactorily:

- Undertake daily on-site and off-site inspections, where receptors (including roads) are nearby, to monitor dust, record inspection results in the site inspection log. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of site boundary, with cleaning to be provided if necessary.
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions. The potential for dust generation increases when rainfall is less than 0.2 mm/day and at wind speeds of greater than 10 m/s. To determine if these conditions are likely to affect the site, the weather forecast should be consulted daily, specifically the hourly forecasts for wind speeds as well as 12-hour rainfall radar showing anticipated amounts of precipitation in mm.
- Monitoring of construction dust deposition along the site boundary to nearby sensitive receptors, specifically to the east and the south of the site close to residential receptors (see Figure 11.2), during the construction phase of the Proposed Development is recommended to ensure mitigation measures are working satisfactorily. This can be carried out using the Bergerhoff method in accordance with the requirements of the German Standard VDI 2119. The Bergerhoff Gauge consists of a collecting vessel and a stand with a protecting gauge. The collecting vessel is secured to the stand with the opening of the collecting vessel located approximately 2m above ground level. The TA Luft limit value is 350 mg/m^2/day during the monitoring period of 30 days (+/- 2 days). Monitoring shall ensure that the dust mitigation measures are working satisfactorily as construction works progress.

11.8.2 Operational Phase

There is no monitoring recommended for the operational phase of the Proposed Development as effects on air quality are predicted to be not significant.

11.9 Reinstatement

There is no reinstatement relevant to air quality.

11.10 Interactions

11.10.1 Air Quality and Population and Human Health

11.10.1.1 Construction Phase

Air quality does not have a significant number of interactions with other topics. The most significant interactions are between Population and Human Health and Air Quality. An adverse air quality impact during the construction phase can cause health and dust nuisance issues. There is a medium risk of

dust-related human health effects during the construction phase of the Proposed Development. Best practice mitigation measures will be implemented during the construction phase to ensure that the impact of the Proposed Development complies with all ambient air quality legislative limits. Therefore, the predicted effect is ***direct, short-term, negative, localised*** and ***not significant*** with respect to Population and Human Health during the construction phase.

11.10.1.2 Operational Phase

Vehicles accessing the site will emit pollutants which may impact Air Quality and Human Health. However, the increased number of vehicles associated with the Proposed Development will not cause a significant change in air pollutant emissions in the locality. It has been assessed that emissions will be in compliance with the ambient air quality standards which are set for the protection of human health. Effects will be ***long-term, localised, direct*** and ***not significant***.

11.10.2 Air Quality and Biodiversity

Dust emissions from construction works have the potential to impact vegetation in the vicinity of the site. Vehicular emissions during construction and operation also have the potential to impact vegetation as a result of NOx emissions leading to nitrogen deposition. With the mitigation measures in place, the predicted impact during construction phase due to this interaction will be ***neutral, imperceptible*** and ***short-term***.

There are no potentially significant interactions identified between Air Quality and Biodiversity during the operational phase.

11.10.3 Air Quality and Land and Soils

11.10.3.1 Construction Phase

Construction phase activities such as land clearing, excavations, stockpiling of materials etc. have the potential for interactions between Air Quality and Land and Soils in the form of dust emissions. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that there will be no significant interactions between air quality and land and soils during the construction phase.

11.10.3.2 Operational Phase

There are no potentially significant interactions identified between Air Quality, and Land and Soils during the operational phase.

11.10.4 Air Quality and Climate

Air Quality and Climate have interactions as the emissions from the burning of fossil fuels during the construction and operational phases generate both air quality and climate impacts. There is no impact on climate due to air quality. However, the sources of impacts on air quality and climate are strongly linked.

11.10.5 Air Quality and Traffic and Transport

11.10.5.1 Construction Phase

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. The impacts of the Proposed Development on air quality are assessed by reviewing the change in annual average daily

traffic on roads close to the site. In this assessment, the impact of the interactions between Traffic and Air Quality are linked but there is no potential for significant impacts from traffic on air quality. The effects are considered to be ***direct, short-term, neutral, localised*** and ***not significant*** during the construction phase.

11.10.5.2 Operational Phase

The effect of the interactions between Traffic and Air Quality are considered to be ***long-term, direct,*** and ***not significant*** during the operational phase.

11.11 Indirect and/or Secondary Impacts

Indirect and secondary impacts with respect to air quality, which are impacts that are not a direct result of the project, are not considered to have the potential for significant effects and are therefore scoped out.

11.12 Cumulative Impacts

11.12.1 Construction Phase

According to the IAQM guidance (2024) should the construction phase of the Proposed Development coincide with the construction phase of any other developments within 500 m then there is the potential for cumulative construction dust related impacts to nearby sensitive receptors.

A review of the Chapter 0 (Cumulative Impacts) and recent planning permissions for the area was conducted, and it was found that there were a number of relevant sites for which cumulative impacts may occur should their construction phase and that of the Proposed Development overlap, (see below Table 11.18)

Table 11.18 Cumulative Sites

Name and Reg. Ref.	Overview
Mooretown Phase 1 - LADP/002/24	Phase 1 includes 274 no. units comprising 187 no. houses and 87 no. duplexes and apartments. Phase 1 of the development includes a new link road from the R125 to Swords Community College. The permitted development is between the two sections of the Phase 2 development and stretches from the west to the east of the overall lands.
Residential development, Mooretown - F23A/0504	The residential development includes 96 no. units comprising 46 no. houses and 50 no. duplexes and apartments. The development Is located to the west of the Proposed Development adjacent to the Mooretown Distributor Link Road.
Mooretown Strategic Housing Development - ABP-313362-22	The Mooretown SHD development includes 650 no. units comprising 265 no. houses and 385 no. duplexes and apartments in addition to 1 no. childcare facility, 5 no. retail units and 1 no. café/restaurant. The development is located adjacent to the Proposed Development, forming the west boundary.
Oldtown Phase 5 - ABP-313302-22	The Oldtown Phase 5 development includes 377 no. units comprising 173 no. houses and 204 no. duplexes and apartments in addition to 1 no. childcare facility. The development is located to the northwest of the Proposed Development and north of the R125.
Education Campus - F18A/0163	The Education Campus is located to the west of the Proposed Development and includes a new primary school and a new secondary school. The secondary school, Swords Community College, opened in 2019. The primary school, Broadmeadow Community

Name and Reg. Ref.	Overview
	National School, is currently based in temporary accommodation on-site with the permanent school building not yet constructed. The primary school will eventually consist of 624 pupils. Both schools are considered committed developments (see Chapter 18 – Traffic and Transportation).

There is the potential for cumulative construction dust impacts should the construction phases overlap with that of the Proposed Development, however, provided the mitigation measures outlined in Section 11.6, are implemented throughout the construction phase of the Proposed Development significant cumulative dust impacts are not predicted. Effects are predicted to be ***direct, short-term, negative, localised*** and ***not significant***.

11.12.2 Operational Phase

There is the potential for cumulative impacts to air quality during the operational phase as a result of traffic associated with other existing and permitted developments within the area. The traffic data provided for the operational phase air quality assessment included specific cumulative developments within the area (see Traffic and Transport Assessment and Chapter 0 (Traffic and Transportation)) for further details).

The cumulative operational phase impact is assessed within Section 11.5.3 and was found to have a 'neutral' impact on air quality as per the TII significance criteria (Table 11.3). The cumulative operational stage effect is ***long-term, localised, direct, negative*** and ***not significant***.

11.13 Difficulties Encountered

There were no difficulties encountered when compiling this assessment.

11.14 References

Environmental Protection Agency (2006) Environmental Management Guidelines - Environmental Management in the Extractive Industry (Non-Scheduled Minerals)

Environmental Protection Agency (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports

Environmental Protection Agency (2025) Air Quality in Ireland 2024 (and previous annual reports 2020-2023)

Environmental Protection Agency (2026) EPA Air Quality website: https://www.epa.ie/environment-and-you/air/

German VDI (2002) Technical Guidelines on Air Quality Control – TA Luft

Government of Ireland (2023) Clean Air Strategy for Ireland

Institute of Air Quality Management (IAQM) (2020) A Guide To The Assessment Of Air Quality Impacts On Designated Nature Conservation Sites (Version 1.1)

Institute of Air Quality Management (IAQM) (2024) Guidance on the Assessment of Dust from Demolition and Construction (Version 2.2)

Met Éireann (2025) Met Éireann Ireland's 30-year Climate Averages https://www.met.ie/climate/30-year-averages

Met Éireann (2026) Historical Data: https://www.met.ie/climate/available-data/historical-data

Transport Infrastructure Ireland (2025a) Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106

Transport Infrastructure Ireland (2025b) TII Road Emissions Model (REM): Model Development Report – GE-ENV-01107

World Health Organisation (2021) Air Quality Guidelines (and previous Air Quality Guideline Reports 1999 and 2000 and 2006

12 Climate

12.1 Introduction

This chapter assesses the likely climate impacts associated with the Proposed Development works at Mooretown, Swords, Fingal, County Dublin. A full description of the development is available in Chapter 5 (Description of the Proposed Development). The climate assessment is divided into two distinct sections – a greenhouse gas assessment (GHGA) and a climate change risk assessment (CCRA).

- Greenhouse Gas Emissions Assessment (GHGA) – Quantifies the GHG emissions from a project over its lifetime. The assessment compares these emissions to relevant carbon budgets, targets and policy to contextualise magnitude.
- Climate Change Risk Assessment (CCRA) – Identifies the impact of a changing climate on a project and receiving environment. The assessment considers a projects vulnerability to climate change and identifies adaptation measures to increase project resilience.

12.1.1 Expertise and Qualifications

This climate assessment was prepared Lee Shelton. Lee is a Principal Environmental Consultant in the Air Quality and Climate section of AWN Consulting, a Trinity Consultants Company. Lee is a Chartered Environmentalist with 11 years' experience in environmental assessment and holds a BSc (Hons) in Environmental Protection from Scotland's Rural College through the University of Edinburgh. Lee has a specialism in air quality assessment having worked on a number of projects requiring the quantification of emissions specific to local air quality, a skill transferrable to climate assessment. He undertook early assessments in the history of climate assessment such as those for the Design Manual for Roads and Bridges Stage 2 assessment for the A47 Improvements at Tuddenham and Guyhirn in England and more recently was involved in the Midlands Connect Transport Carbon Quantification in England. One of Lee's more recent air quality assessment projects is the Grangemouth Air Quality Assessment in support of the revocation of the Grangemouth Air Quality Management Area in Falkirk, Scotland, which involved the quantification of pollutant emissions from multiple industrial sources of numerous types. Lee specialises in air quality dispersion modelling and assessment of emissions, odour and accidental releases, emission inventories, air quality and odour monitoring and geographical information systems.

This assessment was reviewed by Ciara Nolan a Principal Air Quality and Climate Consultant in AWN Consulting, a Trinity Consultants Company. She holds a BSc in Energy Systems Engineering from University College Dublin and has also completed an MSc in Applied Environmental Science at UCD. She is a Member of the Institute of Air Quality Management (MIAQM) and the Institution of Environmental Sciences (MIEnvSc). She specialises in the fields of air monitoring, air quality and climate assessments for EIA and air dispersion modelling. Ciara has undertaken detailed climate assessments for various projects at EIA stage in line with the requirements in the National Climate Action Plan and Section 15 obligations under the Climate Action and Low Carbon Development Act. Project types include residential, commercial and infrastructure developments (road, utility connections) as well as industrial developments and renewable energy projects.

12.2 Method

12.2.1 Legislation, Policy and Guidance

In common with all environmental legislation, in Ireland climate legislation is driven primarily by international agreements or European Directives that are then transcribed into domestic law by the Government of Ireland. This is then interpreted through European and domestic policy instruments that clarify aspects, objectives, targets and requirements described in the legislation.

12.2.1.1 Legislation

The **United Nations Paris Agreement** (United Nations, 2015) treaty binds signatory nations to a commitment to hold global average temperature increase well below 2°C above pre-industrial levels with efforts to limit the increase to 1.5°C below pre-industrial levels. Signatories commit to Nationally Determined Contributions (NDCS) which are self- defined climate pledges made by countries in response to climate change, which also includes the direction of finance. Adaptation to the adverse impacts of climate change and lowering greenhouse gas emissions should be undertaken in an equitable manner so as not to disadvantage populations on lower incomes or those most at risk from climate change.

Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 (European Parliament and Council, 2021) follows from the Paris Agreement and writes into EU law the goal set out in the European Green Deal for Europe's economy and society to become climate-neutral by 2050. The law also sets the intermediate target of reducing net greenhouse gas (GHG) emissions by at least 55% by 2030, compared to 1990 levels. These targets are also applied to member states.

Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment (European Parliament and Council, 2014) acknowledges that climate change will play a crucial role in the sustainable development of society. Directive 2014/52/EU requires assessment of the impact of specific types of new development on the climate. There is a requirement for the quantification of greenhouse gases from a development, and an assessment of the risk posed to specific types of new development by the adverse effects of climate change.

The **Climate Action and Low Carbon Development Act 2015** (Government of Ireland, 2015) enables Ireland 'to pursue, and achieve, the transition to a low carbon, climate resilient and environmentally sustainable economy by the end of the year 2050'. This is referred to in the 2015 Act (as amended) as the 'national transition objective'. The 2015 Act (as amended) made provision for a national mitigation plan, and a national adaptation framework. In addition, the Act provided for the establishment of the Climate Change Advisory Council with the function to advise and make recommendations on the preparation of the national mitigation and adaptation plans and compliance with existing climate obligations.

Section 15 of the 2015 Act, sets out the duties imposed by certain bodies, including local authorities and *An Coimisiún Pleanála*. This section was amended by the 2021 Act and states:

"(1) A relevant body shall, in so far as practicable, perform its functions in a manner consistent with—

(*a*) *the most recent approved climate action plan,*

(*b*) *the most recent approved national long term climate action strategy,*

(*c*) *the most recent approved national adaptation framework and approved sectoral adaptation plans,*

(*d*) *the furtherance of the national climate objective, and*

(*e*) *the objective of mitigating greenhouse gas emissions and adapting to the effects of climate change in the State.".*

The **Climate Action and Low Carbon Development (Amendment) Act 2021** (Government of Ireland, 2021) provides the framework for Ireland to achieve a climate resilient and climate neutral economy by the end of the year 2050. The Act allows for the setting of carbon budgets and sectoral emissions ceilings to apply to sectors of the economy whilst promoting climate justice and just transition to the climate resilient and climate neutral economy. Carbon budgets are determined based on the requirements for reductions in GHG described in EU Regulation 2018/842 (European Union, 2018). The Climate Action and Low Carbon Development (Amendment) Act 2021 should be read together with the Climate Action and Low Carbon Development Act 2015, and together are referred to in this report as the "Climate Act".

12.2.1.2 Policy

The **European Green Deal** published by the European Commission in December 2019, provides an action plan which aims for the EU to achieve climate neutrality by 2050. The EU Green Deal highlights a reduction in emissions of 55% in comparison to 1990 levels by 2030 and 90% by 2040. The deal outlines plans for a just and fair transition to a climate neutral society though funding and social investment, carbon pricing, the Emissions Trading Scheme, green industry, the circular economy and stakeholder engagement in the processes at every level.

The **2021 EU Strategy on Adaptation to Climate Change** (European Commission, 2021a) sets out the pathway to prepare for the unavoidable impacts of climate change. The aim is that "by 2050, when we aim to have reached climate neutrality, we will have reinforced adaptive capacity and minimised vulnerability to climate impacts…"

The latest iteration of the Government of Ireland's **Climate Action Plan** (CAP25) (Government of Ireland, 2025a) was published in 2025 updating many of the suggested measures and actions required to achieve carbon budgets and sectoral emissions ceilings from CAP24 (Government of Ireland, 2024). Both CAP24 and CAP25 should be read together. The plans taken together provide the roadmap for halving Ireland's emissions by 2030 and achieving carbon neutrality by 2050. The CAP25 advances sector-specific measures including decarbonising the residential building sector. This includes the complete phase-out of fossil fuel heating for both new builds and retrofits. CAP25 details the 5-year carbon budget periods, shown in Table 12.1, and the Sectoral Emissions Ceilings, shown in Table 12.2, as required by the Climate Act.

Table 12.1 Carbon Budgets for the CAP25 5-Year Periods

Budget Period	Carbon Budget	Reduction Required
2021-2025	295 $MtCO_2e$	Reduction in emissions of 4.8% per annum for the first budget period.
2026-2030	200 $MtCO_2e$	Reduction in emissions of 8.3% per annum for the second budget period.

Budget Period	Carbon Budget	Reduction Required
2031-2035	151 $MtCO_2e$	Reduction in emissions of 3.5% per annum for the third provisional budget.

Table 12.2 CAP25 Sectoral Emission Ceilings for 2030

Sector	Baseline ($MtCO_2e$)	Carbon Budgets ($MtCO_2e$)		2030 Emissions ($MtCO_2e$)	Indicative Emissions % Reduction in Final Year of 2025-2030 Period (Compared to 2018)
	2018	2021-2025	2026-2030		
Electricity	10	40	20	3	75
Transport	12	54	37	6	50
Built Environment - Residential	7	29	23	4	40
Built Environment - Commercial	2	7	5	1	45
Industry	7	30	24	4	35
Agriculture	23	106	96	17.25	25
Other (F-gases, waste, petroleum refining)	2	9	8	1	50
Land Use, Land-use Change and Forestry (LULUCF)	5	Reflecting the continued volatility for LULUCF baseline emissions to 2030 and beyond, a new approach aligned with the EU LULUCF Regulation has been adopted.			
Total	68				
Unallocated Savings	-	-	26	-5.25	-
Legally Binding Carbon Budgets and 2030 Emission Reduction Targets	-	295	200	-	51

The **Long-Term Strategy on Greenhouse Gas Emissions Reductions** (Government of Ireland, 2023) provides the indicative pathways beyond 2030 on how Ireland will transition towards carbon neutrality by 2050. The strategy is intended to bridge the gap between the short-term objectives of the Climate Action Plans and the longer-term objectives of EU Climate Law and Ireland's National Climate Objective.

The **National Planning Framework** (First Revision) (Government of Ireland, 2025b) specifies policies relevant for the Proposed Development:

- National Policy Objective 69: Reduce our carbon footprint by integrating climate action into the planning system in support of national targets for climate policy mitigation and adaptation objectives, as well as targets for greenhouse gas emissions reductions as expressed in the most recently adopted carbon budgets.
- National Policy Objective 70: Promote renewable energy use and generation at appropriate locations within the built and natural environment to meet national objectives towards achieving a climate neutral economy by 2050.

- National Policy Objective 71: Support the development and upgrading of the national electricity grid infrastructure, including supporting the delivery of renewable electricity generating development.
- National Policy Objective 78: Promote sustainable development by ensuring flooding and flood risk management informs place-making by avoiding inappropriate development in areas at risk of flooding that do not pass the Justification Test, in accordance with the Guidelines on the Planning System and Flood Risk Management, and taking account of the potential impacts of climate change on flooding and flood risk, in line with national policy regarding climate adaptation.

12.2.1.3 Climate Change Vulnerability Policy

The **Second National Adaptation Framework** (NAF) (Government of Ireland, 2024) outlines a comprehensive, whole-of-government and whole-of-society approach to climate adaptation. Its core objective is to enhance Ireland's resilience to a wide range of climate risks, including extreme weather events, flooding, drought, biodiversity loss, sea level rise, and rising temperatures. The NAF sets out the roles of the Taoiseach, Government and non-governmental organisations, incorporates an evidence base for climate change and incorporates sectoral and local requirements and indicators for adaptation planning.

In relation to the built environment, the NAF states in Chapter 3, "deepening of adaptation considerations in the planning and building standards processes is considered the most appropriate way of increasing the resilience of the built environment". Within the NAF it mentions that there is a risk of damage to buildings and structures from severe weather events such as high winds and intense rainfall. New development should accommodate predicted future climate change impacts without requiring major redesign or redevelopment in the future, which may be costly and inefficient. This will require facilitating innovative building design, new materials and standards (to accommodate hotter summers while withstanding changes in precipitation patterns and more intense storms for example).

The **National Climate Change Risk Assessment** (NCCRA) (Environmental Protection Agency, 2025a) was required as part of the 2021 CAP. The NCCRA approached the risk assessment though:

- **Hazard** - the potential occurrence of a natural or human-induced physical event or trend or physical impact that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems, and environmental resources
- **Exposure** - the presence of people, livelihoods, species or ecosystems, environmental functions, services, and resources, infrastructure, or economic, social, or cultural assets in places and settings that could be adversely affected
- **Sensitivity** - refers to the degree to which a system or asset is affected by climate hazards. It reflects how vulnerable something is to changes such as temperature extremes, flooding, or drought, based on its physical, functional, or ecological characteristics
- **Vulnerability** - the propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts including sensitivity
- **Risk** - the potential for adverse consequences for human or ecological systems

Compilation of the NCCRA was undertaken using scenarios from the fifth Intergovernmental Panel on Climate Change Assessment Report (AR5). The NCCRA used a high concentration scenario resulting a predicted average global temperature increase of 4.3°C by 2100 (RCP8.5) generally accepted as an extreme worst-case scenario, and a moderate scenario (RCP4.5) where emissions are predicted to peak

by 2040 and then decline resulting in an average global temperature increase of between 2.5°C and 3°C. Both scenarios are considered conservative for Ireland as they assume that emissions targets are not met.

12.2.1.4 Local Policy

The Fingal County Council Climate Action Plan 2024-2029 (Fingal County Council, 2024) has been prepared in partnership with other Dublin local authorities, Codema (Dublin's Energy Agency) and the Dublin Climate Action Regional Office. The targets for the plan are:

- A 50% improvement in the Council's energy efficiency by 2030
- A 51% reduction in the Council's greenhouse gas emissions by 2030
- To make Dublin a climate resilient region by reducing the impacts of future climate change-related events
- To actively engage and inform its communities on climate action

The Plan seeks to achieve this through the continued roll-out of active travel schemes and implementation of electric vehicle (EV) charging, installation of a district heating scheme in Blanchardstown and continued improvements in the energy efficiency of the Council's housing stock. An area in Balbriggan has been identified as the County's first Decarbonising Zone, and climate action considerations will be included in every Council decision and action.

The Fingal Development Plan 2023-2029 (Fingal County Council, 2022), as amended, places importance on integrating climate action into the planning system and through integrating action to mitigate the effects of climate change and climate resilience into local infrastructure. The Development Plan objectives include supporting high levels of energy efficiency in buildings, layout and design to maximise use of sunlight and natural ventilation and on-site renewable energy generation. Construction materials with low embodied carbon and zero energy emissions are to be encouraged.

12.2.1.5 Guidance

The following guidance is considered relevant to this assessment:

- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (Environmental Protection Agency, 2022)
- Environmental Impact Assessment of Projects – Guidance on the Preparation of the Environmental Impact Assessment Report (European Commission, 2017)
- Transport Infrastructure Ireland (TII) PE-ENV-01104: Climate Guidance for National Roads, Light Rail and Rural Cycleways (Offline and Greenways) – Overarching Technical Document (Transport Infrastructure Ireland, 2022);
- Transport Infrastructure Ireland (TII) GE-ENV-01106: TII Carbon Assessment Tool for Road and Light Rail Projects and User Guidance Document (Transport Infrastructure Ireland, 2025a)
- Institute of Sustainability and Environmental Professionals (ISEP) Environmental Impact Assessment Guide to: Assessing GHG Emissions and Evaluating their Significance Edition 2.1 (hereafter referred to as the ISEP GHG Guidance) (ISEP, 2026);
- ISEP Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (hereafter referred to as the ISEP 2020 EIA Guide) (Institute of Sustainability and Environmental Practitioners, 2020a)

- ISEP GHG Management Hierarchy (Institute of Sustainability and Environmental Practitioners, 2020b)
- Carbon Management in Infrastructure and Built Environment - PAS 2080 (The British Standards Institution, 2023)
- Technical Guidance on the Climate Proofing of Infrastructure in the Period 2021-2027 (European Commission, 2021b)

12.2.2 Greenhouse Gas Assessment Methodology

As per the EU *Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment* (European Commission, 2013) the climate baseline is first established with reference to EPA data on annual GHG emissions (see Section 12.3.1).

12.2.2.1 Construction Phase

The GHG assessment accounts for various components relating to the project during different life stages to determine the total impact of the development on climate. The reference study period, i.e. the assumed building life expectancy, for the purposes of the assessment is 50 years. Embodied carbon refers to the sum of the carbon needed to produce a good or service. It incorporates the energy needed in the mining or processing of raw materials, the manufacturing of products and the delivery of these products to site. The purpose of the embodied carbon assessment is to engage the design team in the consideration of embodied carbon at an early stage in the development and mitigate embodied carbon. This engagement aims to ensure carbon savings are made and to assist in aligning the project to Ireland's CAP goal of Net Carbon Zero by 2050.

A detailed lifecycle assessment (LCA) was undertaken by the project developer (Glenveagh Homes) on their most commonly used house types and apartments. The project developer uses consistent designs across their various developments. This level of repeatability allowed for a detailed LCA to be undertaken across the most commonly used typologies, the results of which have been used to generate a typical embodied carbon figure suitable for use across all Glenveagh units.

Specific $kgCO_2e/m^2$ figures based on building type have been calculated which can be factored based on the specific gross internal area (m^2) of the unit to be assessed. Summing the embodied carbon for all of the units within the Proposed Development then provides an estimate of the embodied carbon associated with the specific project.

The lifecycle assessment followed the lifecycle stage terminology consistent with widely used industry standards (based on BS EN 15978:2011, BS EN 15804:2012):

- Stage A1 – A3: Product Carbon The carbon emissions generated at this stage arise from extracting the raw materials from the ground, their transport to a point of manufacture and then the primary energy used (and the associated carbon impacts that arise) from transforming the raw materials into construction products.
- Stage A4 – A5: Construction Carbon These carbon impacts arise from transporting the construction products to site, and their subsequent processing and assembly into the building.
- Stage B1 – B5: In Use Carbon – use of the building (B1), maintenance (B2), repair (B3), replacement (B4) and refurbishment (B5).

- **Stage B6, B7, B8: In Use Phase** operational use energy (B6), water (B7) and user activities carbon (B8). *These categories have been excluded from the assessment due to the significant variability in user emissions.*
- **Stage C1 – C4: End of Life Carbon** The eventual deconstruction and disposal of the existing building at the end of its life takes account of the on-site activities of the demolition contractors. No 'credit' is taken for any future carbon benefit associated with the reuse or recycling of a material into new products.
- **Biogenic Carbon:** Carbon sequestered during the growth cycle of a tree that is temporarily stored in the timber product until the end of its useful life. This element must be reported separately to the A – C carbon.

The house types assessed, including duplexes, are of timber framed construction with a rendered blockwork façade and concrete tile roof. The apartments are concrete and steel framed with concrete tiled roof. These typologies were considered 'typical' for Glenveagh projects. The LCA study examined the carbon across the lifecycle of the typical unit, and this information can then be used to mitigate impacts from Glenveagh projects and target key areas for improvement.

The LCA was assessed in line with EN 15978 and European Level(s) methodologies. The assessment has also followed *RICS Whole Life Carbon Assessment for the Built Environment Guidance V1*, which is comparable with the European Level(s) methodology, but it has been adapted to accommodate a 50-year service life for the building to coordinate with European Level(s) methodologies.

OneClick LCA, in addition to Glenveagh specific calculations, was used to calculate embodied carbon emissions in line with detailed RICS guidance. The Inventory of Carbon and Energy (ICE) database as well as Environmental Product Declaration (EPDs) were used to find the relevant carbon factors for the specified materials.

The building element groups included in the embodied carbon assessment were substructure; frame; floors; external walls; internal walls and partitions; windows and doors; roofs; services; MEP (mechanical, electrical and plumbing); some permanent furnishings; and some external works.

An uncertainty factor was included in the LCA calculations. Due to the early design stage, precise material quantities and types are not yet known. To ensure emissions are not under-reported a conservative uncertainty factor of 22% was added to all the embodied carbon emissions based on the RICS V2 guidance, which is more conservative than the RICS V1 guidance.

The Glenveagh LCAs concluded that a figure of:

- 500 $kgCO_2e/m^2$ for total carbon (A – C stages, total lifecycle) can be used in EIAR assessments for typical house types.
- 1,150 $kgCO_2e/m^2$ for total carbon (A – C stages, total lifecycle) can be used in EIAR assessments for typical apartment types
- 1,171 $kgCO_2e/m^2$ for total carbon (A – C stages, total lifecycle) can be used in EIAR assessments for typical duplex types

The Glenveagh house types utilise a timber framed construction. Timber usage has a positive climate impact through carbon sequestration. Carbon sequestration is the process of capturing and storing

atmospheric carbon. Trees and plants absorb CO_2 from the atmosphere during photosynthesis in exchange for oxygen that they give out in return.

Biogenic carbon is the term used for carbon absorbed, stored and emitted by organic matter like soil, trees, plants and grasses.

The LCA found that a reduction of between 3% and 21% of total embodied carbon emissions (A – C stages) can be utilised for the biogenic carbon associated with the Glenveagh house types and apartments respectively. This will be a carbon saving or negative carbon figure, within the climate impact assessment.

This biogenic carbon must be reported separately to the embodied carbon results and is not included within the figures for the embodied carbon associated with the house and apartment units referenced above.

In addition to the embodied carbon associated with the buildings in the Proposed Development, other elements of the Proposed Development such as site activities, land clearance works, construction worker travel to site, etc. also result in a carbon impact. PE-ENV-01104 recommends the calculation of the construction stage embodied carbon using the TII Online Carbon Tool. It should be noted that some of the GHG emissions within the TII carbon tool results will have been accounted for within the building LCA therefore the results are conservative estimates and based on a worst-case scenario. A list of assumptions can be found in Table 12.14.

The TII Online Carbon Tool was commissioned by TII to assess GHG emissions associated with road or rail projects in Ireland. The TII Carbon Tool uses emission factors from recognised sources including the Civil Engineering Standard Method of Measurement (CESMM) Carbon and Price Book database (CESMM, 2013), which can be applied to a variety of developments, not just road or rail. The tool aligns with PAS 2080. The TII Carbon Tool was utilised to calculate the embodied carbon associated with the non-building elements of the development including construction wastes; site clearance works; worker travel to site; and construction materials.

The results of the Glenveagh LCAs and the TII Carbon Tool were summed to provide a total carbon impact of the Proposed Development.

The OneClick LCA tool was used to determine the embodied carbon associated with the construction of the crèche and the community building. OneClick LCA is certified to EN 15978, ISO 21931 – 1 and ISO 21929, and data requirements of ISO 14040 and EN 15804, and is LEED, BREEAM and PAS 2080 aligned. It allows users to assess the carbon impact of buildings at various stages of design. The tool includes a detailed product and material list based on Irish materials as well as materials from the UK and Europe. The OneClick LCA 3D Designer option allows for a high-level assessment of the embodied carbon impact of a development at early design stages when specific detailed design information is not known and is suitable for EIAR stage assessments.

Inputs into the tool include gross floor areas for the building types (houses/duplexes/apartments), building frame type, number of above ground floors and building size and shape. The tool then makes necessary default assumptions based on these parameters and a typical build-up with the option to refine the default assumptions where project specific information is available. The tool allows for optioneering and optimization of the carbon impact, it highlights the key areas within the building with the highest carbon impact and provides options for lower carbon intensive materials.

12.2.2.2 Operational Phase

12.2.2.2.1 Traffic Emissions

Emissions from road traffic associated with the Proposed Development have the potential to emit carbon dioxide (CO_2) which will impact climate.

The TII guidance PE-ENV-01106, states that road links meeting one or more of the following criteria can be defined as being 'affected' by a Proposed Development and should be included in the local air quality assessment, and also the climate assessment.

- Annual average daily traffic (AADT) changes by 1,000 or more;
- Heavy duty vehicle (HDV) AADT changes by 200 or more;
- Daily average speed change by 10 kph or more;
- Peak hour speed change by 20 kph or more;
- A change in road alignment by 5 m or greater.

While the guidance is specific to infrastructure projects the approach can be applied to any development that causes a change in traffic.

There is one road link that will experience a change of over 1,000 in the AADT in addition to the access road to the Proposed Development. As a result, a detailed assessment of traffic related carbon dioxide (CO_2) emissions was conducted.

PE-ENV-01104 states that road traffic related emissions information should be calculated using the TII Road Emissions Model (REM) online calculator tool. The PE-ENV-01104 guidance states that modelling should be conducted for the Base, Opening and Design Years for both the Do Nothing and Do Something scenarios. The output is provided in terms of CO_2e.

The following inputs are required for the REM tool: receptor locations, light duty vehicle (LDV) annual average daily traffic movements (AADT), annual average daily heavy-duty vehicles (HDV AADT), annual average traffic speeds, road link lengths, road type, project county location and pollutant background concentrations. The *Default* fleet mix option was selected which includes the following assumptions for fleet composition:

- Cars - Climate Action Plan (CAP). The CAP projection assumes that the policies set out in the CAPs up to 2024 are implemented resulting in increased adoption of electrified vehicles.
- LGV - Business as Usual (High Ambition), this is based on a review of market capacity for different technologies within each category. This is broken down further into "high ambition" in the LGV fleet, where the distinction is the rate of adoption of low emissions technologies based on available and emerging technologies, adjusted to recognise the unique conditions, constraints and opportunities in the Irish market.
- HGVs - EU target projections for HGVs, this represents interim targets for emissions from sales of new HGVs.

The Default fleet mix represents a realistic worst-case scenario according to the TII PE-ENV-01106 guidance (2025a). The TII REM uses county-based Irish fleet composition for different road types, for different European emission standards from pre-Euro to Euro 6/VI with scaling factors to reflect improvements in fuel quality, retrofitting, and technology conversions.

Traffic flow information was obtained from Transport Insights for the purposes of this assessment. Data was provided for the Opening Year 2028 and Design Year 2043 (see Traffic and Transport Assessment for further details). Both the Do Nothing and Do Something scenarios are quantified to determine the degree of change in emissions due to the Proposed Development. A total of 2 no. scenarios were assessed, these include:

- The Do Nothing scenario – this scenario assumes the Proposed Development is not in place in future years but includes traffic associated with cumulative developments in the wider area.
- The Proposed scenario – this is the "Do Something" scenario and includes traffic from the Do Nothing scenario and traffic associated with the Proposed Development as well as traffic associated with cumulative developments in the wider area.

Further detail on the modelling scenarios can be found in the Traffic and Transport Assessment prepared by Transport Insights and submitted with this planning application. The traffic data is detailed in Table 12.3. Only road links that met the TII scoping criteria were included in the modelling assessment. Inputs include light duty vehicle (LDV) annual average daily traffic movements (AADT), annual average daily heavy-duty vehicles (HDV AADT), annual average traffic speeds, road link lengths, road type and project county location.

Table 12.3 Traffic Data used in the Operational Phase Climate Assessment

Road Name	Speed (kph)	Opening Year		Design Year	
		Do Nothing	Do Something	Do Nothing	Do Something
		LDV AADT (HDV AADT)	LDV AADT (HDV AADT)	LDV AADT (HDV AADT)	LDV AADT (HDV AADT)
R125 Rathbeale Road	50	11,449 (339)	12,449 (339)	12,401 (435)	13,401 (435)
Site Access	50	1,681 (59)	2,908 (59)	1,683 (75)	2,909 (75)

12.2.2.2.2 Operational Phase Energy Use

The EU *Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment* (European Commission, 2013) also states indirect GHG emissions resulting from a development must be considered, which includes emissions associated with energy usage. The quantification of operational energy usage is out of scope of this assessment due to user variability, however information on the proposed energy strategy for the development was obtained from the Climate Action Energy Statement prepared by ENX (2026). Several measures in relation to sustainable energy usage have been incorporated into the overall design of the development which will have the benefit of reducing the impact to climate where possible during operation.

12.2.2.2.3 Significance Criteria for GHGA

The significance of the impacts of GHG emissions on the climate is an area of scientific consensus that is described clearly in the IPCC AR5 reports, and as such all GHG emissions are considered to contribute adversely towards climate change.

In accordance with ISEP guidance and PE-ENV-01104, the significance of the impacts of GHG emission resulting from a given project is based on how it contributes to the overall GHG emissions within the

sectoral and national carbon budgets and whether that project contributes or not to the CAP25 objective for Ireland to achieve carbon neutrality by 2050, that is that a project contributes to reducing GHG emissions. This process requires an assessment of the quantified GHG emissions against the sensitivity of receptors (Ireland's national GHG targets or National Climate Objective), qualification of the potential measures that might mitigate against GHG emissions, and a degree of professional judgement that takes account of the balance of all of these factors. Both the ISEP and TII guidance documents are explicit in this concept, however the TII document also highlights the issue of significance in the context of how a project mitigates its GHG emissions.

In order to streamline the assessment process and ensure transparency, the criteria set out in the ISEP *Assessing GHG Emissions and Evaluating their Significance* guidance, as applied through TII PE-ENV-01104, are used in conjunction with the following factors:

- The extent to which the trajectory of GHG emissions from the project aligns with Ireland's GHG trajectory to net zero by 2050
- The level of mitigation taking place.

Table 12.4 Significance Criteria for GHGA

Effects	Significance Level	Description
Significant Adverse	Major Adverse	■ The project's GHG impacts are not mitigated. ■ The project has not complied with do-minimum standards set through regulation, nor provided reductions required by local or national policies; and ■ No meaningful absolute contribution to Ireland's trajectory towards net zero.
	Moderate Adverse	■ The project's GHG impacts are partially mitigated. ■ The project has partially complied with do-minimum standards set through regulation, and have not fully complied with local or national policies; and ■ Falls short of full contribution to Ireland's trajectory towards net zero.
Not Significant	Minor Adverse	■ The project's GHG impacts are mitigated through 'good practice' measures. ■ The project has complied with existing and emerging policy requirements; and ■ Fully in line to achieve Ireland's trajectory towards net zero.
	Negligible	■ The project's GHG impacts are mitigated beyond design standards. ■ The project has gone well beyond existing and emerging policy requirements; and ■ Well 'ahead of the curve' for Ireland's trajectory towards net zero.
Beneficial	Beneficial	■ The project's net GHG impacts are below zero and it causes a reduction in atmosphere GHG concentration. ■ The project has gone well beyond existing and emerging policy requirements; and

Effects	Significance Level	Description
		■ Well 'ahead of the curve' for Ireland's trajectory towards net zero, provides a positive climate impact.

12.2.3 Climate Change Risk Assessment Methodology

The Climate Change Risk Assessment (CCRA) involves determining the vulnerability of the Proposed Development to climate change. This requires an analysis of the sensitivity and exposure of the development to climate hazards which together provide a measure of vulnerability.

PE-ENV-01104 states that the CCRA is guided by the principles set out in the overarching best practice guidance documents:

- Technical Guidance on the Climate Proofing of Infrastructure in the Period 2021-2027
- The Institute of Environmental Management and Assessment, Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (2nd Edition, 2025)

The baseline environment information provided in Section 12.3, future climate change modelling, and input from other experts working on the Proposed Development (i.e. hydrologists) should be used to assess the likelihood of a climate risk.

First, an initial screening CCRA based on the operational phase is carried out, according to the TII guidance PE-ENV-01104. This is carried out by determining the sensitivity of Proposed Development assets (i.e. receptors) and their exposure to climate change hazards.

The Proposed Development asset categories must be assigned a level of sensitivity to climate hazards. PE-ENV-01104 provides the list of asset categories and climate hazards to be considered, as per the below. The asset categories will vary for development type and need to be determined on a development-by-development basis.

- Asset Categories: Pavements; drainage; structures; utilities; landscaping; signs; light posts; buildings; and fences.
- Climate Hazards: Flooding (coastal, pluvial, fluvial); extreme heat; extreme cold; wildfire; drought; extreme wind; lightning and hail; landslides; fog.

First an initial screening of physical hazards is carried out based on the proposed site location, described in Table 12.12. This is a qualitative screening which intends to only proceed with relevant hazards. The sensitivity is based on a High, Medium or Low rating with a score of 1 to 3 assigned as per the criteria below.

- High Sensitivity - The climate hazard will or is likely to have a major impact on the asset category. This is a sensitivity score of 3.
- Medium Sensitivity - It is possible or likely the climate hazard will have a moderate impact on the asset category. This is a sensitivity score of 2.
- Low Sensitivity - It is possible the climate hazard will have a low or negligible impact on the asset category. This is a sensitivity score of 1.

Once the sensitivities have been identified the exposure analysis is undertaken. The exposure analysis involves determining the level of exposure of each climate hazard at the project location irrespective

of the project type. For example, flooding could be a risk if the project location is next to a river in a floodplain. Exposure is assigned a level of High, Medium or Low as per the below criteria.

- **High Exposure** - It is almost certain or likely this climate hazard will occur at the project location, i.e. might arise once to several times per year. This is an exposure score of 3.
- **Medium Exposure** - It is possible this climate hazard will occur at the project location, i.e. might arise a number of times in a decade. This is an exposure score of 2.
- **Low Exposure** - It is unlikely or rare this climate hazard will occur at the project location, i.e. might arise a number of times in a generation or in a lifetime. This is an exposure score of 1.

Once the sensitivity and exposure are categorised, a vulnerability analysis is conducted by multiplying the sensitivity and exposure to calculate the vulnerability.

12.2.3.1 Significance Criteria for CCRA

The CCRA involves an initial screening assessment to determine the vulnerability of the Proposed Development to various climate hazards. The vulnerability is determined by combining the sensitivity and the exposure of the Proposed Development to various climate hazards.

Vulnerability = Sensitivity x Exposure

The vulnerability assessment takes any proposed mitigation into account. Table 12.5 details the vulnerability matrix; vulnerabilities are scored on a high, medium and low scale.

The PE-ENV-01104 guidance and the EU technical guidance (European Commission, 2021a) note that if all vulnerabilities are ranked as low in a justified manner, no detailed climate risk assessment may be needed. Therefore, the impact from climate change on the Proposed Development can be considered to be not significant.

However, where residual medium or high vulnerabilities exist the assessment may need to be progressed to a detailed climate change risk assessment and further mitigation implemented to reduce risks. According to PE-ENV-01104, an assessment of construction phase CCRA impacts is only required if a detailed CCRA is required.

Table 12.5 Climate Change Vulnerability Matrix

		Exposure		
		High (3)	Medium (2)	Low (1)
Sensitivity	High (3)	9 - High	6 - High	3 - Medium
	Medium (2)	6 - High	4 - Medium	2 - Low
	Low (1)	3 - Medium	2 - Low	1 - Low

The screening CCRA, detailed in Section 12.4.3.2, did not identify any residual medium or high risks to the Proposed Development as a result of climate change. Therefore, a detailed CCRA for the construction and operational phase was scoped out.

While a CCRA for the construction phase was not required, best practice mitigation against climate hazards is still recommended in Section 12.5.

12.3 Baseline Environment

PE-ENV-01104 states that a baseline climate scenario should identify, consistent with the study area for the project, GHG emissions without the project for both the current and future baseline. Climate impacts are assessed at a national level and in relation to national targets and sectoral emission ceilings. The study area for climate is the Republic of Ireland, and the baseline is determined in relation to this study area.

Ireland declared a climate and biodiversity emergency in May 2019 and in November 2019 there was European Parliament approval of a resolution declaring a climate and environment emergency in Europe. This, in addition to Ireland's current failure to meet its EU binding targets under Regulation 2018/842 results in changes in GHG emissions either beneficial or adverse being of more significance than previously considered prior to these declarations.

12.3.1 Current GHG Baseline

Data published in March 2026 (Environmental Protection Agency, 2025c), indicates that Ireland exceeded, without the use of flexibilities, its 2024 annual limit set under EU's Effort Sharing Decision (ESD) (EU 2018/842) by 3.93 $MtCO_2e$. However, the reported emissions for 2024 represent the second consecutive year in which Ireland's emission were below 1990 levels by 4.2%. Emissions Trading Scheme emissions have decreased by 49.7% or 11.1 $MtCO_2e$ compared to 2005 and Effort Sharing Regulation emissions decreased by 10.2% or 5 $MtCO_2e$. Ireland is now a net 2,020 $ktCO_2e$ distant from its target under the Effort Sharing Regulation.

The EPA estimate that 2024 total national GHG emissions, excluding LULUCF, have decreased by 1.9% on 2023 levels to 53.93 $MtCO_2e$, with an 8.8% reduction in electricity industries alone. This was driven by an increase in generation from renewables in 2024 by 1.6% and the complete phase-out of peat for electricity generation. Manufacturing combustion and industrial processes decreased by 4.4% to 6.2 $MtCO_2e$ in 2024 due to declines in fossil fuel usage. The sector with the highest emissions in 2024 was agriculture at 36.2% of the total, followed by transport at 20.9%. For 2024, total national emissions (including LULUCF) were 58.74 $MtCO_2e$ (Table 12.6).

The current estimates of National greenhouse gas emissions (including LULUCF) in 2024 are 12.6% below 2018, well below the National Climate ambition of a 51% reduction by 2030. The data indicate that from 2021 to 2024 Ireland has used 85.2% of the 295 $MtCO_2e$ Carbon Budget for the five-year period 2021-2025. This leaves 17.5% of the budget available for 2025, requiring a substantial 14.8% annual emissions reduction across all sectors for 2025 to stay within the budget.

Figures for 2025 emissions are due to be provisionally published by the EPA in July 2026. The final 2025 emissions outturn will determine whether the first carbon budget (2021 to 2025) has been exceeded and, consequently, may necessitate adjustments to the subsequent carbon budget period for 2026 to 2030 in accordance with national carbon budgeting arrangements under the Climate Action and Low Carbon Development (Amendment) Act 2021.

Table 12.6 Trends in Total National GHG Emissions 2021 – 2024

Sector [Note 1]	2021	2022	2023	2024	Total Budget (Mt CO_2e) (2021-2025)	% Budget 2021-2025 Used	Annual Change 2023 to 2024 (%)
Electricity	9.88	9.68	7.56	6.95	40	85.19%	-8.11%

Sector [Note 1]	2021	2022	2023	2024	Total Budget (Mt CO_2e) (2021-2025)	% Budget 2021-2025 Used	Annual Change 2023 to 2024 (%)
Transport	11.19	11.88	11.93	11.78	54	86.66%	-1.26%
Buildings (Residential)	6.71	5.62	5.23	5.48	29	79.47%	4.84%
Buildings (Commercial and Public)	1.42	1.38	1.34	1.44	7	79.69%	8.05%
Industry	7.25	6.81	6.46	6.18	30	89.00%	-4.37%
Agriculture	21.97	21.78	20.72	20.45	106	80.11%	-1.33%
Other [Note 2]	1.82	1.85	1.75	1.65	9	78.45%	-5.82%
LULUCF	2.87	2.47	2.96	2.51	-		
Total including LULUCF	**63.11**	**61.48**	**57.96**	**56.45**	**295**	**81.01%**	**-2.61%**
Total excluding LULUCF	60.24	59.01	54.99	53.93	-	-	-1.93%

Note 1 Reproduced from latest emissions data from the EPA (EPA, 2025b).

Note 2 Other includes Petroleum refining, F-Gases and Waste (emissions from solid waste disposal on land, solid waste treatment (composting and anaerobic digestion), wastewater treatment, waste incineration and open burning of waste).

12.3.2 Future GHG Baseline

The future GHG baseline is considered in relation of the ability of the Proposed Development to contribute positively or negatively to the ability of Ireland to meet the binding commitment as part of the Climate Act for carbon neutrality by 2050.

The targets for 2030 and 2050 are described in CAP24 and CAP25 as required by the Climate Act. The Climate Act codified the GHG reductions required by EU Regulation 2018/842 amended by EU Regulation 2023/857 put in place to enable European Member States to meet their obligations under the Paris Agreement. The future baseline is determined by Ireland being able to meet its requirements under these regulations.

Ireland's Greenhouse Gas Emissions Projections 2024-2055 (Environmental Protection Agency, 2025d) summarises total projected emissions and a breakdown of projected emissions per sector under the 'With Existing Measures' and 'With Additional Measures' scenarios. The EPA projections indicate that the 'With Existing Measures' scenario will achieve a reduction of 10% on 2005 levels by 2030, significantly short of the 42% reduction target. If measures in the 'With Additional Measures' scenario are implemented EPA projections show that Ireland can achieve a reduction of 22% by 2030, still short of the 42% reduction target.

12.3.3 Current CCRA Baseline

The region of the Proposed Development has a temperate, oceanic climate, resulting in mild winters and cool summers. This baseline data is derived from the European Centre for Medium-Range Weather Forecasts (ECMWF) ERA5 data reanalysis (ECMWF, 2023) which includes observed data from local meteorological weather stations across Ireland from 1950-2023. This data is reanalysed to model a

complete picture of Irelands historical climate. This method has been chosen to ensure data can be analysed at the daily level and harmoniously compared with future scenarios. The baseline time-period referred to in this assessment was from 1991-2020 and is specific to Co. Dublin.

Climate averages for the 30-year period from 1991-2020 are shown in Figure 12.1. The data show that there are two distinct peaks in precipitation, one occurring in the period June to September peaking in August at 81.8 mm, and another wetter period from October to January with November being the wettest month on average with rainfall of 87.6 mm. The period from January to May experiences rainfall below the average for the year (74.2 mm). September also experiences rainfall below the annual average however this is when the wettest days occur with daily average maximum rainfall of 28.2 mm. The driest month is February with 60.7 mm of rainfall.

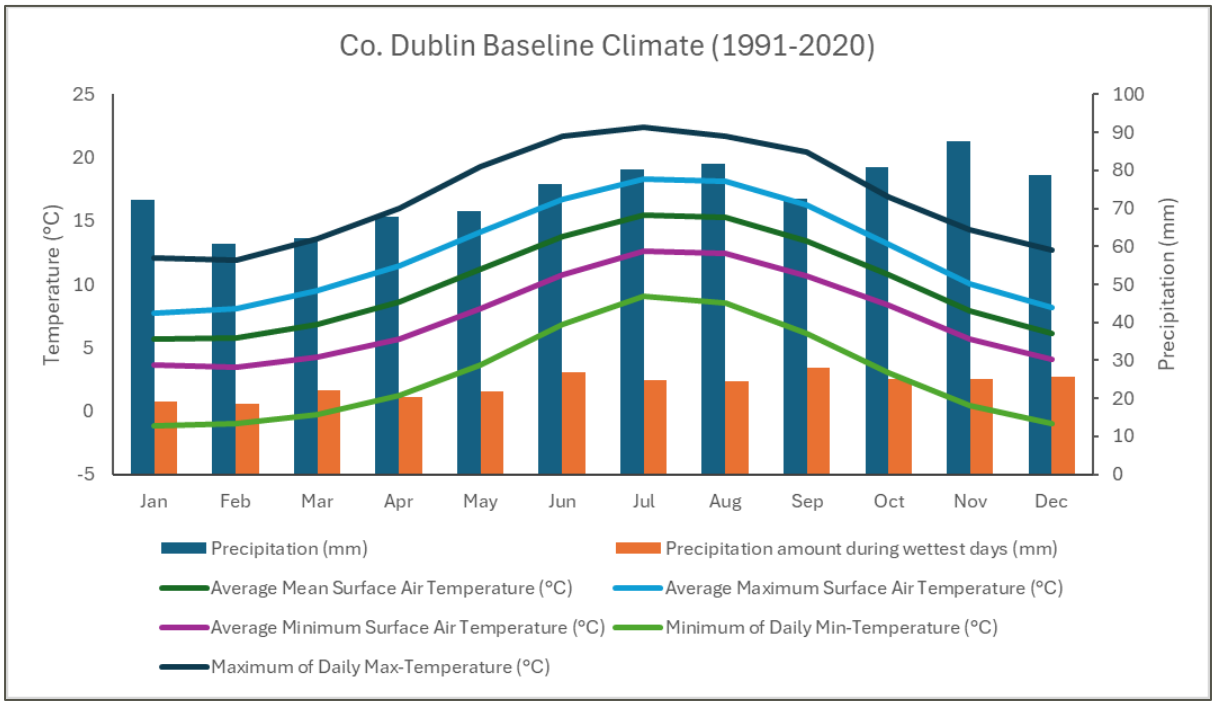

Figure 12.1 Climate Averages for Dublin, Ireland, for the period 1991-2020

July is the warmest month on average with a mean surface air temperature of 15.4°C. July also experiences the average maximum surface air temperature (18.4°C) and the daily maximum temperature (22.4°C). January is the coldest month on average with a mean average surface temperature of 5.7°C and recording the daily minimum temperature (-1.2°C), however the average minimum surface air temperature of 3.5°C occurs in February.

12.3.3.1 Wind and storms

At Dublin Airport during the period 1991-2020, the average wind speed was 10.5 knots (19.5kph), the average windiest month being January at 12.3 knots (22.6 kph) with the average highest gust of 30.0 knots (55.2 kph) also occurring in January. Historically, the highest absolute gust of 80.0 knots (147.3 kph) was recorded in January 2007 during Cylone Kyrill.

With reference to recent extreme weather events in Ireland, storm Éowyn hit the island in January 2025 and recorded a 10-minute mean wind speed of 142 kph in Galway, with the highest gust being 184 kph. Four weather stations broke their highest gust records during this storm and two stations reached hurricane force 12 on the Beaufort scale.

Later in the year storm Amy also resulted in strong winds such that five recording stations broke their records for 10-minute mean wind speeds. Overall, there were five named storms to hit Ireland in 2025.

12.3.3.2 Wildfire

The Dublin area, of which Fingal County is a part, is classified at being of a low risk of wildfire by the World Bank Global Facility for Disaster Reduction and Recovery (GFDRR) Think Hazard dataset (World Bank Group, 2026). The Fingal Council Climate Action Plan 2024-2029 refers to an increase in gorse fires as a possible result of climate change and refers to a wildfire management strategy for the Howth Head area c.15 km from the Proposed Development.

12.3.3.3 Flood

A Site-Specific Flood Risk Assessment was undertaken by AKM Design Group as part of the infrastructure Report to determine risk of flooding and past flood events at the location of the Proposed Development. The assessment showed that there were no recorded flooding events at the location of the Proposed Development.

12.3.4 Future CCRA Baseline

The current global climate is in a state of extreme flux. This is illustrated in the latest IPCC AR6 Synthesis Report Summary for Policymakers (IPCC, 2023) using the climate stripes representation pioneered by Professor Ed Hawkins of the University of Reading, reproduced in Figure 12.2.

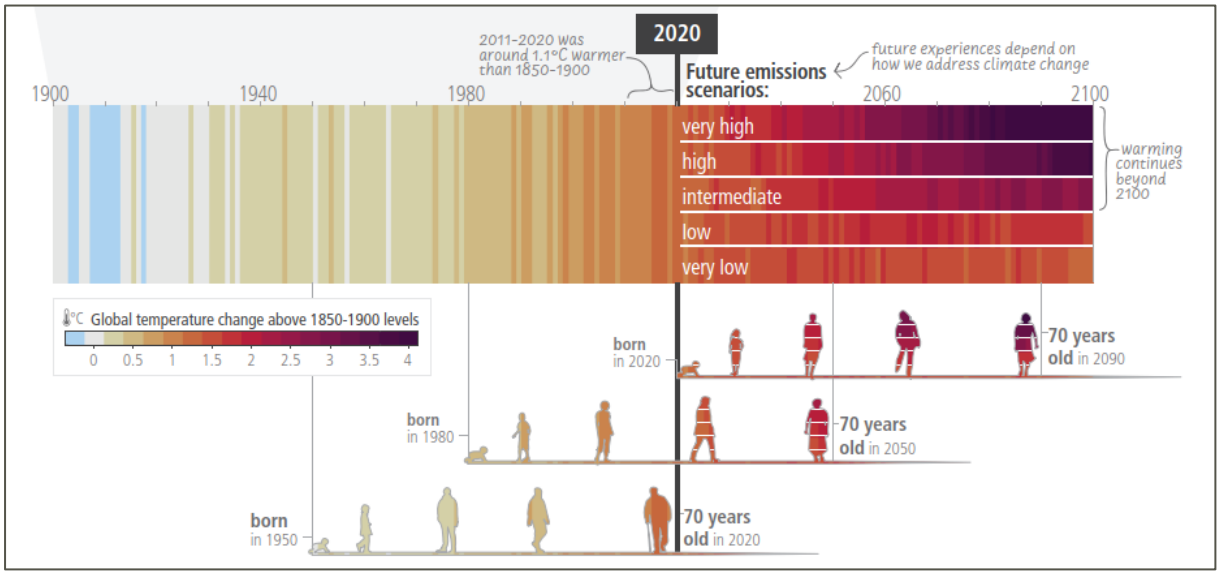

Figure 12.2 Global Climate Change Representation (from IPCC 2023)

Figure 12.2 shows that global average temperatures are already substantially above the 1850-1900 baseline level, and potential increases under future emissions scenarios are also presented. The United Nations reported that 2024 was the first calendar year to exceed the 1.5°C average increase (United Nations, 2026) with an average temperature 1.55° above the 1850-1900 average. Whilst this in itself is not an indication of a definite exceedance of the 1.5°C Paris Agreement commitment, as there will be some natural variation in the coming years, it is a clear indication that the climate is continuing to significantly warm. In addition, the CMIP6 climate model predicts a severe weakening of the Atlantic Meridional Overturning Current (AMOC) due to ocean surface warming and glacial meltwater entering the system from the Greenland ice sheets that is known to be highly influenced by anthropogenic

emissions. Normally this current has a stabilising effect on the climate in Ireland, however a weakening or cessation of the ocean current would have profound consequences for Ireland in terms of overall climate stability and the magnitude of temperature extremes. Recent observations have been coupled with prediction models (Portmann et al, 2026) that show AMOC weakening that is far greater than predicted in CMIP6. The implications of such a weakening or cessation of flow within AMOC for the climate in Ireland are predicted to be severely negative.

12.3.4.1 Climate Change Impacts and Projections for Ireland

Ireland is already experiencing increased annual rainfall in the north and west, with more variable patterns in the south and east including the area of the Proposed Development (Met Éireann 2024). Key risks identified by the EPA relevant to the proposed project include:

- Increased likelihood of more frequent and intense North Atlantic low-pressure systems bringing high rainfall and high winds.
- More intense rainfall periods which may lead to pluvial flooding and elevated fluvial levels.
- Longer dry spells and increased temperatures will elevate the risk of wildfire.

12.3.4.2 Climate Modelling and Planning

International best practice and national policy such as the NCCRA (EPA, 2025a), IPCC (2023), and PE-ENV-01104 recommend using two emission scenarios to project future climate change. This includes a moderate and high emission scenarios (RCP4.5 and RCP8.5) for future planning. These Representative Concentration Pathways (RCPs) reflect varying levels of global climate mitigation explained below.

- RCP 4.5 (a 'moderate' scenario) represents an approximate 2.4°C increase in global average temperatures (1.7-3.2°C). It assumes moderate mitigation efforts leading to stabilisation of emissions by mid-century and is generally aligned with current policies for emission reduction.
- RCP 8.5 (a 'worst case' / high emissions scenario) represents an approximate 4.3°C increase in global average temperatures (3.2-5.4°C) and assumes continued high emissions with minimal mitigation. This high-end scenario is useful for understanding potential impacts of current emission trends continue. Consequently, this scenario will result in the highest level of physical risk for Ireland, and therefore the greatest requirement for adaptation.

This climate change assessment uses the latest climate change projections standardised and bias corrected for Ireland available through the EPA and the TRANSLATE project (EPA, 2025e).

12.3.4.3 Key Findings from Climate Projections

Table 12.7 provides a detailed comparison of baseline and future climate across a medium (RCP4.5) and high emissions scenario (RCP8.5) for the mid-century time period (2040 – 2070) whilst Figure 12.3 shows the changes graphically in a national context. Key Projected changes include:

- Summer maximum temperatures rising by over 1.5°C and overall mean temperatures increasing 1.1°C and 1.6°C by mid-century under RCP4.5 and RCP8.5 respectively.
- Summer rainfall decreasing while winter rainfall increases sharply, contributing to an overall increase in rainfall annually for the site location.
- Fewer cold winter nights and more frequent short heatwaves (≥5 days >25°C).
- Increased likelihood of dry spells and drought which may elevate the risk of wildfire.

This will result in longer dry periods and heavy rainfall events. Met Éireann has high confidence in maximum rainfall rates increasing but not in how the frequency or intensity of storms will change with climate change.

Impacts resulting from climate change hazards will evolve and have the potential to include increases in global temperatures and increases in the intensity and frequency of rainfall days per year combined with increases in the intensity and frequency of low-pressure systems in the north Atlantic during the winter storm period. Therefore, it is expected that the climate over the proposed site in will evolve over time and consideration is needed with respect to this within the design of the Proposed Development.

Table 12.7 Future Climate Projections from Met Éireann TRANSLATE

Climate Hazard	Indicator	Baseline (1976-2005)	RCP4.5 (2040-2070)	RCP8.5 (2040-2070)
Temperature	Mean temp (°C)	10.0	11.1 (+1.1°C)	11.6 (+1.6°C)
	Mean Max temp (°C)	13.5	14.6 (+1.1°C)	15 (+1.5°C)
	Mean Min temp (°C)	6.5	7.7 (+1.2°C)	8.1 (+1.6°C)
	Average of Daily Max temp (°C)	24.9	26.7 (+1.8°C)	27.2 (+2.3°C)
Precipitation and Flooding	Annual precipitation (mm)	754	791 (+37)	811 (+57)
	Max 1-day (mm)	35	42 (+7)	44 (+9)
Storms and high winds	Storm Frequency and Average speed	On Average 8 named storms annually with speeds exceeding 100km/hr [Note 1]	Winter storm frequency is projected to increase, with a possible extension of the storm season. While the intensity of individual storms cannot be accurately projected, storm wind speeds are likely to remain above 100 km/hr.	
	(Descriptive)			
	Max gust Speed [Note 2]	80 knots		
		(147 kph)		
Wildfire	No. of Forest/Bog/Grass fires from the Department of Housing, Local Government and Heritage Fire Statistics	Low risk of wildfire in Dublin area 2024 – 66 2023 – 151 2022 – 307 2021 – 210 2020 - 217	Rising temperatures and prolonged dry spells are projected to elevate wildfire risk.	
Drought	Absolute Drought	Rare	Marginal increase	Increased Likelihood
	(≥15 days with less than 1mm of rain)			
Lightning	Qualitative (Descriptive)	Occurring during summer periods	This hazard may modestly increase in the future due to more favourable conditions, such as rising temperatures and extended warm periods beyond the traditional summer season	
Note-1: Data from combined Met Éireann, UK Met Office and Dutch Meteorological services.				
Note-2: Data from Dublin weather station (c.3 km from site), 1991-2020				

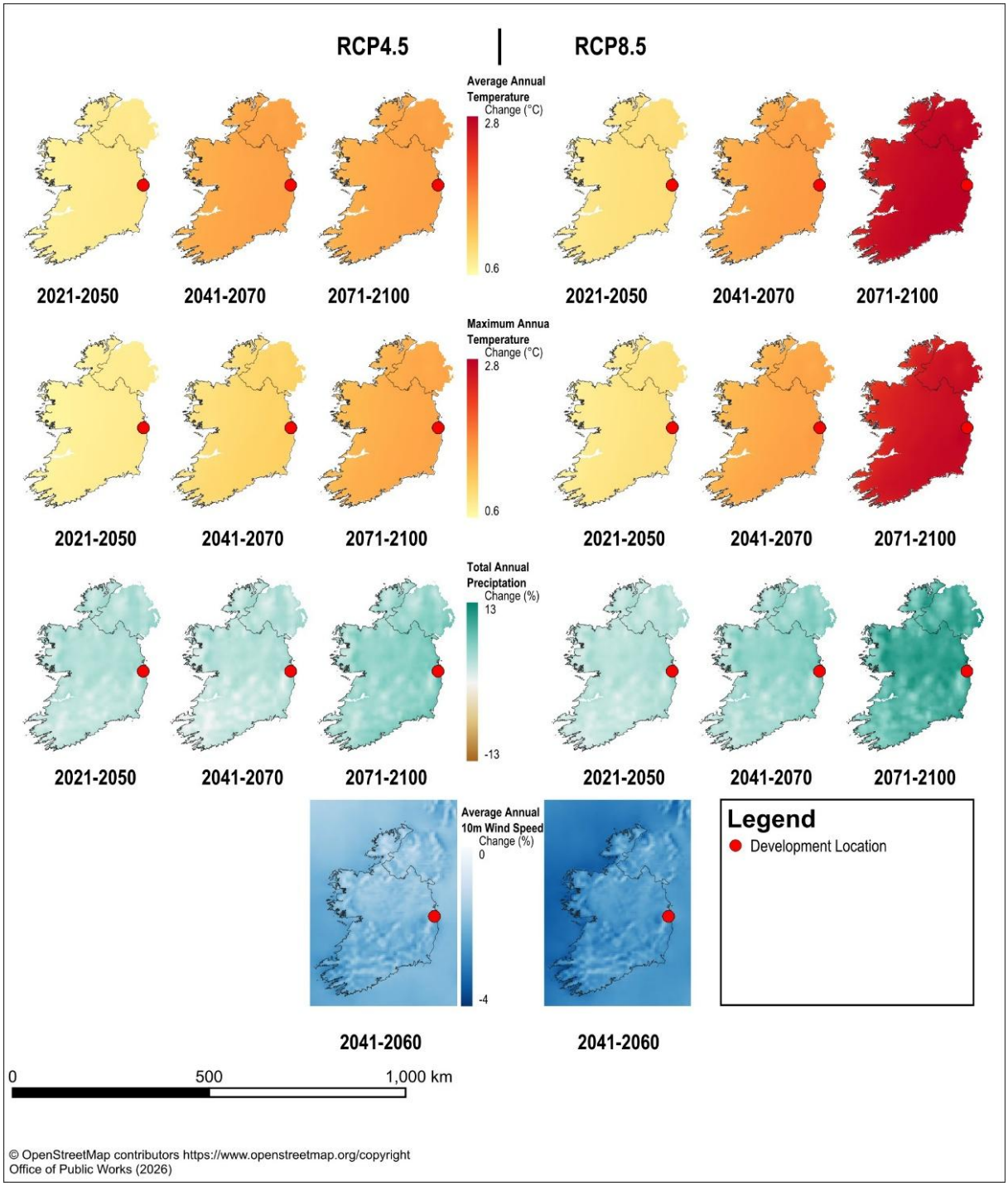

Figure 12.3 Future Climate Projections for RCP4.5 and RCP8.5 from Met Éireann TRANSLATE compared to the 1976-2005 Baseline

12.4 Predicted Impacts of the Proposed Development

12.4.1 Do-Nothing Impact

In the Do-Nothing scenario, the site will remain as per the baseline and will change in accordance with trends within the wider area (including influences from potential new developments in the surrounding area, changes in road traffic, etc).

As the site is zoned for development, it is likely that in the absence of the Proposed Development a development of a similar nature would occur in the future. Therefore, the predicted greenhouse gas emissions associated with the construction and operation phases are likely to occur regardless of the specific Proposed Development. Climate change is being driven by broader, long-term global trends in greenhouse gas concentrations, which will continue irrespective of any localised development. This assessment focuses on the contribution of the Proposed Development to the overall emissions and considers mitigation measures to minimise its climate impact.

12.4.2 Greenhouse Gas Assessment

12.4.2.1 Construction Phase

The most significant proportion of GHG emissions tend to occur during the construction phase due to embodied carbon in construction materials and emissions from construction activities. Therefore, the assessment has been included in the construction phase assessment for the purposes of the EIAR.

Glenveagh's calculated $kgCO_2e/m^2$ for the building units in conjunction with the schedule of areas supplied by the project architects, allowed a site-specific carbon figure for the building elements of the project to be calculated. The carbon figure associated with the crèche, and community building was calculated using One Click LCA. The results are presented in Table 12.8.

It is estimated that the Proposed Development will result in total embodied carbon emissions of 20,895 tCO_2e (Table 12.8). Table 12.8 should be read in conjunction with Table 12.14 in Section 12.12 as due to methods of calculation, some activities (construction and operation) are already accounted for within other categories. Others, such as those within operational emissions have been excluded from the assessment due to significant variability in user emissions.

Table 12.8 GHG Assessment Results

GHG Assessment Category	Predicted GHG Emissions (tCO_2e)	Predicted GHG Emissions as % of Project Total	Relevant Sector for Carbon Budget Comparison
Buildings	18,108	86.7	Industry
Materials	6	<0.1	Industry
Material transport	-	-	Transport
Clearance and demolition	2,025	9.7	Industry
Land Use Change and Vegetation Loss	449	2.1	LULUCF
Excavation	97	0.5	Industry
Construction Energy	3	<0.1	Industry
Construction worker travel to site	165	0.8	Transport
Construction Waste Disposal	1	<0.1	Waste
Construction Waste Transport	40	0.2	Transport
Construction Water	2	<0.1	Industry

GHG Assessment Category	Predicted GHG Emissions (tCO_2e)	Predicted GHG Emissions as % of Project Total	Relevant Sector for Carbon Budget Comparison
Total Construction GHG emissions	**20,895**		
Total Project Biogenic Carbon	-2,976		
Total Avoid Emissions	101		

The GHG emissions associated with the buildings make up the majority (86.7%) of the total GHG emissions for the Proposed Development (Table 12.8). As per the LCA completed on the typical house types the majority (75%) of the carbon emissions are linked to the sub and superstructures. The product stage (A1 – A3) contribute the most to the overall carbon result followed by in use emissions (B1 – B5), primarily B4 replacement.

Seven key materials were identified in the LCA assessment of the house units, undertaken by the project developer, that together make up 89% of Stage A – C emissions: concrete; MEP (mechanical, electrical and plumbing); plastic; windows; boards; timber; and insulation.

Efforts to reduce the quantity of these materials used or swap them for lower carbon alternatives will impact on the carbon footprint of the units. It is important to highlight that although the timber framework forms a significant part of the structural skeleton of the house units it is not as carbon intensive as other materials. Both the Climate Change Advisory Council (CCAC) and National Climate Action Plan advise for the use of timber framed buildings as a construction method. Timber frames have the additional benefit of having absorbed carbon from the atmosphere during their growth and providing a long-term carbon sink during their lifetime in the building.

The LCA found that a reduction of 21% of total embodied carbon emissions (A – C stages) can be utilised for the biogenic carbon associated with the Proposed Development house types and a figure of 3% can be used for apartment blocks. This represents carbon savings of 2,976 tCO_2e for the proposed housing units and apartment blocks.

Reusing excavated material on site avoids the GHG emissions associated with transporting and disposing of it at landfill. This will result in a saving of 101 tCO_2e.

Landscaping and planting is expected to lock up a small amount of CO_2 during the lifetime of the Proposed Development.

The predicted emissions for the Proposed Development are annualised over the assumed 50-year lifespan and then compared to the relevant sector 2030 carbon budgets. Annualising the full carbon emissions over the lifetime of the development allows for appropriate comparison with annual GHG targets. In Table 12.9, GHG emissions have been compared against Ireland's total GHG emissions in 2024 (the existing baseline) and against Ireland's EU 2030 target of a 30% reduction in non-ETS sector emissions based on 2005 levels (27.7 Mt CO_2e) (set out in Regulation EU 2018/842 of the European Parliament and of the Council).

The estimated total GHG emissions, when annualised over the 50-year Proposed Development lifespan, are equivalent to 0.0007% of Ireland's total GHG emissions in 2024 and 0.0015% of Ireland's non-ETS 2030 emissions target.

Table 12.9 GHG emissions comparison: Irish total emissions in 2024 vs Irish EU 2030 target

Predicted Development GHG Emissions (tCO_2e)		Annualised Development GHG Emissions (tCO_2e)	Target/Sectoral Budget (tCO_2e)		Annualised Emissions as % of Relevant Target
20,895	Total Project Stage A - C GHG Emissions	418	Ireland's 2024 Total GHG Emissions (existing baseline)	57,646,201	0.0007%
			Non-ETS 2030 Target	27,721,670	0.0015%

The results of the lifecycle assessment for the building units can be compared with a number of industry benchmarks to demonstrate the carbon impact of the development (Table 12.10).

The Royal Institute of the Architects of Ireland (RIAI) 2030 Climate Challenge embodied carbon benchmarks for small scale residential developments were used for comparison with the predicted lifecycle carbon for the Proposed Development units. The Proposed Development house types will achieve the RIAI 2025 target of <800 $kgCO_2e/m^2$ and the 2030 target of <625 $kgCO_2e/m^2$ based on the predicted figure of 500 $kgCO_2e/m^2$ for the house types.

RIAI have a 2030 higher target of <450 $kgCO_2e/m^2$. Based on the current assessment the predicted figure of 500 $kgCO_2e/m^2$ for the housing units is not currently meeting this higher target. However, it is close to this target and given the ongoing commitment to sustainable development that the project developer (Glenveagh Homes) has it is likely that in the future this higher target can be achieved.

The London Low Energy Transformation Initiative (LETI) Climate Emergency Design banding system for residential properties was also used for comparison with the house units.

The LCA carbon intensity of 500 $kgCO_2e/m^2$ (stage A – C) and upfront carbon (A1 – A5) of 356 $kgCO_2e/m^2$ indicates that the house units are within the LETI B band. According to the LETI carbon alignment document, banding B is considered a robust target performance.

Table 12.10 Comparison Against Industry Embodied Carbon Benchmarks

Metric	Glenveagh Embodied Carbon ($kgCO_2e/m^2$)	Target	Target Achieved
RIAI 2025 Target (Embodied Carbon (A – C) $kgCO_2e/m2$)	500	<800	Y
RIAI 2030 Target (Embodied Carbon (A – C) $kgCO_2e/m2$)	500	<625	Y
RIAI 2030 Higher Target (Embodied Carbon (A – C) $kgCO_2e/m2$)	500	<450	N
LETI Embodied Carbon Band B – Upfront Carbon	356	400	Y
LETI Embodied Carbon Band B – Lifecycle Embodied Carbon	500	625	Y

12.4.2.1.1 GHGA Construction Phase Significance of Effects

With reference to Section 12.2.2.2.3 and the current high sensitivity of the climate as described in Section 12.3.4, the magnitude and significance of effect from GHG emissions resulting from the construction stage has been determined to be of a ***direct*** impact due the use of material and emissions from plant and equipment, that is ***long-term*** as a result of the estimated lifetime of the buildings and ***negative*** due to the emission of GHG to the global climate. Discounting any mitigation measures and the assumption that without mitigation the development would impede the trajectory towards net zero, the impact on the climate is considered to be ***minor adverse*** and ***not significant***.

Referring to the predicted climate impacts in Section **Error! Reference source not found.** any GHG emissions in addition to historic emissions will exacerbate this situation. At this stage in the assessment no assumptions on mitigation measures have been incorporated into the assessment, however the materials used will meet the minimum legal standards described within the Building Regulations. On this basis the emissions resulting from the construction stage of the Proposed Development are not predicted to impede progress towards net zero.

12.4.2.2 Operational Phase

12.4.2.2.1 Operational Energy Usage

The Proposed Development has been designed to reduce the impact to climate where possible. Several measures have been incorporated into the design to ensure the operational phase emissions are minimised. The primary elements with respect to reducing climate impacts and optimising energy usage are summarised in Section 12.5 and are based on information provided in the Climate Action Energy Statement prepared by ENX in relation to the Proposed Development.

12.4.2.2.2 Operational Traffic Emissions

There is the potential for increased traffic volumes to impact climate during the operational phase. To provide for a worst-case assessment and to assess potential cumulative impacts, the traffic data has included specific cumulative developments within the area (see Chapter 0 Traffic and Transport for further details).

The predicted concentrations of CO_2e for the future years of 2028 and 2043 are detailed in Table 12.11. These are significantly less than Ireland's national 2030 targets set out under EU legislation (targets beyond 2030 are not available) and the 2030 sectoral emissions ceilings.

In addition, bicycle parking and electric vehicle parking and charging infrastructure will be provided as part of the parking requirements at the Proposed Development which will promote the use of more sustainable methods of transport.

Table 12.11 Traffic Emissions GHG Impact Assessment

Year	Scenario	CO_2e (tonnes/annum)
2028	Do Nothing	169
	Do Something	191
2043	Do Nothing	100
	Do Something	113
Increment Change in 2028		22

Year	Scenario	CO_2e (tonnes/annum)
National Emission Ceiling 2028 (Tonnes) Note 1		37,869,352
Impact in 2028 (as % of national emissions ceiling)		0.0001
Transport Sector 2030 Emission Ceiling		6,000,000
Impact in 2030 (as % of transport sector emissions ceiling)		0.0004
Increment Change in 2043		12
National Emission Ceiling 2030 (Tonnes) Note 1		33,381,312
Impact in 2043 (as % of national emissions ceiling)		>0.0001
Impact in 2043 (as % of transport sector emissions ceiling)		0.0002
Note 1 Target under Commission Implementing Decision (EU) 2020/2126 of 16 December 2020 on setting out the annual emission allocations of the Member States for the period from 2021 to 2030 pursuant to Regulation (EU) 2018/842 of the European Parliament and of the Council.		

12.4.2.2.3 GHGA Operational Phase Significance of Effects

The information presented in Table 12.11 shows that the operational transport emissions are a very small fraction of the national and sectoral carbon budgets. The operational energy usage is controlled through measures described in the Climate Action Energy Statement prepared by ENX (2026), and pre-mitigation transport usage will necessarily be regulated as dedicated spaces are not provided for every dwelling.

In accordance with the EPA guidelines (EPA, 2022), the above criteria equates to an impact of GHG emissions during the construction and operational phase of a ***direct*** impact due to its presence, that is ***long-term*** as a result of the estimated lifetime of the buildings and ***negative*** due to the emission of GHGs. Due to the mitigation measures in place and the fact that the proposed development does not impede the trajectory to carbon neutrality, the impact on the climate is considered to be ***not significant***.

12.4.3 Climate Change Risk Assessment

12.4.3.1 Construction Phase

Whilst the development is likely to be exposed to potential weather extremes due to climate change during the construction phase, the potential length of the construction phase and its transient nature means that a detailed CCRA of this phase is scoped out.

The following non-exhaustive list of risks has been identified:

- Flood Risk due to increased precipitation, and intense periods of rainfall. This includes fluvial and pluvial flooding affecting unfinished structures or access roads/pavement
- Increased temperatures potentially causing drought, wildfires and prolonged periods of hot weather potentially affecting setting concrete or cement, dust suppression and construction worker health and safety
- Reduced temperatures resulting in ice or snow potentially affecting setting concrete or cement, landscaping and construction worker health and safety
- Major storm damage including wind damage potentially affecting landscaping, stored materials, vertical infrastructure and construction worker health and safety.

12.4.3.2 Operational Phase

12.4.3.2.1 Sensitivity Analysis

To determine the vulnerability of the Proposed Development to climate change the sensitivity and exposure of the development to various climate hazards must first be determined. Table 12.12 presents the initial qualitative climate hazards screening relevant to the Proposed Development. Due to the Proposed Development location a number of hazards have been screened out of the assessment.

Table 12.12 Initial qualitative climate hazards screening

Climate-related Hazard	Hazard Screening Rationale	Screening
Extreme Heat temperatures	High temperatures are a key consideration for both construction and long-term operation of the proposed project. Heat can affect the performance of materials, roofing, road surfaces, electrical systems while also affecting the lifecycle of assets.	Screen in
Extreme Cold Temperature	Snow and ice events pose significant risks to health, safety, and site operations. Road access may be disrupted, and low temperatures can affect water mains. Freeze-thaw cycles may cause cracking in concrete and road surfaces, with snow clearance and ice management the responsibility of the local authority.	Screen in
High precipitation and pluvial flooding	Surface water remains a key vulnerability for any Proposed Development during both construction and operational phases due to the sensitivity of construction materials, site access, and site assets to water exposure.	Screen in
Fluvial flooding	The Flood Risk Assessment shows that there is no risk of fluvial flooding at the location of the Proposed Development.	Screen out
Drought	Droughts have occurred across Ireland, previously impacting water supply. Future reductions in availability would not directly impact the development and its operation.	Screen out
Wildfire	The area surrounding the site is generally made up of pasture and rough grazing. The Think Hazard datasets records the risk for the Co. Dublin area to be low.	Screen out
High winds and storms	High winds may cause localised disturbance such as road blockages and flying small debris, though damage would be expected to be minor and easily repairable.	Screen in
Fog	Fog is not considered a significant hazard for this development as it is not expected to have a long residency period before clearing. There is also ample street lighting.	Screen out
Lightning	Lightning can strike urban buildings but they are in general well earthed. Higher structures such as tall apartment blocks tend to have earthing rods.	Screen out
Landslides and Subsidence	The Geological Society of Ireland (GSI) landslide susceptibility mapping database (GSI, 2026) was reviewed to determine a low risk from landslides at the Proposed Development location.	Screen out
Sea level rise and coastal flooding	The site is c. 2.5km from the coast and at an elevation of approximately 35 m Above Ordnance Datum (AOD).	Screen out

12.4.3.2.2 Climate Vulnerability Assessment

The sensitivity and exposure of the development to the screened in climate hazards must first be determined to then determine the vulnerability of the Proposed Development to climate change. Flooding (pluvial), extreme heat, extreme cold, wildfire, and extreme wind, have been considered as climate hazards in the context of the Proposed Development.

The sensitivity of the Proposed Development to the climate hazards is assessed irrespective of the project location and is judged on a scale of high (3), medium (2) and low (1). Once the sensitivity has been determined, the exposure of the Proposed Development to each of the climate hazards is determined, this reflects on the possible likelihood of the climate hazard occurring at the project location and is also scored on a scale of high (3), medium (2) and low (1). The product of the sensitivity and exposure is then used to determine the overall vulnerability of the Proposed Development to each of the climate hazards. The results of the vulnerability assessment are detailed in Table 12.13.

Table 12.13 Climate Vulnerability Assessment

Climate Hazard	Sensitivity	Exposure	Vulnerability
Extreme heat	1 (Low)	2 (Medium)	2 (Low)
Extreme cold	1 (Low)	1 (Low)	1 (Low)
High precipitation and pluvial flooding	1 (Low)	2 (Medium)	2 (Low)
High winds and storms	1 (Low)	2 (Medium)	2 (Low)

Extreme Temperatures (*Heat and Cold*)

Extreme temperatures, both hot and cold, can affect building materials and infrastructure; however, the project will use materials that comply with current standards and are designed to withstand projected climate extremes. Cold events are expected to decline, reducing the risk of cracking from freeze thawing of road surfaces and deterioration of auxiliary systems and infrastructure. While potential heat-related impacts such as road surface softening are possible during heatwaves, projected extremes are not expected to reach critical thresholds for infrastructure failures seen in other European countries.

Utilities are expected to be buried or not exposed for thermal protection, and any substation cooling systems will be designed for RCP4.5 and RCP8.5 scenarios with capacity for future upgrades. Overall, extreme temperatures are not considered a significant risk.

Flooding

Future increases in rainfall due to climate change may elevate the risk of pluvial flooding, particularly if local drainage is overwhelmed or blocked. A Flood Risk Assessment (FRA) was prepared by AKM Design Group as part of a wider Infrastructure Report. The report noted the Mill stream and drainage ditches that run east-west across the site. However, the FRA records no flood events at the location of the Proposed Development and shows that the area is not subject to any risk of flooding following an analysis of data compiled as part of the Catchment Flood Risk Assessment and Management (CFRAM) programme. Therefore, the risk to the Proposed Development from flooding is assessed as 'low'.

Extreme Wind

In relation to extreme winds, residential buildings and urban infrastructure are generally impacted by flying debris rather than direct impacts of extreme weather.

Whilst winds in general are predicted to reduce in intensity, with future climate change storms are likely to become more extreme. Storms in RCP8.5 likely to be even more extreme than in RCP4.5. Ireland is generally susceptible to Atlantic storms therefore eastern areas such as Co. Dublin are less exposed to such extremities than west coast areas. Therefore, the risk is assessed as 'low'.

12.4.3.3 Summary

Overall, the Proposed Development has at worst a low vulnerability to the identified climate hazards. Therefore, no detailed risk assessment is required.

12.4.3.4 CCRA Significance of Effects

With design mitigation in place, there are no significant risks to the Proposed Development as a result of climate change. In accordance with the EPA Guidelines (EPA, 2022), the significance of effect of the impacts to the Proposed Development as a result of climate change are ***direct*** as climate extremes have a direct physical effect on buildings and infrastructure, ***long-term*** due to the projected lifetime of the development and the response times of the climate in relation to changes in anthropogenic emissions, ***negative*** as climate extremes have been shown to damage or adversely affect infrastructure, and ***not significant*** due to the low vulnerability of the location of the Proposed Development to the effects of climate change, which overall is considered to be ***not significant*** in EIA terms.

12.5 Mitigation Measures

12.5.1 Construction Phase

Embodied carbon of materials and construction activities will be the primary source of climate impacts during the construction phase. During the construction phase the following best practice measures shall be implemented on site to prevent significant GHG emissions and reduce impacts to climate:

- Prevention of on-site or delivery vehicles from leaving engines idling, even over short periods
- Ensuring that fossil fuel powered plant and equipment meet the meet or exceed the Euro Stage V emission standard
- Ensuring, where practicable, that site vehicles and delivery vehicles meet the Euro VI/Euro 6 emission standards
- Ensure all plant, machinery and vehicles are well maintained and inspected regularly
- Specifying electrically powered plant and equipment where practicable and using grid connections for electric power when practicable instead of fossil fuel powered generators
- Bare soil areas will be minimised in extent and duration due to the risk to construction from extreme wind and rain. Temporary soil stockpiles will be seeded to minimise run-off. All landscape areas, including temporary compound areas, will be reinstated
- Re-use and recycling of materials on site where practicable as opposed to disposal and landfill in line with Circular Economy principles
- Sourcing materials locally will be prioritised where practicable. This will help to reduce transport related CO_2 emissions and helps support local suppliers, further promoting economic sustainability

In terms of impact on the Proposed Development due to climate change, during construction the Contractor will be required to mitigate against the effects of extreme rainfall/flooding through site risk

assessments, method statements and good site management practise. The Contractor will also be required to mitigate against the effects of extreme wind/storms, temperature extremes through site risk assessments, method statements and good site management practise. All materials used during construction will be accompanied by certified datasheets which will set out the limiting operating temperatures. Temperatures can affect the performance of some materials, and this will require consideration during construction. During construction, the Contractor will be required to mitigate against the effects of fog, lighting and hail through site risk assessments and method statements.

12.5.2 Operational Phase

A number of mitigation measures have been incorporated into the design of the development to reduce the impact on climate wherever possible. A Climate Action Energy Statement was prepared by ENX in relation to the Proposed Development.

The Climate Action Energy Statement states that the development will be a Nearly Zero Energy Building (NZEB) in accordance with the 2022 Part L requirements.

The residential units will aim to achieve an A2/A3 rated Building Energy Ratio (BER) in line with the NZEB requirements. The development shall include several energy conservation measures to achieve a high energy rating as outlined in the Climate Action Energy Statement:

- Buildings to be constructed with walls achieving a U-value of 0.18W/m²K for apartments and duplexes and 0.14 W/m²K for houses
- A thermal bridging factor of 0.15 to be achieved for all buildings
- Air tightness of apartments to be 3 m³/hr/m² and houses to achieve 0.25 m³/hr/m² or less
- Space heating to be undertaken using either air source heat pumps with Seasonal Coefficient of Performance values exceeding 400%, exhaust air heat pumps or electric storage heaters
- Domestic hot water to be provided by hot water heat pumps or exhaust air heat pumps
- Time and temperature controls for interior zones are to be provided

A number of sustainable design features have been considered within the design to achieve the sustainability targets of the Proposed Development. These include:

- The proximity of the development to public transportation networks
- The proximity of the Proposed Development to active travel networks and car sharing locations
- Installation of infrastructure for electric vehicle (EV) charging for buildings with more than ten car parking spaces to allow for future installation of EV charging points
- Water efficiency measures such as low consumption sanitary fittings
- Improved indoor environmental quality

In addition, the non-building infrastructure shall incorporate the following measures to mitigate vulnerability to the effects of climate change:

- To address climate change vulnerability and risk of flooding, the Proposed Development will incorporate SuDS features along flow routes to intercept and slow runoff and promote infiltration. Consultation with Fingal County Council has resulted in natural design solutions being favoured for this purpose
- Drainage has been designed in accordance with the Greater Dublin Strategic Drainage Study Vol. 2
- The proposed landscaping will account for extreme wind events by providing large root zones for any proposed trees as well as tree anchoring systems to enhance stability and resilience.

- Construction materials will consider, at detailed design, projected climate variations, including periods of extreme heat and cold, to ensure resilience, user comfort, and durability. Road materials will comply with TII and other relevant standards.
- At detailed design stage, appropriate plant species will be selected that are suitable for the site conditions and able to withstand the climate and conditions of the east of Ireland

The above measures will assist in optimising the energy consumed by the development and will also have the benefit of reducing the impact to climate during the operational phase of the development.

12.6 Residual Impacts

The impact to climate due to a Proposed Development must be assessed as a whole for all phases. The Proposed Development will result in some impacts to climate through the release of GHGs. TII reference the IESP guidance which states that the crux of assessing significance is "not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050".

The level of mitigation described in Section **Error! Reference source not found.** has been taken into account in determining the magnitude and significance of residual impacts. According to the TII significance criteria described in Section 12.2.3.1, the project complies with the minimum standards required under Part L and has proposed mitigation that will enable the development to assist in the trajectory towards net zero.

The ISEP GHG guidance (ISEP, 2026) (which has been embraced by the updated PE-ENV-01104 in Section 6.7.2) states as follows:

"A minor adverse not significant impact is described with: A project that is compatible with the budgeted, science based 1.5°C trajectory (in terms of rate of emissions reduction) and which complies with up-to-date policy and 'good practice' reduction measures to achieve that has a minor adverse effect that is not significant. The project may have residual impacts but is doing enough to align with and contribute to the relevant transition scenario. A 'minor adverse' or 'negligible' non-significant effect conclusion does not necessarily refer to the magnitude of GHG emissions being carbon neutral (i.e. zero on balance) but refers to the likelihood of avoiding severe climate change and achieving net zero by 2050. A 'minor adverse' effect or better is a high bar and indicates exemplary performance where a project meets or exceeds measures to achieve net zero earlier than 2050."

According to the TII significance criteria described in Section 12.2.3.1 and Table 12.4, the significance of the GHG emissions during the construction and operational phase is minor adverse and not significant.

In addition, the supplement to the ISEP 2022 GHG Guidance (ISEP, 2022 & 2026) provides clarification on the use of measures to mitigate climate impacts, stating that where mitigation measures are equivalent to the regulatory minimum, it is not considered sufficient to state that the impacts are not significant. This is particularly relevant in the context of the severity of the climate situation and potential exceedance of the 1.5°C Paris Agreement target as described in Section **Error! Reference source not found.**. For this project a proportional approach is taken with respect to the 2026 ISEP Guidance supplement and the contradiction with the published 2022 ISEP guidance that is reference in the 2022 TII Guidance.

With mitigation measures in place, and in the interest of proportionality, the Proposed Development aligns with the following GHG significance criteria as per Table 12.4:

- The project's GHG impacts are mitigated through 'good practice' measures
- The project has complied with existing and emerging policy requirements
- The project is in line with helping Ireland's trajectory towards achieving net zero.

The following statements however should be taken in the context of a global climate system that clearly demonstrates potential indication of having been already compromised.

The construction stage development impact is determined to be ***direct*** due to the nature of emissions of GHG to the atmosphere, ***long-term*** due to the projected lifetime of the development and the lag periods between any emission reductions and measurable changes in climate, ***negative*** as all emissions of GHG are considered to have a negative effect on the climate and ***minor*** due to the nature of the contribution of the development to Ireland's national and sectoral carbon budgets and that the mitigation measures comply with existing regulatory requirements. Therefore the overall impact is considered to be ***not significant*** in EIA terms.

In relation to climate change risk, it has been assessed that there are no significant risks to the Proposed Development due to climate change once mitigation measures in Section **Error! Reference source not found.** have been followed. The residual effect of climate change on the Proposed Development is considered ***direct*** as climate extremes have a direct physical effect on buildings and infrastructure, ***long-term*** due to the projected lifetime of the development and the response times of the climate in relation to changes in anthropogenic emissions, ***negative*** as climate extremes have been shown to damage or adversely affect infrastructure, and ***not significant*** due to the low vulnerability of the Proposed Development to the effects of climate change, which overall is considered to be ***not significant*** in EIA terms.

The climate, being global, is not considered to be constrained by project, local or other geographical boundaries, therefore any effect from the Proposed Development on the climate is considered to be inherently cumulative.

12.7 Indirect and / or Secondary Impacts

This assessment has considered the potential for direct, indirect and secondary impacts and it has been determined by the assessment in Section 12.4 that the impacts associated with the Proposed Development are considered to have a direct effect on climate. There are no indirect or secondary impacts associated with the Proposed Development with the potential for significant effects on climate.

12.8 Monitoring

Monitoring and reporting of the embodied carbon in the construction phase will be conducted in accordance with PAS2080. The aim of monitoring will be to seek further ways to minimise climate impacts. Monitoring will include contractual obligations, in line with the most recent Climate Action Plan and sectoral targets, for the successful tenderer to ensure that the Proposed Development stays in line with updated aims. Commitments to monitor GHG emissions during the construction phase will also be secured through the final Construction Environmental Management Plan (CEMP). Monitoring will include embodied carbon of construction materials, water usage, power and fuel usage, and waste generation (including reuse and recycling rates). Where monitoring shows that the Proposed Development is not meeting its targets, further mitigation will be put in place.

Monitoring should also include reviewing potential for extreme weather events which may cause damage during construction. Contractors' Environmental Management System (EMS) will include measures to address risks during such events i.e. flooding.

12.9 Reinstatement

Due to the projected lifetime of the project, type of project and the land allocation this section is not considered to be applicable to the climate assessment. The Proposed Development is expected to be maintained into the foreseeable future.

12.10 Interactions

Climate has the potential to interact with a number of other environmental attributes.

12.10.1 Land, Soils and Geology

The impact of flood risk has been assessed, and the surface water drainage network will be designed to cater for increased rainfall in future years as a result of climate change. The effect of the interactions between climate and land, soils, geology and hydrology are ***direct, short-term, negative*** and ***imperceptible*** during the construction phase and ***direct, long-term, negative*** and ***imperceptible*** during the operational phase, which is overall not significant in EIA terms.

12.10.2 Air Quality

Air quality and climate have interactions due to the emissions from the burning of fossil fuels during the construction and operational phases generating both air quality and climate impacts. Air quality modelling outputs are utilised within the Climate Chapter. There is no impact on climate due to air quality. However, the sources of impacts on air quality and climate are strongly linked.

12.10.3 Traffic and Transportation

During the construction and operational phase, there is the potential for interactions between climate and traffic. Vehicles accessing the site will result in emissions of CO_2, a greenhouse gas. The effects of the Proposed Development on climate are assessed by reviewing the change in annual average daily traffic on roads close to the site. In this assessment, the effects of the interactions between traffic and climate are considered to be ***direct, short-term, negative*** and ***not significant*** during the construction phase and ***direct, long-term, negative*** and ***not significant*** during the operational phase.

12.10.4 Waste

Waste management measures will be put in place to minimise the amount of waste entering landfill, which has higher associated embodied carbon emissions than other waste management such as recycling. The effect of the interactions between waste and climate are considered to be ***direct, short-term, negative*** and ***not significant*** during the construction phase and ***direct, long-term, negative*** and not significant during the operational phase, which is overall ***not significant*** in EIA terms.

12.11 Cumulative Impacts

In accordance with guidance from the ISEP (2022) and TII (2022) the climate is not constrained by project, regional or national boundaries and therefore the GHG assessment has been presented in the context of the national and sectoral carbon budgets for the whole of Ireland and the ability of the Proposed Development to assist or impede the national relevant targets. Given the contribution of such

targets to the global efforts to reduce the impact of society upon the climate the assessment is considered to be inherently cumulative.

In addition, the traffic data provided for the quantification of operational GHG emissions includes committed developments as far as they can be advised, and as such is considered to be cumulative.

In light of these statements, the residual cumulative impact of the Proposed Development in relation to GHG emissions is considered ***direct, long-term, negative*** and ***slight***, which is overall ***not significant*** in EIA terms.

12.12 Difficulties Encountered

The Proposed Development is still in the design stage and therefore materials used, construction and operational activities are subject to change. Data assumptions for the GHG assessment are set out in Table 12.14. All assumptions follow a conservative approach.

Table 12.14 Assumptions used in the GHG Assessment

GHG Assessment Category	Elements Considered
Buildings	Houses, apartments and duplexes
Materials	Non-building materials for pavements, roads, carparks etc
Material transport	Movement of HDVs provided by Transport Insights
Clearance and demolition	Site preparation and clearance
Land use change and vegetation loss	Land is primarily agricultural which is associated with a 0 $kgCO_2e$ emissions factor according to the TII Carbon Tool
Excavation	General excavation with some reused on site (see avoided emissions)
Construction energy	Use of diesel or other fuels for the duration of construction. Data provided by AKM.
Construction worker travel to site	Movement of constructions worker vehicles provided by Transport Insights
Construction waste disposal	Material construction waste as per Chapter 19 Material Assets – Waste. Earthworks waste as per data provided by AKM.
Construction waste transport	Assumed HGV load of 20 t and 50 km round trip distance to waste facility.
Construction water	4,698,000 litres used over 768 days
Operational energy	Significant variability in data, no quantification of emissions undertaken
Operational transport	See Operational Traffic Emissions Section 12.4.2
Operational waste disposal	Significant variability in data, no quantification of emissions undertaken
Operational waste transport	Significant variability in data, no quantification of emissions undertaken
Maintenance	Included in 'Buildings' category – material maintenance and replacement assumed over the typical 50-year building lifespan
Landscaping and vegetation	Data provided by the landscaping team
Operational water	Significant variability in data, no quantification of emissions undertaken
Biogenic carbon	Based on the use of timber within construction (See section 12.2.2.1 for explanation on biogenic carbon)
Avoided emissions	Excavated material reused on site would otherwise end up in landfill (50 km roundtrip via 20 t capacity HGV)

12.13 Conclusion

This chapter has reviewed and analysed the potential and the predicted impacts of the Proposed Development with regards to climate. These impacts have been considered for both the construction and operational phases of the Proposed Development. The cumulative impact of the Proposed Development and surrounding developments have also been considered.

Provided all mitigation measures as set out in this chapter, the overall predicted effect of the Proposed Development is not significant in relation to GHG emissions and climate change risk.

The Proposed Development ties in with the Council objective of placemaking through the delivery of balanced and sustainable communities that are close to town centres.

12.13.1 Compliance with the Climate Act

Section 15 of the 2015 Act, sets out the duties imposed by certain bodies, including local authorities and An Coimisiún Pleanála. This section was amended by the 2021 Act and states:

"(1) A relevant body shall, in so far as practicable, perform its functions in a manner consistent with—

(*a*) *the most recent approved climate action plan,*

(*b*) *the most recent approved national long term climate action strategy,*

(*c*) *the most recent approved national adaptation framework and approved sectoral adaptation plans,*

(*d*) *the furtherance of the national climate objective, and*

(*e*) *the objective of mitigating greenhouse gas emissions and adapting to the effects of climate change in the State."*

This chapter demonstrates how the Proposed Development is consistent with the objectives of Section 15 of the 2015 Act (as amended). The EIAR has carried out a greenhouse gas emissions assessment and assessed the Proposed Development's resilience/adaptation to climate change.

- Greenhouse Gas Emissions Assessment – This assessment considers the Proposed Development's GHG emissions over its lifetime. The assessment analyses these emissions in the context of the relevant carbon budgets, targets and policies to ensure consistency with the most recent approved climate action plan and the most recent approved national long term climate action strategy, and with measures in furtherance of the national climate objective. This complies with subsections 15 (1) (a), (b), and (d) of the Act.
- Climate Change Vulnerability Assessment – This assessment identifies the impact of a changing climate on the Proposed Development and receiving environment in the context of the most recent approved national adaptation framework and approved sectoral adaptation plans. The assessment considers the Proposed Development's vulnerability and adaption to climate change and identifies adaptation measures to increase resilience, as discussed in Section 12.4.2.2.3. This covers sections 15(1)(c) and (e) of the Act.

The above measures pursue the furtherance of the national climate objective and the objective of mitigating greenhouse gas emissions and adapting to the effects of climate change in the State as far as practicable as required by section 15(1)(d) and(e) of the Acts.

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13 Noise and Vibration

13.1 Introduction

This chapter presents an assessment of the impacts of the proposed Mooretown Phase 2 residential development at the Mooretown, Swords, Co. Dublin in terms of noise and vibration in the local environment. The assessment for noise and vibration is based on the most up to date applicable guidance and assessment documents available both nationally and internationally.

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 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.

13.1.1 Qualifications and Expertise

This EIAR Chapter has been prepared by AWN Consulting Ltd. (AWN).

The chapter was prepared by Dylan Floyd (Acoustic Consultant). Dylan holds a BSc Agri-Environmental Science. Dylan has worked in the field of acoustics since 2022. He has completed noise monitoring campaigns across numerous sites and holds a certificate from the Institute of Acoustics in environmental noise monitoring and building acoustics testing.

This chapter was reviewed by Alistair Maclaurin BSc PgDip MIOA, Senior Consultant at AWN Consulting who has prepared multiple EIS and EIAR documents throughout his 13 years' experience as an environmental consultant.

13.2 Method

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 baseline noise survey has been undertaken in the vicinity of the Proposed Development to characterise the prevailing 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.

13.2.1 Construction Phase

13.2.1.1 Criteria for Assessing Construction Noise Impacts

There is no published statutory Irish guidance relating to the maximum permissible noise level that may be generated during the construction phases of a project. Local authorities normally control construction activities by imposing limits on the hours of operation and consider noise limits at their discretion.

In the absence of specific noise limits, appropriate criteria relating to permissible construction noise levels for a development of this scale may be found in the British Standard BS 5228 – 1: 2009+A1:2014: *Code of practice for noise and vibration control on construction and open sites – Noise.*

The approach adopted here calls for the designation of a NSL into a specific category (A, B or C) based on existing ambient noise levels in the absence of construction noise. This then sets a threshold noise value that, if exceeded at this location, indicates a potential significant noise impact is associated with the construction activities, depending on context.

This document sets out a Construction Noise Threshold (CNT) relative to the existing noise environment. Table 13.1 sets out the approach.

Table 13.1 Example Threshold of Significant Effect at Dwellings

Assessment category and threshold value period (L_{Aeq})	Threshold value, in decibels (dB)		
	Category A Note A	Category B Note B	Category C Note C
Night-time (23:00 to 07:00hrs)	45	50	55
Evenings and weekends Note D	55	60	65
Daytime (07:00 – 19:00) and Saturdays (07:00 – 13:00)	65	70	75

Note A) Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are less than these values.

Note B) Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are the same as category A values.

Note C) Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than category A values.

Note D) 19:00 – 23:00 weekdays, 13:00 – 23:00 Saturdays and 07:00 – 23:00 Sundays.

For the appropriate assessment period (i.e. daytime in this instance), the ambient noise level is determined and rounded to the nearest 5 dB. If the construction noise exceeds the appropriate category value, then a significant effect is deemed to occur. 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 excessively onerous thresholds being set.

Proposed Threshold Levels for Noise

The proposed general construction hours are 07:00 to 19:00 hrs, Monday to Friday and 08:00 to 14:00 hrs on Saturdays. No working will be allowed on Sundays and Public Holidays. Taking into account

the document outlined above (BS 5228-1:2009+A1:2014) and making reference to the baseline noise environment monitored around the development site (see Section 13.3), the Category A and B threshold from the ABC methodology is applied to all noise sensitive locations surrounding the site. This classification will be explained further in Section 13.4. The following threshold therefore applies for the proposed working hours:

Category A

- Monday to Friday - 07:00 to 19:00 hrs – 65 dB $L_{Aeq,12hr}$.
- Saturdays – 08:00 to 13:00 hrs – 65 dB $L_{Aeq,6hr}$.

Category B

- Monday to Friday - 07:00 to 19:00 hrs – 70 dB $L_{Aeq,12hr}$.
- Saturdays – 08:00 to 13:00 hrs – 70 dB $L_{Aeq,6hr}$.

Interpretation of the Construction Noise Levels (CNL)

In order to assist with interpretation of CNL, Table 13.2 includes guidance as to the likely magnitude of impact associated with construction activities, relative to the CNT. This guidance is taken from Table 3.16 of DMRB: Noise and Vibration (UKHE 2020) and adapted to include the EPA EIAR Guidelines.

Table 13.2 Construction Noise Signifiance Ratings.

Construction Noise Level Per Period	Guidelines for Noise Impact Assessment Significance (DMRB)	EPA EIAR Significance of Effects	Determination
Below or equal to baseline noise level	Negligible	Not Significant	Depending on CNT, duration and baseline noise level
Above baseline noise level and below or equal to CNT	Minor	Slight to Moderate	
Above CNT and below or equal to CNT +5 dB	Moderate	Moderate to Significant	
Above CNT +5 dB	Major	Significant, to Very Significant	

The adapted DMRB guidance outlined will be used to assess the predicted construction noise levels at NSLs and comment on the likely impacts during the construction stages.

In accordance with the DMRB Noise and Vibration Guidance, construction noise and construction traffic noise effects shall constitute a significant effect where it is determined that a major or moderate magnitude of effect will occur for a duration exceeding:

- Ten or more days or night in any 15 consecutive day or nights,
- A total number of days exceeding 40 in any six consecutive months

Construction Vehicular Traffic

In order to assist with interpretation of construction traffic noise, Table 13.3 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). For construction traffic, due to the short-term period over which this impact occurs, the magnitude of impacts is assessed against the 'short term' period in accordance with the DMRB document.

Table 13.3 Likely Effect Associated with Change in Traffic Noise Level – Construction.

Change in Sound Level (dB)	Subjective Reaction	DMRB Magnitude of Impact (Short-term)	EPA Significance of Effect
Less than 1 dB	Inaudible	Negligible	Imperceptible
1 – 2.9	Barely Perceptible	Minor	Not Significant to Slight
3 – 4.9	Perceptible	Moderate	Moderate
≥ 5	Up to a doubling of loudness	Major	Significant

The DMRB guidance outlined above will be used to assess the predicted increases in traffic levels on public roads associated with the Proposed Development and comment on the likely impacts during the construction stage.

13.2.1.2 Criteria for Assessing Construction Vibration Impacts

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 13.4. 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 13.4 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 13.4 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	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	

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.

Human Perception

It is acknowledged that humans are particularly sensitive to vibration stimuli and that any perception of vibration may lead to concern. In the case of traffic, vibration is perceptible at around 0.5mm/s and may become disturbing or annoying at higher magnitudes. Higher levels of vibration, however, are typically tolerated for single events or events of short duration. For example, during piling, one of the primary sources of vibration during construction, vibration levels may typically be tolerated at up to 2.5mm/s. This guidance is applicable to the daytime only; it is unreasonable to expect people to be tolerant to such activities during the night-time (or if they are trying to sleep during the daytime).

BS 5228-2 also provides a useful guide relating to the assessment of human response to vibration in terms of the peak particle velocity (PPV). Table 13.5 below summarises the range of vibration values and the associated potential effects on humans.

Table 13.5 Guidance on effects of human response to PPV magnitudes

Vibration Level, mm/s PPV	Description of Effect	Possible Significance Rating
≥10	Vibration is likely to be intolerable for any more than a brief exposure to a level of 10 mm/s	Significant to Very Significant
≥1 to <10	Increasing likelihood of complaints in residential environments but can be tolerated at the lower end of the scale if prior warning and explanation has been given to residents	Moderate to Significant
≥0.3 to <1	Increasing likelihood of perceptible vibration in residential environments	Slight to Moderate

Vibration Level, mm/s PPV	Description of Effect	Possible Significance Rating
<0.3	Vibration is unlikely to be perceptible in even the most sensitive situations for most vibration frequencies associated with construction	Not significant

Further consideration of where the effect is significant is undertaken using professional judgment based on duration and frequency of the effect, as well as the time of the day.

13.2.2 Operational Phase

13.2.2.1 Criteria for Assessing Operational Noise Impacts

The main potential source of outward noise from the Proposed Development will relate to traffic flows to and from the development site onto the public roads. 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 (UKHE 2020), see Table 13.6 and Table 13.7. This document provides magnitude rating tables relating to changes in road traffic noise. The document suggests that, during the year of opening, the magnitude of impacts between the Do Minimum and the Do Something scenarios are likely to be greater compared to the longer-term period (fifteen years post-opening), when people become more habituated to the noise level change. It shows that small changes in noise levels are not normally noticeable, whereas an increase of 10 dB would be described as a doubling of loudness. In summary, the assessment looks at the impact with and without development at the nearest noise sensitive locations.

Table 13.6 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 Classification of Impact
<1.0	Negligible	Imperceptible
1.0 - 2.9	Minor	Not Significant
3 – 4.9	Moderate	Slight, Moderate
>5.0	Major	Significant

Table 13.7 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
< 3.0	Barely Perceptible	Negligible
3 – 4.9	Perceptible	Minor
5 – 9.9	Up to a doubling of loudness	Moderate
10+	More than a doubling of loudness	Major

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 commonly used by Local Authorities in planning conditions and also in complaint investigations.

BS 4142 (2014+A1:2019) 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 (2014+A1:2019) 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.

"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 to meet the relevant noise criteria set at a given sensitive receptor location.

Internal Noise at Receivers within the Development

To ensure there is no adverse impact on the future inhabitants of the Proposed Development itself, it is appropriate to refer to internal noise targets derived from BS 8233: 2014: *Guidance on Sound Insulation and Noise Reduction for Buildings.* The recommended indoor ambient noise levels are set out in Table 13.8 and are based on annual average data; that is to say, they omit occasional events where higher intermittent noisy events may occur.

Table 13.8 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	Bedroom	35 dB $L_{Aeq,16hr}$	30 dB $L_{Aeq,8hr}$ 45 dB $L_{Amax,T}$ [A]

A: 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.

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.

Based on the guidance outlined in the BS8233 standard, the following external noise levels from the operation of the development itself 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 $L_{Aeq,16hrs}$ day
- Night-time (23:00 to 07:00 hrs): 45 dB $L_{Aeq,8hrs}$ night

Residential Inward Noise Impact Assessment

The *Professional Practice Guidance on Planning and Noise* (ProPG) (2017) is the most commonly used guidance document for assessment of the inward noise impacts within new residential developments.

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: -

1. Element 1 – Good Acoustic Design Process
2. Element 2 – Noise Level Guidelines
3. Element 3 – External Amenity Area Noise Assessment
4. 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 13.1 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 13.8 above and are based on annual average data.

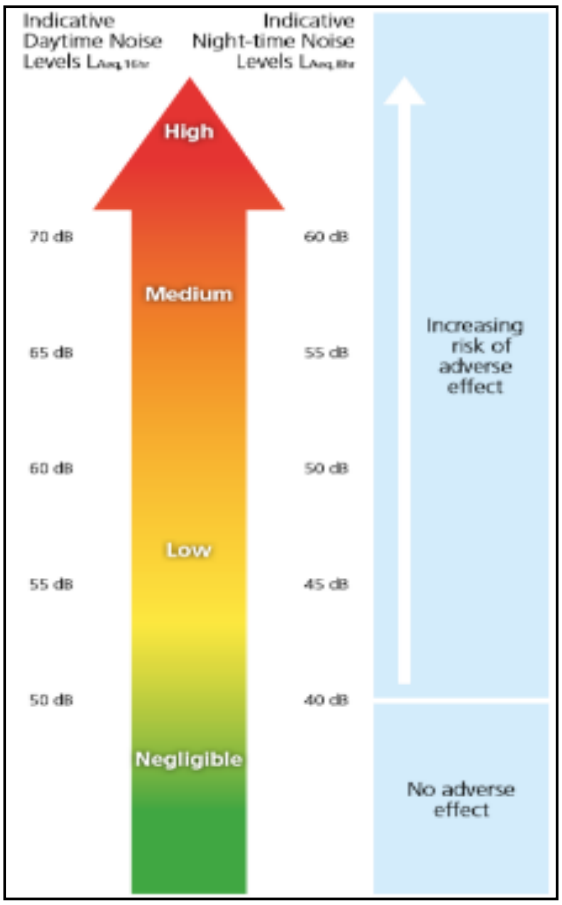

Figure 13.1 ProPG Stage 1 - Initial Risk Assessment

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 $L_{Aeq,16hr}$."

13.2.2.2 Criteria for Assessing Operational Vibration Impacts

There are no noteworthy sources of vibration associated with the operational stage; therefore, vibration criteria have not been specified.

13.2.3 Dublin Agglomeration Noise Action Plan 2024 – 2028

The Dublin Agglomeration Noise Action Plan 2024 – 2028, addresses the requirements of the European Noise Directive 2002/49/EC for local authorities for managing environmental noise. The Noise Action Plan (NAP) states the following regarding planning guidance: *"The appropriate use of the planning system can be used to help avoid, or minimise, the adverse impacts of noise without placing unreasonable restrictions on development".*

The action plan outlines guidance to minimise the impact in relation to noise on new developments. ProPG Planning and Noise: Professional Practice Guidance on Planning and Noise, and BS 8233:

Guidance on Sound Insulation and Noise Reduction for Buildings, are recommended as guidance to be employed in areas where people are being brought to noise in the form of existing road and rail noise.

13.2.4 Fingal Development Plan 2023 – 2029

Objective DA011 of the Fingal Development Plan 2023 – 2029 is relevant to the Proposed Development. The Proposed Development is located within Zone D. Certain specific residential developments located in Zone D may be required to demonstrate that aircraft noise intrusion has been considered in the design. The objective states the following:

> "Strictly control inappropriate development and require noise insulation where appropriate in accordance with Table 8.1 above within Noise Zone B and Noise Zone C and where necessary in Assessment Zone D, and actively resist new provision for residential development and other noise sensitive uses within Noise Zone A, as shown on the Development Plan maps, while recognising the housing needs of established families farming in the zone. To accept that time based operational restrictions on usage of a second runway are not unreasonable to minimize the adverse impact of noise on existing housing within the inner and outer noise zone."

Table 13.9 outlines the objectives to be adhered to by applicants for developments in Zone D. The Proposed Development is situated in Zone D and, hence, a noise assessment is required to demonstrate that good acoustic design has been followed.

Table 13.9 Aircraft Noise Zone D.

Zone	Indication of Potential Noise Exposure during Airport Operations	Objective
D	≥ 50 dB and < 54 dB $L_{Aeq, 16hr}$ and ≥ 40 dB and < 48 dB L_{night}	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. 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 design has been followed. Applicants are advised to seek expert advice.
Notes: - 'Good Acoustic Design' means following the principles of assessment and design as described in ProPG: Planning and Noise – New Residential Development, May 2017. 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'.		

13.3 Baseline Environment

13.3.1 Site Area Description

The Proposed Development currently comprises of greenfield lands. A full description of the development is provided in Chapter 5 (Description of the Proposed Development). The site is to be located in the northwestern part of the town of Swords, County Dublin.

13.3.2 Receptors

The northern section of the site is bordered to the north by the R125 roadway (Rathbeale Road), to the east and south by the Mooretown Phase 1 residential development area and the Cronan's Well Avenue residential estate to the west.

The southern section of the site is bordered to the north by the Mooretown Phase 1 residential development, to the west by the Mooretown SHD/012/21 (under construction), to the east by Cianlea and Lioscian residential estates and to the south by the Ormond Cresent residential estate.

13.3.3 Environmental Noise Survey

An environmental noise survey has been conducted to quantify noise emissions across the existing site. The external survey was conducted in general accordance with ISO1996-2:2017 *Acoustics - Description, Measurement and Assessment of Environmental Noise -- Determination of Environmental Noise Levels*. Specific details are set out in the following sections.

13.3.4 Choice of Measurement Positions

An environmental noise survey was carried out at the site by AWN Consulting between 6 March and 10 March 2026 to assess the existing noise environment. Measurement locations were selected as shown in Figure 13.2. These locations were chosen to representatively characterise the baseline noise conditions in the surrounding area.

Three attended monitoring locations, designated AN1 to AN3, were selected:

- AN1 was positioned to capture the baseline noise environment of the adjacent residential area Cianlea, to the east of the Proposed Development.
- AN2 was positioned to capture the baseline noise environment of the adjacent residential area Cronan's Well Avenue, to the west of the Proposed Development.
- AN3 was positioned to capture the baseline noise environment of the adjacent residential area Ormond Crescent, to the south of the Proposed Development

In addition, one unattended monitoring location, UN1, was installed in a private residence to the north of the Proposed Development, overlooking the R125, the primary noise source in the area. The purpose of UN1 was to measure the noise levels directly affecting the Proposed Development and to measure the road traffic noise affecting the Proposed Development.

Figure 13.2 Noise Survey Locations

13.3.5 Survey Period

The attended noise survey was conducted between the following periods:

- AN1 to AN2 between 10:22 hrs to 12:44 hrs on 10 March 2026.
- AN3 between 10:00 hrs to 12:15 hrs on 6 March 2026.

The unattended noise survey was conducted between the following periods:

- UN1 between 10:00 hrs on 6 March to 10:00 hrs on 10 March 2026.

The measurements cover a period that was selected to provide a typical snapshot of the existing noise climate, with the primary purpose being to ensure that the proposed noise criteria associated with the development are commensurate with the prevailing environment.

13.3.6 Instrumentation

The measurements were performed using the equipment listed in Table 13.10 below.

Table 13.10 Noise Monitoring Equipment Details

Measurement	Manufacturer	Equipment Model	Serial Number	Calibration date
Sound Level Meter	Rion	NL-52	164426	21/03/2024
Sound Level Meter	Rion	NL-52	186668	26/06/2025
Calibrator	Brüel and Kjær	Type 4231	2394086	24/06/2025

The microphone was protected using a proprietary windshield. The sound level meter was check calibrated using a Brüel and Kjær Type 4231 Sound Level before and after the survey. Calibration certificates available on request.

13.3.7 Measurement Parameters

The noise survey results are presented in terms of the following parameters:

L_{Aeq} is the equivalent continuous sound level. It is a type of average and is used to describe a fluctuating noise in terms of a single noise level over the sample period.

L_{AFmax} is the instantaneous maximum sound level measured during the sample period using the 'F' time weighting.

L_{A90} is the sound level that is exceeded for 90% of the sample period. It is typically used as a descriptor for background noise.

The 'A' suffix denotes the fact that the sound levels have been 'A-weighted' in order to account for the non-linear nature of human hearing. All sound levels in this report are expressed in terms of decibels (dB) relative to 2 × 10-5 Pa.

13.3.8 Procedure

The unattended monitoring equipment was configured to log data over 15-minute periods, saved to the instrument memory for subsequent analysis. Survey personnel noted all primary noise sources contributing to noise build-up when the instrumentation was being set up and collected.

The attended noise monitoring equipment was configured to measure data over a 15-minute period at each location. Three measurements were taken at each location.

13.3.9 Results

The weather during the survey periods was generally dry and calm and was not considered to have had a detrimental effect on the noise measurements.

13.3.9.1 Unattended Survey Results UN1

Table 13.11 summarises the measured day, evening and night-time noise levels for the entire survey period.

Table 13.11 Summary of Measured Noise Levels (dB re. 2x10-5 Pa) at UN1

Date	Sound Pressure Level (dB re. $2x10^{-5}$ Pa)					
	Daytime (07:00 to 19:00 hrs)		Evening (19:00 to 23:00 hrs)		Night (23:00 to 07:00 hrs)	
	L_{Aeq}	L_{A90}	L_{Aeq}	L_{A90}	L_{Aeq}	L_{A90}
Friday 6 March 2026	67	53	66	48	61	40
Saturday 7 March 2026	67	51	65	48	60	39
Sunday 8 March 2026	66	50	64	45	60	38
Monday 9 March 2026	67	53	65	46	60	40

Date	Sound Pressure Level (dB re. $2x10^{-5}$ Pa)					
	Daytime (07:00 to 19:00 hrs)		Evening (19:00 to 23:00 hrs)		Night (23:00 to 07:00 hrs)	
	L_{Aeq}	L_{A90}	L_{Aeq}	L_{A90}	L_{Aeq}	L_{A90}
Tuesday 10 March 2026	68	55	-	-	-	-
Average	67[A]	52[B]	65[A]	47[B]	60[A]	39[B]

A) Logarithmically averaged

B) Arithmetically averaged

Daytime noise levels were found to range between 66 to 68 dB $L_{Aeq,12hour}$, evening noise levels were in the range between 64 to 66 dB $L_{Aeq,4hour}$, while night-time noise levels were in the range of 60 to 61 dB $L_{Aeq,8hour}$.

Daytime background noise levels were found to range between 50 to 55 dB $L_{A90,12hour}$, evening noise levels were in the range between 45 to 48 dB $L_{A90,4hour}$, while night-time noise levels were in the range of 38 to 40 dB $L_{A90,8hour}$.

Dominant noise sources noted during the survey were road traffic on the R125 with distant construction activity barely audible from nearby construction site to the south. Other audible noise sources during the monitoring included birdsong.

The L_{AFmax} values were measured at 15-minute intervals over the duration of the unattended monitoring survey. Figure 13.3 presents the distribution of the magnitude of L_{AFmax} events during the night period.

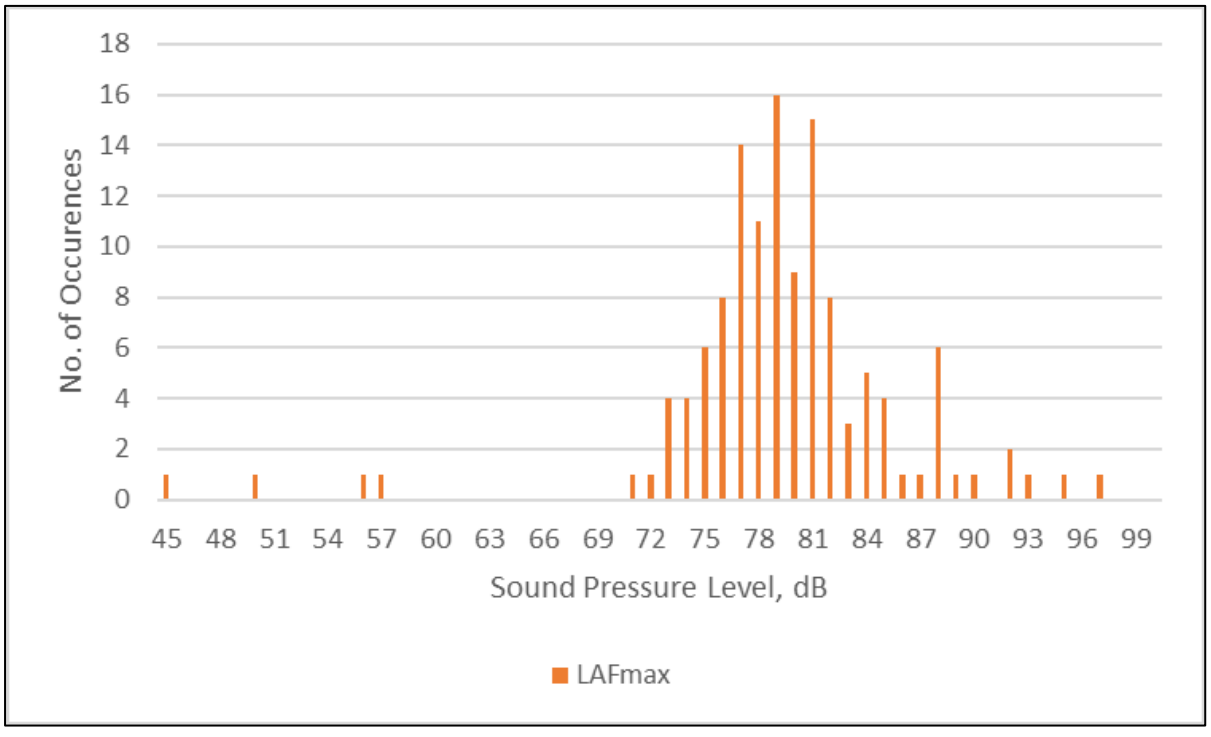

Figure 13.3 Number of L_{AFmax} events at each decibel level measured during the night period at location UN1

59 events were measured at or above 80dB L_{AFmax}. The most commonly occurring L_{AFMax} values are between 76 and 82 dB L_{AFmax} over the 4 night-time periods.

13.3.9.2 Survey Position AN1

The survey results for Location AN1 are presented in Table 13.12. During the survey, distant road traffic noise from the R125 and Murrough Road and construction noise to the west were the dominant noise sources at this location. Occasional local estate traffic and birdsong were also audible at this measurement position.

Table 13.12 Measured noise levels at Location AN1

Date	Measurement Period	Measured Noise \levels, dB re 2x10-5 Pa		
		L_{Aeq}	L_{AFmax}	L_{AF90}
10 March 2026	10:22 – 10:37	52	69	50
	11:20 - 11:35	52	69	49
	11:59 – 12:14	48	64	46
	Average	51	-	48

Daytime noise levels were in the range of 48 to 42 dB $L_{Aeq,15min}$ and in the range of 46 to 50 dB $L_{A90,15min}$ during the measurement periods.

No significant level of vibration was noted at this location during site attendance.

13.3.9.3 Survey Position AN2

The survey results for Location AN2 are presented in Table 13.13. During the survey, the dominant noise sources at this location were distant road traffic from the R125 and construction activities to the east. Additional audible sounds included birdsong. The measurement taken at 10:44 recorded elevated noise levels, attributed to the use of power tools on the construction site to the east for approximately 5 minutes.

Table 13.13 Measured noise levels at Location AN2

Date	Measurement Period	Measured Noise \levels, dB re 2x10-5 Pa		
		L_{Aeq}	L_{AFmax}	L_{AF90}
10 March 2026	10:44 – 10:59	59	80	48
	11:43 – 11:58	54	67	48
	12:29 – 12:44	50	65	46
	Average	56	-	47

Daytime noise levels were in the range of 50 to 59 dB $L_{Aeq,15min}$ and in the range of 46 to 48 dB $L_{A90,15min}$ during the measurement periods.

No significant level of vibration was noted at this location during site attendance.

13.3.9.4 Survey Position AN3

The survey results for Location AN3 are presented in Table 13.14. During the survey, construction activity and distant road traffic noise were the dominant noise sources at this location. Birdsong was also audible at this measurement position.

Table 13.14 Measured noise levels at Location AN3

Date	Measurement Period	Measured Noise \levels, dB re 2x10-5 Pa		
		L_{Aeq}	L_{AFmax}	L_{AF90}
06 March 2026	09:30 – 09:45	50	66	47
	10:30 – 1045	46	58	42
	11:30 – 11:45	45	59	41
	Average	48	-	43

Daytime noise levels were in the range of 45 to 50 dB $L_{Aeq,15min}$ and in the range of 41 to 47 dB $L_{A90,15min}$ during the measurement periods.

No significant level of vibration was noted at this location during site attendance.

13.3.9.5 Desk Based Assessment of EPA Maps

In addition to the survey discussed above reference has also been made to the noise maps prepared by Fingal County Council and the Dublin Airport Authority (DAA).

The following noise maps have been referred to when assessing the baseline noise environment:

- Dublin Airport Aircraft Noise Annual Contours

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 Fingal County Council Mapping website, Dublin Airport aircraft noise annual contours.

Figure 13.4 and Figure 13.5 present the predicted noise levels across the development site for airport traffic in terms of L_{den} and L_{night}.

Figure 13.4 L_{den} Dublin Airport Aircraft Noise Levels

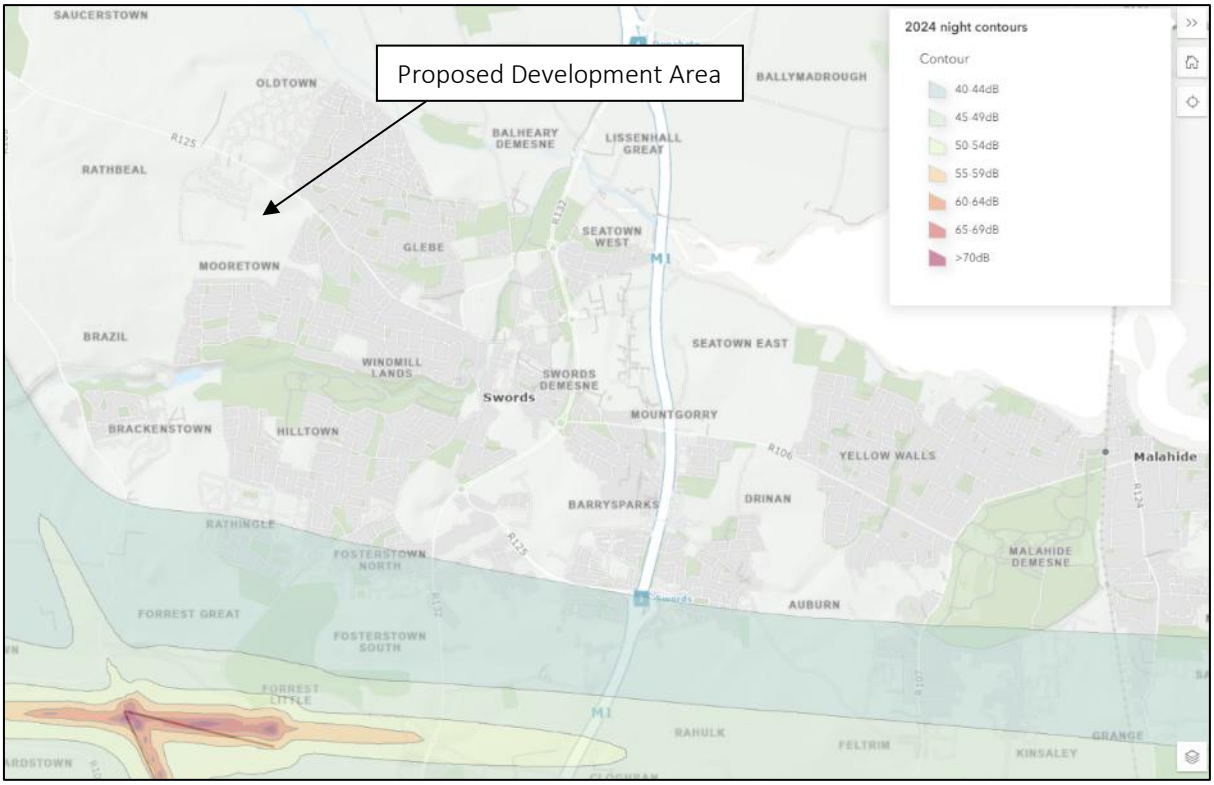

Figure 13.5 L_{night} Dublin Airport Aircraft Noise Levels

Table 13.15 summarises the desk-based assessment of noise levels across the site for road traffic noise.

Table 13.15 Dublin Airport Aircraft Contour Noise Levels at Development Site

Noise Source	L_{den}, dB	L_{night}, dB
Airport Traffic	<45 - 49	<40

13.3.9.6 Vibration

No significant level of vibration was noted at any location during site attendance.

13.4 Predicted Impacts of the Proposed Development

13.4.1 Do-Nothing Impact

In the absence of the Proposed Development being constructed, the noise environment at the nearest noise sensitive locations and within the development site will remain largely unchanged resulting in a neutral and local impact in the long-term.

Moreover, if the current proposal were not developed, then it is likely that one similar in nature would be proposed, in line with the national policy of promoting compact growth and the sites zoning designations that support development of the site for residential development.

13.4.2 Construction Phase

A variety of items of plant will be in use for the purpose of site clearance and construction works. There will also be vehicular movements to and from the site that will make use of existing roads. Due to the nature of these activities, there is potential for the generation of elevated levels of noise in the vicinity of existing noise sensitive properties.

The proposed general construction hours are 07:00 to 19:00 hrs, Monday to Friday and 07:00 to 14:00 hrs on Saturdays. No working will be allowed on Sundays and Public Holidays. Subject to the agreement of the local authority, out of hours working may be required for watermain connections, foul drainage connections etc.

The construction phase will be controlled using construction noise threshold values which the contractor will be required to work within as much as is practicable. In this regard, the choice of plant, scheduling of works on site, provision of localised screening and other best practice control measures will be employed.

13.4.2.1 Sensitive Receptors

Noise and vibration impacts have been assessed to the nearest sensitive locations to the site boundaries, i.e. a worst-case assessment of the closest sensitive locations during any of the construction stages. These closest locations are identified in Figure 13.6 and described below.

Figure 13.6 Noise Sensitive Locations

- NSL1: Group of individual residential houses along the R125, approx. 20m to the north of the northern site boundary and approximately 100m from the closest structural works associated with the construction of residential units. The CNT associated with this NSL is classified as Category B.

- NSL2: Holymount Road residential housing estate, approx. 35 m to the north of the northern site boundary and approximately 80m from the closest structural works associated with the construction of residential units. The CNT associated with this NSL is classified as Category B.

- **NSL3:** Cianlea residential housing estate approximately 10m to the east of the eastern site boundary and approximately 15 m from the closest structural works associated with the construction of residential units. The CNT associated with this NSL is classified as Category A.

- **NSL4:** The Ormond Crescent and Lioscian residential housing estate approximately 10 m to the east and south of the southern site boundary and approximately 30m from the closest structural works associated with the construction of residential units. The CNT associated with this NSL is classified as Category A.

- **NSL5:** The Swords Community College and Cronan's Well Brook residential housing estate approximately 40m to the west of the western site boundary and approximately 80m from the closest structural works associated with the construction of residential units. The CNT associated with this NSL is classified as Category A.

- **NSL6:** Cronan's Well Park residential housing estate approximately 15m to the west of the western site boundary and approximately 120m from the closest structural works associated with the construction of residential units. The CNT associated with this NSL is classified as Category A.

The construction stage will be undertaken over a number of sub-phases from site preparation through to building construction and internal fit out. In terms of the potential noise and vibration impacts, the key stages and activities are expected to involve:

- Site Set Up;
- Ground Works (Excavation and Piling);
- General Construction.

The construction programme will create typical construction activity related noise onsite. Indicative ranges of noise levels associated with construction may be calculated in accordance with the methodology set out in British Standard Institute (BSI) BS 5228-1:2009 +A1:2014 Code of Practice for noise and vibration control of construction and open sites - Part 1: Noise (BSI, 2014). 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.

The following section discusses typical noise levels associated with the Proposed Development construction phase and comments on potential noise impacts at distances to the nearest Noise Sensitive Locations (NSLs) during the key stages and types of activities that will occur on site.

13.4.2.2 Site Set Up and Clearance

For site set up and clearance the works will involve the removal of any vegetation within the site as well as establishing a site office and compound. The provision of temporary foul and storm sewers will also be provided for the site office during this phase. This will likely be the most noise intrusive works during this phase of construction. Reference to BS 5288-1 indicates that highest noise levels during this phase will be associated with ground clearance activities. Noise levels from these activity types are typically in the range of 80 to 90 dB L_{Aeq} at 10m.

For construction activities associated with surface ground clearance, a total construction noise level of 92 dB L_{Aeq} at 10m has been used for the purposes of indicative calculations. This would involve for

example, one item of plant at 90 dB L_{Aeq} and two items of plant at 85 dB L_{Aeq} and one item of plant at 80 dB L_{Aeq} operating simultaneously within one work area which is considered a worst-case scenario.

13.4.2.3 Ground Works (Excavation and Piling)

For construction works associated with activities such as excavation and structural works including excavators, loaders, dozers, cranes, generators, concreting works and continuous flight augured piling etc. noise levels are typically in the range of 70 to 82 dB L_{Aeq} at 10m.

13.4.2.4 General Construction

Once the ground preparation and foundation works have been completed, a large portion of the work will involve manual labour and cranes with lower overall noise levels. For the purpose of this assessment a combined sound pressure level of 78 dB $L_{Aeq,T}$ at 10m has been used for construction noise calculations during ongoing site works and compounds once site clearance and excavation works are completed. This would include, for example, one item of plant at 75 dB L_{Aeq} and three items of plant at 70 dB L_{Aeq} operating simultaneously within a work area resulting in a total noise level of 78 dB L_{Aeq} along the closest works boundary.

Given the nature of the proposed works which will include standard house and apartment building techniques across the site, the cumulative construction noise levels above represent conservative noise levels used to assess construction activities associated with the various stages of construction. This worst-case scenario is a robust assumption made for developments of this size, on the basis that it is unlikely that more than 5 no. items of such plant/equipment would be operating simultaneously in such close proximity to each other at all times. In reality, items of construction plant and machinery will be operating at varying distances from any one NSL.

13.4.2.5 Indicative Construction Noise Levels

Indicative noise calculations have been undertaken which assume that plant items are operating for 66% of the time. Screening from a standard site hoarding of 2.4m is assumed around all site boundaries. It must be stated that for most of the time, plant and equipment will be a greater distance from the nearest NSLs than those used within the calculations and the "on-time" of plant and equipment will be less than those assumed over a normal working day (i.e. the use of piling rigs will be in use for shorter periods than those assumed over a normal working day) and consequently will have lower noise levels. The assessment presented is therefore representative of a best estimate conservative scenario representing construction activities. Table 13.16 presents the calculated noise levels at varying distances.

Table 13.16 Construction Noise Levels at Varying Distances

Construction Phase	Total Sound Pressure, dB $L_{Aeq,T}$ at 10m	Calculated Noise Levels at Varying Distances, dB $L_{Aeq,T}$							
		15m	20m	25m	30m	50m	100m	200m	400m
Site Set Up and Clearance	92	81	79	77	75	71	64	57	50
Ground Works	82	71	69	67	65	61	54	47	40

Construction Phase	Total Sound Pressure, dB $L_{Aeq,T}$ at 10m	Calculated Noise Levels at Varying Distances, dB $L_{Aeq,T}$							
		15m	20m	25m	30m	50m	100m	200m	400m
(Excavation and Piling)									
General Construction	78	67	65	63	61	57	50	43	36

13.4.2.6 Site Set up Noise

During site set up and clearance works, there is potential for the CNT to be exceeded at distances of approximately 50 m or less, particularly where activities occur along the immediate site boundaries. When construction activities take place at distances greater than 50 m from NSLs, noise levels are expected to remain within the CNT.

For NSLs 2, 3, 4, and 5, the approximate distance from construction activities is less than 50 m. As a result, exceedances of the CNT are likely at these locations. NSLs 2 and 5 may experience ***temporary, negative, moderate to significant*** impacts. NSLs 3 and 4 may *experience* ***temporary, negative, significant to very significant*** impacts.

Overall, this phase of construction has the potential to result in temporary, negative impacts ranging from moderate to very significant.

However, it should be noted that if the durations associated with these significance levels are not exceeded, as expected, the resulting effects during this phase of works will be considered not significant.

13.4.2.7 Ground Works (Excavation and Piling)

At all NSLs the ground-works and piling activities associated with the apartment building construction are located at distances greater than 30 m from the works. As a result, the lower CNT threshold is not expected to be exceeded at the NSLs, leading to *a* ***temporary, negative, slight to moderate*** impact at all NSLs.

13.4.2.8 General Construction

During general construction activities, including structural building works, lower noise levels are typically generated. There remains potential for the CNT to be exceeded by a small margin at distances of 20 m or less, particularly where works occur along the immediate site boundaries. When activities take place at distances of 25 m or more from NSLs, noise levels are expected to remain within the CNT.

NSL 3 is the only receptor where the approximate distance to construction activity falls within 20 m, meaning that exceedance of the CNT is likely. The general construction activities occurring within the worst-case scenario distance of 20 m from the NSL would not extend for a full year. This would result in a ***temporary, negative, moderate to significant*** impact. For all other NSLs, the CNT is not predicted to be exceeded during this phase of construction.

13.4.2.9 Construction Phase Impacts Summary

Noise mitigation measures will therefore be required on site to reduce construction noise levels along the boundaries to reduce any potential significant effects. Recommended mitigation measures are presented in Section 13.5.

13.4.2.10 Construction Vibration

There is potential for piling to be used for building and basement foundations for apartment buildings. For the purposes of this assessment, the expected vibration levels during piling, assuming augured or bored piles, have been determined through reference to published empirical data. The British Standard BS 5228 – *Part 2: Vibration*, publishes the measured magnitude of vibration of rotary bored piling using a 600 mm pile diameter for bored piling into soft ground over rock:

- 0.54 mm/s at a distance of 5 m, for auguring;
- 0.22 mm/s at a distance of 5 m, for twisting in casing;
- 0.42 mm/s at a distance of 5 m, for spinning off; and
- 0.43 mm/s at a distance of 5 m, for boring with rock auger.

Considering the low vibration levels at very close distances to the piling rigs, vibration levels at the nearest buildings are not expected to pose any significance in terms of cosmetic or structural damage. In addition, the range of vibration levels is typically below a level which would cause any disturbance to occupants of nearby buildings.

In this instance, taking account of the distance to the nearest sensitive off-site buildings, vibration levels at the closest neighbouring buildings are expected to be orders of magnitude below the limits set out in Table 13.4 and therefore will avoid any cosmetic damage to buildings. Vibration levels are also expected to be below a level that would cause disturbance to building occupants, as set out in Table 13.5. The predicted vibration impact during the construction phase is ***negative, not significant*** and ***short-term.***

13.4.2.11 Construction Traffic

During the construction phase, traffic associated with the Proposed Development would consist of a mix of Light Goods Vehicles (LGVs) and Heavy Goods Vehicles (HGVs) travelling to and from the site.

It is noted that in order to increase traffic noise levels by 1 dB, traffic volumes would need to increase by the order of 25%. It is forecast that additional traffic introduced onto the local road network due to the construction stage of the development will not introduce a level of traffic that would result in a volume change in excess of 25% on the surrounding road network and the expected impact is therefore ***negative, not significant*** and ***short-term.***

13.4.3 Operational Phase

Once the Proposed Development is operational, the potential noise impacts to the surrounding environment are predicted to be minimal. The residential aspect of the development is not expected to generate any significant noise sources over and above those which form part of the existing environment at neighbouring residential areas (road traffic noise, estate vehicle movements, children playing, etc.).

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

buildings. Potential noise impacts also relate to operational plant serving the 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;
- Crèche playground area;

13.4.3.1 Additional Vehicular Traffic on Surrounding Roads

For the purposes of assessing the potential noise impact, it is appropriate to consider the relative increase in noise level associated with traffic movements on existing roads and junctions with and without the Proposed Development, given that traffic from the development will make use of the existing road traffic impact assessment network.

A traffic impact assessment relating to the Proposed Development has been prepared by Transport Insights as part of this EIAR (refer to Chapter 0 (Traffic and Transportation)). The results of this assessment in terms of overall Annual Average Daily Traffic (AADT) and the percentage of HGVs 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 (2028) and Future Design Years (2033) and (2043) are summarised in Table 13.17, Table 13.18 and Table 13.19.

Table 13.17 Summary of change in noise level (Opening Year 2028)

Junction	Road / Arm link	AADT Do Minimum	(HGV%)	AADT Do Something	(HGV%)	Increase in noise level (all vehicles)
J1	Arm A - R125 Rathbeale Rd	10,812	5.3%	10,939	5.3%	0.1
	Arm B - R108	7,341	9.7%	7,380	9.6%	0.0
	Arm C - R125	12,493	6.3%	12,580	6.2%	0.0
J2	Arm A - Glen Ellan Rd	5,175	3.9%	5,182	3.9%	0.0
	Arm B - R125 Rathbeale Rd	9,858	4.0%	10,104	3.9%	0.1
	Arm C - Access to Cronan's Well Gate	5,409	4.2%	5,520	4.1%	0.0
	Arm D - R125 Rathbeale Rd	10,802	5.2%	10,929	5.1%	0.0
J3	Arm A - Holymount Rd	173	2.8%	173	2.8%	0.0
	Arm B - R125 Rathbeale Rd	11,233	3.0%	12,214	2.8%	0.3
	Arm C - Site Access	1,740	3.4%	2,966	2.0%	1.6
	Arm D - R125 Rathbeale Rd	9,969	3.7%	10,215	3.7%	0.1

Junction	Road / Arm link	AADT Do Minimum	(HGV%)	AADT Do Something	(HGV%)	Increase in noise level (all vehicles)
J4	Arm A - Glen Ellan Rd	9,621	4.8%	9,870	4.7%	0.0
	Arm B - R125 Rathbeale Rd	14,268	2.8%	14,860	2.7%	0.1
	Arm C - Murrough Rd	7,736	6.1%	7,897	5.9%	0.0
	Arm D - R125 Rathbeale Rd	11,788	2.9%	12,788	2.7%	0.0
J5	Arm A - Thornleigh Green	3,987	1.6%	4,025	1.6%	0.0
	Arm B - Glen Ellan Rd	13,103	4.2%	13,210	4.1%	0.1
	Arm C - Glen Ellan Rd	9,655	4.9%	9,904	4.8%	0.0
	Arm D - Glen Ellan Rd	12,104	1.6%	12,207	1.6%	0.0

Table 13.18 Summary of change in noise level (Future Design Year 2032)

Junction	Road / Arm link	AADT Do Minimum	(HGV%)	AADT Do Something	(HGV%)	Increase in noise level (all vehicles)
J1	Arm A - R125 Rathbeale Rd	11,391	5.6%	11,518	5.5%	0.0
	Arm B - R108	7,776	10.1%	7,816	10.1%	0.0
	Arm C - R125	13,189	6.6%	13,276	6.5%	0.0
J2	Arm A - Glen Ellan Rd	5,415	4.2%	5,422	4.2%	0.0
	Arm B - R125 Rathbeale Rd	10,303	4.2%	10,549	4.1%	0.1
	Arm C - Access to Cronan's Well Gate	5,595	4.5%	5,706	4.4%	0.0
	Arm D - R125 Rathbeale Rd	11,380	5.5%	11,507	5.4%	0.0
J3	Arm A - Holymount Rd	183	3.0%	183	3.0%	0.0
	Arm B - R125 Rathbeale Rd	11,716	3.2%	12,697	3.0%	0.2
	Arm C - Site Access	1,747	3.7%	2,974	2.2%	1.5
	Arm D - R125 Rathbeale Rd	10,452	4.0%	10,697	3.9%	0.1
J4	Arm A - Glen Ellan Rd	10,147	5.0%	10,396	4.9%	0.1
	Arm B - R125 Rathbeale Rd	14,932	3.0%	15,524	2.8%	0.0

Junction	Road / Arm link	AADT Do Minimum	(HGV%)	AADT Do Something	(HGV%)	Increase in noise level (all vehicles)
	Arm C - Murrough Rd	8,168	6.4%	8,328	6.2%	0.0
	Arm D - R125 Rathbeale Rd	12,271	3.1%	13,271	2.8%	0.0
J5	Arm A - Thornleigh Green	4,208	1.7%	4,247	1.7%	0.0
	Arm B - Glen Ellan Rd	13,813	4.4%	13,920	4.4%	0.1
	Arm C - Glen Ellan Rd	10,188	5.1%	10,436	5.0%	0.0
	Arm D - Glen Ellan Rd	12,744	1.7%	12,848	1.7%	0.0

Table 13.19 Summary of change in noise level (Future Design Year 2042)

Junction	Road / Arm link	AADT Do Minimum	(HGV%)	AADT Do Something	(HGV%)	Increase in noise level (all vehicles)
J1	Arm A - R125 Rathbeale Rd	12,076	6.1%	12,203	6.0%	0.0
	Arm B - R108	8,304	10.9%	8,343	10.9%	0.0
	Arm C - R125	14,016	7.1%	14,104	7.1%	0.0
J2	Arm A - Glen Ellan Rd	5,697	4.6%	5,704	4.6%	0.0
	Arm B - R125 Rathbeale Rd	10,828	4.7%	11,073	4.6%	0.1
	Arm C - Access to Cronan's Well Gate	5,816	5.0%	5,927	4.9%	0.0
	Arm D - R125 Rathbeale Rd	12,063	6.0%	12,190	5.9%	0.0
J3	Arm A - Holymount Rd	194	3.2%	194	3.2%	0.0
	Arm B - R125 Rathbeale Rd	12,281	3.5%	13,262	3.3%	0.2
	Arm C - Site Access	1,758	4.3%	2,985	2.5%	1.4
	Arm D - R125 Rathbeale Rd	11,017	4.3%	11,263	4.2%	0.1
J4	Arm A - Glen Ellan Rd	10,766	5.5%	11,015	5.3%	0.0
	Arm B - R125 Rathbeale Rd	15,706	3.2%	16,298	3.1%	0.0
	Arm C - Murrough Rd	8,681	6.9%	8,841	6.8%	0.0
	Arm D - R125 Rathbeale Rd	12,836	3.4%	13,836	3.1%	0.0

Junction	Road / Arm link	AADT Do Minimum	(HGV%)	AADT Do Something	(HGV%)	Increase in noise level (all vehicles)
J5	Arm A - Thornleigh Green	4,462	1.8%	4,501	1.8%	0.0
	Arm B - Glen Ellan Rd	14,646	4.8%	14,753	4.7%	0.1
	Arm C - Glen Ellan Rd	10,814	5.6%	11,063	5.5%	0.0
	Arm D - Glen Ellan Rd	13,481	1.9%	13,585	1.9%	0.0

The predicted increase in AADT traffic levels associated with the development are between 0.0 and +1.6 dB(A) in the vicinity of the roads assessed for the Opening Year and between 0.0 and +1.5 dB(A) during the Future Design Years. This is largely due to the existing volume of traffic along the surrounding road network onto which the development traffic will travel. Reference to Table 13.17 confirms that the increase in the Opening Year is ***negligible, not significant*** and ***long-term***. Reference to Table 13.18 and Table 13.19 confirms that the increases in the Future Design Years are ***negligible, 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.***

13.4.3.2 Building Services and Plant

Once operational, there will be building services plant items required to serve the residential aspects of the Proposed Development. Plant items will include comms, metering equipment, water pumps and sprinkler systems. Plant items serving the apartments will be housed internally in plant rooms and therefore noise breakout will be minimal.

The specific requirements for mechanical and electrical plant items for the crèche have not yet been progressed at this stage of the design. It is expected that operation of these plant items will be in conjunction with the hours of occupancy of the building during the day. During the night-time some plant may be required to operate but will do so at low capacity and therefore produce minimal noise emissions.

In this instance, it is best practice to set appropriate noise limits that will inform the detailed design during the selection and layout of building services for the Proposed Development. Plant items will be selected, designed and located so that there is no negative impact on sensitive receivers. Based on the best practice guidance the following plant noise limits have been identified:

Receptors within the development

Based on the guidance outlined the BS 8233 standard, the following external noise levels from the operation of the development itself relate to the external façades of new residential developments to control internal noise levels:

- Daytime (07:00 to 23:00 hrs): 55 dB $L_{Aeq,16hrs,day}$
- Night-time (23:00 to 07:00 hrs): 45 dB $L_{Aeq,\ 8hrs,night}$

Receptors outside the development

Based on the guidance outlined the BS 4142 standard, the following external noise levels from the operation of the development itself relate to the external façades of new residential developments to control internal noise levels:

- Daytime (07:00 to 23:00 hrs): 50 dB $L_{Aeq, 1hrs}$
- Night-time (23:00 to 07:00 hrs): 42 dB $L_{Aeq, 15mins, night}$

Once plant items are designed to achieve the criteria detailed above the impact will be ***negative, long-term*** and ***not significant*** at sensitive receivers.

13.4.3.3 Outward Noise from Crèche

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. Considering the usage of the crèche area (e.g. external areas are only expected to be in use for a portion of the 16 hour daytime period), and due to the nearest NSL location being located more than 8m away from the crèche, the expected standard noise insulation of the façade of the nearest NSL, predicts that the internal criteria within Table 13.8 will be met in all residential units and the resultant noise impact due to the crèche is ***negative, long-term*** and ***not significant***.

13.5 Mitigation Measures

13.5.1 Construction Phase

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, and also by referring to the preliminary Construction Environmental Management Plan (CEMP).

13.5.1.1 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.

13.5.1.2 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:

- The use lifting bulky items, dropping and loading of materials within these areas will be restricted to normal working hours.
- For mobile plant items such as cranes, dump trucks, excavators and loaders, maintaining enclosure panels closed during operation can reduce noise levels over normal operation. Mobile plant will be switched off when not in use and not left idling.
- For steady continuous noise, such as that generated by diesel engines, it may be possible to reduce the noise emitted by fitting a more effective exhaust silencer system.
- For percussive tools such as pneumatic breakers, a number of noise control measures include fitting muffler or sound reducing equipment to the breaker tool and ensuring any leaks in the air lines are sealed.
- Erecting localised screens around breaker or drill bit when in operation in close proximity to noise sensitive boundaries.
- For concrete mixers, control measures will be employed during cleaning to ensure no impulsive hammering is undertaken at the mixer drum.
- For all materials handling, ensure that materials are not dropped from excessive heights, lining drops chutes and dump trucks with resilient materials.
- For compressors, generators and pumps, these can be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation.
- All items of plant will be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures.

13.5.1.3 Piling

Piling is the construction activity which is most likely to cause disturbance. General guidance in relation to piling is outlined in the following paragraphs.

Piling programmes 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 a 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 prevent unacceptable disturbance at any time.

Prior to construction the planner, developer, architect and engineer, as well as the local authority, will be made aware of the proposed method of working of the piling contractor. The piling contractor will in turn have evaluated any practicable and more acceptable alternatives that would economically achieve, in the given ground conditions, equivalent structural results.

On typical piling sites the major sources of noise are essentially mobile, and the noise received at any control points will therefore vary from day to day as work proceeds. The duration of piling works is typically relatively short in relation to the length of construction work as a whole, and the amount of time spent working near to noise sensitive areas can represent only a part of the piling period.

Noise reduction can be achieved by enclosing the driving system in an acoustic shroud. 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 or utilising an acoustic canopy to replace the normal engine cover. Impact noise when piling is being driven can be reduced by introducing a non-metallic dolly between the hammer and the driving helmet.

Screening by barriers and hoardings is less effective than total enclosure but can be a useful adjunct to other noise control measures. For maximum benefit, screens should be close either to the source of noise (as with stationary plant) or to the listener. Removal of a direct line of sight between source and listener can be advantageous both physically and psychologically. In certain types of piling works there will be ancillary mechanical plant and equipment that may be stationary, in which case, care should be taken in location, having due regard also for access routes. When appropriate, screens or enclosures should be provided for such equipment.

13.5.1.4 Screening

Screening is an effective method of reducing the noise level at a receiver location and can be used successfully as an additional measure to all other forms of noise control. Standard construction site hoarding (2.4 m in height) with a mass per unit of surface area greater than 7 kg/m^2 can provide adequate sound insulation.

13.5.1.5 Liaison with the Public

A designated Project Supervisor Construction Stage (PSCS) will be appointed to site during construction works. Any noise complaints will be logged and followed up in a prompt fashion by the PSCS. In addition, prior to particularly noisy construction activity (e.g. piling), the PSCS will inform the nearest noise sensitive locations of the time and expected duration of the noisy works.

13.5.1.6 Project Programme

The phasing programme will be arranged to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity. Figure 13.7 below presents the construction phasing plan for the Proposed Development. The project will be delivered in three phases: Phase 2a, Phase 2b, and Phase 2c. This phased construction programme is designed to minimise cumulative noise and vibration impacts at nearby Noise-Sensitive Locations.

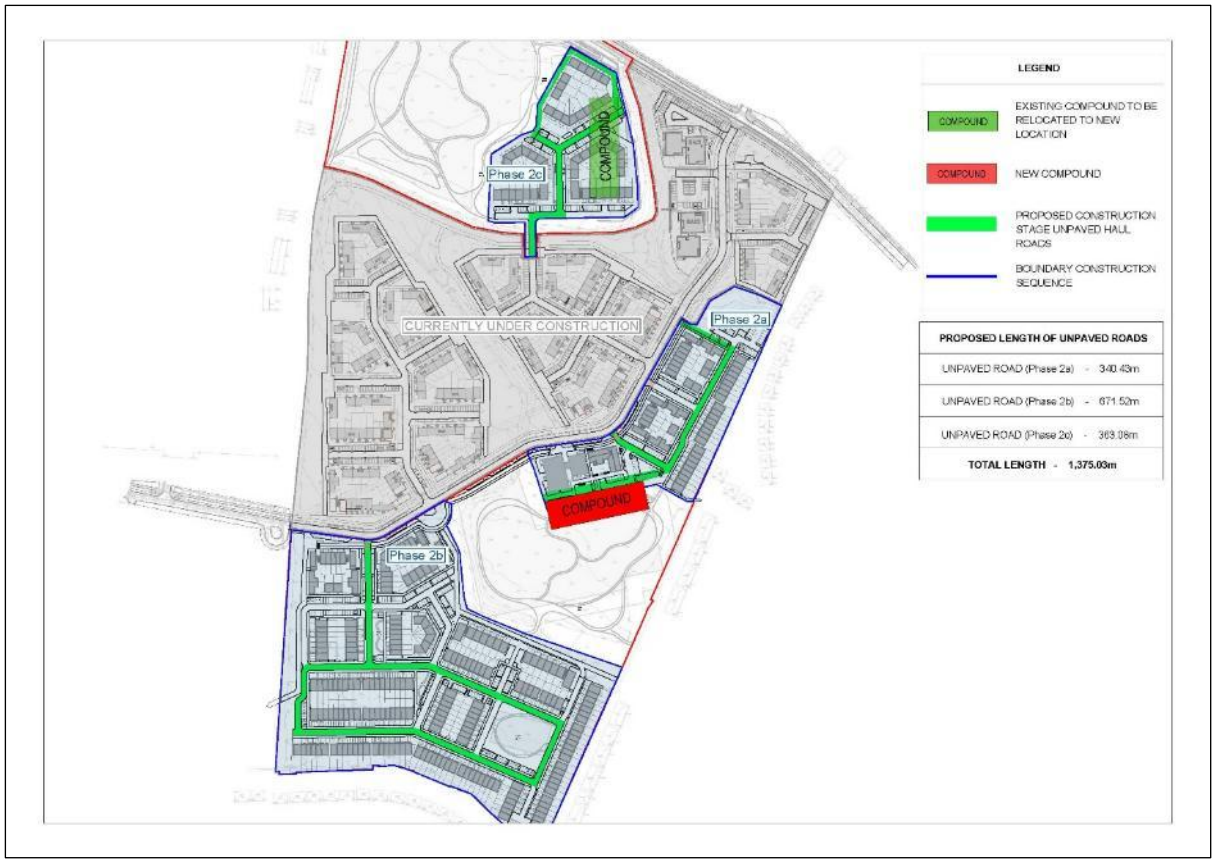

Figure 13.7 Development Sub-phasing Map

If piling works are in progress on another site at the same time as other works of construction that themselves may generate significant noise and vibration, the working programme will be phased so as to ensure noise limits are not exceeded due to cumulative activities. This will be reviewed in relation to other potential cumulative works occurring on adjacent construction site in close proximity to noise sensitive properties which have the potential to lead to significant construction noise impacts.

13.5.2 Operational Phase

13.5.2.1 Building Services and Plant

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.

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 any 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.

13.6 Residual Impacts

13.6.1 Construction Phase

13.6.1.1 Construction Noise

The use of best practice noise control measures, hours of operation, scheduling of works within appropriate time periods, and noise monitoring during this phase will be implemented. With the inclusion of the various noise and vibration control measures on site discussed in Section 13.5, it is expected that calculated noise levels in Table 13.16 can be reduced by 5 to 10 dB.

For early-stage site set up and clearance works, there is potential for construction noise levels to remain above the CNT at NSL 3 by the order of 6 to 11 dB during specific phases of work, when the works are carried out at the closet site location to the NSL. Additionally, the works are expected to be completed within the temporal criteria outlined in Section 13.2.1 and, hence, an overall ***negative, temporary*** and ***slight to moderate*** impact associated with these works.

During all other construction phases, noise levels can be controlled to within the CNTs at all NSLs thus resulting in a ***negative, short term, slight to moderate*** impact.

13.6.1.2 Construction Phase Traffic Noise

The residual noise impact will be ***negative, short term*** and ***not significant*** impact for this phase.

13.6.1.3 Construction Phase Vibration

Vibration impacts during the construction phase will be ***negative, short term*** *and* ***not significant***.

13.6.2 Operational Phase

13.6.2.1 Additional Traffic on Roads

The predicted change in noise levels associated with additional traffic is expected to be ***negligible, long-term*** and ***not significant*** along the existing road network.

13.6.2.2 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, long term*** and ***not significant.***

13.6.2.3 Crèche Playground Noise Breakout

Any change in noise levels associated with the crèche playgrounds on site are expected to be ***negative, long-term*** and ***not significant***.

13.6.3 Operational Phase – Inward Impact Assessment

13.6.3.1 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 13.8 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.

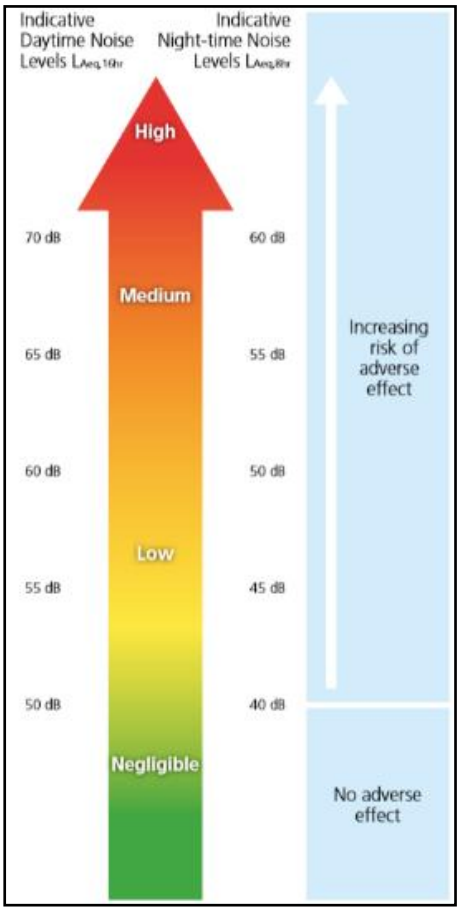

Figure 13.8 ProPG Stage 1 - Initial Noise Risk Assessment

13.6.3.2 Noise Risk Assessment Conclusion

Considering the calculated noise levels presented in Section 13.3.9, the initial site noise risk assessment has concluded that the level of risk varies from low to medium across the site with the northern section of the site adjacent to the R125 as the most at risk dwellings.

Additionally, the Stage 1 Noise Risk Assessment requires analyses of the L_{AFmax} noise levels. The L_{AFmax} results indicate that there is the potential for L_{AFmax} noise levels to exceed 60 dB more than 10 times per night on façades exposed closer to the northern R125 site boundary, for which ProPG recommends that the site is considered as medium risk for L_{AFmax} values.

ProPG states the following with respect to medium and high risks:

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 Acoustic Design Statement (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 parts of the development site may be categorised as Medium, principally due to the higher levels at the northern boundary due to the R125 and as such an ADS 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 low 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 levels. 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.

13.6.3.3 PROPG STAGE 2 – ACOUSTIC DESIGN STATEMENT

13.6.3.4 Element 1 – Good Acoustic Design Process

In practice, good acoustic design 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 all 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 (GAD):

- 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, CDM (construction, design and management) etc;
- Assess the viability of alternative solutions; and,
- Assess external amenity area noise.

13.6.3.5 Application of GAD Process to Proposed Application

Relocation or Reduction of Noise from Source

The R125 is located outside the redline boundary of the site and therefore it is beyond the scope of this development to introduce any noise mitigation at source.

Planning, Layout and Orientation

Consideration has been given to the location of both the buildings and external amenity areas. In the first instance, a primary consideration was to ensure that buildings are located as far as possible from the road.

The orientation of the site is such that the buildings themselves screen the common external amenity areas associated with the development.

Selection of Construction Types for Meeting Building Regulations

Masonry constructions will be used in constructing the external walls of the development. This construction type offers high levels of sound insulation performance. However, as is typically the case the glazed elements and ventilation 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 mechanical ventilation. The proposal here will be to provide dwelling units with glazed elements that have good acoustic insulation properties so that when the windows are closed the noise levels internally are good.

In order to ensure indoor air-quality, a mechanical ventilation system with heat recovery will be utilised as per Part F of the Building Regulations, providing the requisite air changes per hour. The fresh air provided to all the apartments is tempered and filtered as part of the delivery process. Residents will not need to open their windows in terms of providing fresh air. In terms of extract, all of the bathrooms, kitchens and utility spaces will be exhausted to the outside via the mechanical ventilation system on a continuous basis. 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:

"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 L_{Aeq} 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 L_{Aeq} target noise levels should not generally be exceeded."

Impact of Noise Control Measures on Fire, Health and Safety etc

The good acoustic design measures that have been implemented on site, e.g. locating properties away from the road and placing outdoor space on the quiet side of buildings do not have any significant impact on other issues.

Assess the Viability of Alternative Solutions

Due to the height and location of the proposed buildings it is considered that any acoustic screens along the boundary of the site to attenuate traffic noise would be ineffective.

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 $L_{Aeq,16hr}$."

The assessment of external amenity area noise for the Proposed Development is presented in Section 13.6.3.5.

Summary

Considering the constraints of the site, in so far as possible and without limiting the extent of the development area, the principles of Good Acoustic Design have been applied to the development.

In terms of viable alternatives to acoustic treatment of façade elements, there are no further options for mitigation outside of proprietary acoustic glazing and mechanical ventilation. Further specification of suitable glazing options will be outlined in the following sections.

13.6.3.6 Element 2 - Internal Noise Criteria

Element 2 of the ProPG document sets out recommended internal noise targets derived from BS 8233 and World Health Organisation *Community Noise Guidelines*. The recommended indoor ambient noise levels are set out in Table 13.20 and are based on annual average data, that is to say they omit occasional events such as New Year's Eve.

Table 13.20 ProPG Internal Noise Levels

Activity	Location	(07:00 to 23:00hrs)	(23:00 to 07:00hrs)
Resting	Living Room	35 dB $L_{Aeq,\ 16hr}$	-
Dining	Kitchen/Dining Room Area	40 dB $L_{Aeq,\ 16hr}$	-
Sleeping (Daytime Resting Including Bedrooms)	Bedroom	35 dB $L_{Aeq,16hr}$	30 dB $L_{Aeq,\ 8hr}$ 45 dB L_{AFmax} [A]

A) 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.

Giving consideration to the external noise levels, particularly along the northern site boundary site, in line with the ProPG guidelines it may be necessary to use acoustic glazing and mechanical ventilation to meet the recommended internal noise levels. The need for enhanced glazing is assessed in further detail in the following sections of the report.

Discussion on Open/Closed Windows

The typical level of sound reduction offered by a partially open window falls in the region of 10 to 15 dB. Considering the design goals outlined in Table 13.20 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 13.21.

Table 13.21 External Noise Levels Required to Achieve Internal Noise Levels

Level Desired	Day (07:00 to 23:00 hrs)	Night (23:00 to 07:00 hrs)
Good (i.e. at or below the internal noise levels from BS 8233)	50 – 55 dB $L_{Aeq,16hour}$	45 dB $L_{Aeq,8hour}$
Reasonable (i.e. 5 dB above the internal noise levels from BS 8233)	55 – 60 dB $L_{Aeq,16hour}$	50 dB $L_{Aeq,8hour}$

The baseline noise levels presented in Section 13.3 indicate that internal noise levels will not meet either the '*good*' or '*reasonable*' internal noise criteria when windows are open for rooms overlooking the R125 road, hence, further assessment will be completed on these façades. At all other façades, the external noise levels are sufficiently low such that standard double glazing is adequate to achieve good or reasonable internal noise levels when windows are open, hence no further assessment is necessary on these façades. Figure 13.9 indicates the rooms or façades that may require mitigation to meet the guidance indoor noise thresholds.

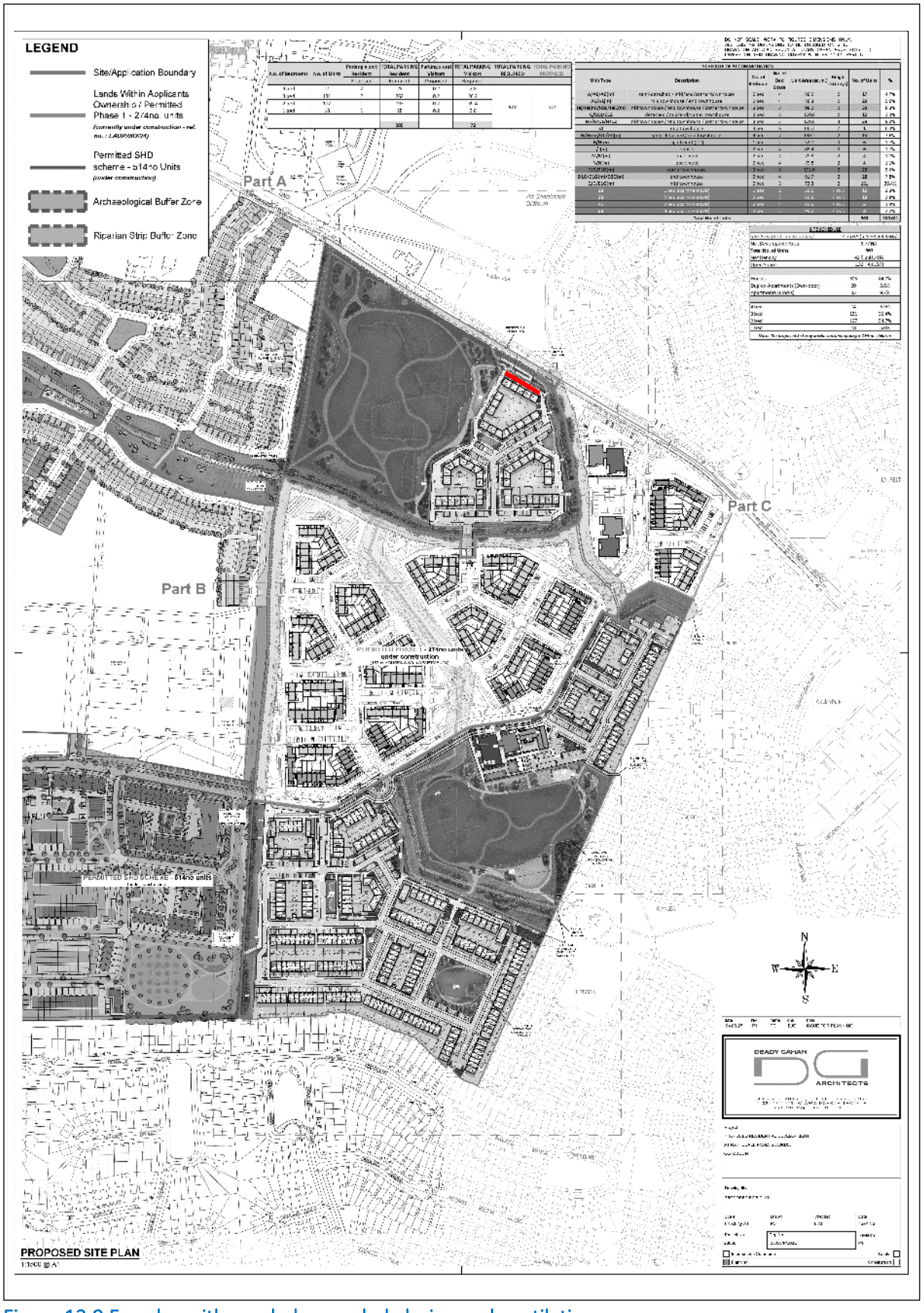

Figure 13.9 Facades with needed upgraded glazing and ventilation

Glazing

Taking account of the measured day and night-time noise levels associated with road traffic from UN1, the glazing specifications in Table 13.22 are applied to the identified façades discussed above. For all other façades within the development there are no specific glazing requirements beyond standard double glazing to meet good internal noise levels at all development buildings when windows are closed.

Table 13.22 Minimum Sound Insulation Performance Requirements (SRI) to Glazing

Element	Octave Band Sound Reduction Index – dB R						dB Rw
	125	250	500	1k	2k	4k	
Glazing SRI to identified façades	22	20	26	36	39	31	31

Following assessment of the highlighted façades, the results demonstrate that standard double glazing is sufficient to meet the 'good' internal noise level criteria set out in BS 8233:2014 for both daytime and night-time periods. The specifications provided in Table 13.22 are an example of the requirements determined to achieve the internal noise levels within bedrooms and living rooms in accordance with the design criteria from BS 8233 (2014). Alternative specifications will be acceptable provided the internal ambient noise criteria outlined in Table 13.8 can be achieved. During the detailed design stage, the acoustic performance of any glazing systems installed to noise sensitive internal areas will be reviewed alongside the building design to determine compliance with the relevant internal design criteria.

The glazing specifications relate to bedrooms and living spaces. For staircase and windows to non-sensitive spaces, standard double glazing provides a suitable level of sound insulation.

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

Taking account of the measured day and night-time noise levels associated with road traffic from UN1, the ventilation specifications in Table 13.23 are applied to the identified façades discussed above. The final ventilation strategy will be in accordance with Part F of the Building Regulations and will be finalised at the detailed design stage.

Table 13.23 Minimum Sound Insulation Performance Requirements (SRI) to ventilation

Element	Octave Band Sound Reduction Index – dB R						dB Rw
	125	250	500	1k	2k	4k	
Ventilation $D_{n,e,w}$ to identified façades	33	32	31	37	47	47	27

Should the ventilation strategy change, a minimum specification will need to be explored at the detailed design stage to minimise the effects of intrusive noise.

13.6.3.7 Element 3 – External Area Noise Assessment

Environmental noise surveys conducted at the development site confirm that the pre-existing ambient noise level at the proposed external amenity areas in question are of the order of <55 dB L_{Aeq}. Additionally, the proposed residential buildings provide a natural screening effect to the rear gardens, resulting in amenity areas remaining below the threshold values specified in BS 8233:2014. It is considered that the objectives of achieving suitable external noise levels is achieved within the overall site.

13.7 Monitoring

13.7.1 Construction Phase

During the construction phase, noise monitoring will be undertaken at sample locations representative of the nearest sensitive locations to ensure construction noise limits outlined in Table 13.1 are not exceeded. Noise monitoring will be conducted in accordance with the International Standard ISO 1996: *Acoustics – Description, measurement and assessment of environmental noise Part 1* (2016) and *Part 2* (2017). The selection of monitoring locations will be based on the nearest sensitive buildings to the working areas.

It is recommended that noise control audits are conducted at regular intervals throughout the construction programme in conjunction with noise monitoring. The purpose of the audits will be to ensure that all appropriate steps are being taken to control construction noise emissions and to identify opportunities for improvement, where required.

13.7.2 Operational Phase

There is no monitoring recommended for the operational phase of the development as impacts to noise and vibration are predicted to be not significant.

13.8 Interactions

13.8.1 Population and Human Health

The interaction between population and human health and noise and vibration during construction phase is due to potential nuisance and disturbance due to noisy construction activities, plant and equipment and construction traffic noise. Appropriate mitigation measures will be implemented in this regard. Implementation of the mitigation measures set out and adherence to good practice noise reducing measures will ensure that the residual impact on human health will be lessened and impacts will be ***short-term, negative slight to moderate significance***.

Similarly, during the operational phase, plant selections designed to achieve the relevant noise criteria will result in a residual impact that is ***negative, long-term,*** and ***not significant*** to people in nearby noise sensitive locations. External noise sources have been assessed and mitigation to ensure internal noise levels achieve the relevant noise criteria have been provided.

13.8.2 Traffic and Transportation

For construction and operational phases, Chapter 0 (Traffic and Transportation) of this EIAR, has been referenced with respect to expected number of vehicle movements in each phase. This data has been used to calculate changes in noise level associated with construction traffic and new operational traffic as a result of the development. This was then used to determine the significance traffic associated with the Proposed Development, during the construction and operational phases, would have on the noise levels in the area. During the construction phase the noise impact will be ***negative, short term*** and ***not significant.*** During operation phase, the predicted change in noise levels associated with additional traffic is expected to be ***negligible, long-term*** and ***not significant*** along the existing road network.

13.9 Cumulative Impacts

13.9.1 Construction Phase

The proximity of the construction works outlined above, indicates that at the nearest NSLs it is possible that cumulative impacts could occur at the nearest receptors should all sites progress construction simultaneously. **Error! Reference source not found.** of the EIAR outlines the potential cumulative projects. 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. However, this would only occur during peaks in construction noise over short periods. 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, short-term*** *and* ***moderate to significant.***

13.9.2 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.

13.10 Conclusion

The Noise and Vibration assessment for the proposed Mooretown Phase 2 development demonstrates that, while certain construction activities have the potential to generate temporary and locally significant impacts, these effects can be effectively controlled through the implementation of established best practice mitigation measures. With these measures in place, all construction-phase noise and vibration impacts are predicted to be temporary, negative, and not significant.

During the operational phase, the development is not expected to introduce any meaningful adverse noise or vibration effects. Predicted increases in road traffic noise are negligible and remain well below

thresholds of significance. Operational plant associated with the residential buildings and crèche will be designed to meet recognised noise criteria, ensuring that no negative impacts occur at nearby sensitive receptors or within the development itself. Noise breakout from the crèche is similarly anticipated to be minimal and compliant with residential internal noise standards.

The inward noise impact assessment shows that the main influencing source for future residents will be road traffic noise. Acoustic design measures such as appropriate glazing and ventilation specifications have been identified to ensure internal noise environments meet the required standards.

13.11 Difficulties Encountered in Compiling

There were no experienced difficulties encountered during the completion of this chapter.

13.12 References

- ANC, IOA and CIEH (2017). ProPG: Planning and Noise – Professional Practice Guidance on Planning and 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 and Part 2: Vibration.
- British Standard BS 7385: 1993: Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration.
- Department of Transport Welsh Office, HMSO (1988). Calculation of Road Traffic Noise.
- EPA (2022). Guidelines on the Information to be contained in Environmental Impact Assessment Reports.
- Fingal County Council. Fingal Development Plan 2023 -2029.
- The UK Highways Agency (2020). Design Manual for Roads and Bridges – LA111 -Revision 2.
- ISO 1996: 2017: Acoustics – Description, measurement and assessment of environmental noise.
- ISO 9613-2: 2024: Acoustics – Attenuation of sound during propagation outdoors, Part 2.
- WHO (2018). Environmental Noise Guidelines for the European Region.

14 Landscape and Visual

14.1 Introduction

This chapter assesses the potential effects of the Proposed Development on the landscape and views/visual amenity of the receiving environment. It should be read in conjunction with the verified photomontages submitted under separate cover as part of the planning application.

14.1.1 Qualifications and Expertise

The chapter was prepared by Richard Butler (B.L. Arch., MSc Spatial Planning, MILI MIPI) of Model Works Ltd., assisted by Thorsten Peters (MSc Architecture, MSc Sustainable Development, MRIAI, MIPI). Richard has 30 years' experience in development and environmental planning, specialising in Landscape Townscape and Visual Impact Assessment (LVIA).

In the last number of years, the author has prepared LVIA (in the form of EIAR chapters or stand-alone reports) for the following projects among others:

- Parkside 4, 5B and 6 SHDs, Clongriffin-Belmayne
- Bluebell Waterways (DCC and LDA), Dublin
- Independent House LRD, Abbey Street, Dublin
- Pembroke Quarter (Irish Glass Bottle and Fabrizia sites) Phases 1, 1B, 2, A, Poolbeg, Dublin
- Guinness Quarter, James's Street, the Liberties, Dublin
- St Vincent's Hospital and Residential Development, Fairview, Dublin
- O'Devaney Gardens SHD, Dublin
- Dublin Arch (Connolly Station Quarter)

14.2 Method

Landscape and Visual Impact Assessment (LVIA) is a tool used to identify and assess the significance of and the effects of change resulting from development on both the landscape as an environmental resource in its own right and on people's views and visual amenity. The methodology followed for LVIA is that set out in the Guidelines for Landscape and Visual Impact Assessment by the Landscape Institute and the Institute of Environmental Management and Assessment (2013), 3rd Edition, hereafter referred to as the GLVIA.

It is important to note that this definition of landscape applies not only to all types of rural landscape, marine and coastal landscapes (seascapes) but also to the landscape of villages, towns and cities with a predominantly urban context and character (Section 2.5, LI, IEMA 2013).

Ireland is a signatory to the European Landscape Convention (ELC). The ELC defines landscape as *"An area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors"*. This definition is important in that it expands beyond the idea that landscape is only a matter of aesthetics and visual amenity. It encourages a focus on landscape as a resource in its own right - a shared resource providing a complex range of cultural, environmental, and economic benefits to individuals and society.

14.2.1 Key Principles of the GLVIA

14.2.1.1 Assessment of Both Landscape and Visual Effects

The GLVIA requires that effects on views and visual amenity be assessed separately from the effects on landscape, although the two topics are inherently linked.

- Visual impact assessment is concerned with changes that arise in the composition of available views, the response of people to these changes and the overall effects on the area's visual amenity, with particular focus on public views and public visual amenity.
- Landscape results from the interplay between the physical, natural and cultural components of our surroundings. Different combinations and spatial distribution of these elements create variations in landscape character. Landscape impact assessment identifies the changes to this character which would result from the Proposed Development and assesses the significance of those effects on the landscape as a resource.

14.2.2 Method for Assessment of Landscape Effects

The assessment of potential landscape effects involves:

a) Classifying the sensitivity of the landscape receptors (the main elements, features, characteristics and character areas of the landscape);

b) Classifying the potential magnitude of change to each receptor; and

c) Combining these factors to arrive at an assessment of significance of the effects on each receptor, and the quality of the effects (positive, neutral or negative).

14.2.2.1 Landscape Sensitivity

The sensitivity of the landscape is a measure of its *Susceptibility to Change* (i.e. its ability to accommodate the Proposed Development without undue consequences for its existing character or the achievement of landscape policies or strategies) and the value attached to the landscape. The nature and scale of the development in question is taken into account, as are any trends of change, and relevant policy. Five categories are used to classify sensitivity:

Table 14.1 Categories of landscape sensitivity

Sensitivity	Description
Very High	*Areas where the landscape exhibits very strong, positive character with valued elements, features and characteristics that combine to give an experience of unity, richness and harmony. The landscape character is such that its capacity to accommodate change is very low. These attributes are recognised in policy or designations as being of national or international value and the principal management objective for the area is protection of the existing character from change.*
High	*Areas where the landscape exhibits strong, positive character with valued elements, features and characteristics. The landscape character is such that it has limited/low capacity to accommodate change. These attributes are recognised in policy or designations as being of national, regional or county value and the principal management objective for the area is the conservation of existing character.*
Medium	*Areas where the landscape has certain valued elements, features or characteristics but where the character is mixed or not particularly strong, or has evidence of alteration, degradation or erosion of elements and characteristics. The landscape character is such that there is some capacity for change. These areas may be recognised in policy at local or county level and the principal*

Sensitivity	Description
	management objective may be to consolidate landscape character or facilitate appropriate, necessary change.
Low	*Areas where the landscape has few valued elements, features or characteristics and the character is weak. The character is such that it has capacity for change; where development would make no significant change or would make a positive change. Such landscapes are generally unrecognised in policy and the principal management objective may be to facilitate change through development, repair, restoration or enhancement.*
Negligible	*Areas where the landscape exhibits negative character, with no valued elements, features or characteristics. The character is such that its capacity to accommodate change is high; where development would make no significant change or would make a positive change. Such landscapes include derelict industrial lands, as well as sites or areas that are designated for a particular type of development. The principal management objective for the area is to facilitate change in the landscape through development, repair or restoration.*

14.2.2.2 Note on Definitions Used in this Assessment

The definitions of the classifications in Table 14.1 (Landscape Sensitivity), Table 14.2 (Magnitude of Landscape Change), Table 14.4 (Viewpoint Sensitivity) and Table 14.5 (Magnitude of Visual Change) are not taken from either the GLVIA or the EPA Guidelines. Both guidance documents require that classifications of sensitivity and magnitude of change (such as high, medium, low, etc.) be used in the assessment process but neither guidance document provides definitions for such classifications. The GLVIA specifically avoids being prescriptive in this regard (paragraph. 1.20, p.10):

> *"The guidance concentrates on principles... It is not intended to be prescriptive, in that it does not provide a detailed 'recipe' that can be followed in every situation. It is always the primary responsibility of any landscape professional carrying out an assessment to ensure that the approach and methodology adopted are appropriate to the particular circumstances."*

The EPA Guidelines state (Section 3, p.49):

> *"While guidelines and standards help ensure consistency, the professional judgement of competent experts plays a role in the determination of significance. These experts may place different emphases on the factors involved. As this can lead to differences of opinion, the EIAR sets out the basis of these judgements so that the varying degrees of significance attributed to different factors can be understood."*

The GLVIA and EPA Guidelines thus require that the factors used in arriving at significance conclusions (i.e. classifications of sensitivity and magnitude) should be explained in the EIAR, but the guidelines do not provide the explanations themselves. It is for this reason that the definitions in Table 14.1, Table 14.2, Table 14.4 and Table 14.5 are provided in this section. These definitions have been developed and refined by LVIA practitioners in Ireland and the UK, including the chapter author, over decades of practice. They are not standard, i.e. the classifications / definitions used in this assessment may differ from those used by other practitioners. However, the author considers them to be reasonable and appropriate for the purpose of classifying the significance of landscape and visual effects and the same definitions have been used in many previous LVIA reports / chapters prepared by the author and accepted by the planning authorities.

14.2.2.3 Magnitude of Landscape Change

Magnitude of change is a factor of the scale, extent or degree of change imposed on the landscape by a development, with reference to its key elements, features, characteristics and character areas (collectively termed *landscape receptors*). Five categories are used to classify magnitude of change:

Table 14.2 Categories of magnitude of landscape change

Magnitude of Change	Description
Very High	*Change that is large in extent, resulting in the loss of or major alteration to key elements, features or characteristics of the landscape, and/or introduction of large elements considered totally uncharacteristic in the context. Such development results in fundamental change in the character of the landscape.*
High	*Change that is moderate to large in extent, resulting in major alteration to key elements, features or characteristics of the landscape, and/or introduction of large elements considered uncharacteristic in the context. Such development results in change to the landscape character.*
Medium	*Change that is moderate in extent, resulting in partial loss or alteration to key elements, features or characteristics of the landscape, and/or introduction of elements that may be prominent but not necessarily substantially uncharacteristic in the context. Such development results in change to the character of the landscape.*
Low	*Change that is moderate or limited in scale, resulting in minor alteration to key elements, features or characteristics of the landscape, and/or introduction of elements that are not uncharacteristic in the context. Such development results in minor change to the character of the landscape.*
Negligible	*Change that is limited in scale, resulting in no alteration to key elements features or characteristics of the landscape, and/or introduction of elements that are characteristic of the context. Such development results in no change to the landscape character.*

14.2.2.4 Significance of Effects

To classify the significance of effects (for landscape and visual impacts), the magnitude of change is measured against the sensitivity of the receiving environment / receptor using the guide in Table 14.3.

Table 14.3 Guide to classification of significance of landscape and visual effects

		Sensitivity of the landscape / view				
		Very high	High	Medium	Low	Negligible
Magnitude of landscape / visual change	Very high	*Profound*	*Profound to very significant*	*Very significant to significant*	*Moderate*	*Slight*
	High	*Profound to very significant*	*Very significant*	*Significant*	*Moderate to slight*	*Slight to not significant*
	Medium	*Very significant to significant*	*Significant*	*Moderate*	*Slight*	*Not significant*
	Low	*Moderate*	*Moderate to slight*	*Slight*	*Not significant*	*Imperceptible*
	Negligible	*Slight*	*Slight to not significant*	*Not significant*	*Imperceptible*	*Imperceptible*

The matrix (Table 14.3) is derived from the EPA guidelines Figure 3.4 (Figure 14.1 below).

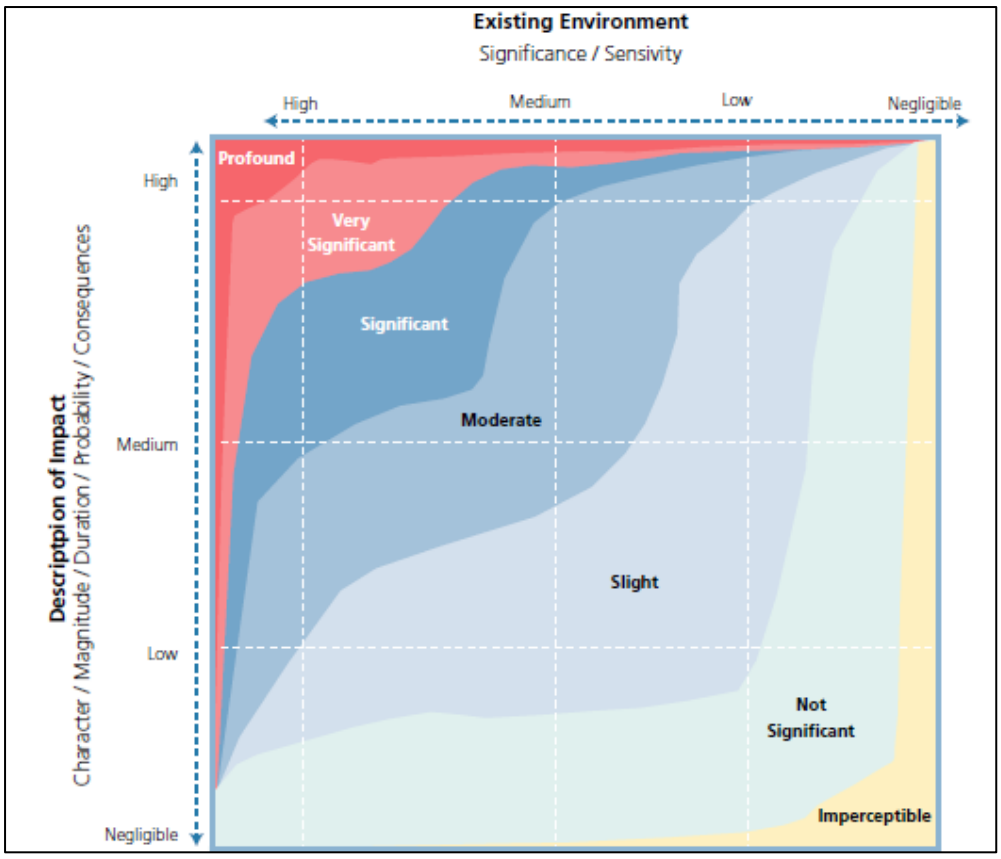

Figure 14.1 'Chart showing typical classifications of the significance of impacts' (Source: Figure 3.4 of the EPA's Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, 2022)

The matrix (Table 14.3) and chart (Figure 14.1) are only a guide to the classification of impact significance. The assessor also uses professional judgement informed by their expertise, experience and common sense to arrive at a classification that is reasonable and justifiable. In the EPA guidelines, the chart is accompanied by a footnote stating:

> *"The depiction of significance classifications is indicative and should not be relied on as being definitive. It is provided for general guidance purposes"* (EPA Guidelines Section 3, p. 53).

For example, according to the EPA chart, a change of high magnitude affecting a receptor of medium sensitivity could be classified as either *significant* or *moderate.* That judgement must be made by the assessor.

14.2.3 Method for Assessment of Visual Effects

Assessment of visual effects involves identifying a number of key / representative viewpoints in the site's receiving environment, and for each one of these: (a) classifying the viewpoint sensitivity, and (b) classifying the magnitude of change which would result in the view (informed by photomontages of the Proposed Development). These factors are combined to arrive at a classification of significance of the effects on each viewpoint.

14.2.3.1 Sensitivity of Viewpoint / Visual Receptor

Viewpoint sensitivity is a function of two main considerations:

- Susceptibility of the visual receptor to change: This depends on the occupation or activity of the people experiencing the view, and the extent to which their attention is focused on the views or visual amenity they experience at that location. Visual receptors most susceptible to change include residents at home, people engaged in outdoor recreation focused on the landscape (e.g. trail users), and visitors to heritage attractions and places of congregation where the setting contributes to the experience. Visual receptors less sensitive to change include travellers on road, rail and other transport routes (unless on recognised scenic routes), people engaged in outdoor recreation where the surrounding landscape does not influence the experience, and people in their place of work or shopping.
- Value attached to the view: This depends to a large extent on the subjective opinion of the visual receptor but also on factors such as policy and designations (e.g. scenic routes, protected views), or the view or setting being associated with a heritage asset, visitor attraction or having some other cultural status (e.g. appearing in arts).

Five categories are used to classify a viewpoint's sensitivity:

Table 14.4 Categories of viewpoint sensitivity

Sensitivity	Description
Very High	*Iconic viewpoints (views towards or from a landscape feature or area) that are recognised in policy or otherwise designated as being of national value. The composition, character and quality of the view are such that its capacity for change is very low. The principal management objective for the view is its protection from change.*
High	*Viewpoints that are recognised in policy or otherwise designated as being of value, or viewpoints that are highly valued by people that experience them regularly (e.g. views from houses or outdoor recreation amenities focused on the landscape). The composition, character and quality of the view may be such that its capacity to accommodate change may or may not be low. The principal management objective for the view is its protection from change that reduces visual amenity.*
Medium	*Views that may not have features or characteristics that are of particular value but have no major detracting elements, and which thus provide some visual amenity. These views may have capacity for appropriate change, and the principal management objective is to facilitate change to the composition that does not detract from visual amenity, or which enhances it.*
Low	*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 views experienced by people involved in activities with no particular focus on the landscape. For such views the principal management objective is to facilitate change that does not detract from visual amenity or enhances it.*
Negligible	*Views that have no valued feature or characteristic, or in which the composition may be unsightly (e.g. in derelict landscapes). For such views the principal management objective is to facilitate change that repairs, restores or enhances visual amenity.*

14.2.3.2 Magnitude of Change to the View

Classification of the magnitude of change takes into account the size or scale of the intrusion of development into the view (relative to the other elements and features in the composition, i.e. its relative visual dominance), the degree to which it contrasts or integrates with the other elements and the general character of the view, and the way in which the change will be experienced (e.g. in full view, partial or peripheral view, or in glimpses). It also takes into account the geographical extent of the

change, as well as the duration and reversibility of the visual effects. Five categories are used to classify magnitude of visual change to a view, as set out in Table 14.5.

Table 14.5 Categories of magnitude of visual change

Sensitivity	Description
Very High	*Full or extensive intrusion of the development in the view, or partial intrusion that obstructs valued features or characteristics, or introduction of elements that are completely out of character in the context, to the extent that the development becomes dominant in the composition and defines the character of the view and the visual amenity.*
High	*Extensive intrusion of the development in the view, or partial intrusion that obstructs valued features, or introduction of elements that may be considered uncharacteristic in the context, to the extent that the development becomes co-dominant with other elements in the composition and affects the character of the view and the visual amenity.*
Medium	*Partial intrusion of the development in the view, or introduction of elements that may be prominent but not necessarily uncharacteristic in the context, resulting in change to the composition but not necessarily the character of the view or the visual amenity.*
Low	*Minor intrusion of the development into the view, or introduction of elements that are not uncharacteristic in the context, resulting in minor alteration to the composition and character of the view but no change to visual amenity.*
Negligible	*Barely discernible intrusion of the development into the view, or introduction of elements that are characteristic in the context, resulting in slight change to the composition of the view and no change in visual amenity.*

14.2.3.3 Significance of Visual Effects

As for landscape effects, to classify the significance of visual effects the magnitude of change to the view is measured against the sensitivity of the viewpoint, using the guidance in Table 14.3, above, and Figure 1.2 in Chapter 1 (Introduction).

14.2.4 Quality of Effects

In addition to predicting the significance of the effects, Environmental Impact Assessment methodology requires that the quality of the effects be classified as positive / beneficial, neutral, or negative / adverse. For landscape to a degree, but particularly for visual effects, this is an inherently subjective exercise. This is because landscape and visual amenity are perceived by people and are, therefore, subject to variations in the attitude and values – including aesthetic preferences – of the receptor. One person's attitude to a development may differ from another person's attitude, and thus their response to the effects of a development on a landscape or view may vary.

Additionally, in certain situations there might be policy encouraging a particular development in an area, in which case the policy is effectively prescribing landscape and visual change. If a development achieves the objective of the policy the resulting effect might be considered positive, even if the landscape character or views are profoundly changed. The classification of quality of landscape and visual effects should seek to take these variables into account and provide a reasonable and robust assessment.

The photomontages were produced by Model Works Ltd. and have been submitted as a standalone booklet under separate cover, as part of the planning application for the Proposed Development. The methodology is based on the Landscape Institute advice note 01/11 Photography and Photomontage

in Landscape and Visual Impact Assessment and over 20 years' experience in photomontage production. The method has five main steps:

1. Photography
2. Survey
3. 3D modelling and camera matching
4. Rendering and finishing of photomontages
5. Presentation

14.2.4.1 Photography

Date, Time and Conditions

The photography is timed so that the scene conditions, weather conditions and sun position allow – as far as possible – for a clear and representative baseline photograph to be captured. The objective is to ensure that all key elements of the view are clearly visible and unobscured by, for example, vehicular or pedestrian traffic in the foreground, precipitation, darkness / shade, sun glare, etc. The date and time of each photograph are recorded so that the sun position can be accurately portrayed in the 3D model ultimately montaged into the baseline photograph.

Camera and Camera Set-up

The photographs were taken using a Canon EOS5D Mark II camera with a 21-megapixel sensor and image resolution of 5616 × 3744 pixels. At each viewpoint the camera was positioned on a tripod with the lens 1.65m above ground level (the level of the average adult's eyes), directed at the site and levelled in the horizontal and vertical axes.

Lenses

Prime lenses (fixed focal length with no zoom function) are used as this ensures that the image parameters for every photograph are the same and that all photographs taken with the same lens are comparable. For the close-up to middle distant views, a 24mm prime lens is normally used. This lens captures a field of view of 73 degrees. This relatively wide field of view is preferred for the purpose of visual effects assessment in urban areas as it shows more of the context landscape surrounding a site (allowing the scale, architecture and materials of a proposed building to be considered in comparison to existing buildings in the view). For distant viewpoints, a 50mm prime lens is used, capturing a 39-degree horizontal field of view. The 50mm lens *'zooms in'* to the object of the view so that it is depicted more clearly in views from a long distance – although the greater zoom necessarily excludes more of the context from the frame of view.

14.2.4.2 Survey

The coordinates of each viewpoint / camera position, including the elevation, are recorded using a survey grade GPS receiver, the Trimble Geo7X, which is accurate to within 1cm. For each viewpoint, the coordinates of several static objects in the view are also surveyed (e.g. lamp posts, bollards, corners of buildings, etc.). The coordinates of these 'markers' are used as reference points later in the process, to ensure that the direction of view of the cameras in the 3D model matches the direction of view of the photographs.

14.2.4.3 3D Model and Camera Matching

Creation of 3D Model

Drawings of the Proposed Development (buildings, roads, hard and soft landscape areas) were provided by the project architects and landscape architect in Autodesk Revit and CAD formats. These were used to generate a 3D model of the Proposed Development (positioned and scaled using the topographical survey drawing of the site provided by the project architect). The 3D CAD model was exported to Autodesk 3DS Max in which materials and textures were applied to the model.

3D Camera Positions

The surveyed camera positions and markers for each view are inserted into the 3D model, with information on the focal length of the lens attributed to each camera. For each camera / view, the date and time is set to match those of the original photograph. This ensures that the direction of sunlight and shadows in the 3D model match those of the photographs.

14.2.4.4 Rendering of 3D Model and Finishing Photomontages

For each view, a render of the Proposed Development is generated. This is the process of creating a photo-realistic image of the 3D model, as seen from each camera position, with sunlight and shadow applied to the model. The render of the Proposed Development is then inserted (or montaged) into the photograph to create the photomontage.

14.2.4.5 Presentation

The individual photomontages are presented on A3 pages in landscape format and submitted under separate cover as part of the planning application. For each photomontage, the viewpoint location description, coordinates and the date and time of photography are provided on the page. The photomontages should be reviewed in conjunction with this chapter.

14.3 Baseline Environment

14.3.1 Site Location

The site is in Mooretown, in the north western extents of Swords (see Figure 14.2), in County Dublin. It is approximately 2.5 km north west of Swords town centre, with largely agricultural and horticultural land uses to the west and southwest. The total site area is approximately 14.75 ha, located to the south of the R125, off which the site is accessed.

Mooretown and the adjacent Oldtown townland have experienced rapid plan-led development in the last ten years, through the incremental implementation of the Mooretown Masterplan, which was prepared in 2014 based on Fingal County Council's 2010 Local Area Plan for Oldtown / Mooretown (extended in 2015 to 2020 - see Figure 14.3).

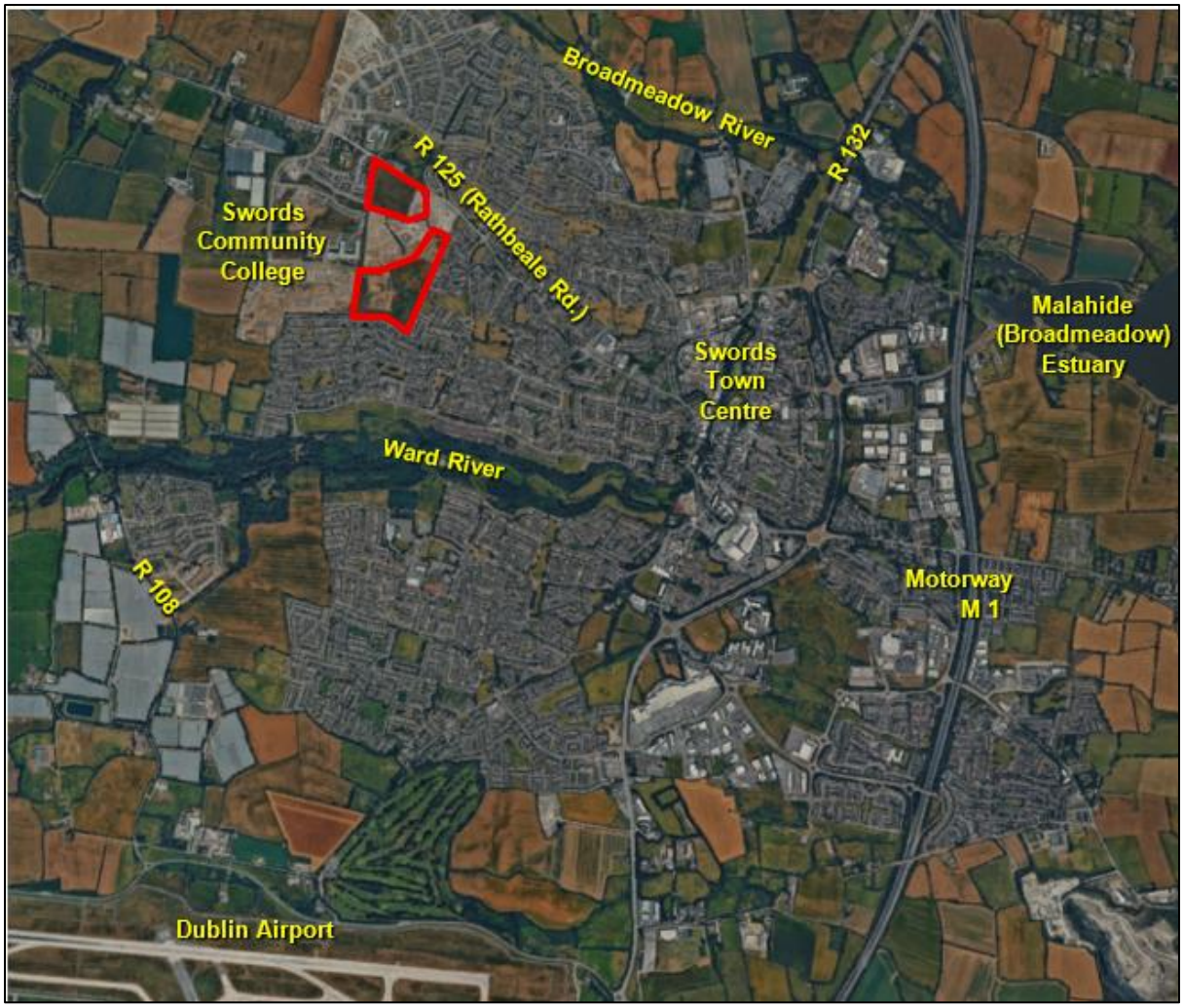

Figure 14.2 Site location in relation to Swords.

Figure 14.3 and Figure 14.4 show the transformation that has taken place in Oldtown / Mooretown, from a previously agricultural landscape outside of Swords to a new / emerging urban residential neighbourhood within the Swords settlement boundary. Parts of this neighbourhood, particularly the Oldtown area north of the Rathbeale Road, are well established, while the Mooretown area south of the road is still in a state of transition and highly disturbed by ongoing construction. The two land parcels that make up the subject site are some of the last remaining undeveloped lands, although they are no longer in use for agriculture and they too have been disturbed by the surrounding construction activity.

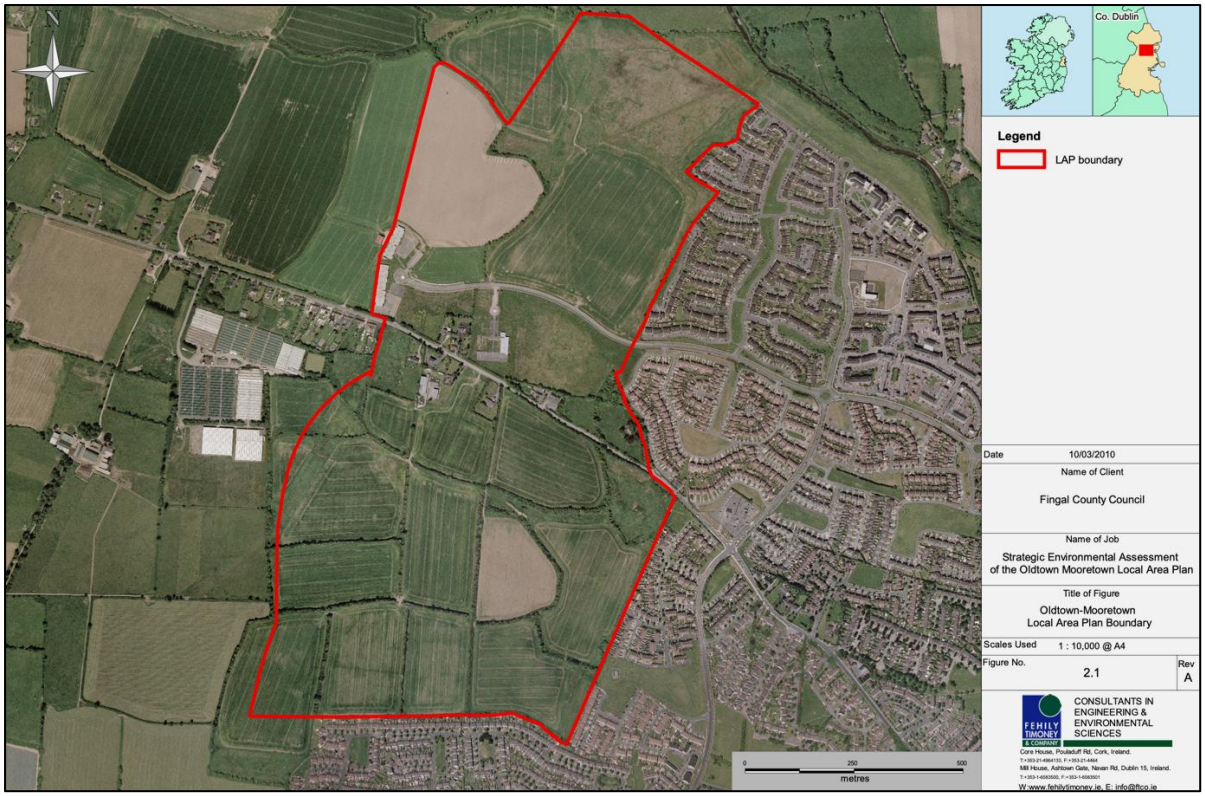

Figure 14.3 Boundary of the Oldtown-Mooretown LAP 2010

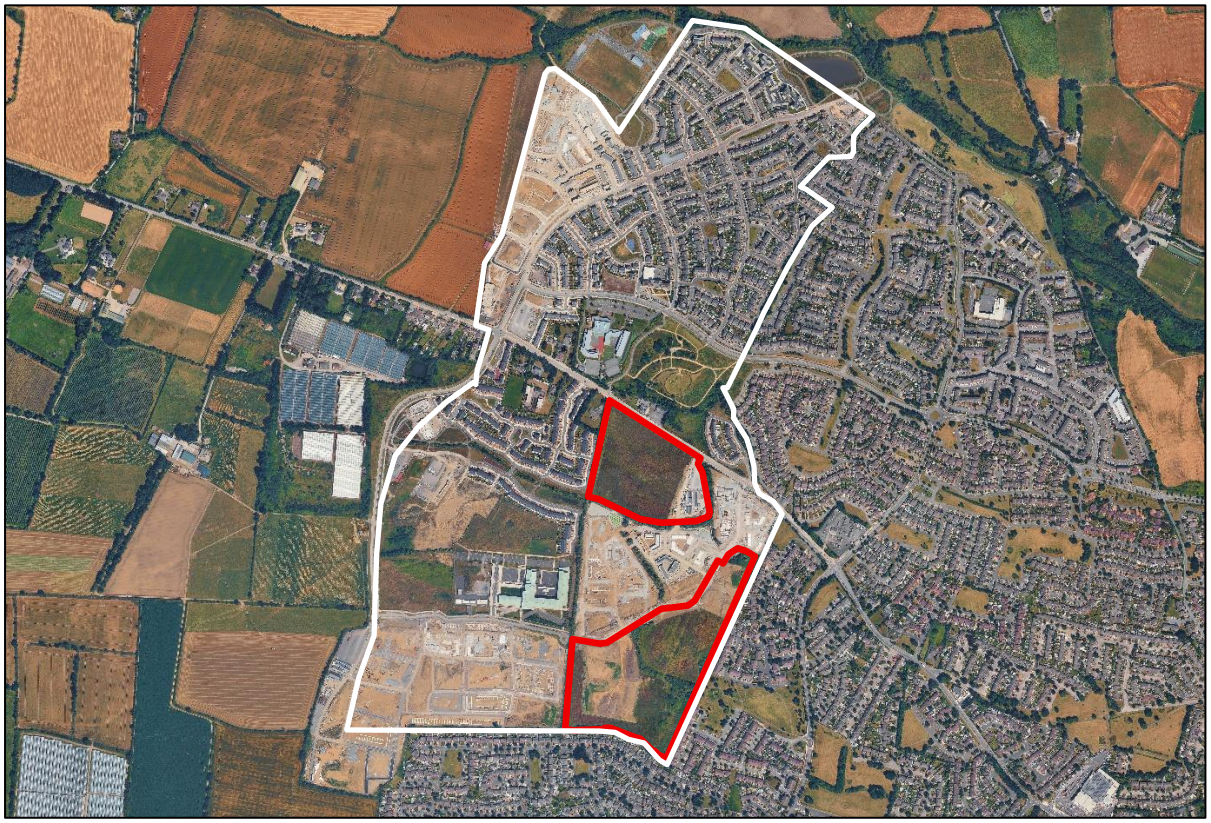

Figure 14.4 Recent aerial photograph showing the transformation of the landscape of Oldtown-Mooretown (2010 LAP boundary in white with site outlined red).

14.3.2 Site Context

The site is made up of two land parcels separated by another development (Phase 1) under construction, between Rathbeale Road to the north and the existing Ormond housing estate to the south. Topographically, the smaller, northern land parcel along Rathbeale Road is slightly raised and hilly, while land Parcel 2 further south has a low-lying topography. The highest point of the site is the north west corner, beside Rathbeale Road, opposite the entrance to Rathbeale Archaeological Park.

Figure 14.5 Site location in Mooretown Lands (Source: 2026 Google Earth)

The smaller land parcel (Parcel 1 - Figure 14.6), of approximately 5.42 ha, is located alongside Rathbeale Road. This parcel consists of a former agricultural field of slightly undulating topography, with hedgerows along its eastern and southern boundaries. The eastern portion of this parcel is currently in use as a construction compound for the adjoining Phase 1 development to the east and south. The completed and operational Cronan's Well housing estate lies to the west.

Figure 14.6 The northern land parcel (Parcel 1)

The larger, southern land parcel (Parcel 2 – Figure 14.7 overleaf), of approximately 9.33 ha, is also comprised of former agricultural fields. An internal hedgerow divides the parcel into two parts. There are also hedgerows along the west boundary and along part of the east boundary, and a number of Ash trees of low or poor quality inside the southern boundary. The north and western parts of this parcel have been disturbed by construction activity.

The cultural heritage site of Glasmore Abbey (in ruin) lies immediately to the east in an open space between the Cianlea and Lioscain housing estates. The parcel is bordered by the Swords Manor and Ormond housing estates to the south, and the permitted Mooretown Strategic Housing Development (SHD) (Planning Ref. SHD/012/21) is under construction to the west.

Although not readily visible above ground, the site contains underground archaeological remains in places, in both the northern and southern land parcels. There is also a well (St Cronan's Well) in the southern land parcel. The archaeological assets add cultural heritage value to the landscape. Rathbeale Archaeological Park to the north of the site beyond Rathbeale Road is an example of how archaeological remains can be preserved and subtly displayed in the urban landscape.

The site is crossed by a 110KV overhead electricity line between tall metal pylons. It is proposed to underground this power line as part of the development.

Figure 14.7 The southern land parcel (Parcel 2)

14.3.3 Landscape Sensitivity

The Oldtown-Mooretown area, designated for urban development and in an advanced state of transition but as yet incomplete, and disturbed in places (by ongoing construction - including in the site's immediate environs), is the context in which the Proposed Development would take place. This landscape is of low sensitivity[29] to further development of the same type, i.e. development that would contribute to the completion / realisation of the planned urban residential neighbourhood.

[29] Landscape sensitivity is a measure of its susceptibility to change (i.e. its ability to accommodate the Proposed Development without undue consequences for its existing character or the achievement of landscape policies or strategies), and the value attached to the landscape. The nature and scale of the development in question is taken into account, as are any trends of change, and relevant policy.

Photo 14.1 Phase 1 construction site adjacent to the northern land parcel

Photo 14.2 Construction activity on a site adjacent to the subject site, and in close proximity to existing houses

There are a number of factors that increase the landscape sensitivity somewhat. These include (a) the remaining woody vegetation on the site (particularly the hedgerows), (b) St Cronan's Well and the underground archaeological assets, (c) the stream / drainage line that traverses the site, and (d) the surrounding residential estates.

Residential receptors are inherently sensitive to change in their context. However, in the case of Mooretown, it must be recognised that the context of the existing, occupied homes is the transitional / unfinished urban landscape. While undeveloped plots such as the site may provide some visual amenity, they can also detract from visual amenity when they become unkempt or disturbed by construction, and from the character and functionality of the urban landscape, e.g. by obstructing continuity of routes of movement, open space / green infrastructure, etc.

14.3.4 Potential Receptors of Landscape and Visual Change

The key potential receptors of landscape and visual change in the receiving environment are as follows:

- **The R125/Rathbeale Road** approaching from east and west and passing by the site. There are also a house and church directly across the road from the northern land parcel of the site.
- **Holymount estate**, a small residential estate to the north of the Rathbeale Road.
- **Rathbeale Archaeological Park** to the north of the Rathbeale Road.
- **Cronan's Well estate** to the west of the northern land parcel.
- **Main Street and Swords Community College** to the west of the southern land parcel.
- The **Cianlea and Lioscian estates** to the east of the site.
- **Glasmore Abbey** (monument) to the east of the site, between the Cianlea and Lioscian estates.
- The **Swords Manor and Ormond estates** to the south of the southern land parcel.

Photo 14.3 A view across the northern land parcel from the Rathbeale Road, with an apartment development under construction (Phase 1) beside the site

Photo 14.4 Rathbeale Archaeological Park, view towards Rathbeale Road and site, with Phase 1 construction site to the left

Photo 14.5 A view towards the northern land parcel from the neighbouring Cronan's Well estate. A boundary hedgerow screens the site from view

Photo 14.6 Perimeter street of Cronan's Well estate, immediately west of site

Photo 14.7 A view from the Cianlea estate, with Phase 1 apartment block under construction to the rear of the houses

Photo 14.8 A view towards the site between houses in the Cianlea estate, showing an electricity pylon on the site and some of the Phase 1 houses under construction

Photo 14.9 A view across the southern land parcel from Cianlea, with the Phase 1 houses under construction beyond the site

Photo 14.10 Glasmore Abbey Ruin and parkland located between the Cianlea and Lioscian estates to the east of the site

Photo 14.11 The Ormond estate south of site

14.4 Relevant Policy - Fingal County Development Plan 2023-2029

14.4.1 Local Area Plan 2010 (extended to 2020)

The Oldtown – Mooretown Local Area Plan (LAP) 2010 was extended to 2020. The LAP has since lapsed.

14.4.2 Land Use Zoning

The site is zoned *"RA - Residential Area: To provide for new residential communities, subject to provision of the necessary social and physical infrastructure."*. Refer to Figure 14.8 below.

Other notable aspects of the land use zoning map, below, include:

- *Residential* zoned land extending to the west of the site, to the Development Boundary. The site is thus well within the Swords urban area, with *Green Belt* zoning further west outside the Development Boundary.
- Two areas of *Community Infrastructure* zoning to the north west and west of the site. These are the sites of existing schools, providing social infrastructure for the Oldtown-Mooretown community.
- A *Local Centre* just to the north of the northern land parcel, on Glen Ellan Road, and a *Local Centre* to the south of the southern land parcel at Swords Manor.
- Extensive *Open Space* zoning in the surrounding area, including Rathbeale Archaeological Park to the north across the Rathbeale Road, and the park containing Glasmore Abbey ruin adjoining the site to the east. A short distance to the north west of the site is a very large area of Open Space zoned land that extends east along the Broadmeadow River Valley to the Estuary. This is a major element of Fingal's green infrastructure network, within walking distance from the site. The Ward River Valley Regional Park is also within walking and cycling distance, to the south.
- *Preserve Views* designation of the R125/Rathbeale Road as it passes the site to the north, extending west into the Green Belt area. The Preserve Views designation ends at the former development boundary of Swords, before the Oldtown-Mooretown LAP was adopted (2010) and the area incorporated into the town. Prior to 2010 (see Figure 14.3 above), Oldtown-Mooretown was rural, and views of the rural landscape were afforded from the road. Now, the eastern stretch

of the Preserve Views designation, i.e. the stretch that passes the site, is within the urban area. This reduces its sensitivity.

- Indications of *Sites and Monuments* (St Cronan's Well and archaeological finds on both land parcels of the site.

Figure 14.8 Land use Zoning map

14.4.3 Policy on Residential Development and Urban Design

Policy SPQHP35 – Quality of Residential Development

"Promote a high quality of design and layout in new residential developments at appropriate densities across Fingal, ensuring high-quality living environments for all residents in terms of the standard of individual dwelling units and the overall layout and appearance of developments.

"Residential developments must accord with the standards set out in the Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas, DEHLG 2009 and the accompanying Urban Design Manual – A Best Practice Guide and the Sustainable Urban Housing; Design Standards for

New Apartments (*DHLGH as updated 2020*) *and the policies and objectives contained within the Urban Development and Building Heights Guidelines* (*December 2018*). *Developments should be consistent with standards outlined in* Chapter 14 *Development Management Standards."*

14.4.4 Policy on Green Infrastructure

Objective DMSO153 – Green Corridors

"Provide green corridors in all new developments where the opportunity exists."

Objective GINHO12 – Green Infrastructure Requirements

"Ensure the provision of new green infrastructure addresses the requirements of functional flood storage, the sustainable management of coastal erosion, and links with provision for biodiversity, Sustainable Drainage Systems (*SuDS*) *and provision for parks and open space wherever possible and appropriate."*

Policy GINHP10 – Green Infrastructure and Development

"Seek a net gain in green infrastructure through the protection and enhancement of existing assets, through the provision of new green infrastructure as an integral part of the planning process, and by taking forward priority projects including those indicated on the Development Plan Green Infrastructure maps during the lifetime of the Development Plan."

Objective GINHO19 – Green Networks

"Create an integrated and coherent green infrastructure for the County by requiring the retention of substantial networks of green space in urban, urban fringe and adjacent countryside areas to serve the needs of communities now and in the future including the need to adapt to and mitigate climate change."

Objective GINHO21 – Integration of Green Infrastructure

"Avoid the fragmentation of green spaces in site design and to link green spaces /greening elements to existing adjacent green infrastructure / the public realm where feasible and to provide for ecological functions."

Objective GIM1 – Green Infrastructure

"Provide new Active Recreation Hubs in Bremore Regional Park, St. Catherine's Park (*Rush*), *Lusk, Donabate, Mooretown / Oldtown* (*Swords*), *Drinan, Baldoyle Race course Park and Phoenix Park Race course."*

14.4.5 Policy on Trees, Hedgerows and Watercourses

Policy GINHP21 – Protection of Trees and Hedgerows

"Protect existing woodlands, trees and hedgerows which are of amenity or biodiversity value and/or contribute to landscape character and ensure that proper provision is made for their protection and management in line with the adopted Forest of Fingal-A Tree Strategy for Fingal."

Objective DMSO128 – Demarcation of Townland Boundaries

"Ensure trees, hedgerows and other features which demarcate townland boundaries are preserved and incorporated where appropriate into the design of developments."

Policy GINHP22 – Tree Planting

"Provide for appropriate protection of trees and hedgerows, recognising their value to our natural heritage, biodiversity and climate action and encourage tree planting in appropriate locations."

Objective DMSO125 – Management of Trees and Hedgerows

"Protect, preserve and ensure the effective management of trees and groups of trees and hedgerows."

Objective DMSO126 – Protection of Trees and Hedgerows during Development

"Ensure during the course of development, trees and hedgerows that are conditioned for retention are fully protected in accordance with BS5837 2012 Trees in relation to the Design, Demolition and Construction - Recommendations or as may be updated and are monitored by the appointed arboriculture consultant."

Objective DMSO127 – Use of Native Species in New Developments

"Require the use of native species where appropriate in new developments in consultation with the Council."

Objective DMSO134 – Site Summary of Specimen Removal, Retention and Planting

"Regardless of development size or type, applicants must submit an overall site summary quantifying and detailing the following:

- *tree and hedgerow removal*
- *tree and hedgerow retention; and*
- *new tree and hedgerow planting*

This information will be submitted in a digital format agreed with the Council to allow amalgamation and reporting on tree and hedgerow cover within the County over time."

Objective DMSO140 – Protection of Existing Landscape

"Protect existing landscape features such as scrub, woodland, large trees, hedgerows, meadows, ponds and wetlands which are of biodiversity or amenity value and/or contribute to landscape character and ensure that proper provision is made for their protection and management."

14.4.6 Policy on Rivers

Objective GINHO41 – Protection of Rivers

"Protect rivers, streams and other watercourses and maintain them in an open state capable of providing suitable habitat for fauna and flora, including fish."

14.4.7 Landscape Character

Landscape designations are covered under Section 9.6.14 of the Development Plan. The Landscape Character Assessment (LCA) for Fingal divides the county into six landscape types, with varying value and sensitivity classifications for each type. The sensitivity of each landscape character type is defined as its overall ability to sustain its character in the face of change. Sensitivity is evaluated using grades ranging from high to low.

Landscape Character Types	Landscape Value	Landscape Sensitivity
Rolling Hills Type	Modest	Medium
High Lying Type	High	High
Low Lying Type	Modest	Low
Estuary Type	Exceptional	High
Coastal Type	Exceptional	High
River Valley and Canal Type	High	High

Figure 14.9 Extract of Table 9.3: Landscape Character Assessment Summary – Value and Sensitivity (source: 2026 Fingal County Development Plan)

Figure 14.10 Fingal County Landscape Character Types (source: 2026 Fingal County Map Viewer)

The subject site falls partly within the *Rolling Hills with Tree Belts* type and partly within the *Low Lying Agricultural* type. Both are classified as being of 'Modest' landscape value. The Rolling Hills type (Parcel 1 of the site) is classified as 'Medium Sensitivity' and the Low Lying Agricultural type (Parcel 2) as 'Low Sensitivity'.

The relevant policies and objectives relating to Fingal's Landscape Character Types are:

Policy GINHP25 – Preservation of Landscape Types

"Ensure the preservation of the uniqueness of a landscape character type by having regard to the character, value and sensitivity of a landscape when determining a planning application."

Objective GINHO56 – Visual Impact Assessments

"Require any necessary assessments, including visual impact assessments, to be prepared prior to approving development in highly sensitive areas."

Objective GINHO57 – Development and Landscape

"Ensure development reflects and, where possible, reinforces the distinctiveness and sense of place of the landscape character types, including the retention of important features or characteristics, taking into account the various elements which contribute to their distinctiveness such as geology and landform, habitats, scenic quality, settlement pattern, historic heritage, local vernacular heritage, land-use and tranquillity."

In addition to the landscape character type classifications, the Development Plan's Green Infrastructure maps indicate additional 'Highly Sensitive Landscape' areas. The site does not fall into such an area, and there are no Highly Sensitive Landscapes in the vicinity of the site.

14.4.8 Views and Prospects

The Development Plan identifies views requiring *Preservation*, with the views indicated by dotted green lines on the Green Infrastructure 1 maps.

Figure 14.11 Development Plan Green Infrastructure Map 1

Objective GINHO60 – Protection of Views and Prospects

"Protect views and prospects that contribute to the character of the landscape, particularly those identified in the Development Plan, from inappropriate development."

Objective GINHO61 – Landscape / Visual Assessment

"Require a Landscape / Visual Assessment to accompany all planning applications for significant proposals that are likely to affect views and prospects."

The nearest *Preserve Views* designation to the site is along the R125 / Rathbeale Road as it passes the site. The Preserve Views designation predated the Oldtown-Mooretown LAP and the area's subsequent

development. This stretch of the R125 now falls within the urban area, and the application of the Preserve Views designation must take this into account.

14.5 Predicted Impacts of the Proposed Development – Visual Amenity

14.5.1 Do-Nothing Impact

The site would remain vacant / unused, in a disturbed condition and fenced off from the surrounding area, maintaining the unfinished appearance of the Mooretown urban landscape. The residential land use objective for the site would not be realised, and the landscape of Mooretown would fail to achieve full functionality - particularly with regard to the continuity / connectivity of movement routes and the open space network. This effect is important due to the site's size and location, fronting the Rathbeale Road and positioned between several permitted developments under construction and the existing estates of Cianlea, Lisocian and Ormond. The site's development has an important role to play in completing and connecting Mooretown to the surrounding urban landscape.

The significance of the Do-Nothing impact would be ***negative, moderate*** and ***permanent***.

14.5.2 Construction Phase

During the estimated 36 months construction phase, the site and immediate environs would be disturbed by construction activity, and the incremental growth of the buildings and associated infrastructure on site. The magnitude of visual change would range from ***High*** in the immediate environs, to ***Low, Negligible*** or ***None*** with increasing distance from the site.

The significance of the construction phase effects are classified for each viewpoint in Table 14.6 below. In almost all cases, the effects would be negative, since construction is inherently disturbing of the landscape, and unsightly. The effects would however be (a) temporary, and (b) not unusual in the urban environment, particularly in the Oldtown-Mooretown area which is a process of transformation from previously agricultural to urban. This reduces the significance of the construction phase visual effects.

14.5.3 Operational Phase

Based on the analysis of the receiving environment in Section 14.3 and relevant policy in Section 14.4 above, 13 no. viewpoints (Figure 14.12 overleaf) were selected for visual impact assessment informed by verified photomontages.

The viewpoints are individually assessed in Table 14.6 below.

For the assessment methodology, criteria and terms used, refer to Section 14.2 above.

For each viewpoint, the following views are provided in the photomontages submitted under separate cover as part of the application. Please refer to these when reading the view assessments in Table 14.6.

- Existing view (photograph);
- Proposed view (photomontage of the Proposed Development);
- Cumulative view - where relevant (photomontage of the Proposed Development and the adjacent Phase 1 development currently under construction).

Figure 14.12 Viewpoints for visual impact assessment

Table 14.6 Visual impact assessment

Viewpoint	Baseline View	Viewpoint Sensitivity	Proposed View	Magnitude of Change	Significance and Quality of Visual Effects	
					Construction (Temporary)	Operation (Permanent)
01 Rathbeale Road near Holymount Housing Estate	▪ The view is from the northern footpath of Rathbeale Road near the entrance to the Holymount housing estate. The nearest houses to the road are visible to the right. ▪ In the foreground to the left is the Phase 1 development under construction, the 5-storey apartment block framing the view and causing a shift in landscape character towards a more urban condition. ▪ Ahead, Rathbeale Road dips as it passes the site, an undulating grassland field. ▪ Beyond the site, the houses of the Cronan's Well estate can be discerned through the site boundary hedgerow. ▪ Visual receptors are mainly road users whose visual experience and reception is primarily of the road while walking, cycling or driving, and to a lesser extent of the environment surrounding them. ▪ The viewpoint represents road users in an emerging urban landscape. There is a high capacity to absorb further change without loss of valued landscape character or visual amenity. This stretch of the road is covered by a Preserve Views designation, and while this designation predated the (plan-led) urban development of Oldtown-Mooretown, it remains an objective of the Development Plan. The viewpoint sensitivity is thus classified medium.	***Medium***	<u>Proposed</u> ▪ A block of houses at the near-side of the northern land parcel is visible in the middle distance. One terrace faces Rathbeale Road but is set back from the road behind a green strip. Another terrace fronts an internal diagonal road on the site. ▪ Beyond the houses, a large area of open space remains alongside the road, and the hedgerow on the far site boundary is retained. <u>Cumulative (Permitted Phase 1 + Proposed)</u> ▪ The Phase 1 apartments are completed, and the Proposed Development is largely screened by the new planting in the foreground between the apartment block and the road. The magnitude of change (of the Proposed Development in the permitted scenario) is low. The development would contribute to the completion of the planned/emerging urban landscape, with no significant effect on visual amenity.	***Low***	***Not significant Negative***	***Slight neutral***
02 Rathbeale Road near house and church	▪ This view is from the northern footpath of Rathbeale Road near the entrance to a house and church. These are the nearest non-road user receptors to the north of the site. ▪ The northern land parcel is across the road – an undulating, disused grassland field with a timber fence on the roadside boundary. ▪ The Phase 1 apartment buildings under construction are prominent, the contrasting typology (from the houses to the left of the road) causing a shift in character towards an urban condition. The houses of Phase 1 are to the right beyond the site. ▪ The viewpoint represents road users and road-front properties in a changing urban landscape. There is a high capacity to absorb further change without loss of valued landscape character or visual amenity. This stretch of the road is covered by a Preserve Views designation, and while this designation predated the urban development of Oldtown-Mooretown, it remains an objective of the Development Plan. The viewpoint sensitivity is thus classified medium.	***Medium***	<u>Proposed</u> ▪ The former agricultural field across the road is converted into a park, with footpaths, beds of planting and trees around the perimeter, and the site's archaeological remains traced on the surface for visitor interpretation. The timber fence is replaced by metal railings. ▪ Ahead, a new entrance (and a stone wall-enclosed path up the embankment) give pedestrian access to the park and the new houses. ▪ The park is part-enclosed by terraced houses, variously overlooking the park or the road. ▪ The houses function as a step between the open space of the park and the apartment building. <u>Cumulative (Permitted Phase 1 + Proposed)</u> ▪ The Phase 1 apartments are completed, stepping up behind the new road-side houses. Green strips on the road-side embankments of the two developments merge and connect to the park in the foreground.	***Medium***	***Slight Negative***	***Moderate Positive***

Viewpoint	Baseline View	Viewpoint Sensitivity	Proposed View	Magnitude of Change	Significance and Quality of Visual Effects	
					Construction (Temporary)	Operation (Permanent)
			The magnitude of change (of the Proposed Development in the permitted scenario) is medium. The development would make a positive contribution to the emerging urban landscape, providing a valuable new amenity (the park) to the neighbourhood, visible and accessible from the road. The operational stage effects would be moderate positive.			
03 Rathbeale Road bus stop near entrance to Rathbeale Archaeological Park	▪ This view is from a bus stop near the entrance to Rathbeale Archaeological Park and the neighbouring school (Gaelscoil Bhrian Bóroimhe). A single house across the road from the site is to the left behind the wall. ▪ The northern land parcel – a disused grassland field - occupies much of the view, with the Phase 1 apartment buildings and houses under construction around the far boundaries of the field. ▪ The landscape is in a state of transition. There is capacity to accommodate change without loss of valued landscape character or visual amenity. This stretch of the road is covered by a Preserve Views designation, and while this designation predated the urban development of Oldtown-Mooretown, it remains an objective of the Development Plan. The viewpoint sensitivity is thus classified medium.	***Medium***	Proposed ▪ The former agricultural field across the road is converted into a large park. The open character of the space is retained. Groups of trees are introduced around the perimeter, except along the roadside boundary, which is unplanted (to retain views across the park from the road). The timber fence is replaced by metal railings. ▪ The site's archaeological remains are traced in the meadow for visitor interpretation. ▪ There is an entrance to the park directly across Rathbeale Road from the existing entrance to Rathbeale Archaeological Park, for connectivity. ▪ An estate of terraced houses is visible on the far side of the park. These combine with the Phase 1 houses (to the right) to enclose the large open space. ▪ A small apartment block rises above the Phase 1 houses' roofline, in the middle distance to the right, marking a 'place' in the landscape. This building is of similar form and height to the Phase 1 apartments ahead beside the road. Cumulative (Permitted Phase 1 + Proposed) ▪ The Phase 1 apartments are completed, stepping up behind the new road-side and park-side houses. The magnitude of change is low (the composition of the view is largely unchanged). However, the development would make a positive contribution to the landscape, providing a valuable new amenity (the park) to the neighbourhood, visible and accessible from the road, and connected to the existing green infrastructure network. The operational stage effects would be moderate positive.	***Low***	***Slight Negative***	***Moderate Positive***
04 Holymount Housing Estate	▪ Holymount is a recently built housing estate on the north side of Rathbeale Road, across the road from the Phase 1 apartments (under construction). ▪ Some of the houses overlook the road and the site's northern land parcel diagonally across the road. (The view shows a thicket of young hedge and tree planting inside the Holymount boundary. In time this will mature and filter the view.) ▪ Across the road, out of view to the left, is the Phase 1 apartment building under construction, the site enclosed by hoarding. ▪ The nearest part of the site is being used as a construction compound for Phase 1. The sloping grassland field occupies the middle ground, and beyond that are the houses of the Cronan's Well estate.	***Medium***	Proposed - Across Rathbeale Road, a terrace of houses is prominently positioned on a rise, set back from the road above a vegetated embankment (i.e. similarly sited to the houses of Holymount). Further houses can be seen to the rear of the road-facing terrace. - Beyond the houses is a large open space beside the road, with trees in the park partly screening the Cronan's Well estate. Cumulative (Permitted Phase 1 + Proposed) ▪ The Proposed Development combines with the Holymount estate (from where the view is taken) – and the neighbouring 5 storey apartment block out of view to the	***Medium***	***Moderate Negative***	***Moderate Neutral***

Viewpoint	Baseline View	Viewpoint Sensitivity	Proposed View	Magnitude of Change	Significance and Quality of Visual Effects	
					Construction (Temporary)	Operation (Permanent)
	■ The viewpoint represents the residential receptors of Holymount, but the landscape around the estate is in a disturbed / transitional condition. There is capacity to accommodate change without loss of valued landscape character or visual amenity.		left – to enclose this stretch of the Rathbeale Road. The road corridor is urbanised, but retains a green edge on both sides. The magnitude of change is medium (the proposed houses being of similar type and similarly sited to the Holymount houses). The development would contribute to the completion of the urban landscape, with an increase in built / visual enclosure, but no negative visual effects. The operational stage effects would be moderate neutral.			
05 Rathbeale Archaeological Park	■ The view is taken from a central position in Rathbeale Archaeological Park, to the north of the site across Rathbeale Road. ■ The foreground is occupied by the park, which includes earth mounds, patches of vegetation and a network of paths. As an urban park, the space is surrounded by development on all sides. ■ Directly ahead, filtered by the park vegetation, is the roof of a church hall beside Rathbeale Road. The houses of the Holymount estate are visible to the left, and the Phase 1 apartments (under construction) are prominent on the far side of the Rathbeale Road, with further houses under construction in the distance. ■ The park provides a valuable landscape and visual amenity for the emerging Oldtown-Mooretown neighbourhood, but as an open space in a developing urban area there is some tolerance for change.	***Medium***	<u>Proposed</u> ■ A terrace of houses is visible on the far side of Rathbeale Road, partially screened by an earth mound in the park in the foreground. <u>Cumulative (Permitted Phase 1 + Proposed)</u> ■ The Proposed Development combines with the Holymount estate and the Phase 1 apartments to provide built enclosure to the park. The magnitude of change is low. The development would contribute to the completion of the urban landscape surrounding the park, with no significant effect on the park's visual amenity.	***Low***	***Not Significant Neutral***	***Not Significant Neutral***
06 Cronan's Well Housing Estate	■ The view is taken from the Cronan's Well estate close to the site's west boundary, and represents the view from the nearest houses to the west of the site. ■ A hedgerow along the boundary largely screens the site from view, although some houses can be seen in the distance beyond the site. ■ The viewpoint represents residential receptors, who are generally sensitive to landscape / visual change in their environs. However, in the context of an urban neighbourhood in the process of development, there is some tolerance for change.	***Medium***	<u>Proposed</u> ■ A large park is proposed adjacent to the Cronan's Well estate, i.e. in the foreground of this view behind the retained hedgerow. ■ The proposed buildings are screened from view by the retained hedgerow and new trees in the park. <u>Cumulative (Permitted Phase 1 + Proposed)</u> ■ n/a. The magnitude of change is Negligible. The development would have no significant effect on the visual amenity of Cronan's Well estate, although the estate would benefit from its proximity to the new park when completed.	***Negligible***	***Not Significant Neutral***	***Slight Positive***
07 Main Street at Swords Community College	■ This view is taken from Mooretown Main Street outside Swords Community College, looking east. ■ The road currently terminates at the western site boundary. A hedgerow on the boundary screens the site and the Phase 1 site from view, although some construction activity can be seen over the hedge.	***Low***	<u>Proposed</u> ■ A section of the site boundary hedgerow is removed, allowing Main Street to extend past the site (and the adjacent Phase 1). ■ A terrace of 3 storey, flat roofed townhouses fronts the street. The terrace turns the corner inside the site boundary, to form an edge and gateway to the site.	***High***	***Slight Negative***	***Moderate Positive***

Viewpoint	Baseline View	Viewpoint Sensitivity	Proposed View	Magnitude of Change	Significance and Quality of Visual Effects	
					Construction (Temporary)	Operation (Permanent)
	■ In the foreground, the street has an urban specification, with segregated cycle lane and footpath, and an avenue of young trees in wide green verges on the north side. ■ The school is to the left behind the boundary wall and railing. To the right is a development site, currently the subject of a planning application (LRD0067/S3E). ■ The landscape is visibly disturbed / unfinished, and would benefit from further development to realise the planned urban character. There is a high capacity to accommodate change.		■ The roofs of 2 storey houses are discernible to the right behind the 3 storey townhouses. Cumulative (Permitted Phase 1, Proposed LRD0067/S3E + Proposed) ■ In the foreground to the right is a 4 storey apartment building (part of LRD0067/S3E), and Main Street is completed, with a footpath and street trees added on its south side. The magnitude of change (cumulative vs. existing) is high. The development would make a significant positive contribution to the completion - and character - of Main Street, an important element of the planned urban landscape.			
08 Cianlea Housing Estate North	■ The view is taken from the Cianlea housing estate to the east of the site. ■ A gap between semi-detached houses that back onto the site boundary affords a view towards the site (the northern extent of the southern land parcel). ■ The Phase 1 apartments and some houses, under construction, are visible in the middle distance. An electricity pylon on the site is also prominent in the view, reducing visual amenity. ■ The viewpoint represents residential receptors, who are generally sensitive to landscape / visual change in their environs. However, in the context of an urban neighbourhood in the process of development, there is some tolerance for change.	***Medium***	Proposed ■ A large park is proposed adjacent to the Cronan's Well estate, i.e. in the foreground of this view behind the retained hedgerow. ■ The proposed buildings are screened from view by the retained hedgerow and new trees in the park. Cumulative (Permitted Phase 1 + Proposed) ■ n/a. The magnitude of change is Negligible. The development would have no significant effect on the visual amenity of Cronan's Well estate, although the estate would benefit from its proximity to the new park when completed.	***Negligible***	***Not Significant Adverse***	***Not Significant Neutral***
09 Cianlea Housing Estate South	■ This view is from a position further south in the Cianlea estate, where an estate access road ends in a cul-de-sac against the site's east boundary. ■ The Cianlea houses to left and right frame a view west, over the estate boundary wall and across the site. ■ Beyond an area of rough grassland (the site) is the neighbouring Phase 1 development under construction, the new houses closing the vista. ■ The viewpoint represents residential receptors, who are generally sensitive to landscape / visual change in their environs. However, in the context of an urban neighbourhood in the process of development, there is some tolerance for change.	***Medium***	Proposed ■ To the right, a terrace of 2 storey houses is positioned inside the site's east boundary, the houses presenting their rear facades to the Cianlea boundary. (The back-to-back positioning of houses is a typical suburban arrangement.) A high quality brick wall is proposed on the boundary, as a visual screen. ■ To the left (to the rear of the existing house to the left), is a large park inside the site's east boundary. ■ In the middle distance is the 4-5 storey apartment building marking the centre of the new neighbourhood, overlooking the park on one side and the central main street on the other. The disaggregated form and variations in brick colour reduce the perceived massing of the apartment building. Cumulative (Permitted Phase 1 + Proposed) ■ n/a.	***High***	***Slight Adverse***	***Moderate Adverse***

Viewpoint	Baseline View	Viewpoint Sensitivity	Proposed View	Magnitude of Change	Significance and Quality of Visual Effects	
					Construction (Temporary)	Operation (Permanent)
			The magnitude of change is High. The development would increase the degree of built / visual enclosure in this part of the Cianlea estate. The residents of the Cianlea houses at the boundary would likely perceive the visual effect as negative. However, it should be recognised that: (a) the site is zoned for residential use, and the retention of the site in its undeveloped condition would not be sustainable; (b) the proximity of neighbouring estates/houses, and their visibility from other estates/houses, is typical in the area.			
10 Glasmore Abbey Ruin from Cianlea Housing Estate	▪ This view is from the Cianlea housing estate, beside the public open space around Glasmore Abbey ruin (a protected structure). ▪ The ruin is the central feature of the open space. To the right is one of the Cianlea houses, which backs onto the site boundary. To the left, on the far side of the open space, are the houses of the neighbouring Lioscian estate. ▪ A hedgerow on the site's east boundary encloses the open space and screens the site from view. ▪ The viewpoint represents residential receptors and the public open space and protected structure. This part of the receiving environment is less affected by ongoing developments in Mooretown, and is therefore more sensitive to change (than Viewpoints 08, 09 for example). However, the urban location demands some tolerance for change.	***Medium-High***	<u>Proposed</u> ▪ A park is proposed in the part of the site adjoining the Glasmore Abbey open space. ▪ The proposed park forms a buffer, and the proposed buildings are largely screened from view – although some houses can just be discerned through the retained boundary hedgerow, to the rear of the Lioscian estate houses. <u>Cumulative (Permitted Phase 1 + Proposed)</u> ▪ n/a. The magnitude of change is Negligible. The development would have no significant effect on this area's visual amenity, and the open space (and surrounding houses) would benefit from the new open space adjoining the Glasmore Abbey open space.	**None**	**Not significant Neutral**	**Not significant Neutral**
11 Glasmore Abbey Ruin from Lioscian Housing Estate	▪ This view is from the open space beside Glasmore Abbey ruin (a protected structure), with the houses of the Lioscian estate to the left. These houses back onto the site boundary. ▪ A hedgerow / tree line on the site's east boundary encloses the open space and screens the site from view. ▪ The viewpoint represents residential receptors and the public open space and protected structure. This part of the receiving environment is less affected by ongoing developments in Mooretown, and is therefore more sensitive to change. However, the urban location demands some tolerance for change.	***Medium-High***	<u>Proposed</u> ▪ A park is proposed in the part of the site adjoining the Glasmore Abbey open space – to the right in the view, behind the retained boundary hedgerow / tree line. ▪ A terrace of houses (2 storeys, rendered, with pitched slate roofs) is visible to the rear of the Lioscian estate houses, positioned back-to-back with the Lioscian estate houses in a typical suburban arrangement. <u>Cumulative (Permitted Phase 1 + Proposed)</u> ▪ n/a. The magnitude of change is Low-Medium. The development would have no significant effect on this area's visual amenity, and the open space (and surrounding houses) would benefit from the new open space adjoining the Glasmore Abbey open space. The residents of the Lioscian estate houses adjacent to the site may perceive the visual effect of the new houses to their rear as negative. However, the back-to-back arrangement of houses is the norm in the area, and the Lioscian estate would retain a high level of landscape / visual amenity.	**Low-Medium**	**Slight Negative**	**Moderate Neutral**

14.6 Predicted Impacts of the Proposed Development – Landscape Character

14.6.1 Do-Nothing Impact

The site would remain vacant / unused, in a disturbed condition and fenced off from the surrounding area, maintaining the unfinished appearance of the Mooretown urban landscape. The residential land use objective for the site would not be realised, and the landscape of Mooretown would fail to achieve full functionality - particularly with regard to the continuity / connectivity of movement routes and the open space network. This effect is important due to the site's size and location, fronting the Rathbeale Road and positioned between several permitted developments under construction and the existing estates of Cianlea, Lisocian and Ormond. The site's development has an important role to play in completing and connecting Mooretown to the surrounding urban landscape.

The significance of the Do-Nothing impact would be ***negative, moderate*** and ***permanent***.

14.6.2 Construction Phase

During the estimated 36 months construction phase, the site and immediate environs would be disturbed by construction activity (including HGV and crane movements) and the incremental growth of the buildings and associated infrastructure on site, before completion of the new urban landscape. The magnitude of landscape change would be 'low-medium' - considering (a) that the context is an urban area in the process of development, i.e. where similar change is and has been ongoing for approximately 20 years, and (b) the construction phase is short term.

The sensitivity of the landscape is ***low to medium*** (see Section 14.3.1 above and 14.6.3.1 below).

Therefore, the significance of the landscape effects during construction would be ***negative***, ***slight to moderate*** and ***short term***. Such temporary negative landscape effects are unavoidable during the construction phase of a development.

14.6.3 Operational Phase

14.6.3.1 Landscape Sensitivity

The Oldtown-Mooretown area is designated for residential-led urban development, and the landscape is in an advanced stage of the transition from former agricultural land to urban. The transition not yet complete, and the landscape is disturbed in places by ongoing construction, including in the site's immediate environs. The site itself is disturbed in places by construction activity on neighbouring plots. The few remaining undeveloped plots (including the site) are at this stage an obstacle to the realisation of the planned / emerging urban neighbourhood. The landscape is thus of low sensitivity[30] to development of the type proposed, i.e. development that would contribute to the completion realisation of the planned urban landscape.

There are a number of factors that increase the landscape sensitivity somewhat. These include (a) the remaining woody vegetation on the site (particularly the hedgerows), (b) St Cronan's Well and the site's underground archaeological assets, (c) the stream / drainage line that traverses the site, and (d) the surrounding residential estates.

[30] Landscape sensitivity is a measure of its susceptibility to change (i.e. its ability to accommodate the Proposed Development without undue consequences for its existing character or the achievement of landscape policies or strategies), and the value attached to the landscape.

Residential receptors are inherently sensitive to change in their context. However, in the case of Mooretown, it must be recognised that the context of the existing, occupied homes is a landscape in

the process of urban development. While the remaining undeveloped plots may provide some visual amenity, they can also detract from visual amenity when they become unkempt or disturbed by construction, and they curtail the functioning of the urban landscape, e.g. by obstructing movement routes, open space / green infrastructure connectivity, etc.

In summary, ***the landscape of the receiving environment is of 'low-medium' sensitivity***.

(Low sensitivity definition (see Table 14.1 above): *Areas where the landscape has few valued elements, features or characteristics and the character is weak. The character is such that it has capacity for change; where development would make no significant change or would make a positive change. Such landscapes are generally unrecognised in policy and the principal management objective may be to facilitate change through development, repair, restoration or enhancement*.

Medium sensitivity definition: *Areas where the landscape has certain valued elements, features or characteristics but where the character is mixed or not particularly strong, or has evidence of alteration, degradation or erosion of elements and characteristics. The townscape character is such that there is some capacity for change. These areas may be recognised in policy at local or county level and the principal management objective may be to consolidate landscape character or facilitate appropriate, necessary change*.)

14.6.3.2 Magnitude of Landscape Change

At approximately 14.75 ha the site is relatively large, but the nature of the development - i.e. two and three storey houses, an apartment building (in two parts) up to five storeys tall, a crèche, road infrastructure and a network of open space - is similar in nature and scale to the existing and permitted developments on the surrounding lands. The development would not change the landscape character of the receiving environment, but would contribute to the ongoing trend of change.

In summary, **the magnitude of landscape change would be 'low-medium'** (it is only the scale of the site / development that increases the magnitude of change above 'low').

(Low magnitude of change definition (see Figure 14.2 above): *Change that is moderate or limited in scale, resulting in minor alteration to key elements, features or characteristics of the landscape, and/or introduction of elements that are not uncharacteristic in the context. Such development results in minor change to the character of the landscape*.

Medium magnitude of change definition: *Change that is moderate in extent, resulting in partial loss or alteration to key elements, features or characteristics of the landscape, and/or introduction of elements that may be prominent but not necessarily substantially uncharacteristic in the context. Such development results in change to the character of the landscape.*)

14.6.3.3 Significance of Townscape Effects

Measuring the magnitude of change against the landscape sensitivity (refer to Table 14.3 and Figure 14.1 above), ***the significance of the landscape effects is predicted to be 'moderate'***.

(EPA definition of moderate effect: *"An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends"*).

The pertinent question is whether the landscape effects would be positive, neutral or negative.

Policy SPQHP35 (re. Quality of Residential Development) of the Fingal Development Plan 2023-2029 states: *"Promote a high quality of design and layout in new residential developments at appropriate densities across Fingal, ensuring high-quality living environments for all residents in terms of the standard of individual dwelling units and the overall layout and appearance of developments. Residential developments must accord with the standards set out in the Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas, DEHLG 2009 and the accompanying Urban Design Manual – A Best Practice Guide"*.

Based on the visual impact assessment in Table 14.6, the landscape impacts of the Proposed Development can be classified as ***positive***.

14.7 Mitigation Measures

14.7.1 Construction Phase

Apart from (a) the measures for hedgerow and tree protection (as recommended in the Arboricultural Report prepared by Charles McCorkell Arboricultural Consultant (2026), (b) the measures for protection of archaeological resources (as recommended by Courtney Deery Heritage Consultancy Ltd in Chapter 15 – Cultural Heritage. Archaeology and Architectural Heritage), and (c) standard best practice construction site management (as set out in the Construction and Environmental Management Plan by AKM Design Group), no mitigation measures are required / recommended specifically for landscape and visual effects.

14.7.2 Operational Phase

The only identified negative effect is on View 09, from a position in the neighbouring Cianlea housing estate. Currently, this location affords a view (over a low boundary wall) of a grassland field in the south eastern part of the site, with the Phase 1 development under construction in the background. The siting of a terrace of two storey houses inside the site boundary would result in an increase in built / visual enclosure along this boundary (the negative effect), affecting a small number of houses in the Cianlea estate.

Mitigation measures are already embedded in the proposal to limit the impact. These include (1) the housing typology (two storey terraced) and siting (rear elevations and gardens to the shared boundary; a typical suburban arrangement), (2) a high quality brick wall on the rear garden boundary, providing a visual screen, and (3) the positioning of the proposed Glasmore Archaeological Park just to the south, adjoining the existing Glasmore Abbey Park (beside Cianlea). The open space of the proposed park is visible to the left in the photomontage for Viewpoint 09 (Figure 14.13), to the rear of the Cinalea house to the left.

These embedded mitigation measures ensure that, while there would be some negative effect on a small part of the Cianlea estate (arising from the increased visual enclosure and loss of green space from the view), the outcome - in landscape character terms - would *not* be unacceptable. The development would take its place comfortably in the emerging urban landscape of Mooretown.

No other negative landscape or visual effects have been identified. For the most part the development would have ***neutral*** or ***positive*** effects. This includes views from Rathbeale Road, where the Rathbeale Archaeological Park South would be introduced to the road corridor beside a small estate of houses (see Figure 14.14 below). This would complete the development of the Rathbeale Road corridor in

Mooretown, adding a public open space visible and accessible from the road, improving landscape character and visual amenity.

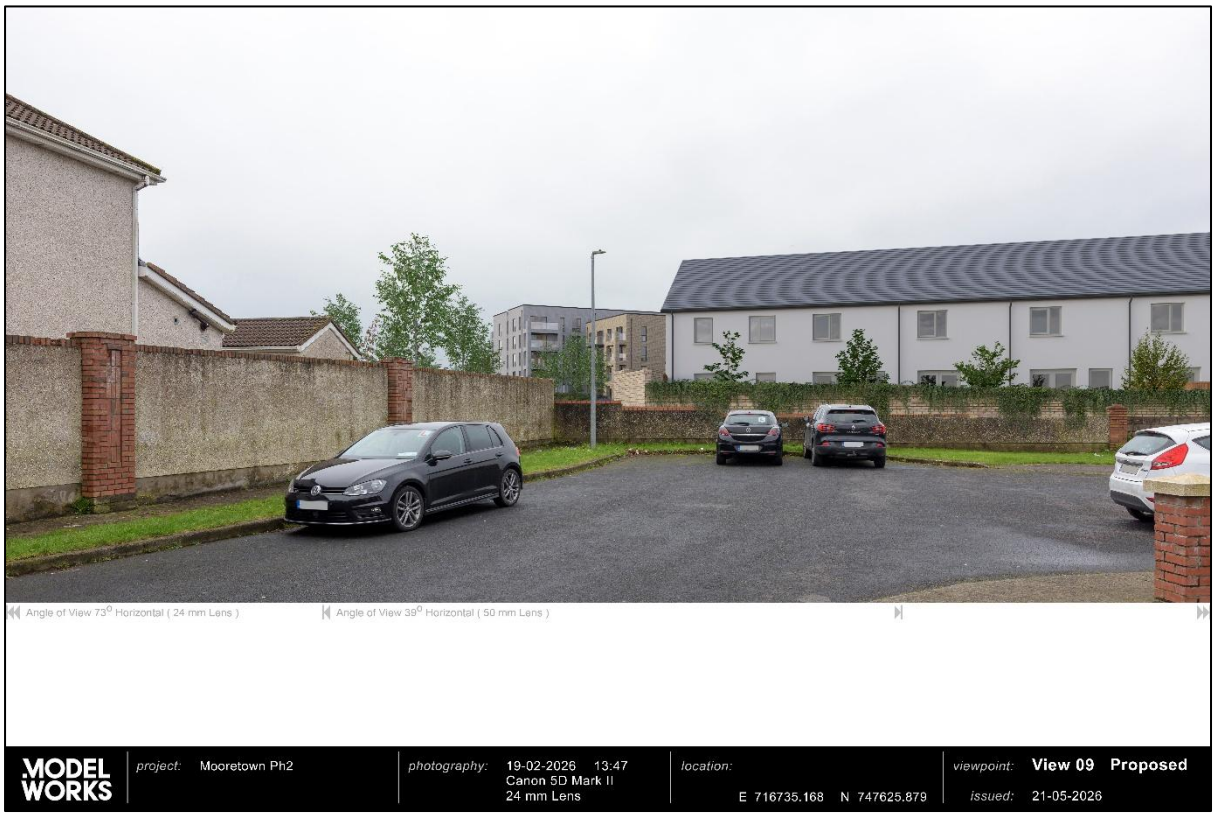

Figure 14.13 Photomontage of Proposed Development for Viewpoint 09 in the Cianlea estate

Figure 14.14 Photomontage of Proposed Development for Viewpoint 02 on Rathbeale Road

The proposal would have a similar ***positive*** effect at the west site boundary. Currently the link street ('Main Street') terminates at the site boundary beside Swords Community College. The Proposed Development would combine with the Phase 1 development to provide built enclosure / definition to the extended link street, completing an important element of the urban landscape.

Figure 14.15 Photomontage of Proposed Development for Viewpoint 07 (proposed and existing), on Main Street outside Swords Community College

In light of the above, no operational phase mitigation measures are required / recommended for landscape or visual effects

14.8 Residual Impacts – Visual Amenity

14.8.1 Construction Phase

The visual effects during the construction phase have been classified for each viewpoint in Table 14.6 above and Table 14.7 below. The effects would generally be negative as construction is disturbing of the landscape, and unsightly. Site hoarding is only effective as a visual screen for ground level activity. Once buildings under construction rise above ground level, they are exposed, and until they are completed their visual effects are negative (see Photo 14.1, Photo 14.2 above). Such temporary negative visual effects are unavoidable during the construction phase of a development.

14.8.2 Operational Phase

Since no mitigation measures have been recommended, the residual visual effects are the same as the predicted / potential visual effects described in Table 14.6 above. The effects are further summarised in Table 14.7 below.

Table 14.7 Residual visual effects

Viewpoint	Viewpoint Sensitivity	Magnitude of Change	Significance and Quality of Visual Effects	
			Construction (Temporary)	Operation (Permanent)
01 Rathbeale Road near Holymount Housing Estate	*Medium*	*Low*	*Not significant Negative*	*Slight neutral*
02 Rathbeale Road near house and church	*Medium*	*Medium*	*Slight Negative*	*Moderate Positive*
03 Rathbeale Road bus stop near entrance to Rathbeale Arch. Park	*Medium*	*Low*	*Slight Negative*	*Moderate Positive*
04 Holymount Housing Estate	*Medium*	*Medium*	*Moderate Negative*	*Moderate Neutral*
05 Rathbeale Archaeological Park	*Medium*	*Low*	*Not Significant Neutral*	*Not Significant Neutral*
06 Cronan's Well Housing Estate	*Medium*	*Negligible*	*Not Significant Neutral*	*Slight Positive*
07 Main Street at Swords Community College	*Low*	*High*	*Slight Negative*	*Moderate Positive*
08 Cianlea Housing Estate North	*Medium*	*Negligible*	*Not Significant Adverse*	*Not Significant Neutral*
09 Cianlea Housing Estate South	*Medium*	*High*	*Slight Adverse*	*Moderate Adverse*
10 Glasmore Abbey Ruin from Cianlea Housing Estate	*Medium-High*	*None*	*Not significant Neutral*	*Not Significant Neutral*

Viewpoint	Viewpoint Sensitivity	Magnitude of Change	Significance and Quality of Visual Effects	
			Construction (Temporary)	Operation (Permanent)
11 Glasmore Abbey Ruin from Lioscian Housing Estate	*Medium-High*	*Low-Medium*	*Slight Negative*	*Moderate Neutral*
12 Ormond Crescent Housing Estate	*Medium*	*Low*	*Not Significant Adverse*	*Not Significant Neutral*
13 Ormond Avenue Housing Estate	*Medium*	*Negligible-Low*	*Not significant Negative*	*Not Significant Neutral*

14.9 Residual Impacts – Landscape Character

14.9.1 Construction Phase

During the construction phase, the site and immediate environs would be disturbed by construction activity and the incremental growth of the buildings and infrastructure on site.

The sensitivity of the landscape is low-medium (see Section 14.6.3.1 above). The magnitude of landscape change would be low-medium. This is based on the following: (a) the context is an urban area in the process of development, where similar change is and has been ongoing for approximately 20 years; (b) the construction phase is short term.

Therefore, ***the significance of the landscape effects during construction would be slight negative***. Such temporary negative landscape effects are unavoidable during the construction phase of a development.

14.9.2 Operational Phase

Since no mitigation measures have been recommended, the residual landscape effects are the same as the predicted / potential landscape effects described in Section 14.6.3.2 and Error! Reference source not found. above.

The sensitivity of the landscape is ***low-medium*** (see Section 14.6.3.1 above). The magnitude of landscape change would be ***low-medium***. At approximately 14.75 ha, the site is relatively large, but the Proposed Development of similar in typology and scale to the existing and permitted developments on the surrounding lands. The development would not itself change the character of the receiving environment, but would contribute to an ongoing trend of change.

Measuring the magnitude of change against the landscape sensitivity (refer to Table 14.3 and Figure 14.1 above), the significance of the operational phase landscape effects is predicted to be moderate (EPA definition: *"An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends"*). Based on (a) an evaluation of the proposal against the relevant criteria of the *Urban Design Manual – A Best Practice Guide* (Error! Reference source not found.) and (b) the visual effects assessment (Table 14.6), ***the significance of the landscape effects during operation can be classified moderate positive***.

14.10 Monitoring

The retention of existing hedgerows and trees on site is an important element of the proposal. Any unplanned loss of vegetation would result in negative landscape and visual impacts. The planning application is accompanied by an Arboricultural Report by Charles McCorkell (2026). This includes the requirement for all works potentially affecting retained hedgerows and trees to be supervised / monitored by a Project Arborist, and for retained vegetation to be reviewed for any ongoing monitoring or management needs.

No other monitoring of landscape and visual effects is required.

14.11 Reinstatement

No reinstatement is required post construction.

14.12 Interactions

14.12.1 Landscape / Visual and Population and Human Health (Noise and Dust Emissions)

During the construction phase, there is potential for the visual impacts of construction to combine with noise and dust emissions from the construction site to negatively impact the residential amenity of residential neighbourhoods / receptors near the site. The impacts would be of ***moderate significance, negative,*** and ***temporary.***

14.12.2 Landscape / Visual and Population and Human Health

During the operation phase:

- The Proposed Development would introduce two large public open spaces to the landscape ('Rathbeale Archaeological Park South' and 'Glasmore Archaeological Park'), visible and accessible from public roads passing by the site, providing a range of active and passive recreation amenities for people of all ages. These spaces are positioned to complement the existing local green infrastructure network, filling gaps that currently exist and thereby improving connectivity (of open space and active travel routes).
- The Proposed Development would complete the formation of the link street (by the introduction of built frontage on its south site, complementing the permitted Phase 1 development), thus contributing to the completion of a key element of the road, cycle and pedestrian network. The pedestrian and cycle routes throughout the site, including multiple entrances to the site from the north and west, would improve permeability of the urban landscape, encouraging walking and sustainable mobility.
- The Proposed Development would provide 360 no. new homes of various types (houses, duplexes, apartments), catering for a range of needs, realising the site's residential land use objective.

These changes to the landscape would have ***positive, significant, long-term impacts*** for the new resident community and the established population of Mooretown.

14.12.3 Landscape / Visual and Biodiversity

The Proposed Development would retain the majority of the site's remaining hedgerows and trees, the drainage ditches, and a large proportion of the site as open space. The open spaces would be planted / seeded with diverse new native planting (pollinator friendly meadows and trees), with the overall

objective of achieving net biodiversity gain. The landscape change would have biodiversity impacts of **moderate significance, positive and long term**.

14.12.4 Cultural Heritage / Archaeology

The three main public open spaces, 'Rathbeale Archaeological Park South', 'Glasmore Archaeological Park' and 'St Cronan's Well Archaeological Park' are sited and designed to preserve the site's archaeological assets in situ. As well as preserving the cultural heritage, this would facilitate its interpretation (by means of signage, etc.). The landscape change would have cultural heritage impacts of ***moderate significance, positive*** and ***long term***.

14.13 Indirect and/or Secondary Impacts

No indirect or secondary impacts have been identified.

14.14 Cumulative Impacts

The assessment of landscape and visual impacts has taken account of the permitted and Proposed Developments in the vicinity of the site, for example the permitted Phase 1 and 3 developments under construction, and the Phase 2 LRD application (LRD0067/S3E) currently under consideration by FCC. The cumulative photomontages accompanying the chapter show the Proposed Development in combination with the relevant permitted and Proposed Developments (Phase 1 and the Phase 2 LRD).

In combination, the Proposed Development and the nearby permitted and proposed schemes would complete the urban landscape of Mooretown which has been in planning for some 20 years. The cumulative landscape impact would be significant, positive and long term.

14.15 Difficulties Encountered

No difficulties were encountered in the preparation of this chapter.

14.16 References

Fingal County Development Plan 2023-2029, Fingal County Council.

Guidelines for Landscape and Visual Impact Assessment, 3rd edition (2013), Landscape Institute and Institute of Environmental Management and Assessment.

Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (2022), Environmental Protection Agency.

Oldtown-Mooretown Local Area Plan 2010, Fingal County Council

Photography and Photomontage in Landscape and Visual Impact Assessment (2011), Landscape Institute.

Townscape Character Assessment, Technical Information Note 05/2017 (2017), Landscape Institute

15 Cultural Heritage, Archaeology and Architectural Heritage

15.1 Introduction

This Chapter of the Environmental Impact Assessment Report (EIAR) assesses likely significant effects of the proposed residential development on Mooretown Lands, Swords, County Dublin on Cultural Heritage, Archaeology and Architectural Heritage.

The assessment considers direct, indirect and cumulative impacts arising during both the construction and operational phases of the development. Mitigation measures are proposed in accordance with established best practice, including the principles of avoidance, preservation in situ where feasible, and preservation by record where avoidance is not possible.

The proposed application area is Phase 2 of the Proposed Development of a larger landbank within the Mooretown lands in Fingal County Council's ownership. Mooretown is located to the west of Swords and south of Rathbeale Road (R125) in north County Dublin (Figure 15.1). The north of the site is bound by Rathbeale Road and further north by Rathbeale Park and residential development; to the east by the existing residential areas of 'Cianlea' and 'Lioscian'; to the south by greenfield lands; and to the west by Swords Community College and Broadmeadow Community National School and lands under development by Gannon Homes. In the northeastern and central area of the site the Mooretown Phase 1 development is currently under construction.

Figure 15.1 Site Location

This assessment considers the archaeological potential of both the current application area (Phase 2 lands comprising 14.75ha) and the entirety of the Fingal County Council (FCC) lands of c.23.9 ha which

includes Phase 1 which is currently under construction (Figure 15.1). The Phase 2 residential development is described in detail in Chapter 5 (Description of the Proposed Development.

The archaeological strategy for the site was established at an early stage and has directly informed the design of the Proposed Development. The layout has been developed to respond to identified archaeological constraints, ensuring the protection and integration of key sites within the scheme.

15.1.1 Expertise and Qualifications

This EIAR chapter was compiled by Siobhán Deery (BA, MA, H-Dip (Ed.), H-Dip Planning and Env. Law, MIAI), Managing Director and Senior Heritage Consultant of Courtney Deery Heritage Consultancy Ltd. Ms Deery is a licence-eligible archaeologist and a Member of the Institute of Archaeologists of Ireland and ICOMOS, with over 30 years of professional experience since 1996 in archaeology and cultural heritage.

Siobhán Deery has extensive experience in the preparation of Archaeological and Cultural Heritage chapters for Environmental Impact Assessment Reports (EIARs) across a wide range of development types. Her expertise spans all stages of assessment, including baseline studies, field evaluation (comprising geophysical survey, test excavation, full excavation and built heritage recording), impact assessment, and the development of proportionate, design-led mitigation strategies. She has a proven track record in delivering robust heritage assessments to support planning and consent.

Courtney Deery Heritage Consultancy Ltd has been directly involved in the Mooretown and Oldtown–Mooretown lands since the early stages of the Local Area Plan process, undertaking archaeological fieldwork, monitoring and excavation that established the baseline archaeological resource for the area. The company also prepared the archaeological and cultural heritage inputs for the planning of Mooretown Phase 1 and the wider Oldtown–Mooretown development lands. This continuity of involvement provides a detailed, site-specific understanding of the archaeological landscape and ensures that the assessment presented in this EIAR is informed, proportionate, and aligned with both the known resource and the evolution of the site design.

15.2 Method

15.2.1 Appraisal Method

A study area extending 1km from the red line boundary was defined to establish the archaeological and cultural heritage context. Professional judgement was applied to extend this area where necessary to consider sites and features of relevance beyond this radius.

The assessment is based on a desk study and field inspection and the results of numerous archaeological assessments.

15.2.1.1 Desk Study

The assessment was based on a desk study of published and unpublished documentary and cartographic sources, field inspections and the results of extensive archaeological investigations. This included the geophysical survey and archaeological testing within the Proposed Development as part of the now-lapsed Oldtown Mooretown LAP (Local Area Plan), and Conservation and Management Plan (Courtney, 2010) and the archaeological assessments that informed it. By using all the different sources and data sets we have developed an understanding of the historic character that surrounds and is part

of the Proposed Development and as a result of this, we can assess the cumulative effect of the Proposed Development.

The desk study also availed of the following sources:

- UNESCO World Heritage Sites (WHS) and Tentative World Heritage Sites and those monuments on the tentative list;
- The National Monuments, Preservation Orders and Register of Historic Monuments lists, sourced directly from the DHLGH;
- Record of Monuments and Places and Sites and Monuments Record (RMP and SMR): SMR, as revised in the light of fieldwork, formed the basis for the establishment of the statutory RMP in 1994 (RMP; pursuant to Section 12 of the National Monuments (Amendment) Act, 1994). The RMP records known upstanding archaeological monuments, their original location (in cases of destroyed monuments) and the position of possible sites identified as cropmarks on vertical aerial photographs. The information held in the RMP files is read in conjunction with published constraint maps. Archaeological sites identified since 1994 have been added to the non-statutory SMR database of the Archaeological Survey of Ireland (NMS, DHLGH), which is available online (NMS 2024) and includes both RMP and SMR sites. Those sites designated as SMR sites have not yet been added to the statutory record, but are scheduled for inclusion in the next revision of the RMP. As noted above, the Historic and Archaeological Heritage and Miscellaneous Provisions Act 2023 was enacted in October 2023 and while this Act is now law, most of its provisions will not enter into force until the Minister for Housing, Local Government and Heritage has made one or more Commencement Orders. This means that the National Monuments Acts have therefore not yet been repealed and remain in force;
- Fingal County Development Plan (2023-2029): The current Fingal County Development Plan was consulted for a list of protected structures, the Record of Protected Structures (RPS sites), comprising schedules of buildings and items of architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest that are listed for protection in the study area (the policies and objectives of the plan are summarised in Appendix 15.3);
- National Inventory of Architectural Heritage (NIAH) Building Survey (NIAH ratings are international, national, regional, local and record, and those of regional and above are recommended for inclusion in the RPS);
- National Inventory of Architectural Heritage (NIAH) Garden Survey (paper survey only);
- The topographical files of the National Museum of Ireland (NMI) (NMI 2026): The topographical files of the National Museum of Ireland (NMI) identify recorded stray finds held in the museum's archive. The files, which are donated to the state in accordance with national monuments legislation, are provenanced to townland and sometimes include reports on excavations undertaken by NMI archaeologists earlier in the 20th century;
- Cartographic sources, comprising pre-19th century historic maps and various editions of the Ordnance Survey (OS) six-inch maps, 25-inch maps and five-foot plans including historical mapping (such as Down Survey 1656 Map);
- Excavations Bulletins and Excavations Database (Excavations 1970 to 2026);
- NIAH, Building Survey and Garden Survey (NIAH 2026);
- Placenames Database of Ireland (Logainm 2026);
- Aerial imagery online: Google Earth 2001 to 2024 (Google Earth 2024), Bing 2013 (Bing 2024) and Ordnance Survey Ireland (OSI) 1995; 2000; 2005 to 2013 (OSI 2024);

- National Folklore Collection (Duchas.ie);
- Fingal County Development Plan (2023-2029).
- Other documentary sources (as listed in Section 15.13).

15.2.1.2 Previous Assessments

The impact assessment includes a review of previous archaeological investigations that have been carried out within the subject lands and also includes supplementary archaeological testing carried out under licence number 24E0067 (Deery 2024). The Proposed Development area and wider development lands lie within the now lapsed Oldtown-Mooretown Local Area Plan (LAP) (2010, extended to 2020) located on either side of the Rathbeale Road within the townlands of Rathbeale, Oldtown and Mooretown. As part of the former LAP process, the application lands have been subjected to several phases of licenced non-invasive and invasive archaeological assessments comprising desk studies, field walkover surveys, licenced geophysical surveys, and test excavations. The focus of many of the earlier investigations was to provide a detailed archaeological assessment for consideration in the development of a planning strategy for the LAP.

The most significant result of these investigations was the identification of a previously unknown extensive early medieval ecclesiastical complex, a religious site with burials and settlements dating to the first millennium AD (RMP DU011-144001/004). This complex is entirely subsurface, without any remains above ground, and presents only as natural ridges within green fields. It extends from the southern part of Oldtown, into the northern part of Mooretown (into the subject lands). The complex is now cut by the Rathbeale Road, and separated into two different townlands. In addition to the ecclesiastical complex at Oldtown-Mooretown, further significant unrecorded archaeological sites were discovered within the Mooretown lands, including a water mill, a medieval settlement in the vicinity of what is known as Glasmore Abbey (RMP no: DU011-019), a fulacht fiadh (RMP no: DU011-148), a natural spring source for the recorded holy well (RMP no: DU011-018), and a possible ringfort (RMP no: DU011-147) (Figure 15.2). The ringfort and water mill are located outside the Phase 2 lands to the west.

The archaeological investigations identified previously unknown subsurface archaeological sites and features with no above-ground representation and established the plan-form extent of these sites. The definition of these sites has led to a comprehensive understanding of the archaeological landscape within the receiving environment. It has enabled a considered strategy for the preservation in situ and protection of significant archaeological remains to be put in place in a series of linked archaeological parks open space areas which include interpretative signage. The archaeological sites/areas identified have been added to the statutory Record of Monuments and Places (RMP) (Figure 15.7).

Given the scale and significance of the discoveries within the LAP lands, a Conservation and Management Plan (Courtney, 2010) was undertaken on behalf of Fingal County Council. The plan outlined the historical and cultural significance of the LAP lands at Oldtown-Mooretown. It recognises the subsurface nature of the newly identified sites and features, and that any future development layout should support their identity.

The Oldtown Mooretown Local Area Plan (2010-2016 as extended to July 2020) focused on incorporating linkages and connectivity objectives, in addition to key opportunities and constraints identified. As this LAP is now expired, Fingal County Development Plan 2023-2029, in addition to national policies and objectives, inform the development framework proposals, including proposed density, approach to archaeology, open space considerations, and sustainable drainage strategies.

15.2.2 Relevant Guidelines, Policy and Legislation

The study was informed by relevant legislation, guidelines, policy and advice notes, as listed below and in the references, Section 15.13. Relevant extracts from the City Development Plan are contained in **Appendix 15.4** of this EIAR.

- Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 1999;
- Code of Practice for Archaeology agreed between the Minister for Arts, Heritage, Regional, Rural and Gaeltacht Affairs and Transport Infrastructure Ireland (TII) (TII 2017);
- Convention for the Protection of the Architectural Heritage of Europe (ratified by Ireland 1997), 'Granada Convention' (Council of Europe 1985);
- European Convention on the Protection of the Archaeological Heritage (ratified by Ireland 1992), 'Valetta Convention' (Council of Europe 1992);
- Framework and Principles for the Protection of the Archaeological Heritage (Department of Arts, Heritage, Gaeltacht and the Islands (DAHG) 1999);
- Framework Convention on the Value of Cultural Heritage for Society, 'Faro Convention' (Council of Europe 2005);
- Guidance and Toolkit for Impact Assessments in a World Heritage Context (United Nations Educational, Scientific and Cultural Organisation (UNESCO) 2022);
- Guidance on Heritage Impact Assessments for Cultural World Heritage Properties (International Council on Monuments and Sites (ICOMOS) 2011);
- Guidelines for Cultural Heritage Impact Assessment of TII National Road and Greenway Projects (hereafter referred to as TII Guidelines) (TII 2024);
- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA 2022);
- Heritage Act, 1995;
- Historic and Archaeological Heritage and Miscellaneous Provisions Act 2023. This Act was enacted in October 2023 and while this Act is now law. The Minister for Housing, Local Government and Heritage commenced certain provisions in May 2024 (S.I. No. 252/2024), however until the Act is fully commenced, the National Monuments Acts have therefore not yet been repealed and remain in force;
- Historic Landscape Characterisation in Ireland: Best Practice Guidance (The Heritage Council 2013);
- International Cultural Tourism Charter (ICOMOS 1999);
- National Landscape Strategy for Ireland 2015-2025 (DHLGH 2015);
- National Monuments Act, as amended, 1930 to 2014;
- Planning and Development Act 2000 to 2017;
- Planning and Development Act 2024;
- The Setting of Heritage Assets, Historic Environment Good Practice Advice in Planning Note 3 (Second Edition) (Historic England 2017);
- UNESCO World Heritage Convention, 1972; and
- Xi'an Declaration on the Conservation of the Setting of Heritage Structures, Sites and Areas (ICOMOS 2005).

15.2.3 Assessment Criteria

The assessment of the likely significant effects on the environment resulting from the construction and/or operation of the Proposed Development relies on a combination of qualitative and quantitative assessment. The methodology has been designed so a full understanding of the potential effects on the character of the historic landscape can be assessed. A detailed archaeological and historical background has been included which describes the character of the immediate and wider historic landscape, as well as the individual heritage assets, and highlights the potential to reveal subsurface features. The methodology used is based on the Environmental Protection Agency (EPA) Guidelines (2022), and both direct physical effects, as well as impacts on the setting of individual heritage assets, have been assessed.

The assessment has regard to the EPA assessment criteria (EPA 2022) and to the TII Guidelines (TII 2024) (Appendix 15.2 includes the criteria for the assessment of effect significance). Archaeological heritage sites are a non-renewable resource, and such assets are generally considered to be location sensitive. In this context, any change to their environment, such as construction activity and ground disturbance works, could adversely affect these sites.

Cultural heritage assets/landscapes are considered to be a non-renewable resource and location sensitive. In this context, any change to their environment, such as construction activity and ground disturbance works, could affect these sites. The methodology which will be applied at the EIAR phase is based on the EPA Guidelines (2022), and both direct physical effects, as well as impacts to the setting of individual heritage assets, will be assessed. The likely significance of all impacts is determined in consideration of the magnitude of the impact and the baseline rating upon which the impact has an effect (i.e. the sensitivity or value of the cultural heritage asset). Having assessed the magnitude of impact with respect to the sensitivity/value of the asset, the overall significance of the effect will then classified as Imperceptible, Not Significant, Slight, Moderate, Significant, Very Significant, or Profound.

Cultural heritage is a broad term that includes a wide range of tangible and intangible cultural considerations. It encompasses aspects of archaeology and architecture and is expressed in the physical landscape as well as in non -physical ways. Cultural heritage can relate to settlements, former designed landscapes, building and structures, as well as folklore, townland and place names, historical events and traditions. Archaeological sites that are afforded protection as Recorded Monuments are regarded as being of high importance. Cultural heritage sites with upstanding features which are not afforded protection under the above criteria are considered to be of medium importance. The assessment methodology is set out fully in Appendix 15.2 of this EIAR.

Ongoing interaction with the wider EIAR team took place, in particular the landscape architects, as well as the engineering design team for the Proposed Scheme. This facilitated an interdisciplinary approach for the assessment of archaeology.

Potential impacts on the receiving archaeological and cultural heritage environment can be described as direct physical impacts, indirect physical impacts, and impacts on setting (i.e. the surroundings in which an archaeological heritage asset can be experienced; Historic England 2017).

Direct physical impacts are those development activities that directly cause damage to the fabric of an archaeological heritage asset. Typically, these activities are related to construction works.

Indirect physical impacts are those processes, triggered by development activity, that lead to the degradation of archaeological heritage assets (e.g. dewatering, which would affect organic archaeological material in water-logged deposits).

Impacts on the setting of archaeological assets describe how the presence of a development changes the surroundings of an asset in such a way that it affects (positively or negatively) the heritage significance of that asset. Visual impacts are most commonly encountered. Such impacts may be encountered at all stages in the life cycle of a development, but they are only likely to be considered significant during the prolonged operational life of the development.

15.3 Baseline Environment

15.3.1 Archaeological and Historical Background

15.3.1.1 Introduction

To produce a comprehensive picture of the archaeological remains within the current planning application area and the overall Mooreotown lands, the findings must not be viewed in isolation but considered within the context of an overall landscape perspective for the entire former LAP lands (Figure 15.2, inset). Therefore, the results of investigations carried out in the proposed application areas and the entire LAP area are examined together.

The dominant archaeological periods represented within Mooretown lands are the Bronze Age (2400-500BC), the early medieval (AD 400-1100), the medieval (c. AD 1100-1534) and the early post-medieval (c. AD 1534-1700) periods. This emerging multi-period landscape is described below by time period. It is best understood when read in conjunction with Figure 15.2 which shows field numbers, geophysical survey interpretative results, the new RMP site designations and archaeologically sensitive areas.

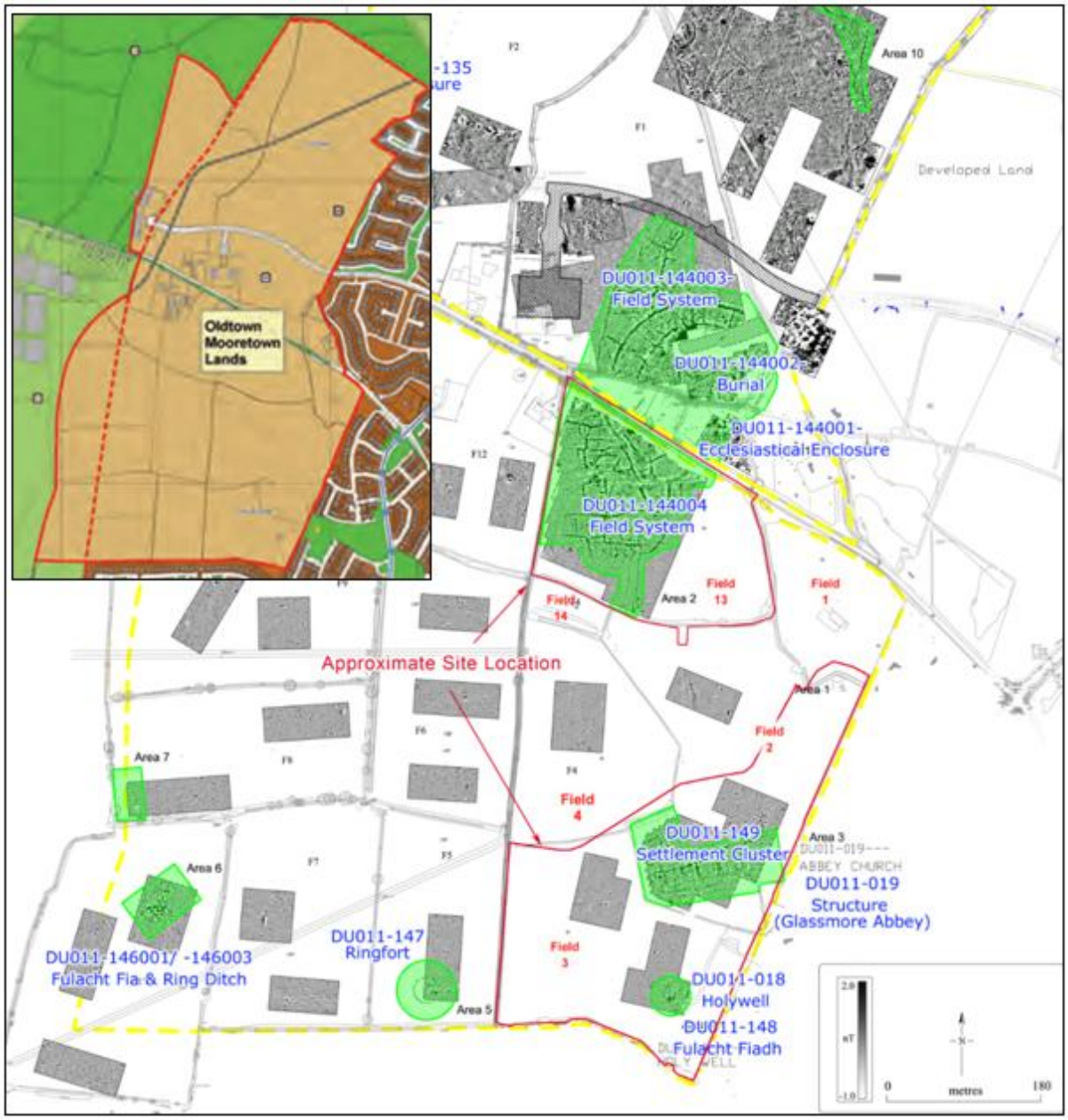

Figure 15.2 Sites identified in the Proposed Development and in its vicinity (inset: the former Oldtown-Mooretown LAP Lands on both sides of the Rathbeale Road)

15.3.1.2 Prehistoric Period

The Bronze Age is represented in the form of two fulachta fia and a ring ditch. The fulachta fia were identified to the south of the Proposed Development in Mooretown during testing: one in Field 3 (Area 4; DU011-148) and a larger one (DU011-146001), overlying a ring-ditch (DU011-146002) and with adjacent evidence for activity, in Field 17 (Area 6) in a neighbouring field outside the development (Figure 15.2). Most recently, excavations in Mooretown (Gannon Lands, west of the subject lands), Area 2, revealed a burnt spread, trough and waterhole dating to the early Bronze Age (Licence no.: 20E0376; McLoughlin 2021). Area 4 comprised two pits, one of which contained Beaker pottery.

Fulachta fiadh ('burnt mounds', 'burnt spreads' or 'cooking sites') sites are made up of three main elements: a hearth in which stones were heated; a trough in which water was heated using the stones;

and a low mound or flatter 'spread' of the stones, burnt and shattered after use. Besides cooking, a variety of functions have been suggested for these sites, including their use as saunas (Buckley 1990; Barfield and Hodder 1987; Brindley 1989–90), for the washing and dyeing of cloth or wool and for tanning/leatherworking (Brindley 1989–90). The majority of fulachta fiadh/burnt mounds/burnt spreads in Ireland that have been dated indicate use during the Mid–Late Bronze Age.

Ring ditches are prehistoric burial sites, dating from the Bronze and Iron Ages (c. 2400BC–400AD). The term refers to the circular—or sometimes annular—shape in plan of an encircling ditch, sometimes surrounded by a low concentric bank ('ring-bank') or enclosing a low interior mound ('ring-barrow'). Ring ditches are usually associated with pits filled with cremated human burial remains. A ring-ditch, approximately 11–12m in diameter, was identified in Field 17 (Area 6, DU011-146003) in Mooretown, apparently beneath part of a fulacht fiadh (although this provisional chronological sequencing of the two may be complicated by subsequent ploughing and re-depositing of the latter's burnt mound deposit).

15.3.1.3 Early Medieval Period and Ecclesiastical Settlement

Early Medieval Ecclesiastical Complex

A significant subsurface early medieval ecclesiastical complex with burials (DU011-144001/002) dating from the first millennium AD was identified in 2003. The complex is centred within the southern half of the Oldtown townland and extends into Mooretown townland on the opposite side of the Rathbeale Road. The northern extent of the site has since been developed as Rathbeale Archaeological Park. The southern portion of the complex, comprising a field system (DU011-144004), lies within the Proposed Development lands and is currently under cultivation as a former potato field.

The following is a short interpretation that fits the presently available evidence for the Oldtown ecclesiastical complex, based on an examination of the aforementioned reports. Uncertainties remain, especially with regard to settlement dates and the nature of different parts of the complex and its annexes. The ecclesiastical complex is a former early medieval religious and settlement centre, inhabited by a Christian monastic community and other lay adherents. The complex survives beneath the topsoil only, as archaeological features, such as ditches and pits, are cut into the sterile natural subsoil. The complex survives as three concentric oval enclosure ditches, with additional settlement within these. The smaller and innermost of the enclosures appear to define a burial ground. The largest, outermost enclosure is 200m in diameter and defines the edge of the main settlement/activity area. The complex is of a form that has other parallels, particularly in North Leinster, such as Nevitt (Harrison D., 2006) or Milverton (DU005-024/01-04), both in Fingal (Nicholls J., 2003), but it is of a significantly larger size than most other such ecclesiastical complexes. The inner enclosure appears to circumscribe the burial ground area, in accordance with contemporary descriptions of such sites (Baker 2003c, 2004). The outer enclosure—at least on its southern side—contained settlement, probably of lay inhabitants. A circular building there suggests a date prior to c. AD 800, consistent with the artefactual dating evidence from the inner enclosure (Baker 2003c). The lack of medieval pottery across the complex also suggests it was abandoned by the late twelfth century. The presence of possible dog whelk shells here is intriguing: such shellfish could be used to produce an expensive, valuable dye. Their presence may indicate the harvesting of such a resource and, consequently, suggest a participation in high-status luxury exchange. Combined with the frequent remains of butchered cattle bone, their presence may even suggest the existence of a scriptorium at the ecclesiastical complex (requiring both vellum and

coloured illumination inks to produced manuscripts), but the present evidence is too scant to confirm this.

Extending northwest and south from this main outer enclosure of the complex are two 'annexes' consisting of cell-like (ditch) enclosures. The southern annex possesses more rectilinear-shaped cells and may represent another area of (secular) settlement that was part of the ecclesiastical complex. The northwest 'annex'/enclosure extends north, in a 'rabbit-ear' shape, from the main complex and possesses a more sharply defined (i.e. deeper, wider) enclosure ditch along much of its exterior. Limited test excavation suggests that the enclosures in this northwest annex represent field systems associated with the complex: possibly some of the larger 'cells' served as fields for arable cultivation, but perhaps others served instead as corral enclosures for livestock (cattle husbandry in particular, was fundamental to the early medieval Irish economy; Frazer 2007).

Test excavation suggests that the south part of the southern annex (within the subject lands), across a narrow paleochannel from the main ecclesiastical complex, may have originated as a separate enclosure that was eventually linked with later ditches to the main complex. No evidence for craft industry such as metalworking was identified. The fills of surrounding ditches here contained some component of butchered animal bone. The precise dating of the southern annex has not been determined, but it seems likely to be contemporary with the main early medieval occupation of the central ecclesiastical complex. A causeway that extends from the southern annex leads only to the watercourse in the existing southern field boundary but not beyond.

Watermill site (RMP DU011-145)

An early medieval–medieval watermill (RMP DU011-145) was identified in lands to the east of the framework plan area along with part of its headrace and its tailrace (Figure 15.7, Field 9, Area 8). This site lies to the west of the Oldtown-Mooretown ecclesiastical centre, along a watercourse. The watermill now lies within a pocket park associated with the development.

Early medieval horizontal watermills were used to grind grain but were also a means through which local potentates could control agricultural production. Their construction, the engineering of the neighbouring landscape (millraces, ponds, etc.) and the sourcing of certain materials (millstones) all required specialist technical knowledge and significant resources. They also required a sizeable labour force, even if the labour was acquired via 'customary' payment-in-kind obligations rather than conscription or payment. As a result of all these factors, mills of the era were invariably under the control of a significant local or regional power, and archaeology has increasingly demonstrated that power was often ecclesiastical. A similar situation also pertained later in the medieval period (twelfth–sixteenth century AD), and certain medieval monasteries—such as the Abbey of St Thomas in Dublin—were well-known for their control of milling activities. In practice, control over this aspect of grain production seems, in most cases to have entailed the literal overseeing of the mill by an ecclesiastical or lay authority, and mills are usually found in close proximity to a monastery, a castle or a similar site. The inference from recent evidence is that the mill, like the enclosure, should be seen as a characteristic component of the early Irish monastery (Mc Erlean and Crothers 2007, 433).

St Cronan's Holy Well and Glasmore Abbey

Within the southeast corner of the Proposed Development lands, there is a holy well (RMP DU011-018) dedicated to St Cronan, the seventh-century-AD saint. Holy Wells are a Christian adaptation of a pre-Christian tradition of sacred springs, which like their pagan predecessors, were often visited at certain

times of the years, and often had a reputation for effecting cures. There is a growing acceptance among archaeologists that holy wells are often indicators of early ecclesiastical settlement. Even though this well is 455m south of the secular activity revealed in Field 13 in Mooretown and some 700m from the ecclesiastical complex at Oldtown it may well have been venerated and linked to this establishment. It is no longer venerated and no longer visible above ground. It was formerly a station well, and local tradition thought of it as a cure for sore eyes and chicken pox (G. Stout, in RMP files at the DAHG). Test-trenching at the site of St Cronan's holy well has identified the precise location of the spring. Beneath more than a metre of peat, a man-made streambed or path of metalled stones (stones pressed into the underlying soil) was found, associated with nineteenth–twentieth-century potsherds and ceramic drainpipe fragments. The route of the metalled streambed/path corresponds with that represented on recent Ordnance Survey maps, indicating that the metalling and all of the overlying peat is recent/modern.

Nearby to St Cronan's well, immediately east of the Proposed Development are the reputed remains of Cronan's early medieval church, Glasmore Abbey (RMP DU011-019). Material evidence suggests that the building is not a church and that it is post-medieval in date. As such, the surviving structure is discussed in the post-medieval section below.

15.3.1.4 Secular Settlement

The ringfort is the most significant component of an early medieval secular settlement. One possible ringfort in Mooretown was identified c.85m west outside of the Proposed Development (DU011-147). The site was identified in Field 5 (Figure 15.2, Area 5), with a north-northeast entrance oriented towards the ecclesiastical complex in Field 13. Ringforts are one of the most widespread archaeological sites surviving in the Irish landscape. They consist of a circular, sub-circular or D-shaped enclosure of 20–50m diameter. The enclosure is typically a deep ditch outside of a bank (of earth, of earth and stone) or a drystone wall. They seem to have functioned as farmsteads and served to protect interior dwellings, their inhabitants and the farm's livestock. Often, they have associated field systems and sometimes underground souterrains. Most that have been robustly dated were occupied between c. 500–1200 AD. They tend to be situated on, or near, particularly good agricultural land for both pasture and tillage, although in the latter case, they often demonstrate a preference for heavier soils than those that are today considered ideal for arable farming. A second ringfort site was identified and excavated in Oldtown lands to the north.

From the newly emerging recorded archaeological evidence to date, apart from the ecclesiastical site in Oldtown, the concentration of early medieval remains and its associated secular annexes and field systems to the ecclesiastical site, a holy well (both within Proposed Development lands), a mill site and a separate ringfort sites serve to demonstrate the significance of this general area and what must have been a thriving community in the latter half of the early medieval period. Excavation evidence suggests, however, that by the 12th century, this area had been abandoned.

15.3.1.5 Medieval period

Revenues for the principal archepiscopal manor at Swords were generated predominantly from agriculture, through a manorial system that extracted payment-in-kind from landless peasants who worked the land, and eventually also from lightly better-off tenants—freemen peasants and lesser nobles both—who leased farms and generally paid their rents in agricultural produce. In some cases, particularly with monastic lands, 'grange' manors were used to administer ecclesiastical lands more

directly. These granges served as agricultural estates centred around a manor farm—often with a nearby mill, sometimes with fishponds—run by a steward with either local labour or lay brothers. Their produce could be used directly or sold. Lands that had formerly been within the purview of some manner of early medieval ecclesiastical power and that were reassigned to a new Anglo-Norman ecclesiastical establishment by the late twelfth century may therefore also contain traces of the later medieval manorial system of tenant farms, granges and farm labourers' residences.

This appears to be the case in Mooretown, where most of the early medieval Oldtown/Mooretown ecclesiastical complex—certainly the southern annex of the complex which lies within the Proposed Development area—seems to have been disused or abandoned by the 12th century. Instead, agricultural production may have been administered from the medieval settlement identified in Field 2, within the application lands (DU011-149, Figure 15.2, Area 3). The archaeology identified there included a fair-sized assemblage of 127 medieval potsherds (dating from the twelfth–fourteenth century, and perhaps slightly later) and an iron riding spur, all of which may indicate the presence of a moderately-well-off tenant farm or grange farm. However, the ground plan of the settlement is more akin to the layout of a small village or hamlet, suggesting it formerly housed peasant labourers. In either case, settlement at the site seems to have persisted, in a reduced capacity, into the sixteenth–seventeenth centuries (on the basis of twenty early post-medieval potsherds also recovered).

15.3.1.6 Post-medieval period

Mooretown is mentioned in the mid-seventeenth-century Civil Survey (1654-56AD). At that time the proprietor of Mooretown was 'Sir Edward Bolton, knight of Brazeil, Protestant'. Several structures, including a house, a barn and eight cabins, are noted within the townland. Furthermore, it is recorded that ornamental ash trees, an orchard and a garden plot were established by this time (after Bolger 2006). The latter features imply that the house was occupied by someone of a middling station, in other words, perhaps not Bolton 'of Brazil' but rather his tenant. In the hearth money roll of 1664, the heads of eight households are listed in 'Murrtowne': Patrick Wales, John Kerrygane, James Gaffney, James Byrne, Christopher Comers, Nicholas Wales, Patrick Crane and John Ash (Anon. 1930–3: 418) all reside in homes with a single hearth, except Patrick Wales who possessed two hearths.

Oldtown is not mentioned by name in the mid-seventeenth century AD Civil Survey, perhaps because it still formed part of the lands of the manor of Swords. Nicholas Barnewall of Turvey, 'Irish Papist', is recorded as the proprietor of 60 acres of arable and meadow, 6 acres of which was 'Bounded East with part of Bath's farme; south with part of ye lands of Mooretowne, West and North [sic—south?] with part of ye lands of Mooretowne' and formed a part 'of ye Mannor of Swords'. The influential Barnewell family of Turvey built a vast estate partly by acquiring and leasing large segments of extensive old Episcopal manors in the parishes of Swords and Lusk. In the Ordnance Survey Names Books of 1843 Oldtown is recorded as 'bounded East by Broadmeadow' and 'of townlands in the Liberties of Swords Parish'. The property of 'Mr Boden Esq.' and 'Earl O'Neill', is described as 'Good Farm steading in the north part of the Townland and small Cott. In the South part being the only house in it' (O'Donovan 1843). The farmstead referred to is shown on each of the Ordnance Survey maps just south of the Broadmeadow River. A long avenue once led off the Rathbeale Road and accessed the farmstead from the south (after Bolger 2006). This appears to confirm the archaeological evidence from Oldtown (Baker 2003c), and now also from Mooretown, that indicates no settlement and little or no activity on the site of the ecclesiastical complex from the twelfth century AD at least.

The reputed remains of Glasmore Abbey church, (RMP DU011-019) lie just southeast and outside of the Mooretown lands. The site is said to have a 7th-century AD origin, but there is some uncertainty as to whether the location is that of Glasmore or another similar site for which the name has been forgotten. The surviving remains of a building (RMP DU011-019) of coursed limestone with dressed quoins set on their narrow sides, stands to a single storey. At the northern end of the structure there is a (reused?) window of fifteenth–sixteenth-century date. The structure is likely to be of seventeenth–eighteenth-century date (i.e., post-medieval), but it is of vernacular construction and not readily dateable by its architectural features. It is traditionally held that the early medieval Glasmore Abbey church was founded by St Cronan before the mid-seventh century AD (he is also said to have been martyred here). However, the building does not at all resemble a church. It could be a folly, except that it is not in the grounds of a large estate. The structure also lacks a fireplace, such as might be expected in a house, although early post-medieval dwellings sometimes lacked proper chimneys and possessed instead a simpler fire hood or even just a central hearth (with either a smokehole or a permeable thatched roof). The structure underwent a programme of conservation in 2001, in which loose stone was collected and inserted into the structure. In 1999 nearby archaeological work relating to the adjacent development revealed nothing of archaeological significance (Swan 1999), in particular no burials or any enclosure, both of which would normally be expected nearby an early medieval–medieval church. The small amount of early post-medieval pottery found in Field 2 (Figure 15.2, Area 3) may be a clue as to the real origin of this building: it could be the surviving part of the house or barn (or a related outbuilding) owned by Edward Bolton in the mid-seventeenth-century, perhaps with some of the cottier 'cabins' mentioned in the Civil Survey built over the medieval settlement in Field 2. Local tradition holds that James II was brought to the nearby townland of Rathbeal while on the way to the Battle of the Boyne (1690). The site of possible fortifications associated with this tradition (DU011-016) is located approximately 200m west of the lands. The site consists of a series of gullies running northeast–southwest across a field. Considerable quantities of cut stone have been exposed during ploughing (after Bolger 2006).

15.3.2 Cartographic Sources

15.3.2.1 Down Survey, Barony Map of Nethercross, 1656

The Down Survey Map of 1656 (Figure 15.3) illustrates the Barony of Nethercross in the County of Dublin. The Proposed Development area is shown in the Parish of Swords in the townland of Mooretown which is noted as 'Moortonne landlord Chief Baron protestant'. No features are indicated within the lands. An extract from the accompanying map terrier names the Baron as the landowner of Mooretown. It is referring to Sir Edward Bolton, Lord Chief Baron of the Exchequer, Knight of Brazeil, who resided at Brazil House to the west of Mooretown. Within the lands held by Bolton at Mooretown, a stone house with a slated roof is recorded, along with a barn and eight small cabins. The house was valued at 200- pounds and included an orchard, a garden plot and a grove of ornamental ash trees. A small shrubby wood is also recorded on the premises, and the land was listed as part of the manor of Swords (Simington 1945, 113). It is possible that this description relates to the building later depicted on Rocque's map in 1760, and also possible that the cabins listed are those identified as a settlement cluster (RMP ref. DU011-149) in the LAP archaeological investigations (Frazer 2008).

Figure 15.3 Down Survey Map c.1656, with approximate site location indicated

15.3.2.2 Rocque's Map of County Dublin, 1760

John Rocque's map of County Dublin in 1760 (Figure 15.4) depicts Mooretown clearly as a cluster of buildings to the southeast of the Proposed Development area. These appear to correlate with the farmstead noted in the geophysical survey and testing of the LAP area. The Rathbeale Road existed by this time and forms the boundary between the townlands of Oldtown and Mooretown. To the north 'Rickenhore', 'Leabstown' and Oldtown are depicted. The Proposed Development area is shown as open fields.

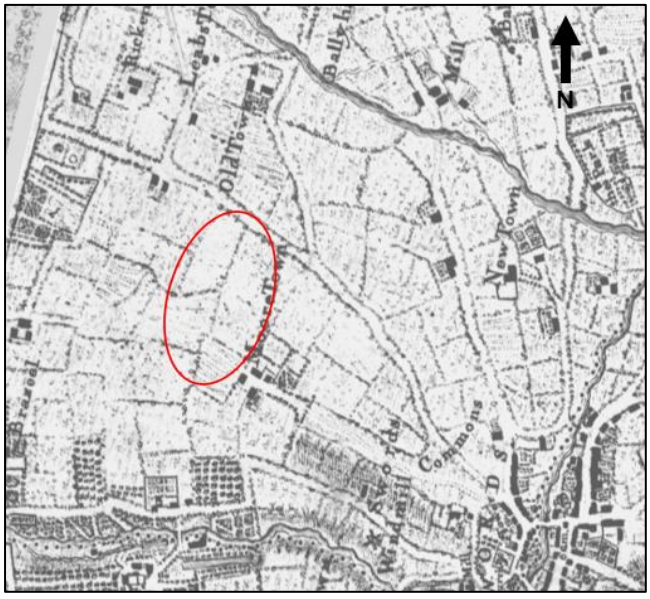

Figure 15.4 Rocque's Map of County of Dublin 1760 and Mooretown lands, with approximate site location indicated.

15.3.2.3 Taylor's Map of County Dublin, 1816 (not shown)

John Taylor records little additional detail on his 1816 map of Swords. Mooretown is noted to the south of 'Holy Studs', the site of burials uncovered in the mid-19th century. The Proposed Development areas are shown as open greenfields. To the west, 'Rabaille' is noted in Rathbeal, and curiously, to the north 'Leabstown' and Oldtown appears to have exchanged locations.

15.3.2.4 First edition Ordnance Survey map, scale 1:10560, 1837 and revised editions

The first edition OS map (Figure 15.5) was the first detailed map of the study area. The Proposed Development lands lie in irregularly shaped open fields in the townland of Mooretown defined by field boundaries and drainage ditches. There are no structures indicated within the Proposed Development area.

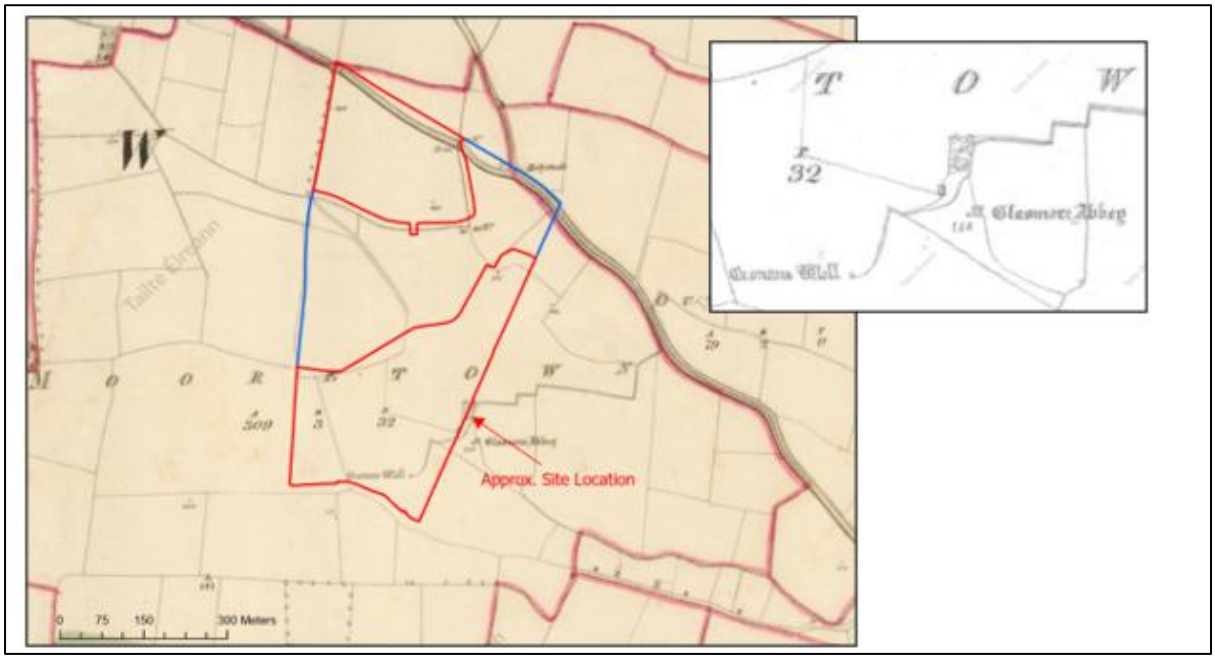

Figure 15.5 Ordnance Survey Map, 1837 showing the Proposed Development land parcel (Inset – details of the well and abbey)

North of the Rathbeale Road at a fork in the road, 'Holy Studs' is labelled. Holy Studs is referred to in The OS Names Books:

> '*I was informed there is the remains of a tumulus or cairn, which was recently destroyed six years since in cutting down the road. Bones were found covered with rolled or beach stones. The remains of Holystud is about 4ft high a segment of a circle in shape and when perfect must have been small*'

(O'Donovan 1843). It is possible, however, that the human remains identified formed part of the Oldtown burial ground.

Cronan's Well is depicted within the southeasternmost field as a spring or circular feature. A watercourse is shown issuing from the spring, extending from the northeast towards an area of ponding or pooling. In this vicinity, a small rectangular structure and an adjoining rectangular area of scrub are indicated, with a possible continuation eastwards as either a watercourse or pathway.

A pathway providing access to the holy well site (DU011-018) is also illustrated. This route runs along the western boundary of the Proposed Development area before continuing northwards to a farmstead located to the north of Rathbeale Road.

Glasmore Abbey is labelled and represented as a square structure. A bridge is shown crossing beneath Rathbeale Road along this route; however, this feature has been replaced in more recent times by a modern culvert.

Except for a more defined watercourses, the Proposed Development area remained the same as depicted in the latter map source on the 1837-46 and 1906 OS Maps (Figure 15.6). The field sub-divisions remain unaltered. By the time of the revised edition, a linear settlement of twelve houses with long property plots was developed on Rathbeale Road (to the northeast of the study area). Glasmore Abbey is indicated as being 'in ruins' and 'St. Cronans Well' is depicted and labelled. The watercourse from the well is not shown.

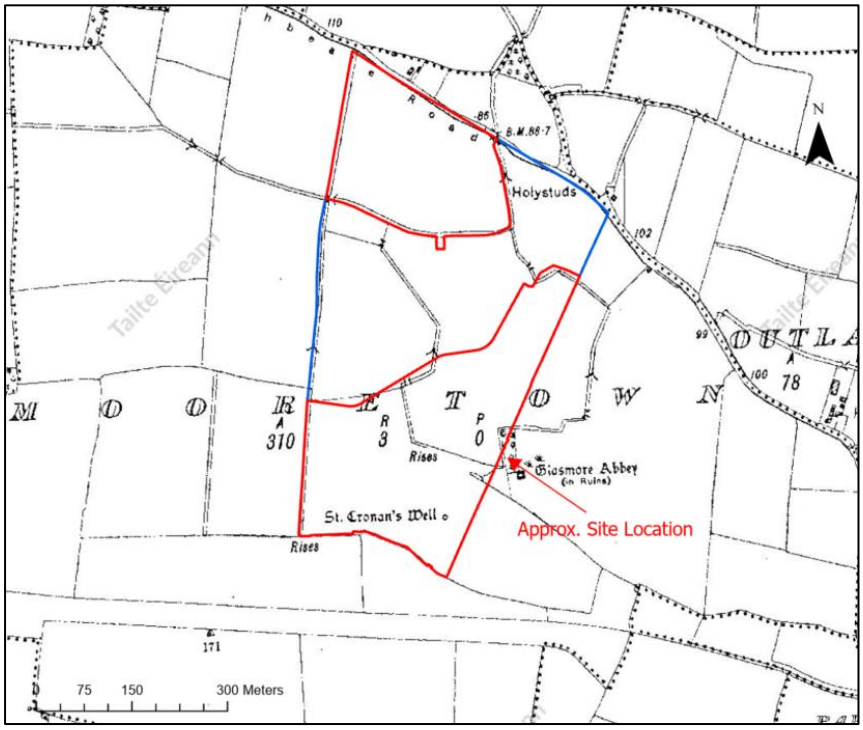

Figure 15.6 Ordnance Survey Map c.1850's, with the overall Mooretown lands and current application area

15.3.3 Townland Names

Townland names/ the toponomy of an area can be a valuable indicator of the type of cultural heritage within the local area. They are an invaluable source of information not only on the topography, land ownership, and land use within the landscape, but also on its history, the archaeological monuments and the folklore. The townland names in this part of Dublin reflect both the Anglo-Norman/English heritage and are dominated by the English language and are derived from family names such as in Mooretown.

15.3.4 Archaeological and Architectural Heritage

15.3.4.1 Record of Monuments and Places (RMP) sites

Prior to the extensive archaeological investigations undertaken as part of the Oldtown-Mooretown LAP, there was a relative paucity of known archaeological sites and features in the townlands of Oldtown and Mooretown. This is a testimony to the fertile soils, which led to an intensive agricultural regime which can denude upstanding earthen features leaving only subsurface features surviving. The features identified have since been added to the Record of Monuments and Places (RMP) record. They are described in detail in the archaeological background in Section 15.3.1 above and indicate a multi-period landscape.

As outlined above the most significant result of the archaeological investigation of the Oldtown-Mooretown LAP area was the identification of a previously unknown extensive early medieval ecclesiastical enclosure complex with burials and field systems (RMP Ref: DU014-144001–144004) dating to the first millennium AD. This significant early medieval ecclesiastical complex is on both sides of Rathbeale Road, the southern side of which is located within the Mooretown lands and the Proposed Development. The northern part of the site has been developed into the Rathbeale Archaeological Park. The scale, preservation and complexity of this ecclesiastical complex underline its importance as a key early medieval centre, with clear implications for archaeological sensitivity and the need for careful management within the Proposed Development area.

Within the Proposed Development lands there are three RMP sites (Table 15.1, Figure 15.7): the above-mentioned field system (DU011-144004), which forms the southern annexe to the medieval ecclesiastical complex; a settlement cluster RMP DU011-149; and a Holy well DU011-018 and adjacent Fulacht fiadh, DU011-148.

Table 15.1 RMP site within the Proposed Development area

RMP / SMR no.	Townland	Description	ITM E	ITM W	Distance
DU011-144004-	Field system	Mooretown (Nethercross By.)	716500	748030	Within the development
DU011-149----	Settlement cluster	Mooretown (Nethercross By.)	716588	747558	Within the development
DU011-148----	Fulacht fia	Mooretown (Nethercross By.)	716560	747423	Within the development
DU011-018----	Ritual site - holy well	Mooretown (Nethercross By.)	716568	747425	Within the development

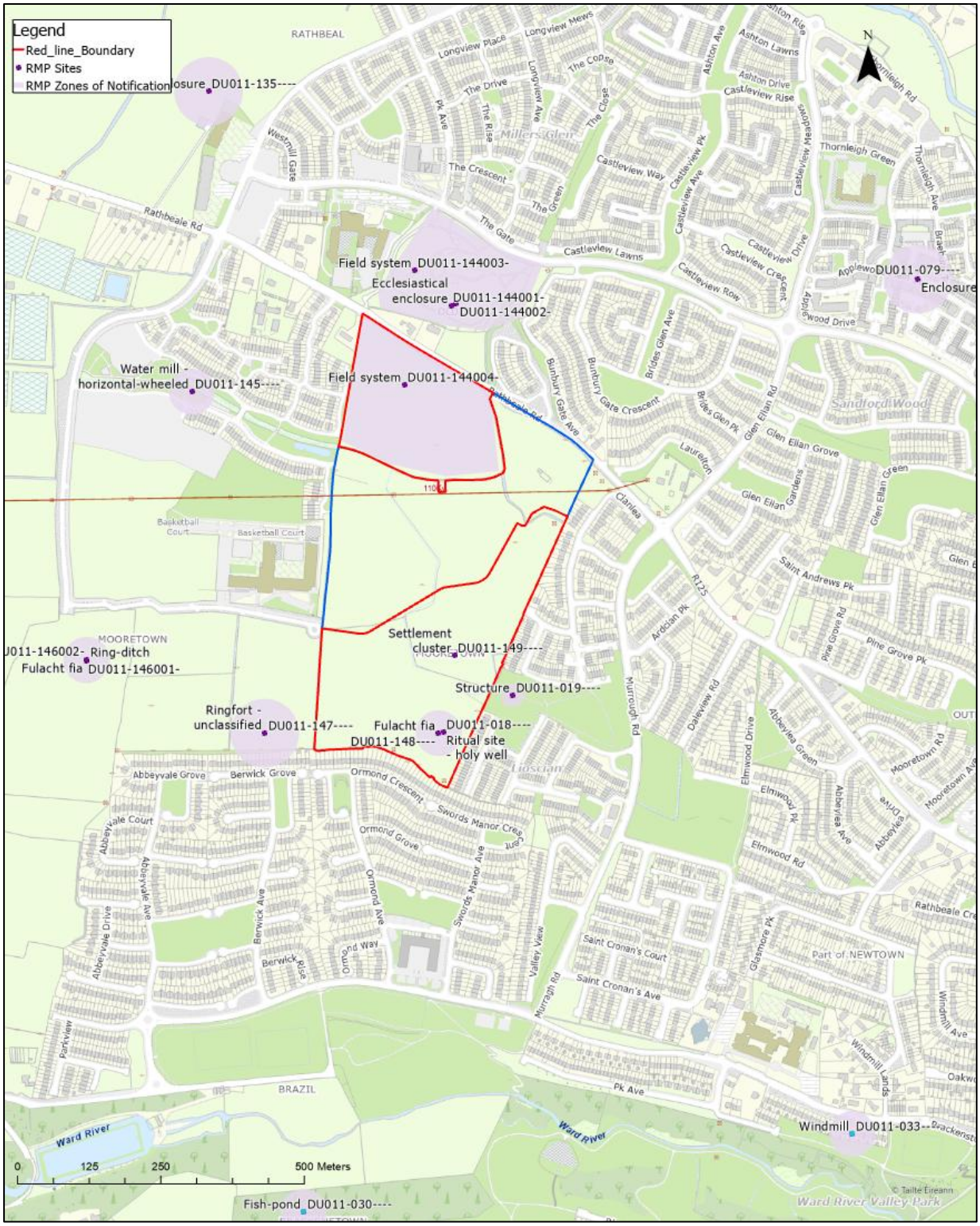

Figure 15.7 RMP site location and Proposed Development redline boundary.

These sites, described as follows will be preserved in situ and incorporated into the Proposed Development as designated archaeological parks. This approach will ensure the long-term protection of the archaeological resource while facilitating public access, interpretation, and integration within the overall landscape design.

RMP DU011-144004, Field System

At the northern end of the site, there is a subsurface ecclesiastical site, the southern continuation of a site that forms the existing Rathbeale Archaeological Park (north of Rathbeale Road). It occupies the highest point of the knoll that falls away to a deep-cutting watercourse. The ecclesiastical complex lies intact entirely below-ground. The complex here at Oldtown – Mooretown follows a similar pattern to contemporary early medieval ecclesiastical sites and presents as three concentric oval enclosures with an accompanying field system. The smaller and innermost of the enclosures appears to define a burial ground, while the largest and outermost enclosure is 200m in diameter and defines the edge of the main settlement/activity area. A circular building within the largest enclosure may represent the remains of an early medieval roundhouse.

Currently the field is deeply cut with machine ridge and furrow cultivation after many years of potato growing but has since been left fallow (Figure 15.8). There is a natural level ridge in the northeast corner of the field (30m OD), where it generally runs level towards the western field boundary; it gradually slopes to the south, and off the ridge, it slopes more steeply again to the east to the watercourse. There is a natural valley/dip in the northern half of the field, referred to previously as a paleochannel running roughly east-west.

Figure 15.8 View looking northwest across Field 13

Only a small area of the main outer enclosure extends across the Rathbeale Road surviving within the subject site. Within the enclosure, remains of a sunken circular hut (about 3.75 m wide) were discovered (Figure 15.9), paved with stones and containing animal bone and shell fragments. This suggests domestic or agricultural occupation, likely by people working or living within the wider monastic settlement.

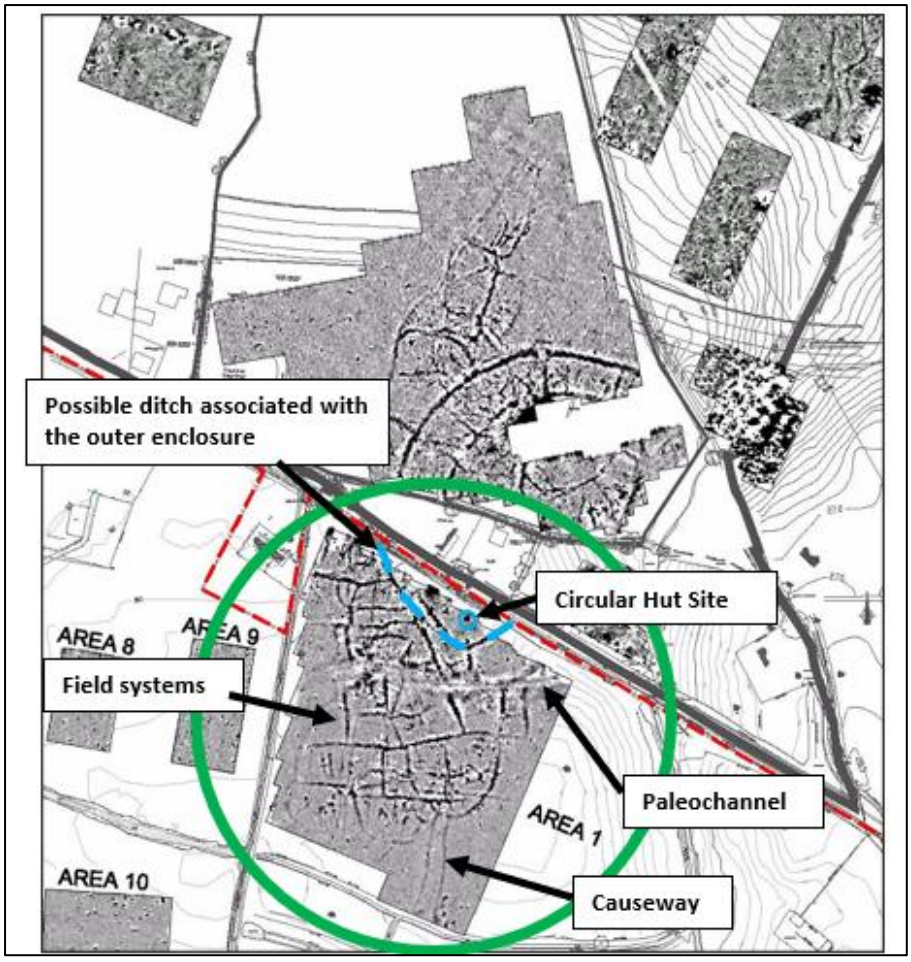

Figure 15.9 RMP DU011-144004, Annotated Geophysical Survey

The southern annex appears to have begun as a separate enclosure—possibly a small settlement or farm area—that was later linked by ditches to the main religious site across a narrow stream (paleochannel- which runs east-west across the site). It has more rectilinear-shaped cells (compared to the annexe to the north of the site in Oldtown) and may represent another area of (secular) settlement that was part of the ecclesiastical complex. Limited test excavation suggests that the enclosures in this annex represent field systems associated with the complex: possibly some of the larger 'cells' served as fields for arable cultivation, but perhaps others served instead as corral enclosures for livestock (cattle husbandry in particular, was fundamental to the early medieval Irish economy).

Test excavations found butchered animal bone, suggesting livestock processing or food preparation, but no evidence of craft or metalworking. A watermill identified to the west of this site (in the neighbouring development) also indicates that growing cereals was important. Finds of shellfish (including dog whelk) are significant: in early medieval Ireland, these were used to make purple dye, a valuable high-status material. Their presence may hint at small-scale dye production or trade connections linked to the monastery's wealth and learning.

A causeway from this annex leads towards a watercourse at the southern boundary, marking an important historic route or access point that could be reflected in modern landscape design. Overall, the southern annex formed part of a self-sufficient early medieval farming landscape connected to the main ecclesiastical centre, dating to before AD 1200 (and likely before AD 800).

Two annexes extend from the main outer enclosure to the northwest and south. The southern annex in Mooretown includes rectilinear cells that may represent another settlement area. The northwest annex extends north and includes wide, deep ditch along its exterior. It is possible that some of the larger cells served as fields for arable cultivation, or perhaps as corral enclosures for cattle husbandry. Cattle were fundamental to the early medieval Irish economy, with the principal value of a cow lying in its ability to provide milk. Irish tact laws note that a 'dry cow' has only half the value of a milk cow. After slaughter, the bone and horn were widely used to produce domestic, personal and craftworking objects.

DU011-149----Settlement cluster

The settlement cluster consists of the remains of medieval (c. AD 1200–1540)–early postmedieval (c. AD 1540–1700) settlement—a farmstead or small village/hamlet (Figure 15.10). Evidence suggests that it postdates the ecclesiastical complex and the complex's southern annex in Oldtown. The archaeology consists of an east northeast–west southwest, L-shaped row of sub-rectangular yards or 'tofts', delimited by boundary ditches/gullys and atop a slight raised platform.

Possible surviving building remains were concentrated in the southern two thirds of the toft (appearing only as a foundation gully or slot trench), with either a yard surface or east northeast–west northwest 'back lane' to the north.

To the south, down a slight slope, an east northeast–west southwest metalled hollow trackway ran parallel to the tofts, with a delimiting field bank on its southern side, opposite the front of the settlement. Deposits of domestic rubbish were identified. The extent of the settlement corresponds closely with the results of the geophysical survey

An assemblage of medieval potsherds (dating from the twelfth–fourteenth century, and perhaps slightly later) and an iron riding spur, all of which may indicate the presence of a moderately-well-off tenant farm or grange farm. However, the ground plan of the settlement is more akin to the layout of a small village or hamlet, suggesting it formerly housed peasant labourers.

Figure 15.10 RMP DU011-149, Settlement Cluster Geophysical Survey Greyscale Results

DU011-018, Ritual site - holy well and DU011-148, Fulacht fia

Within the southeast corner of the Phase 2 lands, there is a holy well (RMP DU011-018) dedicated to St Cronan, the seventh-century-AD saint, it appears on early mapping. Holy Wells are a Christian adaptation of a pre-Christian tradition of sacred springs, which like their pagan predecessors, were often visited at certain times of the years, and often had a reputation for effecting cures. Even though this well is 455m south of the secular activity revealed in Mooretown and some 700m from the ecclesiastical complex at Oldtown it may well have been venerated and linked to this establishment and later used by the settlement in the vicinity of Glasmore Abbey. It is no longer venerated and no longer visible above ground. It was formerly a station well, and local tradition thought of it as a cure for sore eyes and chicken pox.

Test-trenching at the site of St Cronan's holy well has identified the precise location of the spring. Beneath more than a metre of peat, a man-made streambed or path of metalled stones (stones pressed into the underlying soil) was found. The well is presented simply as a spring percolating up through the underlying natural subsoil, near to which a small sub-rectangular pool/pit for collecting the water has been dug (Figure 15.11). The area around the well and pool was metalled with small to medium-sized round, sub-round and irregularly-shaped stones. This metalled surface was pressed directly into the natural subsoil. The area of metalling corresponds to the lines representing a path or waterway on one of the Ordnance Survey maps.

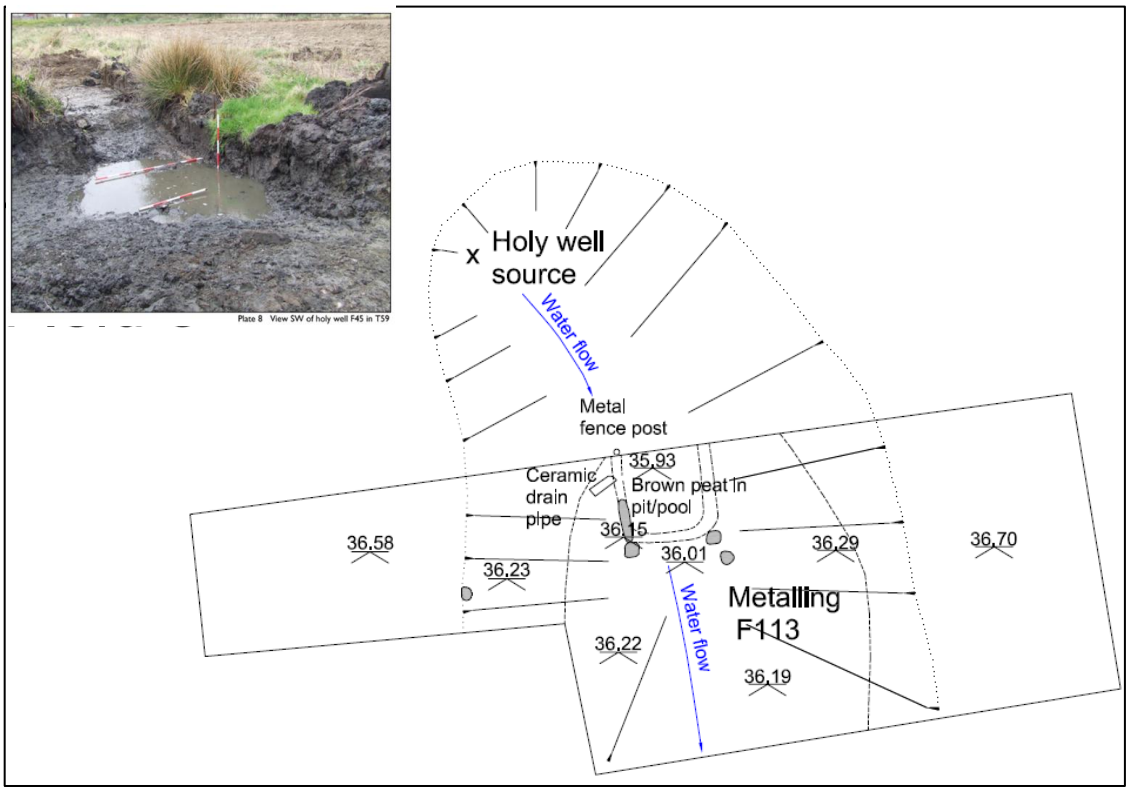

Figure 15.11 Photo of the well during testing and the test excavation plan

A *fulacht fiadh*, of probable prehistoric (Bronze Age, *c.* 2400–500 BC) date, was identified consisting of two burnt spread and a waterlogged trough lined with wicker-work and filled by dark brown peat containing frequent twigs and roots, as well as occasional animal bone (cattle). These sites comprise of a water-filled trough, cut into the ground, beside a mound of burnt stones and charcoal-rich soil,

formed when heated stones were repeatedly used to boil water for cooking, food preparation, or other domestic activities. These sites are commonly found near water sources such as streams or springs and represent short-term or seasonal activity areas rather than permanent settlement.

An assessment of the hydrology and hydrogeology of St Cronan's Well is provided in Chapter 10.

15.3.4.2 Sites within 1km of the Proposed Development

There are several RMP sites within 1km of the Proposed Development boundary (Figure 15.7), reflecting a well-established and multi-period archaeological landscape, none of these sites will be subject to impact by the Proposed Development. Overall, the density and diversity of recorded monuments within the surrounding landscape highlight the archaeological sensitivity of the area, with evidence for prehistoric, early medieval, and post-medieval activity in close proximity to the Proposed Development.

Table 15.2 RMP sites within 1km of the Proposed Development

RMP / SMR no.	Townland	Townland	ITM E	ITM W	Distance
DU011-134----	Enclosure	Rathbeal	715791	748885	987m NW
DU011-135----	Enclosure	Rathbeal	716159	748541	470m NW
DU011-136----	Enclosure	Rathbeal	716134	748791	700m NW
DU011-137----	Field system	Rathbeal	716165	748821	730m NW
DU011-079----	Enclosure	Broadmeadow	717395	748214	745m NE
DU011-144001-	Ecclesiastical enclosure	Oldtown (Nethercross By.)	716582	748167	80m N Rathbeale Archaeological Park
DU011-144002-	Burial	Oldtown (Nethercross By.)	716591	748171	
DU011-144003-	Field system	Oldtown (Nethercross By.)	716518	748229	
DU011-145----	Water mill - horizontal-wheeled	Mooretown (Nethercross By.)	716130	748018	270m W Watermill Park
DU011-146001-	Fulacht fia	Mooretown (Nethercross By.)	715946	747550	400m W
DU011-146002-	Ring-ditch	Mooretown (Nethercross By.)	715947	747551	400m W
DU011-016----	Earthwork	RATHBEAL	715485	747776	890m W
DU011-147----	Ringfort - unclassified	Mooretown (Nethercross By.)	716257	747423	93m W
DU011-019----	Structure	Mooretown (Nethercross By.)	716689	747489	35m E
DU011-033----	Windmill	Windmill Lands	717281	746725	930m SE
DU011-030----	Fish-pond	Brackenstown	716325	746589	806m S

15.3.4.3 Topographical Files

The topographical files in the National Museum of Ireland record a stone mortar (NMI Reg. No 1958.80) from Mooretown townland. The artefact has been variously interpreted as a holy water font possibly associated with Glasmore Abbey or a mortar from the medieval or late medieval period which would correspond with the recent findings in the area.

15.3.4.4 Record of Protected Structures (RPS) Sites and National Inventory of Architectural Heritage (NIAH) sites

The landscape of north Co. Dublin has a rich and varied heritage of historic buildings ranging from grand estate houses and houses of the middle size to more modest vernacular architecture. The area is noted for its tillage and relative prosperity and stability throughout historic times. There are many rural buildings in the county that have served varied purposes—domestic, agricultural, educational, religious and industrial. In particular, the expansions of agriculture and population in the late eighteenth and early nineteenth centuries led to the construction of the familiar 'cottage' in farmyards and along roadsides throughout the countryside (McCullough and Mulvin 1987). The rural countryside is also full of secondary buildings or structures that would have been necessary and important for the daily workings of rural life. They include bridges, mills, schoolhouses, dispensaries, railway stations, creameries and forges or smithy's, typically of eighteenth- and nineteenth-century date.

Scattered throughout the Fingal area is an extensive stock of historic buildings dating to mainly from the 18th to 20th century. These include, for example, cottages, houses, shops, farm complexes, outbuildings, mills, forges and inns. These structures built by local people for local people with local material are known as 'vernacular' buildings and contribute positively to the landscape and help to establish a distinctive character for a particular area.

There are no upstanding structures within the Proposed Development area, and no protected structures are listed in the record of protected structures in the Fingal Development Plan (2023-2029) or in the National Inventory of Architectural Heritage (NIAH) within the bounds of the overall development lands.

There is one protected structure just outside the site, RPS Ref: 370, known locally as Glasmore Abbey and is also recorded in the RMP as DU011-019 and is described in detail in Section 15.3.1.6. It is located 35m to the east of the Mooretown lands within the open space of the Cianlea housing estate. The proposed archaeological parks will have pedestrian links to this site.

Other protected structures that are some distance from the site include Rathbeale Hall (RPS 0338), located over 1km to the west in Rathbeal townland. The town of Swords, located over 1.5km to the southeast, contains a number of protected structures including the Swords Castle, Court House, Carnegie Library, the Old Borough School, Sexton's House, Old Vicarage, St. Columba's Church and St. Columcille's Church.

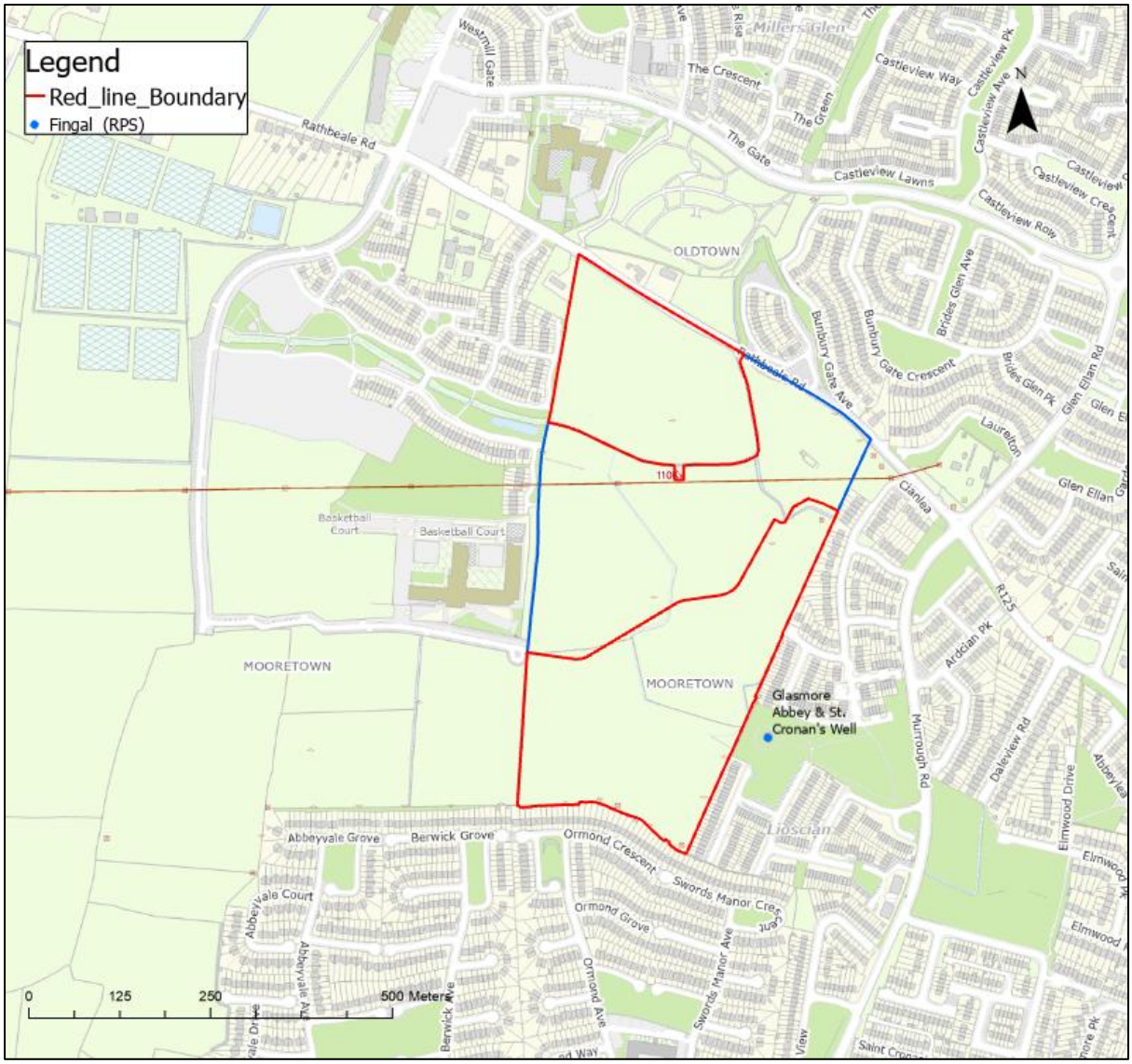

Figure 15.12 RPS site locations

15.3.5 Archaeological Investigations within the Proposed Development

Additional archaeological test excavation was carried out in the northern two fields of the Mooretown lands (Field 1 and Field 13) in 2024. Ten test trenches (T1 to T10) and a small box trench (T1a) were opened across the fields under licence reference 24E0067 (Deery 2024) (Figure 15.13). No additional features of archaeological interest were identified during the testing. Notably the testing demonstrated the veracity of the previous geophysical survey and established the eastern extent of the medieval field system in Field 13.

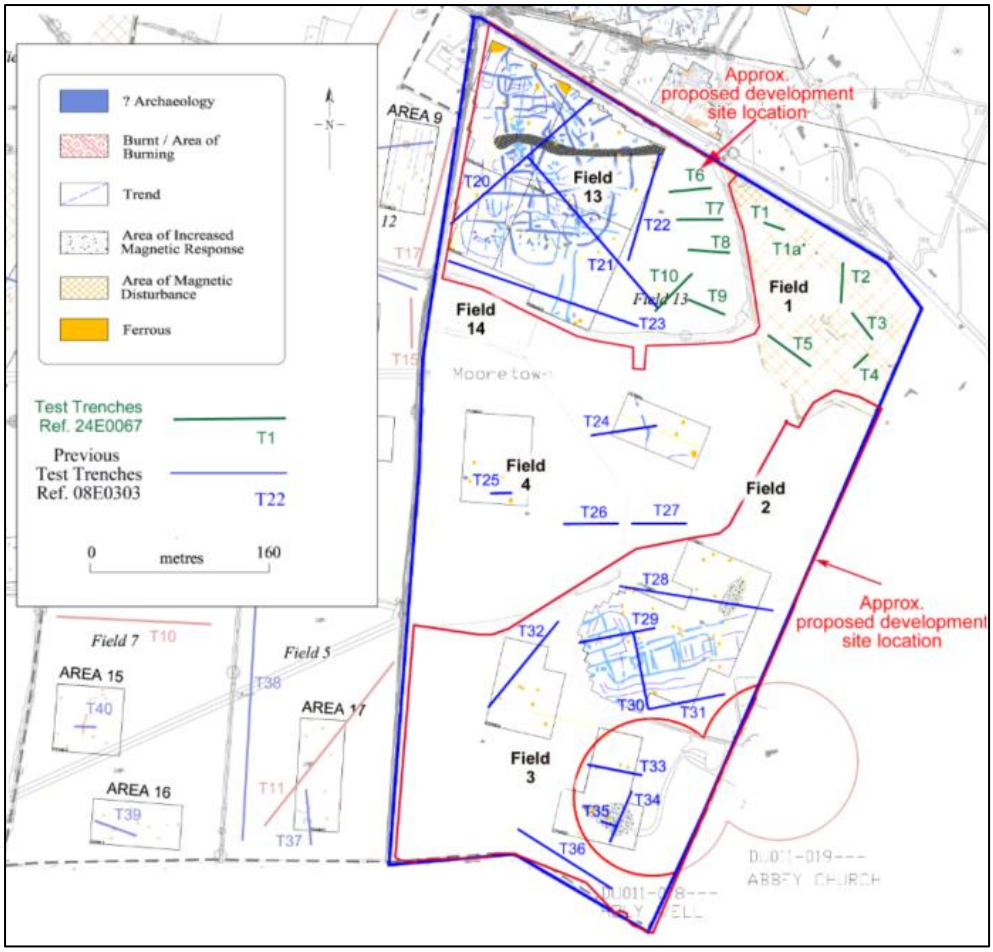

Figure 15.13 Additional test trenches in Field 13 and Field 1 (in Green)

The Mooretown Phase 1 development is at construction stage and all earthmoving works were subject to archaeological monitoring by John Purcell Archaeological Consultancy (Licence 24E1227). As part of the Phase 1 development, topsoil stripping for the northern compound and southern and eastern storage areas, which extended into the Phase 2 lands was also monitored (Figure 15.14).

Nothing of archaeological significance was identified during this work, no archaeological features, finds or artefacts were identified, confirming the reliability of the previous geophysical survey and test excavation results.

Figure 15.14 Areas in Phase 2 lands that have been stripped (After Purcell)

The three designated archaeological parks and their immediate surrounds have not been stripped and remain preserved in situ (Figure 15.15). All remaining unstripped areas of the site will require monitoring.

Figure 15.15 Aerial view showing the extent of topsoil striping that has occurred in the Phase 2 development, the areas shaded in blue comprise the archaeology parks and areas that remain unstripped

15.3.6 Proposed Archaeology Parks

As part of the development strategy the above-mentioned archaeological sites were preserved in situ in open spaces of the proposed Phase 2 development and includes three archaeological parks defined in the former LAP. The definition of these sites has enabled a well-considered preservation strategy that preserves the three key archaeological areas in situ and integrates them into the public open space network within the Proposed Development (Figure 15.16).

- Rathbeale Archaeological Park- Mooretown Section,
- Glasmore Green Archaeological Park, and
- St Cronan's Well Archaeology Park

The landscaping plans for the development of these sites were archaeologically led and adhered to the following principals which was reflected in the development of the Rathbeale Archaeological Park 'Oldtown' section to the north (See Chapter 14 (Landscape and Visual)). The proposed archaeological parks will be developed in accordance with archaeological protection principles aimed at preserving subsurface remains in situ. These principles favour shallow, low-impact construction techniques, minimal ground disturbance, and the careful siting of drainage, lighting and other infrastructure to avoid identified features. The landscape design approach will seek to interpret and reveal the archaeological resource through sensitive design, maintaining existing topography and ensuring a consistent palette of materials, finishes and signage across the three park areas, with reference to Fingal County Council standards and the Oldtown Archaeological Park precedent.

Figure 15.16 Archaeological parks within Phase 2

15.4 Predicted Impacts of the Proposed Development

15.4.1 Do-Nothing Impact

In the absence of the Proposed Development, the archaeological resource within the site would remain unchanged. The known archaeological sites would continue to survive in situ beneath existing ground levels. However, they would remain largely inaccessible and not actively managed or interpreted, resulting in no enhancement of public understanding or appreciation. The do-nothing scenario would therefore result in a neutral impact on the archaeological resource.

As the site is zoned for development, in the absence of the Proposed Development it is likely that a development of a similar nature would be constructed in the future in line with national policy and the development plan objectives. Therefore, the construction and operational phase impacts outlined in this assessment are likely to occur in the future even in the absence of the Proposed Development.

15.4.2 Construction Phase

15.4.2.1 Archaeological Potential

The principal potential impact on archaeology arises from ground disturbance associated with site clearance, topsoil stripping, excavation and construction activities.

Extensive archaeological investigations, including geophysical survey, test excavation, and archaeological monitoring have established a detailed baseline of the cultural heritage potential of the Phase 2 lands. The Proposed Development has been designed to avoid direct impacts on known archaeological sites. This has been achieved through the incorporation of archaeological features into a network of open space areas and archaeological parks, ensuring preservation in situ. This design-led approach represents best practice and significantly reduces the potential for adverse impacts.

Topsoil stripping has already been undertaken across the majority of the development area, with no additional archaeological features or finds identified. This confirms the reliability of the earlier investigations.

Where topsoil stripping has not yet occurred (Figure 15.15), there remains a potential for previously unrecorded archaeological features, deposits or artefacts to survive below ground. This is particularly the case for small-scale or ephemeral features which may not be detectable through geophysical survey. Any such remains, if present, would be directly impacted by groundworks associated with the Proposed Development. This would result in a ***direct, negative, slight, permanent impact*** on the archaeological resource.

There is also a potential risk of indirect or inadvertent impacts to the designated archaeological parks, arising from construction traffic, storage of materials, or encroachment into protected areas in the absence of appropriate controls, this would result in a ***direct, negative, moderate, permanent impact*** on in-situ recorded monuments.

15.4.2.2 Cultural Heritage (Architectural Heritage)

No protected structures or properties recorded in the National Inventory of Architectural Heritage will be impacted by the proposed scheme. In addition, no properties or structures of architectural heritage merit will be directly or indirectly impacted by the Proposed Development area.

There will be ***no impact*** on the architectural heritage environment.

15.4.3 Operational Phase

During the operational phase, no direct impacts on archaeological remains are predicted, as all known sites will be preserved in situ and excluded from development.

The incorporation of archaeological sites into a network of landscaped archaeological parks will ensure their long-term protection. This design-led approach avoids disturbance to the archaeological resource and maintains its integrity within the landscape. In addition, the provision of interpretation and signage will enhance public understanding and appreciation of the archaeological heritage of the area.

The operational phase will therefore result in a ***direct, positive, moderate, long-term impact,*** on the archaeological resource, through both its preservation and active presentation.

15.5 Mitigation Measures

15.5.1 Construction Phase

15.5.1.1 Archaeological Monitoring

The Proposed Development has been designed to avoid direct impacts on known archaeological sites through their incorporation into designated open space areas and archaeological parks. This represents the primary mitigation measure and accords with the principle of preservation in situ.

Archaeological monitoring will take place of any works requiring ground disturbance / excavation, including site preparation works and temporary works where required in the unstripped greenfield areas of the site, this will be carried out under licence to the Department Housing, Local Government and Heritage (DHLGH) and will ensure the full recognition of, and – if required – the proper excavating and recording of all archaeological features, finds or deposits which may lie undisturbed beneath the ground surface.

In the event that previously unrecorded archaeological remains are identified, works will cease in the vicinity, and the National Monuments Service will be consulted to determine appropriate mitigation (e.g. preservation in situ or preservation by record). Provision must be made to allow for and fund any archaeological work that may be needed if any remains should be noted during ground preparation works or construction.

15.5.1.2 Preservation in -situ

Using the same strategy for the development of the Oldtown Section of the Rathbeale Archaeological Park, prior to the landscaping of the parks, the following mitigation measures will be put in place:

- Prior to the commencement of development, full details in relation to the construction methodology for the archaeology parks will be provided to the licenced site archaeologist. An Archaeological Impact Assessment will be prepared, and an archaeological method statement will be developed and submitted to the DHLGH for approval.
- All known archaeological sites and designated archaeological park areas will be clearly demarcated on construction drawings and protected by appropriate fencing and exclusion zones prior to the commencement of construction works
- These exclusion zones will be maintained for the duration of construction and will prohibit all construction-related activities, including machinery movement, material storage and access
- All construction personnel will be made aware of the archaeological sensitivity of the site through site inductions and toolbox talks.
- Prior approval of any activity within the zone should be sought from the site archaeologist.

A programme of integrated heritage signage will be incorporated within the proposed archaeological parks. This signage will interpret the extent, character and significance of the archaeological resource in a clear and accessible manner, thereby enhancing public understanding and appreciation of the site. The signage strategy will be developed in accordance with the approach successfully implemented at the Oldtown Archaeological Park, ensuring consistency in design, materials and interpretive content.

15.5.1.3 General

Any works at or in relation to a recorded monument requires two months' notice to the NMS (DHLGH) under Section 12 of the National Monuments (Amendment) Act, 1994.

All archaeological work will be carried out under licence to the NMS (DHLGH) subject to their approval of a licence application and method statement. Licences can take up to 4 weeks to procure.

Fingal County Council will fund any archaeological work that may take place during construction of the Proposed Development and the preparation of any reports arising from that work. Adequate financial provision will also be made available for post-excavation work, the conservation of artefacts (if any) and the publication of any archaeological excavation results as required. All mitigation practices will be carried out in accordance with current best practice.

All archaeological work will be carried out in accordance with the relevant local and national policies and best practice guidelines as outlined in Section 15.2 and in particular the Department's Framework and Principles for the Protection of the Archaeological Heritage (1999) and Policy and Guidelines on Archaeological Excavation (1999).

15.5.2 Operational Phase

No additional mitigation measures are required during the operational phase, as all known archaeological sites will be preserved in situ.

The archaeological parks and open space strategy will provide ongoing protection for the resource. The inclusion of interpretation and signage will further enhance the cultural value of the sites and ensure their integration into the development.

15.6 Residual Impacts

15.6.1 Construction Phase

While there remains a possibility that previously unknown archaeological features may be identified and recorded during construction, the proposed monitoring strategy will ensure that any such remains are appropriately managed in accordance with best practice. Following the implementation of the proposed mitigation measures, the residual impact on archaeology during the construction phase will therefore be reduced to a ***direct, negative, slight, long-term impact***, reflecting the preservation by record of any previously unknown archaeological remains. The results of the excavations will add to the body of knowledge, resulting in a reduction of the likely effects from for any newly discovered archaeological sites or features. The archaeological knowledge gained from the site will be incorporated into the heritage signage of the development.

15.6.2 Operational Phase

The operational phase will result in a ***direct, positive, moderate long-term impact*** on the archaeological resource. The preservation of archaeological sites in situ, combined with their integration into a structured open space network and the provision of interpretation, will ensure both the long term protection of the resource and its accessibility to the public.

15.7 Monitoring

Archaeological issues will be resolved at the pre-construction and construction stages of the development. This will include any necessary archaeological monitoring and inspection work required.

15.8 Reinstatement

There is no reinstatement measures required for cultural heritage

15.9 Interactions

The Proposed Development has been assessed in conjunction with other environmental factors presented in this EIAR, in accordance with the EPA Guidelines (2022).

The principal interactions relevant to archaeology and cultural heritage are as follows:

15.9.1 Chapter 7 - Population and Human Health

The provision of accessible archaeological parks and interpretative signage will provide educational and amenity benefits, contributing positively to community well-being and sense of place. This will result in a ***direct, positive, moderate, long-term impact*** on population and human health.

15.9.2 Chapter 10 - Hydrology and Hydrogeology

Changes to groundwater levels or drainage patterns in the vicinity of have the potential to indirectly affect archaeological remains, particularly any waterlogged deposits. Chapter 10 (Hydrology and Hydrogeology) confirms that St Cronan's Well is fed by shallow, localised perched groundwater within glacial tills, with no connection to a regionally significant aquifer.

Site investigations indicate that no significant or sustained dewatering will be required, and no groundwater abstraction or interception drainage is proposed. The design retains the well within open space, avoids works in its vicinity, and adopts a SuDS-led drainage strategy that does not interfere with shallow groundwater pathways.

On this basis, and subject to the embedded mitigation measures, the Proposed Development will not alter the groundwater regime feeding the well, which is expected to continue to function as existing. Accordingly, ***no significant adverse interaction*** with cultural heritage is predicted.

15.9.3 Chapter 14 - Landscape and Visual

The incorporation of archaeological sites into landscaped open spaces represents a positive interaction, enhancing both the setting and legibility of the archaeological resource within the wider development.

Overall, no significant adverse interactions are predicted. Beneficial interactions arise through the integration of archaeological heritage into the design and use of the development which results in a ***direct, positive, moderate, long-term impact.***

15.10 Indirect and/or Secondary Impacts

There are no additional indirect or secondary impacts to cultural heritage.

15.11 Cumulative Impacts

The cumulative impact assessment considers the Proposed Development in combination with other existing, permitted and Proposed Developments within the wider area, including the phased development of the Mooretown lands. A description of relevant proposed and permitted developments within the vicinity of the Mooretown lands is provided in **Error! Reference source not found.** (Cumulative Impacts), of this EIAR.

Extensive archaeological investigations have been carried out across the wider lands as part of the former Local Area Plan. These investigations have identified a coherent archaeological landscape and have informed a strategic approach to its management.

The Proposed Development forms part of this coordinated approach, whereby significant archaeological sites are preserved in situ and incorporated into a network of archaeological parks and open spaces across the wider development lands.

As a result, cumulative impacts on archaeological heritage are not negative. Instead, the phased development of the lands has facilitated:

- a comprehensive understanding of the archaeological resource
- a consistent strategy of avoidance and preservation in situ
- the integration of archaeological sites into a connected open space framework

Accordingly, the cumulative impact of the Proposed Development, in combination with other phases, will result in a ***positive, long-term and cumulative*** enhancement of the archaeological landscape, rather than its incremental loss.

15.12 Difficulties Encountered

There were no difficulties encountered in the assessment process or in the compilation of the EIAR chapter.

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16 Microclimate – Daylight and Sunlight

16.1 Introduction

This chapter assesses the potential effect the Proposed Development may have on the provision of daylight and sunlight to the receiving environment. To provide a full review of all potential effects an assessment of the proposed multi-unit dwellings and amenity areas was also conducted, and the summary results of this analysis is included in this chapter. The full details of the scheme's assessment can be found in the supporting Daylight, Sunlight, and Overshadowing Report (Model Works, 2026).

Model Works was commissioned to carry out a Daylight, Sunlight and Overshadowing assessment on the proposed scheme. Specialist 3D software (Waldram Tools for Revit, Version 7) was used to analyse the proposal and receiving environment based on the 3D models, survey information and design details provided to Model Works by the project architects and other qualified professionals on the design team.

16.1.1 Qualifications and Expertise

This chapter has been compiled by Barry Murphy, Managing Director of Model Works, he holds a B Eng (hons) in Mechanical Engineering, is a member of Institute of Engineers Ireland, and has 20 years' experience in the industry.

16.2 Method

Understanding Direct and Diffuse Daylight

Daylight is generally taken to be the totality of visible radiation originating from the sky, and when visible, the sun, during the hours of daytime. The source of all daylight is in fact the sun. Scattering of sunlight in the atmosphere by air, water vapour, dust, and so on gives the sky the appearance of a self-luminous hemispherical source of light. Sunlight is commonly referred to as direct light since it appears to originate from a small source and can be highly luminous, casting sharp shadows. The sky, however, is an extended source of illumination that casts only soft shadows, and so skylight is commonly referred to as diffuse light.

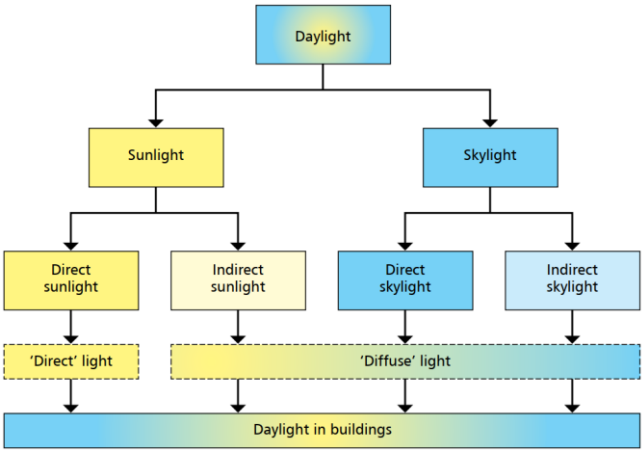

Figure 16.1 Contributions to Daylight in Buildings

16.2.1 Relevant Planning Policies and Guides Used in the Assessment

16.2.1.1 BRE Guide 2022

The BRE (Building Research Establishment) Guide to Daylight and Sunlight was first published in 1991 and has become the primary reference document for local authorities in Ireland and the UK for the assessment of Daylight and Sunlight. The 2022 edition is the third and most recent edition of the guide.

The BRE Guide's summary states:

"This guide gives advice on site layout planning to achieve good sunlighting and daylighting, both within buildings and in the open spaces between them. It is intended to be used in conjunction with the interior daylight recommendations for new buildings in the British Standard Daylight in buildings, BS EN 17037. It contains guidance on site layout to provide good natural lighting within a new development; safeguarding of daylight and sunlight within existing buildings nearby; and the protection of daylighting of adjoining land for future development." (*Summary*)

It also notes that it should be interpreted with a degree of flexibility, depending on the specifics of the development being assessed.

"The guide is intended for building designers and their clients, consultants, and planning officials. The advice given here is not mandatory and the guide should not be seen as an instrument of planning policy; its aim is to help rather than constrain the designer. Although it gives numerical guidelines, these should be interpreted flexibly since natural lighting is only one of many factors in site layout design. In special circumstances the developer or planning authority may wish to use different target values." (*1.6*)

The introduction also states that:

"The guidance here is intended for use in the United Kingdom and in the Republic of Ireland, though recommendations in the Irish Standard IS EN 17037 may vary from those in BS EN 17037." (*1.7*)

The BRE Guide will be the primary reference document used in this report.

16.2.1.2 Sustainable Urban Housing: Design Standards for New Apartments July 2023

This document was prepared by the Department of Housing, Local Government and Heritage, and provides guidance to planners in relation to the built environment including Daylight and Sunlight.

"Planning authorities should avail of appropriate expert advice where necessary and have regard to quantitative performance approaches to daylight provision outlined in guides like A New European Standard for Daylighting in Buildings IS EN17037:2018, UK National Annex BS EN17037:2019 and the associated BRE Guide 209 2022 Edition (June 2022), or any relevant future standards or guidance specific to the Irish context, when undertaken by development proposers which offer the capability to satisfy minimum standards of daylight provision." (*6.6*)

And

"Where an applicant cannot fully meet all of the requirements of the daylight provisions above, this must be clearly identified and a rationale for any alternative, compensatory design solutions must be set out, which planning authorities should apply their discretion in accepting taking account of its assessment of specifics. This may arise due to design constraints associated with the site or location and the balancing of that assessment against the desirability of achieving wider planning objectives. Such objectives might

include securing comprehensive urban regeneration and or an effective urban design and streetscape solution." (*6.7*)

16.2.1.3 Sustainable Residential Development and Compact Settlements Guidelines for Planning Authorities (2024)

These guidelines set national planning policy and guidance in relation to the planning and development of urban and rural settlements, with a focus on sustainable residential development and the creation of compact settlements.

In relation to daylight provision, it states:

"In cases where a technical assessment of daylight performance is considered by the planning authority to be necessary regard should be had to quantitative performance approaches to daylight provision outlined in guides like A New European Standard for Daylighting in Buildings IS EN17037:2018, UK National Annex BS EN17037:2019 and the associated BRE Guide 209 2022 Edition (June 2022), or any relevant future standards or guidance specific to the Irish context." (*5.3.7*)

and

"In drawing conclusions in relation to daylight performance, planning authorities must weigh up the overall quality of the design and layout of the scheme and the measures proposed to maximise daylight provision, against the location of the site and the general presumption in favour of increased scales of urban residential development. Poor performance may arise due to design constraints associated with the site or location and there is a need to balance 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." (*5.3.7*)

16.2.1.4 Fingal Development Plan 2023-2029

In relation to Daylight and Sunlight, it states:

"All applications for residential development must ensure that the layout and design of individual units and accompanying public realms are designed in a manner which maximises daylight and sunlight. A Daylight and Sunlight Assessment may be necessary to assess the impacts of the Proposed Development on surrounding properties and amenity areas outside the site boundaries of an application and in order to assess the likely daylight and sunlight reaching proposed units and associated private, communal and public open spaces."

It also states that:

"Development shall be guided by the principles of Site Layout Planning for Daylight and Sunlight, A Guide to Good Practice – (*Building Research Establishment Report*) *2011 and/or any updated guidance."*

As the 2011 BRE guide has now been withdrawn, the current 2022 guide will be used for this report.

16.2.1.5 Summary of Standards and Guides

Having reviewed all the applicable standards and guidelines it is Model Works' professional opinion that the assessment for daylight, sunlight and overshadowing be carried out in accordance with the BRE Guidelines (2022) which incorporate the target values as set out in BS EN 17037 National Annex.

16.2.2 Methodology

There are three assessments that must be made to determine if a proposal adversely affects the daylight and sunlight to the receiving environment.

- Daylight access to existing accommodation
- Sunlight access to existing accommodation
- Sunlight access to neighbouring amenity areas.

In addition to the above study of the impact of the Proposed Development, a daylight and sunlight assessment of the proposed scheme was also conducted. This assessment comprised three elements:

- Daylight access to proposed accommodation
- Sunlight access to proposed accommodation
- Sunlight access to proposed amenity areas

A 3D model of the Proposed Development and of the receiving environment was created. This model was then analysed using specialist 3D software (Waldram Tools for Revit, Version 7) to determine the potential impacts of the scheme on the receiving environment.

16.2.2.1 Identifying Sensitive Receptors in the Receiving Environment

The primary purpose of a daylight, sunlight and overshadowing assessment is to determine the likely loss of light to adjacent buildings and amenity spaces resulting from the construction of the Proposed Development.

Therefore, in this case, the Proposed Development is identified as the potential source of impact. The sensitive receptors identified for this study, as per the BRE Guidelines are:

- Windows to habitable rooms facing the site where the occupants have a reasonable expectation of daylight; and
- Gardens and open spaces on adjacent properties to the Proposed Development, excluding public footpaths, front gardens and car parks.

16.2.2.2 Loss of Daylight to Existing Buildings

Assessment Method

The amount of skylight falling on a vertical wall or window can be quantified as the Vertical Sky Component (VSC). The VSC for existing buildings is the illuminance on the outside of a window, divided by the illuminance falling on an unobstructed horizontal plane, under overcast sky conditions. The standard Commission Internationale d'Eclairage (CIE) overcast sky is used, and the ratio is usually expressed as a percentage. The maximum value is almost 40% for a completely unobstructed vertical wall and the reference point is in the external plane of the window wall.

"Loss of light to existing windows need not be analysed if the distance of each part of the new development from the existing window is three or more times its height above the centre of the existing window. In these cases the loss of light will be small." (*BRE Guide: 2.2.4*) Refer to Figure 16.3 below.

"Measure the angle to the horizontal subtended by the new development at the level of the centre of the lowest window. If this angle is less than 25° for the whole of the development then it is unlikely to have a substantial effect on the diffuse skylight enjoyed by the existing building. If, for any part of the new development, this angle is more than 25°, a more detailed check is needed to find the loss of skylight to the existing building." (*BRE Guide: 2.2.5*) Refer to Figure 16.4 *below.*

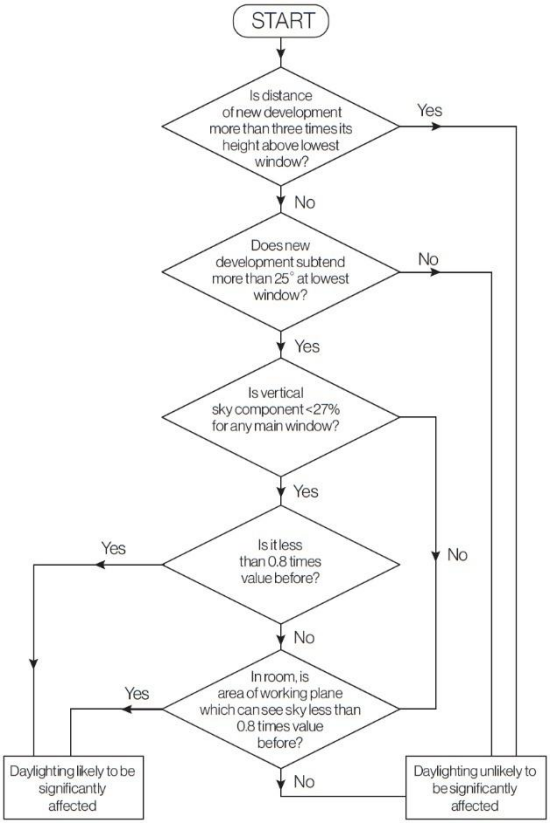

Figure 16.2 Decision chart: diffuse daylight in existing buildings

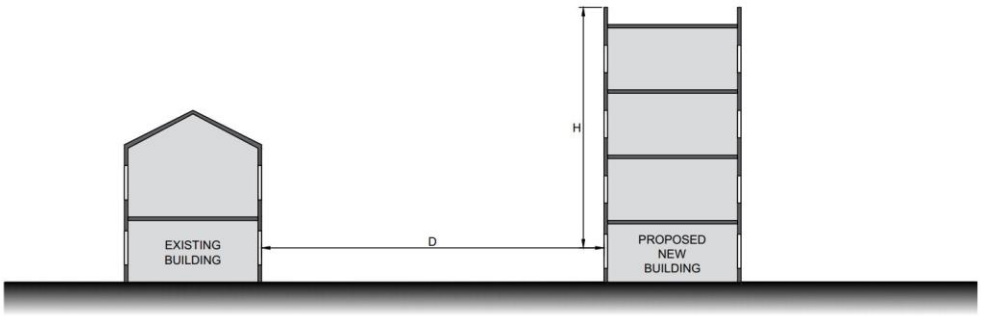

Figure 16.3 Distance test for Daylight Impact to Existing Buildings (Is D > 3xH)

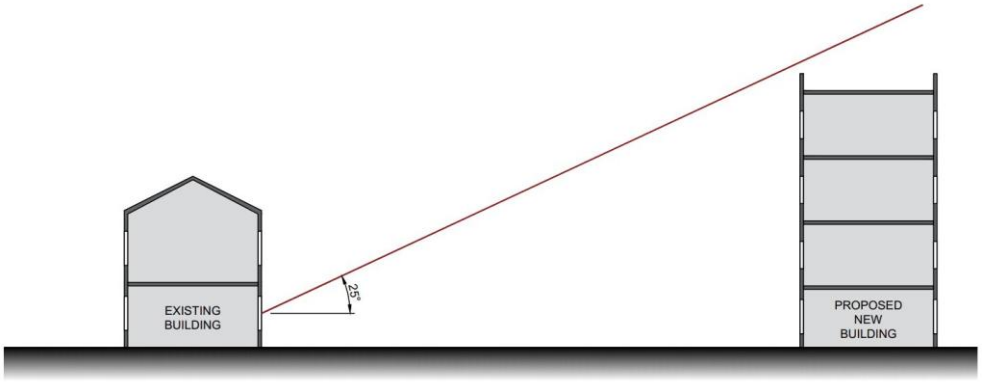

Figure 16.4 25° Angle test for Daylight Impact to Existing Buildings

Weighted Average VSC

"If there would be a significant loss of light to the main window but the room also has one or more smaller windows, an overall VSC may be derived by weighting each VSC element in accordance with the proportion of the total glazing area represented by its window. For example, a room has a main window of area 2 m2 whose VSC would drop from 24% to 18%, 0.75 times the value before. However, it also has a smaller window, area 1 m2, for which the VSC would be unchanged at 30%. The area weighted VSC 'before' would be (24x2+30)/3 = 26%. 'After' it would be (18x2+30)/3 = 22%, 0.85 times the value 'before'. Thus, loss of VSC to the room as a whole would meet the guideline." (*BRE Guide: 2.2.8*)

Trees

While the potential impact of existing trees must be considered when assessing the daylight to proposed dwellings, trees do not need to be considered for existing buildings, unless a dense belt or group of evergreens is specifically planned as a windbreaker or for privacy purposes.

"It is generally more difficult to calculate the effects of trees on daylight because of their irregular shapes and because some light will generally penetrate through the tree crown. Where the effect of a new building on existing buildings nearby is being analysed, it is usual to ignore the effect of existing trees. This is because daylight is at its scarcest and most valuable in winter when most trees will not be in leaf." (*BRE Guide: G1.2*) [Emphasis added.]

Assessment Criteria

The daylight to an existing building may be adversely affected if:

- the VSC measured at the centre of an existing main window is less than 27%, and less than 0.80 times its former value.
- the area of the working plane, 0.85m high, in a room which can receive direct skylight is reduced to less than 0.80 times its former value.

The line that divides the points on the working plane which can and cannot see the sky is known as the No Sky Line (NSL). The NSL test can only be carried out when the internal room layout is known, which is seldom the case when assessing existing buildings.

16.2.2.3 Loss of Sunlight to Existing Buildings

Assessment Method

To determine the possible loss of sunlight to existing buildings the Annual Probable Sunlight Hours (APSH) is calculated. *"Here 'probable sunlight hours' means the total number of hours in the year that*

the sun is expected to shine on unobstructed ground, allowing for average levels of cloudiness for the location in question (*based on sunshine probability data*). *The sunlight reaching a window is quantified as a percentage of this unobstructed annual total."* (*BRE Guide: 3.2.4*)

It is recommended that all living rooms and conservatory windows of existing dwellings be assessed if the new development is positioned within 90° of due south and it subtends an angle greater than 25° to the horizontal, measured from the centre of the window. The reference point is the centre of the window, or 1.6m above the floor for floor to ceiling windows or patio doors, on the plane of the outside surface of the wall.

Trees

Similar to the VSC assessment above, trees are not included, unless a dense belt or group of evergreens is specifically planned as a windbreaker or for privacy purposes.

Assessment Criteria

The sun lighting of an existing dwelling may be adversely affected, if the centre of the window:

- receives less than 25% of annual probable sunlight hours and less than 0.8 times its former annual value; or less than 5% of annual probable sunlight hours between 21 September and 21 March and less than 0.80 times its former value during that period;
- and also has a reduction in sunlight received over the whole year greater than 4% of annual probable sunlight hours.

"It is not always necessary to do a full calculation to check sunlight potential. The guideline above is met provided either of the following is true:

- If the distance of each part of the new development from the existing window is three or more times its height above the centre of the existing window (note: obstructions within 90° of due north of the existing window need not count here).
- The window wall faces within 90° of due south and no obstruction, measured in the section perpendicular to the window wall, subtends an angle of more than 25° to the horizontal. Again, obstructions within 90° of due north of the existing window need not be counted.
- The window wall faces within 20° of due south and the reference point has a VSC of 27% or more." (BRE Guide: 3.2.9)

16.2.2.4 Loss of Sunlight to Existing Gardens and Amenity Areas

Assessment Method

BRE Guidelines recommend that for an existing garden or amenity area to appear adequately sunlit throughout the year, at least half of the space should receive at least 2 hours of sunlight on 21 March, the equinox.

Trees

In general, trees do not need to be considered when assessing potential loss of light to existing gardens and amenity spaces.

"In assessing the impact of buildings on sunlight in gardens …, trees and shrubs are not normally included in the calculation unless a dense belt or group of evergreens is specifically planned as a windbreak or for privacy purposes. This is partly because the dappled shade of a tree is more pleasant than the deep

shadow of a building (*this applies especially to deciduous trees*)." (*BRE Guide 2022: G4.1*) [Emphasis added.]

Assessment Criteria

"If as a result of a new development an existing garden or amenity area does not meet the above, and the area that can receive two hours of sun on 21 March is less than 0.80 times its former value, then the loss of sunlight is likely to be noticeable. If a detailed calculation cannot be carried out, it is recommended that the centre of the area should receive at least two hours of sunlight on 21 March." (*BRE Guide 2022: 3.3.17*)

16.2.2.5 Definition of Impacts

Definition of Impacts - Daylight

The assessment of impacts on daylight access had regard to the *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* prepared by the Environmental Protection Agency (2022) on the assessment of the likely effects of certain public and private projects on the environment.

The list of definitions given below is taken from Table 3.4 Description of Effects contained in the *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* prepared by the Environmental Protection Agency.

Some comment is also given below on what these definitions might imply in the case of impact on daylight access. The definitions from the EPA document are in italics.

- ***Imperceptible:*** *An effect capable of measurement but without significant consequences.* The definition implies that the development would cause a change in the daylight received at a location, capable of measurement, but not noticeable to the casual observer. If the development caused no change in daylight access, there could be no effect.
- Not ***Significant:*** *An effect which causes noticeable changes* in *the character of the environment but without significant consequence.* The definition implies that the development would cause a change in the daylight received at a location, which is capable of measurement and capable of being noticed by an observer. Examples of "Not Significant" impacts on daylight access would include: (A) a scenario where the Proposed Development is predicted to reduce the Vertical Sky Component received by a sample window, but the window will continue to receive the relevant recommended level of Vertical Sky Component of 27% after the construction of the Proposed Development (the BRE Guide threshold for an adverse impact); and (B) a scenario where the Proposed Development is predicted to reduce the Vertical Sky Component to not less than 0.8 times its former value (i.e. the BRE Guide threshold).
- ***Slight:*** *An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.* For this definition to apply, the amount of daylight received at a location would be changed by the construction of the development to an extent that is both capable of measurement and is noticeable to a minor degree. However, the daylight environment within an existing building should remain largely unchanged. An example of a "slight" impact would be a scenario where, although the impact of the Proposed Development is not predicted to reduce the amount of daylight received by a sample window to less than 0.8 times its former value, the amount of light received by the sample window is predicted to fall below a key recommended level, whether

that is the BRE Guide recommended target value or an alternative target value. A further example of a "slight" impact would be where, although the construction of the Proposed Development is predicted to reduce the amount of light received to a level below the BRE Guide threshold for an adverse impact, the predicted reduction is just outside that BRE Guide threshold (e.g. the amount of daylight received by a sample window falls to not less than 0.7 times its existing value). A "slight" impact could also occur where there is a more considerable reduction in daylight by a sample window within an existing building, but only a small number of windows within that property are affected to that extent.

- ***Moderate:*** *An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.* In this case, a development must bring about a change in the daylight environment within an existing building; and this change must be consistent with a pattern of change that is already occurring or is likely to occur. A moderate effect would occur where other developments were bringing about changes in daylight access of similar extent in the area. A "moderate" impact might also be considered to occur where the level of daylight received by a sample window falls below the BRE Guide recommended level and to between 0.5 and 0.7 times its existing value, subject to consideration of other factors.
- ***Significant:*** *An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of* the *environment.* The definition implies that the existence of the development would change the extent of daylight access in a manner that is not *"consistent with existing and emerging baseline trends"*. For example, a development resulting in a *"significant"* diminution of daylight access would reduce daylight to the extent that minimum standards for daylighting are not met, and artificial lighting is required for part of the day. A "significant" impact could occur where the predicted reduction in daylight access is greater than what is envisaged to occur if the application site were developed in line with existing and emerging baseline trends. Subject to consideration of other factors, a "significant" impact could occur where daylight access to the sample window falls to between 0.25 and 0.5 times its former value.
- ***Very Significant:*** An *effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.* The definition implies that the existence of the development would change the extent of daylight access to a considerable degree and in a manner that is not "consistent *with existing and emerging baseline trends"*. For example, a *"very significant"* effect would occur where a development would result in daylight received in a room falling well below the minimum standards for daylighting and where artificial lighting would be required in that room as the principal source of lighting all the time. A "very significant" impact could occur where the predicted reduction in daylight access is considerably greater than what is envisaged to occur if the application site were developed in line with existing and emerging baseline trends. Subject to consideration of other factors, a "very significant" impact could occur where daylight access to the sample window falls to between 0.01 and 0.25 times its former value.
- ***Profound:*** *An effect which obliterates sensitive characteristics.* Examples of development resulting in a *"profound"* effect on daylight access would include facilitating daylight access to a room in an existing building where the existing room has none (e.g. as a result of the demolition of a building) or by removal of all access to daylight within an existing building.

Definition of Impacts - Sunlight

The assessment of impacts on sunlight access had regard to the *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* prepared by the Environmental Protection

Agency (2022) on the assessment of the likely effects of certain public and private projects on the environment.

The list of definitions given below is taken from Table 3.4 Description of Effects contained in the *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* prepared by the Environmental Protection Agency.

Some comment is also given below on what these definitions might imply in the case of impact on sunlight access. The definitions from the EPA document are in italics.

- ***Imperceptible:*** *An effect capable of measurement but* without *significant consequences.* The definition implies that the development would cause a change in the sunlight received at a location, capable of measurement, but not noticeable to the casual observer. If the development caused no change in sunlight access, there could be no effect.
- Not ***Significant:*** *An effect which* causes *noticeable changes in* the *character of the environment but without significant consequences.* The definition implies that the development would cause a change in the sunlight received at a location, which is capable of measurement and capable of being noticed by an observer. Examples of "Not Significant" impacts on sunlight access would include: (a) a scenario where the Proposed Development is predicted to reduce the amount of sunlight received by a sample window, but the sample window will continue to receive the relevant recommended level of Annual Probable Sunlight Hours after the construction of the Proposed Development; and (b) a scenario where the Proposed Development is predicted to reduce the Annual Probable Sunlight Hours received by a sample window to not less than 0.8 times its existing value (i.e. the BRE Guide threshold for an adverse impact). Similarly, where sunlight access to a sample garden is reduced, the impact of Proposed Development could be considered to be "not significant" where the sample garden continues to receive at least two hours of sunlight over half its area on 21st March, and, where the area of the garden capable of receiving sunlight on 21st March does not drop to less than 0.8 times its existing level after the construction of the Proposed Development.
- ***Slight:*** *An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.* For this definition to apply, the amount of sunlight received at a location would be changed by shadows cast by the development to an extent that is both capable of measurement and is noticeable to a minor degree. However, the shadow environment of the surrounding environment should remain largely unchanged. An example of a "slight" impact would be a scenario where, although the impact of the Proposed Development is not predicted to reduce the amount of sunlight received by a sample window or garden to less than 0.8 times its former value, the amount of light received by the sample window or garden is predicted to fall below a key recommended level, whether that is the BRE Guide recommended target value or an alternative target value. A further example of a "slight" impact would be where, although the construction of the Proposed Development is predicted to reduce the amount of light received to a level below the BRE Guide threshold for an adverse impact, the predicted reduction is just outside that BRE Guide threshold (e.g. the amount of sunlight received by a sample window or garden falls to not less than 0.7 times its existing value). A "slight" impact could also occur where there is a more considerable reduction in sunlight by a sample window within an existing building, but only a small number of windows within that property are affected to that extent.
- ***Moderate:*** *An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.* In this case, a development must bring about a change in the shadow environment of the area; and this change must be consistent with a pattern of change

that is already occurring or is likely to occur. A moderate effect would occur where other developments were bringing about changes in sunlight access of similar extent in the area. A "moderate" impact might also be considered to occur where the level of sunlight access to a sample window or garden falls below the BRE Guide recommended level and to between 0.5 and 0.7 times its existing value, subject to consideration of other factors.

- ***Significant:*** *An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of* the environment. The definition implies that the existence of the development would change the extent of sunlight access in a manner that is not *"consistent with existing and emerging baseline trends"*. For example, a development resulting in a *"significant"* diminution of sunlight access would overshadow a location to the extent that there is a significant change in the amount of direct sunlight received at that location. A "significant" impact could occur where the predicted reduction in sunlight access is greater than what is envisaged to occur if the application site were developed in line with existing and emerging baseline trends. Subject to consideration of other factors, a "significant" impact could occur where sunlight access to the sample window or garden falls to between 0.25 and 0.5 times its former value.
- ***Very Significant:*** An *effect which, by its character, magnitude, duration or intensity significantly alters* most *of a sensitive aspect of the environment.* For example, a *"very significant"* reduction in sunlight access would occur where the development overshadows a location for most of the time that the location would have been in sunlight prior to the construction of the development and where overshadowing of that magnitude is not *"consistent with existing and emerging baseline trends".* A "very significant" impact could occur where the predicted reduction in sunlight access is considerably greater than what is envisaged to occur if the application site were developed in line with existing and emerging baseline trends. Subject to consideration of other factors, a "very significant" impact could occur where sunlight access to the sample window or garden falls to between 0.01 and 0.25 times its former value.
- ***Profound:*** *An effect which obliterates sensitive characteristics.* Examples of development resulting in a *"profound"* effect on sunlight access would include facilitating sunlight access at a location where that location has previously had none (e.g. facilitating sunlight access as a result of the demolition of a building) or by removal of all access to sunlight at a location.

16.2.2.6 Scheme Assessment

The summary results of the scheme's performance are included in this EIAR chapter and full details of the assessment can be found in the supporting Daylight, Sunlight, and Overshadowing Report (Model Works, 2026).

16.3 Baseline Environment

The Proposed Development is located in Mooretown, Swords, Co. Dublin. The site is generally bound by Rathbeale Road to the north, to the east by the existing residential area of Cianlea and Lioscian, to the south by Ormond Crescent, and to the west by Cronan's Well and residential lands under development. (planning ref SHD/012/21). The development site consists of two parcels of land, separated by residential lands under development (planning ref. LADP/002/24).

16.4 Predicted Impacts of the Proposed Development

16.4.1 Do-Nothing Impact

In a Do-Nothing scenario, no construction would occur on the site and therefore the impact on neighbouring properties would be neutral as the existing daylight and sunlight levels would remain unchanged. The lands on which the Proposed Development is located are zoned as 'RA- residential' in the Fingal County Development Plan 2023-2029, hence it would be expected that if the following development did not go ahead, a similar residential development would be proposed in its place.

16.4.2 Construction Phase

The potential impact to both daylight and sunlight on the surrounding existing developments during the construction phase is likely to be less than that of the completed development. As construction progresses the impact on the receiving environment will increase until it reaches that of the completed development (Operational Phase). Temporary structures and machinery (cranes, hoarding, scaffolding, etc.) would have an **adverse effect**, but this is expected to be **not significant** and **short-term**.

16.4.3 Operational Phase

16.4.3.1 Daylight Impact Assessment

Using the decision chart detailed in Section 16.2.2.2 above, existing and proposed/under construction dwellings in the vicinity of the proposal site were assessed for potential impact to daylight. The Proposed Development consists predominantly of two- and three-story buildings, and a single apartment block of five stories. The building heights and significant separation distances between them and surrounding dwellings and granted schemes, minimise any potential impact it may have. To confirm this, the closest buildings, existing and proposed, were selected for a detailed analysis. Figure 16.6 identified the neighbouring buildings selected for testing using the 25° angle test, and Figure 16.7 displays the section lines for each building. These section diagrams confirm that the scheme falls below the 25° line and therefore, as per the BRE Guide, no further testing is required as any impact would be ***imperceptible***.

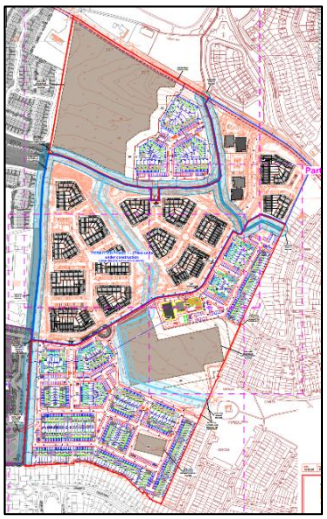

Figure 16.5 Site Plan

16.4.3.2 Sunlight Impact Assessment

Like the Daylight impact assessment above, no dwellings fell within the criteria requiring a detailed assessment. Therefore, the impact would be ***imperceptible***.

16.4.3.3 Sunlight to Amenity areas

The neighbouring environment was reviewed for potential impact to sunlight on gardens or amenity spaces. Given the low-rise naturel of the Proposed Development and the separation distances between it and the neighbouring dwelling any impact was expected to be very limited. However, to confirm this, the gardens of the buildings closest to the proposal were assess for potential impact. Table 16.1 below displays the results of the assessment and demonstrates that 100% of all garden areas meet the BRE Guide and therefore any impact would be ***imperceptible***.

16.4.3.4 Shadow Study

A shadow study was conducted to indicate the shadows cast by the proposal throughout the year. The analysis was run at hourly intervals during daylight hours on:

- 21st March – Spring Equinox
- 21st June – Summer Solstice
- 21st December – Winter Solstice

The BRE Guide recommends:

"If a space is used all year round, the equinox (21 March) is the best date for which to prepare shadow plots as it gives an average level of shadowing. Lengths of shadows at the autumn equinox (21 September) will be the same as those for 21 March, so a separate set of plots for September is not required. (BRE Guide, 3.3.14)

And

"As an optional addition, plots for summertime (for example 21 June) may be helpful as they will show the reduced shadowing then, although it should be borne in mind that 21 June represents the best case of minimum shadow, and that shadows for the rest of the year will be longer. Conversely if winter shadows (e.g. 21 December) are plotted, even low buildings will cast long shadows. In a built-up area, it is common for large areas of the ground to be in shadow in December." (BRE Guide, 3.3.15).

For shadow diagrams refer to the Daylight, Sunlight and Overshadowing Assessment report prepared by Model Works (2026) and submitted under separate cover as part of this planning application.

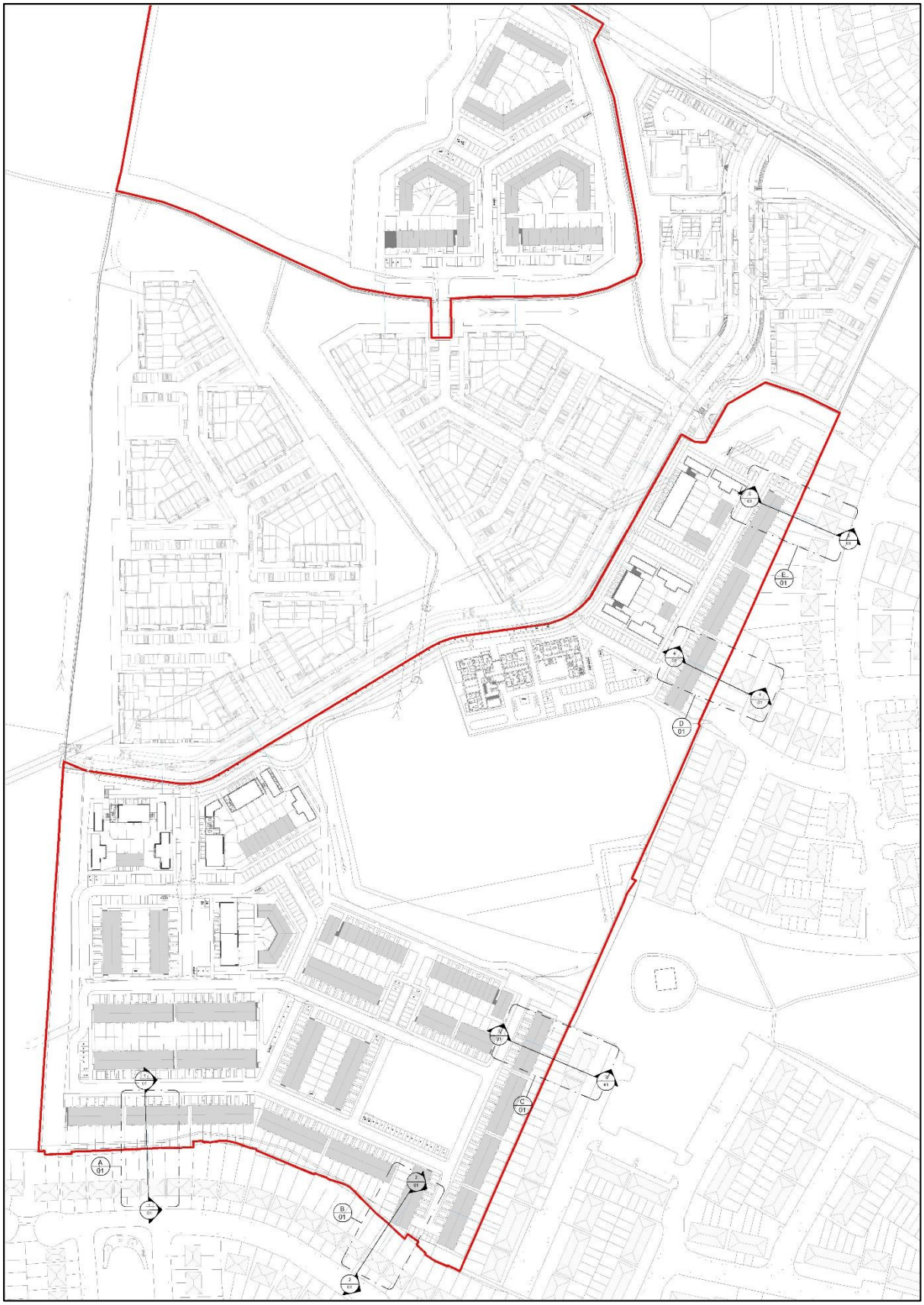

Figure 16.6 Neighbouring buildings tested for potential impact using the 25° Angle test

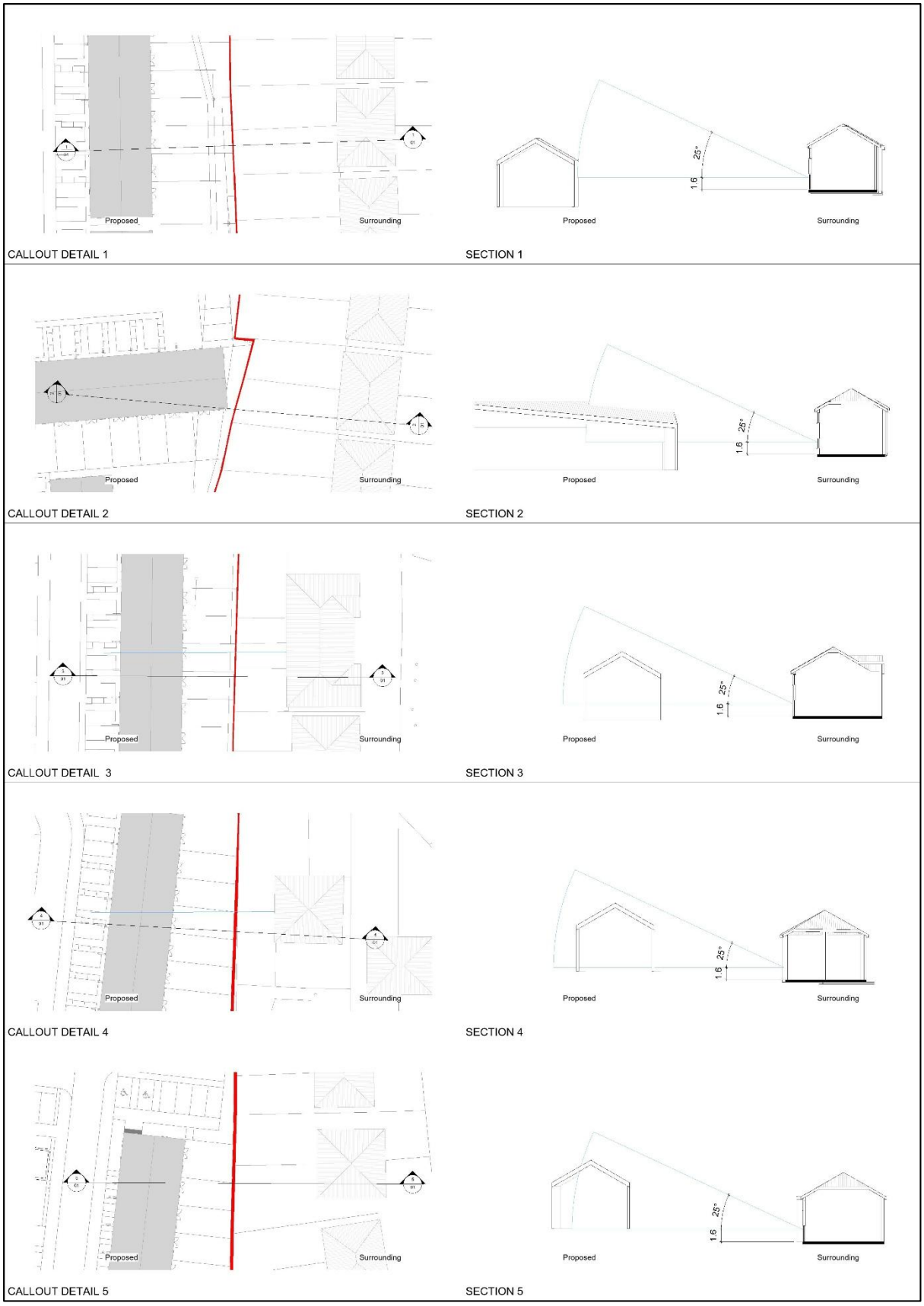

Figure 16.7 25° Angle test results for selected neighbouring buildings

Table 16.1 Sunlight to Neighbouring Amenity Spaces

Amenity Area	Area m²	Area Receiving 2 Hrs of Sunlight - Existing %	Area Receiving 2 Hrs of Sunlight - Proposed %	Reduction in Sunlight	Meets BRE Criteria
18 Ormond Crescent	126	51%	51%	0%	Yes
20 Ormond Crescent	120	53%	53%	0%	Yes
54 Ormond Crescent	120	92%	92%	0%	Yes
56 Ormond Crescent	105	88%	88%	0%	Yes
60 Cianlea	138	97%	97%	0%	Yes
61 Cianlea	348	97%	97%	0%	Yes
74 Cianlea	142	97%	97%	0%	Yes
75 Cianlea	114	100%	100%	0%	Yes
125 Lioscian	75	99%	99%	0%	Yes
127 Lioscian	57	100%	100%	0%	Yes
128 Lioscian	54	100%	100%	0%	Yes
129 Lioscian	69	100%	100%	0%	Yes
143 Lioscian	60	95%	95%	0%	Yes
144 Lioscian	35	100%	100%	0%	Yes
145 Lioscian	34	100%	100%	0%	Yes
146 Lioscian	90	100%	100%	0%	Yes
Total Areas Meeting Criteria			Yes	16	100%
			No	0	0%
Total Amenity Areas Tested				16	

16.4.3.5 Daylight Provision to the Proposed Accommodation

The proposed 55 apartments and duplex units were assessed for daylight provision and 94% of the rooms achieved compliance with the BRE Guide. In accordance with these findings, it is concluded that the Proposed Development demonstrates the capacity to achieve acceptable levels of internal daylight amenity. Refer to Section 5.1 in the supporting report for full details of the analysis.

16.4.3.6 Sunlight Provision to the Proposed Accommodation

The units achieved a high level of compliance for sunlight exposure, with 89% of all units meeting the BRE Guide. The duplex units achieve 100% compliance, and the apartments achieves 83% compliance. In accordance with these findings, it is concluded that the Proposed Development demonstrates the capacity to achieve acceptable levels of sunlight amenity. Refer to Section 5.2 in the supporting report for full details of the analysis.

16.4.3.7 Sunlight Provision to the Proposed Amenity Spaces

Eleven communal opens spaces, three public open spaces, and a crèche play area were assessed for sunlight and all spaces achieved compliance with the BRE Guide. Refer to Section 5.3 of the supporting Daylight, Sunlight and Overshadowing Assessment report (Model Works, 2026) for full details of the analysis.

16.5 Mitigation Measures

16.5.1 Construction Phase

The potential impact to both daylight and sunlight during the construction stage is likely to be less than that of the completed development. As construction progresses the impact on the receiving environment will increase until it reaches that of the completed development (Operational Phase). Temporary structures and machinery (cranes, hoarding, scaffolding, etc.) would have an ***adverse effect***, but this is expected to be ***not significant*** and ***short-term***. Thus, mitigations measures will not be required.

16.5.2 Operational Phase

Section 16.4.3 above details that the impact of the proposed scheme would be ***imperceptible***. Therefore, mitigation measures are not required.

16.6 Residual Impacts

16.6.1 Construction Phase

The potential impact to both daylight and sunlight during the construction stage will gradually increase until it reaches that of the completed development (Operational Phase).

16.6.2 Operational Phase

The residual impact on daylight and sunlight would be ***imperceptible***.

16.7 Monitoring

No monitoring is required in relation to daylight and sunlight during the construction or operational stages as the impacted have been assessed as imperceptible.

16.8 Interactions

As is always the case where a development will result in a change to the sunlight and daylight environment of an area, the impacts of the development on sunlight access will result in interactions with climate, population and human health, material assets, and the landscape. Given the low-rise and low-density nature of the development, any impact would be deemed ***imperceptible***.

16.9 Indirect and/or Secondary Impacts

The impacts to daylight and sunlight are imperceptible, as detailed in Section 16.4.3 above. Therefore, no indirect and/or secondary impacts are anticipated.

16.10 Cumulative Impacts

A description of relevant permitted and Proposed Developments in the surrounding area of the Proposed Development is provided in **Error! Reference source not found.** (Cumulative Impacts) of the EIAR. There is no additional cumulative impact when the development is completed, therefore the residual impacts will be similar to those detailed in Section 16.4.3 above.

16.11 Difficulties Encountered

Detailed 3D models were created for the Proposed Developments, these were either received from the design team or created by Model Works. However, detailed modelling of the receiving environment is more difficult, as it is not possible or practical to gain access to neighbouring private property to carry out a detailed survey, and therefore 3D models are created from the available information, such as from planning portals, Google Earth, limited survey information, etc. While Model Works has confidence in the accuracy of the models used, some level of assumption was necessary to complete these models.

16.12 References

- Building Research Establishment - BRE Site Layout Planning for Daylight and Sunlight: A guide to good practice, 3rd edition 2022
- British Standard BS EN 17037:2018 – Daylight in Buildings.
- Irish Standard EN 17037:2018 – Daylight in Buildings.
- Sustainable Residential Development and Compact Settlements Guidelines for Planning Authorities (2024)
- Urban Development and Building Heights: Guidelines for Planning Authorities (2018). These are guidelines issued under section 28 of the 2000 Planning and Development Act 2000.
- Fingal Development Plan 2023-2029

17 Microclimate – Wind

17.1 Introduction

B-Fluid Limited has carried out the Wind Microclimate Analysis for the Proposed Development at Mooretown, Swords, Co. Dublin. The objective of the analysis is to identify the possible wind patterns around the area proposed, under mean and peak wind conditions typically occurring at the site location. Figure 17.1 shows a view of the Proposed Development within the existing context.

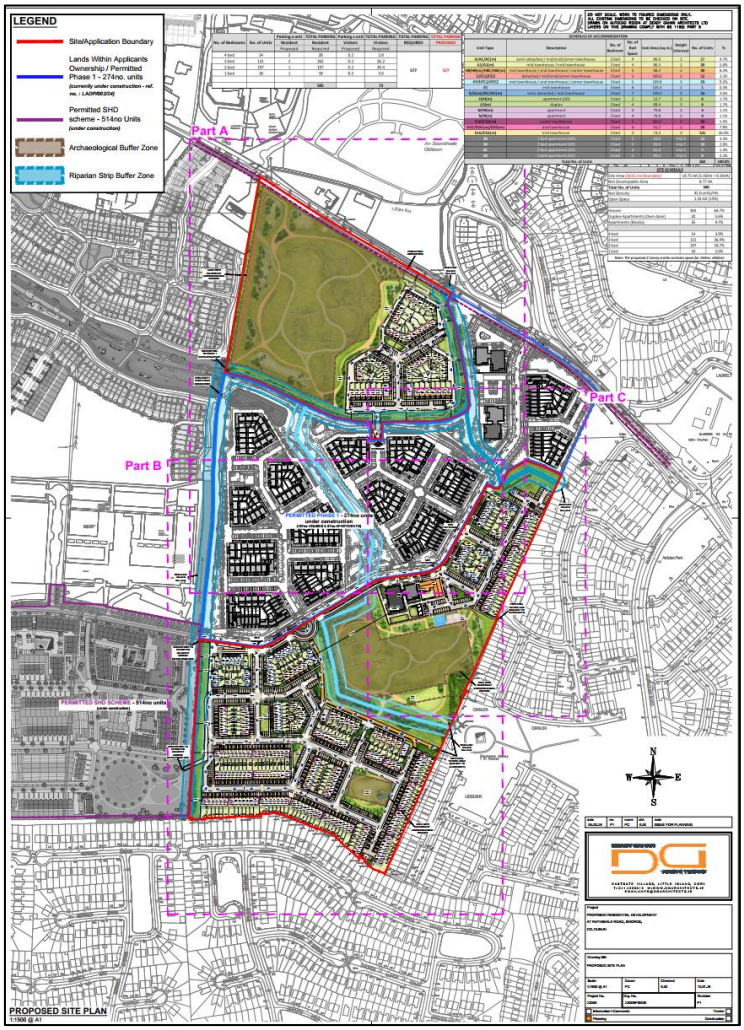

Figure 17.1 Site Layout Showing Site/Application Boundary and Lands Within Applicants Ownership/Permitted Phase 1 & proposed Phase 2

The Proposed Development has been designed to provide high-quality houses and apartments that will contribute positively to Rathbeale Road and deliver much needed housing to Swords and Co. Dublin. The proposed residential development is located in Rathbeale Road, which is approximately 20 kilometers north of Dublin City Centre.

The housing mix will focus on providing affordable homes for both individuals and families alike and it includes 360 no. residential units comprising:

- 12 No. 1 bed / 2-person apartments (Apt Building)

- 10 No. 2 bed / 3-person apartments (Apt Building)
- 05 No. 2 bed / 4-person apartments (Apt Building)
- 08 No. 3 bed / 5-person apartments (Apt Building)
- 06 No. 1 bed / 2-person apartments (Own Door Apt Units)
- 14 No. 2 bed / 4-person apartments (Own Door Apt/Duplex Units)
- 131 No. 2 bed / 3-person mid-townhouses
- 37 No. 2 bed / 4-person semi-detached/ mid & end townhouses
- 27 No. 3 bed / 4-person end townhouses
- 96 No. 3 bed / 5-person detached/ mid, end & corner townhouses
- 01 No. 4 bed / 6-person end townhouses
- 13 No. 4 bed / 7-person semi-detached/ mid-townhouses

The proposed scheme of 360 units has a density of 41.0 units/HA considered on a net developable area of 8.77 Ha. There is also a crèche positioned centrally along link street. This facility has been strategically placed to ensure accessibility for both residents and the wider community with a 4m wide shared active travel facility linking the Proposed Development to Phase 1 and the developments currently under construction to the west.

A wind microclimate study considers the possible wind patterns formed under both mean and peak wind conditions typically occurring on the site area, considering the Proposed Development within its existing surrounding context.

Special attention is given to wind comfort in areas where potential receptors are located, i.e. areas in the surrounding of the development, which can be exposed to potential risks generated by the elevated wind speed or building massing wind effects. In particular:

- Amenity areas (pedestrian level), areas likely to be utilised for leisure purposes and as such should be comfortable surroundings.
- Pedestrian routes and seating areas – to determine if locations are comfortable for leisure activities.
- Entrance to the buildings – to determine if there is potential for pressure related issues for entrances or lobbies.
- Landscaped areas – where there are sheltered areas.
- Impact to existing or adjoining developments – where the proposed buildings will cause discomfort conditions through proximity related issues.

The acceptance criteria which define the acceptable wind velocities in relation to the perception of comfort level experienced while carrying out a specific pedestrian activity is known as the ´Lawson Criteria for Pedestrian Comfort and Distress´. A wind microclimate study analyses the wind flow in an urban context (considering the wind conditions typically occurring on the site during a typical year) to develop the so called ´Lawson Comfort and Distress Map´. The map identifies where a specific pedestrian activity can be carried out comfortably during most of the time.

The assessment can be performed by physical testing in wind tunnels or by performing ´virtual wind tunnel testing´ through numerical simulation using Computational Fluid Dynamics (CFD), as done for this project. The scope of the numerical study is to simulate the wind around the development to predict under which wind speeds pedestrians will be exposed and what level of comfort pedestrian will experience when carrying out a specific activity (i.e. walking, strolling, sitting).

The following sections details the methodology, acceptance criteria, CFD wind simulations and the impact of the Proposed Development on the local wind microclimate against best practice guidelines for pedestrian comfort and safety.

17.1.1 Expertise and Qualifications

This Chapter is completed by Dr. Cristina Paduano, Dr. Sadia Siddiqa and Lucrezia Vigo.

Dr. Cristina Paduano is a Chartered Engineer (CEng) and member of Engineers Ireland who specializes in computational fluid dynamics applications for urban environment and the construction industry with over 18 years' experience. She holds a PhD in Mechanical Engineering from Trinity College Dublin, with M.Eng and B.Eng in Aerospace Engineering.

Dr. Sadia Siddiqa is a CFD Modelling Engineer and member of Engineers Ireland (MIEI) specializing in computational fluid dynamics applications. With expertise in modeling fluid flows, airflow patterns, and heat/mass transfer, she's skilled at applying her knowledge to solve real-world challenges in fluid dynamics. She holds a PhD in Computational Mathematics from COMSATS University, where her research focused on CFD applications.

Lucrezia Vigo is a CFD Modelling Engineer and member of Engineers Ireland (MIEI). She holds a Master's degree in Aeronautical Engineering from Politecnico di Milano, with a specialization in Fluid Dynamics. She has applied CFD to various fluid dynamics problems, from aeronautics to bioreactors and wind engineering.

17.1.2 Urban Wind Effects

Buildings and topography affect the speed and direction of wind flows. Wind speed increases with increasing height above the ground, assuming a parabolic profile.

Flow near the ground level encounters obstacles represented by terrain roughness / buildings that reduce the wind speed and introduce random vertical and horizontal velocity components. This turbulence causes vertical mixing between the air moving horizontally at one level, and the air at those levels immediately above and below it. For this reason, the wind velocity profile is given by a fluctuating velocity along a mean velocity value. Figure 17.2 shows the wind velocity profile, as described above.

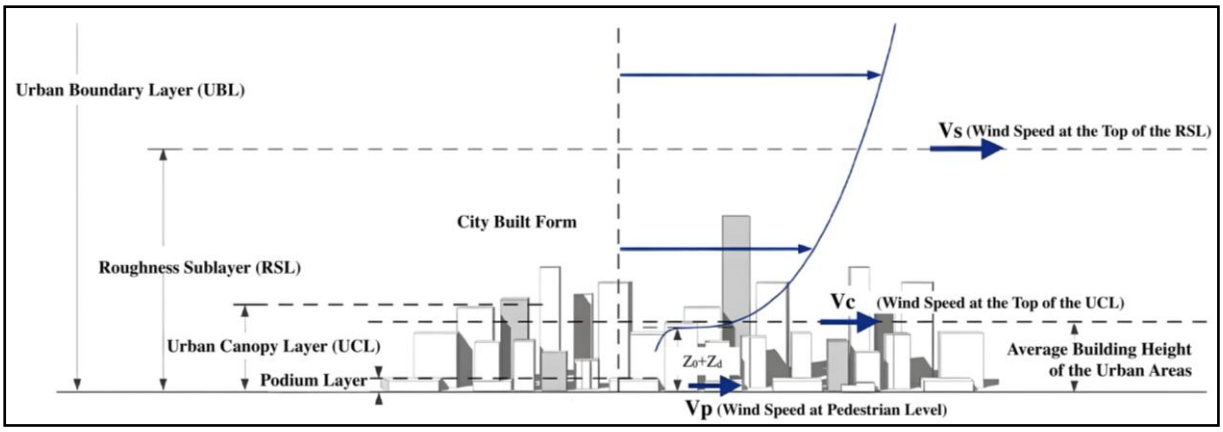

Figure 17.2 Atmospheric Wind Velocity Profile

17.1.3 Legislative & Policy Context

According to the 'Urban Development and Building Heights, Guidelines for Planning Authorities' (Government of Ireland, December 2018), a specific wind impact assessment of the microclimatic effects should be performed for *"buildings taller than prevailing building heights in urban areas"*. In the same guidance, standard buildings height is considered as 6 – 8 storeys. Above this height, buildings are considered 'taller' by Dublin standards.

The recommended approach to wind microclimate studies is outlined in the 'Wind Microclimate Guidelines for Developments in the City of London' (City of London, 2019), and in the guidelines and recommendations contained in BRE Digest (DG) 520, 'Wind Microclimate around Buildings' (BRE, 2011). The Lawson Criteria of Comfort and Distress are used to benchmark the pedestrian wind microclimate. It also indicates how to use CFD to assess wind microclimate conditions and how to generate high quality outputs to provide a good understanding of the fundamental flow features in an urban context.

Usually, the recommended approach to wind microclimate studies is based on the building height, as presented in Table 17.1.

Table 17.1 Recommended approach to wind microclimate studies based on building height, as per *Wind Microclimate Guidelines for Development in the City of London* (2019)

Building height	Recommended approach
Similar or lower than the average height of surrounding buildings (up to 25 m)	Wind studies are not required, unless sensitive pedestrian activities are intended (e.g. around hospitals, transport hubs, etc.) or the project is located on an exposed location.
Up to double the average height of surrounding buildings (25 m to 50 m)	Computational (CFD) simulations or wind tunnel testing
Up to four times the average height of surrounding buildings (50 m to 100 m)	Computational (CFD) simulations and wind tunnel testing
High rise (above 100 m)	Early-stage massing optimisation: wind tunnel testing or computational (CFD) simulations. Detailed design: Wind tunnel testing and computational (CFD) simulations to demonstrate the performance of the final building design.

17.2 Method

The method for the study of wind microclimate combines the use of Computational Fluid Dynamics (CFD) to predict wind velocities and wind flow patterns, with the use of wind data from suitable meteorological station and the recommended comfort and safety standards (Lawson Criteria -Ref. Buildings Aerodynamics - 2001). The effect of the geometry, height and massing of the Proposed Development and existing surroundings including topography, ground roughness and landscaping of the site, on local wind speed and direction is considered as well as the pedestrian activity to be expected (sitting, standing, strolling and fast walking). The results of the assessment are presented in the form of contours of the Lawson criteria at pedestrian level. The assessment has comprised the following scenario:

Proposed Development in the Existing Scenario with Cumulative Applications (if any): this consists of the assessment of the wind microclimate of the site with the Proposed Development surrounded by existing and proposed/approved buildings.

In accordance with the guideline cited in Section 17.1.3, the wind microclimate study should consider the effect of the Proposed Development together with buildings (existing and/or permitted) that are within 400m from the estimated centre of the site. Other taller buildings outside of this zone that could have an influence on wind conditions within the project site should be included for wind directions where they are upwind of the project site. In our case, an 800 m radius has been considered to provide a more comprehensive assessment (Figure 17.3).

Figure 17.3 Extents of Relevant Area for the Wind Microclimate Analysis (radius – 800m)

In particular, the following has been undertaken:

- Topography of the site with the Proposed Development and adjacent existing/permitted developments massing has been modelled.
- Suitable wind conditions have been determined based on historic wind data. Criteria and selected wind scenarios included means and peaks wind conditions that need to be assessed in relation to the Lawson Criteria.
- CFD has been used to simulate the local wind environment for the required scenario (proposed).
- The impact of the Proposed Development massing on the local wind environment has been determined (showing the wind flows obtained at pedestrian level).
- Potential receptors (pedestrian areas) have been assessed through review of external amenity/public areas (generating the Lawson Comfort and Distress Map).
- Potential mitigation measures, where required, can be considered at detailed design stage.

The Lawson Comfort and Distress Criteria have been developed for wind microclimate studies as a means of assessing the long-term suitability of urban areas for walking or sitting, accounting for both microclimatic wind effects (i.e., site location and prevailing winds) and microclimatic air movement associated with wind forces influenced by the localised built environment forms and landscaping effects.

The Lawson scale assesses pedestrian wind comfort in absolute terms and defines the reaction of an average person to the wind. For the distress (safety) criterion, only gusty winds are considered. These are usually rare events but deserve special attention in city planning and building design due to their potential impact on pedestrian safety. Gusts cause most cases of annoyance and distress and are assessed in addition to average wind speeds. Gust speeds should be divided by 1.85 to determine 'Gust Equivalent Mean' (GEM) speeds, which are compared to the same criteria as for the mean hourly wind speeds. This avoids the need for different criteria for mean and gust wind speeds.

The criteria in Table 17.2, Table 17.3 and Table 17.4 are widely accepted by local authorities as well as the international building design and city planning community:

Table 17.2 Lawson Pedestrian Comfort and Distress Criteria – Onset of Discomfort / Distress

Criterion	Onset of discomfort / distress	
Comfort Relates to the activity of the individual	Onset of discomfort	Depends on the activity in which the individual is engaged and is defined in terms of a mean hourly wind speed (or GEM) which is exceeded for 5% of the time.
Distress Relates to the physical wellbeing of the individual	Onset of distress	*Frail person or cyclist:* Equivalent to an hourly mean speed of 15 m/s and a gust speed of 28 m/s (62 mph) to be exceeded less often than once a year (0.022% of the times). This is intended to identify wind conditions that less able individuals or cyclists may find physically difficult. Conditions more than this limit may be acceptable for optional routes and routes that less physically able individuals are unlikely to use.
		General public: A mean speed of 20 m/s and a gust speed of 37 m/s (83 mph) to be exceeded less often than once a year. Beyond this gust speed, aerodynamic forces approach body weight and it rapidly becomes impossible for anyone to remain standing. Where wind speeds exceed these values, pedestrian access should be discouraged (Ref. CFD simulation for pedestrian wind comfort and wind safety in urban areas - 2012).

Table 17.3 Lawson Categories Scale - Comfort

Pedestrian Comfort Category (Lawson Scale)	Mean and Gem wind speed not to be exceeded more than 5% of the time	Description
Long-Term Sitting	4m/s	Acceptable for frequent outdoor sitting use, i.e., restaurant /café
Standing	6m/s	Acceptable for occasional outdoor sitting use, i.e., public outdoor spaces
Walking/Strolling	8m/s	Acceptable for entrances/bus stops /covered walkaways
Business Walking	10m/s	Acceptable for external pavements, walkways
Unacceptable/Distress	>10m/s	Start of not comfortable/distress level for pedestrian access

Table 17.4 Lawson Categories Scale - Distress/Safety

Pedestrian Safety Category (Lawson Scale)	Mean and Gem wind speed not to be exceeded more than 0.0022% of the time	Description
Unsafe for public	>20m/s	Distress/safety concern for pedestrian
Unsafe for cyclists or frail person	>15m/s	Distress/safety concern for cyclist/frail person

These criteria for wind forces represent average wind tolerances. They are subjective and variable depending on thermal conditions, age, health, clothing, etc. which can all affect a person's perception of a local microclimate. Moreover, pedestrian activity alters between winter and summer months. The criteria assume that people will be suitably dressed for the time of year and individual activity. It is reasonable to assume, for instance, that areas designated for outdoor seating will not be used on the windiest days of the year. Weather data measured are used to calculate how often a given wind speed will occur each year over a specified area.

Pedestrian comfort and distress criteria are assessed at 1.8 m above ground level as required by the guideline cited in Section 17.1.3. If the predicted wind conditions exceed the threshold, then conditions are unacceptable for the type of pedestrian activity and mitigation measures should be implemented into the design.

17.2.1 Significance Criteria

The significance of the assessed measurement locations (on-site and off-site) is defined by comparing the predicted wind comfort/safety levels with the intended pedestrian activity at each location, using the Lawson Comfort and Distress Criteria (Table 17.5).

Table 17.5 On-Site Receptors Significance Criteria (*Wind Microclimate Guidelines for Developments in the City of London*, 2019)

Significance	Trigger	Mitigation required?
Major Adverse	Conditions are "unsafe"	Yes
Moderate Adverse	Conditions are "unsuitable" (in terms of comfort) for the intended pedestrian use.	Yes
Negligible	Conditions are "suitable" for the intended pedestrian use.	No
Moderate Beneficial	Conditions are calmer than required for the intended pedestrian use (by at least one comfort category).	No

17.2.2 CFD Modelling Method

The wind microclimate study is conducted through Computational Fluid Dynamics (CFD). This is a numerical technique to simulate fluid flow, heat and mass transfer, chemical reaction and combustion, multiphase flow, and other phenomena related to fluid flows. Wind flow is described by Navier-Stokes equations which are solved within the CFD analysis using a finite volume algorithm based on the

volumetric mesh/grid in which the geometry is divided. CFD modelling includes three main stages: pre-processing, simulation, and post-processing as described in Figure 17.4.

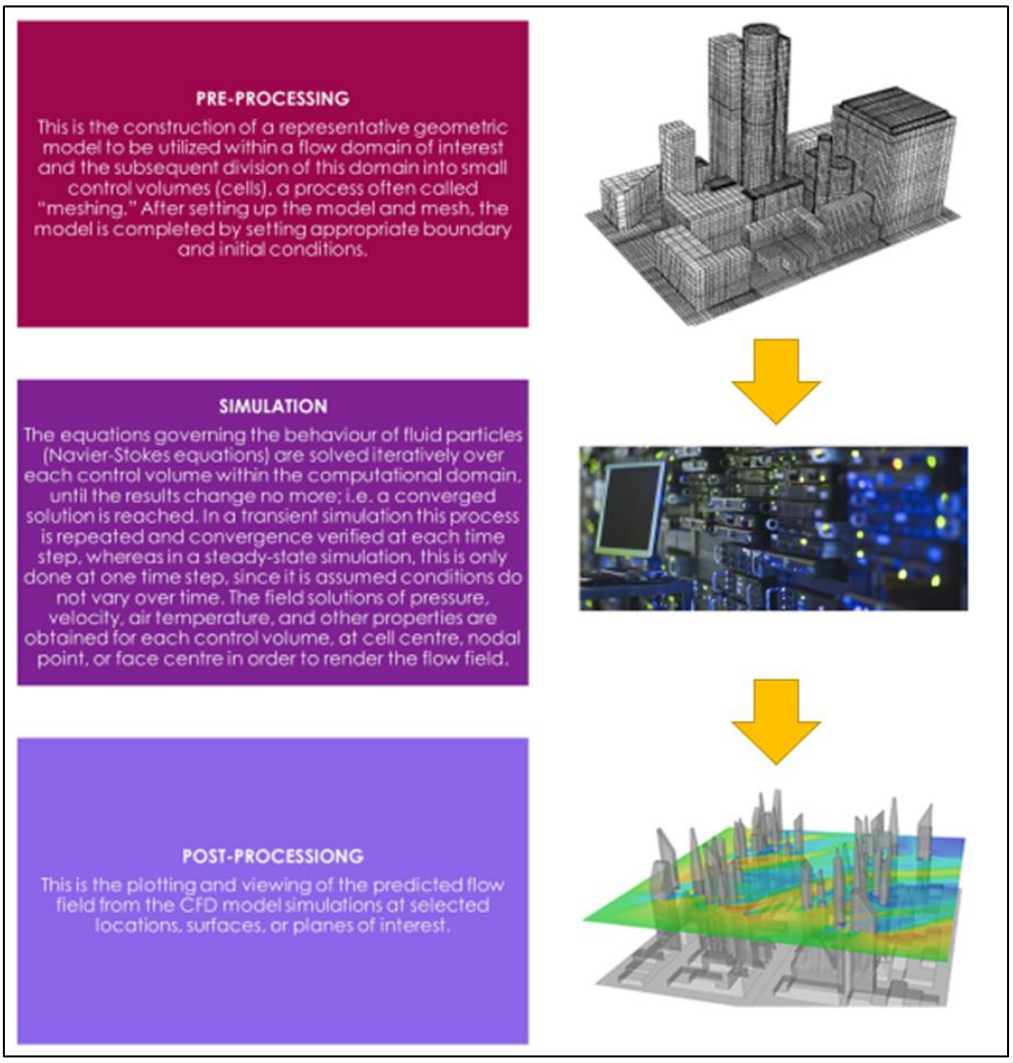

Figure 17.4 CFD Modelling procedure phases-schematic

17.2.3 Modelled Geometry

In accordance with the 'Wind Microclimate Guidelines for Developments in the City of London' (City of London, 2019) and with the 'BRE Digest (DG) 520, 'Wind Microclimate around Buildings' (BRE, 2011), when a wind study is carried out using CFD modelling, the modelled area must include a detailed three-dimensional representation of the Proposed Development and the numerical calculation should take place using a model mesh a maximum cell sizes near critical locations (e.g. entrances, corners, etc.) in the order of 0.3m or smaller. Sufficient mesh cells should be also used between buildings with a minimum of 10 cells across a street canyon. However, the cell size of buildings away from the target can be larger to allow for wind modelling efficiency. (Ref. Computational Fluid Dynamics for Urban Physics -2015).

To represent reality, the modelled area for the wind modelling study comprises a wider urban area, this to include the recommended dimensions (400m radius from the site centre). In our case, an 800 m radius has been considered to provide a more comprehensive assessment.

Table 17.6 Computational modelling details

CFD Model Details	Modelled CFD Environment Dimensions		
	Width	Length	Height
CFD Mesh Domain	1600m approx.	1600m approx.	160m approx.

17.2.4 Boundary Conditions

A rectangular computational domain was used for the analysis. The wind directions were altered without changing the computational mesh. For each simulation scenario, an initial wind velocity was set according to the statistical weather data collected to consider the worst-case scenario. Building surfaces within the model are specified as 'no slip' boundary conditions. This condition ensures that flow moving parallel to a surface is brought to rest at the point where it meets the surface. Air flow inlet boundaries possess the 'inlet' wind profile velocity patch boundary condition with its appropriate inflow turbulence intensity and dissipation rates. Air exits the domain at the 'pressure outlet' boundary condition. (Ref. Best Practice Guidelines for the CFD Simulation of Flows -2007).

Due to aerodynamic drag, there is a wind gradient in the wind flow just a few hundred meters above the Earth's surface – "the surface layer of the planetary boundary layer".

Wind speed increases with increasing height above the ground, starting from zero, due to the no-slip condition. In particular, the wind velocity profile used for the analysis is parabolic. Flow near the surface encounters obstacles that reduce the wind speed and introduce random vertical and horizontal velocity components. This turbulence causes vertical mixing between the air moving horizontally at one level, and the air at those levels immediately above and below it. For this reason, the velocity profile is given by a fluctuating velocity along a mean velocity value which are both numerically simulated by mean of inlet velocity profile and turbulence intensity values assigned to the model. The equation used for the wind velocity profile within the model is as follows:

Where:

- = wind speed measured at the reference height
- = height to measure
- = roughness length selected according to Eurocode
- = Karman constant
- = friction velocity

17.2.5 Computational Mesh

The level of accuracy of the CFD results are determined by the level of refinement of the computational mesh. Details of parameters used to calculate the computational mesh are presented in Table 17.7, below.

The grid follows the principles of the 'finite volume method', which implies that the solution of the model equations is calculated at discrete points (nodes) on a three-dimensional grid, which includes all the flow volume of interest. The mathematical solution for the flow is calculated at the centre of each of these cells and then an interpolation function is used by the software to provide the results in the entire domain.

Table 17.7 Computational mesh details and boundary conditions

Parameters To Calculate Computational Mesh	
Air Density (ρ)	$1.2 kg/m^3$
Ambient Temperature (T)	$288K$ (*approx.*$15C^{\circ}$) isothermal analysis
Gravity Acceleration (g)	$9.8 m/s^2$
dx	0.3m at the building 0.3m in the surroundings 5m elsewhere
Mesh cells size	0.1 m (ratio 1:1)
Total mesh size	Approx. cells number = 147 millions

Figure 17.5 presents the proposed residential development, Mooretown Phase 2 (Part A in red, Part B in blue, Part C in green and Site Boundary in yellow), together with the surrounding context in grey retained due to its proximity to the site.

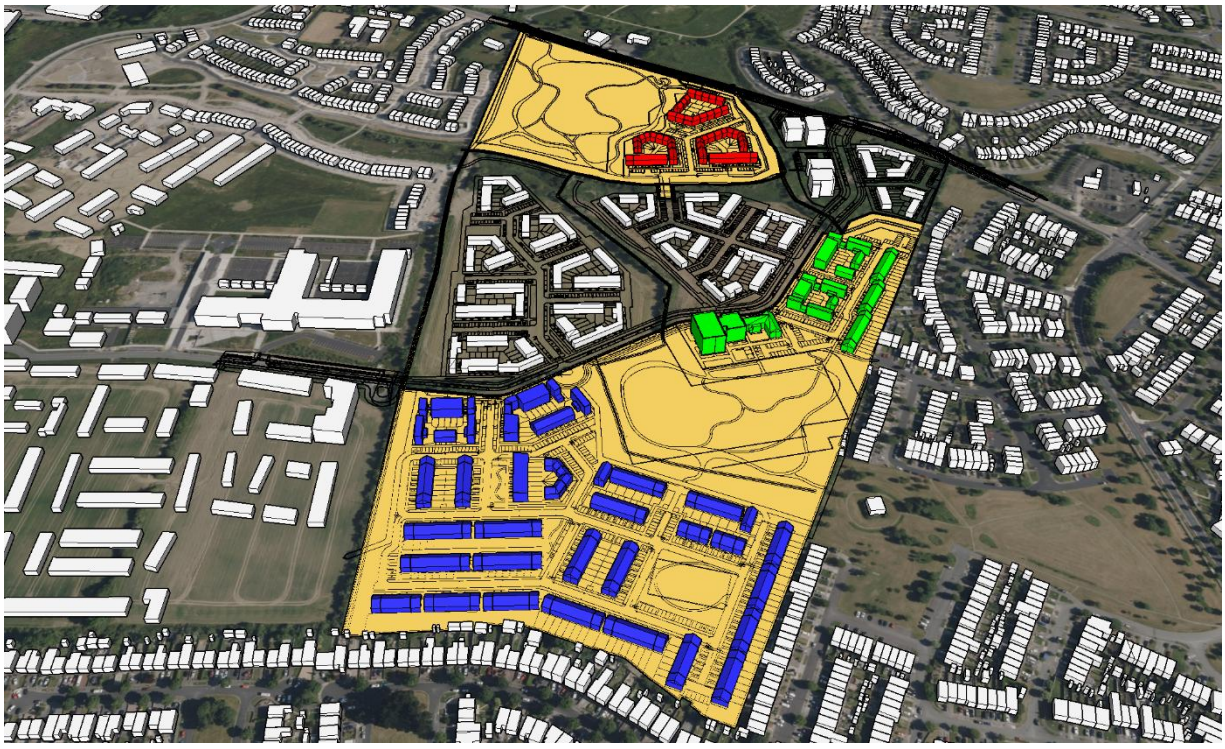

Figure 17.5 Proposed Mooretown Residential Development and surrounding context

17.3 Baseline Environment

The baseline environment comprises the existing site and its surrounding context. In this study, the baseline environment is defined as the prevailing local wind climate under existing conditions. This baseline characterisation is used to establish the frequency, speed and direction of winds relevant to

pedestrian comfort assessment, and to define the reference wind climate against which the Proposed Development is assessed.

A statistical analysis of long-term historical wind records has been carried out to characterise the baseline wind climate in terms of wind speeds, frequency of occurrence and wind directions. The baseline wind climate is derived from meteorological data collected at Dublin Airport Weather Station, which is used as the reference station for the area. Figure 17.6 shows the locations of the subject site and Dublin Airport Weather Station.

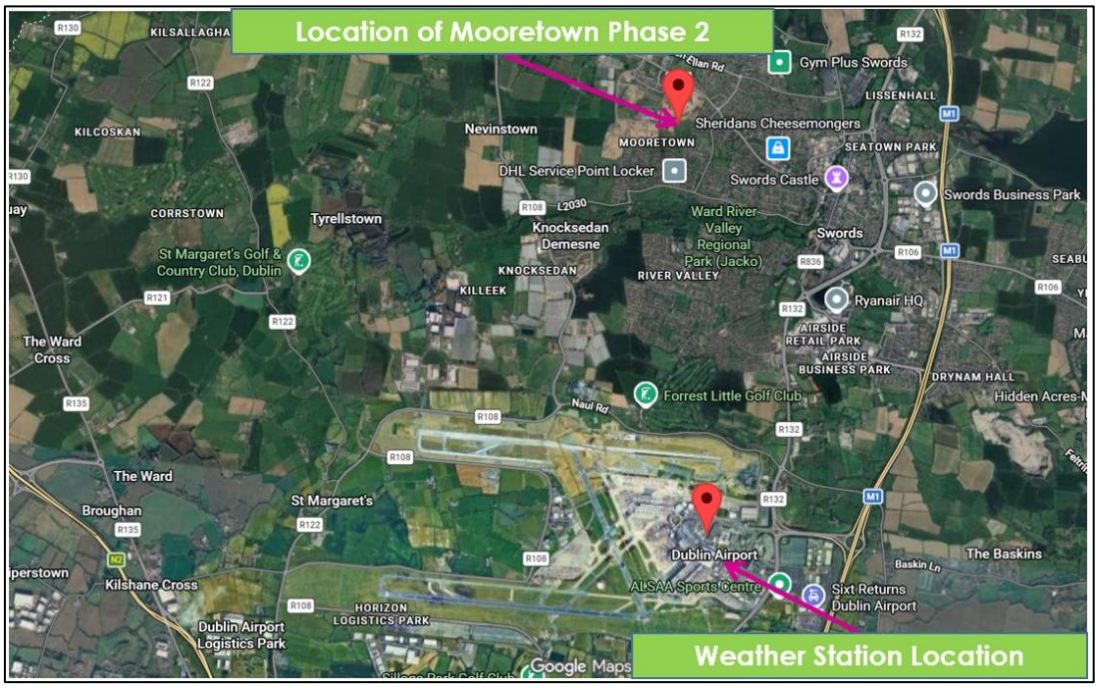

Figure 17.6 Site Location and weather station location at Dublin airport

Regarding the transferability of the available wind data from the Dublin Airport Weather Wind station to the site location, the following considerations have been made:

- Terrain: The meteorological station is located on the flat open terrain of the airport, whereas the Proposed Development site is surrounded by low level houses (1 – 2 storeys).
- Mean wind speeds: Due to the different terrain, the ground-near wind speeds (at pedestrian level) will be lower at the proposed site compared to the meteorological station at the airport.
- Wind directions: The landscape around the development site can principally be characterised as flat terrain.

Based on the above considerations, it can be concluded that the data from the meteorological station at Dublin Airport are applicable for the assessment of the wind climate at the development site.

Two different data sets are analysed as follows:

- The meteorological data associated with the maximum daily wind speeds recorded over a 15-years period between 2008 and 2022; and
- The mean hourly wind speeds recorded over a 15-years period between 2008 and 2022. The data were recorded at 10m above ground.

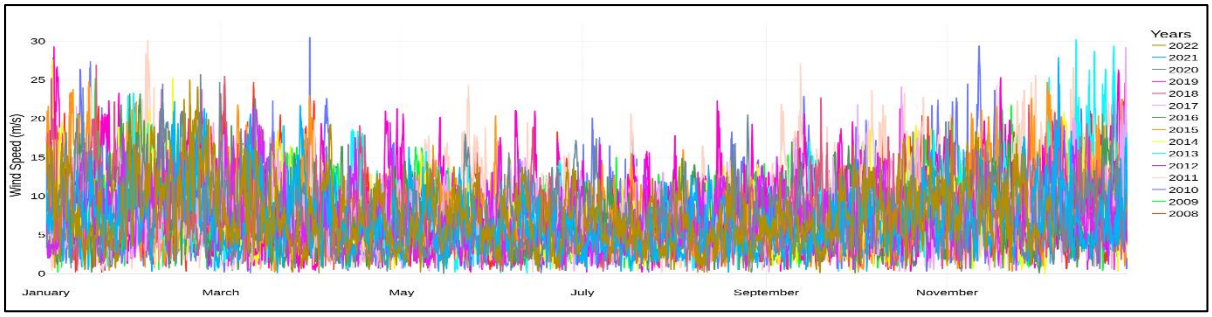

Figure 17.7 Local Wind Conditions – Wind Speed (Mean Values per Months)- historic data 2008-2022 (Data Source www.meteoblue.com)

Furthermore, a Weibull distribution was fitted to the wind data for each wind direction analysed through the adoption of an appropriate dispersion parameter, c, and a shape parameter, k. In house-based 'Python script' applies the factors to the simulation input wind conditions directly. The local data from Dublin Airport was transposed to the development site using the ESDU (Engineering Sciences Data Unit) methodology.

17.3.1 Local Wind Conditions

The predominant wind direction in the baseline environment identifies from which direction the wind is blowing on the site for most of the time during a typical year. In accordance with Lawson Criteria, if the proposed site is exposed to a wind from a specific direction for more than 5% of the times, then the microclimate analysis should consider the impact of this wind (accounting for its direction and most frequent speed) on the local microclimate.

Data analysis and data visualization were obtained using an in-house program which is coded based on Python language. The speed and frequency of wind for each direction were considered, and seasonal changes were analysed to indicate the prevailing wind directions (as shown in Figures 17.8 – 17.10).

Figure 17.8 presents the wind speed diagram for Dublin, showing how often (i.e. how many days per month) the wind blows with a specific speed. Figure 17.9 shows the wind rose for Dublin and details how often (i.e. how many hours per year) the wind blows from a specific direction. These findings indicate that west winds contribute significantly to the probability of discomfort exceedance.

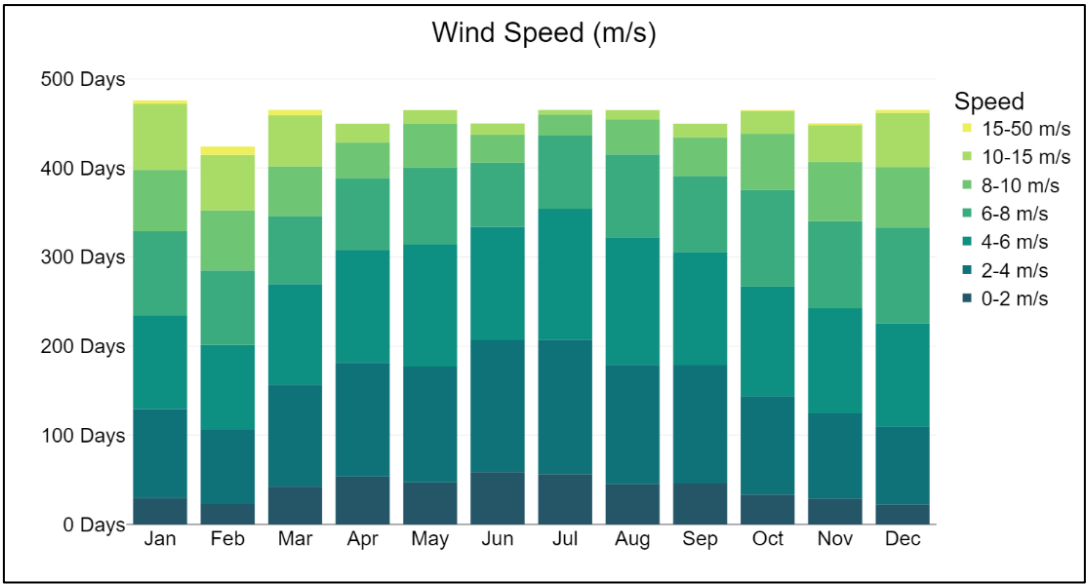

Figure 17.8 Annual wind speed diagram – Dublin (Source: meteoblue.com)

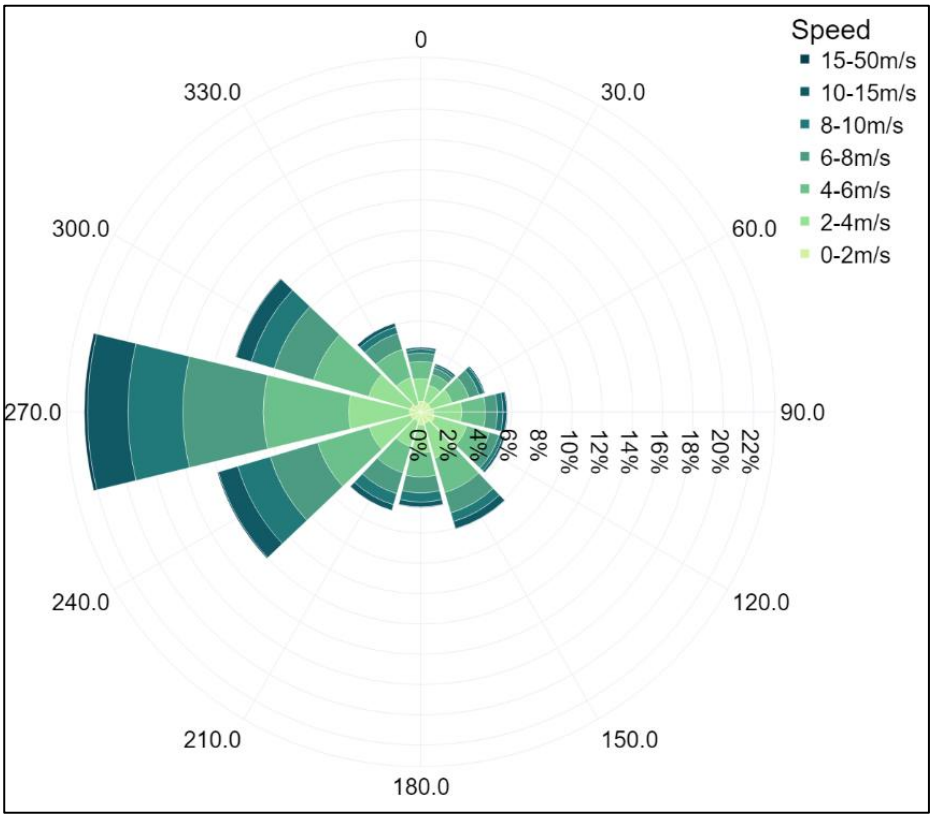

Figure 17.9 Wind rose of Dublin: speed, frequency and duration (Source: meteoblue.com)

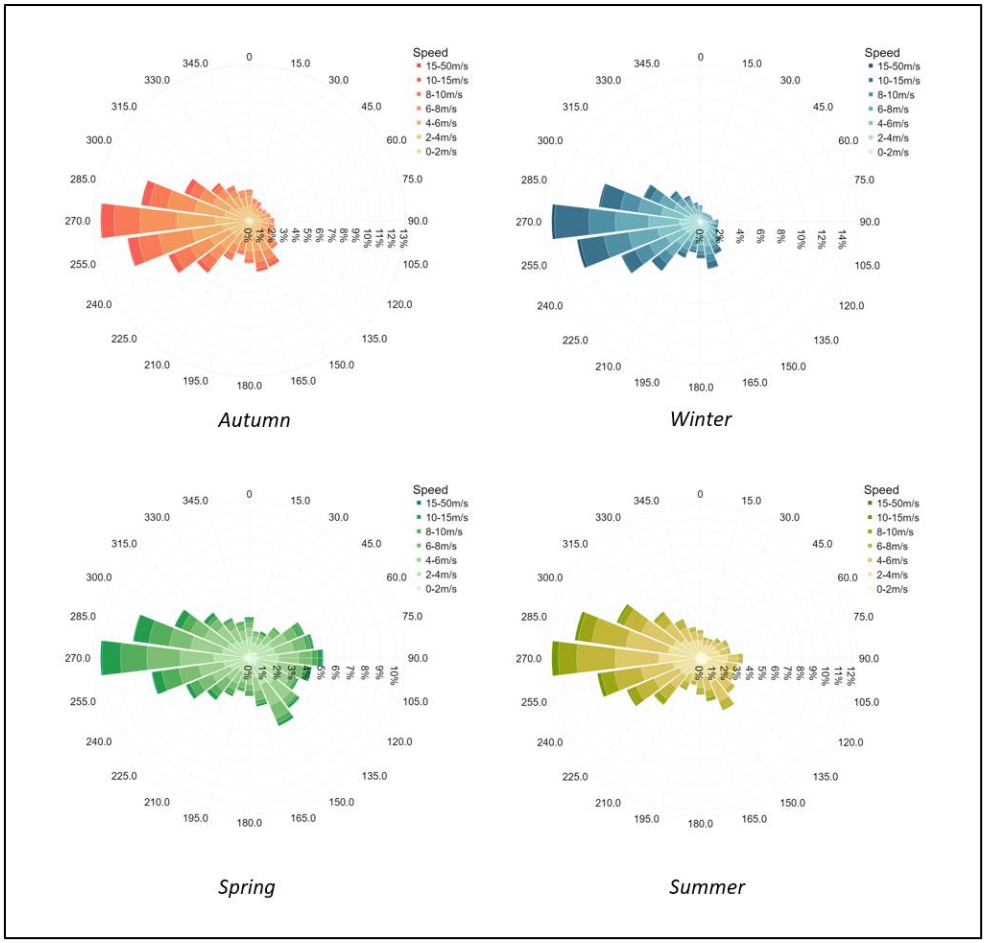

Figure 17.9 Wind speeds and directions by season, Ireland (Source: meteoblue.com)

Table 17.8 reports all the wind directions and their correspondent velocity, displayed in ascending order of wind direction and its corresponding frequency occurrence. As can be noted, the wind at the site is mostly blowing (higher frequency of occurrence) from the West (270°) direction with a wind velocity greater than 5 m/s. A similar wind speed is also blowing from the South-West direction (240°) and the West-Northwest direction (300°). This finding indicates that west winds contribute significantly to the probability of discomfort exceedance. For assessing the wind microclimate for the Proposed Development, the study has considered the site exposed to all the wind directions which exceed the 5% of frequency, as required for the Lawson Criteria, and some additional high-speed winds, which are occurring less often (below 5% of the times) but that can cause distress conditions because of their speed.

Table 17.8 Summary of wind speeds, directions and frequency at the site[31]

DIRECTION (°)	FREQUENCY (%) (2008-2022)				TOTAL FREQUENCY (%)
	0–5 M/S	5–10 M/S	10–15 M/S	15–30 M/S	
0°	2.0	2.0	0.5	0.2	4.7
30°	1.8	1.5	0.3	0.1	3.7
60°	2.2	1.8	0.3	0.1	4.4
90°	2.8	2.5	0.4	0.1	5.8
120°	3.0	2.2	0.3	0.1	5.6
150°	3.2	2.5	0.7	0.3	6.7
180°	2.4	2.2	0.8	0.2	5.6
210°	1.5	2.5	1.2	0.5	5.7
240°	2.2	4.5	3.5	1.5	11.7
270°	4.0	9.5	6.0	2.5	22.0
300°	3.5	6.0	3.0	1.0	13.5
330°	2.0	2.5	0.8	0.3	5.6

[31] Cells highlighted in grey indicate top nine higher frequency winds, which exceed the 5% frequency, and are fundamental to the wind microclimate analysis.

17.4 Predicted Impacts of the Proposed Development

This section assessed the potential impact of the Proposed Development on the already existing environment, and the suitability of the Proposed Development to create and maintain a suitable and comfortable environment for different pedestrian activities.

17.4.1 Do-Nothing Impact

If the Proposed Development is not constructed, wind conditions at the site would remain consistent with the existing baseline wind climate described in Section 17.3. No changes to pedestrian-level wind conditions would be expected in the absence of the Proposed Development.

However, the lands are zoned RA - Residential Area under the Fingal Development Plan 2023–2029, which supports their future development for housing. As noted in consultation for similar projects, if this specific development does not proceed, it is highly likely that an alternative residential scheme of similar scale would eventually be delivered on these lands, with comparable land, soils and geology impacts to those assessed in this EIAR.

17.4.2 Construction Phase

As the finalization of the development proceeds, the wind setting at the site progressively conform to those of the completed development. Since windier conditions are acceptable within a construction area (not accessible to the public), and the Proposed Development would not be the reason for critical wind conditions on-Site (slightly calmer when the development is in site), the impacts evaluated on-Site are insignificant. Thus, the predicted impacts during construction phase are identified as ***not significant*** or ***negligible.***

In summary, as construction of the Mooretown Phase 2 Residential Development progresses, the wind conditions at the site gradually adjust to those of the completed development. During the construction phase, predicted impacts are classified as ***negligible***.

17.4.3 Operational Phase

This section shows CFD results of wind microclimate assessment carried out considering the operational phase of Mooretown Phase 2 Residential Development. In this case the assessment has considered the impact of wind on the existing area including the proposed Mooretown Phase 2 Residential Development. Wind simulations have been carried out in all the various directions for which the development could show critical areas in terms of pedestrian comfort and safety.

Results of wind microclimate at pedestrian level (1.8m height - flow speeds) are collected throughout the modelled site (potential receptors). These flow velocities identify if locally, wind speeds at pedestrian-level are accelerated or decelerated in relation to the undisturbed reference wind speed (inlet/reference profile) and local acceleration/deceleration effects caused by the built form.

The impact of these speeds are then combined with their specific frequency of occurrence and presented in the maps that show the area of comfort and distress in accordance with Lawson Criteria, these maps are produced at pedestrian level on the ground or on the courtyards, and identify the suitability of each areas to its prescribed level of usage and activity.

17.4.3.1 Wind Speeds at Pedestrian Level

Results of wind speeds and their circulations at pedestrian level of 1.8m above the development ground are presented in the following images (Figures 17.11 – 17.22) to assess wind flows at ground floor level of the Proposed Development during the operational phase. Wind flow speeds are shown to be within tenable conditions. Higher velocity and recirculation effects are found in the existing site.

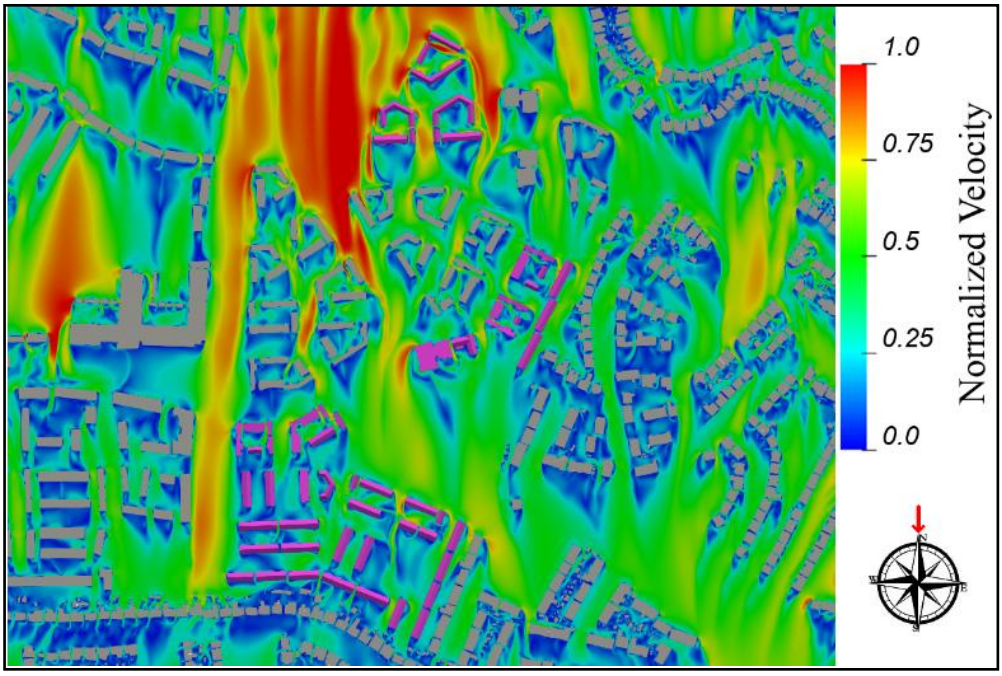

Figure 17.10 Wind at pedestrian level – proposed – direction N

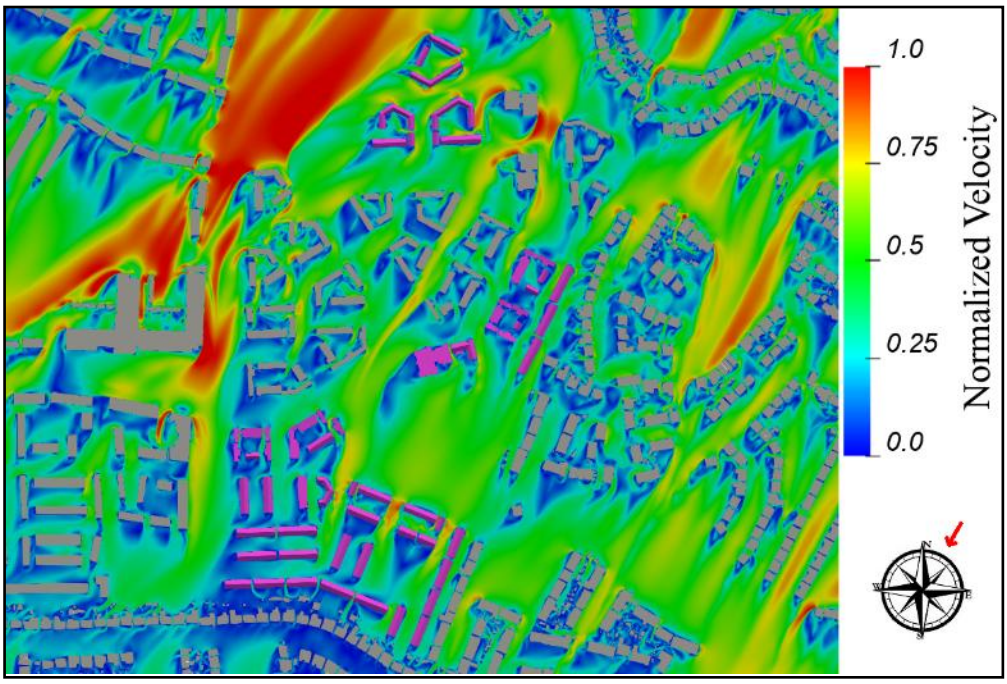

Figure 17.11 Wind at pedestrian level – proposed – direction NNE

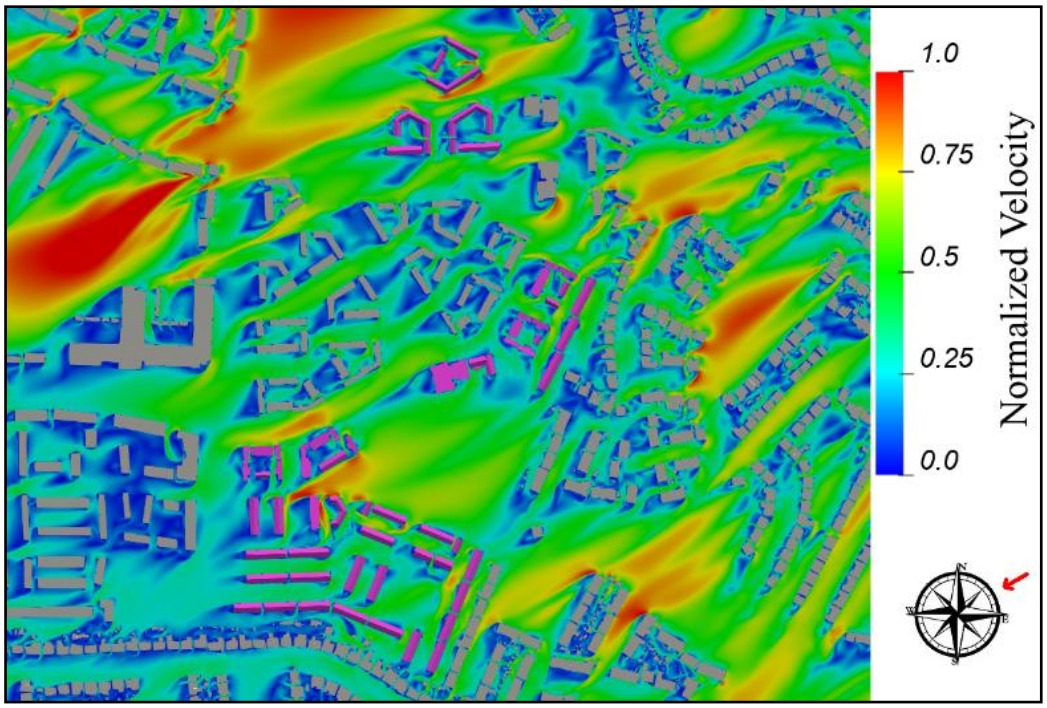

Figure 17.12 Wind at pedestrian level – proposed – direction NE

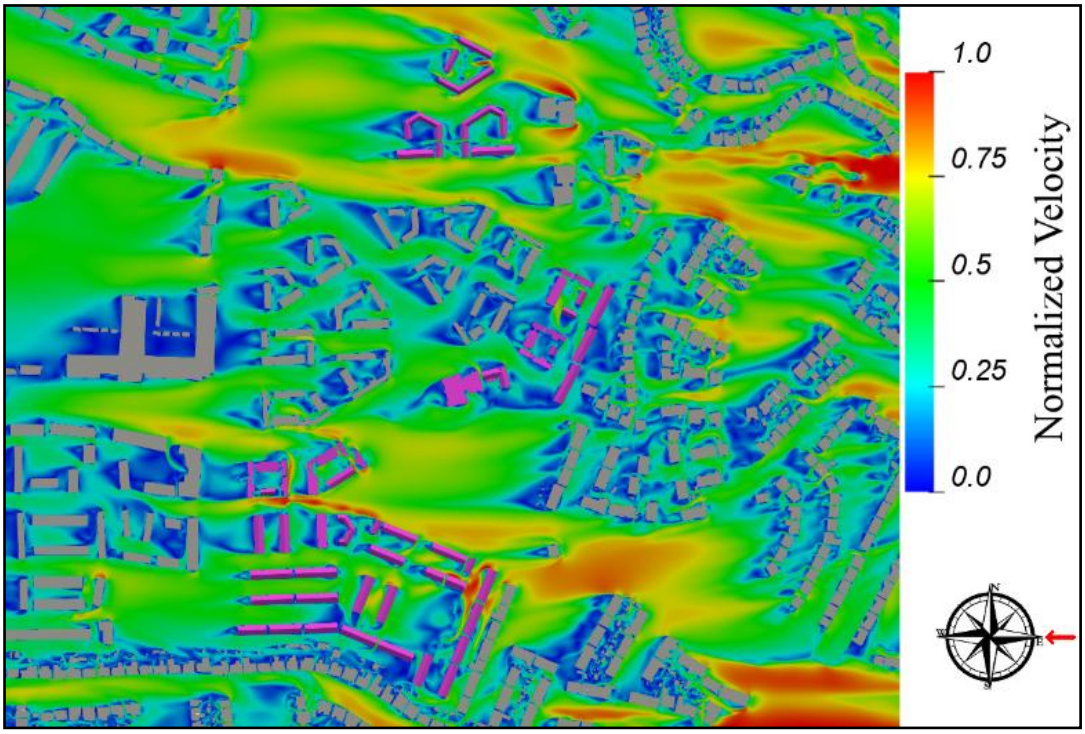

Figure 17.13 Wind at pedestrian level – proposed – direction E

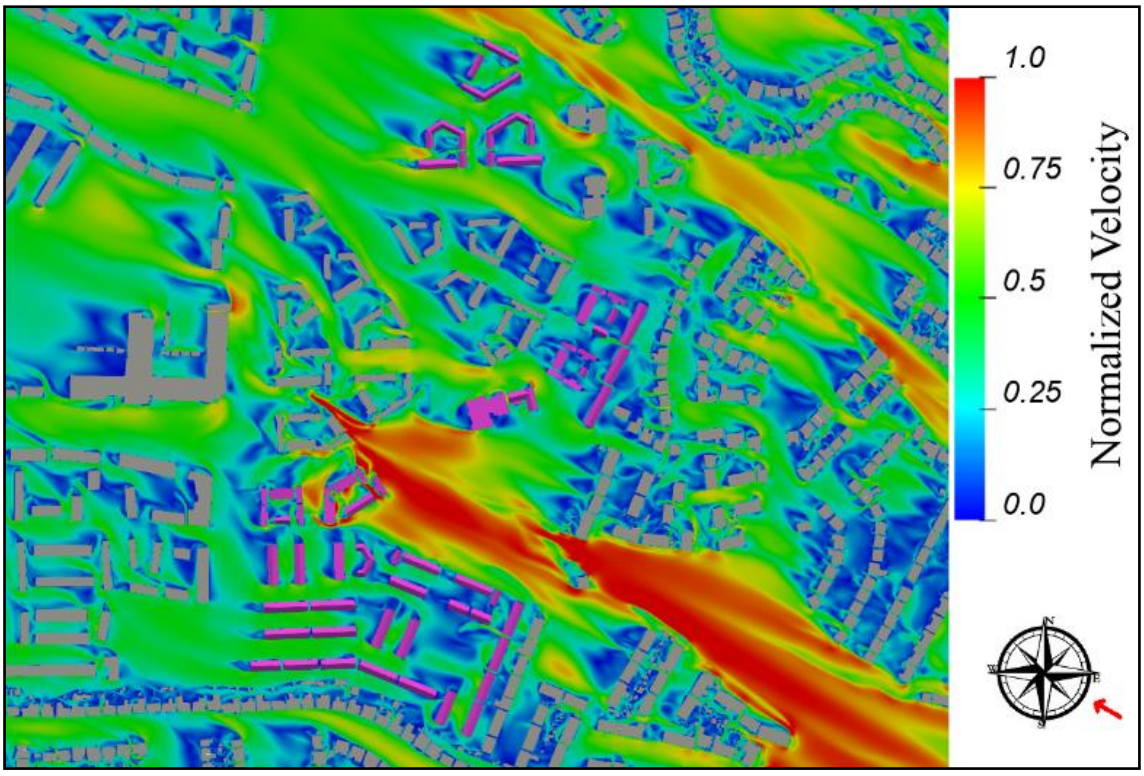

Figure 17.14 Wind at pedestrian level – proposed – direction ESE

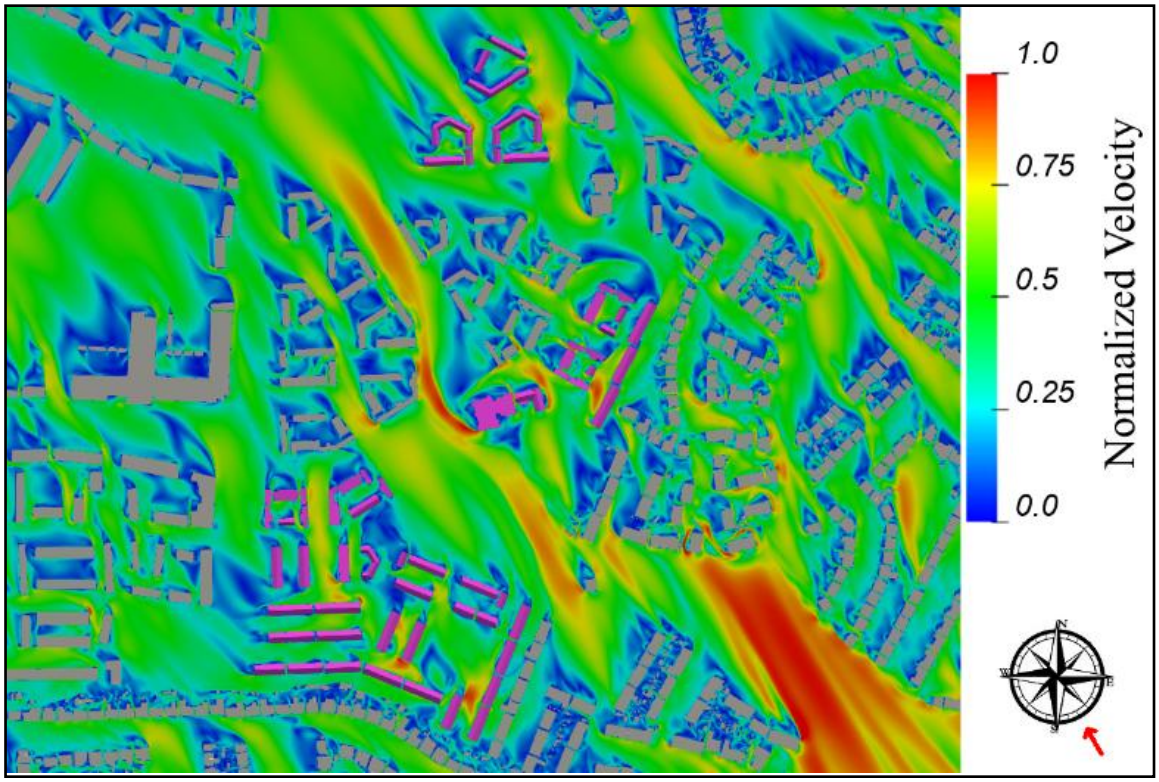

Figure 17.15 Wind at pedestrian level – proposed – direction SE

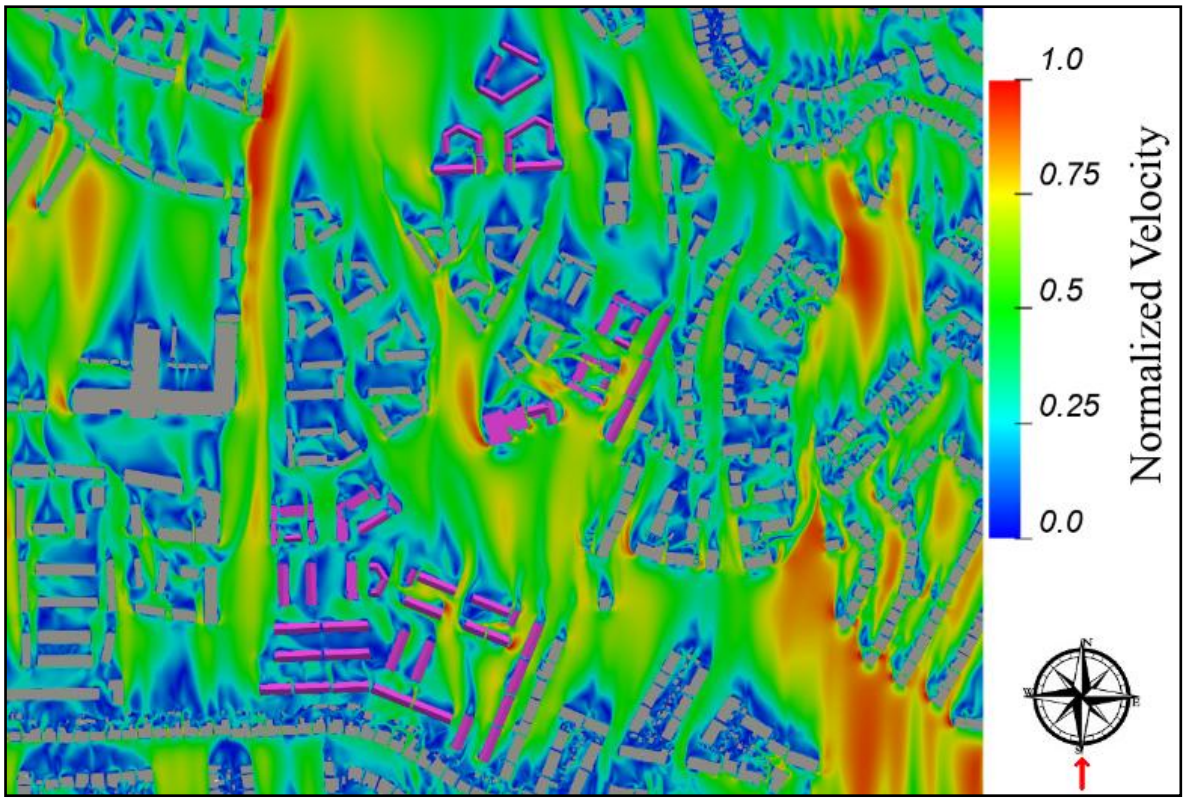

Figure 17.16 Wind at pedestrian level – proposed – direction S

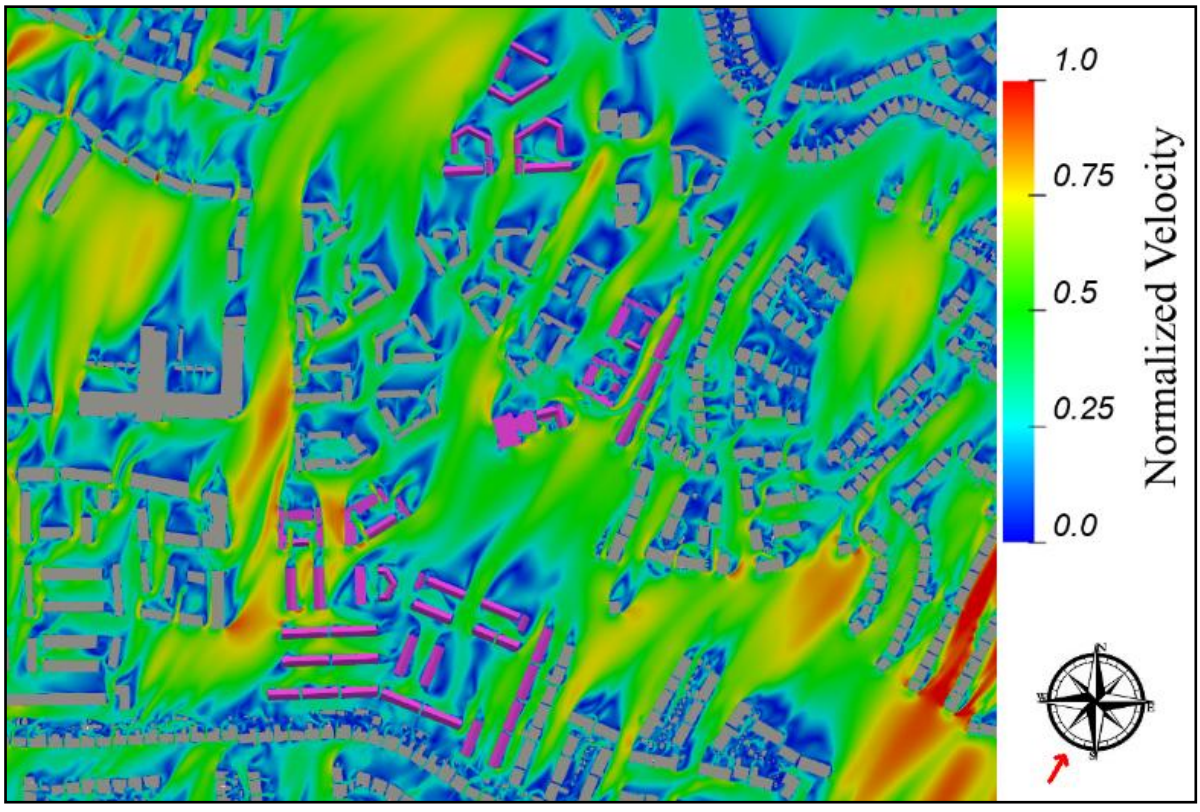

Figure 17.17 Wind at pedestrian level – proposed – direction SSW

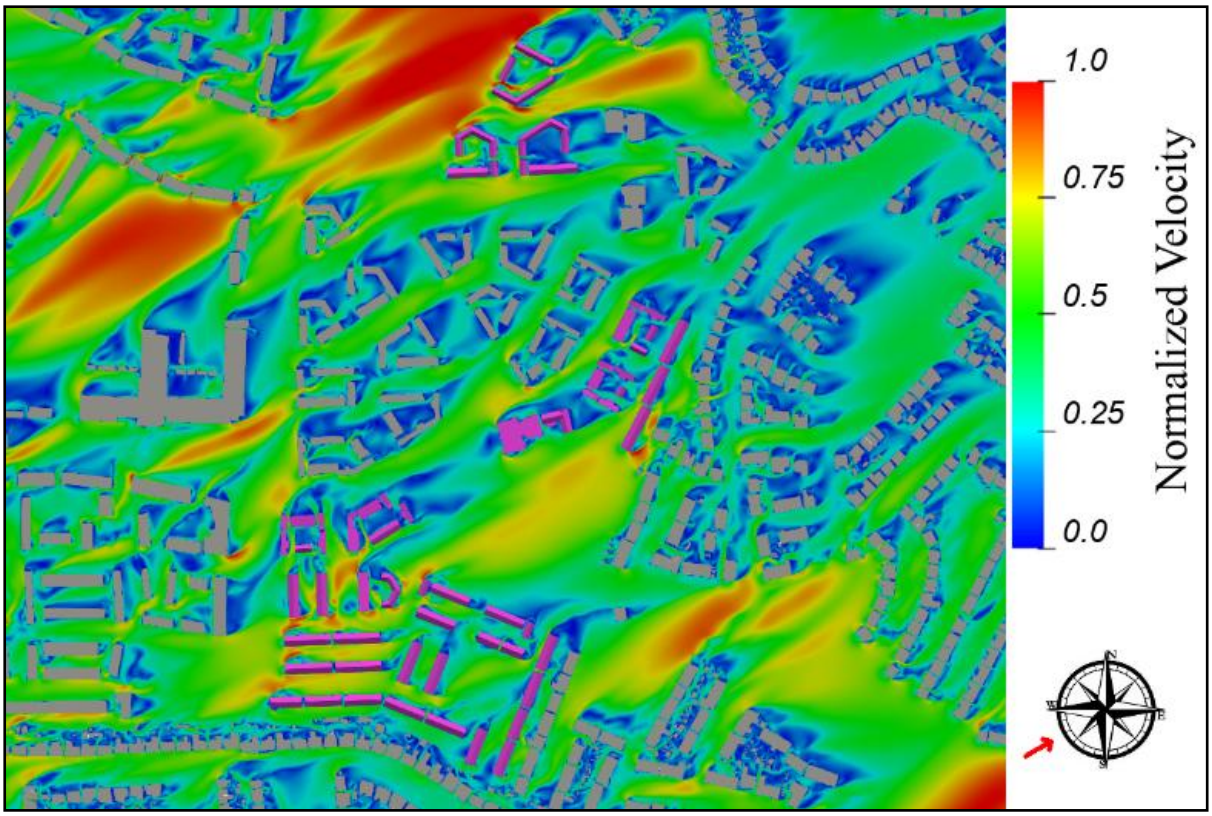

Figure 17.18 Wind at pedestrian level – proposed – direction SW

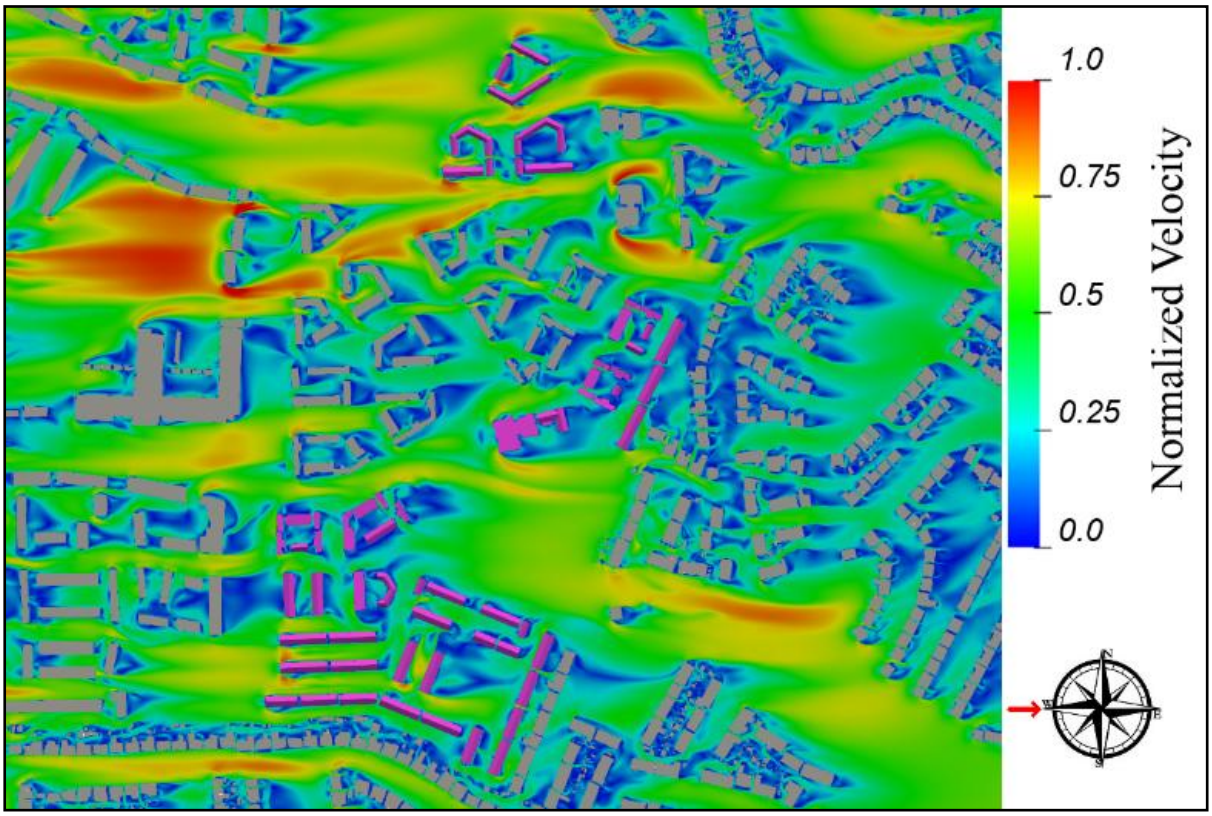

Figure 17.19 Wind at pedestrian level – proposed – direction W

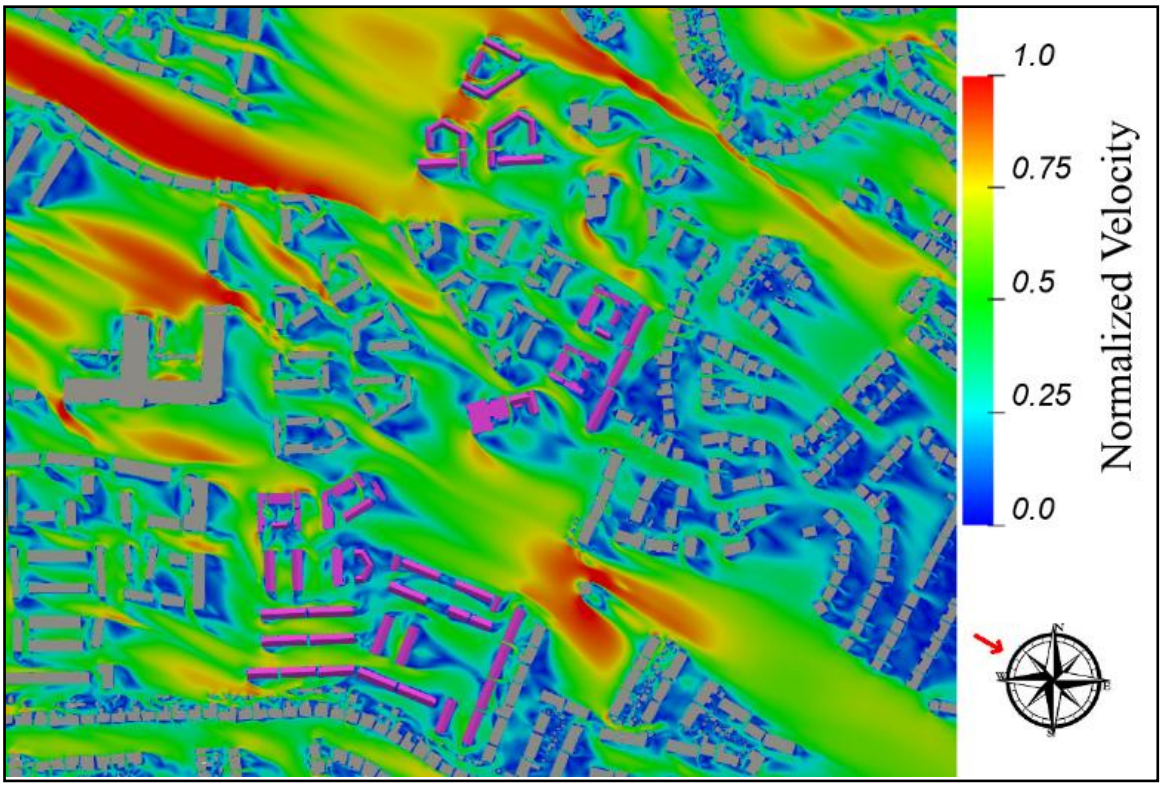

Figure 17.20 Wind at pedestrian level – proposed – direction WNW

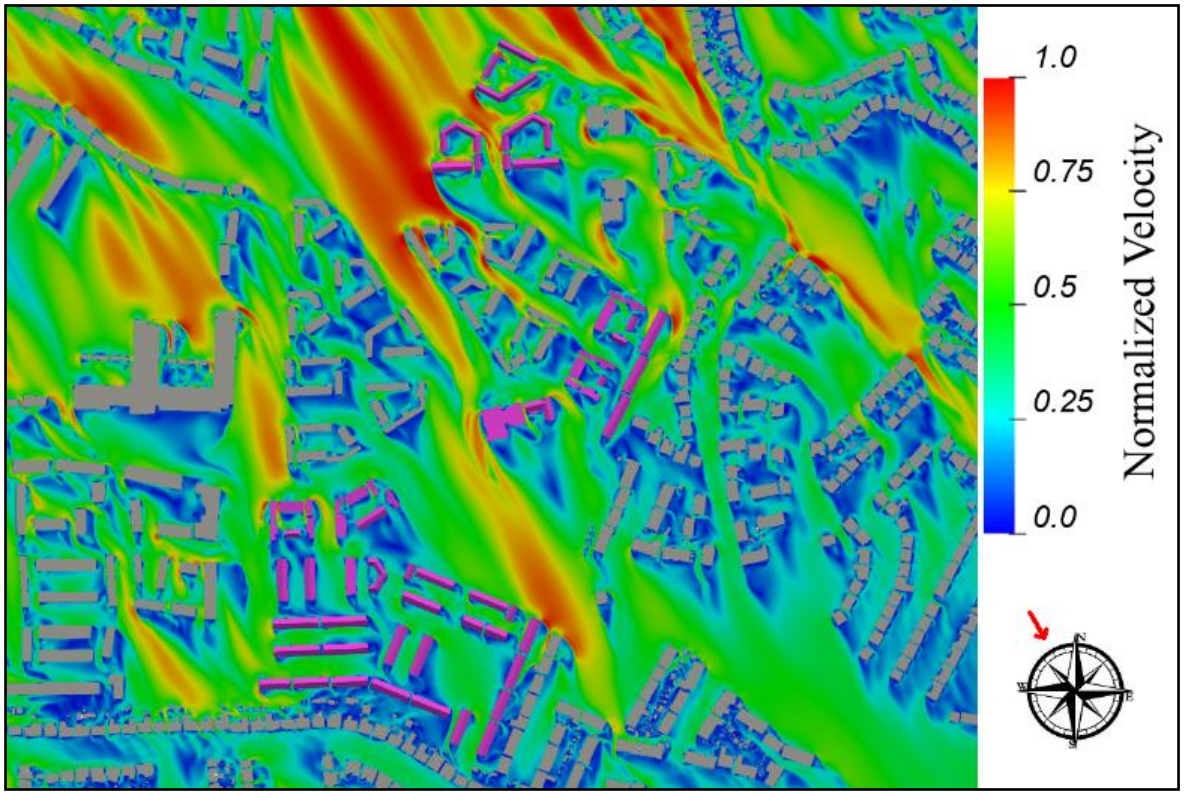

Figure 17.21 Wind at pedestrian level – proposed – direction NW

17.4.3.2 Proposed Scenario Wind Microclimate

The wind flow results obtained simulating the different direction and wind speeds, are combined with wind frequencies of occurrence to obtain comfort ratings at pedestrian level in all areas included within the model. The comparison of comfort ratings with intended pedestrian activities is shown in Figure 17.23. The comfort/distress conditions are presented using a colour coded diagram below formulated in accordance with the Lawson Criteria.

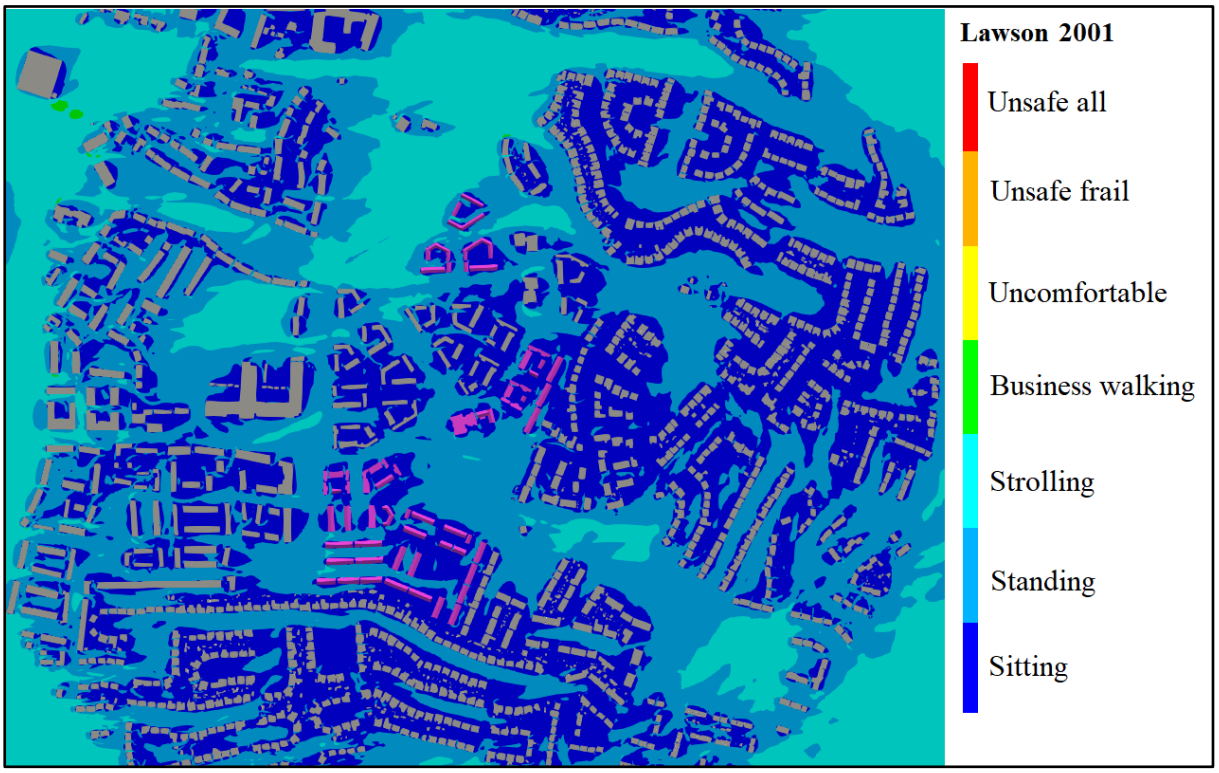

Figure 17.22 Wind comfort-distress map (Lawson map) – Proposed scenario

17.4.3.3 Summary

This section assessed the findings of a wind microclimate study performed for the Proposed Development (Mooretown Phase 2 Residential Development). This study has been carried out to identify the possible wind patterns at the location of the Proposed Development, under mean and peak wind conditions typically occurring in Dublin.

The wind profile of the proposed environment has been built using the annual average meteorological data collected at Dublin Airport Weather Station. The prevailing wind directions for the site are identified as West, West-South-West, and South-East with magnitude of approximately 6m/s. A CFD numerical model was built, where the typical winds conditions were applied on the area around the development, considering the impact of the Proposed Development.

The results of the wind speeds and patterns formed under different simulated wind conditions were combined with the frequency of occurrence of the same and an overall wind map was produced (Lawson map) which has shown the suitability of each area to a specific pedestrian activity.

The following conclusions are drawn from the Proposed Development assessment against the Lawson comfort and distress criteria:

- The Proposed Development does not impact or give rise to negative or critical wind speed profiles at the nearby adjacent roads, or nearby buildings. Moreover, in terms of distress, no critical conditions were found for frail persons or cyclists or for members of the public in the surroundings of the Proposed Development.
- The development is designed to deliver a high-quality environment for the scope of use intended of each area/building (i.e., comfortable and pleasant for pedestrians).
- The assessment of the proposed scenario has shown that no area is unsafe, and no conditions of distress will be created by the Proposed Development.

17.4.3.4 On-Site and Off-Site Receptors

Figure 17.23 shows the pedestrian activity area on the ground around the development. These areas are considered as sensitive potential receptors for the wind microclimate.

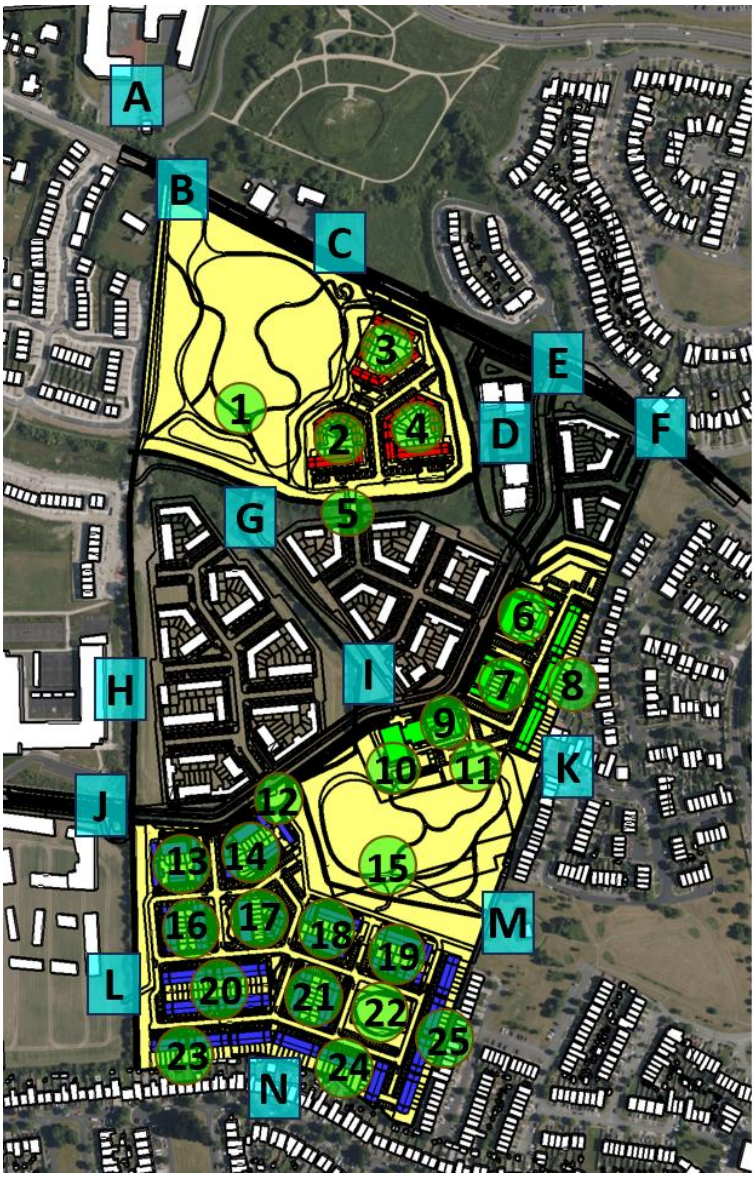

Figure 17.23 Potential Sensitive Receptors on the Ground – Pedestrian Activities Area

Potential receptors for the wind assessment are all pedestrian circulation routes, building entrances and leisure open areas within the site and in neighbouring adjacent areas. The pedestrian level is considered at 1.8m above ground.

Table 17.9 and Table 17.10 summarise the predicted pedestrian comfort levels at the selected on-site and off-site receptors.

Table 17.9 Impact of the Proposed Development – overview (On-Site)

Potential Receptors	Description	Proposed Development Conditions (Mooretown Phase 2 Residential Development)	Impact Significance
1.	Rathbeale Park, south of Rathbeale Road	Wind conditions are suitable for general movement (strolling). No unsafe wind conditions are predicted.	*Beneficial*
2.	Private Amenity Space (PAS) Receptor 2	Wind conditions are calm and sheltered, providing a high level of comfort.	*Beneficial*
3.	Private Amenity Space (PAS) Receptor 3	Wind conditions are calm and sheltered, providing a high level of comfort.	*Beneficial*
4.	Private Amenity Space (PAS) Receptor 4	Wind conditions are calm and sheltered, providing a high level of comfort.	*Beneficial*
5.	Part A Site Access	Wind conditions are calm and sheltered, providing a high level of comfort.	*Beneficial*
6.	Private Amenity Space (PAS) Receptor 6	Wind conditions are calm and sheltered, providing a high level of comfort.	*Beneficial*
7.	Private Amenity Space (PAS) Receptor 7	Wind conditions are calm and sheltered, providing a high level of comfort.	*Beneficial*
8.	Private Amenity Space (PAS) Receptor 8	Wind conditions are calm and sheltered, providing a high level of comfort.	*Beneficial*
9.	Creche Play Area	Wind conditions are calm and sheltered, providing a high level of comfort.	*Beneficial*
10.	Apartment Block Communal Open Space	Wind conditions are calm and sheltered, providing a high level of comfort.	*Beneficial*
11.	Playground Area (Part B)	Wind conditions are calm and sheltered, providing a high level of comfort.	*Beneficial*
12.	Bus Turning Area	Wind conditions are calm and sheltered, providing a high level of comfort.	*Beneficial*
13.	Private Amenity Space (PAS) Receptor 13	Wind conditions are calm and sheltered, providing a high level of comfort.	*Beneficial*

Potential Receptors	Description	Proposed Development Conditions (Mooretown Phase 2 Residential Development)	Impact Significance
14.	Private Amenity Space (PAS) Receptor 14	Wind conditions are calm and sheltered, providing a high level of comfort.	*Beneficial*
15.	Glasmore Green	Wind conditions are calm and sheltered, providing a high level of comfort.	*Beneficial*
16.	Private Amenity Space (PAS) Receptor 16	Wind conditions are calm and sheltered, providing a high level of comfort.	*Beneficial*
17.	Private Amenity Space (PAS) Receptor 17	Wind conditions are calm and sheltered, providing a high level of comfort.	*Beneficial*
18.	Private Amenity Space (PAS) Receptor 18	Wind conditions are calm and sheltered, providing a high level of comfort.	*Beneficial*
19.	Private Amenity Space (PAS) Receptor 19	Wind conditions are calm and sheltered, providing a high level of comfort.	*Beneficial*
20.	Private Amenity Space (PAS) Receptor 20	Wind conditions are calm and sheltered, providing a high level of comfort.	*Beneficial*
21.	Private Amenity Space (PAS) Receptor 21	Wind conditions are calm and sheltered, providing a high level of comfort.	*Beneficial*
22.	St. Cronan's Well	Wind conditions are calm and sheltered, providing a high level of comfort.	*Beneficial*
23.	Private Amenity Space (PAS) Receptor 23	Wind conditions are calm and sheltered, providing a high level of comfort.	*Beneficial*
24.	Private Amenity Space (PAS) Receptor 24	Wind conditions are calm and sheltered, providing a high level of comfort.	*Beneficial*
25.	Private Amenity Space (PAS) Receptor 25	Wind conditions are calm and sheltered, providing a high level of comfort.	*Beneficial*

Table 17.10 Impact of the Proposed Development – overview (Off-Site)

Potential Receptors	Description	Proposed Development Conditions (Mooretown Phase 2 Residential Development)	Impact Significance
A.	Gaelscoil Bhrian Bóroimhe Elementary School	Wind conditions are suitable for general movement (strolling). No unsafe wind conditions are predicted.	*Beneficial*
B.	Off-site at NW boundary, Bus Stop on Rathbeale Rd	Wind conditions are suitable for general movement (strolling). No unsafe wind conditions are predicted.	*Beneficial*
C.	Off-site at N boundary, connection to the North Part of Rathbeale Park	Wind conditions are suitable for general movement (strolling). No unsafe wind conditions are predicted.	*Beneficial*
D.	Block A and Block B (Mooretown Phase 1) Communal Open Space	Wind conditions are suitable for general movement (strolling). No unsafe wind conditions are predicted.	*Beneficial*
E.	Northern Main Access on Rathbeale Rd	Wind conditions are suitable for general movement (strolling). No unsafe wind conditions are predicted.	*Beneficial*
F.	Off-site at NE boundary, Bus Stop on Rathbeale Rd	Wind conditions are calm and sheltered, providing a high level of comfort.	*Beneficial*
G.	Local Area Play (LAP) Mooretown Phase 1 North Side	Wind conditions are suitable for general movement (strolling). No unsafe wind conditions are predicted.	*Beneficial*
H.	Swords Community College	Wind conditions are calm and sheltered, providing a high level of comfort.	*Beneficial*
I.	Local Area Play (LAP) Mooretown Phase 1 South Side	Wind conditions are calm and sheltered, providing a high level of comfort.	*Beneficial*
J.	Western Main Access	Wind conditions are calm and sheltered, providing a high level of comfort.	*Beneficial*
K.	Connection to Cianlea Residential Development	Wind conditions are calm and sheltered, providing a high level of comfort.	*Beneficial*
L.	Pedestrian Route Connection to SHD Scheme	Wind conditions are calm and sheltered, providing a high level of comfort.	*Beneficial*
M.	Connection to Glasmore Abbey Park	Wind conditions are suitable for general movement (strolling). No unsafe wind conditions are predicted.	*Beneficial*
N.	Off-Site at South Boundary	Wind conditions are calm and sheltered, providing a high level of comfort.	*Beneficial*

Overall, the on-site receptors (1 to 25) are predicted to provide comfortable conditions for typical day-to-day pedestrian use, with the most exposed point (receptor 1) showing slightly windier but still acceptable conditions.

For the off-site receptors (A to N), conditions remain safe and comfortable. The more exposed locations show slightly windier but still acceptable conditions.

None of the assessed locations are deemed unsafe, and no distress conditions are predicted for either frail persons/cyclists or the public.

The identified on-site and off-site receptor locations on the Lawson comfort and distress map are shown in Figure 17.24.

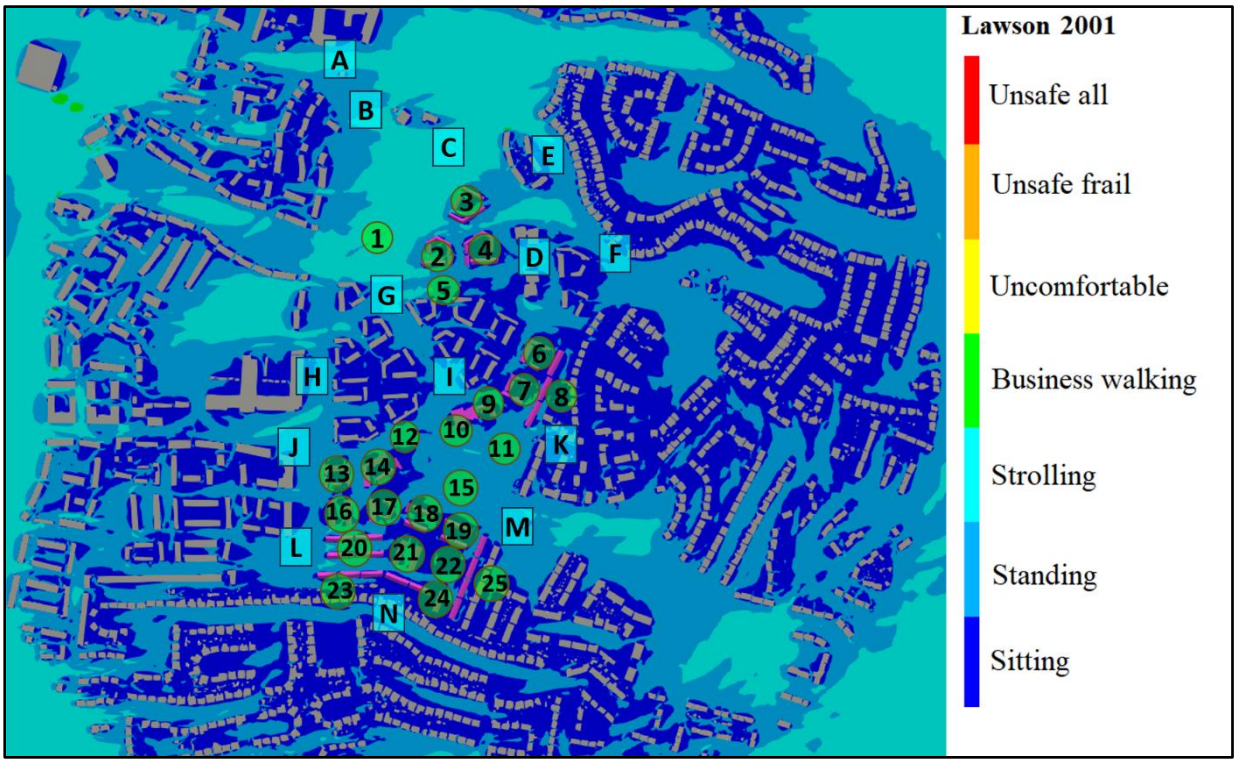

Figure 17.24 Lawson Comfort and Distress Map with On-Site and Off-Site Receptor Locations

17.4.3.5 Balconies

The comparison of comfort ratings with the intended pedestrian activities is depicted in the Lawson Comfort and Distress Map at 1.5m above the balconies, as illustrated in Figure 17.26 to Figure 17.27. The assessment indicates that all balconies are deemed safe for occupants, with no distress areas identified.

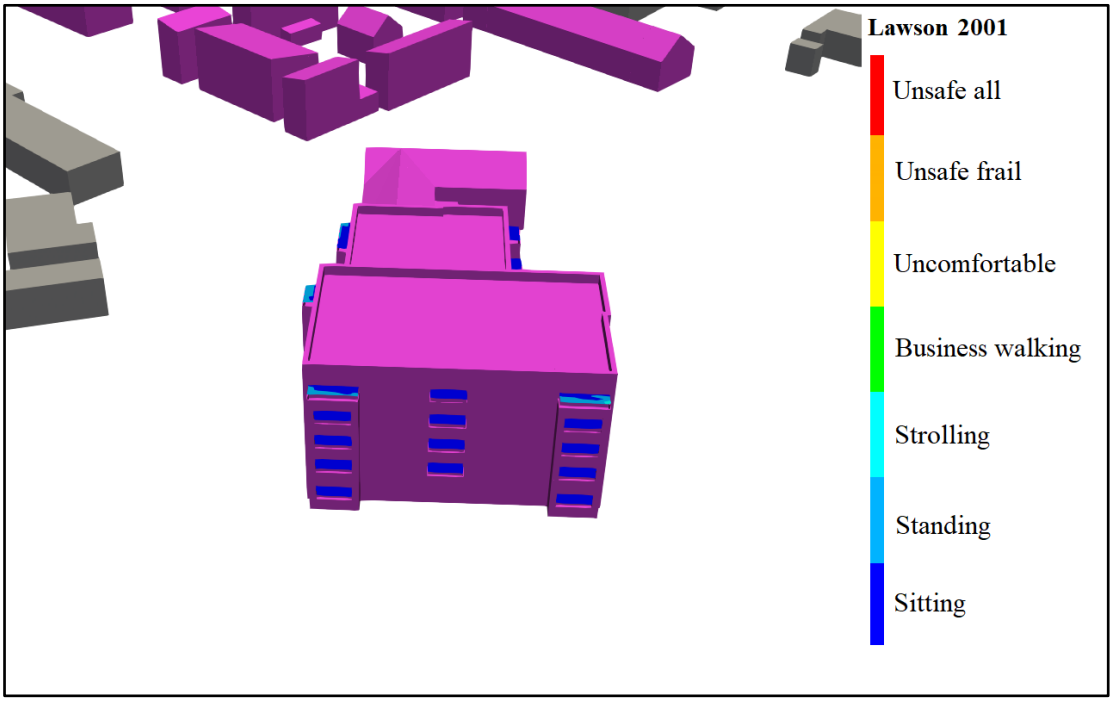

Figure 17.25 Wind comfort-distress map (Lawson map) – Apartment Building (South-West View)

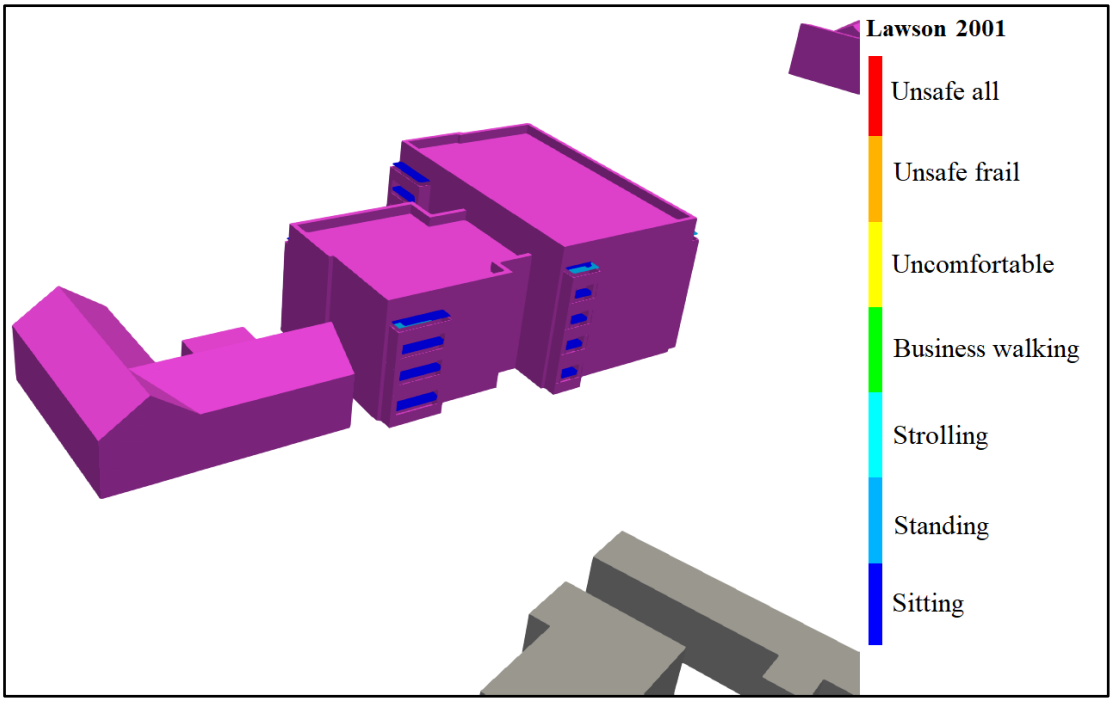

Figure 17.26 Wind comfort-distress map (Lawson map) – Apartment Building (North-East View)

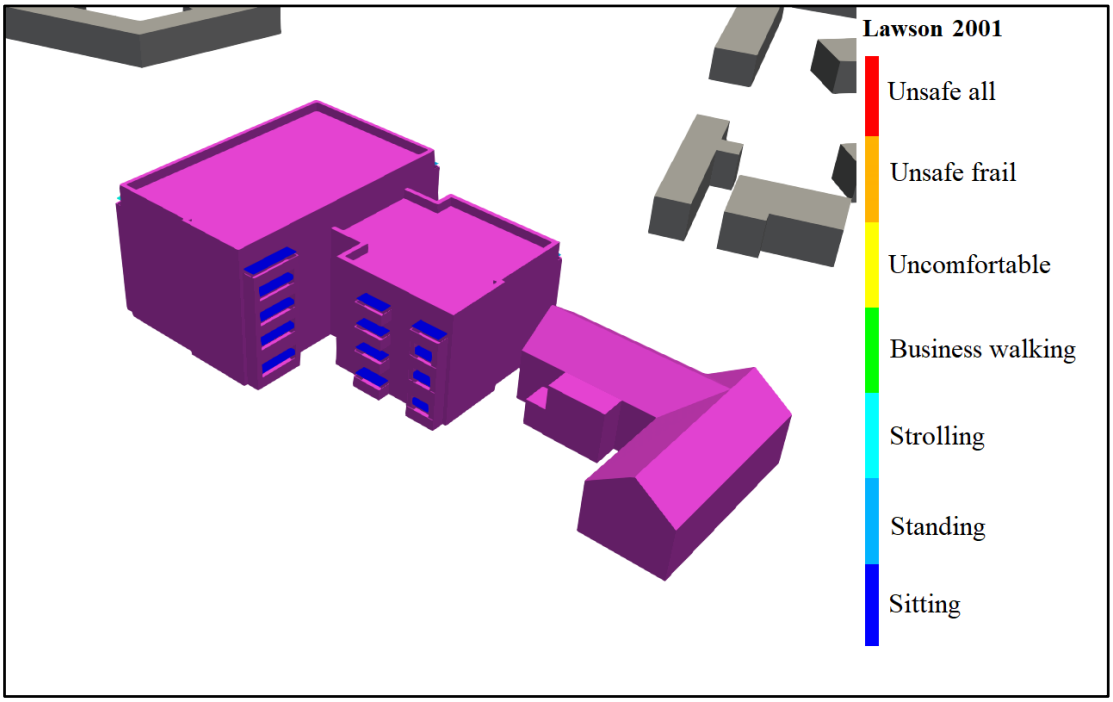

Figure 17.27 Wind comfort-distress map (Lawson map) – Apartment Building (South-East View)

17.5 Mitigation Measures

Beyond what is already proposed under the scope of the Proposed Development, no further mitigation is proposed in relation to wind. The landscaping proposed for the development has been considered within the wind analysis carried out and its effect has been beneficial in reducing the wind speed around the development and creating calmer wind condition in areas such the parks and landscaped areas where pedestrian can be comfortable for long-term sitting.

17.6 Residual Impacts

Wind cannot be eliminated or totally mitigated, as it depends on weather conditions, which could vary. The data of the historical wind conditions collected and reported above, show that the wind speeds likely to occur at the site are below critical values, and that a pleasant and comfortable microclimate can be maintained for most of the time and under the most frequent wind scenarios.

Gusts and storms can still occur, however; and they can create unpleasant and sometimes unsafe conditions. The pedestrian activities concerning the Lawson Comfort and Distress Criteria are not in general carried out during those weather conditions.

Having considered the above, no further changes to the Proposed Development design or further landscaping are suggested, as safety and pedestrian comfort will be maintained in accordance with Lawson Comfort and Distress Criteria (Figure 17.24). As observed in Table 17.9 and Table 17.10, the significance of the impacts of the development are beneficial. Furthermore, pedestrian activities will benefit by the construction of the Proposed Development in the designed roads and amenities areas. Residual effects are ***not significant***.

17.7 Indirect and /or Secondary Impacts

The conducted numerical simulation did not evidence any indirect or secondary impact as result of the Proposed Development for what concerns wind comfort-distress conditions.

17.8 Interactions

The principal interaction is with Chapter 7 (Population & Human Health), since the wind conditions at the Proposed Development site can affect the amenity and safety of residents and visitors, as discussed above. As set out in Table 17.9 and Table 17.10, in all cases, the Proposed Development will deliver a wind microclimate that is either suitable for all intended pedestrian uses or calmer than required for the intended uses. Therefore, ***no significant impacts*** on population and human health are predicted because of the wind effects of the Proposed Development.

17.9 Cumulative Impacts

The cumulative impact assessment considers the Proposed Development in combination with any relevant permitted or approved future developments within the defined study area. As noted above, an 800 m radius from the estimated centre of the site has been adopted in this assessment to provide a comprehensive representation of the surrounding built environment. Within this study area, no relevant cumulative developments have been identified that would influence local wind conditions in combination with the Proposed Development. Therefore, no cumulative wind microclimate impact is predicted. The assessment already takes account of the influence of the existing surrounding buildings and off-site receptors, and therefore the current surrounding environment is inherently considered within the study.

17.9.1 Construction Phase

No cumulative impacts are predicted during the construction phase, as no relevant permitted or approved developments have been identified within the defined study area, including the 800 m assessment radius, that would interact with the Proposed Development and influence local wind conditions during construction.

17.9.2 Operational Phase

No cumulative impacts are predicted during the operational phase, as no relevant permitted or approved developments have been identified within the defined study area, including the 800 m assessment radius, that would interact with the Proposed Development and alter pedestrian level wind conditions in combination with the scheme.

17.10 Difficulties Encountered

No difficulties were encountered in compiling this chapter.

17.11 References

- Wind Microclimate Guidelines for Developments in the City of London '(August 2019)
- BRE Digest (DG) 520, "Wind Microclimate Around Buildings" (BRE, 2011).
- Building Aerodynamics, Tom Lawson Fr.Eng. Imperial College Press, (2001).
- Computational Fluid Dynamics for Urban Physics: Importance, scales, possibilities, limitations and ten tips and tricks towards accurate and reliable simulations. Building and Environment. B.Brocken (2015).
- CFD simulation for pedestrian wind comfort and wind safety in urban areas: General decision framework and case study for the Eindhoven University campus. Environmental Modelling and Software, 30, pp.15–34. Blocken, B., Janssen, W.D. and van Hooff, T., (2012).
- Best Practice Guidelines for the CFD Simulation of Flows in the Urban Environment, University of Hamburg. Franke, J., Hellsten, A., Schlunzen, H., Carissimo, B, Ed.

18 Traffic & Transportation

18.1 Introduction

Transport Insights has been appointed by the Applicant to prepare the following chapter in relation to a proposed residential development at Mooretown, Swords, Co. Dublin. The Proposed Development comprises 360 no. residential units with associated access, crèche, outdoor amenities, car parking, and cycle parking facilities. This chapter of the EIAR assesses the likely significant impacts of the proposed housing development in terms of vehicular, pedestrian and cycle access during both the construction and operational phases.

The chapter describes the methodology used; the receiving environment at the application site and surrounding area; the characteristics of the Proposed Development; the potential likely significant effects (direct, indirect, secondary, cumulative) during both the construction and operational phases; the remedial or reductive measures required to prevent, reduce or offset the likely significant adverse effects/impacts.

18.1.1 Qualifications & Expertise

This chapter was authored by Cillian O'Reilly (BA, MSc, MTPS) an Associate Director at Transport Insights. Cillian has over 10 years U.K. and Irish experience in transport planning and engineering including composing Transport Impact Assessments, EIAR Traffic and Transport Chapters, Construction Traffic Management Plans, etc. Secondary author was Conor O'Brien (BSc, MSc), Graduate Transport Planner at Transport Insights. Conor has 1 years' experience working with transport planning and engineering for public and private sector projects. His experience includes drafting EIAR Traffic and Transport Chapters.

18.2 Method

The following methodology has been adopted for this assessment:

Review of relevant available information including:

- National and local policy and guidance as outlined in Section 18.2.1;
- Site visit to quantify existing road network issues and identify local traffic characteristics;
- Comprehensive traffic survey scope of the local road network to understand baseline traffic flows;
- Detailed estimation of the transport demand that will be generated by the development both during the construction and operation phases; and
- Assessment of the impact of traffic on the local road network, car parking requirements and accessibility of the site by sustainable modes including walking, cycling and public transport.

This section of the EIAR outlines the methodology followed in order to carry out the Traffic and Transport Assessment set out within this chapter. The approach pursued in undertaking the Assessment is consistent with the national best practice, namely Transport Infrastructure Ireland's (TII) Traffic and Transport Assessment (TTA) Guidelines (May 2014).

It should be noted that a comprehensive TTA Report, which includes a framework Residential Travel Plan (RTP) has been produced by Transport Insights (2026) in relation to the Proposed Development and is included in the application package.

18.2.1 Policy and Guidance

This section of the chapter provides an overview of transport planning policy and guidance deemed relevant to the Proposed Development and its assessment.

- TII Guidance – including TTA Guidelines (2014), Project Appraisal Guidelines for National Roads Unit 16.1 – Expansion Factors for Short Period Traffic Counts (October 2016) and Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections (October 2021);
- Design Manual for Urban Roads and Streets (DMURS) - was jointly published by the Department of Transport, Tourism and Sport and the Department of Environment, Community and Local Government in 2013 and updated in 2019. DMURS provides clear guidance in relation to all aspects of road and street design, including carriageway and footpath widths, corner radii, stopping sight distances and sightlines, car parking dimensions and layouts, etc. DMURS guidance has underpinned key aspects of the current Proposed Development's design activities.
- Sustainable Residential Developments and Compact Settlements - the Compact Settlements Guidelines was published in January 2024 to "*set out policy and guidance in relation to the planning and development of urban and rural settlements, with a focus on sustainable residential development and the creation of compact settlements*". The Compact Settlements Guidelines is a statutory document augmenting other relevant guidance documents under Section 28 of the Planning and Development Act 2000, including the Housing Guidelines, as well as DMURS. Car and bicycle parking standards set out in these guidelines have informed the proposed provision (for 3 & 4 bed houses) of car and cycle parking within the Proposed Development.
- GDA Transport Strategy 2022-2042 - published by the National Transport Authority (NTA) in early 2023 sets out the framework for investment in transport infrastructure and services in the Greater Dublin Area over the next two decades to 2042. Proposed infrastructure to be delivered for Swords includes a proposed cycle network and as well as proposed public transport improvements, including Metrolink and BusConnects.
- Fingal Development Plan 2023-2029 - sets the planning context and a strategic vision for the sustainable development of the County. The Development Plan supports sustainable mobility through pledges to contribute to improved public transport provision, in addition to measures to encourage and promote walking and cycling and the development of Mobility Management Plans. Car and bicycle parking standards set out in the Development Plan have informed the proposed parking provision (for apartments, crèche and standard houses) within the Proposed Development.

18.2.2 Study Area

With regard to traffic impact assessment, the Study Area of this EIAR chapter has included sections of the Rathbeale Road (R125), Mooretown Western Distributor Road and Glen Ellan Road. This EIAR chapter presents the expected impact of the Proposed Development on the traffic volumes, with the outputs thereof feeding into other EIAR chapters. The Study Area includes the part of the regional road network directly receiving the traffic generated by the Proposed Development, which will subsequently distribute to other parts of the wider road network. Such definition of the Study Area is aligned with

best practice. It should be noted that this EIAR Chapter has examined the application site's mobility-related characteristics with respect to a wider area of interest, including the entirety of Swords Town.

18.2.3 Site Surveys/Investigations

To assess the Proposed Development's potential impact, an appreciation of the existing situation first needs to be established. This section of the EIAR describes the existing site layout, access arrangements, the local road network and background traffic conditions. The existing conditions presented herein represent an evidence-based review, and have been informed by:

- a desktop review of the study area and its surrounding transport network, including general traffic road infrastructure, facilities for pedestrians and cyclists and public transport infrastructure and service provision;
- collection of traffic survey data within the local road network to capture current traffic conditions, including vehicle volumes and turning movements;
- a site assessment, undertaken on Tuesday 20 January 2026 to confirm facilities and operating conditions for all road users on the adjoining road network

18.3 Baseline Environment

18.3.1 Site Location

The site is located west of Swords Town Centre, on lands generally bounded by the R125 in the north, residential land to the east and south, and Swords Community College to the west. The site forms part of the 'Lands at Mooretown' Framework Plan (October 2023). The Proposed Development, referred to as Phase 2, shall take up the northwestern and southern portions of the overall site, integrating to the respective fringes of the permitted Phase 1 development. The location of the Phase 2 application site with respect to Phase 1 and wider environs is presented in Error! Reference source not found., which follows.

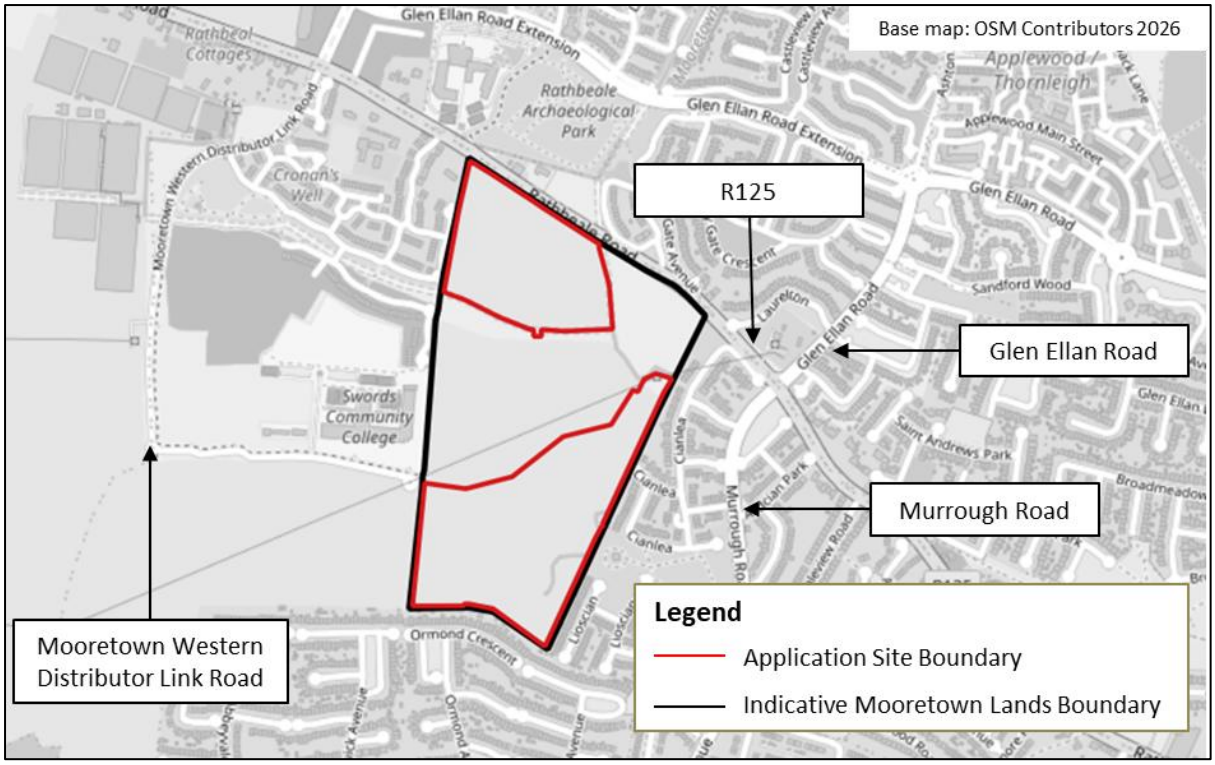

Figure 18.1 Application Site Location

18.3.2 Site Planning History

Adjacent development lands have been the focus of an earlier development proposal, referred to as Phase 1 (FCC Reg. Ref: LADP/002/24). This phase proposed the construction of 274 no. residential units, including houses, apartments, and duplexes, together with associated site development works at Mooretown, Swords, Co. Dublin. This development was approved at FCC's council meeting in May 2024 and is currently under construction.

18.3.3 Relevant Permitted and Committed Developments

Table 18.1 outlines the relevant committed development in the site's vicinity. These various developments have the potential to generate trips on the local road network, and the table indicates how the potential trip generation of each has been considered in the overall trip generation analysis.

Table 18.1 Permitted and Committed Developments

Permitted and Committed Development		Notes
Reference no.	Description	
FCC: LADP/002/24	'Phase 1' development of 274 no. residential units are proposed at Mooretown, Swords, Co. Dublin.	The impact assessment set out in this Traffic and Transport chapter has included trip generation related to the Phase 1 development as a permitted development.
FCC: F23A/0504	The Proposed Development will consist of the construction of 96 no. residential units on Lands to the South of Rathbeale Road and to the North of Main Street and to the East of,	The impact assessment set out in this Traffic and Transport chapter has included trip generation related to this

Permitted and Committed Development		Notes
Reference no.	Description	
	Mooretown Distributor Road, Mooretown, Swords, Co. Dublin	development as a committed development.
FCC: SHD/012/21 ABP: ABP-313362-22	The development will consist of the construction of a total of 650 no residential units on lands to the southeast of Mooretown Distributor Road, Mooretown.	The impact assessment set out in this Traffic and Transport chapter has included trip generation related to this development as a committed development.
FCC: SHD/004/20 ABP: ABP-313302-22	Oldtown Phase 5, development of 377 no. residential units on lands to the north of Rathbeale Road and to the west and north of Millers Avenue and Glen Ellan Road, Oldtown, Swords, Co. Dublin.	The impact assessment set out in this Traffic and Transport chapter has included trip generation related to this development as a committed development.
FCC: F18A/0163	Two new school buildings, one. post primary school and one primary school on lands at Mooretown, Off Rathbeale Road, Swords, Fingal, Co. Dublin.	The post primary school building is occupied, thus associated trips have been recorded as part of the traffic surveys and therefore only trip generation associated with the primary school has been included as a committed development.

18.3.4 Surrounding Road Network

18.3.4.1 R125 Regional Road

R125 is a two-way regional road, which runs in a southeast-northwest alignment and connects Ratoath and Swords.

R125 has a uniform horizontal and vertical alignment adjacent to the development site. Its carriageway in the vicinity of the site is approximately 6.0 metres wide and includes a single general traffic lane in each direction. Cycle tracks and footpaths are provided on both sides of the road.

A 50 km/h speed limit is in operation on this road in the application site's vicinity and public street lighting is present.

Figure 18.2 R125 Regional Road – looking towards site.

18.3.4.2 School Access Road

The School Access Road runs in a west-east alignment to the west of the site. It will provide a connection to/ from Phase 1 Access Road to the Mooretown Western Distributor Link Road. It is currently c. 400

metres in length and provides access to the secondary and primary schools to the west of the site. As part of Phase 1 of the development, the road will be extended to the northeast through Phase 1 lands to connect with the R125/ Site Access/ Holymount junction. Refer to Figure 18.4.

18.3.4.3 Mooretown Western Distributor Link Road

Mooretown Western Distributor Link Road is a two-way single carriageway road, which runs in a north-south alignment from a 4-arm signal junction with the R125 for c. 800 metres. This section forms part of the wider Swords Western Distributor Link Road, see Section 18.3.6.

Mooretown Western Distributor Link Road has a uniform vertical alignment adjacent to the development site, with a long S-curve bend in its northern part (close to the R125 junction). Cycle tracks and footpaths are provided on the eastern/northern side of the carriageway, separated from the carriageway by grass verges. No formal on-street car parking facilities are provided on the Mooretown Western Distributor Link Road. A 50 km/ h speed limit is in operation on this road and public street lighting is present.

18.3.5 Key Junctions

18.3.5.1 R125/ Murrough Road/ Glen Ellan Road Junction

The R125/Murrough Road/Glen Ellan Road Junction is a 4-arm junction located c. 275 metres east of the site. Two-lane approaches and single egress lanes are provided at three (3) of the four (4) junction arms. The R125 northwest arm has a single approach and single egress lane as well as a left turn slip onto Glen Ellan Road (north).

Pedestrian and cyclist facilities are available along each road approaching the junction except the southeastern arm which only has pedestrian facilities. Controlled pedestrian crossings provided across all arms. Street lighting, signage and road markings are provided.

Figure 18.3 R125/Murrough Road/Glen Ellan Road Junction.

18.3.5.2 R125/ Site Access/ Holymount Junction

The R125/ Site Access/ Holymount junction is currently a 3-arm priority (STOP) controlled junction located to the north of the application site, where Holymount estate access road forms the other minor arm with the R125 forming the major arms of the junction. Each arm has a single lane in both directions

As part of Mooretown Phase 1 development, the existing 3-arm priority-controlled junction will be upgraded to a new 4-arm signal-controlled junction. The additional arm shall provide the site access to Phase 1 (and Phase 2) and form the southern arm of the 4-arm junction layout. Footpaths and cycle facilities are provided along the R125 arms and new footpaths and cycle lanes are to be provided on the southern arm as part of the Phase 1 development. Street lighting and standard signage are provided at the junction.

18.3.5.3 R125/ Mooretown Western Distributor Link Road/ Millers Ave Junction

The R125/ Mooretown Western Distributor Link Road/ Millers Ave Junction is a 4-way signal controlled junction located to the northwest of the application site, where Mooretown Western Distributor Link Road approaches the R125 from the south. Each arm has a single egress lane and two approach lanes.

Footpaths and cycle facilities are provided along all arms of the junction with signalised crossing facilities present to facilitate crossing on all arms. Street lighting and signage are provided at the junction.

18.3.6 Future Road Infrastructure Upgrades

18.3.6.1 Swords Western Distributor Road (including Mooretown Distributor Road)

The Mooretown Distributor Road is a planned single-carriageway distributor route designed to serve the future and current Mooretown and Oldtown development lands in the west of Swords. As noted in Section 18.3.5, a c. 800m section of the road has been built. The Mooretown Distributor Road will connect the existing R125 to Brackenstown Road, providing a north-south link and access to new residential areas. Figure 18.4 illustrates the envisaged distributor road network.

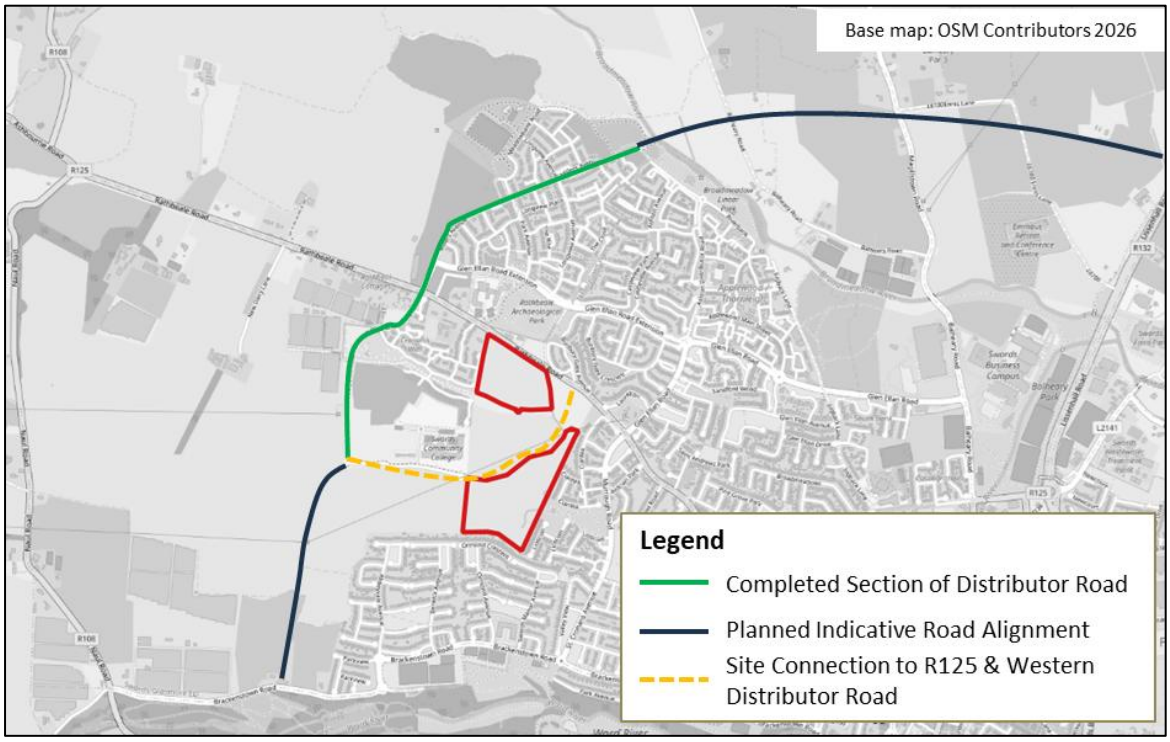

Figure 18.4 Future Swords Western Distributor Road Alignment

18.3.7 Existing Traffic

To provide an understanding of the existing baseline traffic flows on the road network in the vicinity of the application site, traffic surveys were undertaken at 5 no. key junctions. The subject junctions are illustrated in Figure 18.5, with a list provided below the figure.

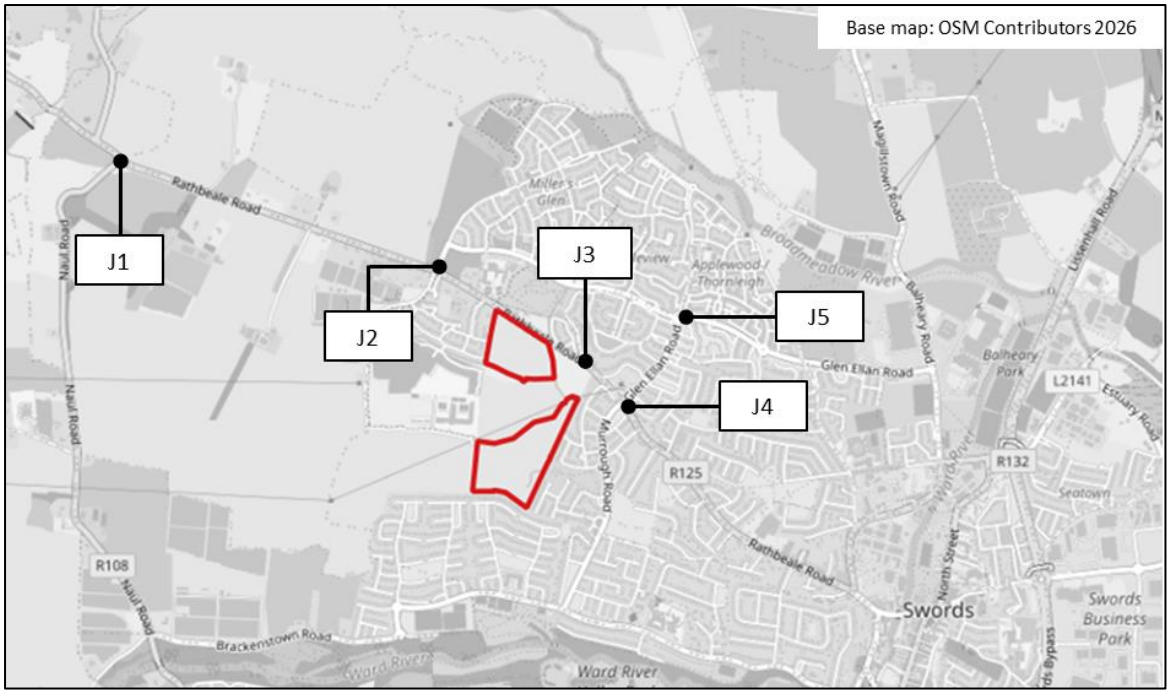

Figure 18.5 Surveyed Junction Locations

Surveyed Junctions are as follows:

- J1 – R125 Rathbeale Road/ R108 Naul Road (3-arm, priority-controlled);
- J2 – R125 Rathbeale Road/ Western Distributor Link Road (4-arm, priority-controlled);
- J3 – R125 Rathbeale Road/ Holymount/ Site Access (3-arm, priority-controlled);
- J4 – R125 Rathbeale Road/ Glen Ellan Road/ Murrough Road (4-arm, priority-controlled); and
- J5 – Glen Ellan Road/ Ashton Distributor Road (Applewood Roundabout) (4-arm, priority-controlled).

The above junctions have been selected to cover the key routes to and from the site. The scope of the survey work has provided an extensive coverage of the road network within west Swords. A Junction Turning Count (JTC) survey was undertaken at each of the 5 no. locations on Thursday 20 November 2025 and covered a 12-hour period from 07:00 to 19:00 hours.

The baseline survey data was analysed and the AM and PM network peak hours were defined. The AM peak hour is from 07:45-08:45hrs with the PM peak hour from 16:30-17:30hrs.

The recorded 12-hour traffic flows have been converted to **Annual Average Daily Traffic (AADT)** flows using the TII's Project Appraisal Guidelines Document 'Unit 16.1: Expansion Factors for Short Period Traffic Counts'.

Table 18.2 outlines the AADT base flows (not including traffic flows from committed, permitted developments or the Proposed Development) for 2025.

Table 18.2 Baseline AADTS

Junction No.	Arm / Road	2025 Baseline AADT Flows (Vehs)
J1	Arm A - R125 Rathbeale Rd	9,310
	Arm B - R108	6,727
	Arm C - R125	11,100
J2	Arm A - Glen Ellan Rd	3,885
	Arm B - R125 Rathbeale Rd	7,198
	Arm C - Access to Cronan's Well Gate	2,943

Junction No.	Arm / Road	2025 Baseline AADT Flows (Vehs)
	Arm D - R125 Rathbeale Rd	9,301
J3	Arm A - Holymount Rd	163
	Arm B - R125 Rathbeale Rd	7,893
	Arm C - Site Access	67
	Arm D - R125 Rathbeale Rd	7,851
J4	Arm A - Glen Ellan Rd	8,509
	Arm B - R125 Rathbeale Rd	10,926
	Arm C - Murrough Rd	6,898
	Arm D - R125 Rathbeale Rd	7,894
J5	Arm A - Thornleigh Green	3,702
	Arm B - Glen Ellan Rd	11,565
	Arm C - Glen Ellan Rd	8,606
	Arm D - Glen Ellan Rd	10,709

18.3.8 Existing Walking and Cycling Infrastructure

Footpaths are provided along most roads in urban Swords, including the R125 and Mooretown Western Distributor Link Road in the application site's vicinity. Cycling infrastructure in the site's general vicinity includes shared pedestrian/ cycle facilities provided as part of the Phase 1 access road, along the R125 and along the Mooretown Western Distributor Road.

Figure 18.6 presents the application site's accessibility by walking, showing travel time from various locations to the site. As can be seen from this figure, the site can be reached by walking from a variety of locations within Swords, with the extent of the 60 minutes' isochrone reaching the northern boundary of Dublin airport in the South. It is deemed that walking represents a viable option for those residing in Swords.

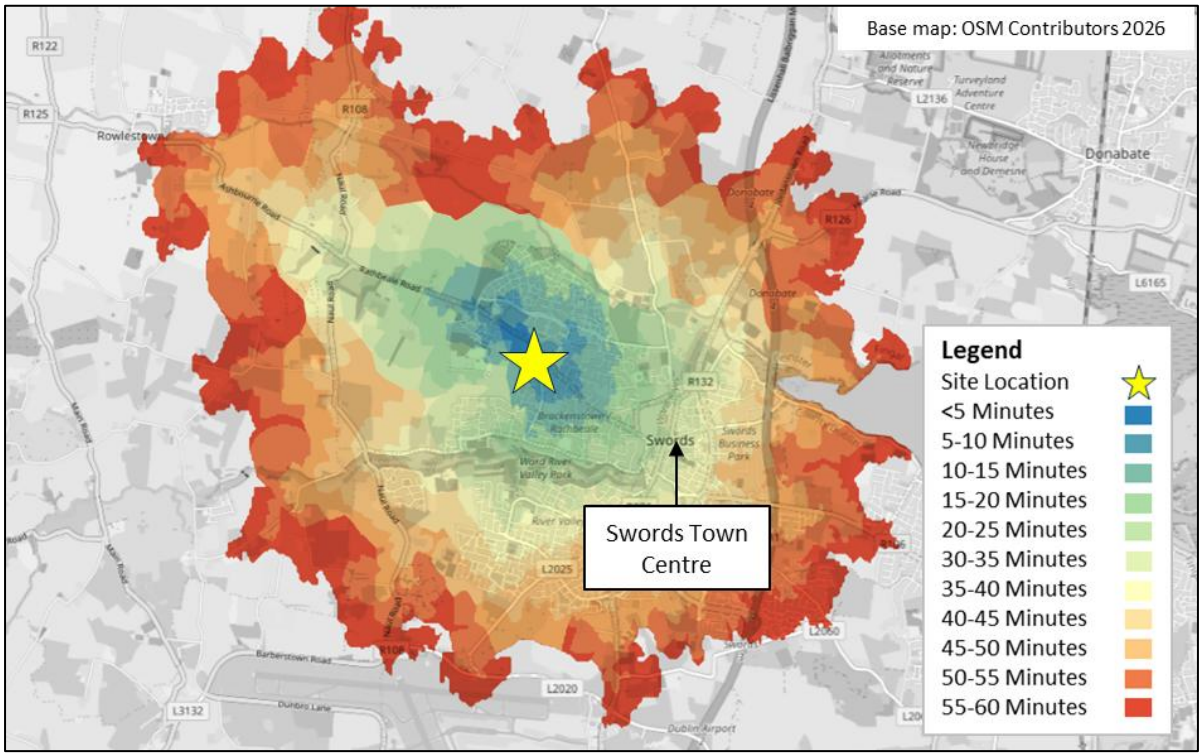

Figure 18.6 Walking Time Isochrones

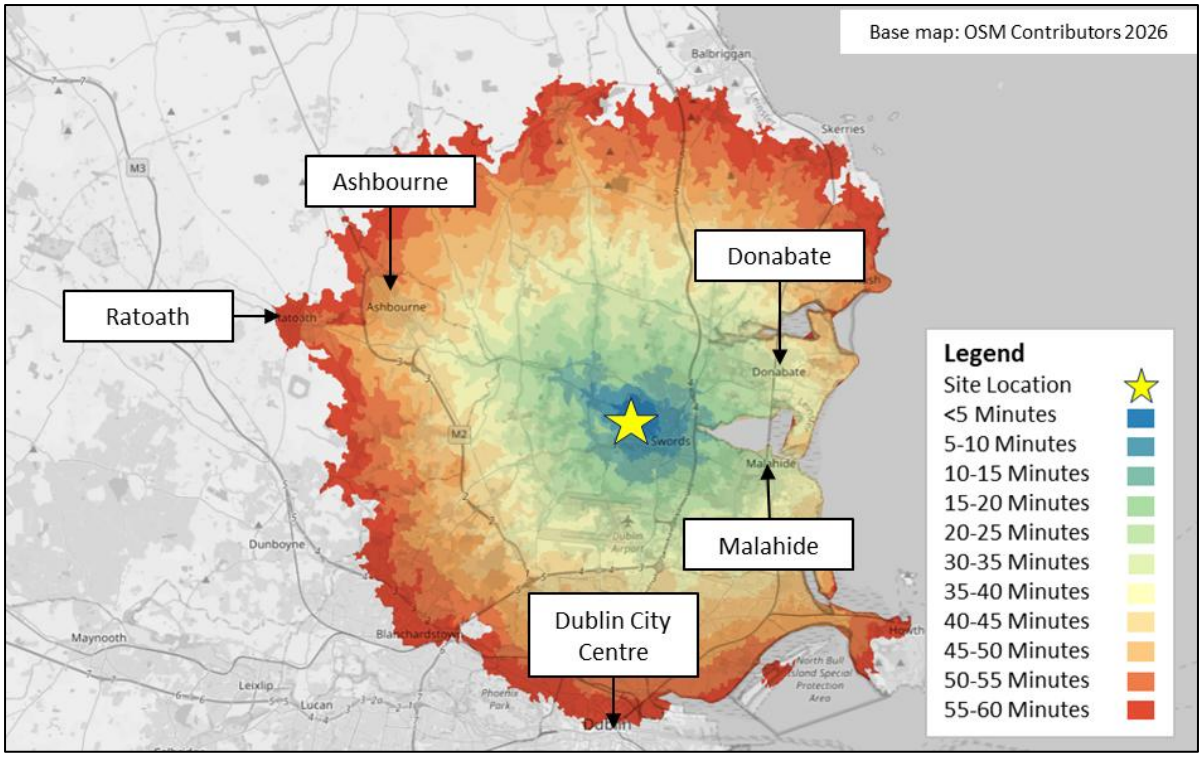

Figure 18.7 Cycling Time Isochrones

Figure 18.7 presents the application site's accessibility by cycling, showing travel time from various locations to the site.

As can be seen in the preceding figure, the application site can be accessed within a 15-minute cycle from all parts of Swords. Distance-wise, cycling is also a viable alternative for trips to destinations including Donabate, Malahide and Dublin Airport. Dublin City Centre and Ashbourne are on the periphery of viable cycling distance with both being accessible within a 60-minute cycle.

18.3.9 Proposed Cycle Infrastructure Improvements

The planned layout of cycle infrastructure network within Dublin has been set out within the Greater Dublin Area Cycle Network Plan (part of the GDA Transport Strategy), published by the NTA. The R125 and Mooretown Western Distributor Link Road have been classified as a secondary cycle link. Murrough Road, to the east of the site, is classified as a primary radial cycle link. In addition, a feeder cycle route is indicated to run west from Murrough Road through existing residential areas and the Proposed Development to link with the Mooretown Western Distributor Link Road. The Proposed Development shall facilitate this cycling link. Expansion of dedicated cycling facilities in Swords shall enhance options for sustainable local mobility, with the planned interurban routes enabling longer distance travel.

It is also noted that the Phase 1 access road shall include active travel facilities with pedestrian and cycle infrastructure present on both sides of the carriageway. The Proposed Development shall deliver the facilities on the southern side of the access road. Although the proposed cycle infrastructure on the northern section of the Phase 1 access road isn't showing in the GDA Cycle Network Plan, it shall provide direct links for future residents of the development to other existing and planned active travel infrastructure in the vicinity of the development.

18.3.10 Existing Public Transport Accessibility

Figure 18.8 presents the application site's accessibility by public transport, showing travel time from various locations to the site.

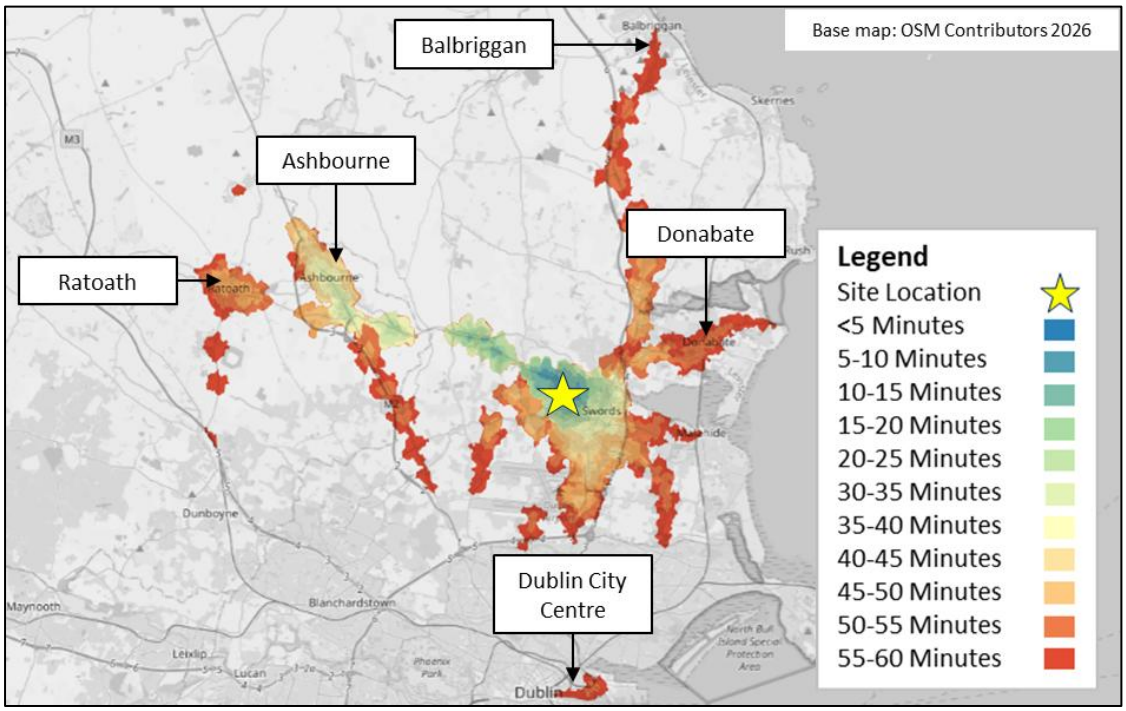

Figure 18.8 Public Transport Travel Time Isochrones

As can be seen from the figure, the available public transport services enable access across Swords and to Dublin City Centre. Central Dublin can also be accessed using the 41C and 500 bus services. There is also a Local Link 192 bus linking Swords to Balbriggan with 10 services a day.

18.3.11 Proposed Public Transport Improvements

18.3.11.1 BusConnects

The final proposals from the New Dublin Area Bus Network Project, developed as part of the broader BusConnects programme, were published by the NTA in September 2020 after considerable public consultation. The revised network includes changes to the bus network within the application site's vicinity. The revised network includes the L82 service which will travel from Knocksedan to Beaumont Hospital and X84 will travel from Knocksedan to UCD. The A4 will travel from Swords to Dundrum. These services will all route along Murrough Road with bus stops accessible from the site via the R125 (c. 450 metres) or via a potential future link (subject to agreement) through Glasmore Abbey Park (c. 400m). The NTA expects to launch the A-spine routes in Autumn 2026. Figure 18.9 illustrates the future BusConnects network in the vicinity of the site.

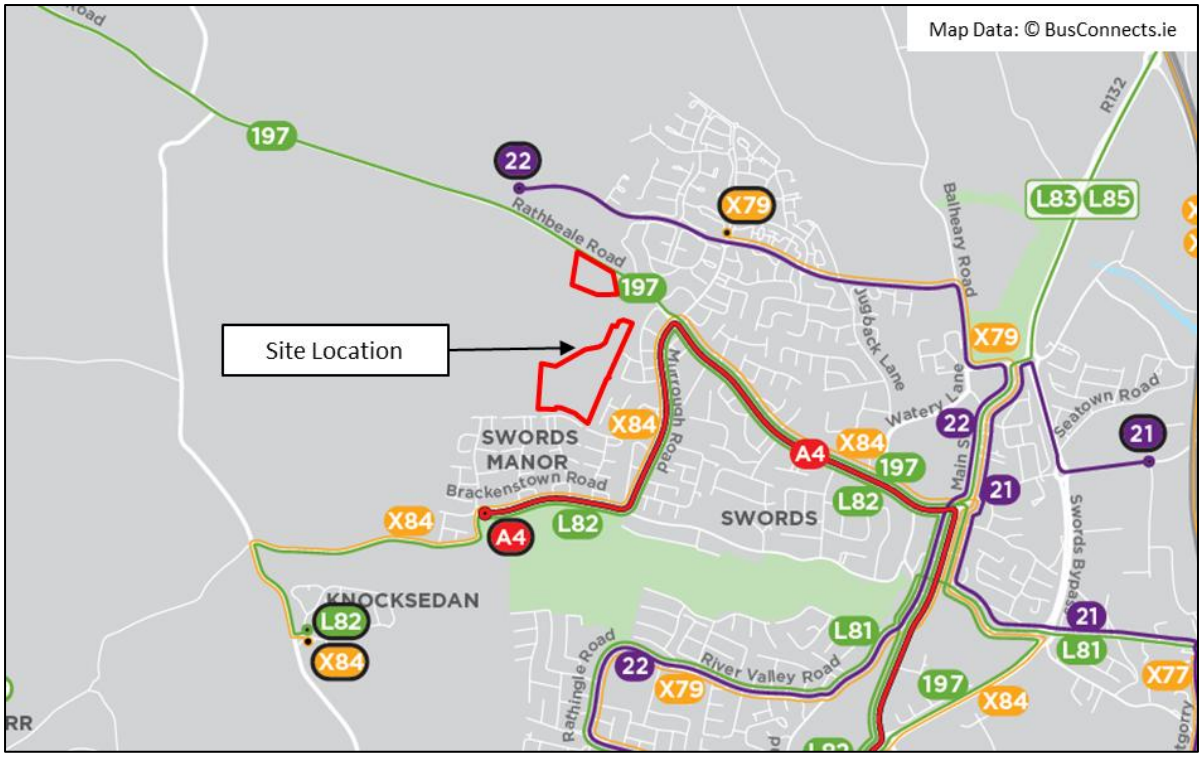

Figure 18.9 Future BusConnects Routes

18.3.11.2 MetroLink

The Metrolink will be developed as part of the GDA Transport Strategy light-rail plans. Its route will serve the broader Swords area. The nearest stops will be Swords Central and Seatown, both will be located a c. 10-minute cycle or a c. 6-minute drive away. The Estuary Park and Ride station will be located c. 13-minute cycle and c. 7-minute drive away from the site.

While no station is located adjacent to the development, the nearest stop will provide improved public transport accessibility for the site. The Metrolink route shall connect Swords, with Dublin City centre via Dublin Airport, offering a high-capacity and high-frequency service.

18.3.12 Shared Mobility

Shared mobility services currently available in Swords Town Centre include 3 no. GoCar stations with 4 no. vehicles available. The station closest to the application site is located on the R836 c. 2 km away from the site. Car share facilities are also to be provided as part of Mooretown Phase 1, with 3 no. spaces to be provided. Two of the spaces are to be located on the Phase 1 Access Road. These spaces would be available for use by future residents and visitors of the Proposed Development. Furthermore, it should be noted that the western part of Swords, including the application site, is currently a mix of greenfield and/ or sites under development. The lands in question are currently undergoing rapid urbanisation, with the availability of car sharing services likely to follow completion of the residential schemes in the vicinity.

Bleeper Bikeshare also includes operating zones in the site's vicinity. Currently operating zones are found in the west of Swords town, with small areas in the western areas of the town. The closest operating zone is found 650 metres to the north of the site access junction.

18.4 Characteristics of the Proposed Development

The overall Proposed Development comprises 360 no. residential units including:

- 305 no. houses including 2, 3 and 4-bed houses;
- 35 no. apartments including 1, 2 and 3-bed apartments; and
- 20 no. own-door duplex units.

The proposed residential units will be accompanied by associated pedestrian, cycle, and car circulation and parking facilities as well as various open space and recreational areas. Furthermore, the mobility needs of the development's future residents will also be supported by a comprehensive and tailored package of measures aimed at enabling and promoting use of sustainable transport modes, and facilitating them in living low-car owning and car-free lifestyles – such measures are set out in the framework Residential Travel Plan.

As part of the Proposed Development a 12-classroom crèche is proposed, and it is intended to primarily serve the local catchment. A detailed description of the Proposed Development is set out in Chapter **Error! Reference source not found.** of this EIAR.

18.4.1 Proposed Access Arrangements

The site layout provides an overview of the proposed new vehicular site accesses, routes of the internal streets and footpaths and the general location of the various housing types and associated car parking facilities. Figure 18.10 and Figure 18.11 illustrate the four proposed vehicle access points.

Vehicular access to the Proposed Development shall be taken from the Phase 1 access road. The Phase 1 access road is a single carriageway local road and includes pedestrian and cyclist facilities on both sides of the carriageway. This access road provides access to the R125 to the north and the Mooretown Western Distributor Road to the east (via the School Access Road).

Three new vehicular access points are proposed on the southern side of the Phase 1 access road to enable access to the southern and northeastern parts of Phase 2. The design of each of these three access points has been informed by DMURS and CDM design guidance (e.g. non-motorised user priority, raised crossing point, tightened corner radii, etc.). Visibility splay requirements for a 30 kph road, as per DMURS, are achievable from each access point.

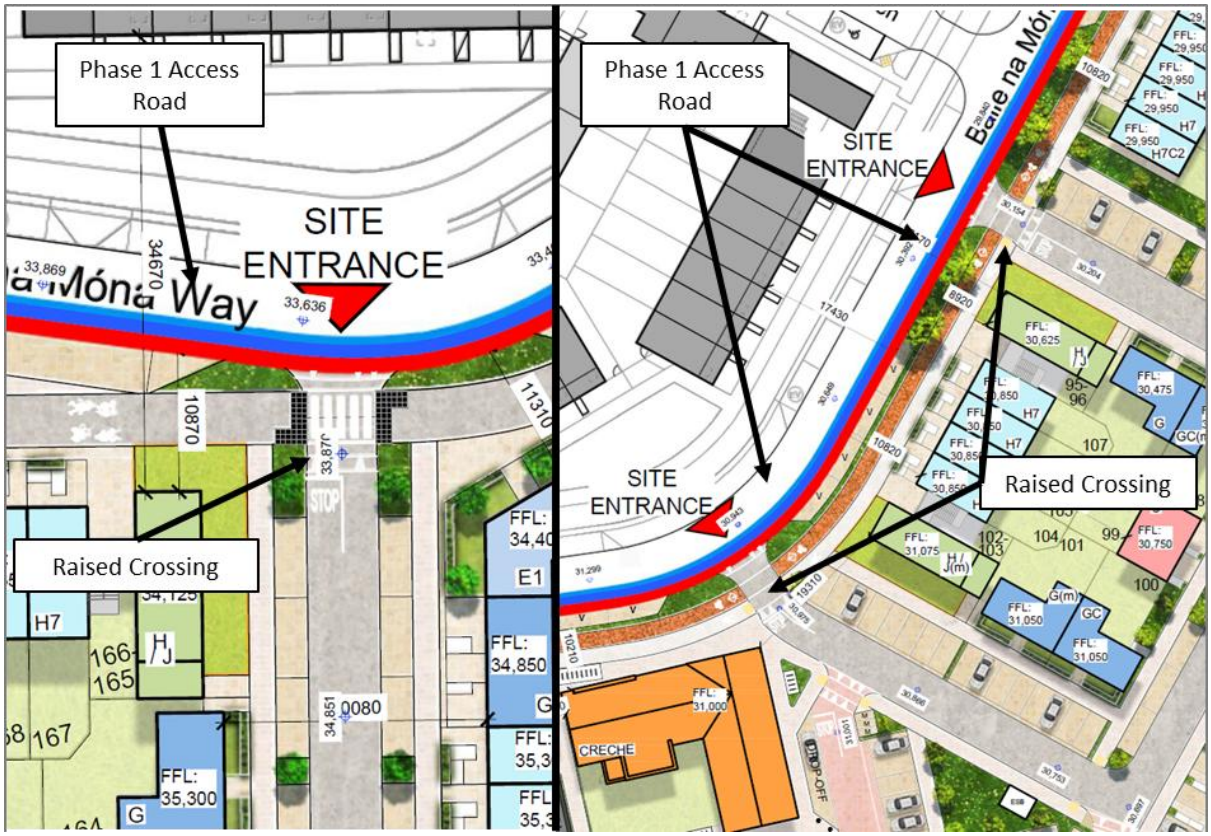

Figure 18.10 Proposed Vehicular Access Arrangements – Southern Parcel

The northern part of Phase 2 is accessed via Phase 1, and its permitted road layout has also been informed by DMURS and CDM guidance (e.g. non-motorised user priority, raised crossing point, tightened corner radii, etc.).

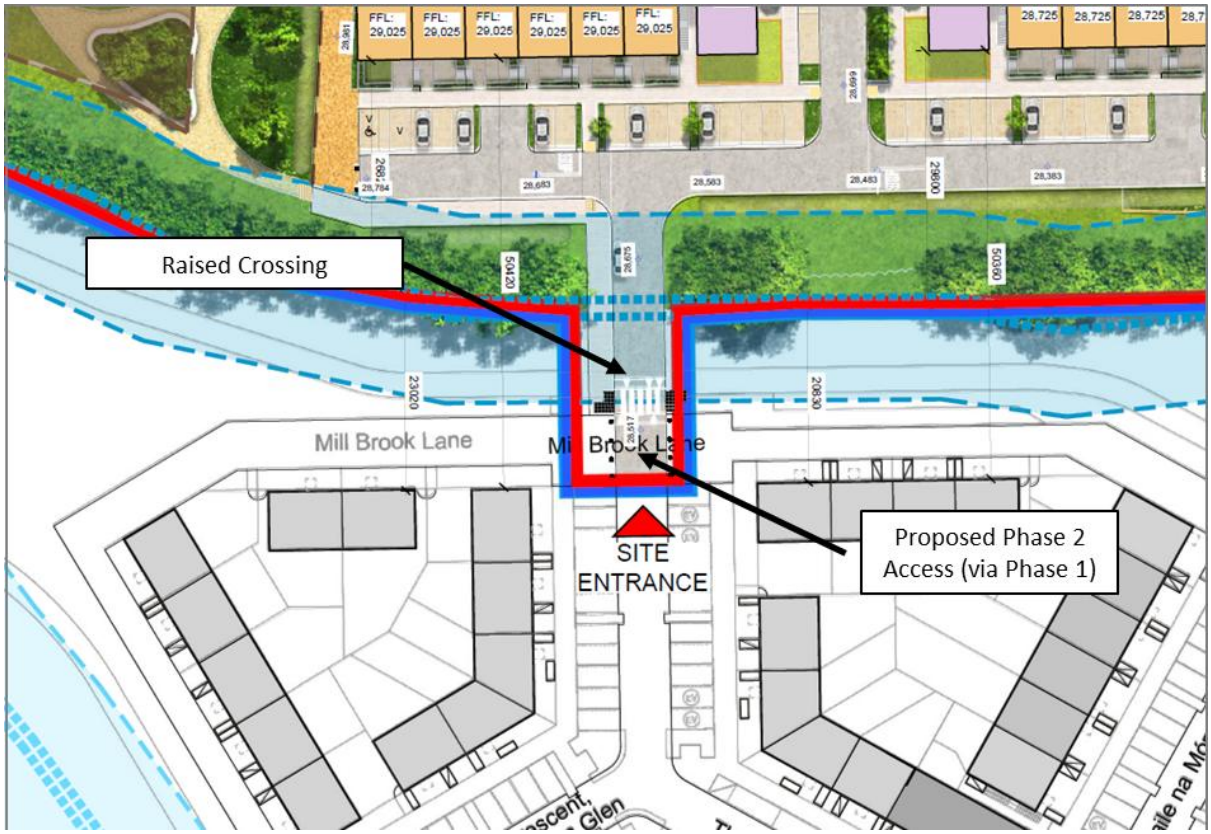

Figure 18.11 Proposed Vehicular Access Arrangements – Northern Parcel

The internal road network has been designed with a focus on safety to ensure a self-enforcing low speed environment. The features applied to do so include tight corner radii, horizontal and vertical deflections in road alignment, raised table junctions, raised uncontrolled crossing points, etc. The internal roads feature sections with a formal carriageway as well as shared space sections, designated as home zones. The application of shared spaces provides a tangible indication of road hierarchy. Moreover, filtered permeability principle has been applied to facilitate convenient circulation of pedestrians and cyclists without encouraging travel by car. Furthermore, proposed active travel facilities enable integration of the proposed layout with Phase 1 (and surrounding areas).

18.4.2 Pedestrian and Cycle Facilities

A Pedestrian & Cycle Strategy Plan, produced by DG Architects (2026), has been provided as part of the planning pack for the Proposed Development. The Strategy seeks to promote a highly permeable layout for Phase 2, providing active travel connections within the site also enabling connections beyond the development site. The Strategy builds on the potential linkages set out in the Lands at Mooretown Framework (BSM, 2023), see Figure 18.12, as well as facilitating cycle connections set out in the GDA Cycle Network Plan. The Proposed Development layout shall include high quality east-west and north-south active travel connections, providing direct links to Phase 1, the R125, School Access Road (and beyond to Mooretown Western Distributor Link Road), Glasmore Abbey Park (via potential future link, subject to agreement), etc.

Pedestrian footpaths within the development are proposed as having a width of 2.0 metres. The site features multiple active travel entrances from all sides to ensure high permeability. The Phase 1 Access Road includes a number of active travel crossing points which facilitate links between the two Phases. While Phase 1 included some active travel facilities along the north eastern part of the carriageway,

where the route bounds Phase 2, active travel facilities along this section are to be delivered as part of Phase 2. The Proposed Development shall include a 4m wide shared active travel facility towards the southern end and a 2m wide cycle track/ 2m wide footpath towards the northern end.

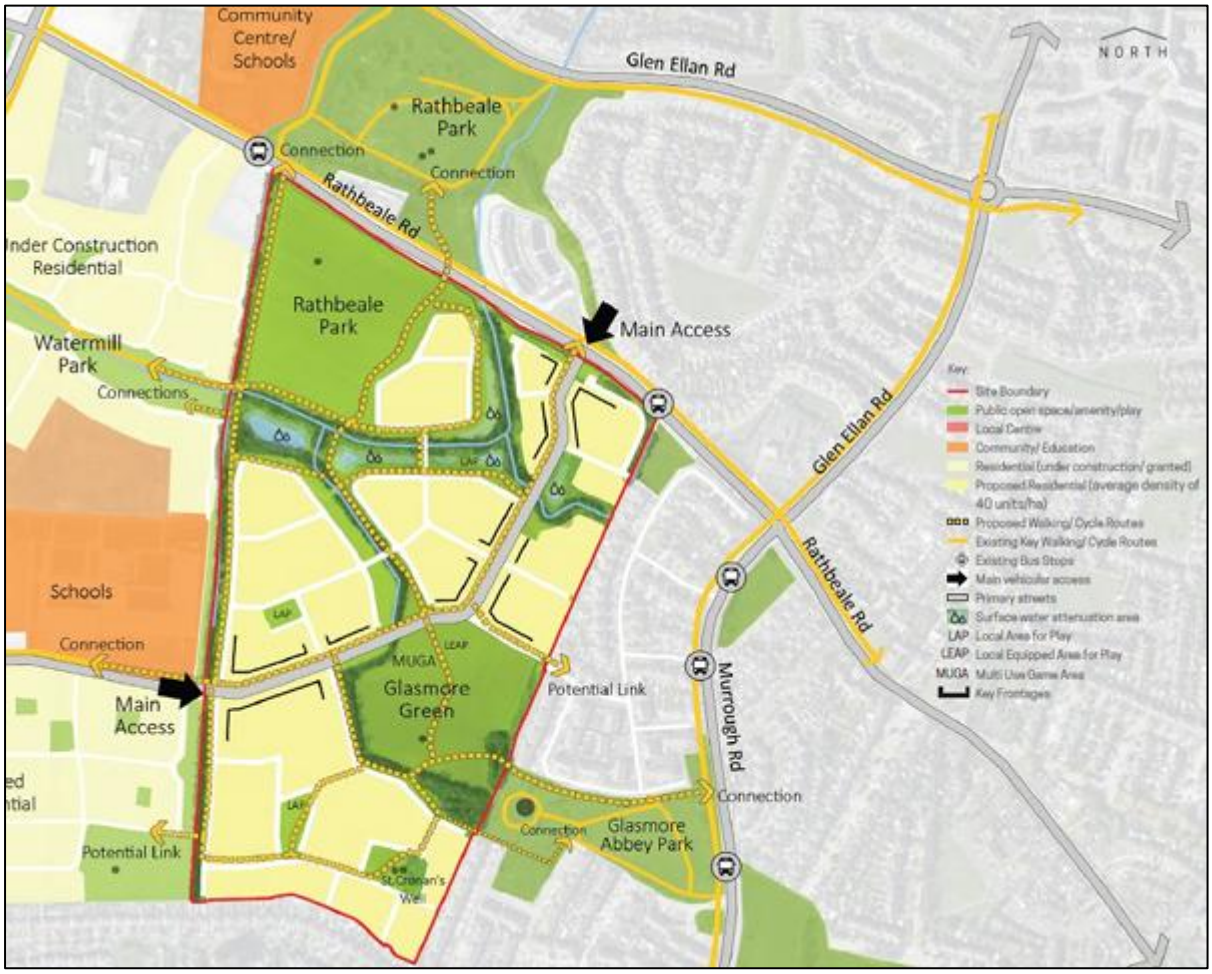

Figure 18.12 Land Use of Overall Lands (Source: BSM Framework Plan 2023 – Lands at Mooretown, Swords

18.4.3 Proposed Bus Turning Facilities

As part of the Proposed Development, a bus turning facility is proposed. The facility has been requested by the NTA to support the potential future provision of bus service(s) directly to the site. The facility is located towards the southwest of the Proposed Development site, situated on the southern side of the Phase 1 access road carriageway. In addition, bus parking facilities are also proposed on the southern side of the Phase 1 carriageway.

The proposed bus facilities layout has been designed in collaboration with the NTA including in line with the NTA's Bus Stop Guidance document. Furthermore, swept path analysis of the proposed layout has been undertaken (as per NTA guidance) to ensure suitability to accommodate the NTA's design vehicle (a single deck bus model).

18.4.4 Servicing and Emergency Vehicle Access

Refuse collection vehicles are proposed to access/egress the site using all vehicular accesses, as specified above. Refuse collection truck routes will be planned to minimise turning movements, with waste bins being taken to designated collection locations prior to the waste contractor arriving.

Swept path analysis has been carried out, by AKM Design Group (2026), in order to ensure that both refuse vehicles and emergency vehicles will be capable of accessing, circulating within and egressing the site. The layout has been designed in accordance with DMURS.

18.4.5 Cycle Parking

The proposed cycle parking provision has been designed to encourage cycling as a key mode of transport to and from the Proposed Development and reduce the reliance of residents and visitors on private car use. The FCC Development Plan Standards and the Sustainable Residential Development and Compact Settlements Guidelines (January 2024) have been consulted in order to determine a suitable amount of cycle parking to be accommodated within the Proposed Development.

Table 18.3 provides the cycle parking standards and Table 18.4 provides an overview of the proposed cycling parking arrangements including applicable standard, residential unit type and cycle parking provision.

Table 18.3 Cycle Parking Standards

Land Use		FCC Development Plan		Compact Settlement Guidelines	
		Long Stay	Short Stay	Long Stay	Short Stay
Apartments	1-2 Bedrooms	1, plus 1 per bedroom	0.5 Spaces per unit	1 per bedroom	"Visitor Parking Should be Provided"
	3+ Bedrooms	2, plus 1 per bedroom	0.5 Spaces per unit		
Standard Housing	1-2 Bedrooms	1, plus 1 per bedroom	-		
	3+ Bedrooms	2, plus 1 per bedroom	-		
Creche		1 per classroom	5 per classroom	-	-

Table 18.4 Breakdown of Proposed Cycle Parking

Land Use		No. Of Units	FCC Development Plan		Compact Settlement Guidelines		Proposed	
			Long Stay	Short Stay	Long Stay	Short Stay	Long Stay	Short Stay
Apartments	1-Bed	12	24	6	12	"Visitor Parking Should be Provided"	24	6
	2-Bed	15	45	7.5	30		46	8
	3-Bed	8	40	4	24		40	4
Duplexes	2-Bed	10	30	-	20		30	-

Standard Houses(Detached/Semi-Detached/Mid-Townhouse*	2-Bed	161	483	-	322		483	-
	3-Bed	58	290	-	363		290	-
	4-Bed	1	6	-	4		6	-
Creche		12	12	60	-	-	12	60
Total			**930**	**77.5**	**775**	**-**	**931**	**78**

*Excludes unit types which have direct access to allocated GF private amenity space which can be utilised for required bike storage. **Compact Settlement Guidelines does not quantify short stay spaces, FCC standard utilised.

Table 18.4 outlines the cycle parking provision for the crèche and the residential units which don't have direct access to private amenity space. The proposed end townhouses, semi-detached and ground floor apartments (e.g. unit types C/CC1/CC2, E1, H, M, F1G) have direct access to private amenity space which would be utilised to store bicycles.

To encourage sustainable travel among residents the proposed cycle parking provision also includes non-standard (e.g. cargo bike) cycle parking spaces, with 12 no. spaces provided within the apartment communal bike store and 2 no. spaces provided within the crèche bike store. Visitor cycle parking is proposed across the site and shall be provided in the form of Sheffield type stands.

18.4.6 Car Parking

The proposed car parking provision has been designed to ensure balance between the residents' mobility needs with the focus on alternative modes of transport, while being cognisant of the site's locational and accessibility characteristics. The FCC Development Plan Standards for Zone 2 (i.e. location not located within 800 metres of an existing BusConnects spine route or 1,600 metres of an existing or planned Luas/Dart/Metro Rail station) and the Sustainable Residential Development and Compact Settlements Guidelines (January 2024) have been consulted in order to determine a suitable amount of car parking.

Table 18.5 and Table 18.6 provides an overview of the proposed car parking arrangements including applicable standard, land use type and car parking provision.

Table 18.5 Breakdown of Proposed Parking Standards

Land Use Type		FCC Development Plan Maximum Requirements		Compact Settlement Guidelines Requirements
		Resident	Visitor	Resident & Visitor
Residential	1-2 Beds	1 per unit	1 per 5 units	2 per unit
	3 Beds	2 per unit	1 per 5 units	
Creche		0.5 per classroom		-

Table 18.6 Proposed Car Parking Space Breakdown

Land Use	No. Of	FCC Development Plan	Compact Settlement Guidelines	Proposed

			Resident	Visitor	Resident	Visitor	Resident	Visitor
Apartments	1-Bed	18	18	3.6	720		18	75
	2-Bed	19	19	3.8			19	
	3-Bed	8	16	1.6			16	
Duplexes	2-Bed	10	10	2			10	
Houses	2-Bed	168	168	33.6			168	
	3-Bed	123	246	24.6			246	
	4-Bed	14	28	2.8			-	
Creche		12	-	6*	-		-	
Total			**505**	**72**	**720**		**505**	**75**

*6 no. proposed visitor parking spaces along the Phase 1 Access Road are intended to be utilised by crèche staff during operating hours (reverting to visitor parking outside these hours).

As detailed in Table 18.6, the FCC development standards would indicate 577 no. residential spaces (residential and visitor). While the Compact Settlement Guidelines would indicate a maximum of 720 no. spaces. The Proposed Development shall provide 580 no. parking spaces (inclusive of residential, visitor and 6 no. crèche spaces that revert to visitor spaces [see subsequent paragraph]). Overall, the proposed car parking provision is below the maximum set out in Compact Settlement Guidelines and generally in line with FCC's development standards.

A plan of car parking facilities, produced by Deady Gahan Architects, is included in the application package. The plan sets out in-curtilage parking, on-street parking (including resident, visitor, crèche) and motorcycle parking.

17 no. of the on-street visitor car parking spaces (22% of 75 no. visitor spaces) are proposed to provide Electrical Vehicle (EV) charging facilities. It is also noted that, in curtilage car parking spaces are proposed to be pre-wired for future provision of EV charging facilities. The proposed EV charging provision is in line with Section 14.17.10 of the FCC Development Plan standard. An EV Charging Strategy and layout plan indicating the 17 no. EV charging spaces, produced by ENX, is provided as part of the application pack.

The Proposed Development is to provide 36 no. public accessible motorcycle parking spaces. This equates to 10% of the proposed car parking provision that is not within curtilage, in line with section 14.17.9 of the FCC Development Plan standards.

As part of the proposed car parking provision, 19 no. accessible space (i.e. 5% of the net within curtilage/ visitor spaces) are to be provided. This provision is in line with the section 14.17.8 of the FCC Development Plan standards.

In relation to the proposed crèche, FCC's Development Plan standards require 6 no. car parking spaces based on 0.5 spaces per classroom. It is noted that the proposed crèche is expected to serve a local demand with sustainable travel modes expected to serve a considerable portion of this potential travel demand. As such, the proposed approach to car parking provision for the crèche is to provide a vehicle drop off area directly adjacent to the crèche building. Two-way circulation is provided through the car parking area which enables a vehicle to access the crèche drop off area in the appropriate direction so that a car door can be opened onto the footpath, providing safe access for parent/ child. In addition, 6 no. proposed visitor parking spaces along the Phase 1 Access Road are intended to be utilised by crèche staff during operating hours (reverting to visitor parking outside these hours). The 6 no. spaces intended to serve the crèche (during operating hours) shall be identified by signage.

18.5 Predicted Impacts of the Proposed Development

18.5.1 Scenario Definitions

In line with national best practice, the potential impact of the development traffic has been analysed for future years - the Year of Opening (YoO) 2028, YoO+5 2033 and YoO+15 2043. Three scenarios were created: a Do Nothing, a Do Minimum and a Do Something. The three scenarios enable the development of the analysis for the future years and ensure potential future background traffic growth and traffic flows from the permitted and committed developments are captured.

Three scenarios are outlined below:

- Do Nothing (DN): Background traffic volumes have been established as traffic volumes at the five junctions listed in Table 18.2 in the YoO, YoO+5 and YoO+15. With no Proposed Development being assumed, this has constituted the Do-Nothing traffic scenario.
- Do Minimum (DM): In this scenario, the additional traffic associated with relevant permitted and committed developments has been accounted for. This has included the permitted Mooretown Phase 1 development (i.e. 274 no. residential units), the committed residential developments to the west and north of the site along the Western Distributor Road and the primary school to the west of the site. The traffic forecast to be generated by these developments has been added to the Do-Nothing flows to obtain the Do-Minimum flows.
- Do-Something (DS): The traffic generation of the current Proposed Development has also been quantified. The DS scenario has been defined as including the DM traffic and the Proposed Development traffic.

18.5.2 Do-Nothing Impact

DN traffic flows have been developed by applying forecast growth for the YoO, YoO+5 and YoO+15 to the baseline AADT flows (see Table 18.7). Growth factors have been determined from the TII's Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections, October 2021 for Central County Dublin.

Table 18.7 AADT Traffic Flows

Junction No.	Arm / Road	Background Flows		
		2028 AADT (Veh)	2033 AADT (Veh)	2043 AADT (Veh)
J1	Arm A - R125 Rathbeale Rd	9,844	10,424	11,109
	Arm B - R108	7,125	7,560	8,088
	Arm C - R125	11,741	12,437	13,265
J2	Arm A - Glen Ellan Rd	4,107	4,347	4,629
	Arm B - R125 Rathbeale Rd	7,609	8,055	8,579
	Arm C - Access to Cronan's Well Gate	3,113	3,299	3,521
	Arm D - R125 Rathbeale Rd	9,834	10,412	11,096
J3	Arm A - Holymount Rd	172	182	193
	Arm B - R125 Rathbeale Rd	8,340	8,823	9,388
	Arm C - Site Access	73	80	91
	Arm D - R125 Rathbeale Rd	8,297	8,779	9,345
J4	Arm A - Glen Ellan Rd	8,995	9,521	10,140
	Arm B - R125 Rathbeale Rd	11,543	12,207	12,981
	Arm C - Murrough Rd	7,296	7,728	8,240

Junction No.	Arm / Road	Background Flows		
		2028 AADT (Veh)	2033 AADT (Veh)	2043 AADT (Veh)
	Arm D - R125 Rathbeale Rd	8,342	8,825	9,389
J5	Arm A - Thornleigh Green	3,908	4,130	4,384
	Arm B - Glen Ellan Rd	12,223	12,933	13,766
	Arm C - Glen Ellan Rd	9,098	9,630	10,257
	Arm D - Glen Ellan Rd	11,305	11,946	12,683

18.5.3 Construction Phase

The construction traffic impacts of the development are dependent on the capacity of the local road network to facilitate access to the site by the cars and vans associated with the workforce together with the HGVs and heavy construction machinery associated with the construction activities. The ability to accommodate temporary parking for contractors and storage of materials on site is another key consideration.

The following assumptions regarding the Proposed Development's key construction traffic related attributes have been utilised to estimate the potential construction traffic generation characteristics.

- Normal construction working hours:
  - Monday to Friday 07:00hrs to 19:00hrs; and
  - Saturday 08:00hrs to 14:00hrs.
- Estimated staff numbers:
  - up to c. 10 no. staff during the site set up phase; and
  - up to c. 35 no. staff during peak construction phase.
- Estimated construction-related traffic generation:
  - c. 30 Heavy Goods Vehicle (HGV) arrivals and ca. 30 HGV departures each day for the first 2 to 3 months for initial site set up. Decreasing to c. 7-9 HGV arrivals and departures on a typical day;
  - 2 Light Goods Vehicle (LGV) arrivals and 2 LGV departures otherwise in each of the weekday peak activity hours,
    - 20 car arrivals in the weekday AM peak hour, and
    - 20 car departures in the weekday PM peak hour.

A proposed construction traffic route (see Figure 18.13) has been developed which routes construction traffic towards the M1 (avoiding Swords Town Centre) to the east of the site. As such, no construction traffic is envisaged to route through Junction 1 and 2. Based on the construction traffic assumptions set out above, the corresponding AADT values have been quantified and are outlined in Table 18.8. Note as the construction programme is assumed to take less than 5 years, only the YoO was assessed as construction would be completed before the YoO+5 and YoO+15.

Table 18.8 Do Something Construction Vehicular AADTs

Junction No.	Arm	YoO 2028		
		DM (Veh.)	DS (Veh.)	DS vs DM (%)
J3	Arm B - R125 Rathbeale Rd	11,233	12,614	12.29%

	Arm C - Site Access	1,740	3,071	76.50%
J4	Arm A - Glen Ellan Rd	9,641	9,994	3.66%
	Arm D - R125 Rathbeale Rd	11,788	12,893	9.37%
J5	Arm B - Glen Ellan Rd	13,103	13,314	1.61%
	Arm C - Glen Ellan Rd	9,655	10,008	3.66%

While the overall development is large in scale, the corresponding increases in the number of construction-related trips per day or in the duration of the construction period are expected to be incremental and temporary. Predicted percentage impacts are below 10% for the majority of junction arms. Junction 3 indicates higher percentage impacts between the DM and DS scenarios however this is largely due to additional permitted and committed development traffic utilising this junction in the YoO. As such, ***no significant effects on the local road network are anticipated***.

18.5.4 Operational Phase

18.5.4.1 Do-Minimum Traffic Forecasting

Section 7 (and Appendix F) of the Mooretown Phase 1 TTA quantified the predicted traffic related to Phase 1 as well as other committed developments considered. The trip information from the Mooretown Phase 1 TTA has informed development of the DM scenario. The Phase 1 development quantified development traffic on trip generation rates, based on TRICS trip rates. Table 18.9 sets out the daily TRICS trip generation rates.

Table 18.9 TRICS Daily Vehicular Trip Rates

Unit Type	Daily Trip Rate per Unit
'Mixed Residential' (per dwelling)	3.407

The forecast traffic generation of the permitted (i.e. Mooreland Phase 1 Lands) and committed developments has been estimated using the daily trip rates derived from the TRICS trip generation database. A summary of predicted vehicular trip rates is presented in Table 18.10, which follows.

Table 18.10 Permitted and Committed Residential Component Vehicular Trip Generation

Development Proposal	Daily Trips
Mooretown Phase 1	934
Mooretown - F23A/0504	327
Mooretown Strategic Housing Development (SHD) - ABP-313362-22	2,215
Oldtown Phase 5 - ABP-313302-22	1,285
Education Campus (F18A/0163)	448
Overall	**5,209**

As can be seen in the preceding table, delivery of the permitted and committed developments would result in daily vehicular trip generation of c. 5,209 trips on an average day. Building upon the background traffic forecast presented in Section 18.5.2 and the relevant committed and permitted development's traffic generation estimates presented in Table 18.10, future traffic volumes at the surveyed junctions in the Do-Minimum scenario are presented in Table 18.11 which follows.

Table 18.11 Do Minimum Vehicular AADTs

Junction No.	Arm / Road	YoO 2028		YoO+15 2043	
		Do Nothing Flows (Veh.)	Do-Minimum Flows (Veh.)	Do Nothing Flows (Veh.)	Do-Minimum Flows (Veh.)
J1	Arm A - R125 Rathbeale Rd	9,844	10,812	11,109	12,076
	Arm B - R108	7,125	7,341	8,088	8,304
	Arm C - R125	11,741	12,493	13,265	14,016
J2	Arm A - Glen Ellan Rd	4,107	5,175	4,629	5,697
	Arm B - R125 Rathbeale Rd	7,609	9,858	8,579	10,828
	Arm C - Access to Cronan's Well Gate	3,113	5,409	3,521	5,816
	Arm D - R125 Rathbeale Rd	9,834	10,802	11,096	12,063
J3	Arm A - Holymount Rd	172	173	193	194
	Arm B - R125 Rathbeale Rd	8,340	11,233	9,388	12,281
	Arm C - Site Access	73	1,740	91	1,758
	Arm D - R125 Rathbeale Rd	8,297	9,969	9,345	11,017
J4	Arm A - Glen Ellan Rd	8,995	9,621	10,140	10,766
	Arm B - R125 Rathbeale Rd	11,543	14,268	12,981	15,706
	Arm C - Murrough Rd	7,296	7,736	8,240	8,681
	Arm D - R125 Rathbeale Rd	8,342	11,788	9,389	12,836
J5	Arm A - Thornleigh Green	3,908	3,987	4,384	4,462

Junction No.	Arm / Road	YoO 2028		YoO+15 2043	
		Do Nothing Flows (Veh.)	Do-Minimum Flows (Veh.)	Do Nothing Flows (Veh.)	Do-Minimum Flows (Veh.)
	Arm B - Glen Ellan Rd	12,223	13,103	13,766	14,646
	Arm C - Glen Ellan Rd	9,098	9,655	10,257	10,814
	Arm D - Glen Ellan Rd	11,305	12,104	12,683	13,481

As can be seen in the preceding table, the scale of development in the current permitted and committed development is expected to result in a notable increase in traffic volumes on a small number of junctions. The predicted impact on traffic during operational phase is ***negative, low to moderate, slight significance*** and ***long term.***

18.5.4.2 Do Something Trip Generation

The proposed Mooretown Phase 2 development shall result in will deliver 360 no. residential units and a new access road from the R125 through the site. To quantify the Proposed Development trip generation the same TRICS trip rates used for the permitted scheme (see Table 18.9) have been utilised for the Proposed Development. This ensures consistency with the permitted scheme development traffic approach. Table 18.12 below presents the expected number of daily trips to be generated by the Proposed Development.

Table 18.12 Proposed Development Vehicular Trip Generation

Development Proposal	Daily Trips Two-Way
Mooretown Phase 2	1,226

18.5.4.3 Do Something Trip Distribution

The same distribution for the Mooretown Phase 1 development from the Phase 1 TTA traffic has been applied to the Proposed Developments predicated traffic. This means that all proposed traffic is distributed onto the local road network via the Phase 1 access road and Junction 3. At the junction, 80% will travel east towards Swords and 20% will travel west.

18.5.4.4 Do Something Traffic Forecast

The following Table 18.13 presents the DS and DM scenario forecast traffic volumes at the 5 no. surveyed junctions in the future YoO, and YoO+15. The table also provides the % increase at each junction between the DM and DS scenarios.

Table 18.13 Do Something Vehicular AADTs

Junction No.	Arm	YoO 2028			YoO+15 2043		
		Do-Minimum (Veh.)	Do-Something (Veh.)	DS vs DM (%)	Do-Minimum (Veh.)	Do-Something (Veh.)	DS vs DM (%)
J1	Arm A - R125 Rathbeale Rd	10,812	10,939	1.17%	12,076	12.203	1.05%
	Arm B - R108	7,341	7,380	0.53%	8,304	8,343	0.47%
	Arm C - R125	12,493	12,580	0.70%	14,016	14,104	0.63%
J2	Arm A - Glen Ellan Rd	5,175	5,182	0.14%	5,697	5,704	0.13%
	Arm B - R125 Rathbeale Rd	9,858	10,104	2.49%	10,828	11,073	2.27%
	Arm C - Access to Cronan's Well Gate	5,409	5,520	2.05%	5,816	5,927	1.91%
	Arm D - R125 Rathbeale Rd	10,802	10,929	1.18%	12,063	12,190	1.05%
J3	Arm A - Holymount Rd	173	173	0.00%	194	194	0.00%
	Arm B - R125 Rathbeale Rd	11,233	12,214	8.73%	12,281	13,262	7.99%
	Arm C - Site Access	1,740	2,966	70.49%	1,758	2,985	69.77%
	Arm D - R125 Rathbeale Rd	9,969	10,215	2.46%	11,017	11,263	2.23%
J4	Arm A - Glen Ellan Rd	9,621	9,870	2.58%	10,766	11,015	2.31%
	Arm B - R125 Rathbeale Rd	14,268	14,860	4.15%	15,706	16,298	3.77%
	Arm C - Murrough Rd	7,736	7,897	2.07%	8,681	8,841	1.84%
	Arm D - R125	11,788	12,788	8.49%	12,836	13,836	7.79%

Junction No.	Arm	YoO 2028			YoO+15 2043		
		Do-Minimum (Veh.)	Do-Something (Veh.)	DS vs DM (%)	Do-Minimum (Veh.)	Do-Something (Veh.)	DS vs DM (%)
	Rathbeale Rd						
J5	Arm A - Thornleigh Green	3,987	4,025	0.97%	4,462	4,501	0.87%
	Arm B - Glen Ellan Rd	13,103	13,210	0.81%	14,646	14,753	0.73%
	Arm C - Glen Ellan Rd	9,655	9,904	2.57%	10,814	11,063	2.30%
	Arm D - Glen Ellan Rd	12,104	12,207	0.85%	13,481	13,585	0.77%

As Table 18.13 indicates, the junctions with the highest % impact are the junction 3 (northern site access) and junction 4 to the east of the site access which would reflect the distribution of the majority of the development traffic in this general direction. The following summary of the impact assessment is noted.

- The % impact at the majority of junctions arms is less than 3% (e.g. junctions 1,2 and 5).
- Junction 3 (Northern Site Access) sees a large % impact due to the majority of proposed traffic traveling through the junction.
- Arm D – R125 Rathbeale Road of junction 4 has a % impact of 7.79%, it is the only arm outside of the site access junction that is greater than 3% impact.

As demonstrated in Table 18.13, the predicted percentage impact is expected to be negative **low to moderate, slight** and **long term** across the local road network.

18.6 Mitigation Measures

18.6.1 Construction Phase

A detailed Construction Environmental Management Plan (CEMP) has been prepared by AKM Design Group (2026) and submitted under separate cover as part of this planning application. The CEMP includes the mitigation contained in this EIAR, including construction traffic management measures.

Construction traffic mitigation measures address likely human health risks and documents construction practices and measures that can be adopted to minimise any effects on road users during the Proposed Development's construction phase. The follow overarching objectives are noted:

- mitigate likely construction traffic effects on nearby local roads by routing construction traffic along the regional and national road network, where possible;
- construction traffic movements will be scheduled to avoid school pick-up and drop-off times in order to minimise potential conflicts with school-related pedestrian and vehicular activity;
- avoid conflict between construction traffic activities and general traffic/ pedestrians/ cyclists in the general vicinity of the site; and

- set out appropriate construction staff car parking arrangements so as to avoid overspill car parking on the local road network and resulting potential for traffic hazards.

A proposed HGV construction traffic route has been developed for the Proposed Development. The HGV haulage route shall be strictly adhered to, as illustrated in the following Figure 18.13, unless otherwise agreed with FCC.

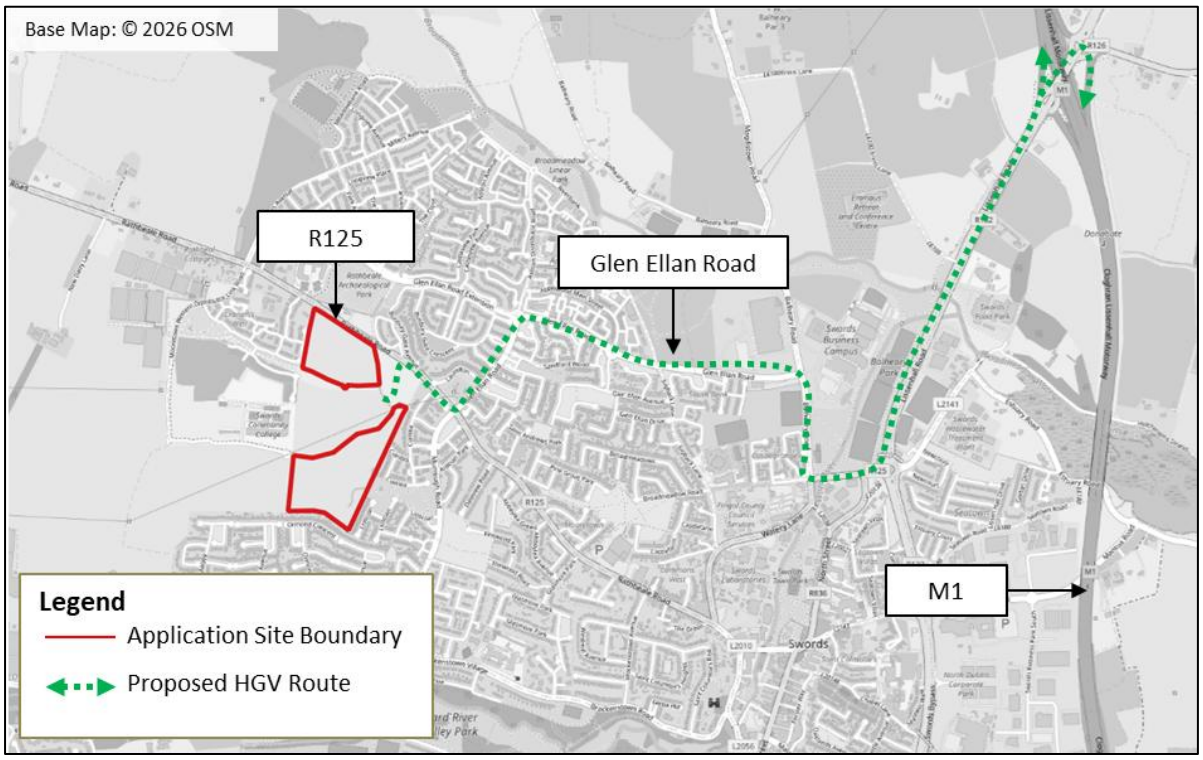

Figure 18.13 Construction Traffic Route to/from the application site.

Furthermore, the following mitigation actions would be advised for the construction period of the Proposed Development:

- All construction staff parking will be accommodated in temporary parking areas within the site, which will have capacity for c. 35 no. vehicles;
- A Construction Staff Travel Management Plan (CSTP) for the site will be developed by the contractor and implemented prior to construction works commencing;
- Just-in-time deliveries will be arranged where feasible;
- Construction materials will, where feasible, be sourced from local suppliers and manufactures, thus, limit likely effects of construction traffic;
- The site will operate from 07:00hrs to 19:00hrs on weekdays and from 08:00hrs to 14:00hrs on Saturday. No works will be undertaken on Sundays or Bank Holidays without the consent of FCC;
- A signage plan will be developed and implemented, providing advance warning of the construction access junction, and likelihood of slow-moving turning traffic to/ from the site;
- Compliance with the CEMP will form part of written contracts between the principal contractor and nominated sub-contractors;

- Methods of handling materials on site will be in accordance with construction site health and safety requirements;
- An on-site speed restriction of 15 kph shall be enforced;
- Where required, construction vehicles will be inspected prior to exit from the site to ensure that dirt is not spread onto the adjoining road, and systems shall be put in place to facilitate this process, including an on-site cleaning area and/ or rumble grid;
- The principal contractor will comply at all times with FCC requirements, including but not limited to hoarding/ scaffolding licences, skip licences etc; and
- The CEMP will be monitored constantly throughout the proposed construction programme and updated as needed to reflect the evolving needs of the project. The process for monitoring and updating the CEMP will be in accordance with FCC requirements.

The construction traffic mitigation measures will ensure that suitable temporary traffic works, and road safety measures are put in place during the construction phase. The plan will ensure that any required traffic management measures are put in place to minimise the impact on local road users. Construction related traffic will access/ egress the site via the R125 Rathbeale Road, the impact of the construction period will be temporary in nature and will cease following completion of the works. ***No significant effects are likely to occur due to construction phase traffic.***

The Applicant will appoint a dedicated construction manager and construction traffic manager. The construction traffic manager will be required to coordinate and schedule all deliveries to the site, ensure that the access roads are kept clear of mud and debris, advise haulage contractors on the appropriate routes to and from the site, and to adhere to good traffic management principles. In this way, the likely effects of the construction phase can be appropriately managed. ***No significant effects are expected.***

18.6.2 Operational Phase

Swords provides suitable infrastructure and transport services to enable travel by sustainable modes. In addition, proposed active travel and public transport improvements planned for Swords shall help to enable sustainable mode choices. A key barrier to modal shift towards sustainable modes of travel is often a lack of information about potential alternatives to the car.

To encourage sustainable transport use and help reduce potential traffic impacts, a Framework Residential Travel Plan (RTP) has been prepared by Transport Insights (2026) and is included within the overall application package. The RTP will implement the mitigation measures set out in this EIAR.

11.8.2.1 RTP Objectives and Measures

Considering the site's accessible location, multiple employment and educational destinations within its walking, cycling, and public transport catchment and access to public transport services, the overarching objectives of the RTP are to:

- promote sustainable travel choices (walking, cycling and public transport); and
- support car-free lifestyle among residents and visitors of the development.

To achieve the mode share targets in the RTP, the following actions will be undertaken:

- Appointment of a Residential Travel Plan Co-Ordinator (RTPC);

- Promotion of the public transport TaxSaver scheme and Cycle to Work scheme;
- Promote a sustainable alternative to private car ownership through provision of active travel infrastructure. It is also noted that car share spaces are provided on the access road as part of Mooretown Phase 1;
- Provision of secure cycle parking for standard and nonstandard type bicycles across the development to serve future residents, visitors and users of the commercial, community and crèche amenities;
- Promotion of walking as active travel in residents Sustainable Transport Information Pack; and
- Incentivising Active Commuters.

The Framework document sets out a clear set of objectives and identifies measures to help achieve the stated objectives, as well as appropriate monitoring and marketing techniques. Following occupation of the site and appointment of an RTPC, it is recommended that the Action Plan included in the RTP be further developed. The Action Plan will remain a 'living' document thereafter and should be updated periodically.

18.7 Residual Impacts

18.7.1 Construction Phase

The construction traffic volumes have been assessed and are expected to be below the operational traffic volumes. The overall development is large in scale, however the number of construction-related trips during the construction period are expected to be incremental and temporary. Therefore, the effects of the construction traffic volumes are expected to be negligible to the local road network.

Table 18.14 Residual Impacts on traffic during construction phase.

Junction		Residual Impact		
No.	Name	Quality / Scale	Significance	Duration
1	R125 Rathbeale Road/ R108 Naul Road	***Negative - Low***	***Not significant***	***Short-term***
2	R125 Rathbeale Road/ Western Distributor Link Road	***Negative - Low***	***Not significant***	***Short-term***
3	R125 Rathbeale Road/ Holymount Site Access	***Negative - Low***	***Not significant***	***Short-term***
4	R125 Rathbeale Road/ Glen Ellan Road/ Murrough Road	***Negative - Low***	***Not significant***	***Short-term***
5	Glen Ellen Road/ Ashton Distributor Road	***Negative - Low***	***Not significant***	***Short-term***

18.7.2 Operational Phase

The majority of the junctions have a percentage impact of less than 3%, with only junction 3 and 4 having a greater than 3% impact. This is due to the majority of the proposed traffic travelling through junction 3 (and the fact at present it is not an operational access so in percentage terms the increase appears large). Junction 4 has only 1 no. arm which has an impact above 3% which is the R125 Rathbeale Road arm. Give the assessment of the additional produced movements caused by the development, it is clear that the operational phase of the development will not have a significant traffic impact on the local road network.

Table 18.15 Residual Impacts on traffic during operational phase.

Junction		Residual Impact		
No.	Name	Quality / Scale	Significance	Duration
1	R125 Rathbeale Road/ R108 Naul Road	*Positive - Low*	*Not significant*	*Short to Medium-term*
2	R125 Rathbeale Road/ Western Distributor Link Road	*Positive - Low*	*Not significant*	*Short to Medium-term*
3	R125 Rathbeale Road/ Holymount Site Access	*Positive - Low*	*Not significant*	*Short to Medium - term*
4	R125 Rathbeale Road/ Glen Ellan Road/ Murrough Road	*Positive - Low*	*Not significant*	*Short to Medium - term*
5	Glen Ellen Road/ Ashton Distributor Road	*Positive - Low*	*Not significant*	*Short to Medium - term*

18.8 Monitoring

18.8.1 Construction Phase

During the construction stage the following monitoring exercises will be carried out. The specific compliance exercises to be undertaken in regard to the range of measures detailed in the final construction management plan will be agreed with the planning authority.

- Compliance with construction vehicle routing practices;
- Compliance with construction vehicle parking practices;
- Internal and external road conditions, and
- Timings of construction activities.

Construction traffic will be monitored constantly throughout the proposed construction programme and updated as needed to reflect the evolving needs of the project. The process for monitoring and updating the CEMP will be in accordance with FCC requirements.

18.8.2 Operational Phase

It is important to monitor and update the RTP to ensure the actions are being implemented and that action is sustained over time. It also provides an opportunity for the effectiveness of actions to be assessed, and if required, new actions identified. The following steps are recommended to monitor progress:

- Informed by a residents and visitors travel survey, the RTP should be updated within six months of occupation of the full site; and the Action Plan tailored to meet the specific requirements of its residents and visitors.
- A resident and visitor travel survey should be carried out biannually thereafter, forming the baseline from which the RTP's future performance is measured and additional/ amended interventions identified.

- A review of the actions carried out or due should be carried out by the RTPC every three months. This should take the form of a memo to the scheme's management company, documenting actions implemented, residents' feedback etc.

18.9 Interactions

The analysis contained within this chapter interacts with human health, biodiversity, water, noise and vibration, visual, contained within this EIAR. This is primarily due to the potential for an increase in traffic movements on the surrounding road network during the construction and operational phases due to the Proposed Development. The following is noted in terms of interaction with each:

18.9.1 Population and Human Heath

Construction and operational stage traffic and traffic management measures have the potential to affect journey amenity or economic activity as a result of increased congestion or access restrictions. Chapter 7 (Population & Human Health) further describes the effect of the Proposed Development on population and human health. The impacts due to interactions with population and human health are anticipated to be ***negative, short-term*** and ***not significant*** for the construction phase. The impacts due to the interactions with population and human health are anticipated to be ***positive, long term*** and ***not significant*** for the operational phase.

18.9.2 Biodiversity

The presence of the Proposed Development and new traffic flows can have impacts on biodiversity including severance of commuting or feeding routes and direct mortality. Chapter 8 (Biodiversity) assesses the impacts of the Proposed Development on biodiversity. The impacts due to the interactions with biodiversity are anticipated to be ***negative, short-term*** and ***not significant*** for the construction phase. The impacts due to the interactions with biodiversity are anticipated to be ***negative, long term*** and ***not significant*** for the operational phase.

18.9.3 Land, Soils and Geology

The volumes of surplus soils generated by the Proposed Development and the earthworks import requirement will affect construction stage traffic generation. Corresponding mitigation measures are set out in Chapter 9 (Land, Soils and Geology). During construction, the CEMP will ensure that construction traffic impacts are minimised through the control of site access / egress routes and site locations and any temporary lane closure requirements. The impacts due to the interactions with land, soils and geology are anticipated to be ***negative, short-term*** and ***not significant*** for the construction phase.

During the operational phase, vehicle movements can generate pressure on road surfaces and adjacent soils and roads and parking areas can reduce the permeable soil cover. The proposed scheme introduces SuDS, permeable paving and landscaping to mitigate these potential impacts. The impacts due to the interactions with land, soils and geology are anticipated to be ***negative, long term*** and ***not significant*** for the operational phase.

18.9.4 Hydrology and Hydrogeology

Construction and operational stage traffic have the potential to impact on water quality via accidental hydrocarbon spills and leaks and via increased sediment / particle loading on trafficked surfaces.

Measures to mitigate against impacts are detailed in Chapter 9 (Land, Soils and Geology) and Chapter 10 (Hydrology and Hydrogeology). The impacts due to the interactions with hydrology are anticipated to be ***negative, short-term*** and ***not significant*** for the construction phase. The impacts due to the interactions with hydrology are anticipated to be ***negative, long-term*** and ***not significant*** for the operational phase.

18.9.5 Air Quality

Changes in traffic volumes resulting from the Proposed Development impacts levels of air pollutant emissions, i.e. from internal combustion engines. The presence of construction traffic at the site and on the surrounding road network also contributes to dust generation and deposition. These aspects of the Proposed Development are addressed under the scope of Chapter 11 (Air Quality), which is informed by the predicted traffic flows during construction and operation. The impacts due to the interactions with air quality are anticipated to be ***negative, short-term*** and ***not significant*** for the construction phase. The impacts due to the interactions with air quality are anticipated to be ***negative, long-term*** and ***not significant*** for the operational phase

18.9.6 Climate

Changes in traffic volumes resulting from the Proposed Development affects levels of air pollutant emissions, i.e. from internal combustion engines. These aspects of the Proposed Development are addressed under the scope of Chapter 12 (Climate), which is informed by the predicted traffic flows during construction and operation. The impacts due to the interactions with climate are anticipated to be ***negative, short-term*** and ***not significant*** for the construction phase. The impacts due to the interactions with climate are anticipated to be ***negative, long-term*** and ***not significant*** for the operational phase.

18.9.7 Noise and Vibration

Changes in the locations and volumes of traffic resulting from the Proposed Development affect noise levels in the receiving environment. This topic has been addressed under the scope of Chapter 13 (Noise & Vibration), which is informed by the predicted traffic volumes during construction and operation. The impacts due to the interactions with noise & vibration are anticipated to be ***negative, short-term*** and ***not significant*** for the construction phase. The impacts due to the interactions with noise & vibration are anticipated to be ***negative, long-term*** and ***not significant*** for the operational phase.

18.9.8 Landscape and Visual

During the construction phase, the presence of a substantial construction site (including construction traffic entering and exiting the site) negatively affects visual amenity in adjacent areas. This subject is addressed under the scope of Chapter 14 (Landscape & Visual). The impacts due to the interactions with landscape and visual are anticipated to be ***negative, short-term*** and ***not significant*** for the construction phase. The impacts due to the interactions with landscape and visual are anticipated to be ***negative, long-term*** and ***not significant*** for the operational phase.

18.9.9 Material Assets - Waste

The generation of waste materials during the construction and operational phases creates the need for waste collection vehicles at the site and on the surrounding road network. Regard has been had to this aspect of the Proposed Development in the preparation of this chapter. The impacts due to the interactions with material assets are anticipated to be ***negative, short-term*** and ***not significant*** for the

construction phase. The impacts due to the interactions with material assets are anticipated to be ***negative, long-term*** and ***not significant*** for the operational phase.

No likely significant effects are predicted in relation to any of the above-listed interactions. For further information, please refer to the other EIAR chapters referred to above.

18.10 Cumulative Impacts

18.10.1 Identified Relevant Committed Developments

With the objective of assessing the cumulative impacts of the potential traffic that could arise from permitted and committed development schemes in the local area, the impact assessment has incorporated five developments. This is in addition to growth factors applied to base traffic flows which have also been incorporated into the analysis in Section 18.5.4. Such an approach ensures the cumulative impact of potential additional vehicular movements as a result of the implementation of both the subject proposals and the permitted and committed developments have been considered in the impact assessment.

The identified developments are presented in Table 18.16 (below), with commentary provided regarding their consideration in this EIAR chapter.

Table 18.16 Relevant Committed and Proposed Developments

No.	Reg. Ref.	Name	Location	Comments
1	FCC: LADP/002/24	Mooretown Phase 1	Overall Application Lands	The first Mooretown phase has been accounted for in the Do-Minimum development scenario, as committed development, and as such any cumulative impacts have been reflected in the analysis presented in this chapter.
2	FCC: F23A/0504	Mooretown	Lands to the south	The scheme has been accounted for in the Do-Minimum development scenario, as committed development.
3	FCC: SHD/012/21 ABP: ABP-313362-22	Mooretown Strategic Housing Development (SHD)	Lands to the southwest	The Mooretown SHD has been accounted for in the Do-Minimum development scenario, as committed development.
4	FCC: SHD/004/20 ABP: ABP-313302-22	Oldtown Phase 5	Lands to the northwest	The Oldtown Phase 5 has been accounted for in the Do-Minimum development scenario.
5	FCC: F18A/0163	Swords School Development	Lands to the west	The post primary school building is occupied, thus associated trips have been recorded as part of the traffic surveys. Only trips generation associated with the primary school has been included as a committed development in the Do-minimum scenario.

As presented in the table above, each development noted has been deemed to generate excess traffic beyond the assumed background traffic growth factors, and therefore they have been accounted for in the analysis included herein.

18.11 Conclusion

This chapter has provided a comprehensive Traffic & Transport Assessment of the Proposed Development in accordance with TII guidance. The impact assessment presented future year scenarios which considered the potential cumulative impacts of the construction and operational phases of the Proposed Development. Mitigation measures including RTP have been detailed. The assessment has demonstrated that the Proposed Development will not have a significant impact on the local road network.

18.12 Difficulties Encountered

The main difficulty encountered in preparing this chapter was the availability traffic survey data. Up-to-date traffic counts were unavailable from other sources, so traffic surveys were commissioned by the application team to collect the required data from the local road network.

18.13 References

- Traffic & Transport Assessment Report (FCC Reg. Ref. LADP/002/24), prepared by Waterman Moylan Consulting Engineers, dated May 2024.
- Travel Plan Report (FCC Reg. Ref. LADP/002/24), prepared by Waterman Moylan Consulting Engineers, dated May 2024;
- EPA (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports;
- European Commission Guidance on the preparation of the Environmental Impact Assessment Report (2017);
- Sustainable Urban Housing: Design Standards for New Apartments (July 2023);
- Sustainable Residential Development and Compact Settlements Guidelines for Planning Authorities (January 2024)
- Fingal Development Plan 2023-2029;
- BSM Framework Plan 2023 – Lands at Mooretown Swords (April 2024)
- Transport Infrastructure Ireland (TII) (2014) Traffic and Transport Assessment Guidelines;
- Transport Infrastructure Ireland (TII) Project Appraisal Guidelines for National Roads Unit 16.1 – Expansion Factors for Short Period Traffic Counts (October 2016);
- Transport Infrastructure Ireland (TII) Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections (October 2021); and
- Design Manual for Urban Roads and Streets (DMURS) (May 2019).
- National Transport Authority Cycle Design Manual (September 2024).

19 Material Assets – Waste

19.1 Introduction

This chapter evaluates the likely impacts, if any, which the Proposed Development may have on Material Assets (related to waste management) as defined in the EIA Directive (Directive 2011/92/EU (inc 3.1(d)) as amended by Directive 2014/52/EU) and the Environmental Protection Agency (EPA) *Guidelines on the information to be contained in Environmental Impact Assessment Reports* (2022).

This chapter has also been prepared to address the issues associated with waste management during the construction and operational phases of the Proposed Development as described in Chapter 5 (Description of Proposed Development).

This chapter was completed by Chonaill Bradley (Bsc ENV, PG Dip Circ Econ, AssocCIWM) of AWN Consulting. Chonaill Bradley is a Principal Environmental Consultant in the Environment Team at AWN. He holds a BSc in Environmental Science from Griffith University, Australia and a Postgraduate Diploma in Circular Economy Leadership for the Built Environment from the Atlantic Technological University, Galway. He is an Associate Member of the Institute of Waste Management (AssocCIWM). Chonaill has over 10 years' experience in the environmental consultancy sector and specialises in sustainability, resource and waste management. Refer to Table 1.4 in Chapter 1 (Introduction) for qualifications of authors and reviewers.

A site-specific Resource and Waste Management Plan (RWMP) has been prepared by AWN Consulting Ltd. to deal with resource use and waste generation during the site clearance, excavation and construction phases of the Proposed Development and has been included as Appendix 19.1 in Volume 3 of this EIAR. The RWMP was prepared in accordance with the Environmental Protection Agency's (EPA) document '*Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction and Demolition Projects*' (2021).

A separate Operational Waste Management Plan (OWMP) has also been prepared by AWN for the operational phase of the Proposed Development and is included as Appendix 19.2 in Volume 3 of this EIAR.

The Chapter has been prepared in accordance with European Commission's Guidelines, '*Guidance on the preparation of the Environmental Impact Assessment Report* (2017)' and the EPA '*Guidelines on the Information to be contained in Environmental Impact Assessment Reports* (2022)'.

These documents will ensure the sustainable management of wastes arising at the development site in accordance with the legislative requirements and best practice standards.

19.2 Method

The assessment of the impacts of the Proposed Development, arising from the consumption of resources and the generation of waste materials, was carried out, taking into account the methodology specified in relevant guidance documents, along with an extensive document review to assist in identifying current and future requirements for waste management; including national and regional waste policy, waste strategies, management plans, legislative requirements and relevant reports.

This chapter was undertaken in accordance with the Environmental Protection Agency (EPA) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (2022). The

methodology applied is consistent with the overarching EIA framework described in Chapter 2 of this EIAR.

The assessment addresses the construction and operational phases of the Proposed Development and, where relevant, considers the potential for direct, indirect and residual effects on the receiving environment.

Study Area

The assessment of waste has utilised two geographically different study areas to examine the use of materials and the generation and management of waste:

- The first study area comprises the Proposed Development boundary and any areas required for temporary access, site compounds and other enabling activities. Where materials will be consumed, and materials/waste will be generated.
- The second study area extends to the availability of appropriate waste management infrastructure suitable (permitted for waste volume and type) to accept arisings and/or waste generated by the Proposed Development. This includes the Eastern Midlands Region (EMR) (regional) and Ireland (national) as a whole where applicable in order to capture potential impacts of recovering, recycling or disposal of the waste generated from the Proposed Development at waste facilities located throughout the country.

The impact assessment methodology applied within this chapter comprises the following stages:

This chapter is based on the Proposed Development, as described in Chapter 5 (Description of Proposed Development) and considers the following aspects:

- Legislative context;
- Construction phase (including site clearance, excavation and site preparation); and
- Operational phase.

A desktop study was carried out, which included the following:

- Review of applicable policy and legislation which creates the legal framework for resource and waste management in Ireland;
- Description of the typical waste materials that will be generated during the construction and operational phases; and
- Identification of mitigation measures to prevent waste generation and promote management of waste in accordance with the waste hierarchy.

Estimates of waste generation during the construction and operational phases of the Proposed Development have been calculated. The waste types and estimated quantities are based on published data by the EPA in the National Waste Reports and National Waste Statistics, data recorded from similar previous developments, Irish and US EPA waste generation research as well as other available research sources.

Mitigation measures are proposed to minimise the effect of the Proposed Development on the environment during the construction and operational phases, to promote efficient waste segregation, and to reduce the quantity of waste requiring disposal. This information is presented in Section 19.6.

A detailed review of the existing ground conditions on a regional, local and site-specific scale is presented in Chapter 8 (Land, Soils, Geology and Hydrogeology). Chapter 8 also discusses the

environmental quality of any soils which will have to be excavated to facilitate construction of the Proposed Development.

19.2.1 Legislation and Guidance

Waste management in Ireland is subject to EU, national and regional waste legislation, which defines how waste materials must be managed, transported and treated. The overarching EU legislation is the 'Waste Framework Directive (2008/98/EC)' as amended, which is transposed into national legislation in Ireland. The cornerstone of Irish waste legislation is the 'Waste Management Act 1996 (as amended)'. European and national waste management policy is based on the concept of 'waste hierarchy', which sets out an order of preference for managing waste (prevention > preparing for re-use > recycling > recovery > disposal) (Figure 19.1).

Figure 19.1 Waste Hierarchy (Source: European Commission)

EU and Irish national waste policy also aims to contribute to the circular economy by extracting high-quality resources from waste as much as possible. Circular Economy (CE) is a sustainable alternative to the traditional linear (take-make-dispose) economic model, reducing waste to a minimum by reusing, repairing, refurbishing and recycling existing materials and products (Figure 19.2).

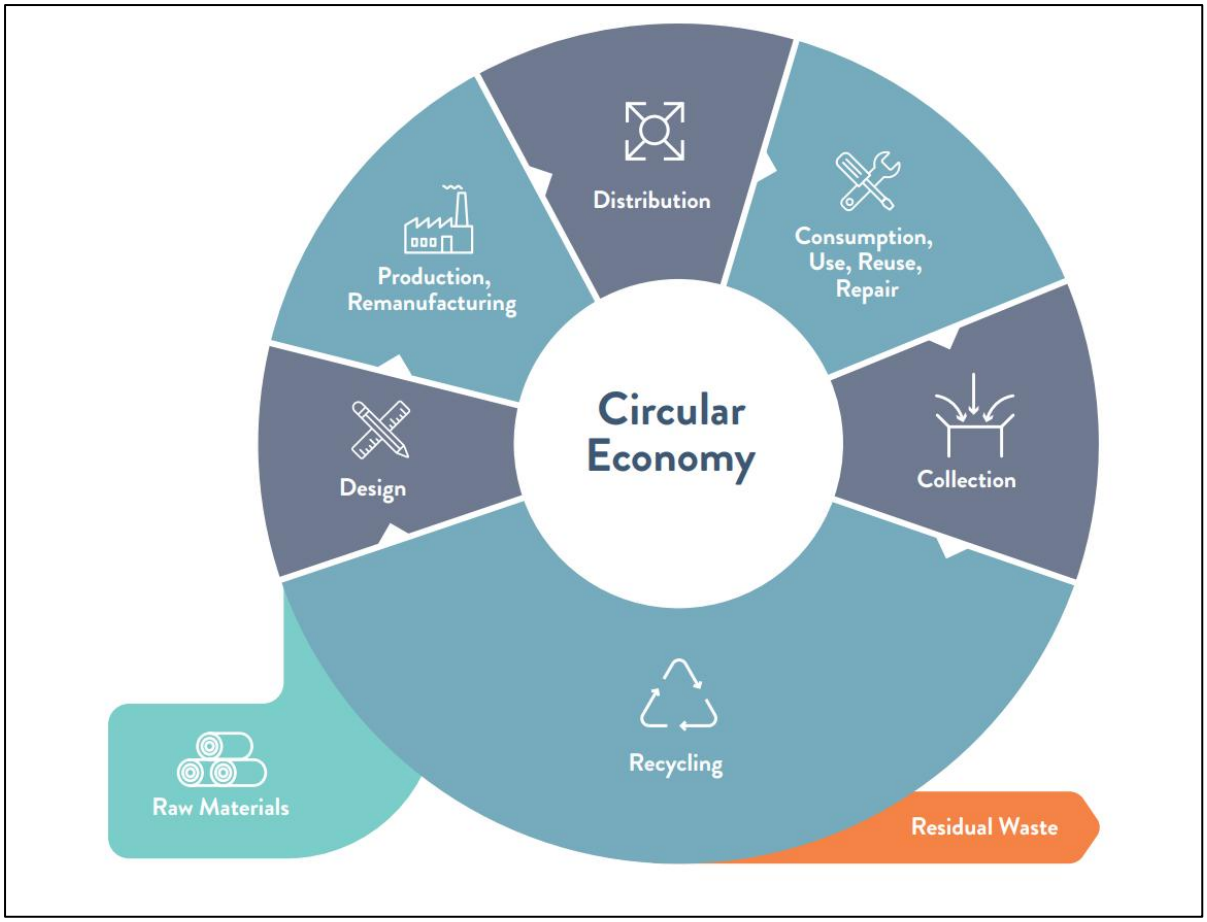

Figure 19.2 Circular Economy (Source: EPA)

The Irish Government issues policy documents which outline measures to improve waste management practices in Ireland and help the country to achieve EU targets in respect of recycling and disposal of waste. The policy document, 'Waste Action Plan for a Circular Economy – Waste Management Policy in Ireland' (WAPCE), was published in 2020 and shifts focus away from waste disposal and moves it back up the production chain. The move away from targeting national targets is due to Irish and international waste context changing in the years since the launch of the previous waste management plan, 'A Resource Opportunity', in 2012.

One of the first actions to be taken from the WAPCE was the development of the Whole of Government Circular Economy Strategy 2022-2023 'Living More, Using Less' (2021) to set a course for Ireland to transition across all sectors and at all levels of Government toward circularity and was issued in December 2021.

The Circular Economy and Miscellaneous Provisions Act 2022 was signed into law in July 2022. The Act underpins Ireland's shift from a "take-make-waste" linear model to a more sustainable pattern of production and consumption, that retains the value of resources in our economy for as long as possible and that will significantly reduce our greenhouse gas emissions. The Act defines Circular Economy for the first time in Irish law, incentivises the use of recycled and reusable alternatives to wasteful, single-use disposable packaging, introduces a mandatory segregation and incentivised charging regime for commercial waste and streamlines the national processes for End-of-Waste and By-Products decisions.

The Regional Waste Management Planning Offices published the National Waste Management Plan for Circular Economy 2024-2030 (2024) (NWMPCE). The ambition of this Plan is 0% total waste growth per

person over the life of the Plan with an emphasis on non-household wastes including waste from commercial activities and the construction and demolition sector. This Plan provides a waste management planning framework for the waste sector to maintain and strengthen existing services and identifies key interventions to accelerate the transition to a circular economy.

This Plan recognises Climate Change as a key driver for both behavioural change and improved waste management practices. The ambition of this Plan is 0% total waste growth per person over the life of the Plan with an emphasis on non-household wastes including waste from commercial activities and the construction and demolition sector. This ambition is underpinned with a comprehensive series of targets, policies, actions and a suite of key deliverables.

The strategy for the management of waste from the construction phase is in line with the requirements of the EPA's *'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction and Demolition Projects'* (2021). The guidance documents, *Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects* (*2006*) *and Construction and Demolition Waste Management: A Handbook for Contractors and Site Managers* (FÁS and Construction Industry Federation, 2002), were also consulted in the preparation of this assessment.

There are currently no Irish guidelines on the assessment of operational waste generation, and guidance is taken from industry guidelines, plans and reports including:

- Waste Management Act 1996
- The National Waste Management Plan for a Circular Economy 2024 – 2030 (NWMPCE) (2024),
- BS 5906:2005 Waste Management in Buildings – Code of Practice,
- Fingal County Council (FCC) 'Segregation, Storage and Presentation of Household and Commercial Waste Bye-Laws' (2020),
- EPA National Waste Database Reports 1998 – 2020, and
- The Circular Economy and National Waste Database Report 2021-2023 (2025) and the EPA National Waste Statistics Web Resource (2025).

Fingal Waste bye-laws

The waste bye-laws for both counties require mandatory waste segregation (recycling and food waste), prohibit illegal dumping and backyard burning, and necessitate proof of proper waste disposal to ensure compliance

19.2.2 Terminology

Note that the terminology used herein is generally consistent with the definitions set out in Article 3 of the Waste Framework Directive. Key terms are defined as follows:

- **Waste:** Any substance or object which the holder discards or intends or is required to discard.
- **Prevention:** Measures taken before a substance, material or product has become waste, that reduce:
  (a) the quantity of waste, including through the re-use of products or the extension of the life span of products;
  (b) the adverse impacts of the generated waste on the environment and human health; or
  (c) the content of harmful substances in materials and products.
- **Reuse:** Any operation by which products or components that are not waste are used again for the same purpose for which they were conceived.

- **Preparing for Reuse:** Checking, cleaning or repairing recovery operations, by which products or components of products that have become waste are prepared so that they can be re-used without any other pre-processing.
- **Treatment:** Recovery or disposal operations, including preparation prior to recovery or disposal.
- **Recovery:** Any operation the principal result of which is waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function, in the plant or in the wider economy. Annex II of the Waste Framework Directive sets out a non-exhaustive list of recovery operations.
- **Recycling:** Any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations.
- **Disposal:** Any operation which is not recovery even where the operation has, as a secondary consequence, the reclamation of substances or energy. Annex I sets out a non-exhaustive list of disposal operations.
- **Circular Economy:** A model of production and consumption, which involves sharing, leasing, reusing, repairing, refurbishing and recycling existing materials and products as long as possible.

19.3 Baseline Environment

In terms of waste management, the receiving environment is largely defined by FCC as the local authorities responsible for setting and administering waste management activities in the area. This is governed by the requirements set out in the NWMPCE 2024 – 2030 and the Waste Action Plan for a Circular Economy – Waste Management Policy in Ireland.

The waste management plans set out the following targets for waste management in the region:

- Achieve a recycling rate of 60% of managed municipal waste by 2030; and;
- Reduce to 0% the direct disposal of unprocessed residual municipal waste to landfill (from 2016 onwards) in favour of higher value pre-treatment processes and indigenous recovery practices.

The Regional Waste Management Planning Offices have issued a National Waste Management Plan for a Circular Economy 2024 - 2030 in March 2024, which supersedes the Eastern midlands regional (EMR) waste management plan and the two other regional waste management plans. The NWMPCE does not however dissolve the three regional waste areas. The NWCPCE sets the ambition of the plan to have a 0% total waste growth per person over the life of the Plan with an emphasis on non-household wastes including waste from commercial activities and the construction and demolition sector.

The FCC, *Fingal Development Plan 2023 – 2029* sets out the objectives for the FCC area which reflect those set out in the regional waste management plan and can be found in **Appendices 19.1** and **19.2**.

In terms of physical waste infrastructure, FCC no longer operates any municipal waste landfills in the area. There are a number of waste permitted and licensed facilities located in the EMR, in the surrounding counties and over Ireland and Northern Ireland, for management of waste from the construction industry as well as municipal sources. These include soil recovery facilities, inert C&D waste facilities, hazardous waste treatment facilities, municipal waste landfills, material recovery facilities, waste transfer stations and two waste-to-energy facilities.

However, these sites may not be available for use when required or may be limited by the waste contractor selected to service the Proposed Development in the appropriate phase. In addition, there is potential for more suitably placed waste facilities or recovery facilities to become operational in the future, which may be more beneficial from an environmental perspective.

The ultimate selection of waste contractors and waste facilities would be subject to appropriate selection criteria proximity, competency, capacity and serviceability.

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

19.4 Characteristics of the Proposed Development

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

19.4.1 Construction Phase

During the construction phase, waste will be produced from surplus materials such as broken or off-cuts of timber, plasterboard, concrete, tiles, bricks, etc. Waste from packaging (cardboard, plastic, timber) and oversupply of materials may also be generated. The appointed Contractor will be contractually required to ensure that oversupply of materials is kept to a minimum and opportunities for reuse of suitable materials is maximised.

There will be topsoil and subsoil excavated to facilitate construction of new foundations, roads and the installation of underground services The project engineers (AKM Design Group) have estimated that c. 21,860m^3 of material will need to be excavated to do so. It is currently envisaged that c. 21,860m^3 will be able to be reused on site in landscaping and site levelling functions. Where material is deemed unsuitable for reuse, this material will be taken for appropriate offsite reuse, recovery, recycling and / or disposal.

During the construction phase there may be a surplus of building materials, such as timber off-cuts, broken concrete blocks, cladding, plastics, metals and tiles generated. There may also be excess concrete during construction which will need to be disposed of. Plastic and cardboard waste from packaging and supply of materials will also be generated. The Contractor will be required to ensure that oversupply of materials is kept to a minimum and opportunities for reuse of suitable materials is maximised.

If any material that requires removal from the site is deemed to be a waste, its removal and subsequent reuse / recycling / recovery / disposal will be carried out in accordance with the Waste Management Act 1996 (as amended), the Waste Management (Collection Permit) Regulations 2007 (as amended) and the Waste Management (Facility Permit and Registration) Regulations 2007 (as amended). The volume of waste requiring recovery / disposal will dictate whether a Certificate of Registration (COR), permit or licence is required for the receiving facility. Alternatively, the material may be classed as by-product under Regulation 27 (By-products), as amended, of S.I. No. 323/2020 - European Union (Waste Directive) Regulations 2011-2020, (formerly Article 27 of the European Communities (Waste Directive)). For further information in relation to the envisaged management of by-products, refer to the RWMP (Appendix 19.1).

In order to establish the appropriate reuse, recovery and / or disposal route for the soils and stones requiring removal off-site as waste, the material will first need to be classified. Material deemed to be waste will initially be classified as hazardous or non-hazardous in accordance with the EPA publication Waste material *Waste Classification – List of Waste and Determining if Waste is Hazardous or Non-Hazardous* (2018). Environmental soil analysis will be undertaken prior to removal on a number of representative soil samples, in accordance with the Waste Acceptance Criteria (WAC) requirements set out in Council Decision 2003/33/EC. This legislation establishes limit values for the acceptance of waste at landfills, based on pollutant concentrations and leachability. It is anticipated that the surplus material will be suitable for acceptance at either inert or non-hazardous soil recovery facilities / landfills in Ireland. In the unlikely event that any hazardous material is encountered, such material will be transported to a suitable treatment / recovery facilities or exported abroad for disposal in appropriately licensed facilities.

Waste will also be generated from construction phase workers e.g. organic / food waste, dry mixed recyclables (wastepaper, newspaper, plastic bottles, packaging, aluminium cans, tins and Tetra Pak cartons), mixed non-recyclables and, potentially, sewage sludge from temporary welfare facilities provided on-site during the construction phase. Waste printer / toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated in small volumes from site offices.

Further detail on the waste materials likely to be generated during the excavation and construction works are presented in the project-specific RWMP (**Appendix 19.1**). The RWMP provides an estimate (of the main waste types likely to be generated during the construction phase of the Proposed Development. These are summarised in Table 19.1.

Table 19.1 Predicted On and Off Site Reuse, Recycling, and Disposal Rates for Construction Waste

Waste Type	Tonnes	Reuse		Recycle / Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Mixed C&D	643.8	10	64.4	80	515.0	10	64.4
Timber	546.2	40	218.5	55	300.4	5	27.3
Plasterboard	195.1	30	58.5	60	117.1	10	19.5
Metals	156.1	5	7.8	90	140.5	5	7.8
Concrete	58.5	30	17.6	65	38.0	5	2.9
Other	292.6	20	58.5	60	175.6	20	58.5
Total	1892.4		425.3		1286.6		180.5

It should be noted that until final materials and detailed construction methodologies have been confirmed it is difficult to predict with a high level of accuracy the construction waste that will be generated from the construction of the Proposed Development as the exact materials and quantities may be subject to some degree of change and variation during the compliance and construction process. However, the above estimates are considered to be the worst-case scenario.

19.4.2 Operational Phase

As noted in Section 19.1, an OWMP has been prepared for the Proposed Development and is included as **Appendix 19.2**. The OWMP provides a strategy for segregation (at source), storage and collection of all wastes generated within the Proposed Development during the operational phase. This includes the main waste streams, Mixed Non-Recyclable Waste (MNR), Dry Mixed Recyclables (DMR), Organic

Waste, Glass, Paper and Cardboard, Plastics, as well as a strategy for managing additional waste types such Deposit Return Scheme (DRS) drink cans and bottles, green / garden waste from landscaping, batteries (hazardous and non-hazardous), WEEE (hazardous and non-hazardous), printer / toner cartridges, chemicals (e.g., paints, adhesives, detergents), light bulbs, textiles, waste cooking oil, furniture and bulky waste, and abandoned bicycles.

The total estimated waste generation for the Proposed Development for the main waste types based on the AWN waste generation model is presented in Table 19.2 and is based on the uses and areas as advised by the project architects (Deady Gahan Architects Co Ltd).

The estimated quantum / volume of waste that will be generated from the residential units / residents (inc houses, duplexes and duplex apartments) a has been determined based on the predicted occupancy of the units. While the floor area usage (m^2) has been used to estimate the waste arising from the commercial unit / childcare unit.

Further breakdowns can be found with in **Appendix 19.2** OWMP.

Table 19.2 Estimated Waste Generation for the Proposed Development

Waste Type	Waste Volume (m^3 / week)	
	Residential	Commercial
Organic Waste	6.36	0.08
DMR	45.05	3.08
Glass	1.23	0.01
MNR	23.69	1.68
Total	**76.33**	**4.86**

Dedicated Waste Storage Areas (WSAs) have been allocated within the Proposed Development design and can be viewed in the drawings submitted with the application and in the OWMP (**Appendix 19.2**). Communal area waste will be accommodated in the closest shared residential WSAs and waste estimates are included as part of the overall residential waste figures provided in the previous tables.

The waste receptacles from the shared residential WSA and the commercial WSAs will be collected by facilities management or the waste contractor (agreement dependant), at the time of collection and brought to one of the staging areas, within the development redline boundary. Individual WSAs will be the responsibility of the owner to move the bins to and from the collection point, inline with the FCC waste bye-laws

The OWMP seeks to ensure the Proposed Development contributes to the targets outlined in the NWMPCE and the FCC waste Bye-laws, achieving maximum reuse, recycling, and recovery in line with the waste hierarchy and circular economy principles.

19.5 Predicted Impacts of the Proposed Development

19.5.1 Do-Nothing Impact

In the 'Do Nothing' scenario, the Proposed Development does not proceed and there would be no excavation, construction or operational waste generated at the site. There would, therefore, be no additional demand or loading on waste management infrastructure locally or nationally and thus there would be a neutral effect on the environment in terms of waste.

However, the demand for housing and associated infrastructure generated by the existing and projected population would persist. In the absence of development at this centrally located, serviced, and zoned site, this demand may be displaced to less sustainable, peripheral, or unserviced locations. This could result in greater environmental impacts due to increased land take, car dependency, and pressure on less serviced or less accessible infrastructure.

Given that the site is zoned for development and forms part of the wider Maynooth and Environs Joint Local Area, it is likely that a development of a similar nature would come forward in the future in line with national policy and development plan objectives. As such, the construction and operational phase effects outlined in this chapter.

19.5.2 Construction Phase

If waste materials are not managed and stored correctly, it is likely to lead to litter, odour or pollution issues at the Proposed Development site and in adjacent areas. The indirect effect of litter issues also cause the presence of vermin/flies in areas affected. In the absence of mitigation, the effect on the local and regional environment is likely to be ***short-term, significant*** and ***negative***.

The use of non-permitted waste contractors or unauthorised waste facilities could give rise to inappropriate management of waste, resulting in indirect negative environmental impacts, including pollution. It is essential that all waste materials are dealt with in accordance with regional and national legislation, as outlined previously, and that time and resources are dedicated to ensuring efficient waste management practices. In the absence of mitigation, the effect on the local and regional environment is likely to be ***long-term, significant*** and ***negative***.

C&D wastes arising will need to be taken to suitably registered / permitted / licenced waste facilities for processing and segregation, reuse, recycling, recovery, and / or disposal, as appropriate. There are numerous licensed waste facilities in the EMR, Ireland and Northern Ireland which can accept hazardous and non-hazardous waste materials, and acceptance of waste from the Proposed Development site would be in line with daily activities at these facilities. At present, there is sufficient capacity for the acceptance of the likely C&D waste arisings at facilities in the region. The majority of construction materials are either recyclable or recoverable and can be taken for recycling or recovery when managed correctly. However, in the absence of mitigation, the effect on the local and regional environment is likely to be ***short-term, significant*** and ***negative.***

There is a quantity of material that will need to be excavated to facilitate the Proposed Development. A detailed review of the existing ground conditions on a regional, local and site-specific scale are presented in Chapter 8 (Land, Soils, Geology and Hydrogeology). Excavated material that cannot be reused onsite will need to be removed off-site. Correct classification in accordance with the European Waste Catalogue (EWC) and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site. However, in the absence of mitigation, the effect on the local and regional environment is likely to be ***short-term, significant*** and ***negative***.

19.5.3 Operational Phase

The potential impacts on the environment of improper, or a lack of, waste management during the operational phase would be a diversion from the priorities of the waste hierarchy, which would lead to small volumes of waste being sent unnecessarily to landfill and diverted from reuse or recycling. In the absence of mitigation, the effect on the local and regional environment is likely to be ***long-term, significant*** and ***negative***.

The nature of the Proposed Development means the generation of waste materials during the operational phase is unavoidable. Networks of waste collection, treatment, recovery and disposal infrastructure are in place in the region to manage waste effectively from this type of development. Waste unsuitable for recycling is typically sent for energy recovery. There are also facilities in the region for segregation of municipal recyclables, which is typically exported as a raw material for the production of recycled products (e.g. paper mills and glass recycling).

If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues at the development site and in adjacent areas. The knock-on effect of litter issues is the presence of vermin in affected areas. In the absence of mitigation, the effect on the local and regional environment is likely to be ***long-term, significant*** and ***negative***.

Waste contractors will be required to service the Proposed Development on a regular basis to remove waste. The use of non-permitted waste contractors or unauthorised facilities could give rise to inappropriate management of waste and result in negative environmental impacts or pollution. It is essential that all waste materials are dealt with in accordance with regional and national legislation, as outlined previously, and that time and resources are dedicated to ensuring efficient waste management practices. In the absence of mitigation, the effect on the local and regional environment is likely to be ***indirect, long-term, significant*** and ***negative***.

19.6 Mitigation Measures

This section outlines the measures that will be implemented to reduce waste generation, manage waste responsibly and minimise environmental effects. All mitigation measures are guided by the principles of the 'Waste Hierarchy' and 'Circular Economy'. The waste hierarchy sets out waste management options in order of preference, from most to least preferred, based on environmental impact and compliance with EU and national policy: prevention and minimisation of waste, followed by preparing for reuse and recycling / recovery, energy recovery (i.e. incineration) and, as a last resort, disposal. The circular economy principle aims to keep materials, components, and products in-use for as long as possible, designing systems that create and retain value. These principles will be applied across the construction and operational phases of the Proposed Development.

The waste management objectives for the Proposed Development are as follows. These measures will facilitate material reuse and recycling, where possible, and seek to divert waste from landfill:

- Prevention (Construction Phase): The Main Contractor will prevent and minimise waste generation where possible by ensuring large surpluses of construction materials are not delivered to the site through coordination with the suppliers, operating a 'just-in-time' delivery scheme and ensuring sub-contractors conform to the Contractor(s) RWMP. The RWMP submitted with this application outlines the overarching principles, and a more detailed, site-specific version will be prepared by the Main Contractor prior to the commencement of the works. Prevention measures will also

include careful planning of excavations to maximise feasible reuse of suitable soil materials on-site and minimise surplus volumes requiring off-site management;

- Reuse (Construction and Operational Phases): Reuse of waste and surplus materials including the reuse of suitable excavated soil and stone as fill material. Surplus construction materials will be repurposed on-site where feasible. During the operational phase, reuse will be encouraged through appropriate segregation of waste streams to support recovery and minimise disposal;
- Recycle (Construction and Operational Phases): Recycling will be implemented during construction with segregated skips or containers provided for recyclable C&D waste streams such as metals, timber, plastic and cardboard. During operation, dedicated recycling facilities will be provided to support waste segregation in line with FCC requirements and national waste policy; and
- Disposal (Construction and Operational Phases): Where waste disposal is unavoidable, it will be carried out in accordance with the Waste Management Act 1996 (as amended) and relevant guidance. This applies to both construction waste and operational waste streams. Only licensed / permitted waste contractors will be used, and waste will be sent to authorised facilities. Disposal will remain a last resort in line with waste hierarchy principles.

19.6.1 Construction Phase

The following mitigation measures will be implemented during the construction phase of the Proposed Development:

WM_1:
As previously stated, a project-specific RWMP has been prepared in line with the requirements of the EPA '*Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction and Demolition Projects*' (2021) and is included as **Appendix 19.1.** The mitigation measures outlined in the RWMP will be implemented in full and form part of the mitigation strategy for the site. The mitigation measures presented in this RWMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the excavation and construction phases of the Proposed Development.

- Prior to commencement, the appointed Contractor(s) will be required to refine / update the RWMP (**Appendix 19.1**) in agreement with FCC and in compliance with any planning conditions, or submit an addendum to the RWMP to FCC, detailing specific measures to minimise waste generation and resource consumption, and provide details of the proposed waste contractors and destinations of each waste stream.
- The Contractor will implement the RWMP throughout the duration of the proposed excavation and construction phases.

WM_2:

A quantity of topsoil and sub soil will need to be excavated to facilitate the Proposed Development. The quantity surveyors have estimated that the majority excavated material will need to be removed off-site. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site.

In addition, the following mitigation measures will be implemented:

WM_3:

- Building materials will be chosen to 'design out waste';

WM_4:

- On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling and recovery. The following waste types, at a minimum, will be segregated:
  - Clean Soil
  - Contaminated soil (if located onsite)
  - Concrete rubble (including ceramics, tiles and bricks);
  - Plasterboard;
  - Metals;
  - Glass;
  - Timber;
  - Asbestos.

WM_5:

- Left over materials (e.g. timber off-cuts, broken concrete blocks / bricks) and any suitable construction materials shall be re-used on-site, where possible; (alternatively, the waste will be sorted for recycling, recovery or disposal);

WM_6:

- All waste materials will be stored in skips or other suitable receptacles in designated areas of the site;

WM_7:

- Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required);

WM_8:

- A Resource Manager will be appointed by the main Contractor(s) to ensure effective management of waste during the excavation and construction works;

WM_9:

- All construction staff will be provided with training regarding the waste management procedures;

WM_10:

- All waste leaving site will be reused, recycled or recovered, where possible, to avoid material designated for disposal;

WM_11:

- All waste leaving the site will be transported by suitably permitted contractors and taken to suitably registered, permitted or licenced facilities;

WM_12:

- All waste leaving the site will be recorded and copies of relevant documentation maintained;

WM_13:

- Nearby sites requiring clean fill material will be contacted to investigate reuse opportunities for clean and inert material, if required. If any of the material is to be reused on another site as by-product (and not as a waste), this will be done in accordance with Regulation 27 (By-products), as

amended, European Union (Waste Directive) Regulations 2011-2020. EPA approval will be obtained prior to moving material as a by-product.

These mitigation measures will ensure that the waste arising from the construction phase of the Proposed Development is dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated Regulations and the Litter Pollution Act 1997, as amended and the NWCPE. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will promote more sustainable consumption of resources.

19.6.2 Operational Phase

The mitigation measures to be implemented during the operational phase of the development are as follows:

WM_14:
All waste materials will be segregated into appropriate categories and will be temporarily stored in appropriate bins or other suitable receptacles in designated, easily accessible areas of the site.

WM_15:
As previously stated, a project specific OWMP has been prepared and is included as **Appendix 19.2.** The mitigation measures outlined in the OWMP will be implemented in full and form part of the mitigation strategy for the site. Implementation of this OWMP will ensure a high level of recycling, reuse and recovery at the development. All recyclable materials will be segregated at source to reduce waste contractor costs and ensure maximum diversion of materials from landfill, thus achieving the targets set out in the NWMPCE, Waste Action Plan for a Circular Economy – Waste Management Policy in Ireland and the FCC waste bye-laws.

Residents, tenants and facilities management of the site during the operational phase will be responsible for ensuring – allocating personnel and resources, as needed – the ongoing implementation of the OWMP, ensuring a high level of recycling, reuse and recovery at the site of the Proposed Development.

WM_16:

In addition, the following mitigation measures will be implemented:

- On-site segregation of all waste materials into appropriate categories including (but not limited to):
  - Organic waste;
  - Dry Mixed Recyclables;
  - Mixed Non-Recyclable Waste;
  - Glass;
  - Waste electrical and electronic equipment (WEEE);
  - Batteries (non-hazardous and hazardous);
  - Cooking oil;
  - Light bulbs;
  - Cleaning chemicals (pesticides, paints, adhesives, resins, detergents, etc.);
  - Furniture (and from time-to-time other bulky waste); and
  - Abandoned bicycles.

WM_17:

- Residents, tenants and facilities management will ensure that all waste materials will be stored in colour coded bins or other suitable receptacles in designated, easily accessible locations. Bins will be clearly identified with the approved waste type to ensure there is no cross contamination of waste materials.

WM_18:

- Residents, tenants and facilities management will ensure that all waste collected from the site of the Proposed Development will be reused, recycled, or recovered, where possible, with the exception of those waste streams where appropriate facilities are currently not available.

WM_19:

- Residents, tenants and facilities management will ensure that all waste leaving the site will be transported by suitably permitted contractors and taken to suitably registered, permitted, or licensed facilities.

These mitigation measures will ensure the waste arising from the development is dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated Regulations, the Litter Pollution Act 1997, as amended, The NWMPCE and the FCC waste bye-laws. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved.

19.7 Residual Impacts

19.7.1 Construction Phase

A carefully planned approach to waste management as set out in Section 19.6.1 and adherence to the RWMP (which includes mitigation) (Appendix 19.1) during the construction phase will promote resource efficiency and waste minimisation. With full implementation of the mitigation measures and achievement of high levels of waste prevention, reuse, recycling and recovery, the predicted impact of the construction phase on the environment will be ***short-term, imperceptible*** and ***neutral***.

19.7.2 Operational Phase

During the operational phase, a structured approach to waste management as set out in Section 19.6.2 and adherence to the OWMP (which includes mitigation) (Appendix 19.2) will promote resource efficiency and waste minimisation. With effective ongoing management and continued mitigation measures, and when a high rate of reuse, recycling and recovery is achieved, the predicted impact of the operational phase on the environment will be ***long-term, imperceptible*** and ***neutral***.

19.8 Indirect and / or Secondary Impacts

During construction, indirect impacts could occur off-site through the transport, recovery, treatment and disposal of waste materials at authorised facilities. These facilities operate within existing permitted capacities, and the volumes of construction waste arising from the Proposed Development are not anticipated to place additional pressure on regional waste infrastructure. Therefore, any indirect impacts associated with off-site waste treatment are expected to be neutral.

Indirect impacts may also arise where poor waste handling practices could lead to nuisances such as litter, odour or vermin, which in turn may affect human health, biodiversity or water quality. However, implementation of the RWMP, the mitigation measures outlined in Section 19.6.1, and adherence to best practice for storage, segregation and transport, will prevent such effects.

During the operational phase, the ongoing management of municipal and commercial waste streams will be governed by the OWMP and by FCC's waste storage and collection requirements. Indirect, off-site impacts may arise from the transport and processing of municipal waste; however, these activities will occur within established regional waste networks and will be small in scale relative to existing waste volumes. As such, no adverse secondary impacts are predicted.

Overall, following implementation of the construction and operational mitigation measures, indirect and/or secondary impacts associated with waste generation and management from the Proposed Development are expected to be ***long-term, imperceptible*** and ***neutral***.

19.9 Monitoring

The management of waste during the construction phase will be monitored by the Contactor's appointed Resource Manager (RM) to ensure compliance with the above-listed mitigation measures, and relevant waste management legislation and local authority requirements, including maintenance of waste documentation. Monitoring proposals for the construction phase are summarised in Table 19.3.

The management of waste during the operational phase will be monitored by the facilities management team to ensure effective implementation of the OWMP internally and by the nominated waste contractor(s). Monitoring proposals for the operational phase are summarised in Table 19.4.

19.9.1 Construction Phase

The objective of setting targets for waste management is only achieved if the actual waste generation volumes are calculated and compared. This is particularly important during the excavation and construction works, where there is a potential for waste management objectives to become secondary to other objectives, i.e. progress and meeting schedule targets. The RWMP specifies the need for a Resource Manager to be appointed, who will have responsibility for monitoring the actual waste volumes being generated and ensuring that contractors and sub-contractors are segregating waste as required. Where targets are not being met, the Resource Manager will identify the reasons for this and work to resolve any issues. Recording of waste generation during the construction phase of the Proposed Development will enable better management of waste contractor requirements and identify trends. The data should be maintained to advise on future developments.

Table 19.3 Construction Phase Monitoring Proposals

Likely Significant Effect	Monitoring Proposals
Litter Pollution	The Contractor will review and maintain waste records and site audits.
Unlicensed Waste Collection (Illegal Dumping)	A register will be maintained and reviewed. A copy of all waste collection permits will be maintained.
Insufficient Waste Facilities	A register will be maintained and reviewed. A copy of all waste collection permits will be maintained.
Lack of Waste Classification	An appointed RM will monitor all on-site waste segregation and classification.

19.9.2 Operational Phase

During the operational phase, waste generation volumes should be monitored by the Operator / Buildings Management. There may be opportunities to reduce the number of bins and equipment required in the shared and commercial WSAs, where estimates have been too conservative. Reductions in bin and equipment requirements will improve efficiency and reduce waste contactor costs.

Table 19.4 Operational Phase Monitoring Proposals

Likely Significant Effect	Monitoring Proposals
Litter Pollution	Waste storage areas will be monitored by the facilities management team.
Unlicensed Waste Collection (Illegal Dumping)	The facilities management team will maintain waste receipts on-site for a period of 7 years and make them available to FCC as requested.
Poor Waste Segregation	Waste generation volumes and cross contamination will be monitored by the facilities management team and their selected waste management company.

19.10 Interactions

19.10.1 Population and Human Health

19.10.1.1 Construction Phase

During the construction phase, improper handling, storage or removal of construction waste has the potential to give rise to litter, interaction of vermin and short-term odour or contamination risks, all of which could adversely affect workers on site and the local population if unmanaged.

These risks will be minimised through strict adherence to the project specific RWMP and the mitigation measures outlined in Chapter 7 (Population and Human Health). Waste will be segregated at source, stored in covered containers and collected by permitted waste collectors in accordance with the Waste Management Acts. No waste will be stockpiled in public areas and no on site burning or uncontrolled disposal will occur.

With these measures in place, the potential for human exposure to waste, litter or vermin is very low. Following mitigation, the construction phase effects on population and human health will be ***short-term, imperceptible*** and ***neutral***.

19.10.1.2 Operational Phase

If unmanaged, operational waste has the potential to affect human health through exposure to improperly stored or handled waste, particularly organic and hazardous materials. However, the implementation of the OWMP will ensure that waste is segregated, stored in appropriate receptacles and collected regularly by authorised contractors. These measures will minimise risks associated with odours, pests and contamination, thereby protecting the health and wellbeing of future residents, workers and the surrounding community. Potential effects on Population and Human Health are

addressed in Chapter 7. Following mitigation, the effects are expected to be ***long-term, imperceptible*** and ***neutral***.

19.10.2 Biodiversity

19.10.2.1 Construction Phase

The potential impacts on biodiversity in relation to the generation of waste during the construction phase are that the incorrect management of waste could result in littering, pollution issues, spread of invasive species and/or vermin in areas affected. If invasive alien species (IAS) are identified during construction, an Invasive Species Management Plan (ISMP) will be implemented. Adherence to the mitigation measures set out in this chapter, and in Chapter **Error! Reference source not found.** (Biodiversity) will ensure the associated effect is ***neutral, imperceptible*** and ***short-term***.

19.10.2.2 Operational Phase

The potential impacts on biodiversity in relation to the generation of waste during the operational phase are that the incorrect management of waste could result in littering, pollution issues or vermin in areas affected. Adherence to the mitigation measures set out in this chapter, and in Chapter **Error! Reference source not found.** (Biodiversity) will ensure the associated effect is ***neutral, imperceptible*** and ***long-term***.

19.10.3 Land, Soils and Geology

19.10.3.1 Construction Phase

During the construction phase, there will be 21,860m^3 of topsoil and subsoil excavated to facilitate the Proposed Development. AKM Design Group have estimated that none of this material will need to be removed off-site.

The management of contaminated soil, if encountered, will be undertaken in accordance with the Land and Soils chapter and the RWMP. Proper classification and handling of soil waste will prevent degradation of land quality and avoid cross-contamination with clean materials. Potential effects on land and soils are addressed in Chapter 8. Adherence to the mitigation measures in Chapter 8. (Land, Soils and Geology), this chapter, and the requirements of the RWMP (**Appendix 19.1**), will ensure the effect is ***short-term, imperceptible*** and ***neutral***.

19.10.3.2 Operational Phase

No interactions between waste and land and soils are predicted during the operational phase.

19.10.4 Hydrology and Hydrogeology

19.10.4.1 Construction Phase

Improper storage or disposal of waste, particularly hazardous substances, has the potential to impact surface water and groundwater quality during the construction phase. The RWMP includes provisions for bunded storage of hazardous materials and protocols for managing contaminated soil. These measures will mitigate the risk of leachate or runoff entering watercourses and protect the hydrological environment. Potential effects on hydrology are addressed in Chapter 10 and, following the implementation of mitigation measures, are expected to be ***short-term, imperceptible*** and ***neutral***.

19.10.4.2 Operational Phase

During the operational phase, the OWMP will ensure that liquid and cleaning chemicals are stored and disposed of in compliance with best practice to avoid water contamination. Potential effects on hydrology are addressed in Chapter 10 and, following the implementation of mitigation measures, are expected to be ***long-term, imperceptible*** and ***neutral***.

19.10.5 Climate

19.10.5.1 Construction Phase

Waste management contributes to greenhouse gas (GHG) emissions, particularly through landfill disposal and transport. The RWMP prioritises reuse, recycling, and recovery of materials, which will reduce the volume of waste sent to landfill and associated emissions. Adherence to the mitigation measures in Chapter 12 (Climate), this chapter, and the requirements of the RWMP, will ensure the effect is ***short-term, imperceptible*** and ***neutral***.

19.10.5.2 Operational Phase

Similarly, the OWMP will promote recycling and minimise residual waste during operation, reducing indirect emissions from waste transport and disposal. The direct and indirect effects of the Proposed Development on climate, such as GHG are addressed in Chapter 12, and following implementation of mitigation measures, are expected to be ***long-term, imperceptible*** and ***neutral***.

19.10.6 Traffic and Transportation

19.10.6.1 Construction Phase

During the construction phase, the generation, handling and removal of waste will result in additional vehicle movements, primarily associated with the transport of excavated materials, construction waste and deliveries / collections of skips. These vehicle movements will occur alongside other construction related traffic and therefore will contribute to the overall short-term increase in traffic volumes in the vicinity of the works.

However, waste related traffic will be short-term and intermittent, confined to the active construction period and managed through the measures outlined in in Chapter 0 (Traffic and Transportation). Waste will only be removed by permitted collectors, and vehicle routing will follow agreed routes.

Provided the mitigation measures detailed in Chapter 0 and this chapter are adhered to, the predicted effects are ***short-term, imperceptible*** and ***neutral***.

19.10.6.2 Operational Phase

During operation, waste arising from the Proposed Development will be managed through scheduled collections by licensed waste contractors. The OWMP will ensure efficient segregation, minimisation of residual waste and appropriately timed collections.

Provided the mitigation measures detailed in Chapter 0 and this chapter are adhered to, the predicted effects are ***long-term, imperceptible*** and ***neutral***.

19.11 Cumulative Impacts

This section assesses the potential cumulative effects of the Proposed Development in combination with other permitted or under-construction projects within the vicinity of the Proposed Development. A list of relevant planning permissions from the surrounding area is provided in Error! Reference source not found. and has been considered in this assessment. The analysis focuses on cumulative impacts relating to waste arisings, segregation, reuse/recycling opportunities, and disposal routes during both the construction and operational phases.

19.11.1 Construction Phase

There are existing residential and commercial developments close by, along with the multiple permissions remaining in place in the area. Multiple developments in the area could potentially be developed concurrently or overlap in the construction phase.

Developments that potentially could overlap during the construction phase are identified in Error! Reference source not found.. All cumulative developments outlined in Error! Reference source not found. have been taken into account.

Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will mitigate against any potential cumulative effects associated with waste generation and waste management. As such the effect will be ***short-term, not significant*** and ***neutral.***

19.11.2 Operational Phase

There are proposed, permitted, existing residential and commercial developments close by, along with the multiple permissions remaining in place. All of the current and potential developments will generate similar waste types during their operational phases. Authorised waste contractors will be required to collect waste materials segregated, at a minimum, into recyclables, organic waste and non-recyclables. An increased density of development in the area is likely improve the efficiencies of waste collections in the area.

Other developments in the area and the developments planned for the surrounding land will be required to manage waste in compliance with national and local legislation, policies and plans which will minimise/mitigate any potential cumulative impacts associated with waste generation and waste management. As such the effect will be a ***long-term, imperceptible*** and ***neutral***.

19.12 Difficulties Encountered

Until final materials and detailed construction methodologies have been confirmed, it is difficult to predict with a high level of accuracy the construction waste that will be generated, as exact materials and quantities may vary during the build process. While an initial licensed facility may be selected for soil disposal, there is potential to encounter contaminated material or naturally occurring variations in minerals and chemicals that necessitate routing to a different suitably licensed facility. Site Investigation (SI) sampling provides spot data; further testing may be required during excavation, as the true condition of all excavated materials cannot be verified until works commence.

There are numerous licensed, permitted, and registered waste facilities in Fingal, Dublin, the surrounding counties, and across the former EMR, as well as other regions in Ireland and Northern Ireland. However, facility availability, capacity, and contractor service constraints may limit options at

a given time. Licensed facilities operate under annual intake limits; therefore, it is not feasible to commit to a single receiving facility throughout the excavation phase. In practice, facilities may change over time as capacity becomes available or as more suitably located recovery facilities commence operations, which can be preferable from an environmental perspective.

Licensed waste facilities have annual limitations on material that they can import as part of their license agreements. Because of this it would not make it possible to commit to a singular specific receiving facility as it is not available throughout the excavation phase. It would not be viable to cease a development and wait until a receiving facilities annual receiving quotas are reset. In a normal development waste facilities would switch between facilities with available capacity.

There are a large number of available waste facilities that the Proposed Development may utilise. The materials used during the construction of the Proposed Development will be standard construction materials and it is anticipated that sufficient capacity will be available to accept the waste generated during the construction phase. A list of potential waste permitted sites in Fingal and Dublin can be found in the appendix of Appendix 19.1.

During the operational phase, some uncertainty may arise due to variations in resident behaviour, segregation performance, waste contractor availability, or updates to FCC *Waste Bye-Laws* over the lifetime of the development. These factors may influence waste quantities and collection frequencies; however, the OWMP provides a framework that can be adapted to reflect operational requirements as they evolve.

The ultimate selection of waste contractors and waste facilities would be subject to appropriate selection criteria proximity, competency, capacity and serviceability. The waste facilities selected will ultimately be selected to minimise the environmental impacts on the surrounding environment.

19.13 Conclusion

Adherence to this chapters mitigation measures and the RWMP (Appendix 19.1) will also ensure that waste management during the construction phase at the Proposed Development is carried out in accordance with the requirements in the EPA's Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction and Demolition Projects, the FCC development plans and the FCC Waste Bye-Laws and the NWMPCE.

Implementation of the mitigation in the chapter and the OWMP (Appendix 19.2) will ensure a high level of recycling, reuse and recovery at the development. All recyclable materials will be segregated at source to reduce waste contractor costs and ensure maximum diversion of materials from landfill, thus contributing to the targets set out in the *NWMPCE*. It will also ensure that waste management at the development is carried out in accordance with the requirements of the FCC *Waste Bye-Laws.*

The waste mitigation presented in this document will ensure sufficient storage capacity is provided for the estimated quantity of segregated waste. The designated areas for waste storage will provide sufficient room for the required receptacles in accordance with the details of this strategy.

19.14 References

- Waste Management Act 1996 as amended.
- Environmental Protection Agency Act 1992 as amended.
- Litter Pollution Act 1997 as amended.

- Regional Waste Management Planning Offices, The National Waste Management Plan for a Circular Economy 2024 - 2030 (2024).
- Forum for the Construction Industry – Recycling of Construction and Demolition Waste.
- Department of Communications, Climate Action and Environment (DCCAE), Waste Action Plan for the Circular Economy - Ireland's National Waste Policy 2020-2025 (Sept 2020).
- DCCAE, Whole of Government Circular Economy Strategy 2022-2023 'Living More, Using Less' (2021).
- Circular Economy and Miscellaneous Provisions Act 2022, as amended.
- Environmental Protection Agency (EPA) 'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction and Demolition Projects' (2021).
- FÁS and the Construction Industry Federation (CIF), Construction and Demolition Waste Management – a handbook for Contractors and site Managers (2002).
- Fingal County Council, Segregation Storage, Presentation and of Household and Commercial Waste (2020)
- FCC, Fingal County Development Plan 2023 – 2029 (2023).
- Planning and Development Act 2000 (S.I. No. 30 of 2000) as amended.
- EPA, Waste Classification – List of Waste and Determining if Waste is Hazardous or Non-Hazardous (2018).
- European Waste Catalogue - Council Decision 94/3/EC (as per Council Directive 75/442/EC).
- Hazardous Waste List - Council Decision 94/904/EC (as per Council Directive 91/689/EEC).
- Council Decision 2003/33/EC, establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC.
- Environmental Protection Agency (EPA), *National Waste Database Reports 1998 – 2020* and the Circular Economy and National Waste Database Report 2021 – 2023 (2025).
- EPA and Galway-Mayo Institute of Technology (GMIT), EPA Research Report 146 – A Review of Design and Construction Waste Management Practices in Selected Case Studies – Lessons Learned (2015).
- Department of Transport, Tourism and Sport and Department of Housing, Planning and Local Government, *Design Manual for Urban Roads and Streets* (2019)

20 Material Assets – Services

20.1 Introduction

This chapter of the EIAR was prepared to assess the potential significant effects of the Proposed Development on the surface water drainage, wastewater drainage, water supply and utilities (electricity, telecommunications and gas) in the existing environment. Where appropriate, mitigation measures are proposed along with monitoring plans to ensure their effective implementation.

Resources that are valued and that are intrinsic to specific places are called “material assets”. They may be either of human or natural origin, and the value may arise for either economic or cultural reasons.

This chapter is intended to deal with the physical resources in the environment which may be of either human or natural origin. The objective of the assessment is to ensure that these assets are used in a sustainable manner, so that they are available for future generations, after the delivery of the Proposed Development. This chapter comprises an assessment of the likely impact of the Proposed Development on existing surface water, water supply, foul drainage, and utility services in the vicinity of the site as well as identifying proposed mitigation measure to minimise any impacts.

This chapter should be read in conjunction with the Chapter **Error! Reference source not found.** (Biodiversity), Chapter 8 (Land, Soils and Geology), and Chapter 10 (Hydrology and Hydrogeology) in this EIAR and the engineering design drawings and Infrastructure Report prepared by AKM Design Group (2026) and submitted as part of the planning application.

20.1.1 Statement of Authority

This chapter of the EIAR has been prepared by Cathal Kennedy and Daniel Oliveira of AKM Design Group. Both are qualified Civil Engineers and members of Engineers Ireland with extensive experience in the design and delivery of urban development schemes. Cathal Kennedy is also a Chartered Engineer.

This chapter has also been prepared by Thomas Power from ENX. Thomas has over 5 years’ experience in Mechanical Engineering.

20.1.2 Proposed Development

The proposed site is split into 2 no. land parcels one of which is on the southern side of Rathbeale Road, and the other is bound on three sides by other residential developments that are existing or under construction. Between the two parcels is a previous phase of this development currently under construction.

It is comprised of 360 no. residential units and 1 no. crèche consisting of 305no. houses and 55no. apartment/duplex units. The proposal also includes a mixed-use greenway and bicycle and pedestrian paths. Refer to Figure 20.1.

Figure 20.1 Proposed Site Layout – Drawing No. 23068/P/003E (Source DG Architects, 2026).

20.1.3 Aspects Relevant to this Chapter

20.1.3.1 Surface Water Drainage

Existing: The existing site is divided by existing drainage ditches which flow from the east and west into the site before combining within Phase 1 to flow north under Rathbeale Road and through Rathbeale Archaeological Park to discharge into the Broadmeadow River. The existing drainage ditches form isolated low points within the site. Infiltration characteristics are poor throughout the site.

Proposed: Surface water runoff from the Proposed Development will be designed in accordance with the requirements of the Greater Dublin Strategic Drainage Study (GDSDS), CIRIA SuDS Guide and the requirements of the Fingal County Council. A 20% climate change factor and a 10% urban creep factor will be applied to the design of the surface water network.

20.1.3.2 Wastewater Drainage

Existing: The existing Uisce Éireann wastewater network is located northwest of the site, and it is being expanded in Phase 1 which is currently under construction. By the time Phase 2 will be connected, Phase 1 will be fully constructed, and spurs connection will serve Phase 2 via Phase 1.

Proposed: The proposed foul water drainage network is to be fully integrated into the network currently under construction as part of the Phase 1 works. Capacity has been included in this network for this purpose.

Uisce Éireann have been engaged as part of the design process to confirm foul drainage arrangements for the Proposed Development. As shown in Figure 20.1, Area A will be connected to the on-site pump station, which has already been approved by Uisce Eireann under reference CDS2400952001 with its design considering the additional 53 no. units proposed as part of this application. This pump station is currently under construction as part of the Phase 1 works. However, a foul gravity pipe bridge is required to facilitate this connection, and it will be submitted for approval to Uisce Éireann.

Areas B and C will be connected into the spurs left in Phase 1 of the development, where the design also accounted for the foul loading generated by the Phase 2 units. A Pre-Connection Enquiry was submitted on 2nd May 2025 under reference CDS25003155, a Confirmation of Feasibility and a Statement of Design Acceptance have been received.

20.1.3.3 Water Supply

The proposed water supply network is to be integrated into the Phase 1 network which is currently under construction. Provision has been made for this through the construction of 150mm diameter connection spurs within the Phase 1 network for supply to the subject site.

20.1.3.4 Electrical Supply

Initial discussions have taken place with the ESB regarding existing infrastructure in the locality and existing overhead cables will be undergrounded. The preliminary loading for the site is estimated to be in the region of 2100 kVA. (This is subject to change dependent on final renewable considerations etc.) Preliminary design estimates would indicate an MV substation, and 4 no. additional unit sub stations will be required.

20.1.3.5 Gas Supply

It is not proposed to supply gas within the Proposed Development and there is no gas in the vicinity of the site.

20.1.3.6 Telecommunications

It is proposed that telecoms services for the site are provided via SIRO network.

20.2 Method

20.2.1 Relevant Legislation and Guidance

This chapter has been prepared having regard to the following guidelines:

- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning and Local Government, 2018);
- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017);
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022).

20.2.2 Site Surveys/Investigations

The following desktop reviews and physical surveys were undertaken:

- Review of Fingal County Council existing services records;
- Uisce Éireann (UÉ) Water and Wastewater records;
- ESB Utility Plans;
- Gas Networks Ireland existing services records;
- Eir Utility Plans;
- Initial Topographical Survey by JandL Surveys Ltd, Dec 2024;
- Geotechnical Survey by Metroscan Utility Locating Ltd, Dec 2024.

20.2.3 Consultation

Throughout the pre-planning process the applicant consulted with a few relevant authorities relating to the provision of services to the proposed site:

20.2.3.1 Water Supply

A Pre-Connection Enquiry was submitted to Uisce Éireann (UÉ) as part of the pre-planning process. UÉ issued a Confirmation of Feasibility letter in August 2025 which confirmed that connection from the Proposed Development to the existing Water Supply network was feasible but subject to completion of the Phase 1 currently under construction.

20.2.3.2 Wastewater Drainage

A Pre-Connection Enquiry was submitted to Uisce Éireann (UÉ) as part of the pre-planning process. UÉ issued a Confirmation of Feasibility letter in Aug 2025 which confirmed that connection from the Proposed Development to the existing Wastewater network was feasible but subject to upgrades to the existing network and completion of phase currently under construction:

> "*The Proposed Development sites are part of Mooretown East Development. In order to accommodate the Development, Glen Ellen Road Storage tank downstream of the site must be completed and in function prior the connection. Uisce Éireann currently has no plans to deliver this upgrade. The upgrade is proposed via a third party and is currently at detailed design stage. Phase 3 of Moortown East Development is currently under construction, and the internal infrastructure must be of adequate capacity to cater for the whole Development phases, completed and connected to Uisce Éireann network prior connections of the subject sites. A*

Wastewater Infrastructure Masterplan for Moortown East Development (*all phases*) *must be submitted at a connection application stage for approval*."

20.2.3.3 Stormwater Drainage

AKM Design Group engaged Fingal County Council (FCC) throughout the pre-planning process including two meetings in which comments were received which have been incorporated into the final designs.

20.2.3.4 Electricity Supply

The Applicant has engaged with ESB who have reviewed and commented on the proposed ESB design and capacity for the Proposed Development. This is applicable to the network design, connection with the existing ESB network external to the site and capacity availability. No official confirmation can be provided from the ESB until official applications are submitted with an approved planning reference number.

20.2.3.5 Telecoms

The Applicant has engaged with the telecoms services providers and reviewed existing as-installed network layouts. With regard to the existing as-installed layouts and infrastructure, the telecoms services are sufficient to cater for the Proposed Development. Official confirmation and connection to the area network systems will be provided and supplied by the service providers upon submittal of official applications, post planning approval.

20.3 Baseline Environment

20.3.1 Surface Water Drainage

The existing site is divided by existing drainage ditches which flow from the east and west into the site before combining within Phase 1 to flow north under Rathbeale Road and through Rathbeale Archaeological Park to discharge into the Broadmeadow River. The existing drainage ditches form isolated low points within the site. Infiltration characteristics are poor throughout the site.

The steep topography of the existing site means that most site runoff currently flows overland across the subject site. Figure 20.2 details the pre-development drainage catchments and flow paths.

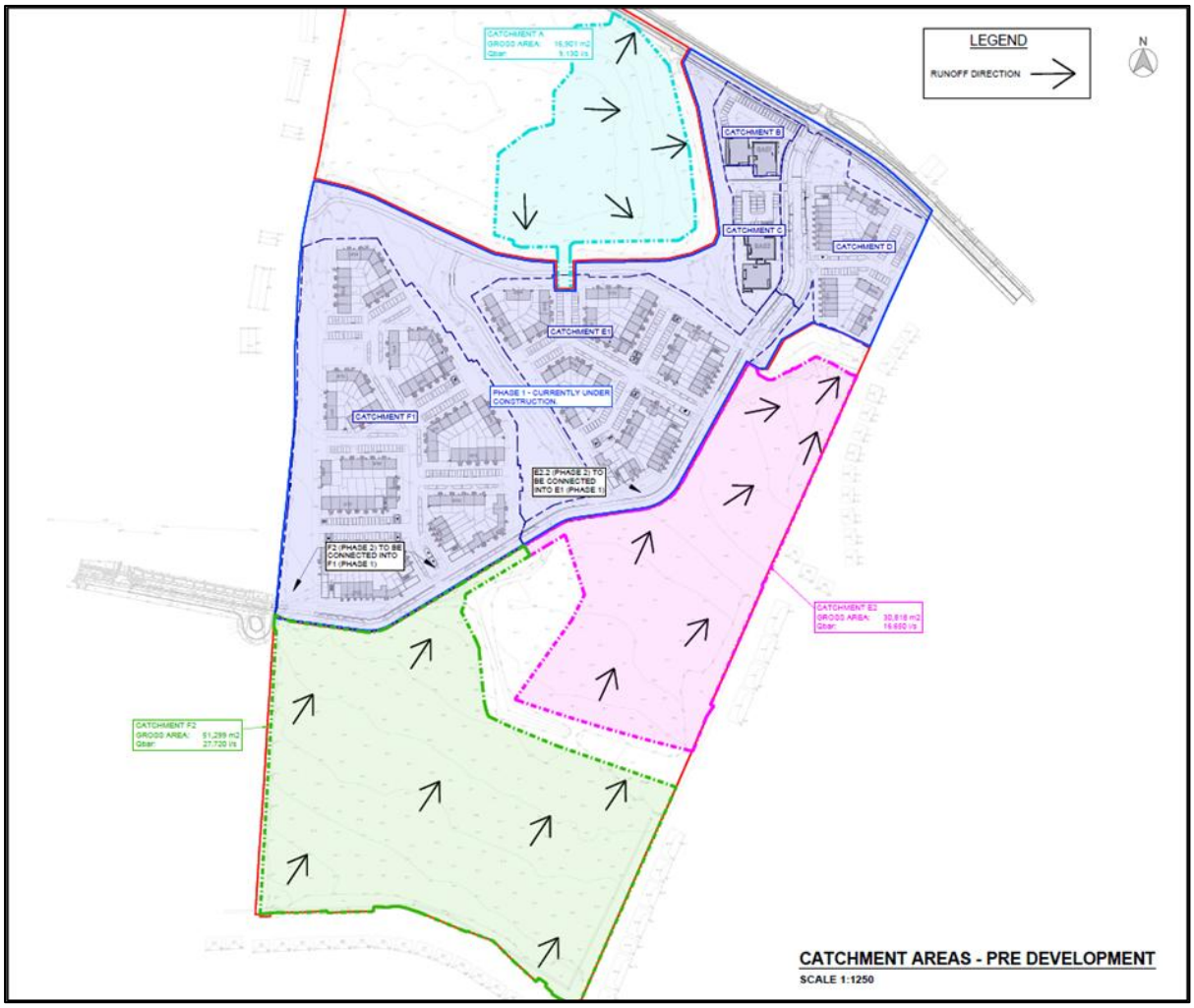

Figure 20.2 Pre-Development Catchments and Flow Paths.

20.3.2 Wastewater Drainage

The proposed foul water drainage network is to be fully integrated into the network currently under construction as part of the Phase 1 works. Capacity has been included in this network for this purpose.

Uisce Éireann have been engaged as part of the design process to confirm foul drainage arrangements for the Proposed Development. Area A, as shown in Figure 20.1, will be connected to the on-site pump station, which has already been approved by Uisce Eireann under reference CDS2400952001 with its design considering the additional 53 no. units proposed as part of this application. This pump station is

currently under construction as part of the Phase 1 works. However, a foul gravity pipe bridge is required to facilitate this connection, and it will be submitted for approval to Uisce Éireann.

Areas B and C will be connected into the spurs left in Phase 1 of the development, where the design also accounted for the foul loading generated by the Phase 2 units. A Pre-Connection Enquiry was submitted on 2nd May 2025 under reference CDS25003155, and a Confirmation of Feasibility and Statement of Design Acceptance have been received.

Figure 20.3 Uisce Éireann Existing Services Map.

20.3.3 Water Supply

The proposed water supply network is to be integrated into the Phase 1 network which is currently under construction. Provision has been made for this through the construction of 150mm diameter connection spurs within the Phase 1 network for supply to the subject site.

20.3.4 Electrical Supply

There is an existing 110 kv medium-voltage overhead line that will be rerouted underground, see Figure 20.4.

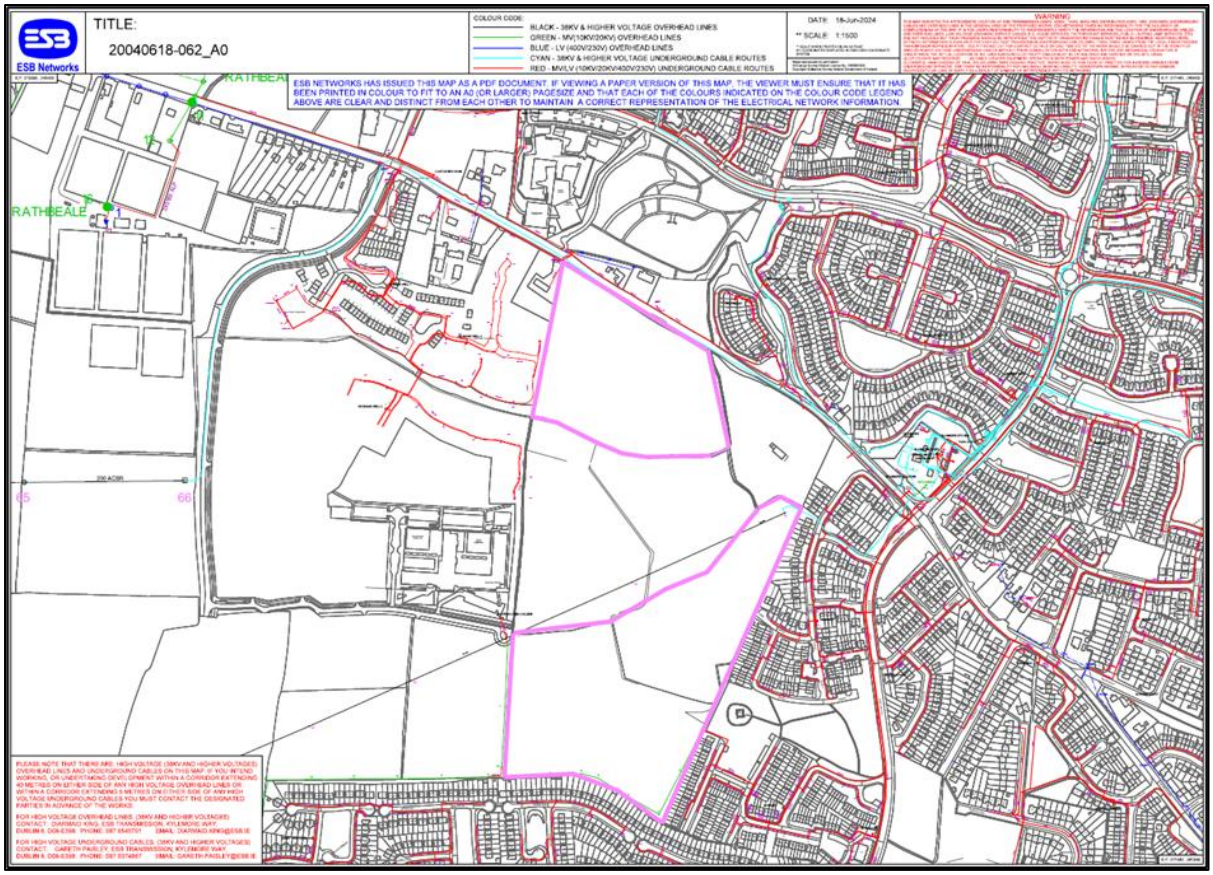

Figure 20.4 ESB Existing Services Map (Drawing Title 20040618-062_A0)

20.3.5 Gas Supply

It is not proposed to supply gas within the Proposed Development and there is no gas in the vicinity of the site.

20.3.6 Telecommunications

There is no existing telecommunications infrastructure within the subject site of the Proposed Development and all existing telecommunication cables in close proximity to the subject site are located in underground ducts within the adjacent roads.

20.4 Predicted Impacts of the Proposed Development

20.4.1 Do-Nothing Impact

Should the Proposed Development not take place, there would be no expected change to the baseline environment for material assets. It should be noted that most of the subject site is currently zoned for residential development according to the Fingal County Development Plan. It can be expected that another, similar residential development would take place on the subject site in the future with similar impacts to those expected from this development.

In the absence of this Proposed Development, there would be no change to the existing services, which is a ***neutral, imperceptible, long-term*** impact.

20.4.2 Construction Phase

20.4.2.1 Surface Water Drainage

During the construction phase of the development, any excess surface/groundwater runoff shall be retained in settlement ponds and provided with silt removal prior to discharge to the public drainage network. Should appropriate interventions not be used, the following significant impacts can be expected:

- Mobilisation of silts and sediments during the construction phase, due to exposed soil and earth movement/excavation, which may wash into the watercourse during rainfall events. These materials can also arise from dewatering of trenches or runoff from stockpiles on site. Waterborne silts can have negative impacts on receiving watercourses causing blockages, erosion or damage to fisheries.
- Accidental spills of chemicals or hydrocarbons during the delivery and storage or by leakages from construction machinery. Construction materials such as concrete and cement are alkaline and corrosive and can cause pollution in watercourses.

Without the implementation of mitigation measures these effects are considered to be ***adverse, moderate/significant and temporary***.

20.4.2.2 Wastewater Drainage

Wastewater discharge from site facilities shall be discharged to the public wastewater network or tanked and removed via trucks depending on the outcome of a Temporary Connection Application to Uisce Eireann which will be submitted prior to construction. This discharge licence will dictate the location and flow rate that effluent can enter the public network. Should appropriate interventions not be used, the following significant impacts can be expected:

- The rate of discharge to the public network can exceed the capacity of the network and potentially lead to surcharging or flooding of the network.
- Excess water from other sources (groundwater/rainwater discharge) could enter the wastewater system and exceed the capacity of the receiving network or introduce polluting chemicals or harmful silts/sediments to the network.

Without the implementation of mitigation measures these effects are considered to be ***adverse, moderate/significant and temporary***.

20.4.2.3 Water Supply

Subject to the outcome of a Temporary Connection Application to Uisce Eireann, the Contractor will obtain a connection to the public water network to provide water for site facilities. The demand of this connection is considered to be relatively small and so the potential impacts are considered to be ***neutral, low significance and temporary***.

20.4.2.4 Electrical Supply

Electricity will be required for the construction activities for temporary lighting, equipment use etc. It is anticipated that a temporary connection to existing spurs at the site boundary will facilitate electricity supply to the site during construction, subject to the appropriate agreements. The power demands during the construction phase on the existing electricity network are considered to be a ***neutral, imperceptible/ not-significant*** and ***short-term*** effect.

Where the excavation strategy or temporary works require any temporary diversion of local services or utilities on the site perimeter, this would be undertaken with prior agreement of the relevant service provider. A ***negative, not-significant, short-term*** effect is identified where utility diversions are required.

Where work is required near overhead electric lines, there is a risk of electric shock caused by accidental contact or near contact with the overhead electric lines. Before any work is undertaken within the vicinity of overhead electric lines the ESB's official document "ESB Networks Code of Practice for Avoiding Danger from Overhead Electricity Lines – Michael Murray, 2019" should be consulted and taken into consideration. Any work required near an overhead electric line is considered to be ***adverse, significant,*** and ***short-term***.

20.4.2.5 Gas Network

It is not proposed to supply gas within the Proposed Development and there is no gas in the vicinity of the site. No effects are expected to the gas network based on the Proposed Development during construction phase. Should any gas networks be uncovered a diversion would be required. These impacts are considered to be ***negative, low significance and temporary***.

20.4.2.6 Telecommunications

There is no existing telecommunications infrastructure within the subject site of the Proposed Development and all existing telecommunication cables in close proximity to the subject site are located in underground ducts within the adjacent roads. As such, there will be no likely significant effects on telecommunications infrastructure during the construction phase of the Proposed Development. Where the excavation strategy or temporary works require any temporary diversion of local telecommunication services or utilities on the site perimeter, this would be undertaken with prior agreement of the relevant service provider. These works are considered as ***neutral*** with an ***imperceptible/ not-significant*** impact and with a ***short-term*** duration.

20.4.3 Operational Phase

20.4.3.1 Surface Water

The existing site is a greenfield site with poor infiltration characteristics. Runoff from the site discharges to drainage ditches which flow from the east and west into the site before combining within Phase 1 to flow north under Rathbeale Road and through Rathbeale Archaeological Park to discharge into the

Broadmeadow River. It is estimated that the current greenfield runoff rate (Qbar) for both combined phases is 93.80 l/s and the post-development runoff rates from both phases will not exceed this rate. Flowrates will be limited by several hydro-brake flow controls and excess runoff from hardstanding areas will be stored in below and above-ground attenuation storages. Filtration and treatment of runoff will be achieved through the use of an extensive SUDS strategy incorporating swales, a pond, permeable paving and oil interceptors ensuring the removal of any potential pollutants. Post-development runoff will have effects on the surface water drainage network which will be ***neutral, of low significance*** and ***permanent***.

20.4.3.2 Wastewater

Wastewater from the Proposed Development will drain via gravity through the public network northwest towards the Swords Wastewater Treatment Plant (SWWTP). The applicant engaged Uisce Eireann (UE) with a Pre-Connection Enquiry and the resulting Confirmation of Feasibility (CoF) provided UE commentary on the capacity of the storage tank to accommodate flow from the Proposed Development:

> *"The Proposed Development sites are part of Mooretown East Development. In order to accommodate the Development, Glen Ellen Road Storage tank downstream of the site must be completed and in function prior the connection. Uisce Éireann currently has no plans to deliver this upgrade. The upgrade is proposed via a third party and is currently at detailed design stage.*
>
> *Phase 3 of Moortown East Development is currently under construction and the internal infrastructure must be of adequate capacity to cater for the whole Development phases, completed and connected to Uisce Éireann network prior connections of the subject sites.*
>
> *A Wastewater Infrastructure Masterplan for Moortown East Development (all phases) must be submitted at a connection application stage for approval"*

An approved connection to the public wastewater drainage network is conditional upon the completion of these works. After their completion, the impacts to the wastewater network will be ***neutral, low significance and permanent.***

20.4.3.3 Water Supply

The applicant engaged Uisce Eireann (UE) with a Pre-Connection Enquiry and the resulting Confirmation of Feasibility (CoF) without infrastructure upgrade, once Phase 1 is complete and connected:

"A Water Supply Infrastructure Masterplan for Mooretown East Development (all phases) must be submitted at a connection application stage for approval."

An approved connection to the public water network is conditional upon the completion of these upgrade works. After their completion, the impacts to the water network will be ***neutral, of low significance*** and ***permanent.***

20.4.3.4 Electrical Supply

The Proposed Development will increase the demand on the electricity supply system. However, it is expected that infrastructural requirements for future development will be accommodated by ESB Networks. Therefore, the impact of the Proposed Development on the electricity supply network is expected to be ***neutral, not significant*** *and* ***permanent***.

20.4.3.5 Gas Supply

It is not proposed to supply gas within the Proposed Development and there is no gas in the vicinity of the site. No effects are expected to the gas network based on the Proposed Development during the operational phase.

20.4.3.6 Telecommunications

The Proposed Development will increase the demand on the telecommunications systems which may potentially lead to a reduction in the level of service to existing customers. It is expected that infrastructural requirements for future development will be accommodated by utility service providers. In the absence of mitigation measures, these potential impacts are considered to be ***adverse, not significant*** *and* ***permanent****.*

20.4.4 Cumulative Effects

20.4.4.1 Surface Water Drainage

It is expected that any future development in the area will adhere to Fingal County Council Taking-In-Charge Policy, GDSDS and the CIRIA SuDS Guide. These policies will ensure that stormwater runoff from future developments will be limited in volume using flow controls and on-site attenuation and will receive treatment prior to discharge to the public network. These effects will be expected to be ***neutral, of low significance*** and ***permanent.***

20.4.4.2 Wastewater Drainage

The Confirmation of Feasibility (CoF) received from Uisce Eireann (UE) detailed requirement to the public wastewater storage tank to facilitate the connection of the Proposed Development. No other concerns were raised regarding capacity in the wider wastewater network or downstream Swords WWTP. The cumulative impacts to the wastewater network are expected to be ***neutral, of low significance*** and ***permanent***.

20.4.4.3 Water supply

The Confirmation of Feasibility (CoF) received from Uisce Eireann (UE) assessed the capacity of the local water network and detailed requirements to facilitate the connection of the Proposed Development. No other concerns were raised regarding capacity in the wider water network, and it was confirmed that the capacity is available after completion Phase 1. The cumulative impacts to the water network are expected to be ***neutral, of low significance*** and ***permanent***.

20.4.4.4 Electricity Supply

Any redevelopment in the area resulting in an intensification of land use or increased density of occupation would likely lead to an increase in demand on the electricity supply network. While there is substantial existing electricity supply infrastructure in place, continued cumulative development will tend to necessitate future provision of new electricity supply infrastructure with increased capacity. The cumulative impact is a ***neutral, not significant*** and ***short-term***.

20.4.4.5 Gas Network

It is not proposed to supply gas within the Proposed Development and changing trends away from fossil fuels mean that it is unlikely that there will be significant further development of the gas network in the area of Swords. The cumulative effect will be ***neutral, of low significance*** and ***permanent***.

20.4.4.6 Telecommunications

Any redevelopment in the area resulting in an intensification of land use or increased density of occupation would likely lead to an increase in demand on the telecommunications networks. While there is existing telecommunications infrastructure in place, continued cumulative development will tend to necessitate future provision of new telecommunications infrastructure with increased capacity. The cumulative impact is a ***neutral, not significant*** and ***short-term***.

20.4.5 Summary

The following Table summarises the identified likely significant effects during the construction phase of the Proposed Development before mitigation measures are applied.

Table 20.1 Summary of Construction Phase Likely Significant Effects in the absence of mitigation

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Surface water – mobilisation of silt, sediment or pollutants into drainage system	*Adverse*	*Moderate/ significant*	*Local*	*Likely*	*Temporary*	*Direct*
Wastewater – Excess/polluted temporary discharge to network	*Adverse*	*Significant*	*Local*	*Likely*	*Temporary*	*Direct*
Water Supply – Temporary network connection	*Neutral*	*Low*	*Local*	*Likely*	*Temporary*	*Direct*
Gas Supply – Diversion	*Neutral*	*Low*	*Local*	*Unlikely*	*Short Term*	*Direct*
Telecoms	*Neutral*	*Low*	*Local*	*Unlikely*	*Short Term*	*Direct*

Table 20.2 summarises the identified likely significant effects during the operational phase of the Proposed Development before mitigation measures are applied.

Table 20.2 Summary of Operational Phase Likely Significant Effects in the absence of mitigation

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Surface water connection to public network	*Neutral*	*Low*	*Local*	*Likely*	*Permanent*	*Direct*
Wastewater connection to public network	*Neutral*	*Low*	*Local*	*Likely*	*Permanent*	*Direct*

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Water connection to public network	*Neutral*	*Low*	*Local*	*Likely*	*Permanent*	*Direct*
Electricity	*Neutral*	*Low*	*Local*	*Likely*	*Permanent*	*Direct*
Gas	*Neutral*	*Low*	*Local*	*Likely*	*Permanent*	*Direct*
Telecoms	*Neutral*	*Low*	*Local*	*Likely*	*Permanent*	*Direct*

20.5 Mitigation Measures

20.5.1 Incorporated Design Mitigation

20.5.1.1 Surface Water

The mitigation schedule presented within Table 1 summarises measures that will be undertaken in order to reduce impacts on ecological receptors within the zone of influence of the Proposed Development.

The proposed surface water drainage network will be designed in accordance with the requirements and recommendations of Fingal County Council Taking-in-Charge policy, the Greater Dublin Strategic Drainage Study and Regional Code of Practice and CIRIA SuDS Guide. The measures incorporated into the design will:

- Limit the discharge rate of stormwater runoff;
- Provide attenuation volume for excess runoff;
- Provide treatment prior to discharge to the public network.

20.5.1.2 Wastewater

The proposed public wastewater network has been designed in accordance with the Uisce Eireann Code of Practice, and all private drainage will be in accordance with the Building Regulations Technical Guidance Document Part H. Any required upgrades to the public drainage network are to be fully agreed with UE at connection application stage. This will ensure capacity in the internal and receiving networks and adequate performance of the network by preventing contamination and ensuring adequate flow velocities.

20.5.1.3 Water Supply

The water supply network has been designed in accordance with the Uisce Eireann Code of Practice and any upgrades to the existing network to provide capacity for the Proposed Development will be fully agreed with UE at connection application stage

20.5.1.4 Electricity Supply

All proposed power cables within the development will be buried underground or internal within buildings and will be installed according to the relevant ESB Networks specifications.

20.5.1.5 Gas Supply

It is not proposed to supply gas within the Proposed Development and there is no gas in the vicinity of the site.

20.5.1.6 Telecommunications

The proposed telecommunications infrastructure within the development will be buried underground or internal within buildings.

20.5.2 Construction Phase

20.5.2.1 Surface Water

The surface water from the subject site will outfall into the neighbouring / existing drainage networks. The following Mitigation Measures are to address potential impacts on water quality and are required to protect any ultimate outfall of the proposed sites surface water. All works will be undertaken with reference to the following guidelines:

- CIRIA C532: Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (Masters-Williams et al., 2001);
- CIRIA C692: Environmental Good Practice on Site, (Audus et al., 2010);
- BPGCS005: Oil Storage Guidelines;
- CIRIA C648: Control of Water Pollution from Linear Construction Projects: Technical Guidance (Murnane et al., 2006a);
- CIRIA C648: Control of Water Pollution from Linear Construction Projects: Site Guide (Murnane et al., 2006a);
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (IFI 2016);
- Guidelines for Planning Authorities – Architectural Heritage Protection – Guidance on Part I of the Planning and Development Act 2000. (Part 2, Chapter 7) and ICOMOS Principles.

At construction stage the contractor will write and adhere to a Surface Water Management Plan which will dictate how excess water within the site is to be treated and managed during construction. This will include details on mitigation measures including, but not limited to:

- Implementing settlement ponds and silt removal measures for any water prior to discharge to the existing network;
- Providing bunds to chemical/fuel storage and generators.

Table 20.3 Schedule of Surface Water Mitigation Measures

No.	Risk	Possible Impact	Mitigation	Result of Mitigation
1	Hydrocarbons from the car parking area entering the watercourse.	- Water quality impacts - Reduction in habitat quality - Mortality of aquatic key ecological receptors/qualifying interests	Designated parking at least 50m from any watercourse.	Ensures no soil disturbance or hydrocarbons leak near the aquatic zone
2	Pollutants from site compound areas entering the watercourse.	- Water quality impacts - Reduction in habitat quality - Mortality of aquatic key ecological receptors/qualifying interests	The site compound will be located at least 50m from any watercourse	Prevents pollution of the aquatic zone from toxic pollutants
3	Pollutants from material storage areas entering the watercourse.	- Water quality impacts - Reduction in habitat quality - Mortality of aquatic key ecological receptors/qualifying interests	Fuels, oils, greases, and other potentially polluting chemicals will be stored in bunded compounds at the Contractor's compound or at a location at least 50m from any body of water. Bunds are to be provided with a 110% capacity of the storage container. Spill kits will be always kept on site and all staff trained in their appropriate use. Method statements for dealing with accidental spillages will be provided to the Contractor for review by the Employer's Representative.	Prevents contamination of aquatic zone by toxic pollutants
4	Concrete/ cementitious materials entering the watercourse from washdown	- Water quality impacts - Reduction in habitat quality - Mortality of aquatic key ecological receptors/qualifying interests	A designated wash-down area within the Contractor's compound will be used for cleaning any equipment or plant, with the safe disposal of any contaminated water.	Prevents contamination of aquatic zone by suspended solids or pollutants, ensures

No.	Risk	Possible Impact	Mitigation	Result of Mitigation
				invasive species material is not transported off-site
5	Concrete/ cementitious materials entering the watercourse from concrete pours.	- Water quality impacts - Reduction in habitat quality - Mortality of aquatic key ecological receptors/qualifying interests	Pouring of cementitious materials will be carried out in the dry.	Prevents contamination of aquatic zone by suspended solids or pollutants, ensures invasive species material is not transported off-site
6	Water quality impacts Reduction in habitat quality Mortality of aquatic key ecological receptors/qualifying interests	Spill kits will contain 10 hr terrestrial oil booms (80mm diameter x 1000mm) and a plastic sheet, upon which contaminated soil can be placed to prevent leaching to groundwater	Prevents contamination of aquatic zone by petrochemicals	Leaching of contaminated soil into groundwater.
7	Pollutants from equipment storage/ refuelling area entering the watercourse.	- Water quality impacts - Reduction in habitat quality - Mortality of aquatic key ecological receptors/qualifying interests	Any refuelling and maintenance of equipment will be done at designated bunded areas with full attendance of plant operative(s) within contained areas at least 50m from any watercourse	Prevents contamination of aquatic zone by petrochemicals
8	Runoff from exposed work areas and excavated material storage areas entering the watercourse.	- Water quality impacts - Reduction in habitat quality - Mortality of aquatic key ecological receptors/qualifying interests	The Contractor is to prepare a site plan showing the location of all surface water drainage lines and proposed discharge points to the sewer. The plan will include the location of all surface water protection measures, including monitoring points and treatment facilities.	Prevents contamination of aquatic zone by suspended solids or pollutants.

20.5.2.2 Wastewater Drainage

All wastewater pipework and manholes will be designed and constructed in accordance with the Uisce Eireann Code of Practice and Standard Details and will be subject to inspection by the UE Field Engineer and the Consultant Design Engineer during construction. Upon completion the contractor will submit for review a QA pack for review which will include:

- CCTV analysis;
- As-Built Drawings;
- Pressure Test Records;
- Manhole Exfiltration Test Records.

Any defects will be identified and repaired prior to connection to the public network.

20.5.2.3 Water Supply

All water pipework and manholes will be designed and constructed in accordance with the Uisce Eireann Code of Practice and Standard Details and will be subject to inspection by the UE Field Engineer and the Consultant Design Engineer during construction. Upon completion the contractor will submit for review a QA pack for review which will include:

- Chlorination;
- As-Built Drawings;
- Pressure Test Records.

20.5.2.4 Electricity Supply

The ESB will install all of the new incoming supplies to the Proposed Development. The ESB will also liaise with residents and keep existing customers fully informed of any brief outages which may be required due to the diversion and undergrounding of the existing medium voltage overhead lines or connections to the Proposed Development.

Works will be in compliance with Health and Safety Authority (HSA) *Code of Practice for Avoiding Danger from Underground Services* (2016), and the *ESB Networks and Health and Safety Authority Code of Practice for Avoiding Danger from Overhead Electricity Lines* (2019). The latter of which includes specific zones for safe practice when working near overhead electric lines including:

- Hazard Zone - which is the lateral area near an overhead electric line which must normally be isolated from the work site by physical barriers;
- Exclusion Zone – which is a region around a live overhead electric line which much never be breached in order to avoid electrical arcing or flashover.

(The dimensions of the Hazard Zone and Exclusion Zone vary based on the voltage of the overhead electric line).

The exact locations of the below ground ESB Networks infrastructure will be confirmed as part of the Detailed Design Phase. Prior to excavation the Contractor will carry out additional site investigation, in order to determine the exact location of the below ground network.

20.5.2.5 Gas Supply

It is not proposed to supply gas within the Proposed Development and there is no gas in the vicinity of the site.

20.5.2.6 Telecommunications

The relevant utility provider will install the new incoming supplies to the Proposed Development and will liaise with existing customers to advise of possible outages in order to facilitate the connections. The works will be carried out such that they minimise disruption to surrounding areas.

Prior to excavation the Contractor will carry out additional site investigation, in order to determine the exact location of the telecommunications networks in close proximity to the works area. This will ensure that the underground telecommunications network will not be damaged during the construction phase.

20.5.3 Operational Phase

20.5.3.1 Surface Water

The proposed surface water drainage network will be designed in accordance with the requirements and recommendations of Fingal County Council Taking-in-Charge policy, the Greater Dublin Strategic Drainage Study and Regional Code of Practice and CIRIA SuDS Guide. The measures incorporated into the design will:

- Limit the discharge rate of stormwater runoff;
- Provide attenuation volume for excess runoff;
- Provide treatment prior to discharge to the public network thereby minimising impact.

20.5.3.2 Wastewater

The proposed public wastewater network has been designed in accordance with the Uisce Eireann Code of Practice and all private drainage will be in accordance with the Building Regulations Technical Guidance Document Part H. This, combined with a regular maintenance regime by UE, will ensure the network continues to operate as designed.

20.5.3.3 Water Supply

All water pipework will be designed and constructed in accordance with the Uisce Eireann Code of Practice and Standard Details. This, combined with a regular maintenance regime by UE, will ensure the network continues to operate as designed.

20.5.3.4 Electricity Supply

The proposed electricity supply system will be commissioned and subject to a regular operational inspection and maintenance regime, in accordance with the utility providers procedures, to ensure the system keeps operating within the design specifications.

Predicted operational impacts are therefore assessed as ***neutral, permanent,*** and ***imperceptible,*** with no residual significant impacts.

20.5.3.5 Gas Supply

It is not proposed to supply gas within the Proposed Development and there is no gas in the vicinity of the site.

20.5.3.6 Telecommunications

The proposed telecommunications system will be commissioned and subject to a regular operational inspection and maintenance regime, in accordance with the utility providers procedures, to ensure the system keeps operating within the design specifications.

20.6 Residual Impacts

This section assesses potential significant environmental impacts which remain after mitigation measures are implemented.

20.6.1 Construction Phase

20.6.1.1 Surface Water

The implementation of mitigation measures detailed in the Surface Water Management Plan (settlement ponds, silt removal, etc.) will ensure that the volume and quality of any water discharged during construction will have minimal impact on the receiving network. This impact will be ***neutral, of low significance*** and ***temporary.***

20.6.1.2 Wastewater

The wastewater network will be constructed as per design and in accordance with the Uisce Eireann Code of Practice and all private drainage will be in accordance with the Building Regulations Technical Guidance Document Part H. This will ensure minimal impact on the existing wastewater network during construction. This impact will be ***neutral, of low significance*** and ***temporary.***

20.6.1.3 Water Supply

All water pipework will be designed and constructed in accordance with the Uisce Eireann Code of Practice and Standard Details. This will ensure minimal impact on the existing water network during construction. This impact will be ***neutral, of low significance*** and ***temporary.***

20.6.1.4 Electricity Supply

It is considered that the residual impact on the existing electrical supply network will be ***neutral, not significant*** and ***short-term***.

20.6.1.5 Gas Supply

It is not proposed to supply gas within the Proposed Development and there is no gas in the vicinity of the site.

20.6.1.6 Telecommunications

It is considered that the residual impact on the existing electrical supply network will be ***neutral, not significant*** and ***short-term***.

20.6.2 Operational Phase

20.6.2.1 Surface Water

It is estimated that the current greenfield runoff rate (Qbar) for both combined phases is 93.80 l/s and the post-development runoff rates from both phases will not exceed this rate. Flowrates will be limited by several hydro-brake flow controls and excess runoff from hardstanding areas will be stored in below and above-ground attenuation storages. Filtration and treatment of runoff will be achieved through the use of an extensive SUDS strategy incorporating swales, a pond, permeable paving and oil interceptors ensuring the removal of any potential pollutants. Post-development runoff will have effects on the surface water drainage network which will be ***neutral, of low significance*** and ***permanent***.

20.6.2.2 Wastewater

The proposed public wastewater network has been designed in accordance with the Uisce Eireann Code of Practice and all private drainage will be in accordance with the Building Regulations Technical Guidance Document Part H. This, combined with a regular maintenance regime by UE, will ensure the network continues to operate as designed. The upgrade works required to facilitate the development will have a positive impact on the local drainage network. The impact on the existing network will be ***positive, significant*** and ***permanent.***

20.6.2.3 Water Supply

All water pipework will be designed and constructed in accordance with the Uisce Eireann Code of Practice and Standard Details. This, combined with a regular maintenance regime by UE, will ensure the network continues to operate as designed. The upgrade works required to facilitate the development will have a positive impact on the local drainage network. The impact on the existing network will be ***positive, significant*** and ***permanent.***

20.6.2.4 Electricity Supply

The proposed electricity supply system will be commissioned and subject to a regular operational inspection and maintenance regime, in accordance with the utility providers procedures, to ensure the system keeps operating within the design specifications. This is a ***neutral, moderate*** and ***long-term*** effect.

20.6.2.5 Gas Supply

It is not proposed to supply gas within the Proposed Development and there is no gas in the vicinity of the site. Any impacts will be ***neutral, of low significance*** and ***permanent.***

20.6.2.6 Telecommunications

The proposed telecommunications system will be commissioned and subject to a regular operational inspection and maintenance regime, in accordance with the utility providers procedures, to ensure the system keeps operating within the design specifications. This is a ***neutral, moderate*** *and* ***long-term*** impact.

20.6.3 Summary of Post-mitigation Effects

The following Table 20.4 summarises the identified likely significant residual effects during the construction phase of the Proposed Development following the application of mitigation measures.

Table 20.4 Summary of Construction Phase Effects Post Mitigation

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Surface water Drainage network	*Neutral*	*Low*	*Local*	*Likely*	*Short Term*	*Direct*
Wastewater Drainage	*Neutral*	*Low*	*Local*	*Likely*	*Short Term*	*Direct*
Water Supply network	*Neutral*	*Low*	*Local*	*Likely*	*Short Term*	*Direct*
Electricity Supply	*Neutral*	*Low*	*Local*	*Likely*	*Short Term*	*Direct*
Gas Supply	*Neutral*	*Low*	*Local*	*Unlikely*	*Short Term*	*Direct*
Telecoms	*Neutral*	*Low*	*Local*	*Likely*	*Short Term*	*Direct*

The following Table 20.5 summarises the identified likely residual significant effects during the operational phase of the Proposed Development post mitigation.

Table 20.5 Summary of Operational Phase Effects Post Mitigation

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Surface water Drainage network	*Positive*	*Low*	*Local*	*Likely*	*Permanent*	*Direct*
Wastewater Drainage	*Positive*	*High*	*Local*	*Likely*	*Permanent*	*Direct*
Water Supply network	*Positive*	*High*	*Local*	*Likely*	*Permanent*	*Direct*
Electricity Supply	*Neutral*	*Low*	*Local*	*Likely*	*Permanent*	*Direct*
Gas Supply	*Neutral*	*Low*	*Local*	*Unlikely*	*Permanent*	*Direct*
Telecoms	*Neutral*	*Low*	*Local*	*Likely*	*Permanent*	*Direct*

20.7 Monitoring

20.7.1 Surface Water Drainage

During the construction of the Surface Water drainage, the system shall be inspected and monitored for compliance with the design and relevant Fingal Co. Co. and GDSDS standards in accordance with the Preliminary Inspection Plan. Pressure testing shall be carried out on all sewer installations during construction while exfiltration testing shall be carried out on all manholes. Records of these tests shall be maintained by the Contractor. The connection to the existing open water course will not be made until all the works are complete within each Phase, and temporary surface water management will remain in place until this time to ensure only clean, uncontaminated surface water is discharged to the public drainage network.

The Developer and their consultants will be monitoring the site operations as the works progress and ensuring the necessary measures are put in place for the management of surface water which are deemed effective.

The following is a list of inspections and monitoring to be carried out during the works relating to surface water management. The developers site team including Project Manager, Foreman and Environmental Clerk of Works/ Engineer will carry out these inspections:

- Inspect the Principal Control Measures outlined in this plan on a weekly basis.
- Inspect surface water treatment measures (ponds, tanks, sandbags, etc.) on a daily basis
- Daily visual inspection of all discharges of measures implemented within the site daily including excavation, deposition, pumping out or concreting works are on-going in the vicinity
- Visual inspections of the adjacent stream will be carried out and observed on a regular basis. The visual inspection will be carried out by the Project Manager or Foreman, who is aware of the importance of the sensitive nature of the receiving watercourses.
- Wheel wash facilities shall be inspected on a weekly basis
- Borrow Pits shall be inspected daily while in operation and on a weekly basis thereafter.
- Material Deposition Areas shall be inspected daily while in operation and on a weekly basis thereafter.
- Stockpiles shall be monitored daily while being filled or emptied and otherwise on a weekly basis.
- Concrete operations shall be supervised and designated concrete washing out facilities shall be inspected on a daily basis
- Site Compounds shall be inspected on a weekly basis

20.7.2 Wastewater

All wastewater pipework and manholes will be designed, constructed and tested in accordance with the Uisce Eireann Code of Practice and Standard Details and will be subject to inspection by the UE Field Engineer and the Consultant Design Engineer during construction. Upon completion the contractor will submit for review a QA pack for review including but not limited to:

- CCTV analysis
- As-Built Drawings
- Pressure Test Records
- Manhole Exfiltration Test Records

No connection to the public network will be made until all QA information is reviewed and approved by the Consultant Design Engineer and UE Field Engineer.

20.7.3 Water Supply

During the construction of the water supply network, the system shall be inspected, tested and monitored in accordance with the requirements of the relevant Uisce Éireann Code of Practice. Records of these tests shall be maintained by the Contractor as required and shall be witnessed by Uisce Éireann in accordance with the relevant Quality Procedures. No connection to the public network will be made until all relevant QA information is reviewed and approved by the Consultant Design Engineer and UE Field Engineer.

20.7.4 Electricity Supply

The ESB will carry out ongoing testing and commissioning of the installed infrastructure during construction.

Once commissioned, the proposed electricity supply system will be subject to a regular operational inspection and maintenance regime, in accordance with the Utility providers procedures, to ensure the system keeps operating within the design specifications.

20.7.5 Gas Supply

It is not proposed to supply gas within the Proposed Development and there is no gas in the vicinity of the site. As such monitoring will not be required.

20.7.6 Telecommunications

The incoming telecommunications provider will monitor the existing and proposed networks during the installation of the proposed telecommunications network throughout the site during construction. The incoming telecommunications provider will carry out ongoing testing and commissioning of the installed infrastructure during construction.

Once commissioned, the proposed telecommunications system will be subject to a regular operational inspection and maintenance regime, in accordance with the Utility providers procedures, to ensure the system keeps operating within the design specifications

20.7.7 Summary of Mitigation and Monitoring

The following Table summarises the Construction Phase mitigation and monitoring measures.

Table 20.6 Summary of Construction Phase Mitigation and Monitoring

Likely Significant Effect	Mitigation	Monitoring
Contamination of Surface Drainage Network	Implementation of surface water management plan	Monitoring of settlement ponds and silt removal
Contamination of Wastewater Network	Construction as per UE Code of Practice	Regular inspections by Consultant Design Engineer
Water Supply	Construction as per UE Code of Practice	Regular inspections by Consultant Design Engineer
Electricity supply diversion impacts on services	Testing and commissioning of diverted network	ESB to monitor all works

Likely Significant Effect	Mitigation	Monitoring
Impacts to gas network	No works proposed	GNI provider to monitor existing network
Impact on existing Telecommunications network	Testing and commissioning of new network connections	Utility provider to monitor all works

Table 20.7 summarises the Operational Phase mitigation and monitoring measures.

Table 20.7 Summary of Operational Phase Mitigation and Monitoring

Likely Significant Effect	Mitigation	Monitoring
Contamination/blockage of surface water network	Regular inspection and maintenance as per SUDS Maintenance Plan	Regular inspections as per SUDS Maintenance Plan
Leaks/Blockages of Wastewater System	Regular inspections and maintenance per UE policies	Regular inspections by UE
Leaks from water supply system	Construction in accordance with UÉ COP. Metering of supply.	Review and assessment of water meter readings. Water Audit by Uisce Éireann.
Increase in electrical load	Regular monitoring and maintenance	ESB periodic inspections
Gas network impacts	No gas works proposed	GNI provider to monitor existing network
Increased Load on Telecoms network	Regular monitoring and maintenance	Regular inspections by Telecommunications provider

20.8 Reinstatement

The reinstatement process occurs with the Construction Phase and is deemed to have been completed by the Operational Phase.

20.8.1 Worst Case Scenario

20.8.1.1 Surface Water

The 'worst-case' scenario for the surface water drainage systems is that flooding occurs on-site. The design of the system ensures that the pipe sizes, gradients etc. will be adequate for the design stormwater flows. As per GDSDS, Fingal County Council Green Infrastructure Policy and the CIRIA SUDS Guide a 20% climate change uplift was applied to the design storm and 10% urban creep factor applied to the design catchment.

20.8.1.2 Wastewater

The 'worst-case' scenario would be flooding of the wastewater system and/or contamination of groundwater with effluent from the network. This issue is mitigated by ensuring that the network is constructed in accordance with best practice guideline laid out in the Uisce Eireann Code of Practice and Standard Details.

20.8.1.3 Water Supply

The 'worst-case' scenario would be contamination of the water supply during construction. This risk is mitigated by ensuring all watermains in accordance with best practice guideline laid out in the Uisce Eireann Code of Practice and Standard Details and appropriate disinfection is carried out prior to connection.

20.8.1.4 Electricity Supply

During the construction of the electrical supply infrastructure, trench excavations will be backfilled and ground levels will be reinstated to the final proposed ground levels. This is a **neutral, imperceptible** and **short-term** effect.

20.8.1.5 Gas Supply

The 'worst-case' scenario would be striking a piece of existing live gas infrastructure during excavation works and causing an unplanned outage of service to customers. The Contractor shall ensure that all of the works will be carried out by authorised personnel who have expertise in the required works. This will minimise disruption to surrounding areas.

20.8.1.6 Telecommunications

During the construction of the telecommunication infrastructure, trench excavations will be backfilled and ground levels will be reinstated to the final proposed ground levels. This is a **neutral, imperceptible** and **short-term** effect.

20.9 Interactions

Interactions are addressed in detail in Chapter 21 of this EIAR report.

20.9.1 Population and Human Health

There is adequate capacity in existing infrastructure for the construction and operational stages of the Proposed Development. A risk to the human health of the installer from built services can occur as a result of any excavation work in areas where built services exist, through coming into contact with live electricity lines or damaging live gas or watermains. With the implementation of appropriate mitigation measures, the impact of the proposed built services on human health is **likely not significant**.

20.9.2 Land, Soils and Geology

Construction of the Proposed Development will require the removal of topsoil and earthworks to facilitate the construction of the road and infrastructure service provision, storage systems, etc. These initial and short-term adverse impacts would be ameliorated through the re-use of soils for fill, levelling and landscaping works resulting in a **neutral impact**. Additionally, trench excavations to facilitate site service installation will result in exposure of subsoils to potential erosion and subsequent sediment generation. Mitigation measures are outlined in Chapter 9 Land, Soils and Geology (i.e. service trenches to be backfilled as soon as practicable to minimise potential erosion of subsoils).

20.9.3 Hydrology and Hydrogeology

The Proposed Development is designed to comply with the recommendations of the GDSDS, including the provision of SUDS, and is therefore unlikely to have any residual impacts in terms of the impact on hydrology and hydrogeology.

20.10 Indirect and/or Secondary Impacts

20.10.1 Risk of Major Accidents or Disasters

There are no expected significant adverse effects on the environment deriving from the vulnerability of the project to risks of major accidents and/or disasters.

There are no Indirect and/or Secondary Impacts anticipated as a result of the proposed works and all impacts are fully assessed in Section 20.3.

20.11 Cumulative Impacts

There are a number of granted planning permissions for activities / plans / projects which may be under construction at the same time as the Proposed Development. All elements of the project have been cumulatively assessed together for their overall impact and the project has then been assessed in combination with the other existing, consented or planned projects as listed in Table 22.1.

20.11.1 Surface Water Drainage

It is expected that any future development in the area will adhere to Fingal County Council Taking-In-Charge and Green Infrastructure Policy, GDSDS and the CIRIA SuDS Guide. These policies will ensure that stormwater runoff from future developments will be limited in volume using flow controls and on-site attenuation and will receive treatment prior to discharge to the public network. These effects will be expected to be ***neutral, of low significance*** and ***permanent***.

20.11.2 Wastewater Drainage

The Confirmation of Feasibility (CoF) received from Uisce Eireann (UE) detailed requirements to facilitate the connection of the Proposed Development. No other concerns were raised regarding capacity in the wider wastewater network or downstream Swords WWTP. The cumulative impacts to the wastewater network are expected to be ***neutral, of low significance*** and ***permanent***.

20.11.3 Water Supply

The Confirmation of Feasibility (CoF) received from Uisce Eireann (UE) assessed the capacity of the local water network and requirements to facilitate the connection of the Proposed Development. No other concerns were raised regarding capacity in the wider water network, and it was confirmed that the capacity is available after completion of the water network in Phase 1. The cumulative impacts to the water network are expected to be ***neutral, of low significance*** and ***permanent***.

20.11.4 Electricity Supply

Any redevelopment in the area resulting in an intensification of land use or increased density of occupation would likely lead to an increase in demand on the electricity supply network. While there is substantial existing electricity supply infrastructure in place, continued cumulative development will tend to necessitate future provision of new electricity supply infrastructure with increased capacity. The cumulative impact is a ***neutral, not significant*** and ***short-term***.

20.11.5 Gas Network

It is not proposed to supply gas within the Proposed Development and changing trends away from fossil fuels mean that it is unlikely that there will be significant further development of the gas network in the area of Swords. The cumulative residual effect will be ***neutral, of low significance*** and ***permanent***.

20.11.6 Telecommunications

Any redevelopment in the area resulting in an intensification of land use or increased density of occupation would likely lead to an increase in demand on the telecommunications networks. While there is existing telecommunications infrastructure in place, continued cumulative development will tend to necessitate future provision of new telecommunications infrastructure with increased capacity. The cumulative impact is a ***neutral, not significant*** and ***short-term***.

20.12 Difficulties Encountered

No clear limitations were encountered in accessing and assessing the relevant information relating to built services.

There were no difficulties encountered in compiling this section.

20.1 Conclusion

The assessment has found that there will no significant negative effects in terms of Material Assets, either from the development when considered alone, or in combination with other developments, during either the construction or operational phases of the development.

20.2 References

- Fingal Council County Development Plan 2023 – 2029
- Fingal County Council Taking in Charge – Policy Document
- The SuDS Manual C753, 2015, Construction Industry Research and Information Association
- The Greater Dublin Region Code of Practice for Drainage Works, 2012
- Greater Dublin Strategic Drainage Study, 2005
- Technical Guidance Document H Drainage and Wastewater Disposal, 2016, Department of Housing, Planning, Community and Local Government
- Standard Details for Wastewater Infrastructure IW-CDS-5030-01 Rev 04
- Code of Practice for Wastewater Infrastructure IW-CDS-5030-03 Rev 02
- Standard Details for Water Infrastructure CDS-5020-01 Rev 05
- Code of Practice for Water Infrastructure CDS-5020-03 Rev 03
- Mooretown, Infrastructure Report, AKM Design Group, 2026
- ESB Networks Code of Practice for Avoiding Danger from Overhead Electricity Lines

21 Interactions

21.1 Introduction

This chapter provides an overview of the key interactions identified and addressed in the foregoing chapters of the EIAR.

It is a requirement of the EIA Directive that, not only are the impacts in respect of the individual specialist topics (hydrology, biodiversity, air quality and climate, etc.) to be addressed in the EIAR, but so must the interactions and inter-relationships between these topics be addressed. As stated in Article 3 of the amended Directive:

> "*The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors:*
>
> (*a*) *population and human health;*
>
> (*b*) *biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;*
>
> (*c*) *land, soil, water, air and climate;*
>
> (*d*) *material assets, cultural heritage and the landscape;*
>
> (*e*) *the* ***interaction*** *between the factors referred to in points* (*a*) *to* (*d*)*."*

The EPA guidelines state that interactions should be addressed, where relevant, in the corresponding specialist EIAR chapters, with an 'interactions matrix' and brief text provided by way of summary:

> *"The interactions between effects on different environmental factors should be addressed as relevant throughout the EIAR. For example, where it is established in the Hydrology section that there will be an increase in suspended solids in discharged surface waters during construction, then the Biodiversity section should assess the effect of that on sensitive aquatic receptors. […] It is general practice to include a matrix to show where interactions between effects on different factors have been addressed. […] This is typically accompanied by text describing the interactions."* (*Section 3, p. 56*).

A brief description of these interactions is presented below, as is an interactions matrix (Table 21.1).

Note that this chapter provides an overview of the potential impacts that may arise as a result of interactions between environmental topics, and as a direct or indirect result of the Proposed Development. It does not repeat the detailed characterisation of these impacts or reiterate any mitigation measures that have been prescribed in relation to them. These are addressed under the scope of the corresponding EIAR chapters, as referenced below.

Table 21.1 Interactions matrix

Source \ Receptor	Population & Human Health	Biodiversity	Land, Soils, Geology	Hydrology & Hydrogeology	Air Quality	Climate	Noise & Vibration	Landscape & Visual	Cultural Heritage & Archaeology	Microclimate – Daylight & Sunlight	Microclimate - Wind	Traffic & Transportation	Material Assets - Waste	Material Assets - Services
Population & Human Health					✓		✓	✓	✓	✓	✓	✓	✓	✓
Biodiversity			✓	✓	✓			✓						
Land, Soils, Geology	✓	✓		✓	✓							✓	✓	
Hydrology & Hydrogeology		✓	✓		✓	✓			✓				✓	
Air Quality	✓	✓	✓			✓						✓		
Climate			✓		✓							✓	✓	
Noise & Vibration	✓	✓										✓		
Landscape & Visual	✓	✓							✓					
Cultural Heritage, Archaeology & Architectural Heritage	✓			✓				✓						
Microclimate – Daylight & Sunlight	✓													
Microclimate – Wind	✓													
Traffic & Transportation	✓	✓	✓	✓	✓	✓	✓	✓					✓	
Material Assets – Waste	✓	✓	✓	✓		✓						✓		
Material Assets - Services	✓		✓	✓										
Material Assets – Waste	✓	✓	✓	✓		✓						✓		

21.2 Summary of Interactions

Interactions addressed in this EIAR are discussed under the headings of the corresponding receptor topics / media, below.

21.2.1 Population and Human Health

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

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

Air Quality (Chapter 11)

Air quality does not have a significant number of interactions with other topics. The most significant interactions are between Population and Human Health and Air Quality. An adverse air quality impact during the construction phase can cause health and dust nuisance issues. There is a medium risk of dust-related human health effects during the construction phase of the Proposed Development. Best practice mitigation measures will be implemented during the construction phase to ensure that the impact of the Proposed Development complies with all ambient air quality legislative limits. Therefore, the predicted effect is ***direct, short-term, negative, localised and not significant*** with respect to Population and Human Health during the construction phase.

Vehicles accessing the site will emit pollutants which may impact Air Quality and Human Health. However, the increased number of vehicles associated with the Proposed Development will not cause a significant change in air pollutant emissions in the locality. It has been assessed that emissions will be in compliance with the ambient air quality standards which are set for the protection of human health. Effects will be ***long-term, localised, direct, and not significant***.

Noise & Vibration (Chapter 13)

The interaction between population and human health and noise and vibration during construction phase is due to potential nuisance and disturbance due to noisy construction activities, plant and equipment and construction traffic noise. Appropriate mitigation measures will be implemented in this regard. Implementation of the mitigation measures set out and adherence to good practice noise reducing measures will ensure that the residual impact on human health will be lessened and impacts will be ***short-term, negative slight to moderate significance.***

Similarly, during the operational phase, plant selections designed to achieve the relevant noise criteria will result in a residual impact that is ***negative, long-term, and not significant*** to people in nearby noise sensitive locations. External noise sources have been assessed and mitigation to ensure internal noise levels achieve the relevant noise criteria have been provided.

Landscape & Visual (Chapter 14)

During the construction phase, there is potential for the visual impacts of construction to combine with noise and dust emissions from the construction site to negatively impact the residential amenity of

residential neighbourhoods / receptors near the site. The impacts would be of ***moderate significance, negative, and temporary.***

During the operation phase:

- The Proposed Development would introduce two large public open spaces to the landscape ('Rathbeale Archaeological Park South' and 'Glasmore Archaeological Park'), visible and accessible from public roads passing by the site, providing a range of active and passive recreation amenities for people of all ages. These spaces are positioned to complement the existing local green infrastructure network, filling gaps that currently exist and thereby improving connectivity (of open space and active travel routes).
- The Proposed Development would complete the formation of the link street (by the introduction of built frontage on its south site, complementing the permitted Phase 1 development), thus contributing to the completion of a key element of the road, cycle and pedestrian network. The pedestrian and cycle routes throughout the site, including multiple entrances to the site from the north and west, would improve permeability of the urban landscape, encouraging walking and sustainable mobility.
- The Proposed Development would provide 360 no. new homes of various types (houses, duplexes, apartments), catering for a range of needs, realising the site's residential land use objective.

These changes to the landscape would have ***significant, long-term, positive impacts*** for the new resident community and the established population of Mooretown.

Cultural Heritage, Archaeology and Architectural Heritage (Chapter 15)

The provision of accessible archaeological parks and interpretative signage will provide educational and amenity benefits, contributing positively to community well-being and sense of place. This will result in a **direct, positive, moderate, long-term** impact on population and human health.

Microclimate- Daylight & Sunlight (Chapter 16)

There are potential impacts due to changes to daylight and sunlight availability on the population and human health e.g. overshadowing of neighbouring buildings, can negatively or positively affect residential amenity in the receiving environment. Following the BRE Guide's recommendations for essential daylight & sunlight, internal daylighting is required to meet more than 50% of the targeted illuminance in lux throughout the year. As detailed above, the assessment determined that the ***neutral short-term impacts*** to neighbouring residential areas, including outdoor spaces, and potential solar panel locations, are ***imperceptible***, and the Proposed Development itself will provide well-lit homes and amenity areas, in accordance with the BRE Guide. The results demonstrate each of the proposal's amenity open spaces easily achieve compliance with the BRE Guide. All of the spaces were comfortably compliant with the BRE criteria to receive at least 2 hours of sunlight on March 21st, for at least 50% of the space. The assessment determined that the ***neutral long-term impacts*** to neighbouring residential areas, including outdoor spaces, and potential solar panel locations, are ***imperceptible***, and the Proposed Development itself will provide well-lit homes and amenity areas. All analysis were deemed to be compliant in accordance with the BRE Guide.

Microclimate – Wind (Chapter 17)

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

Traffic & Transportation (Chapter 18)

Construction and operational stage traffic and traffic management measures have the potential to affect journey amenity or economic activity as a result of increased congestion or access restrictions. Chapter 7 (Population & Human Health) further describes the effect of the Proposed Development on population and human health. The impacts due to interactions with population and human health are anticipated to be ***negative, short-term and not significant*** for the construction phase. The impacts due to the interactions with population and human health are anticipated to *be* ***positive, long term and not significant*** for the operational phase.

Material Assets - Waste (Chapter 19)

During the construction phase, improper handling, storage or removal of construction waste has the potential to give rise to litter, interaction of vermin and short-term odour or contamination risks, all of which could adversely affect workers on site and the local population if unmanaged.

These risks will be minimised through strict adherence to the project specific RWMP and the mitigation measures outlined in Chapter 7 (Population and Human Health). Waste will be segregated at source, stored in covered containers and collected by permitted waste collectors in accordance with the Waste Management Acts. No waste will be stockpiled in public areas and no on site burning or uncontrolled disposal will occur.

With these measures in place, the potential for human exposure to waste, litter or vermin is very low. Following mitigation, the construction phase effects on population and human health will be ***short-term, imperceptible and neutral***.

Material Assets - Services (Chapter 20)

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

21.2.2 Biodiversity

Where the potential for impacts on biodiversity has been identified as a result of interactions with other EIA topics, these have been addressed comprehensively in Chapter 8 (Biodiversity) and / or the corresponding other specialist chapter. In respect of the Proposed Development, the noteworthy interactions between biodiversity and other topics, in the absence of mitigation, may be summarised as follows:

Land, Soils, Geology (Chapter 9)

Dust emissions from construction activities have the potential to settle on vegetation, causing minor effects on local ecological receptors. With the dust control measures included in the CEMP, any interaction between Biodiversity and Land, Soils and Geology will be ***negative, imperceptible and short-term***.

No significant interaction between Biodiversity and Land, Soils and Geology is predicted during the operational phase.

Hydrology & Hydrogeology (Chapter 10)

Taking into consideration the discharge of surface and foul water to the sewer network and the mitigation measures outlined in Section 10.7, the impact on biodiversity should be minimal.

Considering the design and mitigation measures set out in Chapter 10 (Hydrology and Hydrogeology) and Chapter 8 (Biodiversity) of this EIAR, the interaction between Hydrology and Hydrogeology, and Biodiversity is considered to be ***neutral, imperceptible and short term***.

The Proposed Development design incorporates SuDS measures across the site. These features reduce runoff rates and pollutant loading, thereby minimising the potential for hydrology related impacts on downstream aquatic or wetland habitats. The SuDS have been designed to manage the 1% AEP (1 in 100 year) storm event with allowances for climate change and urban creep.

Process wastewater will be treated at Swords WWTP before discharge, which is shown to have capacity to accommodate the Proposed Development.

Taking into account the design and mitigation measures set out in Section 10.7, the interaction between Hydrology and Hydrogeology and Biodiversity during the operational phase is considered to be ***neutral, imperceptible and long term***.

Air Quality (Chapter 11)

Dust emissions from construction works have the potential to impact vegetation in the vicinity of the site. Vehicular emissions during construction and operation also have the potential to impact vegetation as a result of NOx emissions leading to nitrogen deposition. With the mitigation measures in place, the predicted impact during construction phase due to this interaction will be ***neutral, imperceptible and short-term.***

There are no potentially significant interactions identified between Air Quality and Biodiversity during the operational phase.

Landscape & Visual (Chapter 14)

The Proposed Development would retain the majority of the site's remaining hedgerows and trees, the drainage ditches, and a large proportion of the site as open space. The open spaces would be planted

/ seeded with diverse new native planting (pollinator friendly meadows and trees), with the overall objective of achieving net biodiversity gain. The landscape change would have biodiversity impacts of ***moderate significance, positive and long term***.

Material Assets – Waste (Chapter 19)

The potential impacts on biodiversity in relation to the generation of waste during the construction phase are that the incorrect management of waste could result in littering, pollution issues, spread of invasive species and/or vermin in areas affected. If invasive alien species (IAS) are identified during construction, an Invasive Species Management Plan (ISMP) will be implemented. Adherence to the mitigation measures set out in this chapter, and in Chapter 8 (Biodiversity) will ensure the associated effect is ***neutral, imperceptible and short-term***.

The potential impacts on biodiversity in relation to the generation of waste during the operational phase are that the incorrect management of waste could result in littering, pollution issues or vermin in areas affected. Adherence to the mitigation measures set out in this chapter, and in Chapter 8 (Biodiversity) will ensure the associated effect is ***neutral, imperceptible and long-term***.

21.2.3 Land, Soils and Geology

During the construction and operational phase, potential interactions between environmental factors have been considered, particularly in relation to site clearance, excavation works, soil handling, and the off-site transport of excavated materials. These activities have the potential to interact with a number of other environmental receptors mentioned below.

Population and Human Health (Chapter 7)

A reduction in soil quality via unmitigated pollutants entering the soil has the potential to lead to negative impacts on human health and populations. Exposure to contaminated soils and potential gases during the construction phase may give rise to health impacts. However, mitigation measures during the construction phase of the Proposed Development will ensure that dust generation is minimised and the effect on Human Health will be ***neutral, imperceptible, and short-term***.

Biodiversity (Chapter 8)

Dust emissions from construction activities have the potential to settle on vegetation, causing minor effects on local ecological receptors. With the dust control measures included in the CEMP, any interaction between Biodiversity and Land, Soils and Geology will be ***negative, imperceptible and short-term***.

No significant interaction between Biodiversity and Land, Soils and Geology is predicted during the operational phase.

Hydrology and Hydrogeology (Chapter 10)

Earthworks also have the potential to interact with hydrological and hydrogeological receptors through the disturbance of soils and subsoils and the potential mobilisation of sediments into nearby watercourses which would interact negatively on surface or groundwater quality. Standard construction management practices, including the implementation of surface water management measures and sediment control, will be employed to minimise the risk of sediment-laden runoff entering nearby watercourses. Further mitigation measures are set out in the Hydrology and

Hydrogeology Chapter 10 of the EIAR. The interaction is considered to be ***neutral, imperceptible and short-term.***

The operational phase of the Proposed Development has the potential to interact negatively on surface water or groundwater quality via the proposed surface water network. The proposed operation phase mitigation outlined in Chapter 10 – Hydrology and Hydrogeology of the EIAR, means that the Proposed Development will not result in significant negative impact on surface water quality in the local area. The interaction is considered to be ***neutral, imperceptible and long-term.***

Air Quality (Chapter 11)

Excavation works and the movement of soils may also give rise to the temporary generation of dust and particulate matter, particularly during dry or windy conditions. Mitigation measures implemented during the construction phases will ensure that the deposition of dust is minimised. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that there will be no significant interactions between air quality and land, soils and hydrogeology. The interaction is considered to be ***neutral, imperceptible, and short-term***.

There are no interactions identified between Land, Soils & Geology with Air Quality & Climate during the operational phase.

Traffic and Transportation (Chapter 18)

Excavation and earthworks associated with the Proposed Development will involve the removal, temporary storage and reuse or off-site removal of soils and subsoils. Where surplus materials require off-site transport to licensed or authorised facilities, this will generate construction traffic movements which may interact with the receiving road network. These measures are assessed within the Traffic and Transportation Chapter 18 of the EIAR. The interaction is considered to be ***neutral, imperceptible, and short-term***. *There* are no significant interactions identified between Land, Soils & Geology with Traffic and Transportation during the construction phase.

There are no interactions identified between Land, Soils & Geology with Traffic and Transportation during the operational phase.

Material Assets – Waste (Chapter 19)

During the construction phase, excavated soil (c. 156,193.41 m^3) will be generated from the excavations required to facilitate site levelling, construction of new foundations and installations of site services. It is currently envisaged that 3,693.41 m^3 of excavated soil will be reused on-site. The material that will be taken off-site will be sent for reuse or recovery, where practical, with disposal as a last resort. Adherence to the mitigation measures in Chapter 19 (Material Assets- Waste), Chapter 5 (Land, Soils and Geology) and the requirements of the RWMP (Appendix 19.1, Volume 3 of the EIAR), will ensure the effect is ***neutral, imperceptible and long-term***.

There are no potentially significant interactions identified between Land, Soils & Geology and Material Assets- Waste during the operational phase.

21.2.4 Hydrology & Hydrogeology

Hydrology & Hydrogeology has the potential to interact with a number of other environmental attributes:

Biodiversity (Chapter 8)

Taking into consideration the discharge of surface and foul water to the sewer network and the mitigation measures outlined in Section 10.7, the impact on biodiversity should be minimal.

Considering the design and mitigation measures set out in Chapter 10 (Hydrology and Hydrogeology) and Chapter 8 (Biodiversity) of this EIAR, the interaction between Hydrology and Hydrogeology, and Biodiversity is considered to be ***neutral, imperceptible and short term***.

The Proposed Development design incorporates SuDS measures across the site. These features reduce runoff rates and pollutant loading, thereby minimising the potential for hydrology-related impacts on downstream aquatic or wetland habitats. The SuDS have been designed to manage the 1% AEP (1-in-100-year) storm event with allowances for climate change and urban creep.

Process wastewater will be treated at Swords WWTP before discharge, which is shown to have capacity to accommodate the Proposed Development.

Taking into account the design and mitigation measures set out in Section 10.7, the interaction between Hydrology and Hydrogeology and Biodiversity during the operational phase is considered to be ***neutral, imperceptible and long-term***.

Land, Soils and Geology (Chapter 9)

The construction phase of the Proposed Development has the potential to result in increased sediment runoff, which could interact negatively with surface water quality before the permanent drainage infrastructure is installed. However, the construction-phase mitigation measures will ensure that the Proposed Development does not result in any significant negative impact on surface-water quality in the local area.

Taking into account the design and mitigation measures set out in Chapter 9 (Land, Soils and Geology) and Chapter 10 (Hydrology and Hydrogeology) of this EIAR, there is a residual negative interaction between Land, Soils and Geology, and Hydrology and Hydrogeology during the construction phase. The interaction is considered to be ***negative, not significant and short term***.

There are no potentially significant interactions identified between Land, Soils and Geology, and Hydrology and Hydrogeology during the operational phase.

Air Quality (Chapter 11)

Construction phase activities, such as excavations and stockpiling of materials, have the potential for interactions between air quality and hydrology in the form of dust emissions that may deposit in surface waters.

Mitigation measures implemented during the construction phase will ensure that the deposition of dust is minimised. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that there will be no significant interactions between Air Quality and Hydrology and Hydrogeology. The interaction is considered to be neutral, imperceptible and short-term.

There are ***no potentially significant interactions*** identified between Hydrology and Hydrogeology and Climate during the construction phase.

Projected increases in rainfall due to climate change may influence surface-water runoff and potential flood risk. However, the Site-Specific Flood Risk Assessment confirms that the Proposed Development is located within Flood Zone C, and the operational SuDS network incorporates climate-change and urban-creep allowances (refer to Section 10.3.6 above).

Therefore, no significant interactions between Climate and Hydrology and Hydrogeology are predicted during the operational phase. The Site-Specific Flood Risk Assessment (SSFRA) is included in the Infrastructure Report (Document Ref: 25051-AKM-XXXX-XX-RP-C01-100001) prepared by AKM Design Group (February 2026) in support of the planning application.

Climate (Chapter 12)

The impact of flood risk has been assessed and due to the nature of the Proposed Development being subsurface once operational, flooding as a result of increased rainfall from climate change is not a risk. The effect of the interactions between climate and land, soils, geology and hydrology and hydrogeology are ***direct, temporary, negative and imperceptible*** during the construction phase.

There are no potentially significant interactions identified between climate, and hydrology and hydrogeology during the construction phase.

The impact of flood risk has been assessed and due to the nature of the Proposed Development being subsurface once operational, flooding as a result of increased rainfall from climate change is not a risk. The effect of the interactions between climate and land, soils, geology and hydrology and hydrogeology are ***direct, long-term, negative and imperceptible*** during the operational phase, which is overall not significant in EIA terms.

Cultural Heritage – Archaeology and Architectural Heritage (Chapter 15)

During the construction phase, a potential interaction exists between Hydrology and Hydrogeology and Cultural Heritage – Archaeology and Architectural Heritage due to the presence of St Cronan's Well (RMP DU011-018), a statutorily protected archaeological monument located within the south-eastern corner of the southern parcel.

St Cronan's Well is a naturally occurring spring supported by shallow, perched groundwater within overlying glacial tills. Construction activities will not involve any sustained groundwater abstraction, deep excavation or drainage interception capable of altering the hydrological regime that supports the well. Temporary groundwater management, if required, will be ***localised, short-term*** and related to rainfall accumulation or minor perched seepage only, and will be undertaken in accordance with the Construction and Environmental Management Plan (CEMP) and Surface Water Management Plan (SWMP).

Specific mitigation measures have been incorporated to protect the well during construction, including buffering, controlled drainage, sediment controls and restrictions on works in its vicinity. With these measures in place, no significant adverse interactions between Hydrology and Hydrogeology and Cultural Heritage are predicted during the construction phase.

During the operational phase, the Proposed Development is not anticipated to give rise to significant interactions between Hydrology and Hydrogeology and Cultural Heritage – Archaeology and Architectural Heritage.

The operational drainage strategy comprises a fully separated, SuDS-led system that controls runoff, provides water quality treatment and restricts discharges to greenfield-equivalent rates. The design does not introduce any groundwater abstraction, infiltration interception or ground reduction measures that could alter the shallow groundwater regime feeding St Cronan's Well.

The well is retained within dedicated public open space, and its hydrological regime will remain unchanged during operation. As a result, the continued functioning and cultural significance of

St Cronan's Well will be maintained, and no significant operational-phase interactions are predicted between Hydrology and Hydrogeology and Cultural Heritage.

Material Assets – Waste (Chapter 19)

During construction, excavated soil will be generated from site levelling, foundations and service installations. For this project, approximately 21,860 m³ of material will be excavated and 100% reused on-site, meaning no export of soil is expected. In addition, approximately 35,000 m³ of imported engineered fill will be required to achieve design levels and formation requirements.

There is potential for an increase in surface run-off due to temporary exposed ground, compaction of soils and the introduction of temporary working areas. These activities can reduce natural infiltration capacity and increase the rate and volume of direct run-off, which can mobilise sediment. Run-off containing elevated silt loads has the potential to enter temporary drainage features or construction-phase systems and, if unmanaged, may pose a risk to surface water drainage networks or nearby receiving waters.

Adherence to the mitigation measures in Chapter 19 (Material Assets – Waste), Chapter 10 (Hydrology and Hydrogeology), and the RWMP (**Appendix 19.1**) will ensure that earthworks, soil handling and waste management activities do not adversely interact with the hydrological and hydrogeological environment. With these measures in place, the interaction between Waste with Hydrology and Hydrogeology is ***neutral, imperceptible and long-term***.

The use of SuDS during operations will mean that the development will result in neutral water impacts in the operational phase with regard to runoff rates and flooding risk. As a part of the SuDS features, it is anticipated that small amounts of hydrocarbon sludge waste and debris may be generated in the hydrocarbon interceptors which will treat the surface water run-off.

Process wastewater will be treated at the WWTP before being discharged to the wastewater outfall.

This waste stream will be managed in accordance with the relevant legislation identified in Chapter 19 (Material Assets – Waste). The interaction is considered to be ***negative, not significant and long-term***.

21.2.5 Air Quality

Air Quality has the potential to interact with a number of other environmental attributes:

Population and Human Health (Chapter 7)

Air quality does not have a significant number of interactions with other topics. The most significant interactions are between Population and Human Health and Air Quality. An adverse air quality impact during the construction phase can cause health and dust nuisance issues. There is a medium risk of dust-related human health effects during the construction phase of the Proposed Development. Best practice mitigation measures will be implemented during the construction phase to ensure that the impact of the Proposed Development complies with all ambient air quality legislative limits. Therefore, the predicted effect is ***direct, short-term, negative, localised and not significant*** with respect to Population and Human Health during the construction phase.

Vehicles accessing the site will emit pollutants which may impact Air Quality and Human Health. However, the increased number of vehicles associated with the Proposed Development will not cause a significant change in air pollutant emissions in the locality. It has been assessed that emissions will be

in compliance with the ambient air quality standards which are set for the protection of human health. Effects will be ***long-term, localised, direct, and not significant***.

Biodiversity (Chapter 8)

Dust emissions from construction works have the potential to impact vegetation in the vicinity of the site. Vehicular emissions during construction and operation also have the potential to impact vegetation as a result of NOx emissions leading to nitrogen deposition. With the mitigation measures in place, the predicted impact during construction phase due to this interaction will be ***neutral, imperceptible and short-term***.

There are no potentially significant interactions identified between Air Quality and Biodiversity during the operational phase.

Land, Soils and Geology (Chapter 9)

Construction phase activities such as land clearing, excavations, stockpiling of materials etc. have the potential for interactions between Air Quality and Land and Soils in the form of dust emissions. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that there will be no significant interactions between air quality and land and soils during the construction phase.

There are ***no potentially significant interactions*** identified between Air Quality, and Land and Soils during the operational phase.

Climate (Chapter 12)

Air Quality and Climate have interactions as the emissions from the burning of fossil fuels during the construction and operational phases generate both air quality and climate impacts. There is no impact on climate due to air quality. However, the sources of impacts on air quality and climate are strongly linked.

Traffic and Transport (Chapter 18)

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. The impacts of the Proposed Development on air quality are assessed by reviewing the change in annual average daily traffic on roads close to the site. In this assessment, the impact of the interactions between Traffic and Air Quality are linked but there is no potential for significant impacts from traffic on air quality. The effects are considered to be ***direct, short-term, neutral, localised and not significant*** during the construction phase.

The effect of the interactions between Traffic and Air Quality are considered to be ***long-term, direct, and not significant*** during the operational phase.

21.2.6 Climate

Climate has the potential to interact with a number of other environmental attributes:

Land, Soils and Geology (Chapter 9)

The impact of flood risk has been assessed, and the surface water drainage network will be designed to cater for increased rainfall in future years as a result of climate change. The effect of the interactions between climate and land, soils, geology and hydrology are ***direct, short-term, negative and***

imperceptible during the construction phase and ***direct, long-term, negative and imperceptible*** during the operational phase, which is overall ***not significant*** in EIA terms.

Air Quality (Chapter 11)

Air quality and climate have interactions due to the emissions from the burning of fossil fuels during the construction and operational phases generating both air quality and climate impacts. Air quality modelling outputs are utilised within the Climate Chapter. There is no impact on climate due to air quality. However, the sources of impacts on air quality and climate are strongly linked.

Traffic and Transportation (Chapter 18)

During the construction and operational phase, there is the potential for interactions between climate and traffic. Vehicles accessing the site will result in emissions of CO2, a greenhouse gas. The effects of the Proposed Development on climate are assessed by reviewing the change in annual average daily traffic on roads close to the site. In this assessment, the effects of the interactions between traffic and climate are considered to be ***direct, short-term, negative and not significant*** during the construction phase and ***direct, long-term, negative and not significant*** during the operational phase.

Material Services - Waste (Chapter 19)

Waste management measures will be put in place to minimise the amount of waste entering landfill, which has higher associated embodied carbon emissions than other waste management such as recycling. The effect of the interactions between waste and climate are considered to be ***direct, short-term, negative and not significant*** during the construction phase and ***direct, long-term, negative and not significant*** during the operational phase, which is overall ***not significant*** in EIA terms.

21.2.7 Noise & Vibration

The potential noise impacts associated with the Proposed Development have been considered in the context of their interactions with other environmental factors assessed in this EIAR. Key interactions are outlined below:

Population and Human Health

The interaction between population and human health and noise and vibration during construction phase is due to potential nuisance and disturbance due to noisy construction activities, plant and equipment and construction traffic noise. Appropriate mitigation measures will be implemented in this regard. Implementation of the mitigation measures set out and adherence to good practice noise reducing measures will ensure that the residual impact on human health will be lessened and impacts will be ***short-term, negative slight to moderate significance***.

Similarly, during the operational phase, plant selections designed to achieve the relevant noise criteria will result in a residual impact that is ***negative, long-term, and not significant*** to people in nearby noise sensitive locations. External noise sources have been assessed and mitigation to ensure internal noise levels achieve the relevant noise criteria have been provided.

Traffic and Transportation

For construction and operational phases, Chapter 0 (Traffic and Transportation) of this EIAR, has been referenced with respect to expected number of vehicle movements in each phase. This data has been used to calculate changes in noise level associated with construction traffic and new operational traffic as a result of the development. This was then used to determine the significance traffic associated with

the Proposed Development, during the construction and operational phases, would have on the noise levels in the area. During the construction phase the noise impact will be ***negative, short term and not significant.*** During operation phase, the predicted change in noise levels associated with additional traffic is expected to be ***negligible, long-term and not significant*** along the existing road network.

21.2.8 Landscape & Visual

Population and Human Health (Chapter 7)

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

The operational phase will result in positive contribution to the emerging residential community of the wider area, as well as enhancing green infrastructure and green space connectivity. The predicted impact will be ***negative to positive, moderate to not significant and long-term*** as the landscape (including replacement tree planting) matures and the views become more residential.

The incorporation of public open spaces into the Proposed Development is assessed to have ***significant, long-term, positive impacts*** for the new resident community and the established population of Mooretown.

Biodiversity (Chapter 8)

The Proposed Development would retain the majority of the site's remaining hedgerows and trees, the drainage ditches, and a large proportion of the site as open space. The open spaces would be planted / seeded with diverse new native planting (pollinator friendly meadows and trees), with the overall objective of achieving net biodiversity gain. The landscape change would have biodiversity impacts of ***moderate significance, positive and long term***.

Cultural Heritage, Archaeology & Architectural Heritage (Chapter 15)

The three main public open spaces, 'Rathbeale Archaeological Park South', 'Glasmore Archaeological Park' and 'St Cronan's Well Archaeological Park' are sited and designed to preserve the site's archaeological assets in situ. As well as preserving the cultural heritage, this would facilitate its interpretation (by means of signage, etc.). The landscape change would have cultural heritage impacts of ***moderate significance, positive and long term***.

21.2.9 Cultural Heritage, Archaeology & Architectural Heritage

Given the archaeological character of the proposed site, this chapter interacts with Chapter 7 – Population and Human Health, Chapter 10 – Hydrology and Hydrogeology (St. Cronan's Well) and Chapter 14 – Landscape and Visual:

Population and Human Health (Chapter 7)

The provision of accessible archaeological parks and interpretative signage will provide educational and amenity benefits, contributing positively to community well-being and sense of place. This will result in a ***direct, positive, moderate, long-term impact*** on population and human health.

Hydrology and Hydrogeology (Chapter 10)

Changes to groundwater levels or drainage patterns in the vicinity of have the potential to indirectly affect archaeological remains, particularly any waterlogged deposits. Chapter 10 (Hydrology and Hydrogeology) confirms that St Cronan's Well is fed by shallow, localised perched groundwater within glacial tills, with no connection to a regionally significant aquifer.

Site investigations indicate that no significant or sustained dewatering will be required, and no groundwater abstraction or interception drainage is proposed. The design retains the well within open space, avoids works in its vicinity, and adopts a SuDS-led drainage strategy that does not interfere with shallow groundwater pathways.

On this basis, and subject to the embedded mitigation measures, the Proposed Development will not alter the groundwater regime feeding the well, which is expected to continue to function as existing. Accordingly, ***no significant adverse interaction*** with cultural heritage is predicted.

Landscape and Visual (Chapter 14)

The incorporation of archaeological sites into landscaped open spaces represents a positive interaction, enhancing both the setting and legibility of the archaeological resource within the wider development.

Overall, no significant adverse interactions are predicted. Beneficial interactions arise through the integration of archaeological heritage into the design and use of the development which results in a ***direct, positive, moderate, long-term impact***.

21.2.10 Microclimate – Daylight & Sunlight

Given the low-rise and low-density nature of the development, any impact would be deemed ***imperceptible***, and hence no interactions between the chapters are present.

21.2.11 Microclimate – Wind

The principal interaction is with Chapter 7 (Population & Human Health), since the wind conditions at the Proposed Development site can affect the amenity and safety of residents and visitors, as discussed above. As set out in Ch 17 Microclimate - Wind, in all cases, the Proposed Development will deliver a wind microclimate that is either suitable for all intended pedestrian uses or calmer than required for the intended uses. Therefore, ***no significant impacts*** on population and human health are predicted because of the wind effects of the Proposed Development.

21.2.12 Traffic & Transportation

Population and Human Heath (Chapter 7)

Construction and operational stage traffic and traffic management measures have the potential to affect journey amenity or economic activity as a result of increased congestion or access restrictions. Chapter 7 (Population & Human Health) further describes the effect of the Proposed Development on population and human health. The impacts due to interactions with population and human health are anticipated to be negative, short-term and not significant for the construction phase. The impacts due to the interactions with population and human health are anticipated to be ***positive, long term and not significant*** for the operational phase.

Biodiversity (Chapter 8)

The presence of the Proposed Development and new traffic flows can have impacts on biodiversity including severance of commuting or feeding routes and direct mortality. Chapter 8 (Biodiversity)

assesses the impacts of the Proposed Development on biodiversity. The impacts due to the interactions with biodiversity are anticipated to be ***negative, short-term and not significant*** for the construction phase. The impacts due to the interactions with biodiversity are anticipated to be ***negative, long term and not significant*** for the operational phase.

Land, Soils and Geology (Chapter 9)

The volumes of surplus soils generated by the Proposed Development and the earthworks import requirement will affect construction stage traffic generation. Corresponding mitigation measures are set out in Chapter 9 (Land, Soils and Geology). During construction, the CEMP will ensure that construction traffic impacts are minimised through the control of site access / egress routes and site locations and any temporary lane closure requirements. The impacts due to the interactions with land, soils and geology are anticipated to be ***negative, short-term and not significant*** for the construction phase.

During the operational phase, vehicle movements can generate pressure on road surfaces and adjacent soils and roads and parking areas can reduce the permeable soil cover. The proposed scheme introduces SuDS, permeable paving and landscaping to mitigate these potential impacts. The impacts due to the interactions with land, soils and geology are anticipated to be ***negative, long term and not significant*** for the operational phase.

Hydrology and Hydrogeology (Chapter 10)

Construction and operational stage traffic have the potential to impact on water quality via accidental hydrocarbon spills and leaks and via increased sediment / particle loading on trafficked surfaces.

Measures to mitigate against impacts are detailed in Chapter 9 (Land, Soils and Geology) and Chapter 10 (Hydrology and Hydrogeology). The impacts due to the interactions with hydrology are anticipated to be negative, short-term and not significant for the construction phase. The impacts due to the interactions with hydrology are anticipated to be ***negative, long-term and not significant*** for the operational phase.

Air Quality (Chapter 11)

Changes in traffic volumes resulting from the Proposed Development impacts levels of air pollutant emissions, i.e. from internal combustion engines. The presence of construction traffic at the site and on the surrounding road network also contributes to dust generation and deposition. These aspects of the Proposed Development are addressed under the scope of Chapter 11 (Air Quality), which is informed by the predicted traffic flows during construction and operation. The impacts due to the interactions with air quality are anticipated to be ***negative, short-term and not significant*** for the construction phase. The impacts due to the interactions with air quality are anticipated to be ***negative, long-term and not significant*** for the operational phase

Climate (Chapter 12)

Changes in traffic volumes resulting from the Proposed Development affects levels of air pollutant emissions, i.e. from internal combustion engines. These aspects of the Proposed Development are addressed under the scope of Chapter 12 (Climate), which is informed by the predicted traffic flows during construction and operation. The impacts due to the interactions with climate are anticipated to be ***negative, short-term and not significant*** for the construction phase. The impacts due to the

interactions with climate are anticipated to be ***negative, long-term and not significant*** for the operational phase.

Noise and Vibration (Chapter 13)

Changes in the locations and volumes of traffic resulting from the Proposed Development affect noise levels in the receiving environment. This topic has been addressed under the scope of Chapter 13 (Noise & Vibration), which is informed by the predicted traffic volumes during construction and operation. The impacts due to the interactions with noise & vibration are anticipated to be ***negative, short-term and not significant*** for the construction phase. The impacts due to the interactions with noise & vibration are anticipated to be ***negative, long-term and not significant*** for the operational phase.

Landscape and Visual (Chapter 14)

During the construction phase, the presence of a substantial construction site (including construction traffic entering and exiting the site) negatively affects visual amenity in adjacent areas. This subject is addressed under the scope of Chapter 14 (Landscape & Visual). The impacts due to the interactions with landscape and visual are anticipated to be ***negative, short-term and not significant*** for the construction phase. The impacts due to the interactions with landscape and visual are anticipated to be ***negative, long-term and not significant*** for the operational phase.

Material Assets – Waste (Chapter 19)

The generation of waste materials during the construction and operational phases creates the need for waste collection vehicles at the site and on the surrounding road network. Regard has been had to this aspect of the Proposed Development in the preparation of this chapter. The impacts due to the interactions with material assets are anticipated to be ***negative, short-term and not significant*** for the construction phase. The impacts due to the interactions with material assets are anticipated to be ***negative, long-term and not significant*** for the operational phase.

No likely significant effects are predicted in relation to any of the above-listed interactions. For further information, please refer to the other EIAR chapters referred to above.

21.2.13 Material Assets – Waste

Population and Human Health (Chapter 7)

During the construction phase, improper handling, storage or removal of construction waste has the potential to give rise to litter, interaction of vermin and short-term odour or contamination risks, all of which could adversely affect workers on site and the local population if unmanaged.

These risks will be minimised through strict adherence to the project specific RWMP and the mitigation measures outlined in Chapter 7 (Population and Human Health). Waste will be segregated at source, stored in covered containers and collected by permitted waste collectors in accordance with the Waste Management Acts. No waste will be stockpiled in public areas and no on site burning or uncontrolled disposal will occur.

With these measures in place, the potential for human exposure to waste, litter or vermin is very low. Following mitigation, the construction phase effects on population and human health will be ***short-term, imperceptible and neutral.***

If unmanaged, operational waste has the potential to affect human health through exposure to improperly stored or handled waste, particularly organic and hazardous materials. However, the

implementation of the OWMP will ensure that waste is segregated, stored in appropriate receptacles and collected regularly by authorised contractors. These measures will minimise risks associated with odours, pests and contamination, thereby protecting the health and wellbeing of future residents, workers and the surrounding community. Potential effects on Population and Human Health are addressed in Chapter 7. Following mitigation, the effects are expected to be ***long-term, imperceptible and neutral***.

Biodiversity (Chapter 8)

The potential impacts on biodiversity in relation to the generation of waste during the construction phase are that the incorrect management of waste could result in littering, pollution issues, spread of invasive species and/or vermin in areas affected. If invasive alien species (IAS) are identified during construction, an Invasive Species Management Plan (ISMP) will be implemented. Adherence to the mitigation measures set out in this chapter, and in Chapter **Error! Reference source not found.** (Biodiversity) will ensure the associated effect is ***neutral, imperceptible and short-term***.

The potential impacts on biodiversity in relation to the generation of waste during the operational phase are that the incorrect management of waste could result in littering, pollution issues or vermin in areas affected. Adherence to the mitigation measures set out in this chapter, and in Chapter **Error! Reference source not found.** (Biodiversity) will ensure the associated effect is ***neutral, imperceptible and long-term***.

Land, Soils and Geology (Chapter 9)

During the construction phase, there will be 21,860m^3 of topsoil and subsoil excavated to facilitate the Proposed Development. AKM Design Group have estimated that none of this material will need to be removed off-site.

The management of contaminated soil, if encountered, will be undertaken in accordance with the Land and Soils chapter and the RWMP. Proper classification and handling of soil waste will prevent degradation of land quality and avoid cross-contamination with clean materials. Potential effects on land and soils are addressed in Chapter 8. Adherence to the mitigation measures in Chapter 8. (Land, Soils and Geology), this chapter, and the requirements of the RWMP (**Appendix 19.1**), will ensure the effect is ***short-term, imperceptible and neutral***.

No interactions between waste and land and soils are predicted during the operational phase.

Hydrology and Hydrogeology (Chapter 10)

Improper storage or disposal of waste, particularly hazardous substances, has the potential to impact surface water and groundwater quality during the construction phase. The RWMP includes provisions for bunded storage of hazardous materials and protocols for managing contaminated soil. These measures will mitigate the risk of leachate or runoff entering watercourses and protect the hydrological environment. Potential effects on hydrology are addressed in Chapter 10 and, following the implementation of mitigation measures, are expected to be ***short-term, imperceptible and neutral***.

During the operational phase, the OWMP will ensure that liquid and cleaning chemicals are stored and disposed of in compliance with best practice to avoid water contamination. Potential effects on hydrology are addressed in Chapter 10 and, following the implementation of mitigation measures, are expected to be ***long-term, imperceptible and neutral***.

Climate (Chapter 12)

Waste management contributes to greenhouse gas (GHG) emissions, particularly through landfill disposal and transport. The RWMP prioritises reuse, recycling, and recovery of materials, which will reduce the volume of waste sent to landfill and associated emissions. Adherence to the mitigation measures in Chapter 12 (Climate), this chapter, and the requirements of the RWMP, will ensure the effect is ***short-term, imperceptible and neutral***.

Similarly, the OWMP will promote recycling and minimise residual waste during operation, reducing indirect emissions from waste transport and disposal. The direct and indirect effects of the Proposed Development on climate, such as GHG are addressed in Chapter 12, and following implementation of mitigation measures, are expected to be ***long-term, imperceptible and neutral***.

Traffic and Transportation (Chapter 18)

During the construction phase, the generation, handling and removal of waste will result in additional vehicle movements, primarily associated with the transport of excavated materials, construction waste and deliveries / collections of skips. These vehicle movements will occur alongside other construction related traffic and therefore will contribute to the overall short-term increase in traffic volumes in the vicinity of the works.

However, waste related traffic will be short-term and intermittent, confined to the active construction period and managed through the measures outlined in in Chapter 0 (Traffic and Transportation). Waste will only be removed by permitted collectors, and vehicle routing will follow agreed routes.

Provided the mitigation measures detailed in Chapter 0 and this chapter are adhered to, the predicted effects are ***short-term, imperceptible*** and ***neutral***.

During operation, waste arising from the Proposed Development will be managed through scheduled collections by licensed waste contractors. The OWMP will ensure efficient segregation, minimisation of residual waste and appropriately timed collections.

Provided the mitigation measures detailed in Chapter 0 and this chapter are adhered to, the predicted effects are ***long-term, imperceptible*** and ***neutral***.

21.2.14 Material Assets – Services

Population & Human Health (Chapter 7)

There is adequate capacity in existing infrastructure for the construction and operational stages of the Proposed Development. A risk to the human health of the installer from built services can occur as a result of any excavation work in areas where built services exist, through coming into contact with live electricity lines or damaging live gas or watermains. With the implementation of appropriate mitigation measures, the impact of the proposed built services on human health is likely to be ***negligible***.

Land, Soils & Geology (Chapter 9)

Construction of the Proposed Development will require the removal of topsoil and earthworks to facilitate the construction of the road and infrastructure service provision, storage systems, etc. These initial and short-term adverse impacts would be ameliorated through the re-use of soils for fill, levelling and landscaping works resulting in a neutral impact. Additionally, trench excavations to facilitate site service installation will result in exposure of subsoils to potential erosion and subsequent sediment generation. Mitigation measures are outlined in Chapter 9 Land & Soils (i.e. service trenches to be backfilled as soon as practicable to minimise potential erosion of subsoils).

Hydrology & Hydrogeology (Chapter 10)

The Proposed Development is designed to comply with the recommendations of the GDSDS, including the provision of SUDS, and is therefore unlikely to have any residual impacts in terms of the impact on hydrology and hydrogeology

22 Cumulative Impacts

22.1 Introduction

This chapter discusses the potential for cumulative impacts to arise as a result of the Proposed Development in combination with other projects.

Annex III (3)(g) of the EIA Directive requires the EIAR to include the potential for significant cumulative effects of projects on the environment and it states to include "*the cumulation of the impact with the impact of other existing and/or approved projects*." Annex IV (5)(e) of the EIA Directive states that EIAR should include "*the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources*."

The European Commission *Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions* (1999) define cumulative impacts as "*Impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project"* (p. iii).

Similarly, the EPA guidelines define cumulative effects as *"The addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects"* (Section 3, p. 52). The EPA guidelines further state that:

> *"While a single activity may itself result in a minor impact, it may, when combined with other impacts* (*minor or insignificant*), *result in a cumulative impact that is collectively significant. For example, effects on traffic due to an individual industrial project may be acceptable; however, it may be necessary to assess the cumulative effects taking account of traffic generated by other permitted or planned projects. It can also be prudent to have regard to the likely future environmental loadings arising from the development of zoned lands in the immediate environs of the proposed project."* (Section 3, p. 54)

22.2 Assessment of Cumulative Impacts

Cumulative impacts have been assessed by taking account of the baseline environment and the predicted impacts of the construction and operation of the Proposed Development in combination with those of other existing and / or permitted projects in the zone of influence relevant to individual environmental factors.

Therefore, each of the specialist contributors to this EIAR have considered the potential for cumulative impacts to arise, with particular reference to the projects listed in this Chapter.

This EIAR has considered three categories of potential cumulative plans / projects for the Proposed Development based on the following:

- Existing or commenced projects with a valid planning permission within the vicinity of the Proposed Development that have the potential for significant cumulative effects with the Proposed Development;
- Approved projects with a valid planning permission that have not commenced construction but with potential for significant cumulative effects with the Proposed Development; and
- Proposed projects that do not have planning permission but have the potential for significant cumulative effects with the Proposed Development.

22.3 Key Plans and Developments

A search for other developments that may have the potential to result in cumulative impacts with the Proposed Development was carried out, and a list of key developments for consideration was developed (Table 22.1). In identifying these developments, the following principal sources were consulted (as of May 2026):

- Fingal City Council planning portal;
- Fingal City Council weekly lists of applications received;
- An Coimisiún Pleanála (ACP) website;
- Department of Housing, Local Government and Heritage EIA Portal;
- Fingal Development Plan 2023-2029.

As detailed in Chapter 3 (Planning and Development Context) the Proposed Development lies within the FCC administrative area. Therefore, the site is subject to the land use policies and objectives of the Development Plan, which has zoned the lands in question as RA, 'Residential Area' with the objective to *"provide for new residential communities subject to the provision of the necessary social and physical infrastructure".* As such, the use of the lands as proposed in this application is in accordance with the zoning and envisaged future development for the lands, as set out in the Development Plan.

As required under Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (the 'SEA Directive') and the Habitats Directive, a Strategic Environmental Assessment (SEA) and Appropriate Assessment (AA) have been completed in respect of the Development Plan, respectively.

Table 22.1 provides a list of relevant permitted and Proposed Developments in the vicinity of the site, which have been given due consideration in the assessment of potential cumulative impacts. Figure 22.1 maps these developments in relation to the Proposed Development site.

It is noted that the list of developments in this Chapter is non-exhaustive. There are a wide variety of other applications and permissions in the area. However, minor developments, such as one-off housing, erection of signage and other minor structures and extensions, have been excluded due to the absence of potential for significant cumulative impacts. Lapsed and refused permissions have also been excluded.

22.4 Conclusion

For topic-specific assessments of the potential for cumulative impacts, please refer to the foregoing specialist EIAR chapters. Assuming the full and proper implementation of the mitigation measures set out in this EIAR, it has been assessed within those specialist chapters that no significant negative cumulative impacts are likely to arise during the construction or operational phases of the Proposed Development.

Table 22.1 Developments to which regard has been had in the assessment of potential cumulative impacts.

Reg. Ref.	Applicant	Location	Description – Overview	Status	Environmental Assessments
Permitted or Proposed Developments					
FCC Ref. LADP/002/24	Fingal County Council (Architects Department)	Rathbeale Road, Mooretown, Swords, Co. Dublin	**Mooretown Phase 1 Residential Development** FCC Architects Department applied for permission on 31st May 2024 for a Local Authority own housing development under Section 179A of the Planning and Development Act 2000, as amended. The Proposed Development comprises the construction of 274 no. residential units (187 no. houses and 87 no. duplex/apartments, 2-5 no. storeys) with a mix of 1–4 bed homes. It includes extensive landscaping with c.18,065 sq.m of open space, eight pocket parks, and new pedestrian and cycle links. Provision is made for 415 no. car parking spaces and 1,143 no. bicycle spaces, alongside comprehensive site and infrastructural works, including drainage, SuDS measures, PV panels, utilities, and all associated landscaping and services.	Granted Permission (by FCC during monthly council meeting) Link to FCC meeting. 13/05/2024 Under construction	EIA Screening, AA Screening
FCC Ref. LRD0067/S3E	Glenveagh Homes Limited	Townland of Mooretown, Co. Dublin. Two sites - the larger of the sites (5.50 Ha, to the north) is generally bound by: Cronan's Well.	**Amendment to Permitted Phase 2A and Phase 3 Residential Development in Mooretown** Glenveagh Homes Ltd. applied for permission on 3rd November 2025 for a LRD, including permission for amendments to previously permitted developments (FCC Reg. Ref. F23A/0504 (also known as Mooretown Phase 2A) and ABP Ref. 313362-22 (a 'Strategic Housing Development' (SHD), known as both Mooretown Phase 3 and the Mooretown SHD), at these 2 no. sites totalling c. 6.34 Ha in the townland of Mooretown, north-west of Swords, Co. Dublin. Amendments to Phase 2A include the omission of 3 no. residential units (all 4-bed), the partial realignment of the permitted Cronan's Well Road; and alterations to car parking and landscaping.	Granted Permission by FCC with 36 Conditions 11/02/2026	EIA Screening, AA Screening

Reg. Ref.	Applicant	Location	Description – Overview	Status	Environmental Assessments
			Amendments to Phase 3 include the omission of 196 no. residential units (43 no. 1-bed, 120 no. 2-bed and 33 no. 3-bed), comprising 8 no. houses and 188 no. apartments; and alterations to the internal road network, car parking, crèche drop-off spaces, open space and landscaping. Permission is also sought for a mixed-use development with a gross floor area of 34,055.2 sq.m and ranging in height from 1 no. to 5 no. storeys that principally comprises: 381 no. residential dwellings (89 no. 1-bed, 198 no. 2-bed, 88 no. 3-bed and 6 no. 4-bed) (29,704.9 sq.m), of which 156 no. are houses (84 no. 2-bed, 66 no. 3-bed and 6 no. 4-bed) and 225 no. are apartment units (89 no. 1-bed, 114 no. 2-bed and 22 no. 3-bed) (including triplex typologies); 2 no. commercial units (totalling 257.6 sq.m); and a childcare facility (494.2 sq.m). Permission is also sought for: internal road, cycle and footpath network; modifications to existing road, junction and car parking arrangements at Main Street, including omission of 2 no. crèche drop-off spaces (permitted as part of the Mooretown Phase 3 development), removal of an existing car parking zone and removal/relocation of 3 no. junctions at Main Street; 500 no. car parking spaces; 23 no. motorcycle parking spaces; cycle parking stores and spaces; hard and soft landscaping, including public open space, communal amenity space and incidental open space; private amenity space as gardens, and balconies and terraces facing all directions; public lighting; bin stores; plant rooms; rooftop PV panels, plant and lift overruns; green roofs; 4 no. sub-stations; and all associated works above and below ground.		
FCC Ref. F25A/0585E	Glenveagh Homes Limited	3 No. sites in the townlands of Oldtown and Rathbeal, north-west of Swords, County Dublin.	**Development of Oldtown Phases 2A, 2B and 2C.** A proposed residential development at these 3 No. sites with a combined site area of 1.2 Ha in the townlands of Oldtown and Rathbeal, north-west of Swords, County Dublin. The sites are identified as the remaining, undeveloped portions of the larger plots known as Oldtown Phases 2A, 2B and 2C. As part of the application, permission is also	Granted Permission by FCC with 28 Conditions 22/01/2026 Under Construction	EIA Screening, AA Screening

Reg. Ref.	Applicant	Location	Description – Overview	Status	Environmental Assessments
			sought for amendments to the public open space permitted under Reg. Ref. F23A/0676 at Oldtown Phase 2C.		
FCC Ref. SHD/012/21 ACP Ref. ABP-313362	Gerard Gannon Properties	Lands to the south of Rathbeale Road and to the north and south of Main Street, Mooretown Distributor Road, Celestica/Motorola site, Swords, Co. Dublin	**Mooretown SHD along Rathbeale Road** Gerard Gannon Properties applied to the Bord for a SHD consisting of 650 no. units (265 no. houses and 385 no. apartments), a crèche facility and associated site works.	Granted Permission by ACP with 31 Conditions 31/03/2023 Under Construction	EIAR, NIS
FCC Ref. SHD/004/20 ACP Ref. ACP-313302	Gerard Gannon Properties	Lands to the north of Rathbeale Road and to the west of and north of Miller's Avenue and Glen Ellan Road, Oldtown, Swords, Co. Dublin.	**Oldtown Strategic Housing Development** Removal of the temporary site structures, construction of a total of 377 no. residential units (173 no. houses, 204 no. apartments), crèche and associated site works.	Granted Permission (by ACP with 32 Conditions. 22/02/2023 Under Construction	AA Screening, NIS. Winter Bird Surveys
FCC Ref. F23A/0504	Gerard Gannon Properties	Lands south of Rathbeale Road and to the North of Main Street and to the East of, Mooretown Distributor Road (Western Distributor Link Road), Mooretown, Swords, Co. Dublin.	**Residential Development in Mooretown along Rathbeale Road** Permission for a residential development was applied for on 24th August 2023. The Proposed Development will comprise the construction of 96 no. residential units including 46 no. houses and 50 no. duplex units (25 no. apartment units and 25 no. duplex 'house' units) comprising 25 no. 1-bed units, 55 no. 3-bed units and 16 no. 4-bed units. A total of 128 no. car parking spaces is proposed and 326 no. bicycle spaces located within external bike stores, landscaping, boundary treatments, public lighting, future pedestrian access to adjoining school lands and all associated site infrastructure are proposed.	Granted Permission by FCC with 25 Conditions 11/06/2024 Under Construction	EIAR, NIS
FCC Ref. F23A/0676	Gerard Gannon Properties	Lands to the south of Glen Ellan Road, to the east of Miller's Avenue, north of	**Permission to Complete Residential Development**	Permission Granted by FCC with 24 Conditions	N/A

Reg. Ref.	Applicant	Location	Description – Overview	Status	Environmental Assessments
		Rathbeale Road, Oldtown, Swords, Co. Dublin	The Proposed Development will comprise the construction of 23 no. 3-bed, 2- storey houses and 1 no. 2- storey crèche as previously permitted under F11A/0473, F19A/0101 (ABP Reg. Ref. 307003-20), F11A/0473/E1 and F11A/0473/E2.	19/03/2024 Under Construction	
FCC Ref. F15A/0183/E2	Gerard Gannon Properties	Lands South of the Rathbeale Road, Mooretown, Swords, Co. Dublin.	**Extension of Duration for Watermill Park/Phase 1C of Mooretown Development** The proposed permission was registered on 1st November 2023 for extension of duration to construct 190 no. houses (72 no. 4-bedroom 2-storey houses, 15 no. 3-bedroom 3-storey houses and 103 no. 3-bedroom 2-storey houses and 60 no. apartments 4 no. blocks of 15 no. apartments each (with 4 no. 1-bedroom apartments and 11 no. 2-bedroom apartments in 3-storey plus penthouse.) The development includes all associated site works and infrastructure which includes landscaped open space, internal roads, paths, cycle-paths, public lighting, utilities, drainage and surface water attenuation.	Granted Permission by FCC for the Extension of Duration with 3 Conditions 08/12/2023 Under Construction.	EIS
FCC Ref. F18A/0701/E1	Gerard Gannon Properties	Lands south of the Rathbeale Road, and east of the Swords Western Distributor Link Road, and north of Watermill Park, Mooretown, Swords, Co Dublin	**Extension of the Duration for Permission** (**Mooretown Phase 1A**) The permission includes omission of 43 no. houses and 15 no. apartments (58 units in total) and the constructions of 39 no. houses and 60 no. apartments (99 no. units in total), a crèche of c. 352 no. sq.m and 153 no. car parking spaces. This application is referred to as Phase 1A and is the of 3 no. planning applications to revise the parent permission F15A/0183. Planning permission originally granted under F18A/0701 will cease to have effect on 7th August 2024 and an extension is south until 7th August 2026. It is noted that construction on the apartments could not proceed with construction due to funding issues.	Granted Permission by FCC for the Extension of Duration with 3 Conditions 08/12/2023	N/A

Reg. Ref.	Applicant	Location	Description – Overview	Status	Environmental Assessments
FCC Ref. LRD0080/S3E	Cairn Homes Properties Limited	Estuary West Lands at Holybanks, Swords, Co. Dublin	**Amendment to Permitted LRD at Holybanks, Swords** The Proposed Development is an amendment to the permitted development FCC Reg. Ref.: LRD0018/S3E. The amendments will consist of changes to 1. the locations and dimensions of the permitted ESB substations and bin and bicycle stores including the relocation of some bicycle storage space into the ground floor of block 10; 2. Condition 5; and 3. Condition 23 Permission is also sought for all associated works to accommodate the proposed changes. The remainder of the permitted development, including accesses, site services, and all other works will be delivered as permitted under FCC Reg. Ref.: LRD0018/S3E.	Permission Granted by FCC with 4 Conditions 12/02/2026 Awaiting Construction	Ecology Note
FCC Ref. LRD0018/S3E ACP Ref. ACP-323029	Cairn Homes Properties Limited	Estuary West Lands at Holybanks, Swords, Co. Dublin	**Large Residential Development at Holybanks, Swords** Large-Scale Residential Development at this c.13.57 ha (gross) site located within the Estuary West Lands at Holybanks, Swords, Co. Dublin. The main development site is bounded by Glen Ellan Road to the south, Jugback Lane/Terrace to the west, the former Celestica factory site to the east and the Broadmeadow River to the north. Junction and road improvement works are proposed to the Glen Ellan Road / Balheary Road junction and the R132 Dublin Road / R125 Seatown West Roundabout. The Proposed Development will consist of a residential scheme of 640 no. units (219 no. 1-bed units, 281 no. 2-bed units, 119 no. 3-bed units	Appeal lodged to ACP 14/07/2025 Appeal to ACP withdrawn 29/09/2025 Permission Granted by FCC with 43 Conditions 09/10/2025	EIA, NIS

Reg. Ref.	Applicant	Location	Description – Overview	Status	Environmental Assessments
			and 21 no. 4-bed units) along with childcare facility (c.537 sq.m in proposed Block 11).		
FCC Ref. F25A/1120E ACP Ref ACP-500881	Kavco Estuary Project Ltd.	The Estuary, Townparks, North Street, Swords, Co. Dublin, K67 E840	**The Estuary Residential Development** Planning permission is sought for: i) Demolition of the existing two-storey public house known as 'The Estuary'; ii) The construction of a part four-, part five-storey flat-roofed mixed-use building, comprising 39 no. apartments (25 no. 1-bed and 14 no. 2-bed units) arranged over ground to fourth floor levels, with the fourth floor set back from Balheary Road and North Street; iii) Provision of 1 no. ground-floor commercial/retail unit fronting Balheary Road; iv) All apartments will have direct access to an area of private amenity space in the form of a balcony/terrace and will have shared access to communal amenity space including a landscaped ground-level courtyard and a roof-level communal amenity garden; v) Provision of 94 no. secure bicycle spaces and 8 no. cargo bike spaces within an internal store, and 20 no. visitor bicycle spaces proposed within the courtyard at ground floor level; (vi) Provision of refuse storage, plant rooms and ESB substation at ground floor level; (vii) All ancillary works including landscaping, boundary treatments, SuDS drainage (including blue green roofs), and all associated site services, site infrastructure and associated site development works necessary to facilitate the development.	Permission Refused by FCC with 5 Conditions 04/02/2026 Appeal lodged with ACP 02/03/2026 Awaiting ACP decision	AA Screening, SSRA

Reg. Ref.	Applicant	Location	Description – Overview	Status	Environmental Assessments
FCC Ref. F24A/1125E ACP Ref. ACP-233489	Rathbeale Developments Limited	Lands at the junction of Rathbeale Road and Watery Lane, Swords, Co. Dublin	**Residential Development at the junction of Rathbeale Road and Watery Lane, Swords** Planning permission is sought for the (i) demolition of vacant/derelict single-storey shed; (ii) construction of a residential development of 36 no. apartments (16 no. one bedroom and 20 no. two-bedroom) within 2 no. apartment blocks (Block 1 of four-storey height, with set-back fifth floor level and roof terrace, and containing 27 no. apartments and Block 2 of three-storey height and containing 9 no. apartments); (iii) all apartments will have direct access to an area of private amenity space, in the form of a garden/balcony and will have shared access to 322sq.m of external communal amenity space at ground/roof terrace levels and bin store/bicycle stores at ground floor level; (iv) provision of 14 no. vehicular parking spaces (inclusive of 1 no. accessible spaces) and 2 no. motorcycle parking spaces at ground level accessible via Watery Lane; and (v) all ancillary works including tree removal/planting, landscaping, boundary treatments, visitor bicycle parking, SuDS drainage and all site services, site infrastructure and associated site development works necessary to facilitate the development.	Permission Refused by FCC 29/07/2025 Permission Granted by ACP with 22 Conditions 23/12/2025 Awaiting Construction	NIS, EcIA, Bat Survey, Tree Survey
FCC Ref. YA06F.304624	Fingal County Council	Malahide Demesne, Kilcrea, Newbridge Demesne, Donabate, Fingal, County Dublin	**Broadmeadow Way - Greenway between Malahide Demesne and Newbridge Demesne** The greenway would travel along a linear site extending c. 6km in length between Malahide Castle and Newbridge House and their surrounding parklands. The site travels through various landscapes including demesne landscapes and parklands, estuarine/coastal landscape (foreshore), rural/agricultural lands and urban and residential environments. It commences at Malahide Demesne, then travels along the northern side of the R106 regional road, through a residential laneway (O'Hanlon's Lane) and onto Bissets Strand. At that point it rises	Permission granted by ACP 19/05/2020. Under construction	EIAR; NIS

Reg. Ref.	Applicant	Location	Description – Overview	Status	Environmental Assessments
			to the same level as the Dublin to Belfast railway embankment and crosses Malahide Estuary alongside the existing railway line. The site continues through agricultural lands at Kilcrea and crosses the River Pill at two locations. It continues onwards to Corballis road and then travels westwards through agricultural lands, after which it crosses the new Donabate Distributor Road (Phase 1). Thereafter it crosses Hearse Road and travels onwards to its finishing point at Newbridge Demesne.		
TA06F.306794	Elchoir Construction Limited	Lands adjacent to the existing residential development known as 'The Gallery', Turvey Walk, off Turvey Avenue, To the west of Donabate Train Station, Donabate, Co. Dublin	**Residential Development at Turvey Avenue** Elchoir Construction Limited lodged a SHD planning application to An Bord Pleanàla on 4th March 2020 at lands adjacent to the existing residential development known as 'The Gallery', Turvey Walk, off Turvey Avenue, to the west of Donabate Train Station, Donabate, Co. Dublin. The development consists of 144 no. apartments and 1 no. retail unit in three blocks, all over a single basement. The site has a total area of 1.16ha with a density of 124 units per hectare and is 3-5 storeys in height over basement.	Permission granted by ACP 10/08/2020. Under construction	EIA Screening; AA Screening
F20A/0630	Drumargh Ltd	Lands at Turvey Walk, fronting Turvey Avenue, adjacent to Donabate Train Station, and the residential development of The Gallery, Donabate, Co Dublin	**Mixed-use Development at Turvey Walk** Permission for a mixed use (Retail convenience foodstore, 4 no. retail units and a café unit) development in 2 no. Blocks as follows: 1) Block 01: Two storey structure (with plant room at roof level) comprising 4no. retail units at ground floor level, internal ESB substation, car park at ground floor level, providing for car and bicycle parking spaces, and a licensed retail convenience foodstore at first floor level (1,187m²net floor area) including an off licence. 2) Block 02: Change of use of existing residential dwelling and provision of an extension to now provide for a single storey café unit. 3) Demolition of shed structure, removal of portacabin and construction of a public plaza development with	Permission granted by FCC 09/05/2021.	

Reg. Ref.	Applicant	Location	Description – Overview	Status	Environmental Assessments
			landscaping, seating and bicycle parking to serve Block 2. 4) Utilisation of existing vehicular and pedestrian access with associated widening and improvements, including provision of a right hand turn on Turvey Avenue. 5) New internal access roundabout with associated landscaping. 6) Loading Bay. 7) Landscaping. 8) Boundary Treatments. 9) And all ancillary site and engineering works necessary to facilitate the development.		
FCC Ref. PARTXI/004/21 (Part 8)	Fingal County Council	Ballymastone, Donabate, Co. Dublin	**Ballymastone Recreational Hub** This multifunctional campus will provide for an extensive range of sporting and recreational activities as a shared public facility; these include a floodlit 8 no. lane all-weather athletics track surrounding a grass soccer sized pitch, a full sized all-weather GAA pitch which also provides for 2 no. all-weather soccer pitches with flood lighting, a combined playground and skate park, car / cycle parking, a 6m wide access road, extensive walking and cycling infrastructure, bleacher seating and extensive landscape planting .	Permission Granted by FCC 14/09/2021 Under construction	AA Screening; EIA Screening; SSFRA
FCC Ref. PARTXI/002/22	Fingal County Council (Economic Enterprise Tourism and Cultural Development Department)	Adjacent to Fingal County Hall and Swords Castle - the road junction of North Street, Seatown Road, Bridge Street and Main Street, Swords	**Swords Cultural Quarter (SCQ)** The proposed creation of a Cultural Quarter, Swords Cultural Quarter (SCQ), within Swords Town centre, Co. Dublin, in proximity to Fingal County Hall and Swords Castle [a National Monument (No.340), Recorded Monument (RMP Ref. DU011-034001-) and Protected Structure (No.351)], with an overall site area of 15,751m2 (3.89 acres) comprising: the road junction of North Street, Seatown Road, Bridge Street and Main Street, Swords; Fingal County Council Executive car park (site area: 2,400m2) at the junction of North Street and Seatown Road; St. Michael's House, Seatown Road (site area: 542m2); Swords District Court House (a Protected Structure (RPS No.350); 4 no. terraced 2-storey commercial vacant properties at Units 1-4 No.20 North Street;	Permission Granted by FCC 12/09/2022 Under Construction	EIA Screening, AA Screening, Ecology Survey

Reg. Ref.	Applicant	Location	Description – Overview	Status	Environmental Assessments
			Fingal County Hall external public space (site area: 1,881m2); vacant plots at No.'s 1 – 8, 10-13, 15 North Street adjacent to Swords Castle; a single storey commercial property at 17 North Street and Chamber House 17A North Street; single storey structure located on North Street (west side); and the existing side entrance area of Swords Park accessed from North Street, Swords. The site is located within the boundary of the Zone of Notification for the Historic Town of Swords RMP DU011-35.		
FCC Ref. PARTXI/006/24	Fingal County Council (Architects Department)	Woodside, Swords	**Part 8 – Woodside, Swords Social Housing** 34 social units proposed in Woodside Swords between Foxwood and Mountgorry, along Clifford's Lane.	Permission Granted by FCC 10/03/2025 Awaiting Construction Due for Completion Q1 2027	EcIA, AA Screening
FCC Ref. PARTXI/006/22	Fingal County Council	Seatown Road, Swords, Co. Dublin.	**Stage 1B Seatown Rd** 36 No. apartments and associated site works.	Permission Granted by FCC 13/03/2023 Under Construction	EIA Screening, AA Screening
ACP Ref. ACP- 314253	Fingal County Council	Pinnock Hill, Fosterstown North, Swords, Co. Dublin	**Pinnock Hill SHD, Fosterstown, Swords** 7-year permission for 219 no. apartments, crèche and all associated site works.	Permission Granted by ACP with 26 Conditions 30/03/2023 Under Construction	EIAR, AA Screening
FCC Ref. LRD0025/S3E	Bartra Propco No. 23 Limited	A site fronting the Swords to Malahide Road (R106),	**Mountgorry LRD, Malahide Rd, Swords** The Proposed Development will principally consist of: the construction of 123 No. residential units (55 No. one bed apartments and 68 No. two	Permission Refused by FCC 20/11/2024	

Reg. Ref.	Applicant	Location	Description – Overview	Status	Environmental Assessments
ACP Ref. ACP-321455		Mountgorry, Swords, Co. Dublin	bed apartments). The development will be provided in a courtyard block arrangement ranging in height from part 4 No. to part 5 No. storeys. The Proposed Development has a gross floor area of c. 10,291 sq m.	Permission Granted by ACP Awaiting Construction	
FCC Ref. LRD0057/S3E	Golden Port Homes Limited	Lands at Forest Road, Swords, Co. Dublin	**Forest Road LRD, Swords** The Proposed Development will consist of a total of 109 no. residential units (42 no. duplex units; 41 no. apartments; 26 no. houses).	Permission Granted by FCC with 27 Conditions 12/12/2025 Awaiting construction	
FCC Ref. SHD/013/21 ACP Ref. ACP- 313223	Jacko Investments Limited	The Lord Mayor's Public House, Main Street, Swords, Co Dublin, K67 W8N4	**Lord Mayor SHD, Main Street Swords** Demolition of the existing buildings, construction of 146 no. apartments, crèche and associated site works.	Permission Granted by ACP 03/04/2023 Under Construction	EIAR, NIS
FCC Ref. LRD0039/S3 ACP Ref. ABP-320885-24	Glenveagh Living Limited	Lands at Ballymastone, Donabate, Co Dublin	**Ballymastone Phase 2** The development consists of the construction of a residential development, which represents Phase 2 of the wider development of the Ballymastone Lands (as identified in the Donabate Local Area Plan 2016 (as extended)), ranging in height from 2 to 6 storeys to accommodate 364 no. residential dwellings (including a mix of apartments, duplexes and houses), a foul pump station and public open space. The site will accommodate 278 no. car parking spaces, 1457 total no. bicycle parking spaces, new pedestrian/cycle links, road improvements, storage, services and plant areas. Landscaping will include communal amenity areas, and a significant public open space provision.	Permission Granted by An Coimisiún Pleanàla on 13/01/2025. Under construction	EIA,NIS,SSFRA

Reg. Ref.	Applicant	Location	Description – Overview	Status	Environmental Assessments
FCC Ref. LRD0064/S3E	Cairn Homes Properties Limited	Corballis East, Donabate, County Dublin	**Aledo Donabate Residential Development Amendment** The proposed amendments relate to part of the Main Residential Development Site, as permitted under LRD0017/S3, to the north of the Donabate Distributor Road (DDR) only. The proposed amendments result in an overall decrease of 21 no. units, from 1,020 no. units previously permitted to 999 no. now proposed.	Permission Granted by FCC with 39 Conditions 25/02/2026 Under Construction	AA Screening
FCC Ref. LRD0017/S3	Aledo Donabate Ltd	Corballis East, Donabate, Co Dublin	**Aledo Donabate Residential Development** The development consists of the construction of 1,020 no. new residential dwellings on the Main Residential Development Site, provision of 2 no. childcare facilities, provision of 3 no. retail units, 2 no. café units, a community use unit and a medical centre at the proposed local centre area, total of 902 no. car parking spaces are proposed, 39 no. on-street visitor parking spaces, together with a total of 3,013 no. bicycle parking spaces, series of public parks, open spaces, pocket parks and communal open spaces are proposed throughout the Main Residential Development Site, provision of the Corballis Nature Park, vehicular access to the Main Development Site will be via two existing junctions from the DDR to the south and a new vehicular entrance to the north-east at New Road and all other ancillary works above and below ground on a site of approximately 41.9 ha.	Permission Granted by FCC with 48 Conditions 04/04/2024 Under Construction	EIAR, NIS, SSFRA
FCC Ref. F24A/0169	Marshall Yards Development Company Limited	Corballis East, Donabate, Co Dublin	**Residential Development at Corballis East** The permitted development, which will have a total Gross Floor Area of 8,028 sq.m, will consist of: the construction of a Residential Development comprising 98 no. units including 70 no. two storey houses, 4 no. three storey 4 bed houses, and 6 no. two storey	Permission granted by FCC 28/01/ 2025.	EIA Screening, AA Screening and NIS

Reg. Ref.	Applicant	Location	Description – Overview	Status	Environmental Assessments
			maisonette buildings comprising a total of 24 no. 1 bed units. The development will also comprise of: alterations to the access road associated with the Residential Development permitted under Fingal County Council Reg. Ref. F22A/0527; the provision of internal roads and footpaths; pedestrian connections to the Donabate Distributor Road; pedestrian and vehicular connections to the adjoining site to the west (subject to a Live planning application for a Large-Scale Residential Development as per Fingal County Council Reg. Ref. LRD0017/S3); 73 no. car parking spaces; 5 no. car club spaces; bicycle and bin stores; hard and soft landscaping; balconies and terraces; boundary treatments; solar panels; 2 no. ESB substations; public lighting; and all other associated site and development works above and below ground.		
FCC Ref. SHD/006/20 ACP Ref. ABP-311059-21	Aledo Donabate Limited	Corballis East, Donabate, Dublin	**Residential Development at Corballis East** The development consists of the construction of a residential development of 1,365 no. new residential dwellings (including a mix of apartments and houses), residential amenities, 3 no. childcare facilities, 7 no. retail/café units, car parking spaces, 2,613 bicycle parking spaces, public open spaces, road improvements and services.	Permission Granted with Conditions by ACP 10/11/2022. Under construction	EIAR, NIS, AASR
F22A/0527	Glenveagh Homes Limited	Corballis East, Donabate, Co Dublin	**Residential Development at Corballis East** The development, which will consist of: the construction of 96 No. residential units, 1 No. two storey crèche, vehicular access from the Donabate Distributor Road; internal roads, footpaths and a shared pedestrian and cyclist link, 166 No. car parking spaces bicycle and bin stores; hard and soft landscaping; boundary treatments; green roof; solar panels; plant; 2 No. ESB substations; lighting; signage; drainage works; and all other associated site and development works above and below ground.	Permission Granted by FCC 30/08/2023 Under Construction	AA, NIS, EcIA, Archaeological Assessment; SSFRA; EIA Screening

Reg. Ref.	Applicant	Location	Description – Overview	Status	Environmental Assessments
FCC Ref. F23A/0192	Aledo Donabate Ltd	Corballis East, Donabate, County Dublin	**Corballis East Construction Access** The development will consist of the provision of construction access and haul road (total length approx. 494m), to facilitate the construction of development permitted under Reg. Ref. F20A/0204 (ABP PL06F.308446), on a site of approx. 1.1ha. The haul road extends from the existing access onto the Donabate Distributor Road (R126), northwards towards Main Street, Donabate, to connect with the site associated with Reg. Ref. F20A/0204 (ABP PL06.308446). The haul road infrastructure works include: • Temporary road surface finish with a width of approx. 5.5m and length of approx. 494m; • Incorporation of swales along the proposed haul road edge which will discharge to a temporary drainage basin; and • All ancillary and associated site development, drainage, landscape and boundary treatment works. It is intended that this additional haul route will assist in reducing the level of construction traffic accessing the site via the permitted construction and development access from Main Street, Donabate. On completion of development permitted under Reg. Ref. F20A/0204 (ABP PL06F.308446), the extent of the haul route will be reinstated to its current agricultural use or incorporated into future development of zoned lands at Corballis East.	Permission Granted by FCC 25/07/2023 Under construction	AA, EcIA,
FCC Reg. Ref. LADP/0001/24 (S179A)	Fingal County Council	New Road, Donabate, Co. Dublin	**Section 179A – New Road, Donabate** FCC intends to carry out a housing development under S179A(5) of the Planning and Development Act 2000 (as amended) on a c. 4.72ha site at New Road, Donabate, Co. Dublin. The proposed housing development will include for the construction of 175 no. dwelling units and a single storey crèche of c. 365 sq.m. The development will also include 2 no. multi-modal exits onto New Road, 2	Approved by FCC 08/04/2024 Under Construction	AA Screening

Reg. Ref.	Applicant	Location	Description – Overview	Status	Environmental Assessments
			no. multi-modal connections to existing and under construction developments to the north and east, 139 no. car parking spaces, cycle parking, bin stores, hard and soft landscaping, PV panels, public and community amenity spaces and all associated site development works. The Proposed Development was put to Councillors at a meeting held on 8th April 2024, where the proposal was subject to 5 no. motions proposed by Councillors. The agenda item relating to the Proposed Development was noted by Councillors, and construction has commenced.		
FCC Ref. F18A/0335	Bovale Developments Unlimited Company	Holywell, Swords, Co. Dublin.	**Hollywell, Swords** A residential development on a 0.77 ha site bounded by Holywell Avenue and Holywell Court to the east, Holywell Drive and Holywell Gardens to the south and to the north and west by the recently constructed link road section that links to the R125 to the south and Mountgorry Way to the east. Access to the site is from the recently constructed link road section that bounds the development to the north. The Proposed Development comprises 29 dwellings in the following mix: A 2/3 storey duplex/apartment building 7 no. 2-bedroom ground floor apartments, 2 no. 1-bedroom ground floor apartments, 9 no. 3-bedroom duplex units and 2 no. 2-bedroom two storey apartments. The development also consists of 9 no. two houses comprising 3 no. 3-bedroom mid-terraced Type B units; 2 no. 3-bedroom end of terrace Type B1 units; 2 no. 4-bedroom semi-detached Type C units and 2 no. 3-bedroom semi-detached Type D units together with all associated site development/car parking/landscaping works.	Permission Granted by FCC with 19 Conditions 03/01/2019 Under Construction	EcIA, Tree Survey

Reg. Ref.	Applicant	Location	Description – Overview	Status	Environmental Assessments
FCC Ref. LRD0055/S3E	Bovale Developments Unlimited Company	Barrysparks and Crowscastle (lands generally bound by the R132 to the north, Lakeshore Drive to the west, Drynam Road to the east and the Holywell Distributor Road to the south)., Swords, Co. Dublin	**Barrysparks LRD** The development will consist of a Large-scale Residential development (LRD) of 530no. residential units and crèche in 4no. blocks with a total gross floor area (GFA) of 49,210sq.m (excluding basement car parking) with associated ancillary accommodation, private balconies, communal amenity spaces and public open spaces. The development will be accessed from the south via a connection to the existing roundabout on the Holywell Distributor Road and from the north via a fully signalised junction with the R132 including works to the north and south bound carriageways and central median of the R132 to provide for the fully signalised junction with associated turning lanes and a separate pedestrian and cycle crossing on the R132. Permission is also sought for hard and soft landscaping in public realm and public open spaces within the development, cycle and motorcycle parking, bin stores, water supply and foul water connections, surface water infrastructure, connections to public utilities, ESB substations, plant areas, roof mounted photovoltaic (PV) panels, building and directional signage and all associated site and development works. A 10-year permission is sought.	Additional Information received by FCC 16/02/2026 AI Deemed Significant by FCC 11/03/2026	EIAR/NIS
FCC Ref. F24A/1179E	Kinwest Limited	Lands at Auburn House, Malahide, Co. Dublin	**Amendment to Auburn House Residential Development** The Proposed Development seeks to provide amendments to the previously permitted development at the subject site, granted under Reg. Ref. F22A/0581 (ABP Ref. 316504-23). The proposed changes will see a net reduction of 6 no. units from 91 no. residential units (44 no. housing units, 34 no. apartment units, and 13 no. duplex units), to now provide 85 no. residential units (54 no. housing units and 31 no. duplex units).	Permission Granted by FCC with 13 Conditions 19/05/2025 Under Construction	

Reg. Ref.	Applicant	Location	Description – Overview	Status	Environmental Assessments
			The Proposed Development will also comprise of revisions to the pumping station previously granted under Reg. Ref. F22A/0579, ABP Ref. 316444-23; F22A/0580, ABP Ref. 316498-23 (as further amended by Reg. Ref. F24A/0811E and Reg. Ref. F24A/0812E); and F22A/0581, ABP Ref. 316504-23. The Proposed Development will also comprise of in curtilage car parking; boundary treatment; landscaping works; bicycle and bin stores; ESB substation, and all other ancillary site development works that are necessary to accommodate these proposed amendments		
FCC Ref. F22A/0581 ACP Ref. ACP-316504	Kinwest Limited	Lands at Auburn House, Malahide, Co. Dublin	**Amendment to Auburn House Residential Development** Preservation of Auburn House and its stables as 1 residential dwelling. Construction of 92 residential units; landscaped public and communal open spaces, public lighting, 1 ESB unit substation; 1 foul pumping station; foul sewer works and all associated ancillary site development infrastructure.	Appeal lodged to ACP 25/04/2024 Permission Granted by ACP with 53 Conditions 13/05/2024 Under Construction	EIAR, NIS
FCC Ref. F24A/0612E ACP Ref. ACP-320878	Marron Estates	Knocksedan Demesne, Naul Road, Brackenstown, Swords, Co. Dublin	**Residential Development in Knocksedan** The proposed residential development will connect to existing infrastructure previously approved and constructed under Reg. Ref. F06A/0347 (which was later extended under Reg. Ref. Nos. F06A/0347/E1, F06A/0347/E2, F06A/0347/E3 and F20A/0309/E1). Construction of a residential development consisting of 59 houses, 18 apartments, a crèche facility and all associated site works.	Permission Refused by FCC 26/08/2024 Permission Granted by ACP with Conditions 25/06/2025 Under Construction	N/A
FCC Ref. F23A/0103	SK Biotek Ireland	SK Biotek Swords Campus, Watery Lane, Townparks,	**Construction of an Active Pharmaceutical Ingredient Manufacturing Facility at a SEVESO site**	Permission Granted by FCC with 13 Conditions	EIAR, NIS

Reg. Ref.	Applicant	Location	Description – Overview	Status	Environmental Assessments
		Swords, Co. Dublin, K67 AY91	The Proposed Development will consist of the construction of a modern c. 1,010m2 Active Pharmaceutical Ingredient (API) manufacturing facility with a parapet height of c. 14.63m (with handrail and plant above), located in the south-eastern part of the campus. The Proposed Development will replace part of an existing API building (to be demolished in accordance with Reg. Ref. F22A/0673 and will employ the latest industry technology with no change to the nature of operations undertaken (which will be similar to those previously used in the API building area that is to be demolished and elsewhere throughout the overall site.) The Proposed Development represents a modification to a SEVESO (lower tier) site and relates to development which comprises an activity requiring an industrial emissions (IE) LICENCE. (The site currently operates under IE Licence No P0014-04 and will comply with any future revisions to that licence.)	07/02/2024 Under Construction	
FCC Ref. F25A/0008E	Roadstone Limited	Feltrim Quarry, Swords, Co. Dublin, K67X0Y7	**Deepening existing extraction area at Quarry** The development will consist of: deepening of the existing extraction area permitted under F15A/0291 (c. 10.8 hectares) to minus 113 metres below Ordnance Datum OD (-113 mOD); using conventional drilling and blasting techniques; use of mobile crushing and screening plant; aggregate product stockpiles; final restoration to original ground level in accordance with the requirements of condition 5 attached to planning permission F15A/0291; and all related ancillary site works within an application area of c. 15.5 hectares.	Permission Granted by FCC with 11 Conditions 06/02/2026	EIAR, NIS
FCC Ref. FW25A/0480E	D.A. Terminal 3 Limited	Lands within the townland of Huntstown, Swords, Co. Dublin, The subject site	**Construction of an aviation related cargo handling facility with ancillary office space** The proposed units will have an overall combined total gross floor area (GFA) of c. 34,623.6 sq.m (alongside ancillary ESB substations, 4 no.	Refused Permission by the FCC under 5 Conditions 09/01/2026	EIAR

Reg. Ref.	Applicant	Location	Description – Overview	Status	Environmental Assessments
		fronts onto the R108 to the east.	security huts with a combined GFA of 30 sq.m and pumphouses). The warehouses are c. 12m in height, with the office element being c. 3.3 m in height and located within a landscaped campus on a site of c. 10.7 Ha.	Appeal lodged to ACP 05/02/2026 Application currently under appeal	
FCC Ref. F25A/1210E	DAA Plc	Dublin Airport Swords Co. Dublin	**Cargo Relocation Project** DAA Plc are seeking planning permission for development of lands within and to the east of Dublin Airport for Phase 1 of a cargo relocation project, on a site of 15.11 hectares (ha).	Application lodged 22/12/2025 Additional Information Requested by FCC 24/02/2026	EIAR
FCC Ref. F23A/0636 ACP Ref ACP-320815	DAA Plc	Dublin Airport, Swords, Co. Dublin	**Dublin Airport Drainage Infrastructure** Upgrades to drainage infrastructure and construction of additional drainage infrastructure to improve performance of the surface water management with all associated site works.	Permission Granted by FCC with Conditions 21/08/2024 Appeal lodged to ACP 16/09/2024 Appeal under review	EIAR, NIS
FCC Ref. F23A/0301 ACP Ref. ACP Ref. ACP-317828	DAA Plc	US Customs and Border Protection pre-clearance facility, Pier 4, Terminal 2, and the former Flight Catering Building, Castle Drive, Corballis Park, both located in the townlands of Corballis and Collinstown,	**US Customs Expansion** A reconfiguration and extension to the existing US Customs and Border Protection pre-clearance facility at Pier 4, Terminal 2, Dublin Airport and the partial demolition, refurbishment and upgrade of the former Flight Catering Building, Dublin Airport.	Permission Refused by FCC 02/05/2025 Applicant lodged appeal to ACP 18/08/2025	EIAR

Reg. Ref.	Applicant	Location	Description – Overview	Status	Environmental Assessments
		Dublin Airport, Swords, Co. Dublin		Permission Granted by ACP with Conditions 02/05/2025	
ACP Ref. ABP-320164-24	Córas Iompar Eireann	Dublin City Centre and Drogheda, Counties Dublin, Meath and Louth	**DART + Coastal North Railway** Extension of the existing electrification from Malahide to Drogheda (approx. 37km) including the installation of overhead line equipment and associated substations; infrastructure works to facilitate the increase in service frequency and capacity.	Permission granted (confirmation of Railway Order with conditions) by An Coimisiún Pleanàla on 19 August 2025.	EIAR, NIS
ACP Ref. PA06f.3121331	Uisce Éireann	New wastewater treatment plant in the townland of Clonshagh and associated sludge hub centre, orbital sewer outfall pipeline and regional biosolids storage facility in various townlands in County Dublin	**Clonshaugh WWTP** Greater Dublin Drainage Project consisting of a new wastewater treatment plant, sludge hub darte, orbital sewer, outfall pipeline and regional biosolids storage facility in County Dublin The Proposed Project will comprise a new Wastewater Treatment Plant (WwTP) at Clonshaugh and associated infrastructure that will serve the projected wastewater treatment requirements of existing and future drainage catchments in the north and north-west of the Ringsend Agglomeration (i.e. catchments currently draining to Ringsend WwTP), up to the Proposed Project's 2050 design horizon. The Proposed Project will therefore protect public health, safeguarding the environment and facilitating social and economic growth to 2050 and beyond.	Permission granted by An Coimisiún Pleanàla on 09 July 2025.	EIAR, NIS
ACP Ref. ACP-314724	National Transport Authority (operating as Transport	Metrolink - Estuary through Swords, Dublin Airport, Ballymun, Glasnevin, and City Centre to Charlemont, Co. Dublin	**Railway (Metrolink-Estuary to Charlemont via Dubin Airport) Order 2022** The Proposed Development comprises of a fully segregated and automated railway and metro mostly underground approximately 18.8km in length with 16 stations running from north of Swords at	Railway Order Granted by ACP with Conditions. 30/09/2025	EIAR, NIS

Reg. Ref.	Applicant	Location	Description – Overview	Status	Environmental Assessments
	Infrastructure Ireland)		Estuary through Swords, Dublin Airport, Ballymun, Glasnevin and the City Centre to Charlemont in the south of Dublin City Centre. It includes a 9.4km section of single bore tunnel running beneath Dublin City Centre running from Charlemont to Northwood Station and a 2.3km section of single bore tunnel running beneath Dublin Airport. North of Dublin Airport the railway will emerge from tunnel and will run at surface level and in cut and cover structures to Estuary Station. A new 99m bridge will be constructed over the M50 and a 261m long multi-span Viaduct over the Broadmeadow and Ward River. There will be a total of 16 stations, including 11 underground stations at Dublin Airport, Northwood, Ballymun, Collins Avenue, Griffith Park, Glasnevin, Mater, O'Connell Street, Tara, St. Stephen's Green and Charlemont; 4 retained cut stations at Seatown, Swords Central, Fosterstown and Dardistown and 1 at-grade station at Estuary. A multi-storey 3000 space park and ride close to the M1 Motorway will be provided at Estuary Station, a maintenance depot is located near Dardistown Station which will house all the facilities required for the maintenance and operation of the MetroLink and its rolling stock and the Operational Control Centre. The works will also include railway signalling, command and control and communications systems; provision of electrical substations; establishment of temporary construction compounds; establishment of temporary traffic management and road diversions; new and realigned access routes and road junction improvements; diversion of existing utilities; provision of new drainage infrastructure; provision of environmental mitigation measures; and other infrastructural modifications to facilitate the overall project.		

Reg. Ref.	Applicant	Location	Description – Overview	Status	Environmental Assessments
ACP Ref. ACP-319866	North Irish Sea Array Windfarm Limited	Off the coast of counties Dublin, Meath and Louth. The onshore infrastructure will be located in County Dublin	**North Irish Sea Array Offshore Wind Farm** Offshore wind farm consisting of offshore wind turbine generators, offshore substation platform and subsea cables, landfall and associated infrastructure, grid facility and associated infrastructure, and onshore cables and grid connection.	Application lodged to ACP 07/06/2024 Awaiting Decision	EIAR, NIS
ACP Ref. ACP-317121	National Transport Authority	Along the R132 Swords Road, Drumcondra Road and Dorset Street between Pinnock Hill, Swords and Parnell Square, and within the Fingal County Council (FCC) and Dublin City Council (DCC) administrative areas.	**BusConnects - Swords to City Centre Bus Corridor Scheme** Swords to City Centre Core Bus Corridor Scheme has an overall length of approximately 12km including roadworks to facilitate bus, cycling and urban realm improvements along with any associated ancillary/accommodation works for the scheme.	Approved by ACP with Conditions 19/06/2024	EIAR, NIS
FCC Reg. F25A/0710E	National Transport Authority (Ian Gourley)	Lissenhall Little, West of the M1- Junction 4, Lissenhall, Co. Dublin	**NTA Bus Park and Ride** The development will consist of a Park and Ride facility with a total of 733 no. car parking spaces, including 522 standard spaces, 37 spaces for mobility-impaired users (including 29 no. standard and electric vehicle charging spaces, along with 8 no. larger spaces), 72 no. spaces designated for electric vehicles and an additional 72 no. space futureproofed for electric vehicles. Additionally, the facility will include 3 no. bus bays and passenger shelters to enhance accessibility and convenience for users. Provision for active travel will be made with a hardstanding area for a bike shelter and lockers. The scheme will also include hard and soft landscaping, planting, lighting, boundary	Application lodged to FCC 06/08/2025	EIAR, NIS

Reg. Ref.	Applicant	Location	Description – Overview	Status	Environmental Assessments
			treatments, surface-foul water drainage, public lighting, CCTV, ESB substation, and all other associated and ancillary works.		
ACP Ref. ACP-319422	Eirgrid Plc	Comprises a 37.5km underground cable circuit from the existing Woodland Substation in Co. Meath to the existing Belcamp Substation in Fingal, Co. Dublin, extending across various townlands between these two substations.	**East-Meath-North Dublin Grid Upgrade** Comprises a 37.5km underground cable circuit from the existing Woodland Substation in Co. Meath to the existing Belcamp Substation in Fingal, Co. Dublin, extending across various townlands between these two substations.	Approved by ACP with Conditions 05/02/2025	EIAR, NIS
ACP Ref. ACP-324069	FCC		**The Burrow CFERM Scheme** Proposed Development under sections 175 and 177AE of the Planning and Development Act 2000 (as amended) and the Planning and Development Regulations 2001-2005 (as amended) for proposed coastal and flood risk management works. Construction of a c. 190m long earth embankment; construction of a combined c.130m long sheet piled flood wall and a c.200m embankment; and construction of seven fishtail (Y shaped) groynes structures with beach nourishment scheme	Application lodged to ACP 09/02/2026 Case is due to be decided by 30/07/2026	EIAR, NIS

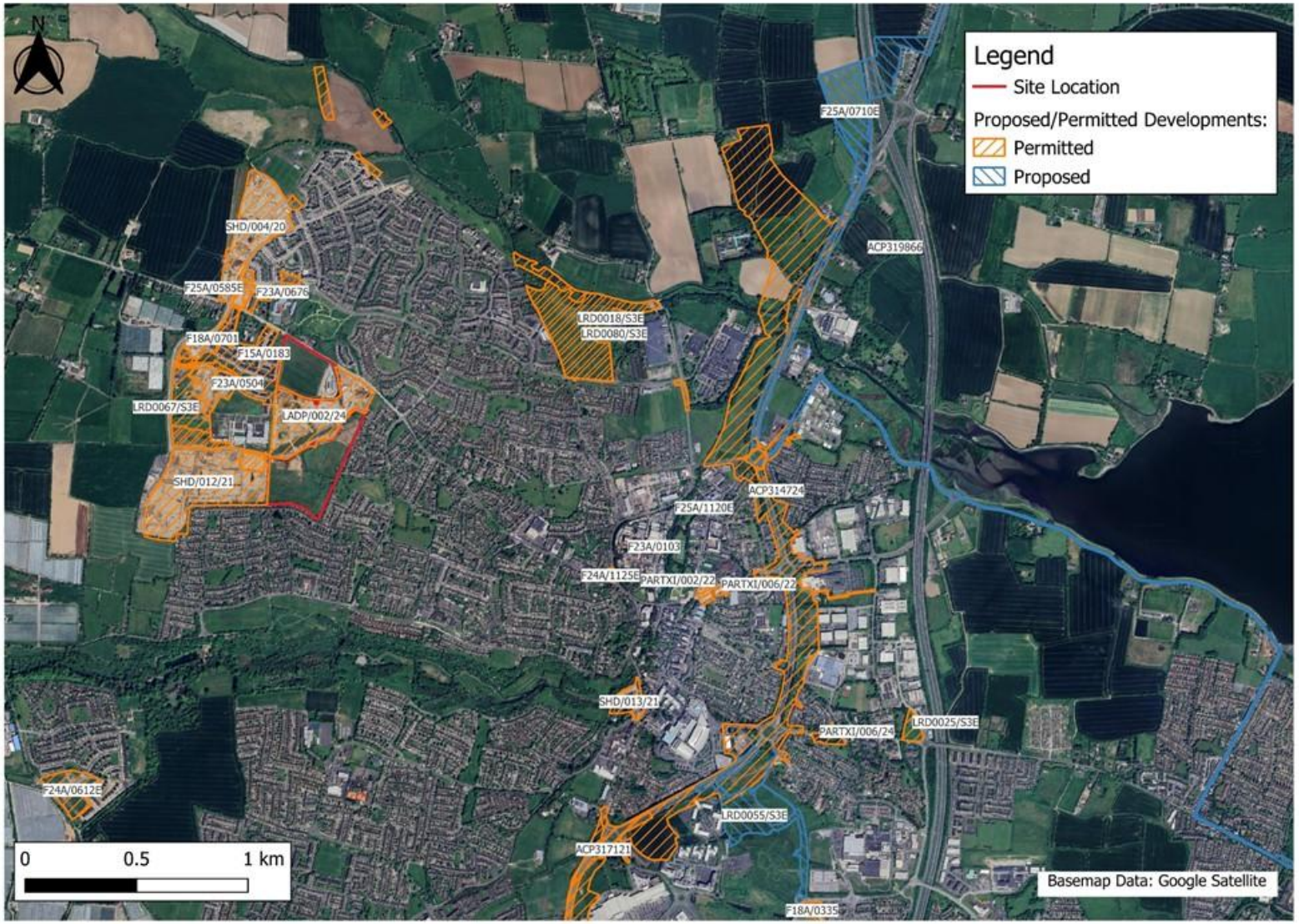

Figure 22.1. Map of permitted and Proposed Developments in the surrounding area of the Proposed Development.

23 Mitigation Measures and Monitoring

23.1 Introduction

This chapter collates the mitigation measures and monitoring set out in the preceding chapters of the EIAR. Note that this section does not include 'mitigation by design', i.e. features already integrated into the Proposed Development (as assessed) that mitigate environmental impacts.

23.2 General Mitigation Measures

Table 23.1 Mitigation measures - General

Ref.	Mitigation measure
Construction phase	
GE01	In order to minimise the volume of material being exported off-site, excavated material will be reused on-site (e.g. as fill material) where feasible.
GE02	Hydrocarbons, solvents and other such hazardous substances will be stored in secure, bunded hardstanding areas.
GE03	Re-fuelling and servicing of construction plant and machinery will only be permitted at suitably located, designated hardstanding areas.
GE04	Spill kits will be present on-site at all times.
GE05	The proposed construction phase working hours are as follows, subject to conditions of the planning authority: ■ Monday – Friday: 07:00 – 19:00 ■ Saturday: 08:00 – 14:00 ■ Sundays and Bank Holidays: No works Any works proposed outside of these hours, e.g. for water mains / foul drainage connections, will be subject to prior approval by the Local Authority.
GE06	**Construction & Environmental Management Plan** A Construction & Environmental Management Plan (CEMP) has been prepared in respect of the Proposed Development by AKM Design Group (2026) (refer to standalone document submitted under separate cover). It contains best practice measures and protocols to be implemented during the construction phase of the Proposed Development to avoid / minimise environmental impacts. In the preparation of this Environmental Impact Assessment Report, regard has been had to the mitigation measures and protocols proposed in the CEMP. The appointed contractor will be responsible for the implementation of the CEMP. The contractor will appoint a suitably qualified Project Supervisor Construction Stage (PSCS) with responsibility for overseeing the implementation of the CEMP (and all construction phase environmental commitments). To ensure the CEMP remains fit for purpose, it will be maintained as a live document. The appointed contractor will be responsible for updating the CEMP, as required; e.g. to reflect the publication of relevant new or revised guidelines and / or new statutory requirements. The full schedule of environmental commitments (i.e. all mitigation measures set out in the CEMP and Environmental Impact Assessment Report submitted as part of the planning application, as well as any applicable conditions of development consent) will be included in the CEMP by the appointed contractor.
GE08	**Resource & Waste Management Plan** A project-specific Resource & Waste Management Plan (RWMP) has been prepared by AWN Consulting (2026) in line with the requirements of the EPA '*Best Practice Guidelines for the*

Ref.	Mitigation measure
	Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (*2021*) and is included as **Appendix 19.1** Volume 3 of the EIAR. The implementation of the mitigation measures presented in the RWMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the excavation and construction phases of the Proposed Development. Prior to commencement, the appointed Contractor(s) will be required to refine / update the RWMP in agreement with the Local Authority, detailing specific measures to minimise waste generation and resource consumption, and provide details of the proposed waste contractors and destinations of each waste stream. The Contractor will be required to fully implement the RWMP throughout the duration of the proposed construction phase.
GE09	**Arboricultural Impact Assessment & Method Statement** A Tree Survey, Arboricultural Impact Assessment & Arboricultural Method Statement has been prepared in respect of the Proposed Development by Charles McCorkell (2026) and submitted under separate cover as part of the planning application. It contains an Arboricultural Method Statement and recommendations in relation to tree protection on construction sites. The method statement and recommendations contained in the Tree Survey Report shall be integrated into the final CEMP, and implemented in full during the proposed construction works.
Operational phase	
GE10	**Residential Travel Plan** An outline Residential Travel Plan (RTP) has been prepared by Transport Insights (2026) for the operational phase of the Proposed Development (refer to Section 7 of the Traffic & Transport Assessment submitted under separate cover), to promote sustainable mobility among the residents of the Proposed Development through a range of measures. The appointed Mobility Manager of the site during the operational phase will be responsible for ensuring – allocating personnel and resources, as needed – the ongoing implementation of the RTP. This is intended to be a live document, to be updated by the Applicant / Operator, where appropriate, e.g. to ensure the Plan remains fit for purpose and up-to-date with relevant policy.
GE11	**Operational Waste Management Plan** An Operational Waste Management Plan (OWMP) has been prepared by AWN Consulting (2026), containing measures to promote operational phase waste management in accordance with the waste hierarchy, i.e. high rates of reuse, recycling and recovery. Refer to **Appendix 19.2** Volume 3 of the EIAR. The Operator / Facilities Management of the site during the operational phase will be responsible for ensuring – allocating personnel and resources, as needed – the ongoing implementation of the OWMP. This is intended to be a live document, to be updated by the Applicant / Operator, where appropriate, e.g. to ensure the Plan remains fit for purpose and up-to-date with relevant policy.

23.3 Specific Mitigation & Monitoring Measures

23.3.1 Population & Human Health

Table 23.2 Mitigation measures - Population and Human Health

Ref.	Mitigation measure
Construction phase	
PHH01	A Construction and Environmental Management Plan (CEMP) has been prepared in respect of the Proposed Development by AKM Design Group (2026) (refer to document submitted under separate cover). The CEMP will remain a 'live document' and will be further updated by the

Ref.	Mitigation measure
	Contractor (subject to planning approval) in advance of the proposed works, in agreement with the Local Authority. The CEMP will be fully implemented throughout the proposed works. It will set out the measures to be implemented during the proposed works to mitigate potential impacts on the environment and local population, e.g. measures in relation to good housekeeping, site hoarding and security, traffic management, pollution control and safety.
PHH02	A Community Liaison Officer (CLO) will be appointed by the contractor for the duration of the construction phase. They will be responsible for keeping the local community and businesses informed of the timing and duration of potentially disruptive works, and for receiving and addressing concerns of local residents and businesses in relation to the proposed works.
PHH03	Chapter 11 (Air Quality) & Chapter 12 (Climate) includes a suite of mitigation measures to minimise air quality (including dust) impacts during the construction phase. Dust minimisations measures are included in Chapter 11 and shall be finalised by the appointed contractor in agreement with the Local Authority and implemented during the proposed works. Other mitigation measures are included in relation to community liaison, site management, maintenance of site, control of construction machinery, waste management especially earthworks and measures specific to trackout.
PHH04	Chapter 13 (Noise & Vibration) includes a suite of mitigation measures to minimise noise impacts during the construction phase. Mitigation measures are included in relation to selection of quiet plant, noise control at source, screening, adherence to noise limits, community liaison and project programme / phasing.
PHH05	Chapter 14 (Landscape & Visual) includes a number of mitigation measures to minimise the impacts of the proposed works on landscape and visual amenity. These include measures in relation to visual impact of construction works, landscape character and existing vegetation.
PHH06	Chapter 18 (Traffic & Transportation) includes a suite of measures in relation to construction traffic and parking management to minimise the impacts of construction traffic on the local community and the operation of the existing road network in the area. It requires the implementation of a Construction Traffic Management Plan, to be prepared by the appointed contractor during pre-construction phase in agreement with the Local Authority.
PHH07	Chapter 19 (Material Assets - Waste) includes a suite of measures in relation to management of construction waste to minimise the impacts of all site construction activities. A Resource and Waste Management Plan (**Appendix 19.1**, Volume 3 of the EIAR) prepared as part of the application shall be implemented throughout the construction phase of the Proposed Development.
PHH08	Chapter 20 (Material Assets – Services) includes a suite of measures in relation to management of services in the vicinity of the works and regard shall be had to the Gas Networks Ireland Guidelines for Designers and Builders – Industrial and Commercial (Non-Domestic) Sites (2018), the Health & Safety Authority (HSA) Code of Practice for Avoiding Danger from Underground Services (2016), and the ESB Networks & Health and Safety Authority Code of Practice for Avoiding Danger from Overhead Electricity Lines (2019).
Operational phase	
PHH09	Chapter 18 (Traffic & Transportation) includes a suite of measures in relation to mobility management and car parking management during the operational phase. It requires the implementation of a Residential Travel Plan, to encourage sustainable travel patterns among residents of the Proposed Development.

Ref.	Mitigation measure
PHH10	Chapter 14 (Landscape & Visual) includes a number of mitigation measures to minimise the impacts of the proposed works on landscape and visual amenity. These include measures in relation to good quality architectural design, provision of open spaces, retention, enhancement and management of existing hedgerows, enhanced and additional tree planting etc.
PHH11	Chapter 11 (Air Quality) & Chapter 12 (Climate) includes a suite of mitigation measures to minimise future climate change impacts during the operational phase. These measures have been incorporated into the design of the development to mitigate against the impacts of future climate change. For example, adequate attenuation and drainage have been incorporated into the design of the development to avoid potential flooding impacts as a result of increased rainfall events in future years. The Proposed Development has been designed to reduce the impact on climate as a result of energy usage during operation.
PHH12	Chapter 19 (Material Assets- Waste) includes a suite of measures in relation to management of operational phase waste to minimise the impacts of the operational phase of the Proposed Development. An Operational Waste Management Plan (**Appendix 19.2**, Volume 3 of the EIAR) prepared as part of the application shall be implemented throughout the operational phase of the Proposed Development.
PHH13	The impacts of the Proposed Development on Chapter 16 (Microclimate – Daylight & Sunlight) to itself have been mitigated through considered design and development to ensure the highest level of compliance for the operational phase and human health.

Table 23.3 Monitoring - Population and Human Health

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

23.3.2 Biodiversity

Table 23.4 Mitigation measures - Biodiversity

Ref.	Mitigation measure
Construction phase	
BIO01	**Incorporated Design Mitigation** The proposed development incorporates a comprehensive landscape design, with biodiversity-focussed planting (refer to Chapter 14 (Landscape & Visual) and the Landscape and Green Infrastructure Report and associated drawings, prepared by SRLA, the project landscape architects) and submitted as part of this application under separate cover). The planting and long-term management proposed will greatly enhance the biodiversity resource on the proposed development site by creating new, pollinator-friendly habitats.

Ref.	Mitigation measure
BIO02	**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.
BIO03	**Habitats** ■ The high value field boundaries will be retained and protected in so far as is feasible and incorporated into the landscaping of the proposed development. ■ All of the retained hedgerows and woodland will be treated in accordance with British Standard *BS5837:2012 Trees in Relation to Design, Demolition and Construction – Recommendations*, with protective fencing being installed prior to commencement of development. ■ All site clearance and landscaping works will comply with current legislative requirements and best practice. The clearance of any vegetation that may be suitable for use by nesting birds will be undertaken outside the bird nesting season (avoiding the period 1 March to 31 August). Should the construction programme require vegetation clearance between March and August, and this is unavoidable, bird nesting surveys will be undertaken by suitably qualified ecologists. If no active nests are recorded, vegetation clearance will take place within 24 hours. In the event that active nests are observed, an appropriately sized buffer zone (up to 5 m radius around the nest) will be maintained around the nest until such time as all the eggs have hatched and the birds have fledged – a period that may be three weeks from the date of the survey. Once it is confirmed that the birds have fledged and no further nests have been built or occupied, vegetation clearance may take place immediately. ■ The planting proposed for the development will, wherever possible, comprise an appropriate mixture of native trees and shrubs, preferably of local provenance. The planting will also incorporate a range of species that will attract feeding invertebrates, including moths, butterflies and bees. It will take account of and implement the relevant objectives of the All-Ireland Pollinator Plan 2021-2025. ■ Species listed on Schedule 3 of the Birds and Habitats Regulations, 2011-2015, such as Japanese knotweed and giant hogweed, have not been recorded on the site. Nevertheless, appropriate biosecurity measures will be implemented during the construction phase of the proposed development to ensure that no invasive species are introduced, either deliberately or inadvertently, to the site. ■ The following recommendations from Inland Fisheries Ireland 'Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters' (2016) will be implemented as necessary: □ No direct discharges be made to waters where there is potential for cement or residues in discharge. □ The pH of any and all discharges made from and during construction works shall be in the range of 6.0 – 9.0 units and not alter the pH of any receiving fisheries waters by more than+/- 0.5 pH units.

Ref.	Mitigation measure
	◻ The level of suspended solids in any discharges to fisheries waters as a consequence of construction works shall not exceed 25 mg/l, nor result in the deposition of silts on gravels or any element of the aquatic flora or fauna.
BIO04	**Fauna** *Nesting birds* Where feasible and practicable, 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, 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. *Otters and other large mammals* There will be no impacts on otters and no mitigation is required. No badger setts will be in any way affected by the proposed development, and no mitigation measures will be required for the protection of badgers. Nevertheless, a watching brief will be maintained by the project ecologist throughout the construction phase, in the event that badgers should establish a territory at the site. *Bats* No bat roosts have been recorded at the proposed development site, and it will not be necessary to apply for a derogation licence under Regulation 54 or 55 of the *European Communities (Birds and Natural Habitats) Regulations 2011, as amended*. There are no suitable structures (natural or manmade) available for use by roosting bats within the subject site. *Installation of bat and bird boxes, and hedgehog access points* Notwithstanding the lack of roosting potential of the site, it is proposed to install bat (and bird) boxes both within the proposed development. The reason for the installation of habitat boxes is not to provide replacement roosts/nesting; 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. The boxes proposed are as follows (this list is subject to revision based on the availability of suitable boxes in the future): ■ Bat and bird boxes proposed: ◻ 6* 2FN bat boxes or similar will be incorporated into the site within the northwestern corner where a park is proposed. These should be at least 3 metres high, with a clear drop below (as bats need to drop to start their flight). ◻ 6 no. assorted wooden or woodcrete bird boxes, suitable for use by robins, blue tits and tree creepers will also be installed.

Ref.	Mitigation measure
	◻ 6 no. insect hotels, to be distributed through the landscaped areas, as advised by the project ecologist during the construction phase. The installation of boxes that can accommodate swifts will increase the available nesting potential of the proposed development site for this species, which has not been recorded at the subject site, and which has undergone significant decline in recent years[32], and has now been placed on the red list of BoCCI[33]. Where feasible (i.e. where topography allows) hedgehog access points shall be incorporated into the site from garden fences / perimeter walls. Any ponds/wet areas found will be inspected by a suitably experienced ecologist prior to works being undertaken. Should any frog spawn or tadpoles be discovered, a licence to remove frog spawn may be required from NPWS.
BIO05	**Water Quality, Dust and Other Emissions** The surface water mitigation measures proposed in Chapter 10 (Hydrology), and in the Surface Water Management Plan and Outline Construction Management Plan, (all submitted as part of this application under separate cover), will ensure that no sediment contamination, contaminated run-off or untreated wastewater will enter any on-site surface water ditches as a result of the construction of the proposed development. Refer also to the Appropriate Assessment Screening report. The measures set out in Chapter 11 (Air Quality) of this EIAR will be implemented to ensure that no air-related impacts arise on biodiversity. No further mitigation measures, in the context of biodiversity, are required.
Operational phase	
BIO13	**Lighting** Increased artificial lighting has the potential to impact on bat feeding and commuting behaviour. The proposed lighting for the proposed development has been designed in accordance with the following guidelines: ■ Bat Mitigation Guidelines for Ireland – V2 (IWN no. 134)[34] ■ Bats and Lighting – Guidance Notes for Planners, Engineers, Architects and Developers (Bat Conservation Ireland, 2010)[35]; ■ Bats and Artificial Lighting at Night, Institute of Lighting Professionals, 2023[36].
BIO14	**Water** There will be no impacts on foul water treatment capacity at the Swords WwTP as a result of the proposed development. No mitigation measures are required. There will be no impacts related to surface water, as a result of the proposed development. The proposed development is designed in accordance with the principles of SuDS as embodied in the recommendations of the Greater Dublin

[32] Swift Conservation Ireland
[33] Gilbert *et al*. (2021)
[34] https://www.npws.ie/sites/default/files/publications/pdf/IWM134.pdf
[35] https://www.batconservationireland.org/wp-content/uploads/2013/09/BCIrelandGuidelines_Lighting.pdf
[36] https://theilp.org.uk/publication/guidance-note-8-bats-and-artificial-lighting/

Ref.	Mitigation measure
	Strategic Drainage Study (GDSDS), which addresses the issue of sustainability 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. The proposed surface water design is also in line with the following standards: ■ The Greater Dublin Strategic Drainage Study (GDSDS), Volume 2 ■ The Greater Dublin Regional Code of Practice for Drainage Works ■ British Standard BS EN 752:2008 (Drains and Sewer Systems Outside Buildings) ■ Part H of the Building Regulations (Building Drainage). ■ Nature based solutions to the management of rainwater and surface water runoff in urban areas by the Department of Housing Local Government and Heritage No mitigation is proposed for the operational phase of the proposed development, once the measures required during the construction phase are implemented.

Table 23.5 Monitoring- Biodiversity

Phase	Monitoring measure
Construction	A suitably experienced Project Ecologist will be appointed for the duration of the construction phase and regular monitoring of all related works will take place to ensure the correct and full implementation of all mitigation measures. The Project Ecologist will ensure that all construction works take place in accordance with planning conditions, the project CEMP and the mitigation measures set out in this EIAR.
	As noted in Section 8.5, vegetation clearance will only be permitted outside the bird-nesting season. Should vegetation clearance be required during the bird nesting season, and should this work be unavoidable, such clearance will take place only after the Project Ecologist has undertaken a survey to ensure that no active bird nests or recently fledged birds are present. Pre-construction surveys will be required to ensure that any necessary tree felling or works to buildings continue to have no impact on roosting bats.
	Monitoring of construction dust deposition along the site boundary to nearby sensitive receptors during the construction phase of the proposed development will ensure mitigation measures are working satisfactorily.
	Monitoring of all fuel / oil storage areas will also be undertaken to ensure that all related mitigation measures are being implemented effectively.
Operation	No long-term ecological monitoring is required, other than post-construction monitoring of the bat and bird boxes and insect hotels. The bat and bird boxes, and insect hotels installed on the site will be checked annually for a period of two years

Phase	Monitoring measure
	post-completion of the works, to ensure that they continue to be accessible to these species. If necessary, they will be repositioned within the site.
	On completion of construction, the lighting installed will be reviewed by the Project Ecologist and a bat specialist, to ensure that it is operating according to the approved specifications. The landscape architect will similarly ensure that all works undertaken are in full compliance with the landscape specification. The arborist will ensure that all hedgerow and tree management measures are fully implemented. All monitoring tasks will be recorded and logged for inspection by the site manager.

23.3.3 Land, Soils & Geology

Table 23.6 Mitigation measures - Land, Soils & Geology

Ref.	Mitigation measure
Construction phase	
LSG01	To minimise impacts on land, soils and geology, the following mitigation measures will be implemented during all construction activities. These measures address key potential impact sources, including: ■ Control of soil excavation, handling and potential export ■ Sources and management of imported fill and aggregates ■ Fuel and chemical handling, transport and storage ■ Control of construction related runoff and potential contamination pathways
LSG02	A Construction and Environmental Management Plan (CEMP) has been prepared for the Proposed Development (AKM Design Group, 2026). It sets out the construction techniques, sequencing, environmental controls and site management procedures. A Surface Water Management Plan (SWMP) (AKM Design Group, 2026) supports the CEMP by detailing settlement, silt control and runoff management measures essential for preventing contamination of soils during earthworks.
LSG03	Construction activities and associated mitigation measures have been informed by best practice guidance for controlling pollution and protecting surface water and groundwater during development works, including but not limited to: ■ Construction Industry Research and Information Association (CIRIA), Control of Water Pollution from Construction Sites: Guidance for Consultants and Contractors (C532); ■ CIRIA C741 Environmental Good Practice on Site (4th Edition); ■ Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (IFI, 2016); ■ Enterprise Ireland Best Practice Guide – Oil Storage Guidelines (BPGCS005); ■ Eastern Regional Fisheries Board – Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites; ■ Central Fisheries Board – Channels and Challenges: The Enhancement of Salmonid Rivers; ■ CIRIA C648 Control of Water Pollution from Construction Sites; ■ Guidelines for the Crossing of Watercourses During the Construction of National Road Schemes (NRA, 2008); ■ Inland Fisheries Ireland (IFI) – Planning for Watercourses in the Urban Environment.

Ref.	Mitigation measure
LSG04	The CEMP will set out the proposed procedures and operations to be utilised on the proposed construction site to protect water quality. The CEMP will be implemented and adhered to by the construction Contractor and will be overseen and updated as required if site conditions change by the Project Manager, Environmental Clerk of Works where relevant. All personnel working on the site will be trained in the implementation of the procedures. All relevant personnel will be fully trained in the use of this equipment. Guidelines such as "Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors" (CIRIA 532, 2001) will be complied with.
LSG05	During the project planning phase, a comprehensive emergency response plan will be developed by the construction contractor. This plan will outline a well-defined procedure for effectively managing emergencies as they arise. Furthermore, it's imperative to disseminate this emergency protocol to all site personnel during the site induction process. This plan will include for events such as: ■ Pollution incidents: These may involve spillages, the malfunction of temporary structures, embankment collapse, acts of vandalism, fires, and other related events. ■ Extreme weather occurrences: Events such as heavy rainfall, flooding, are important factors to consider due to their potential impact on the construction process. All mitigation measures outlined here, and within the CEMP will be implemented during the construction phase, as well as any additional measures required pursuant to planning conditions which may be imposed.
LSG06	Soil Excavation, Removal and Infill During construction, topsoil and subsoil will be stripped and stockpiled separately in designated areas to preserve their structure, avoid cross contamination and prevent unnecessary compaction. Stockpiles will be protected from erosion using measures such as silt fencing where required. All excavated soils will be visually inspected by suitably qualified personnel for signs of contamination, including staining or odour, and any suspect materials will be sampled and analysed. Contaminated soils, if encountered, will be segregated and removed from the site by a licensed contractor. As the entirety of the excavated material (21,860 m^3) is intended to be reused on site, the need for soil export is not anticipated; however, if export becomes necessary, waste soils will be classified by a competent environmental professional prior to off site recovery or disposal. Where feasible, excavated soils and stones will be reused on site in accordance with Regulation 27 (By product) procedures under S.I. 323/2020, subject to EPA approval. Regulation 28 (End of Waste) will also be considered for any recycled aggregate or fill material meeting the appropriate criteria. Imported fill, including CL.503 material, will comply with IS 328:2021 and all relevant national standards.
LSG07	Sources of Engineering Fill and Aggregates The construction phase will require the importation of approximately 35,000 m^3 of engineering fill and aggregate material to facilitate site development and infrastructure works. All imported fill materials, including Clause 503 (CL.503) material, will comply with IS 328:2021 and all other relevant Irish and European standards. Engineering fill and aggregates will be sourced exclusively from appropriately licensed and permitted quarries or suppliers, operating in compliance with environmental, planning and

Ref.	Mitigation measure
	regulatory requirements. Material specifications, certification and traceability documentation will be reviewed prior to delivery to site to verify compliance with project requirements and environmental best practice. All suppliers will be vetted in advance to ensure conformity with applicable quality controls, environmental obligations and waste management legislation. Records of material source, volumes and certification will be maintained for audit and reporting purposes.
LSG08	**Fuel and Chemical Handling** The following mitigation measures will be implemented during the construction phase in order to prevent any spillages of fuels and other construction chemicals and prevent any resulting discharge to the soil or geological environment: ■ All plant and machinery will be regularly maintained and serviced to minimise the risk of release of hydrocarbons. This will only be undertaken by qualified personnel; ■ Designation of bunded maintenance and refuelling areas on the site; ■ Provision of spill kit facilities across the site strategically located in high risk areas; ■ Where mobile fuel bowsers are used, the following measures will be taken: □ Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use; □ The pump or valve will be fitted with a lock and will be secured when not in use; □ All bowsers to carry a spill kit and operatives must have spill response training; □ Portable generators or similar fuel containing equipment will be placed on suitable drip trays. In the case of drummed fuel or other potentially polluting substances which may be used during the construction phase, the following measures will be adopted: ■ Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded area; ■ Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be stored within temporary bunded areas, doubled skinned tanks or bunded containers to a volume of 110% of the capacity of the largest tank/container. Drainage from the bunded area(s) shall be diverted for collection and safe disposal. ■ Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage; ■ All drums to be quality approved and manufactured to a recognised standard; ■ If drums are to be moved around the Site, they will be secured and on spill pallets; and ■ Drums will be loaded and unloaded by competent and trained personnel using appropriate equipment. Refuelling and maintenance of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area or within the construction compound (or where possible off the site) which will be away from watercourses. Emergency procedures and spill protection equipment such as oil booms, oil soakage pads, socks and sand will be available in clearly marked bins/silos and in construction vehicles to be used in the event of an accidental release during refuelling. This equipment will be checked weekly to ensure there is sufficient supply for the site. Any spillage of fuels, lubricants or hydraulic oils will be immediately contained, and the contaminated soil removed from the site and disposed of in accordance with all relevant waste management legislation. Training will be given to site workers in how to manage a spill event. Prior to any work commencing on site, all construction

Ref.	Mitigation measure
	equipment will be checked to ensure that it is mechanically sound, to avoid leaks of oil, hydraulic fluids and grease. In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank. The following measures will be put in place to prevent any spillages to ground of fuels during machinery activities and prevent any resulting soil and/or groundwater quality impacts: ■ Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use. ■ Any 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. ■ Weekly checks of spill kits will be carried out to ensure they are sufficiently stocked. Guidelines such as "Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors" (CIRIA 532, 2001) will be complied with.
LSG09	**Cement/Concrete Works** Concrete works will be subject to a pre works risk assessment to identify appropriate controls for preventing the discharge of alkaline wash water or cementitious material to the soil environment. No concrete washout will be permitted on bare ground. All washout activities will be confined to a designated impermeable, bunded washout area within the construction compound. Washout water and residues will be collected and removed from site by a licensed contractor or reused where appropriate. Mixer trucks will not wash out anywhere other than the designated area, and pumped concrete operations will be supervised at all times to prevent accidental discharge.
LSG10	**Human Health & Safety** No additional mitigation measures are required beyond standard construction good practice as set out in the CEMP. The site is a greenfield landholding with no known hazardous soils identified (Refer to Section 9.4.10), and therefore no significant risks to human health are predicted. All excavated materials will be visually assessed for potential contamination, and any suspect soil will be segregated, sampled and managed appropriately. Where contaminated material is identified, it will be removed by a licensed waste contractor in accordance with waste legislation. Personnel handling soils or construction materials will be trained and equipped with suitable PPE. Fuels and oils will be stored and managed within designated bunded areas, and spill control equipment will be accessible at all work locations to minimise risks associated with accidental releases. With these procedures in place, no significant risks to human health and populations are expected during construction.
Operational phase	
LSG11	**Fuel Storage** There is no requirement for bulk fuel, oil, or chemical storage during the operational phase, and therefore the potential for soil or geological contamination is inherently low. The main

Ref.	Mitigation measure
	residual source of potential contamination arises from the possibility of minor hydrocarbon drips or leaks from vehicles in parking areas or along internal access roads. Such events would be small in scale, localised and intermittent. To ensure these risks remain minimal, standard operational procedures will be followed, including the provision of spill kits within maintenance stores and training for appointed personnel in spill response and incident reporting. These procedures will ensure any accidental spill is contained and remediated before it can infiltrate into the soil.
LSG12	**Increase in Hardstand** The Proposed Development will introduce an increase in hardstanding (c. 5.471 ha), which will permanently seal sections of the existing soil profile and reduce natural infiltration. Given that the site is underlain by cohesive glacial tills and a 'PI – Poor Aquifer', the reduction in infiltration will not materially alter the geological or hydrogeological regime. The extent of sealed surface is modest in the context of the overall groundwater body and geological formation, and the resulting change in recharge is considered negligible. The site drainage strategy incorporates Sustainable Urban Drainage System (SuDS) measures such as permeable paving, bioretention areas, swales and detention basins, which collectively manage and treat runoff during operation. These SuDS features ensure that surface water generated on hardstanding areas is collected, conveyed and controlled without creating pathways for pollutants to enter the soil or subsoil. As the operational drainage system is fully contained and functions independently of the underlying geology, no additional mitigation measures are required to protect soils and geology
LSG13	**Human Health & Safety** There are no sensitive geological or socio-economic receptors within the Proposed Development site, and the operational phase will not introduce any activities that could expose residents or visitors to underlying soils or subsoils. As the site will be predominantly capped by buildings, pavements and landscaped areas, direct contact with soil will be removed entirely. Furthermore, as stated in Section 9.6.3.2 above, there is no requirement for the storage or handling of hazardous substances during operation, eliminating any associated risk pathways. The mitigation measures outlined in Section 9.7.1 above will be implemented during operation, ensuring that any minor spill risks are effectively managed. With these measures in place, no additional mitigation is required for the protection of human health or populations, and no significant operational-phase risks are anticipated.

Table 23.7 Monitoring- Land, Soils & Geology

Phase	Monitoring measure
Construction	During the construction phase the following monitoring measures will be carried out for the protection of the land, soils and geological environment: ■ Monitoring will be undertaken by the Contractor in accordance with planning conditions and in full compliance with the project CEMP. ■ Daily inspections will be undertaken to address potential environmental risks including soil management, dust, litter, waste, machinery leaks and general housekeeping.

Phase	Monitoring measure
	■ Excavated soil will be visually assessed for signs of contamination such as staining or odour. Soil sampling will be undertaken where required to confirm suitability for reuse or disposal. ■ Construction activities with potential to affect soils, including concreting, refuelling, plant maintenance and excavation, will be inspected regularly to confirm that pollution-prevention measures are being correctly implemented. ■ Weekly checks will be undertaken to ensure that temporary drainage features including surface water drains, silt traps, silt fencing and sediment-control measures remain unblocked and fully functional. ■ Silt fences and other sediment-control measures will be maintained throughout the construction phase to ensure they continue to perform effectively. ■ Runoff diversion channels and temporary bunds will be regularly maintained to prevent erosion, sediment movement and uncontrolled surface runoff. ■ Regular auditing of mitigation measures will be completed, including verification that refuelling occurs only within designated bunded areas and that concrete washout procedures are followed. ■ A site inspection log will be maintained at all times, recording inspections, incidents such as spills or blockages, and corrective actions. Significant incidents will be investigated to determine root causes and to prevent recurrence.
Operational	During the operational phase, potential impacts on land, soils and geology are minimal due to the presence of extensive hardstanding and SuDS features that limit direct infiltration to underlying soils. The following monitoring measures will be carried out for the protection of the land, soils and geological environment during operation: ■ Regular maintenance of the surface water drainage system will be undertaken, including inspection and cleaning of hydrocarbon interceptors, to ensure pollutants from vehicles are effectively captured and do not reach underlying soils. ■ Foul sewer infrastructure will be monitored to prevent blockages, leaks or deterioration that could result in uncontrolled discharge to surrounding soils or subsoils. ■ Maintenance of SuDS components such as permeable paving, swales, bioretention features and detention basins will ensure that operational drainage continues to function as designed and prevents accidental release to ground. These measures will ensure that the operational phase does not introduce any new contamination pathways and that long-term protection of soils and geology is maintained throughout the lifecycle of the development.

23.3.4 Hydrology & Hydrogeology

Table 23.8 Mitigation measures – Hydrology & Hydrogeology

Ref.	Mitigation measure
Construction phase	
HYD01	A Construction and Environmental Management Plan (CEMP) has been prepared by AKM Design Group (March 2026) for the Proposed Development. The CEMP outlines and explains the construction techniques, sequencing and environmental control measures to be implemented throughout the construction period. It is supported by a Surface Water

Ref.	Mitigation measure
	Management Plan (SWMP) (AKM Design Group, March 2026), which sets out detailed requirements for drainage protection, settlement systems, and pollution mitigation during earthworks and infrastructure delivery.
HYD02	Construction activities and associated mitigation measures have been informed by best practice guidance for controlling pollution and protecting surface water and groundwater during development works, including but not limited to: ■ Construction Industry Research and Information Association (CIRIA), Control of Water Pollution from Construction Sites: Guidance for Consultants and Contractors (C532); ■ CIRIA C741 Environmental Good Practice on Site (4th Edition); ■ Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (IFI, 2016); ■ Enterprise Ireland Best Practice Guide – Oil Storage Guidelines (BPGCS005); ■ Eastern Regional Fisheries Board – Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites; ■ Central Fisheries Board – Channels and Challenges: The Enhancement of Salmonid Rivers; ■ CIRIA C648 Control of Water Pollution from Construction Sites; ■ Guidelines for the Crossing of Watercourses During the Construction of National Road Schemes (NRA, 2008); ■ Inland Fisheries Ireland (IFI) – Planning for Watercourses in the Urban Environment.
HYD03	The CEMP and SWMP set out the onsite procedures, controls and environmental protection measures required to prevent pollution of the existing drainage ditches, the unnamed tributaries within the northern and southern land parcels, and downstream receiving waters including the Newtown 08 the Broadmeadow 08 rivers. All construction personnel will receive appropriate induction and task specific training to ensure full implementation of the CEMP. Key hydrological and hydrogeological mitigation measures will include:
HYD04	Surface Water Pollution Prevention ■ A comprehensive silt and sediment control strategy will be implemented in accordance with the CEMP and SWMP. This includes the use of silt fencing, settlement tanks/ponds, silt bags, temporary drainage channels, stockpile controls and erosion prevention measures to prevent sediment mobilisation from exposed soils, haul routes, excavations and stockpiles. ■ No direct discharge of untreated runoff will be permitted to the existing drainage ditches. All run-off will be intercepted, directed to settlement tanks or settlement ponds incorporating internal baffles and forebays, or routed through proprietary treatment systems prior to controlled release, in accordance with the SWMP. ■ Concrete works will be strictly managed. All concrete washouts will occur within a designated, bunded washout area located within the construction compound. Mixer washings or cementitious materials will not be discharged to the drainage system or ground. Pumped concrete will be supervised to prevent accidental release. ■ Fuel, oils and construction chemicals will be stored in bunded, impermeable areas with a minimum 110% containment capacity. Refuelling will occur only at designated bunded locations or via mobile double skinned refuelling units. Spill kits will be available at all refuelling, maintenance and storage areas, consistent with both the CEMP and SWMP requirements.

Ref.	Mitigation measure
	■ Sanitary wastewater will be fully contained within sealed units and will be removed off site by licensed waste contractors for treatment at an authorised facility.
HYD05	Protection of Groundwater ■ Excavations will be managed to limit rapid groundwater ingress within the cohesive glacial tills. Where perched water pockets are encountered, dewatering (if required) will be undertaken using local sump pumps discharging to settlement tanks or vegetated areas only after filtration via silt bags or equivalent controls. ■ No infiltration of untreated or potentially contaminated runoff will be permitted to the subsoil during construction. All potentially silty water will be directed to appropriate treatment measures prior to disposal, in accordance with the SWMP. ■ Temporary works will be designed to avoid unnecessary compaction of soils, to minimise increased runoff rates.
HYD06	Run-off and Flow Management ■ Temporary works will be designed to avoid unnecessary compaction of soils, helping to maintain natural infiltration pathways and minimise increased overland flow. ■ Where practicable, temporary attenuating features including settlement ponds, check dams within temporary channels, or localised barriers will be installed to prevent hydraulic overloading of the existing onsite drainage ditches. ■ The contractor will prepare and maintain a site plan identifying drainage lines, discharge points and all water protection measures, as required by the SWMP.
HYD07	Emergency Response ■ The contractor will prepare a Construction Phase Emergency Response Plan, consistent with the CEMP, setting out procedures for managing environmental incidents, including accidental spillages, concrete washout failures, hydrocarbon leaks, sediment releases and blockages of drainage systems. All staff will be trained in the emergency response procedures and in the use of spill kits. ■ The plan will also include measures to address extreme weather events, including high-intensity rainfall, which may mobilise sediments or affect site drainage and settlement systems.
HYD08	Implementation and Oversight ■ All mitigation measures specified in the CEMP and SWMP, as well as those outlined above, will be implemented throughout the construction phase. ■ The Project Manager, supported by the Environmental Clerk of Works (ECoW), will oversee compliance with the CEMP and ensure that measures are updated in response to changing site conditions, weather events or evolving construction methodologies. Monitoring inspections will be undertaken in accordance with the CEMP and SWMP inspection schedules (daily, weekly and activity based requirements). ■ Any additional mitigation measures required under planning conditions will be incorporated and adhered to for the full duration of the works.
HYD09	Control of Suspended Solids Given the potential for construction phase runoff to indirectly enter the existing drainage ditches within the northern and southern land parcels which are hydrologically connected to the Newtown 08 river and ultimately to the Broadmeadow 08 river waterbody, a robust set

Ref.	Mitigation measure
	of suspended solid control measures will be implemented during the construction phase. These measures will ensure that sediment, silt laden flows and associated contaminants are prevented from entering the receiving drainage network, consistent with the Construction Environmental Management Plan (CEMP) and the Surface Water Management Plan (SWMP). The following mitigation measures will be applied: ■ Prior to commencement of construction, the appointed contractor(s) will prepare a method statement identifying the areas likely to be disturbed, confirming that the extent of excavation and earthworks is the minimum necessary to complete the works. ■ During earthworks and excavation, exposed soil surfaces will be stabilised to minimise erosion. Movement and double handling of soils will be kept to a minimum to avoid unnecessary degradation and sediment generation. ■ Hard surfaced construction roads will be routinely swept to remove mud, clay and aggregate deposits. Unsurfaced haul routes will be restricted to essential construction traffic only, reducing sediment mobilisation. ■ Where stockpiling is required, temporary stockpiles will be located at least 20 m from any drainage feature. Stockpiles will be positioned on level ground, compacted, graded inward, covered in periods of heavy rainfall, and surrounded on three sides with silt fencing. Downslope banks will be provided to prevent runoff entering drainage lines. ■ Silt fencing will be installed along low lying boundaries and adjacent to drainage ditches, using double layer geotextile membrane keyed into the ground to prevent bypassing. ■ Silt fences will be monitored frequently, with a silt fence inspection log maintained by the Site Manager. Daily inspections will occur during wet weather, and accumulated silt will be removed from the upslope side before capacity is exceeded. ■ Cut off drains and temporary drainage channels will be installed where necessary to intercept clean water flows and divert them away from exposed soils and excavations, reducing the potential for water ingress and uncontrolled inflow during earthworks. ■ Collected runoff requiring treatment will be directed to appropriately sized settlement ponds or temporary settlement tanks. Settlement ponds will incorporate a forebay equal to 10% of the total pond area to capture coarse sediment and will maintain a permanent water level to support fine sediment settlement. Where space is limited, proprietary mobile settlement units may be used. Only clarified surface water will be discharged. ■ Weather conditions will be considered in construction planning, with high-risk activities suspended during prolonged or intense rainfall to prevent sediment mobilisation. ■ Excavations will be left open for the minimum time practicable, and backfilling and reinstatement will proceed without delay to prevent unnecessary water ingress into the cohesive glacial tills. ■ All reinstatement, including topsoil replacement and rapid revegetation/grass cover, will be completed as soon as practicable to restore surface stability and minimise erosion. ■ Regular inspection of all surface water controls including silt fences, settlement systems, cut off drains, wheel wash areas and stockpile measures will be undertaken. A construction phase inspection log will be maintained, and any blockages, failures or pollution incidents will be promptly recorded, investigated and corrected, with measures adapted where necessary.
HYD10	Control and Treatment of Construction Surface Water No water that has accumulated onsite from any source (groundwater, surface water, or precipitation) will be pumped directly to ground or to any surface water feature.

Ref.	Mitigation measure
	All water intercepted within the site during the construction phase will be treated as construction water and will be actively managed, controlled and monitored to prevent the uncontrolled discharge of silt-laden or contaminated runoff to the existing drainage ditches, associated unnamed tributaries, the Newtown 08 waterbody, or downstream to the Broadmeadow 08 river waterbody. Construction water containing suspended solids or other pollutants will require treatment prior to discharge. Under no circumstances will untreated, silty or contaminated water be released into any surface water drainage pathway. Dewatering may be required in localised excavation areas to maintain a dry working environment. Construction water may arise from rainfall, surface water inflow or perched groundwater seepages within the cohesive glacial tills. All dewatering activities will be carefully managed to ensure that flows are captured, treated and discharged in accordance with best practice. The following control and treatment measures will be implemented: ■ Surface water, groundwater or rainwater collected within excavations or across the working area will not be pumped directly to watercourses, drainage ditches or stormwater infrastructure. All such water will undergo appropriate settlement and filtration prior to any discharge. ■ Discharge of treated construction water will only occur after water-quality testing confirms compliance with agreed discharge standards. Where suitable, treated water may be discharged to the existing stormwater drainage network following attenuation within settlement ponds or proprietary treatment units, subject to agreement with the relevant authorities. Water exceeding permitted thresholds will be either re-treated onsite or removed to a licensed waste facility by tanker. ■ Where feasible, clean water pumped from excavations—following sediment removal through settlement or filtration may be dispersed to permeable vegetated areas within the site to promote infiltration and natural attenuation. Discharge will be controlled to avoid erosion or bypassing of treatment. ■ If treated water is discharged to any receiving ditch or watercourse, energy-dissipating and sediment-control measures will be installed at the discharge point. These may include baffles, geotextile curtains, sediment mats, riprap or other appropriate devices to prevent scour and minimise sediment mobilisation. The design of any temporary discharge outfalls will be agreed with the appropriate statutory bodies. ■ Excavation works will temporarily halt during periods of prolonged or intense rainfall, allowing water levels to stabilise and reducing the likelihood of turbid runoff or excessive dewatering flows. ■ For the avoidance of doubt, no untreated, silty or contaminated construction water shall be discharged to any watercourse, drainage ditch, stormwater system or the wider hydrological environment. Should removal of contaminated construction water be necessary, discharge will occur only to the foul sewer with

Ref.	Mitigation measure
	prior agreement from Uisce Éireann, or alternatively the water will be tankered off-site to a licensed facility for appropriate disposal.
HYD11	**Control of Pollution from Other Substances** The following mitigation measures will be implemented during the construction phase to prevent spillages of fuels, hydraulic oils, lubricants, cementitious materials and other construction related chemicals. These measures will minimise the potential for pollutants to enter soils, the existing drainage ditches, unnamed tributaries, the Newtown 08 waterbody or the underlying low permeability glacial till groundwater environment. ■ All plant and machinery will be regularly inspected, serviced and maintained by qualified personnel to minimise the risk of hydrocarbon leaks or mechanical failure. Any defective plant will be removed from service until repaired. ■ Designated bunded maintenance and refuelling areas will be established within the construction compound, located away from drainage ditches and surface water pathways. ■ Spill kits (including pads, absorbent granules, booms and socks) will be provided at strategic high risk locations, including refuelling points, plant storage areas, material laydown areas and within construction vehicles. Where mobile fuel bowsers are used, the following measures will apply: ■ Flexible pipes, taps and valves will be fitted with locks and secured when not in use; ■ Pumps/valves will be locked in the closed position when unattended; ■ All bowsers will carry a spill kit and operators will receive spill response training; ■ Portable generators, compressors and similar equipment will be placed on impermeable drip trays. ■ For drummed fuels, chemicals or other potentially polluting substances, the following measures will be adopted: ■ All containers will be stored in a dedicated bunded storage area or within an internally bunded chemical cabinet. ■ Fuel and oil tanks will be stored in bunded or double skinned units, with secondary containment sized to at least 110% of the largest container. Any liquid collected within bunds will be removed and disposed of appropriately. ■ Containers will be clearly labelled to ensure correct handling and response actions in the event of a spill. ■ Drums will be certified to an approved standard and kept in good condition. ■ Where drums require movement around the site, they will be transported on spill pallets, secured to prevent tipping, and handled only by trained personnel using appropriate lifting equipment. Refuelling and maintenance of construction vehicles, and the addition of oils or lubricants, will take place only in designated areas within the construction compound (or off site where practical) and well away from any watercourses or drainage ditches. Emergency spill response equipment including booms, pads, socks and sand—will be stored in clearly marked bins, with weekly checks undertaken to ensure all kits are fully stocked. Any accidental spillage of hydrocarbons, chemicals or cementitious material will be immediately contained, with contaminated soil removed for off site disposal at a licensed

Ref.	Mitigation measure
	waste facility in accordance with relevant waste legislation. All site personnel will receive spill response training as part of site induction. Prior to work commencing, all construction equipment and mobile plant will be inspected to confirm that they are mechanically sound and free of leaks. If refuelling must occur outside the designated refuelling area, fuel will be transported in a mobile double skinned tank. The following additional measures will prevent soil and groundwater contamination during plant operation: ■ All flexible hoses, taps and valves will be locked when not in use; ■ All pumps and valves will be secured when unattended; ■ All bowsers will contain spill kits and trained operatives; ■ Portable generators or fuel containing equipment will be placed on drip trays; ■ Spill kits will undergo weekly inspections to ensure adequate stock and readiness. All works will be undertaken in accordance with CIRIA C532 - Control of Water Pollution from Construction Sites: Guidance for Consultants and Contractors to ensure industry best practice is applied throughout the construction period.
HYD12	**Waste Management** Foul wastewater generated during the construction phase will be fully managed and controlled throughout the works. All welfare facilities including toilets, wash areas and canteen provisions will be located within the designated construction compound, which will remain in place for the full duration of the development. The compound will be situated within the application site boundary in a location that avoids any areas identified as being at risk of flooding, ensuring no interaction with Flood Zone A or Flood Zone B. Water required for welfare use and general construction activities will be supplied from the existing public watermain, via a connection agreed with Uisce Éireann and installed in accordance with their current infrastructure requirements. Foul effluent arising from site offices, canteen facilities and other welfare units (c. 0.42 l/s) will be collected in self contained portable sanitary units or similar sealed systems. These units will be regularly serviced, maintained and emptied by a licensed waste contractor, ensuring that all wastewater is removed off site and treated at an authorised wastewater treatment facility. No foul effluent will be allowed to enter the ground, surface water drains, the stormwater network or any watercourse under any circumstances. Where a temporary connection to the public foul sewer is permitted, it will be used strictly for the disposal of welfare related wastewater only. Any such connection will incorporate appropriate control measures to prevent accidental discharge of contaminated water and will be decommissioned upon completion of the construction works. The appointed contractor will implement a site specific Emergency Response Plan, setting out the procedures for responding to accidental spills, welfare system failures, or any incident that could pose a risk to surface water or groundwater. Spill kits and containment equipment will be available at all welfare and waste storage locations, and all site personnel will be trained in the relevant emergency response procedures during induction and throughout the construction phase. No foul wastewater will be discharged to ground, drainage ditches, surface water systems or any element of the stormwater network at any time during construction. All waste-water will

Ref.	Mitigation measure
	be fully contained and removed off site for appropriate treatment, ensuring protection of the receiving hydrological and hydrogeological environment.
HYD13	**Works in Proximity to Waterbodies** In combination with the measures outlined above, the following specific controls will be implemented during construction works undertaken in proximity to the existing drainage ditches, overland flow paths and localised groundwater features, including St Cronan's Well (RMP DU011 018) located in the south eastern corner of the southern parcel. These measures are required to ensure that surface water quality, shallow groundwater conditions, drainage conveyance and downstream hydrological receptors including the unnamed tributaries, the Newtown 08 river and the Broadmeadow 08 river waterbody are not adversely affected. Work areas will be kept to the minimum footprint necessary. All working zones will be clearly marked, fenced or cordoned off in advance to prevent unnecessary disturbance of soil or vegetation adjacent to drainage features and the vicinity of St Cronan's Well. ■ No vehicles or machinery will enter, traverse or track within any drainage channel, swale or low lying surface water flow path, or within the immediate vicinity of St Cronan's Well. Where access across minor drainage features is unavoidable, temporary culverts or bridging structures will be installed to protect channel integrity and maintain natural flow. ■ Unnecessary tracking, excavation or disturbance of vegetated areas will be avoided to reduce the risk of sediment mobilisation into drainage pathways and shallow seepage zones. ■ Silt fencing will be installed along all construction working areas adjacent to drainage features and around sensitive areas associated with St Cronan's Well. Fencing will be securely keyed into the ground and maintained for the duration of works to ensure effective sediment retention. ■ On completion of works, all silt fencing will be removed and disposed of at a licensed waste management facility. ■ Temporary stockpiles will be located at least 20 m from any drainage ditch, watercourse or St Cronan's Well. Stockpiles will be positioned on level ground, compacted and protected from erosion during heavy rainfall. ■ Stockpiles will be surrounded on three sides with silt fencing, with downslope banks provided to prevent sediment laden runoff entering drainage lines. ■ Earthworks will be managed to minimise erosion, and exposed soils will be stabilised wherever practicable. Movement and double handling of excavated materials will be minimised to limit degradation and sediment generation. ■ Excavation works will cease during periods of continuous, heavy or prolonged rainfall, allowing surface water to dissipate before works resume and reducing the risk of excessive runoff or sediment mobilisation. ■ Where required, temporary drainage ditches or cut off drains will be installed to intercept and divert surface water away from excavations and sensitive areas, including the locality of St Cronan's Well, preventing uncontrolled flow to adjoining lands or drainage pathways. These drains will be regularly inspected and maintained. ■ Dewatering, where required following heavy rainfall, will be localised and temporary. Any discharge will occur only to vegetated areas at least 20 m from drainage features and away from St Cronan's Well, and only after prior treatment through silt bags, settlement tanks, or equivalent sediment removal systems. Silt fencing will be installed around discharge areas to ensure no sediment laden water reaches the drainage system.

Ref.	Mitigation measure
	■ Collected surface water requiring treatment will be directed to settlement ponds or mobile settlement units. Settlement ponds will incorporate a forebay equal to 10% of the pond footprint to capture coarse sediment. Ponds will maintain a permanent water level to allow fine sediment settlement before any controlled discharge to the existing surface water network. Mobile settlement tanks will be sized and operated to ensure effective removal of suspended solids before discharge. All works will be carried out in accordance with the best practice guidance documents Control of Water Pollution from Construction Sites – Guidance for Consultants and Contractors (CIRIA C532, 2001) and Inland Fisheries Ireland's Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (2016).
HYD14	**Human Health & Safety** It has been established (refer to Section 10.4.2.3 above) that there are no designated Recreational Waters or Bathing Waterbodies located within the immediate downstream environment. The existing drainage ditches, the unnamed tributaries within the site, and the downstream receiving rivers all form part of the Broadmeadow_040 WFD river waterbody, which is not associated with any downstream drinking water abstraction point that could give rise to a human health risk. As there is no source–pathway–receptor (SPR) linkage, no further mitigation is required.
HYD15	**Water Framework Directive Status** It has been established (refer to Section 10.6.2 above) that there is a potential for accidental discharges during the construction phase. However, these would be temporary, short lived events that will not impact the WFD status of the Broadmeadow_040 WFD river waterbody, which includes: ■ The existing drainage ditches on site, ■ The unnamed tributaries draining the northern and southern development parcels, and ■ The Newtown 08 and Broadmeadow 08 river waterbodies. The underlying groundwater body (Swords GWB) comprises a 'Pl - Poor Aquifer – Bedrock which is generally unproductive except for local zones' and the Proposed Development will not cause any long term deterioration in groundwater quality or status. Accordingly, the Proposed Development will not cause any significant deterioration or prevent compliance with the Water Framework Directive objectives for the Broadmeadow_040 waterbody or the Swords groundwater body (GWB), nor will it impede the ability of the receiving waters to meet the requirements of the current river basin management cycle. On a precautionary basis, the mitigation measures set out in Section 10.7.1 and Section 10.7.2 will be implemented during the construction works for the protection of surface water and groundwater quality.
Operational phase	
HYD16	**Surface Water and Groundwater Quality** The design has taken account of the potential impacts of the Proposed Development on surface water and groundwater quality, and a range of measures have been incorporated to mitigate these potential impacts and safeguard local receptors, including St Cronan's Well (RMP DU011 018) located within the south eastern corner of the southern parcel.

Ref.	Mitigation measure
	The proposed surface water management design establishes a hydrological connection to the existing on site drainage ditches, including the central drainage ditch within the southern parcel, the north western and eastern unnamed tributaries, and the Mooretown_09 watercourse, all of which drain towards the Newtown 08 river along the eastern and southern boundaries of the northern parcel. These receiving ditches and tributaries subsequently convey flows northwards to the Broadmeadow 08, forming part of the Broadmeadow_040 WFD river waterbody. Discharge from the Proposed Development will be controlled via hydrobrake flow control devices located upstream of the stormwater outfalls, ensuring that flows are restricted to greenfield equivalent rates and conveyed by gravity to the receiving ditch and downstream tributary. To mitigate potential contamination from surface water runoff which may originate from roads, car parks, and hardstanding areas; a Sustainable Drainage System (SuDS) will be implemented throughout the site. This system is designed to minimise the risk of contaminants such as hydrocarbons, suspended solids, and particulate bound pollutants entering the stormwater drainage network and subsequently impacting the hydrological and hydrogeological environment, including shallow groundwater conditions that support St Cronan's Well. SuDS measures across the development include permeable paving, filter drains, bioretention tree pits and raingardens, roadside swales, underground attenuation storage, and full retention petrol interceptors at appropriate discharge locations. These measures collectively provide interception, treatment and attenuation prior to controlled discharge, ensuring that untreated runoff is not permitted to infiltrate sensitive areas or local groundwater features. The proposed drainage system has been designed using industry standard hydraulic modelling software and in accordance with the Recommendations for Site Development Works for Housing Areas (DoEHLG), the Greater Dublin Strategic Drainage Study (GDSDS), current SuDS design guidance, and the requirements of the local authority. A new fully separated surface water sewer network is proposed for the development. In accordance with drainage standards applied within the Greater Dublin Area, surface water discharge will be restricted to the greater of 2 l/s/ha or Qbar. The system has been designed to accommodate the 1% AEP (1:100 year) storm event, including a 30% allowance for climate change, with attenuation provided through a combination of underground tanks, swales, and raingarden systems to ensure effective management of runoff volumes and peak flows. The operational drainage design ensures that no adverse effects on surface water quality, groundwater quality or the shallow spring feeding St Cronan's Well are anticipated during the operational phase. For detailed information on the operational surface water strategy, attenuation design, SuDS components, pollution control and foul drainage layout, refer to the Infrastructure Report (AKM Design Group, February 2026) and Drawing Number: 5051-AKM-XXXX-XX-DR-C01-300001 (Proposed Storm and Foul Drainage – General Layout, AKM Design Group, January 2026) submitted a spart of the planning application.
HYD17	**Surface Water and Groundwater Flow** During the operational phase, the introduction of additional hardstanding has the potential to marginally reduce local groundwater recharge and increase surface water runoff if not

Ref.	Mitigation measure
	appropriately controlled. As the site is predominantly greenfield, the Proposed Development will result in a shift from permeable to impermeable surfaces; however, the overall reduction in infiltration to the underlying 'PI – Poor Aquifer – Bedrock which is generally unproductive except for local zones' (Swords Groundwater Body) will be small and is not considered hydrologically significant. Given the cohesive, low permeability nature of the limestone derived glacial tills across the site, groundwater recharge is already limited under baseline conditions. The operational development will not introduce any abstraction, drainage interception or ground reduction capable of altering the shallow, perched groundwater regime that supports St Cronan's Well, and its natural flow conditions will be maintained. In the absence of mitigation, increased surface water runoff could potentially contribute to downstream hydraulic pressures within the existing on site drainage ditches, including the southern parcel ditch, the northwestern and eastern unnamed tributaries, and the Mooretown_09 watercourse, all of which drain to the Newtown 08 river before entering the Broadmeadow River. However, the Proposed Development is located within Flood Zone C, where the probability of fluvial flooding is low. All elements of the Proposed Development have been positioned outside areas identified as susceptible to localised flooding, effectively eliminating residual flood risk to the development itself. To ensure runoff is properly managed and does not exceed predevelopment conditions, the proposed drainage system incorporates a suite of Sustainable Drainage Systems (SuDS) and attenuation features. These measures regulate, treat and attenuate flows before discharge to the receiving ditches and tributaries, ensuring that: ■ Runoff rates remain restricted to greenfield equivalent conditions; ■ Peak flows are contained on site; ■ Downstream drainage networks, including the local ditches and unnamed tributaries, are not hydraulically overloaded; and ■ Local groundwater recharge patterns, including those relevant to St Cronan's Well, remain broadly unchanged The system has been designed to manage the 1% AEP (1:100 year) storm event, with an additional 30% climate change allowance and 10% urban creep allowance, providing robust long term resilience under future climate scenarios. No surface water or groundwater abstractions are proposed during the operational phase. Therefore, no impacts on the quantity of local water resources are anticipated, and no drawdown or flow reduction at St Cronan's Well will occur. Overall, with the proposed SuDS measures and attenuation systems in place, no significant operational impacts on surface water or groundwater flow or quantity are expected. For detailed information on the operational surface water strategy, attenuation design, SuDS components, pollution control and foul drainage layout, refer to Infrastructure Report (AKM Design Group, February 2026) and Drawing Number: 5051-AKM-XXXX-XX-DR-C01-300001 (Proposed Storm and Foul Drainage – General Layout, AKM Design Group, January 2026) submitted as part of the planning application.
HYD18	**Human Health & Safety** It has been established (refer to Section 10.4.2.3 above) that there are no recorded Recreational Waters or designated Bathing Waterbodies located within the downstream

Ref.	Mitigation measure
	environment of the Proposed Development. The existing on site drainage ditches, the unnamed tributaries, the Mooretown_09 stream and the Newtown 08 waterbody which collectively form part of the Broadmeadow_040 WFD river waterbody do not support any identified recreational water uses. There are no public surface water drinking water abstraction points located downstream of the site within the Broadmeadow catchment. Similarly, there are no recorded public groundwater supply sources, Group Water Schemes, groundwater source protection zones, public supply source protection areas, or Group Scheme preliminary source protection areas identified by the Geological Survey of Ireland (GSI) within or in the vicinity of the Proposed Development. The underlying groundwater body is classified as a 'Pl – Poor Aquifer – Bedrock which is generally unproductive except for local zones' (Swords GWB), and no groundwater abstraction wells serving public or private potable supplies are located within the zone of influence of the site. As there is no source–pathway–receptor (SPR) linkage between the Proposed Development and any human health receptors, no further mitigation is required during the operational phase.
HYD19	**Water Framework Directive Status** There is a potential risk of accidental discharges during the operational phase from car parking areas and roads (as detailed in Section 10.6.3.4). However, these events would be temporary and short lived, with no long-term impacts. Given the level of treatment, attenuation and flow control provided by the SuDS infrastructure, the Proposed Development will not cause deterioration in the WFD status of any of the surface water features hydrologically connected to the site, including the central southern drainage ditch, the north western and eastern unnamed tributaries, the Mooretown_09 watercourse, and the Newtown 08 river waterbody, all of which form part of the Broadmeadow_040 WFD river waterbody. The underlying groundwater body comprises a 'Pl – Poor Aquifer – Bedrock which is generally unproductive except for local zones' (Swords GWB). Given the low permeability of the bedrock and the treatment measures incorporated into the surface water drainage system, there is no pathway for any operational phase runoff to cause deterioration in groundwater status. During the operational phase, only limited and highly controlled surface water discharges will occur from the Proposed Development. Runoff will be regulated by hydrobrake flow control devices located upstream of the stormwater outfalls, ensuring that flows are attenuated, treated and conveyed by gravity to the receiving on site drainage ditches and downstream unnamed tributaries before ultimately discharging to the Newtown 08 waterbody. Consequently, the Proposed Development will not lead to any significant deterioration or change in water quality status, nor will it hinder the achievement of Water Framework Directive (WFD) objectives or the goals outlined in the current river basin management cycle. The proposed foul water drainage system for the subject site has been designed to discharge via gravity into the existing foul drainage system within the Cronan's Well Estate. Minimum gradients and pipe diameters for the main foul sewers have been designed in accordance with Uisce Éireann's Code of Practice and Standard Details for Wastewater Infrastructure, IS EN 752 (2008), IS EN 12056: Part 2, and Building Regulations Part H.

Ref.	Mitigation measure
	According to current capacity information, the Swords Wastewater Treatment Plant (WWTP; Active Licence Number: D0024-01) has sufficient operational capacity to accommodate the Proposed Developments peak foul effluent discharge of 10.81 l/s. This foul loading will not adversely impact the operational capacity of Swords WWTP nor downstream surface water environments within the wider Nanny-Delvin WFD catchment. According to the Swords Waste Water Treatment Plant (WWTP) Annual Environmental Report (AER, 2024), the plant's reported peak hydraulic capacity is 60,750 m³/day (703.125 l/s). The Proposed Development's peak foul effluent discharge of 10.81 l/s represents approximately 1.54% of this capacity. This level of additional loading is negligible in hydraulic terms and will not constrain the ability of Swords WWTP to continue operating within its licensed limits or to meet the relevant environmental objectives for the receiving waters. All foul water conveyed to Swords WWTP will receive full treatment prior to discharge, ensuring no operational phase pathway to the hydrological or hydrogeological environment. As the Proposed Development will drain to a fully separated foul system, it will not contribute any additional stormwater flows to Swords WWTP. Furthermore, as the underlying groundwater body is a 'PI – Poor Aquifer – Bedrock which is generally unproductive except for local zones' (Swords GWB), there is no pathway for foul water infrastructure to impact groundwater quality or status during operation. For further information, refer to the Water Framework Directive (WFD) Screening Report, prepared by AWN Consulting Ltd (March 2026) in support of the planning application. No further mitigation is required.

Table 23.9 Monitoring - Hydrology

Phase	Monitoring measure
Construction	During the construction phase, the following monitoring measures will be implemented: ■ Monitoring will be undertaken in accordance with planning conditions and carried out by the contractor in compliance with the project CEMP. ■ Contractors will carry out regular inspections to confirm compliance with the CEMP. Daily inspections will address potential environmental impacts including dust, litter, waste management and general housekeeping. ■ Weekly checks will be carried out to ensure surface water drains are not blocked by silt or debris and that all material storage areas are located at least 20 m from surface water receptors. ■ Regular inspection of surface water runoff and all sediment control measures (such as silt traps, silt bags, settlement tanks and silt fencing) will be undertaken. Silt fences will be maintained throughout the entire construction period, with accumulated sediment removed to ensure continued effectiveness. ■ Runoff diversion channels, temporary bunds and cut off drains will be inspected and maintained regularly to ensure they function effectively for the duration of the works. ■ Regular auditing of construction and mitigation measures will be undertaken, including checks on concrete works, refuelling only in designated areas, storage of fuels and chemicals, and adherence to pollution prevention procedures. ■ Stockpiles, material deposition areas and similar working zones will be monitored during active use and periodically thereafter to ensure erosion and sediment release controls remain effective.

Phase	Monitoring measure
	■ A log of all inspections will be maintained. Any significant blockages, spills, pollution incidents or non-conformances will be recorded, investigated and followed by corrective action to prevent recurrence.
Operational	No routine surface water monitoring is proposed during the operational phase due to the low hazard potential associated with the completed development and the presence of SuDS features designed to treat and control runoff. Hydrocarbon interceptors will be maintained and cleaned out in accordance with the manufacturer's instructions to ensure continued effectiveness. Routine maintenance of the surface water drainage system and foul sewers, consistent with standard practice for residential developments, is recommended to minimise the risk of accidental discharges, blockages or spillages reaching surface water receptors.

23.3.5 Air Quality

Table 23.10 Mitigation measures – Air Quality

Ref.	Mitigation Measures
AQ01	Communications ■ Develop and implement a stakeholder communications plan that includes community engagement before work commences on site. ■ Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager. ■ Display the head or regional office contact information.
AQ02	Site Management ■ Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken. ■ Make the complaints log available to the local authority when asked. ■ Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book.
AQ03	Preparing and Maintaining the Site ■ Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible. ■ Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site. ■ Fully enclose site or specific operations where there is a high potential for dust production and the site is actives for an extensive period ■ Avoid site runoff of water or mud. ■ Keep site fencing, barriers and scaffolding clean using wet methods. ■ Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below. ■ Cover, seed or fence stockpiles to prevent wind whipping.
AQ04	Operating vehicle/machinery and sustainable travel ■ Ensure all vehicles switch off engines when stationary – no idling vehicles. ■ Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable. ■ Impose and signpost a maximum-speed-limit of 20 kmph on surfaced and 15 kmph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may

Ref.	Mitigation Measures
	be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate) ■ Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials. ■ Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and carsharing).
AQ05	Operations ■ Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems ■ Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate ■ Use enclosed chutes and conveyors and covered skips. ■ Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate. ■ Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.
AQ06	Waste management ■ Bonfires and burning of waste materials are legally prohibited.
AQ07	Measures specific to earthworks ■ Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable ■ Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as is practicable. ■ Only remove the cover in small areas during work and not all at once.
AQ08	Measures specific to construction ■ Avoid scabbling (roughening of concrete surfaces) if possible. ■ Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place. ■ Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery. ■ For smaller supplies of fine powder materials, ensure bags are sealed after use and stored appropriately to prevent dust.
AQ09	Measures specific to trackout ■ Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use. ■ Avoid dry sweeping of large areas. ■ Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. ■ Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable. ■ Record all inspections of haul routes and any subsequent action in a site logbook.

Ref.	Mitigation Measures
	■ Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned. ■ Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable). ■ Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permit. ■ Access gates to be located at least 10 m from receptors where possible.
Operational phase	
There is no mitigation required for the operational phase of the development	

Table 23.11 Monitoring - Air Quality

Phase	Monitoring measure
Construction	The following monitoring measures are proposed to ensure the dust mitigation measures are working satisfactorily: ■ Undertake daily on-site and off-site inspections, where receptors (including roads) are nearby, to monitor dust, record inspection results in the site inspection log. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of site boundary, with cleaning to be provided if necessary. ■ Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions. The potential for dust generation increases when rainfall is less than 0.2 mm/day and at wind speeds of greater than 10 m/s. To determine if these conditions are likely to affect the site, the weather forecast should be consulted daily, specifically the hourly forecasts for wind speeds as well as 12-hour rainfall radar showing anticipated amounts of precipitation in mm. ■ Monitoring of construction dust deposition along the site boundary to nearby sensitive receptors, specifically to the east and the south of the site close to residential receptors (see Figure 11.2), during the construction phase of the Proposed Development is recommended to ensure mitigation measures are working satisfactorily. This can be carried out using the Bergerhoff method in accordance with the requirements of the German Standard VDI 2119. The Bergerhoff Gauge consists of a collecting vessel and a stand with a protecting gauge. The collecting vessel is secured to the stand with the opening of the collecting vessel located approximately 2m above ground level. The TA Luft limit value is 350 mg/m2/day during the monitoring period of 30 days (+/- 2 days). Monitoring shall ensure that the dust mitigation measures are working satisfactorily as construction works progress.

23.3.6 Climate

Table 23.12 Mitigation measures – Climate

Ref.	Mitigation measure
Construction phase	
C01	Embodied carbon of materials and construction activities will be the primary source of climate impacts during the construction phase. During the construction phase the following best

Ref.	Mitigation measure
	practice measures shall be implemented on site to prevent significant GHG emissions and reduce impacts to climate: ■ Prevention of on-site or delivery vehicles from leaving engines idling, even over short periods. ■ Ensuring that fossil fuel powered plant and equipment meet the meet local emission standards ■ Ensuring, where practicable, that site vehicles and delivery vehicles meet the required standards for emissions ■ Ensure all plant, machinery and vehicles are well maintained and inspected regularly. ■ Specifying electrically powered plant and equipment where practicable and using grid connections for electric power when practicable instead of fossil fuel powered generators ■ Bare soil areas will be minimised in extent and duration. Temporary soil stockpiles will be seeded to minimise run-off. All landscape areas, including temporary compound areas, will be reinstated ■ Re-use and recycling of materials on site where practicable as opposed to disposal and landfill in line with Circular Economy principles ■ Sourcing materials locally will be prioritised where practicable. This will help to reduce transport related CO2 emissions and helps support local suppliers, further promoting economic sustainability
C02	In terms of impact on the Proposed Development due to climate change, during construction the Contractor will be required to mitigate against the effects of extreme rainfall/flooding through site risk assessments, method statements and good site management practise. The Contractor will also be required to mitigate against the effects of extreme wind/storms, temperature extremes through site risk assessments, method statements and good site management practise. All materials used during construction will be accompanied by certified datasheets which will set out the limiting operating temperatures. Temperatures can affect the performance of some materials, and this will require consideration during construction. During construction, the Contractor will be required to mitigate against the effects of fog, lighting and hail through site risk assessments and method statements.
Operational phase	
C03	A number of mitigation measures have been incorporated into the design of the development to reduce the impact on climate wherever possible. A Climate Action Energy Statement was prepared by ENX in relation to the Proposed Development. The Climate Action Energy Statement states that the development will be a Nearly Zero Energy Building (NZEB) in accordance with the 2022 Part L requirements.
C04	The residential units will aim to achieve an A2/A3 rated Building Energy Ratio (BER) in line with the NZEB requirements. The development shall include several energy conservation measures to achieve a high energy rating as outlined in the Climate Action Energy Statement: ■ Buildings to be constructed with walls achieving a U-value of 0.18W/m²K for apartments and duplexes and 0.14 W/m²K for houses ■ A thermal bridging factor of 0.15 to be achieved for all buildings ■ Air tightness of apartments to be 3 m³/hr/m² and houses to achieve 0.25 m³/hr/m²

Ref.	Mitigation measure
	■ Space heating to be undertaken using either air source heat pumps with Seasonal Coefficient of Performance values exceeding 400%, exhaust air heat pumps or electric storage heaters ■ Domestic hot water to be provided by ASHP or ESHP ■ Time and temperature controls for interior zones are to be provided
C05	A number of sustainable design features have been considered within the design to achieve the sustainability targets of the Proposed Development. These include: ■ The proximity of the development to public transportation networks ■ The proximity of the Proposed Development to active travel networks and car sharing locations ■ Installation of infrastructure for electric vehicle (EV) charging for buildings with more than ten car parking spaces to allow for future installation of EV charging points ■ Water efficiency measures such as low consumption sanitary fittings ■ Improved indoor environmental quality
C06	In addition, the non-building infrastructure shall incorporate the following measures to mitigate vulnerability to the effects of climate change: ■ To address climate change vulnerability and risk of flooding, the Proposed Development will incorporate SuDS features along flow routes to intercept and slow runoff and promote infiltration. Consultation with Fingal County Council has resulted in natural design solutions being favoured for this purpose ■ Drainage has been designed in accordance with the Greater Dublin Strategic Drainage Study Vol. 2 ■ The proposed landscaping will account for extreme wind events by providing large root zones for any proposed trees as well as tree anchoring systems to enhance stability and resilience. ■ Construction materials will consider, at detailed design, projected climate variations, including periods of extreme heat and cold, to ensure resilience, user comfort, and durability. Road materials will comply with TII and other relevant standards. ■ At detailed design stage, appropriate plant species will be selected that are suitable for the site conditions and able to withstand the climate and conditions of the east of Ireland The above measures will assist in optimising the energy consumed by the development and will also have the benefit of reducing the impact to climate during the operational phase of the development.

Table 23.13 Monitoring - Climate

Phase	Monitoring measure
Construction	Monitoring and reporting of the embodied carbon in the construction phase will be conducted in accordance with PAS2080. The aim of monitoring will be to seek further ways to minimise climate impacts. Monitoring will include contractual obligations, in line with the most recent Climate Action Plan and sectoral targets, for the successful tenderer to ensure that the Proposed Development stays in line with updated aims. Commitments to monitor GHG emissions during the construction phase will also be secured through the final Construction Environmental Management Plan (CEMP). Monitoring will include embodied carbon of construction materials, water usage, power and fuel usage, and waste generation

Phase	Monitoring measure
	(including reuse and recycling rates). Where monitoring shows that the Proposed Development is not meeting its targets, further mitigation will be put in place. Monitoring should also include reviewing potential for extreme weather events which may cause damage during construction. Contractors' Environmental Management System (EMS) will include measures to address risks during such events i.e. flooding.

23.3.7 Noise & Vibration

Table 23.14 Mitigation measures – Noise & Vibration

Ref.	Mitigation measure
Construction phase	
NV01	Best practice noise and vibration control measures will be employed by the contractor during the construction phase in order to avoid significant impacts at the nearest sensitive buildings. The best practice measures set out in BS 5228 (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, and also by referring to the preliminary Construction Environmental Management Plan (CEMP).
NV02	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.
NV03	General Comments on 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: ■ The use lifting bulky items, dropping and loading of materials within these areas will be restricted to normal working hours.

Ref.	Mitigation measure
	■ 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.
NV04	**Piling** Piling is the construction activity which is most likely to cause disturbance. General guidance in relation to piling is outlined in the following paragraphs. Piling programmes 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 a 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 prevent unacceptable disturbance at any time. Prior to construction the planner, developer, architect and engineer, as well as the local authority, will be made aware of the proposed method of working of the piling contractor. The piling contractor will in turn have evaluated any practicable and more acceptable alternatives that would economically achieve, in the given ground conditions, equivalent structural results. On typical piling sites the major sources of noise are essentially mobile, and the noise received at any control points will therefore vary from day to day as work proceeds. The duration of piling works is typically relatively short in relation to the length of construction work as a whole, and the amount of time spent working near to noise sensitive areas can represent only a part of the piling period. Noise reduction can be achieved by enclosing the driving system in an acoustic shroud. 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 or utilising an acoustic canopy to replace the normal engine cover. Impact noise when piling is being driven can be reduced by introducing a non-metallic dolly between the hammer and the driving helmet. Screening by barriers and hoardings is less effective than total enclosure but can be a useful adjunct to other noise control measures. For maximum benefit, screens should be close either

Ref.	Mitigation measure
	to the source of noise (as with stationary plant) or to the listener. Removal of a direct line of sight between source and listener can be advantageous both physically and psychologically. In certain types of piling works there will be ancillary mechanical plant and equipment that may be stationary, in which case, care should be taken in location, having due regard also for access routes. When appropriate, screens or enclosures should be provided for such equipment.
NV05	**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.
NV06	**Liasing with the public** A designated Project Supervisor Construction Stage (PSCS) will be appointed to site during construction works. Any noise complaints will be logged and followed up in a prompt fashion by the PSCS. In addition, prior to particularly noisy construction activity (e.g. piling), the PSCS will inform the nearest noise sensitive locations of the time and expected duration of the noisy works.
NV07	The phasing programme will be arranged to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity. The project will be delivered in three phases: Phase 2a, Phase 2b, and Phase 2c. This phased construction programme is designed to minimise cumulative noise and vibration impacts at nearby Noise-Sensitive Locations. If piling works are in progress on another site at the same time as other works of construction that themselves may generate significant noise and vibration, the working programme will be phased so as to ensure noise limits are not exceeded due to cumulative activities. This will be reviewed in relation to other potential cumulative works occurring on adjacent construction site in close proximity to noise sensitive properties which have the potential to lead to significant construction noise impacts.
Operational phase	
NV08	**Mechanical and Building Services Plant** 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. 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 any 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:

Ref.	Mitigation measure
	■ 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 23.15 Monitoring – Noise & Vibration

Phase	Monitoring measure
Construction	During the construction phase, noise monitoring will be undertaken at sample locations representative of the nearest sensitive locations to ensure construction noise limits outlined in Table 13.1 are not exceeded. Noise monitoring will be conducted in accordance with the International Standard ISO 1996: Acoustics – Description, measurement and assessment of environmental noise Part 1 (2016) and Part 2 (2017). The selection of monitoring locations will be based on the nearest sensitive buildings to the working areas. It is recommended that noise control audits are conducted at regular intervals throughout the construction programme in conjunction with noise monitoring. The purpose of the audits will be to ensure that all appropriate steps are being taken to control construction noise emissions and to identify opportunities for improvement, where required.
Operation	There is no monitoring recommended for the operational phase of the development as impacts to noise and vibration are predicted to be not significant.

23.3.8 Landscape & Visual

Table 23.16 Mitigation measures – Landscape & Visual

Ref.	Mitigation measure
Construction phase	
LV01	Apart from (a) the measures for hedgerow and tree protection (as recommended in the Arboricultural Report prepared by Charles McCorkell Arboricultural Consultant), (b) the measures for protection of archaeological resources (as recommended by Courtney Deery Heritage Consultancy Ltd in Chapter 15 – Cultural Heritage. Archaeology and Architectural Heritage), and (c) standard best practice construction site management (as set out in the Construction and Environmental Management Plan by AKM Design Group), no mitigation measures are required / recommended specifically for landscape and visual effects.
Operational phase	
LV02	The housing typology (two storey terraced) and siting (rear elevations and gardens to the shared boundary; a typical suburban arrangement;
LV03	A timber trellis on the rear garden boundary wall to reduce and soften the visual enclosure while providing a visual screen;
LV04	The positioning of the proposed Glasmore Archaeological Park just to the south, adjoining the existing Glasmore Abbey Park (beside Cianlea). The open space of the proposed park is visible

Ref.	Mitigation measure
	to the left in the photomontage for Viewpoint 09 (Table 14.3), to the rear of the Cinalea house to the left.

Table 23.17 Monitoring – Landscape & Visual

Phase	Monitoring measure
Construction/Operational	The retention of existing hedgerows and trees on site is an important element of the proposal. Any unplanned loss of vegetation would result in negative landscape and visual impacts. The planning application is accompanied by an Arboricultural Report by Charles McCorkell Arboricultural Consultant. This includes the requirement for all works potentially affecting retained hedgerows and trees to be supervised / monitored by a Project Arborist, and for retained vegetation to be reviewed for any ongoing monitoring or management needs. No other monitoring of landscape and visual effects is required.

23.3.9 Cultural Heritage, Archaeology & Architectural Heritage

Table 23.18 Mitigation measures - Cultural Heritage, Archaeology & Architectural Heritage

Ref.	Mitigation measure
Construction phase	
CAA01	Preservation in-situ Using the same strategy for the development of the Oldtown Section of the Rathbeale Archaeological Park, prior to the landscaping of the parks, the following mitigation measures will be put in place: ■ Prior to the commencement of development, full details in relation to the construction methodology for the archaeology parks will be provided to the licenced site archaeologist. An Archaeological Impact Assessment will be prepared, and an archaeological method statement will be developed and submitted to the DHLGH for approval. ■ All known archaeological sites and designated archaeological park areas will be clearly demarcated on construction drawings and protected by appropriate fencing and exclusion zones prior to the commencement of construction works ■ These exclusion zones will be maintained for the duration of construction and will prohibit all construction-related activities, including machinery movement, material storage and access ■ All construction personnel will be made aware of the archaeological sensitivity of the site through site inductions and toolbox talks. ■ Prior approval of any activity within the zone should be sought from the site archaeologist. A programme of integrated heritage signage will be incorporated within the proposed archaeological parks. This signage will interpret the extent, character and significance of the archaeological resource in a clear and accessible manner, thereby enhancing public understanding and appreciation of the site. The signage strategy will be developed in

Ref.	Mitigation measure
	accordance with the approach successfully implemented at the Oldtown Archaeological Park, ensuring consistency in design, materials and interpretive content.
CAA02	Any works at or in relation to a recorded monument requires two months' notice to the NMS (DHLGH) under Section 12 of the National Monuments (Amendment) Act, 1994. All archaeological work will be carried out under licence to the NMS (DHLGH) subject to their approval of a licence application and method statement. Licences can take up to 4 weeks to procure. Fingal County Council will fund any archaeological work that may take place during construction of the Proposed Development and the preparation of any reports arising from that work. Adequate financial provision will also be made available for post-excavation work, the conservation of artefacts (if any) and the publication of any archaeological excavation results as required. All mitigation practices will be carried out in accordance with current best practice. All archaeological work will be carried out in accordance with the relevant local and national policies and best practice guidelines as outlined in Section 15.2.2 and in particular the Department's Framework and Principles for the Protection of the Archaeological Heritage (1999) and Policy and Guidelines on Archaeological Excavation (1999).
Operational phase	
CAA03	No additional mitigation measures are required during the operational phase, as all known archaeological sites will be preserved in situ. The archaeological parks and open space strategy will provide ongoing protection for the resource. The inclusion of interpretation and signage will further enhance the cultural value of the sites and ensure their integration into the development.

Table 23.19 Monitoring – Cultural Heritage, Archaeology & Architectural Heritage

Phase	Monitoring measure
Construction	Archaeological issues will be resolved at the pre-construction and construction stages of the development. This will include any necessary archaeological monitoring and inspection work required. Archaeological monitoring will take place of any works requiring ground disturbance / excavation, including site preparation works and temporary works where required in the unstripped greenfield areas of the site, this will be carried out under licence to the Department Housing, Local Government and Heritage (DHLGH) and will ensure the full recognition of, and – if required – the proper excavating and recording of all archaeological features, finds or deposits which may lie undisturbed beneath the ground surface.

23.3.10 Microclimate – Daylight & Sunlight

The subject application proposes the development of a greenfield site zoned for development, within the Development Plan. In these circumstances, during the construction or operational phases scope for mitigation measures, which would preserve a sustainable level of density, is limited.

The impacts of the Proposed Development on daylight & sunlight to itself have been mitigated through considered design and development to ensure the highest level of compliance for the operational phase and human health.

23.3.11 Microclimate – Wind

Beyond what is already proposed under the scope of the Proposed Development, no further mitigation is proposed in relation to wind. The landscaping proposed for the development has been considered within the wind analysis carried out and its effect has been beneficial in reducing the wind speed around the development and creating calmer wind condition in areas such the parks and landscaped areas where pedestrian can be comfortable for long-term sitting.

23.3.12 Traffic & Transportation

Table 23.20 Mitigation measures – Traffic & Transportation

Ref.	Mitigation measure
Construction phase	
TT01	A detailed Construction Environmental Management Plan (CEMP) has been prepared by AKM and submitted under separate cover as part of the planning application. The CEMP includes the mitigation contained in this EIAR, including construction traffic management measures.
TT02	Construction traffic mitigation measures address likely human health risks and documents construction practices and measures that can be adopted to minimise any effects on road users during the Proposed Development's construction phase. The follow overarching objectives are noted: ■ mitigate likely construction traffic effects on nearby local roads by routing construction traffic along the regional and national road network, where possible; ■ construction traffic movements will be scheduled to avoid school pick-up and drop-off times in order to minimise potential conflicts with school-related pedestrian and vehicular activity; ■ avoid conflict between construction traffic activities and general traffic/ pedestrians/ cyclists in the general vicinity of the site; and ■ set out appropriate construction staff car parking arrangements so as to avoid overspill car parking on the local road network and resulting potential for traffic hazards. A proposed HGV construction traffic route has been developed for the Proposed Development. The HGV haulage route shall be strictly adhered to, as illustrated in the following Figure 18.12, unless otherwise agreed with the Local Authority.
TT03	Furthermore, the following mitigation actions would be advised for the construction period of the Proposed Development: ■ All construction staff parking will be accommodated in temporary parking areas within the site, which will have capacity for c. 35 no. vehicles; ■ A Construction Staff Travel Management Plan (CSTP) for the site will be developed by the contractor and implemented prior to construction works commencing; ■ Just-in-time deliveries will be arranged where feasible; ■ Construction materials will, where feasible, be sourced from local suppliers and manufactures, thus, limit likely effects of construction traffic;

Ref.	Mitigation measure
	■ The site will operate from 07:00hrs to 19:00hrs on weekdays and from 08:00hrs to 14:00hrs on Saturday. No works will be undertaken on Sundays or Bank Holidays without the consent of FCC; ■ A signage plan will be developed and implemented, providing advance warning of the construction access junction, and likelihood of slow-moving turning traffic to/ from the site; ■ Compliance with the CEMP will form part of written contracts between the principal contractor and nominated sub-contractors; ■ Methods of handling materials on site will be in accordance with construction site health and safety requirements; ■ An on-site speed restriction of 15 kph shall be enforced; ■ Where required, construction vehicles will be inspected prior to exit from the site to ensure that dirt is not spread onto the adjoining road, and systems shall be put in place to facilitate this process, including an on-site cleaning area and/ or rumble grid; ■ The principal contractor will comply at all times with FCC requirements, including but not limited to hoarding/ scaffolding licences, skip licences etc; and ■ The CEMP will be monitored constantly throughout the proposed construction programme and updated as needed to reflect the evolving needs of the project. The process for monitoring and updating the CEMP will be in accordance with FCC requirements. The construction traffic mitigation measures will ensure that suitable temporary traffic works, and road safety measures are put in place during the construction phase. The plan will ensure that any required traffic management measures are put in place to minimise the impact on local road users. Construction related traffic will access/ egress the site via the R125 Rathbeale Road, the impact of the construction period will be temporary in nature and will cease following completion of the works. No significant effects are likely to occur due to construction phase traffic. The applicant will appoint a dedicated construction manager and construction traffic manager. The construction traffic manager will be required to coordinate and schedule all deliveries to the site, ensure that the access roads are kept clear of mud and debris, advise haulage contractors on the appropriate routes to and from the site, and to adhere to good traffic management principles. In this way, the likely effects of the construction phase can be appropriately managed. No significant effects are expected.
Operational phase	
TT04	Swords provides suitable infrastructure and transport services to enable travel by sustainable modes. In addition, proposed active travel and public transport improvements planned for Swords shall help to enable sustainable mode choices. A key barrier to modal shift towards sustainable modes of travel is often a lack of information about potential alternatives to the car. To encourage sustainable transport use and help reduce potential traffic impacts, a Framework Residential Travel Plan (RTP) has been prepared by Transport Insights and is included within the overall application package. The RTP will implement the mitigation measures set out in this EIAR. RTP Objectives and Measures

Ref.	Mitigation measure
	Considering the site's accessible location, multiple employment and educational destinations within its walking, cycling, and public transport catchment and access to public transport services, the overarching objectives of the RTP are to: ■ promote sustainable travel choices (walking, cycling and public transport); and ■ support car-free lifestyle among residents and visitors of the development. To achieve the mode share targets in the RTP, the following actions will be undertaken: ■ Appointment of a Residential Travel Plan Co-Ordinator (RTPC); ■ Promotion of the public transport TaxSaver scheme and Cycle to Work scheme; ■ Promote a sustainable alternative to private car ownership through provision of active travel infrastructure. It is also noted, car share spaces are provided on the access road as part of Mooretown Phase 1; ■ Provision of secure cycle parking for standard and non standard type bicycles across the development to serve future residents, visitors and users of the commercial, community and crèche amenities; ■ Promotion of walking as active travel in residents Sustainable Transport Information Pack; and ■ Incentivising Active Commuters. The Framework document sets out a clear set of objectives and identifies measures to help achieve the stated objectives, as well as appropriate monitoring and marketing techniques. Following occupation of the site and appointment of an RTPC, it is recommended that the Action Plan included in the RTP be further developed. The Action Plan will remain a 'living' document thereafter and should be updated periodically.

Table 23.21 Monitoring- Traffic & Transportation

Phase	Monitoring measure
Construction	During the construction stage the following monitoring exercises will be carried out. The specific compliance exercises to be undertaken in regard to the range of measures detailed in the final construction management plan will be agreed with the planning authority. ■ Compliance with construction vehicle routing practices; ■ Compliance with construction vehicle parking practices; ■ Internal and external road conditions, and ■ Timings of construction activities. Construction traffic will be monitored constantly throughout the proposed construction programme and updated as needed to reflect the evolving needs of the project. The process for monitoring and updating the CEMP will be in accordance with Local Authority requirements.
Operation	It is important to monitor and update the RTP to ensure the actions are being implemented and that action is sustained over time. It also provides an opportunity for the effectiveness of actions to be assessed, and if required, new actions identified. The following steps are recommended to monitor progress: ■ Informed by a residents and visitors travel survey, the RTP should be updated within six months of occupation of the full site; and the Action Plan tailored to meet the specific requirements of its residents and visitors.

Phase	Monitoring measure
	■ A resident and visitor travel survey should be carried out biannually thereafter, forming the baseline from which the RTP's future performance is measured and additional/ amended interventions identified. ■ A review of the actions carried out or due should be carried out by the RTPC every three months. This should take the form of a memo to the scheme's management company, documenting actions implemented, residents' feedback etc

23.3.13 Material Assets – Waste

Table 23.22 Mitigation measures – Material Assets - Waste

Ref.	Mitigation measure
Construction phase	
WM01	As previously stated, a project-specific RWMP has been prepared in line with the requirements of the EPA 'Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction and Demolition Projects' (2021) and is included as **Appendix 19.1**. The mitigation measures outlined in the RWMP will be implemented in full and form part of the mitigation strategy for the site. The mitigation measures presented in this RWMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the excavation and construction phases of the Proposed Development. Prior to commencement, the appointed Contractor(s) will be required to refine / update the RWMP (**Appendix 19.1**) in agreement with FCC and in compliance with any planning conditions, or submit an addendum to the RWMP to FCC, detailing specific measures to minimise waste generation and resource consumption, and provide details of the proposed waste contractors and destinations of each waste stream. The Contractor will implement the RWMP throughout the duration of the proposed excavation and construction phases.
WM02	A quantity of topsoil and sub soil will need to be excavated to facilitate the Proposed Development. The quantity surveyors have estimated that the majority excavated material will need to be removed off-site. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site.
WM03	Building materials will be chosen to 'design out waste'
WM04	On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling and recovery. The following waste types, at a minimum, will be segregated: ■ Clean Soil ■ Contaminated soil (if located onsite) ■ Concrete rubble (including ceramics, tiles and bricks); ■ Plasterboard; ■ Metals; ■ Glass; ■ Timber; ■ Asbestos.

Ref.	Mitigation measure
WM05	Left over materials (e.g. timber off-cuts, broken concrete blocks / bricks) and any suitable construction materials shall be re-used on-site, where possible; (alternatively, the waste will be sorted for recycling, recovery or disposal)
WA06	All waste materials will be stored in skips or other suitable receptacles in designated areas of the site
WA07	Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required);
WA08	A Resource Manager will be appointed by the main Contractor(s) to ensure effective management of waste during the excavation and construction works;
WA09	All construction staff will be provided with training regarding the waste management procedures;
WA10	All waste leaving site will be reused, recycled or recovered, where possible, to avoid material designated for disposal;
WA11	All waste leaving the site will be transported by suitably permitted contractors and taken to suitably registered, permitted or licenced facilities;
WA12	All waste leaving the site will be recorded and copies of relevant documentation maintained;
WA13	Nearby sites requiring clean fill material will be contacted to investigate reuse opportunities for clean and inert material, if required. If any of the material is to be reused on another site as by-product (and not as a waste), this will be done in accordance with Regulation 27 (By-products), as amended, European Union (Waste Directive) Regulations 2011-2020. EPA approval will be obtained prior to moving material as a by-product.
Operational phase	
WA17	All waste materials will be segregated into appropriate categories and will be temporarily stored in appropriate bins or other suitable receptacles in designated, easily accessible areas of the site.
WA18	A project specific OWMP has been prepared and is included as **Appendix 19.2,** Volume 3 of the EIAR**.** The mitigation measures outlined in the OWMP will be implemented in full and form part of the mitigation strategy for the site. Implementation of this OWMP will ensure a high level of recycling, reuse and recovery at the development. All recyclable materials will be segregated at source to reduce waste contractor costs and ensure maximum diversion of materials from landfill, thus achieving the targets set out in the NWMPCE, Waste Action Plan for a Circular Economy – Waste Management Policy in Ireland and the MCC and KCC waste bye-laws. Residents, tenants and facilities management of the site during the operational phase will be responsible for ensuring – allocating personnel and resources, as needed – the ongoing implementation of the OWMP, ensuring a high level of recycling, reuse and recovery at the site of the Proposed Development.
WA19	On-site segregation of all waste materials into appropriate categories including (but not limited to): ■ Organic waste; ■ Dry Mixed Recyclables;

Ref.	Mitigation measure
	■ Mixed Non-Recyclable Waste; ■ Glass; ■ Waste electrical and electronic equipment (WEEE); ■ Batteries (non-hazardous and hazardous); ■ Cooking oil; ■ Light bulbs; ■ Cleaning chemicals (pesticides, paints, adhesives, resins, detergents, etc.); ■ Furniture (and from time-to-time other bulky waste); and ■ Abandoned bicycles.
WA20	Residents, tenants and facilities management will ensure that all waste materials will be stored in colour coded bins or other suitable receptacles in designated, easily accessible locations. Bins will be clearly identified with the approved waste type to ensure there is no cross contamination of waste materials
WA21	Residents, tenants and facilities management will ensure that all waste collected from the site of the Proposed Development will be reused, recycled, or recovered, where possible, with the exception of those waste streams where appropriate facilities are currently not available
WA22	Residents, tenants and facilities management will ensure that all waste leaving the site will be transported by suitably permitted contractors and taken to suitably registered, permitted, or licensed facilities
WA23	These mitigation measures will ensure the waste arising from the development is dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated Regulations, the Litter Pollution Act 1997, as amended, The NWMPCE and the Local Authority waste bye-laws. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved.

Table 23.23 Monitoring- Material Assets – Waste

Phase	Monitoring measure
Construction	The objective of setting targets for waste management is only achieved if the actual waste generation volumes are calculated and compared. This is particularly important during the excavation and construction works, where there is a potential for waste management objectives to become secondary to other objectives, i.e. progress and meeting schedule targets. The RWMP specifies the need for a Resource Manager to be appointed, who will have responsibility for monitoring the actual waste volumes being generated and ensuring that contractors and sub-contractors are segregating waste as required. Where targets are not being met, the Resource Manager will identify the reasons for this and work to resolve any issues. Recording of waste generation during the construction phase of the Proposed Development will enable better management of waste contractor requirements and identify trends. The data should be maintained to advise on future developments. ■ Litter Pollution - The Contractor will review and maintain waste records and site audits. ■ Unlicensed Waste Collection (Illegal Dumping) - A register will be maintained and reviewed. A copy of all waste collection permits will be maintained. ■ Insufficient Waste Facilities - A register will be maintained and reviewed. A copy of all waste collection permits will be maintained.

Phase	Monitoring measure
	Lack of Waste Classification - An appointed RM will monitor all on-site waste segregation and classification.
Operation	During the operational phase, waste generation volumes should be monitored by the Operator / Buildings Management. There may be opportunities to reduce the number of bins and equipment required in the shared and Commercial Waste Storage Areas (WSA's), where estimates have been too conservative. Reductions in bin and equipment requirements will improve efficiency and reduce waste contactor costs. ■ Litter Pollution - Waste storage areas will be monitored by the facilities management team. ■ Unlicensed Waste Collection (Illegal Dumping) - The facilities management team will maintain waste receipts on-site for a period of 7 years and make them available to Local Authority as requested. Poor Waste Segregation - Waste generation volumes and cross contamination will be monitored by the facilities management team and their selected waste management company.

23.3.14 Material Assets – Services

Table 23.24 Mitigation measures – Material Assets - Services

Ref.	Mitigation measure
Construction phase	
MAS01	Surface Water The surface water from the subject site will outfall into the neighbouring / existing drainage networks. The following Mitigation Measures are to address potential impacts on water quality and are required to protect any ultimate outfall of the proposed sites surface water. All works will be undertaken with reference to the following guidelines: ■ CIRIA C532: Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (Masters-Williams et al., 2001); ■ CIRIA C692: Environmental Good Practice on Site, (Audus et al., 2010); ■ BPGCS005: Oil Storage Guidelines; ■ CIRIA C648: Control of Water Pollution from Linear Construction Projects: Technical Guidance (Murnane et al., 2006a); ■ CIRIA C648: Control of Water Pollution from Linear Construction Projects: Site Guide (Murnane et al., 2006a); ■ Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (IFI 2016); ■ Guidelines for Planning Authorities – Architectural Heritage Protection – Guidance on Part I of the Planning and Development Act 2000. (Part 2, Chapter 7) and ICOMOS Principles. At construction stage the contractor will write and adhere to a Surface Water Management Plan which will dictate how excess water within the site is to be treated and managed during construction. This will include details on mitigation measures including, but not limited to:

Ref.	Mitigation measure
	■ Implementing settlement ponds and silt removal measures for any water prior to discharge to the existing network; ■ Providing bunds to chemical/fuel storage and generators. Further mitigation for surface water is detailed in Table 20.3: ■ Designated parking at least 50m from any watercourse. ■ The site compound will be located at least 50m from any watercourse ■ Fuels, oils, greases, and other potentially polluting chemicals will be stored in bunded compounds at the Contractor's compound or at a location at least 50m from any body of water. Bunds are to be provided with a 110% capacity of the storage container. Spill kits will be always kept on site and all staff trained in their appropriate use. Method statements for dealing with accidental spillages will be provided to the Contractor for review by the Employer's Representative. ■ A designated wash-down area within the Contractor's compound will be used for cleaning any equipment or plant, with the safe disposal of any contaminated water. ■ Pouring of cementitious materials will be carried out in the dry. ■ Prevents contamination of aquatic zone by petrochemicals ■ Any refuelling and maintenance of equipment will be done at designated bunded areas with full attendance of plant operative(s) within contained areas at least 50m from any watercourse ■ The Contractor is to prepare a site plan showing the location of all surface water drainage lines and proposed discharge points to the sewer. The plan will include the location of all surface water protection measures, including monitoring points and treatment facilities.
MAS02	**Wastewater Drainage** All wastewater pipework and manholes will be designed and constructed in accordance with the Uisce Eireann Code of Practice and Standard Details and will be subject to inspection by the UE Field Engineer and the Consultant Design Engineer during construction. Upon completion the contractor will submit for review a QA pack for review which will include: ■ CCTV analysis; ■ As-Built Drawings; ■ Pressure Test Records; ■ Manhole Exfiltration Test Records. Any defects will be identified and repaired prior to connection to the public network.
MAS03	**Water Supply** All water pipework and manholes will be designed and constructed in accordance with the Uisce Eireann Code of Practice and Standard Details and will be subject to inspection by the UE Field Engineer and the Consultant Design Engineer during construction. Upon completion the contractor will submit for review a QA pack for review which will include: ■ Chlorination; ■ As-Built Drawings; ■ Pressure Test Records.
MAS04	**Electrical Supply**

Ref.	Mitigation measure
	The ESB will install all of the new incoming supplies to the Proposed Development. The ESB will also liaise with residents and keep existing customers fully informed of any brief outages which may be required due to the diversion and undergrounding of the existing medium voltage overhead lines or connections to the Proposed Development. Works will be in compliance with Health and Safety Authority (HSA) Code of Practice for Avoiding Danger from Underground Services (2016), and the ESB Networks and Health and Safety Authority Code of Practice for Avoiding Danger from Overhead Electricity Lines (2019). The latter of which includes specific zones for safe practice when working near overhead electric lines including: ■ Hazard Zone - which is the lateral area near an overhead electric line which must normally be isolated from the work site by physical barriers; ■ Exclusion Zone – which is a region around a live overhead electric line which much never be breached in order to avoid electrical arcing or flashover. (The dimensions of the Hazard Zone and Exclusion Zone vary based on the voltage of the overhead electric line). The exact locations of the below ground ESB Networks infrastructure will be confirmed as part of the Detailed Design Phase. Prior to excavation the Contractor will carry out additional site investigation, in order to determine the exact location of the below ground network.
MAS05	**Telecommunications** The relevant utility provider will install the new incoming supplies to the Proposed Development and will liaise with existing customers to advise of possible outages in order to facilitate the connections. The works will be carried out such that they minimise disruption to surrounding areas. Prior to excavation the Contractor will carry out additional site investigation, in order to determine the exact location of the telecommunications networks in close proximity to the works area. This will ensure that the underground telecommunications network will not be damaged during the construction phase.
Operational phase	
MAS06	**Surface Water** The proposed surface water drainage network will be designed in accordance with the requirements and recommendations of Fingal County Council Taking-in-Charge policy, the Greater Dublin Strategic Drainage Study and Regional Code of Practice and CIRIA SuDS Guide. The measures incorporated into the design will: ■ Limit the discharge rate of stormwater runoff; ■ Provide attenuation volume for excess runoff; ■ Provide treatment prior to discharge to the public network thereby minimising impact.
MAS07	**Wastewater** The proposed public wastewater network has been designed in accordance with the Uisce Eireann Code of Practice and all private drainage will be in accordance with the Building Regulations Technical Guidance Document Part H. This, combined with a regular maintenance regime by UE, will ensure the network continues to operate as designed.

Ref.	Mitigation measure
MA08	**Water Supply** All water pipework will be designed and constructed in accordance with the Uisce Eireann Code of Practice and Standard Details. This, combined with a regular maintenance regime by UE, will ensure the network continues to operate as designed.
MAS09	**Electrical Supply** The proposed electricity supply system will be commissioned and subject to a regular operational inspection and maintenance regime, in accordance with the utility providers procedures, to ensure the system keeps operating within the design specifications.
MAS10	**Telecommunications** The proposed telecommunications system will be commissioned and subject to a regular operational inspection and maintenance regime, in accordance with the utility providers procedures, to ensure the system keeps operating within the design specifications.

Table 23.25 Monitoring- Material Assets – Services

Phase	Monitoring measure
Construction/Operational	■ Implementation of surface water management plan ■ Construction as per Uisce Éireann Code of Practice for Wastewater and Drinking Water Supply ■ Testing and commissioning of diverted network for electrical supply. ■ Testing and commissioning of new network connections for telecommunications ■ Regular inspection and maintenance as per SUDS Maintenance Plan ■ Regular inspections and maintenance per Uisce Éireann policies for wastewater system. ■ Metering of supply for monitoring of leaks in water supply. ■ Regular monitoring and maintenance for electrical and telecoms loading

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